

FESTO

Automation Technology



Pneumatic and electrical components

The Festo product range – always available online or offline

Find your perfect solution quickly –

in our Online Shop → www.festo.com or in the digital product catalogue on DVD



Our Online Shop offers you advantages around the clock → www.festo.com

- The online advantage: always up to date, more engineering tools, the spare parts catalogue and our Support Portal
- Select products with ease and confidence
- Price and delivery time always up to date
- Quick ordering – instant confirmation
- Optimum planning reliability – you have an overview of all delivery dates and orders. Includes order tracking and delivery status display, even for orders not made via the Online Shop
- Fast data exchange – share baskets with colleagues/customers/suppliers with access to the Online Shop
- Error-free procurement – give your purchaser parts lists as a CSV file
- Easy editing – conveniently download order confirmations, delivery notes and invoices
- Easy reordering – reorder previous orders with just a few clicks
- Greater organisation and transparency – create stock labels using our free Label Designer. Includes a product picture and further details such as optimum ordering quantity for stock goods

You can find details about our Online Shop here → www.festo.com/ols

Or select products offline quickly and with confidence – using the Festo product catalogue on DVD

System requirements

Minimum configuration

- Intel Pentium IV, 2.4 GHz+ or AMD 2400 xp+
- 1 GB RAM
- DVD-ROM drive
- Screen resolution set to 1024 x 768 pixels
- Operating system: Microsoft Windows 7
- Browser: Microsoft Internet Explorer 11

Recommended configuration

- PC, no more than 4 years old
- Laptop, no more than 2 years old
- Dual-core CPU with 2 GHz
- 2 GB RAM
- DVD-ROM drive
- Screen resolution set to 1280 x 1024 pixels
- Operating system: Microsoft Windows 7/8/10 (32 or 64 bit) incl. all Windows updates
- Browser: Microsoft Internet Explorer 11






















Installation instructions

1. Insert the DVD-ROM into the drive.
If the setup program starts automatically, continue with Step 5.
If not:
2. Select the **Run** command from the Start menu.
3. Enter the drive letter of your DVD-ROM drive followed by **setup.exe**.
For example: **d:\setup.exe**
4. Then click on **OK** or **Enter**.
5. Follow the instructions.

For further information (installation in a network, FAQs), please read **Info_en.pdf** on the CD or write to us: dki@festo.com

Exclusion of liability

Festo provides this software to support you in the selection and ordering of Festo products. The data/results generated using the software are exclusively intended as a non-binding product description and do not constitute warranted properties. Festo accepts no liability for damages caused through the use of this software, in particular in relation to consequential damage, whether material damage or financial loss, directly related to the use of this DVD-ROM, unless the result of gross negligence or intent. Excluded from this is damage to health, body or life, as well as in case of violation of essential obligations, which are paramount for achieving the contract purpose, whereby the liability in the latter case is limited to the amount of the typically foreseeable damage.

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			Grippers	446	02
			Servo-pneumatic positioning systems	490	03
			Electromechanical drives	496	04
Motors and controllers				728	05
Handling systems				830	06
Vacuum technology				854	07
Valves and valve terminals			Valves	900	08
			Valve terminals	1064	09
Motion Terminal				1156	10
Sensors				1184	11
Image processing systems				1268	12
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Colour key

- Grey text on the product pages:
You will find these products online;
see description → 17
- Blue type code on the product pages:
Type code for Internet searches

★ Products for easy selection,
quick ordering and delivery

Example

ADN...-EL

online: → adn

→ www.festo.com/catalogue/adn

★ 174376 FNC-32

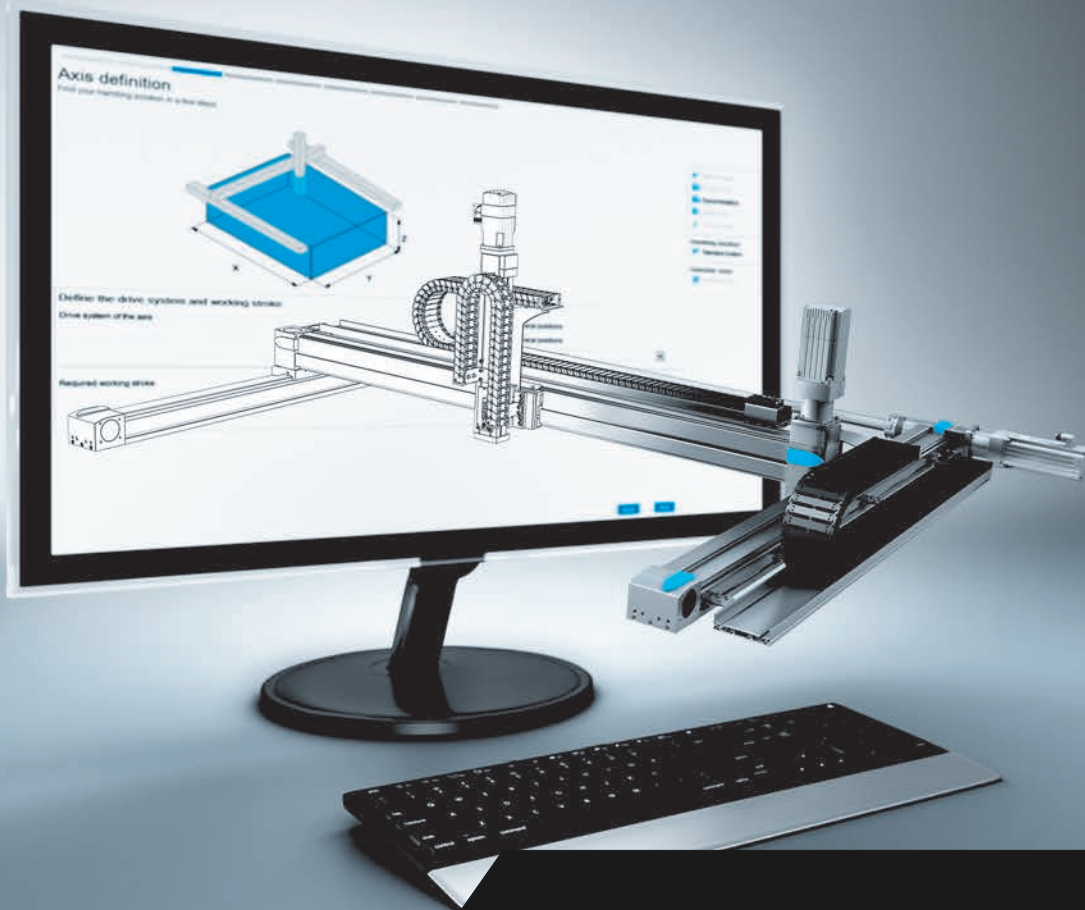
FESTO

Automation Technology



Pneumatic and electrical components

Editorial





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Preface

Editorial





Dr Ansgar Kriwet,
Member of the Management Board, Sales, Festo AG

Dear customers,

Are you ready to join us on the digital journey along the entire machine and system cycle? We will show you digital solutions that will make you even more productive.

We will assist you from the first learning experience in Industry 4.0, because the digital transformation affects all manufacturing companies in equal measure. We must learn together and find intelligent basic and further training concepts. We will guide you on the path of digital transformation with personal expertise and digital learning and training tools.

Our goal is to make you more productive. To do this, we would like to show the way and support you in the future, from planning and design to commissioning and system operation, with products from Festo – with a consistent look and feel and an integrated database.

Intuitively finding the right automation solution, sizing it and commissioning it immediately with the right tools: Festo Cloud services enable efficient engineering throughout the entire system cycle, always with data adapted to your configuration. For example, circuit diagram macros appropriate to the configuration can be generated and integrated directly into the system diagrams using the Festo circuit diagram service.

The goal of automation has always been to achieve the greatest possible standardisation in the production process. Digitised solutions reinforce this approach and add a key aspect to standardisation: maximum flexibility. The Festo Motion Terminal, for example, makes batch sizes of 1 or larger possible, without time lost due to increased production. It ensures extremely stable processes, since incorrect adjustment of settings is no longer possible, for example.

Smartenance, the digital maintenance manager for production managers and system operators, finally makes maintenance management paperless. Smartenance provides you with a clear schedule and evaluation for your system maintenance and offers a fast and easy transition to digital maintenance – for all system manufacturers.

However, we are also continuously further developing the classic components in our core product range. This range of over 2000 products is available for fast and reliable delivery, even in large quantities. Take for example the slide unit DGST, the most compact on the market. Or the new service units MS2 – so compact in size, light in weight and high in flow rate that they can also be used on robot arms.

We have one goal: our solutions have to make your processes even faster, more efficient and more flexible. Both now and in the future. We are the engineers of productivity.

I hope you enjoy browsing through our new catalogue – and that you find lots of clever solutions to make your company fit for the future.

Best regards,

A handwritten signature in black ink, appearing to read 'Ansgar Kriwet'. The signature is stylized and written in a cursive-like font.

Dr Ansgar Kriwet

Partner for maximum productivity

You want to make your applications more productive. You are looking for efficient solutions. We are entering the digital future with you.

→ WE ARE THE ENGINEERS OF PRODUCTIVITY.

Festo: a partner in dialogue, a partner for maximum productivity.

Best products. Best solutions. Best services. That is our claim. In this context, there is much more you can expect from us to permanently increase your productivity.

Editorial





Build with engineering excellence.

Use our ingredients for quick and easy engineering: extremely simple and suitable product selection, smart engineering and simulation processes, also with a digital twin, and a unique Product Key for complete product information. And procurement? It couldn't be easier.

Operate your systems smartly.

Connectivity to the cloud ensures reliable processes with greater productivity. Condition monitoring lets you see immediately when a service or repair is due - our MyDashboards will tell you. And with the Smartenance digital maintenance manager you have the servicing of all systems under control - even third-party systems.

Prepare to be inspired.

What does the automation of tomorrow look like? What are the trends? And what will make my production highly flexible, while also offering standardisation? You can find the answers right now with our Festo Motion Terminal VTEM, the first app-controlled pneumatic component. Future Concepts and our bionic studies show you how the world of tomorrow might look.

Never stop learning.

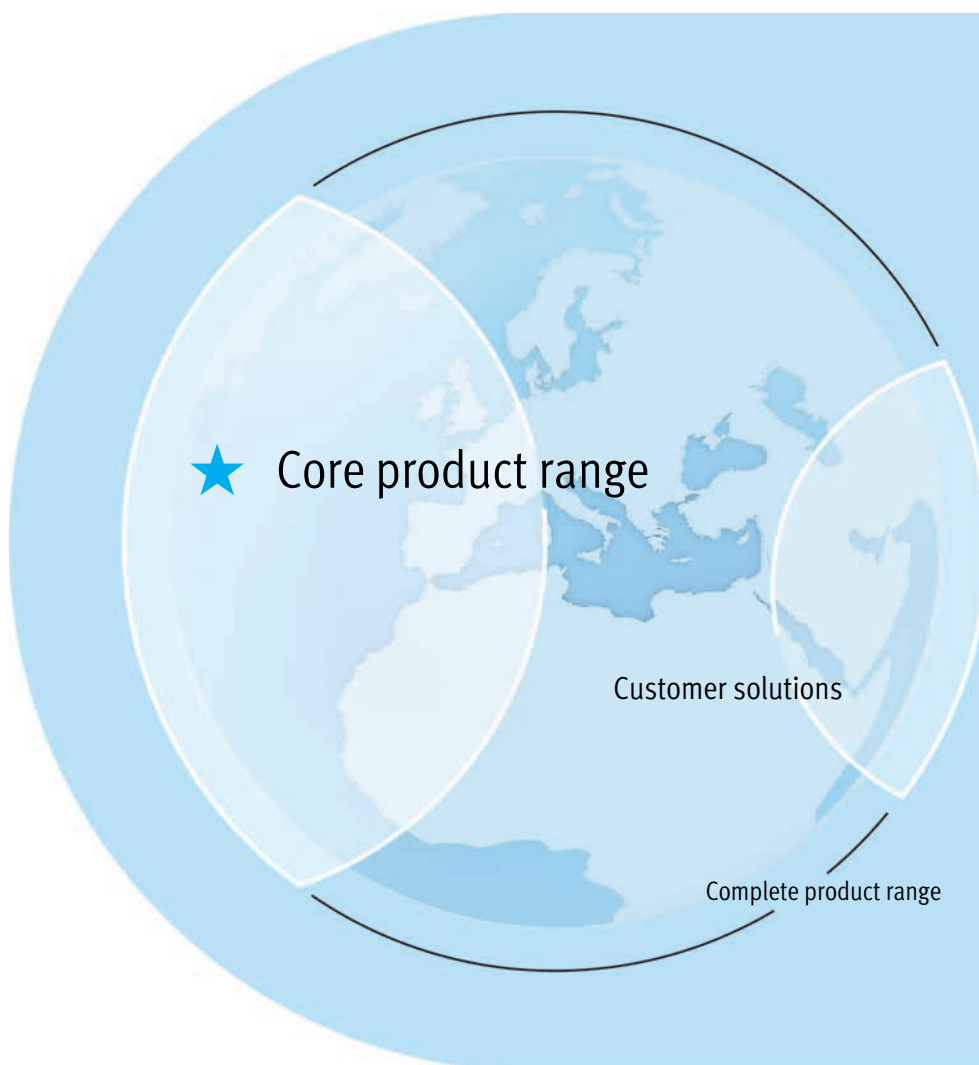
The market and global competition are accelerating steadily - and require constant learning if you want to maintain your competitive edge. You and your employees will benefit from the offer of Festo Didactic. Knowledge that pays off.

Innovations for simpler automation

You rely on factory automation.
You rely on process automation.
We are technology and training.

→ **WE ARE THE ENGINEERS OF PRODUCTIVITY.**

Editorial



Product range

The rapid changes of our time are challenging and we have to continually adapt processes, functional concepts and solutions. Mastering this challenge technically and economically will become a core competency in the coming years. Only then can we keep up with general developments. Many tasks can be solved with simple means, some only with special approaches: our range is designed to support with all aspects.

1

Core product range

Our core product range offers you special advantages – selected products for 80% of automation applications. They can be ordered using a part number and are especially attractively priced.



- **Generally ready for dispatch from the Festo factory in 24 hours**
- In stock worldwide in 13 service centres
- Over 2200 products

Look for the star!

2

Complete product range

You will find solutions for more specific requirements in our complete product range, which we will deliver on the indicated date. This part of the range is not separately identified.

3

Customer solutions

If you cannot find the right products for your task in our range, our specialists in the "customer solutions" area are at your disposal.

Your partner for all automation questions.

Contact us → www.festo.com

Digitalisation

Digitalisation – megatrend for productivity

The virtual and real worlds are continuing to converge – and leading to Industry 4.0. Increasing digitalisation is one of the basic prerequisites for this process. Festo is driving this process forward in the field of automation – and we invite our customers to undertake this journey together with us.



The future: smart products – smart offering

Digital products can do more and more – and are masters at integrating additional functions. Smart products optimise themselves, adapt to external influences and identify themselves. The digital twin is accessed via the Product Key. These are the prerequisites for highly flexibly and extremely fast and adaptive production.

This also includes a tailored digital offering in the form of software, apps and firmware along our customer journey. Festo is making every effort in this area. Engineering tools such as FluidDraw or EPLAN Schematic Solutions ensure seamless, error-free documentation. Condition monitoring of components or solutions takes place via dashboards that output all relevant parameters – including on the go. This makes it possible to reconcile maximum system availability and optimum maintenance planning. Huge savings potential can be realised with Smartenance, our digital maintenance manager with reminder functions and proof for audits, including for non-Festo products.

Your entry into the digital world? CPX/MPA as an example

The advantages of digitalisation are clearly demonstrated by a valve terminal MPA ordered and configured in the Online Shop and the CPX automation platform with decentralised intelligence. It features numerous approaches from integrated industries. It is documented electromechanically and pneumatically in no time at all with Schematic Solutions and FluidDraw from the App World, so that a digital twin is immediately available. In addition, the Product Key as a data matrix code on the product ensures that important information is easy to retrieve during commissioning and maintenance.

An additional, configurable OPC UA interface connects the CPX/MPA to the IoT gateway that transfers the data to the Festo Cloud. Festo MyDashboards visualise this data, for example for condition monitoring. Smartenance is used for maintenance planning, including for the entire system or production line.

Only this combination of classic hardware and software-controlled elements boost the automation productivity and flexibility. We are happy to share this expertise with our customers.

You can find out more about digitalisation under the Festo Motion Terminal in Chapter 10 from page 1156.

Automation x3

Editorial





Factory automation

... for maximum productivity

In everyday factory operations, typical tasks such as gripping, moving and positioning part components, modules or complete products are carried out by Festo automation technology.

Fully integrated competitive edge

Our components and systems are used in production and assembly in a wide range of industry sectors, including the automotive, packaging and electronics industries.

The corresponding service and appropriate training make us the No. 1 partner for our customers across their entire value chain.

Process automation

... for safety during operation

Regulating and controlling fluids, gases and solids are typical process automation tasks. The main fields of application are in water and wastewater technology, the pharmaceutical sector, the chemical industry and food and beverage production. However, our solutions are also used in many factories, for example in cooling circuits and ventilation systems.

Tailored industry solutions

Together with and for our customers, we develop tailored automation solutions for controlling and regulating fluids, gases and solids. We provide support in all project phases from development through to commissioning.

Electric automation

... seamless connectivity in factory and process automation

One automation platform for factory and process automation

Our CODESYS controllers, primarily the modular control system CPX-E and the control platform CPX with protection to IP65 create unique advantages and set new standards in factory and process automation.

This includes a cost-effective overall concept, technical synergies and the advantages of decentralised installation as well as connecting to Industry 4.0, the IoT and the Festo Cloud thanks to OPC UA.

A comprehensive platform for electric automation

Automation in core and secondary machine processes: from electromechanics and rotary modules, servo motors and servo drives, complete positioning systems and motion control solutions to complete handling systems and decentralised control solutions as well as the Multi-Carrier System – and always with the appropriate Festo Automation Suite sizing and engineering software.

Includes intelligent connectivity with various communication tools as well as the direct and complete integration of our servo drives in higher-level control concepts from globally controller manufacturers.

Easy selection

Quick order placement for selected basic designs

We make it easy for you!

We have compiled a globally standardised core product range that not only offers you faster and easier selection, but also fast delivery.

It has been selected by Festo experts based on actual customer requirements and covers the main applications of automation technology, while offering the best possible value for money.

Products with the star: easy selection and fast delivery

You can recognise these outstanding products at a glance: they are marked in the catalogues with a ★ star.

Quick and easy to order

Preconfigured to ensure the best possible value for money, these products can be ordered quickly and easily either via the order code, which is based on the features, or the unique part number.

High level of availability

In stock and generally ready for immediate dispatch: these products are available in no time at all.¹⁾

More variety or individually configured? No problem!

If your requirements go beyond the main applications of automation technology or if you need individually configurable products such as valve terminals, you can choose from the full spectrum of Festo's automation portfolio with all of its technological diversity.

- Each product in this catalogue is presented as part of a product range overview, e.g. the ISO valve terminal VTSA → page 1141
- Make your selection using the configurator in our digital product catalogue – offline on the DVD or online at
→ www.festo.com/catalogue/..., enter the type code, e.g. **vtsa**
- You can also place the order from the configurator.

Further information on how to quickly find the optimal solution
→ page 17, 19 and 20.

1) Special features are explicitly stated.



You can benefit from these advantages whenever you need core pneumatic and electrical functions. Wherever you see this symbol in our printed or electronic catalogue, it identifies a selected product which is perfect for the main applications of automation technology. The stars will help you to find what you are looking for more quickly and place orders more easily. These star products are generally in stock and ready for immediate delivery.

At a glance:

- + Fast: generally ready for dispatch in 24 hours
- + Superb: Festo quality at an attractive price
- + Easy: just a few clicks to place an order online

Quick order placement for selected basic designs

You will find the order code for each product on the product pages. The appropriate accessories for each product are presented in tabular format at the end of each product description.

It couldn't be easier:

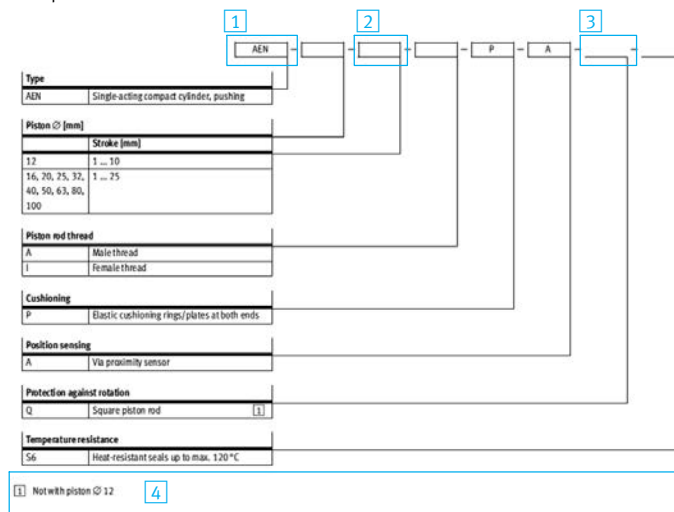
to get the correct order code, complete the fields in the first row from the left to the right. Follow the connecting line from each field to the column with the associated sizes and variants and make your selection.

There are three types of fields:

- + Mandatory data with predefined content **1**:
in the example on the right, the basic design AEN is specified.
- + Mandatory data (empty field) **2**:
enter your required stroke length here.
- + Optional data (line only) **3**:
if nothing is entered here, the basic variant will be supplied (in this example this means a standard piston rod).

When making your selection, note the conditions associated with the variants **4**, which are shown as footnotes.

Example of an order code:



Contact

On pages 1759 to 1760 you will find the service network with details of our contacts.

Prefer online?

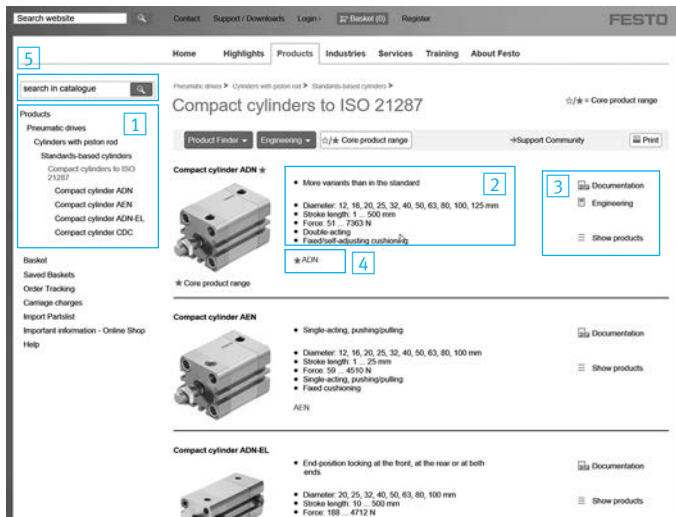
→ www.festo.com

We look forward to hearing from you.

Online or offline – get the ideal solution fast

Online: Enter www.festo.com in your web browser, then choose your country. Click on Go. On the homepage, select the "Products" menu.

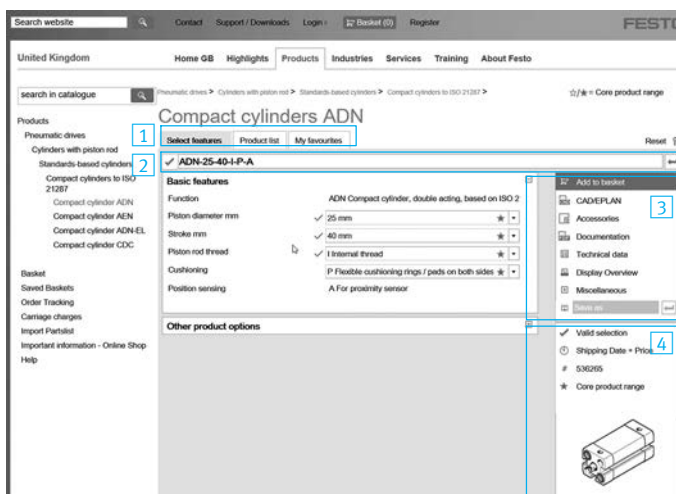
Offline: Insert the DVD and install the product catalogue. On the start page, click on the "Products" link.



From the product group to the product

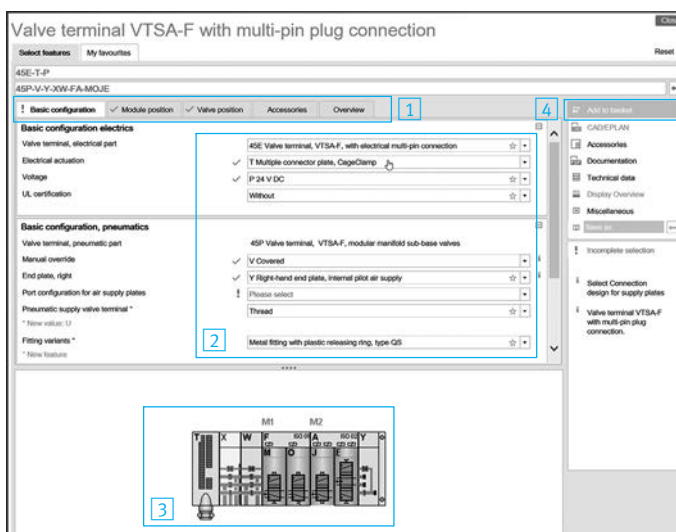
There are three options available:

1. Click on a product group **1** or product photo. A selection of products will then be displayed along with a list of the technical features **2** and selectable links **3**:
 - "Engineering" starts the selection and calculation software
 - "Documentation" provides detailed information in PDF format
 - "Feature search" lets you further narrow down the product selection
2. Full text search: Enter your search term in the search field **5**. This can be made up of complete or partial keywords, part numbers, type codes or names of favourites. Depending on your input, a selection of products as described in step 1 will be displayed or you will be taken directly to the product you searched for.
3. Quick link: Use the quick link **4** to take you directly to the required product by clicking on an order code.



Functions in the product configurator

1. Tab navigation **1**
 - "Select features": Select the appropriate features here
 - "Product list": Lists all products in the product group
2. Input field for order code **2**: Enter the exact order code here.
3. Other actions **3** which are available following a correct configuration:
 - "Add to basket": Adds your product to the basket, see also the sections "Exporting your basket" and "Managing your basket" → 19.
 - "2D/3D view": Creates a CAD model, see the section "Viewing CAD models"
 - "Accessories": Lists suitable accessories
 - "Data Sheet": Contains all the relevant technical data
 - "Display Overview": Displays an overview of all selected models
4. Details **4**: Here you will find information such as part number, price, product graphic, product illustration and circuit symbol.



Selecting product features in the product configurator

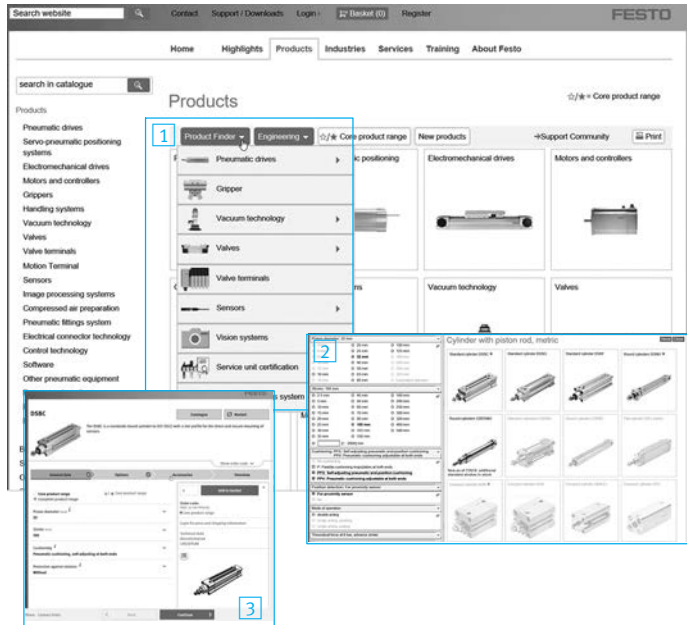
1. Select the product features:
 - Navigate using the tabs **1**.
 - Configure your product by selecting the required features **2** on the tabs **1** running from left to right.
 - The tabs **1** give you a quick overview of all the selected features. Missing features are marked with a blue exclamation mark and incorrect features are marked in red. Clicking on the feature takes you directly to it, so that you can then change it.
2. Graphic representation **3**: A dynamic graphic¹⁾ is created based on your current configuration.
3. Add the product to the basket: Once the configuration is complete, you can add products to the basket by clicking on "Add to basket" **4**. A message is displayed to confirm that the product has been added successfully. To find out how to place an order, see the section "Managing your basket" → 19.

1) Available for the valve terminal and service unit product groups.

Online or offline – get the ideal solution fast

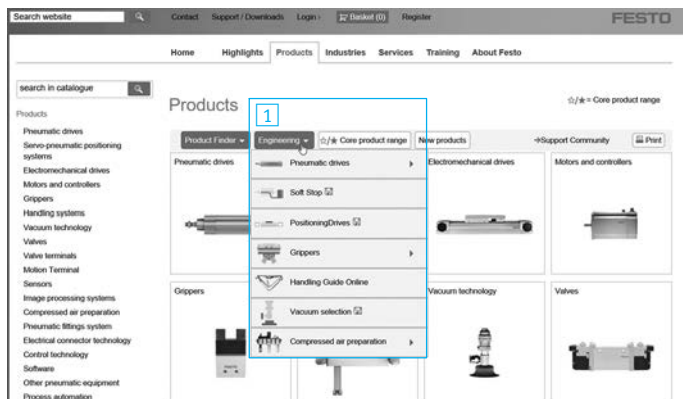
Online: Enter → www.festo.com in your web browser, then choose your country. Click on Go. On the homepage, select the "Products" menu.

Offline: Insert the DVD and install the product catalogue. On the start page, click on the "Products" link.



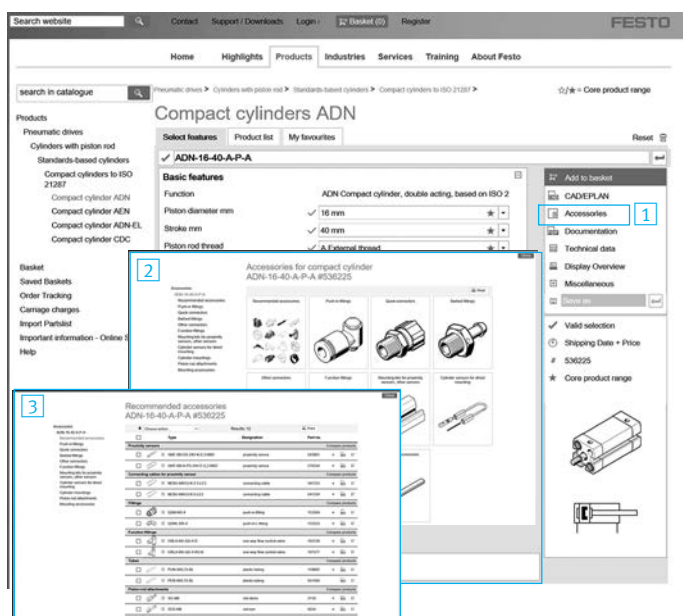
Selecting product features in the product finder

1. Click on the blue icon "Product finder" **1** and select the required product group.
2. Select the required technical features in the selection field **2** on the left-hand side.
3. Then click on a product photo. The configurator **3** opens with the features you selected.



Engineering tools for appropriate products for your applications

1. Click on the blue icon "Engineering" **1** and select the required engineering tool. This tool guides you step-by-step to the application simulation based on the technical features you selected and suggests the appropriate products for your application.



Finding the appropriate accessories quickly

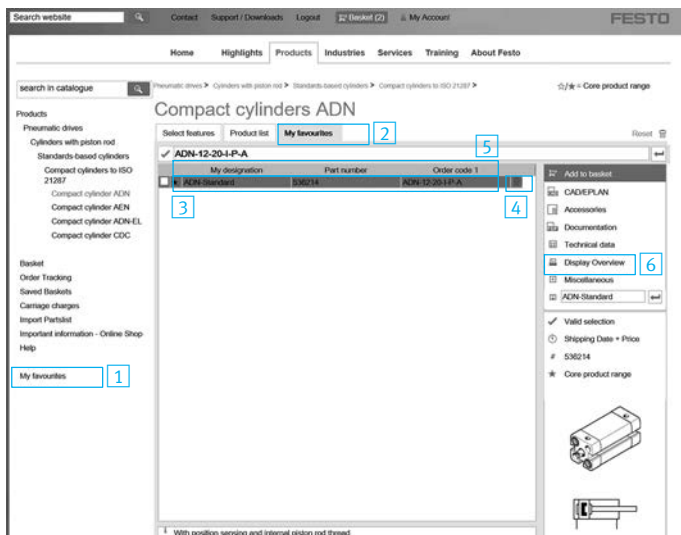
1. Select the required features in the configurator.
2. Click on the "Accessories" icon **1** on the right-hand side.
3. Select the required accessory from the accessories on offer **2**.

The tool will take you to the appropriate accessory selection list.
Tip: For some cylinder series you can find the appropriate accessories faster by selecting "Recommended accessories" in the accessories on offer **2**. For some cylinder series you will also find "Recommended accessories" **3** after you have added your selection to the basket.

Online or offline – get the ideal solution fast

Online: Please register as a user to use the functions described on this page.

Offline: Registration is not required to use the functions on this page.



My favourites

You can save as many product configurations as favourites as you want.

To display the list of all stored favourites **1**:

– Click on the "My favourites" tab **2**. A table containing your saved favourites is displayed.

The name of the favourite, part number, type code and a button **4** for deleting the favourite are displayed.

– Double-clicking on a row in the configuration **3** opens the corresponding configuration window.

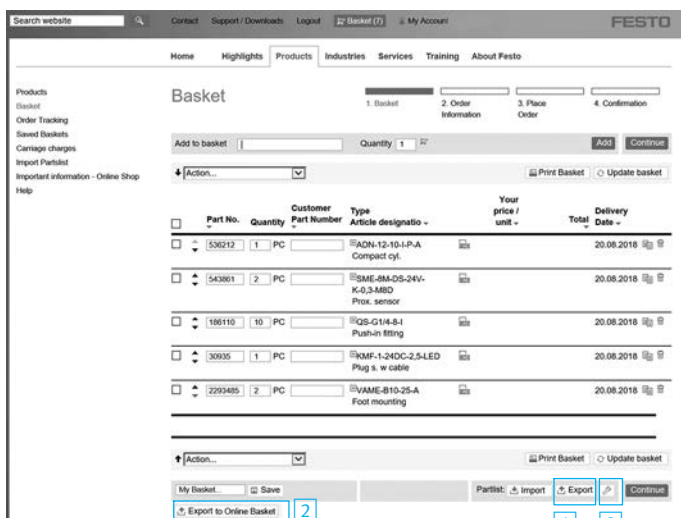
– You can sort your favourites by clicking on the column headings **5**.

– You can select multiple favourites and compare them by clicking on "Product compare" in the field on the right **6**.



Viewing CAD models

Clicking on the "2D/3D view" icon opens a window containing a CAD preview of the product. The "Export" function lets you export the files to your CAD system in the right format.



Exporting your basket ...

1. ... as a csv file:

To do this, click on "Export" **1**, choose "Save as" in the new window and specify where you want to save it to. This file can then be opened in Excel, for example, and edited.

2. ... in your choice of format: To do this, click on "Settings" **3** and specify which information is to be exported.

Managing your basket

1. Upload the basket directly to the Online Shop and place your order: to upload a basket directly to the Online Shop, simply click on "Export to online basket" **2**. An Internet connection is established and the products are transferred to the online basket. After logging in via "Login", your net prices and delivery times are displayed. Now just place your order and you're done!

2. Place an order: To place an order, simply print out your basket and send it to Festo by fax or export it as an e-mail.



The Support Portal

All product information can be accessed centrally → www.festo.com/sp



Festo Online Shop

Round-the-clock benefits

24 h online

+ **Continuous availability** – product information, documentation, prices, availability, ordering, etc.



+ **Complete overview of all orders** – order tracking with search function, status display in lists and easy reordering.



+ **No minimum quantity surcharge** – there will be no additional costs for small orders.



+ **Request quotations** – you can request quotations directly from the basket at the push of a button.



+ **Download all documents for a complete basket** – complete documentation for the selected products.



+ **Express delivery** – orders placed before 8:30 p.m. with express delivery selected will be with you by noon the following working day, provided they are in stock.

You will find our Online Shop at ...

→ www.festo.com

> click on the "Basket" link

Search website | Contact | Support / Downloads | Logout | **Basket (3)** | My Account | **FESTO**

Home | Highlights | **Products** | Industries | Services | Training | About Festo

Basket | 1. Basket | 2. Order Information | 3. Place Order | 4. Confirmation

Add to basket | Quantity 1 | Add | Continue

Action... | Print Basket | Update basket

Part No.	Quantity	Customer Part Number	Type Article designatio	Your price / unit	Total	Delivery Date
536212	1	PC	ADN-12-10-I-P-A Compact cyl.			20.08.2018
543861	2	PC	SME-8M-DS-24V-K-0,3-M8D Prox. sensor			20.08.2018
193138	1	PC	GRLA-M5-QS-4-D 1-way contr.val			20.08.2018

Action... | Print Basket | Update basket

My Basket... | Save | Partlist: Import | Export | Continue

Requested Delivery Date: 19.08.2018 | Shipping method: UPS Saver Service | Ship complete orders only: | Check

Please Note: For items that exceed 30kg or are over 2 metres in length, delivery can take up to 5 working days from despatch date.

Festo Design Tool 3D

Already registered?

Then you can log in directly via → www.festo.com/login or by clicking on "Login".

If you have not yet registered ...

... open the registration form via → www.festo.com and by clicking on "Register". Further information on the Festo Online Shop can be found here:

→ www.festo.com/ols

Partnership for a better automation solution

Festo – partner for automation

Integrated information ...

... is a prerequisite for successful pneumatic and electric automation.

That's why Festo sees itself as a partner to its customers and maintains a continuous dialogue with them to provide and exchange expert and comprehensive information.

Direct communication

- Worldwide consultation provided by more than 1000 sales engineers and project engineers with up-to-date product and industry knowledge
- Hotlines to answer all your questions
- Experts on components, modules, systems and industries

At events

- Over 120 trade fairs around the world each year
- Expotainer – the exhibition that comes to you
- Technology days – specialised presentations and exhibits about current topics in the field of automation
- Automation lectures – a series of specialised presentations based on actual, real-life applications

In printed form

- trends in automation – the customer magazine with application examples, news and innovations from the world of automation technology

Documentation

- The printed Festo catalogue. Automation in a compact volume and with a clear structure
- Industry catalogues
- Manuals and operating instructions
- System descriptions and product overview posters
- Specialist literature

Everything can be found on our Support Portal at → www.festo.com/sp

Are you familiar with our basic and further training courses? Festo Didactic brings together and promotes the transfer of knowledge:

Festo Didactic → 22.

After all, productivity begins with training.



Digital dialogue

- Overview of all tools and services: → www.festo.com/support
- Easy search, fast design: Product Finders and free engineering tools
- Wide range of tools for CAD and creating circuit diagrams
- Efficiency with complete transparency: the Online Shop
- Application notes on commissioning on the Support Portal
- Additional product videos on YouTube: service2see
- Product Key for automatic product identification
- Spare parts catalogue, including for configured products like valve terminals
- Database-supported catalogue in 26 languages



Festo Didactic

Festo Didactic is the world's leading supplier to technical educational institutions and provider of consulting and training services to industry. The product and service portfolio offers customers an integrated approach, covering all technological areas of factory and process automation.

We integrate technical training content with knowledge and training courses from other specialist areas like process optimisation, management and communication.

As an integral part of the Festo Group, Festo Didactic has its roots in the world of automation and industry is just part of its DNA. We work in close cooperation with Festo Automation and are familiar with the challenges faced by our customers. This enables us to offer tailored and practical training courses for industry. As well as covering our core competency in automation technology, these also include innovation topics like Industry 4.0. This content is delivered by experienced trainers and is tailored to each individual group of participants.



Selection of current training courses

Industry 4.0 Assessment –

We prepare your company for digitalisation and Industry 4.0

Like many other companies, you are probably asking yourself the following questions: how well prepared are your production and processes for the digital transformation? Where do you stand at the moment as an organisation? And how well do you prepare your employees for the digital future? Our Industry 4.0 Assessment is the ideal solution for assessing how prepared your company is for Industry 4.0 and providing a starting point for your digitalisation strategy. Together we define which Industry 4.0 technologies will add value to your company and help you to achieve your goals in the long term. Our detailed analysis offers you a reliable basis for initiating further processes and projects on the path of digital transformation.

Introduction to Industry 4.0 – Fundamentals and opportunities

Industry 4.0 is a hot topic, and one that is often understood in different ways. People working in management positions in particular are increasingly being confronted with Industry 4.0, and need to be aware of the effects. It offers companies numerous ways of enhancing productivity, quality and processes. Before it can be implemented, however, managers need a thorough understanding of all the elements and technologies, and how they are intertwined. This knowledge can then be used to develop new business models and specific strategies for implementing Industry 4.0 in the participants' own companies.

Active participation 4.0 – Interactive introduction to Industry 4.0

"Industry 4.0" is a hot topic in industry at the moment. Despite the transformation that this brings, many employees do not know what the changes will involve or why they are necessary. Changes are hard for them to understand and also cause anxiety, resulting in a lack of motivation. The "Active participation 4.0" training course is a 1-day interactive awareness building training course for employees from industrial companies working in both production-related and non-production-related areas. Its purpose is to raise awareness of the topic of digitalisation and the changes associated with the technological transformation. The training course addresses the current challenges and motivates participants to embrace them.

Lean management and Industry 4.0 – Two solutions that complement each other

Lean management and Industry 4.0 are two concepts that pursue similar goals. With an increasing number of customised products and ever declining batch sizes, the lean concept is reaching its limits. Industry 4.0 supports the existing lean methods with new technologies. However, digitalisation produces new types of waste (particularly when it comes to data), therefore new forms of value stream analysis are becoming more important. By adapting the typical value stream analysis, these new types of waste can be identified and avoided.

Detailed information as well as course dates, locations and costs: → tac.global@festo.com

Industry 4.0: Enabling the production of tomorrow

The goal of Industry 4.0 is the smart factory.

The trend in industrial production is towards the individualisation of products and batch sizes of one. Conventional processes are increasingly merging with modern information and communication technologies. The real and virtual worlds are continuing to converge, and the Internet of Things is becoming a reality.

However, the transformation and the new technical opportunities are not only affecting companies, but in particular their employees. The challenge of being able to apply the principles of self-organisation in open and unpredictable, complex and dynamic situations also calls for new knowledge on the part of your employees. New competencies – both technical, organisational or social – that were less relevant up to now are becoming increasingly important and help your employees to be productive in a new, more complex working environment. These include the ability to reflect, analytical thinking, complex communication and coming up with new ideas.

All our services are focused on developing these necessary competencies. We always combine the transfer of knowledge with the development of skills and the practical transfer to the participants' working environment, whether in public courses, company-specific training courses or during process-oriented consultation.

The aim is to ensure that your employees not only understand the technologies around Industry 4.0, but can also apply and develop them in a targeted way in your company to help increase efficiency and performance.

You will find a small selection of our training courses on this page.

CP Factory Training – Production planning and control in the smart factory

Production planning and control (PPC) has always been one of the core tasks of a manufacturing company and is gaining in significance with smart factories and Industry 4.0 (e.g. greater product diversity, customised solutions and the demand for batch sizes of one). The purpose of production planning and control is to design the production processes so that smooth and economical operation is guaranteed. Inadequate or poor PPC frequently results in delivery, cost and quality problems. Designing an efficient PPC system is therefore essential for every manufacturing company.

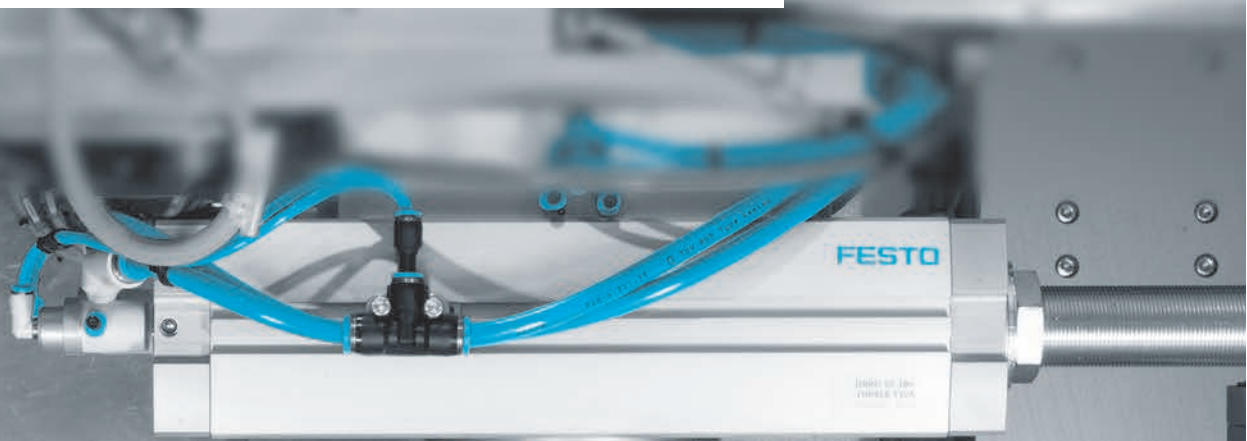
Smart Maintenance – Predictive and usage-based maintenance

Cyber-physical systems enable new approaches in maintenance and yet also place higher demands on maintenance. Because all the promises of Industry 4.0, such as one-piece flow or make-to-order, can only be fulfilled with extremely high machine and system availability and reliability. Those responsible for maintenance are therefore required to use maintenance strategies that show anomalies and wear in good time before malfunctions and failures occur, and that turn maintenance into a predictable process.



1 Pneumatic drives

- + Cylinders with piston rod
- + Rodless cylinders
- + Semi-rotary drives
- + Tandem, high-force and multi-position cylinders
- + Drives with guides
- + Stopper cylinders
- + Clamping cylinders
- + Bellows and diaphragm drives
- + Rotary indexing tables
- + Valve actuators for process automation
- + Cylinder/valve combinations
- + Shock absorbers
- + Cylinder mounting parts and accessories






DSBC ★

Standards-based cylinders to ISO 15552

- + Self-adjusting pneumatic end-position cushioning PPS
- + Comprehensive range of mounting accessories for just about every type of installation

→ page 61



CRDSNU

Standards-based and round cylinders, stainless steel

- + Corrosion-resistant stainless steel, therefore extremely easy to clean
- + Position sensing

→ page 125



DRRD ★

Semi-rotary drives

- + Twin-piston rotary drive, power transmission via rack and pinion principle
- + Very high bearing load capacity

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DGRF-C

Guided drive

- + Easy to clean
- + Position sensing
- + Elastic cushioning rings at both ends
- + Plain-bearing guide

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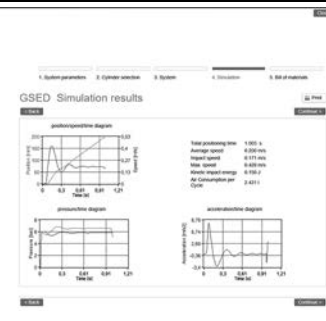
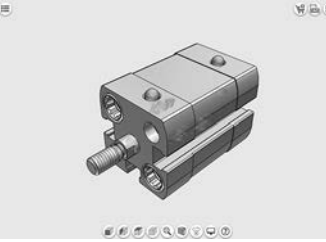
Stopper cylinders DFST 437

Product overview





01

Software tool


Pneumatic drives

<p>Pneumatic simulation</p> 	<p>Perfect simulations replace expensive real-life tests. The tool is an expert system that supports you in the selection and configuration of the entire pneumatic control chain. If one parameter is changed, the program automatically adapts all the others.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
<p>Festo Design Tool 3D</p> 	<p>The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo. The configurator makes your search for the right accessory easier, more reliable and faster.</p> <p>You can then order the module that has been created with a single order item – either completely pre-assembled or as individual parts in a single box. As a result, your bill of materials is considerably shortened and downstream processes such as product ordering, order picking and assembly are significantly simplified.</p>	<p>All ordering options are available in the following countries: AT, BE, CH, CZ, DE, DK, ES, EST, FI, FR, GB, GR, HU, IE, IT, NL, NO, PL, PT, RU, SE, SI, SK, TR, ZA.</p> <p>This tool can be found</p> <ul style="list-style-type: none"> • either via the address: www.festo.com/fdt-3d-online in the above listed countries,


Standards-based cylinders

Type	 Compact cylinders ADN	★  Compact cylinders AEN	 Compact cylinders ADN-EL	 Compact cylinders, Clean Design CDC
Mode of operation	Double-acting	Single-acting, pushing, pulling	Double-acting	Double-acting
Piston diameter	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm
Theoretical force at 6 bar, advancing	51 ... 7363 N	54 ... 4416 N	188 ... 4712 N	141 ... 3016 N
Stroke	1 ... 500 mm	1 ... 25 mm	10 ... 500 mm	1 ... 500 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends
Description	<ul style="list-style-type: none"> • ISO 21287 • Up to 50% less installation space than comparable standards-based cylinders to ISO 15552 • Piston rod with female or male thread • Wide range of variants for customised applications • For position sensing 	<ul style="list-style-type: none"> • ISO 21287 • Up to 50% less installation space than comparable standards-based cylinders to ISO 15552 • Piston rod with female or male thread • Wide range of variants for customised applications • For position sensing 	<ul style="list-style-type: none"> • Mounting hole pattern to ISO 21287 • With end-position locking at both ends, front or rear • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • ISO 21287 • Up to 50% less installation space than comparable standards-based cylinders to ISO 15552 • Easy-to-clean design • Increased corrosion protection • Wide range of variants for customised applications • Piston rod with female or male thread • For position sensing
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Standards-based cylinders

Type	Standards-based cylinders DSBC 	Standards-based cylinders DSBG	Standards-based cylinders DSBG
Mode of operation	Double-acting	Double-acting	Double-acting
Piston diameter	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	160 mm, 200 mm, 250 mm, 320 mm
Theoretical force at 6 bar, advancing	415 ... 7363 N	415 ... 7363 N	12064 ... 48255 N
Stroke	1 ... 2800 mm	1 ... 2800 mm	1 ... 2700 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, pneumatic cushioning, adjustable at both ends
Description	<ul style="list-style-type: none"> • ISO 15552 (ISO 6431, VDMA 24562) • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Wide range of variants for customised applications • Comprehensive range of mounting accessories for just about every type of installation • For position sensing 	<ul style="list-style-type: none"> • ISO 15552 (ISO 6431, VDMA 24562) • Sturdy tie rod design • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Comprehensive range of mounting accessories for just about every type of installation • For position sensing 	<ul style="list-style-type: none"> • ISO 15552 (ISO 6431, VDMA 24562) • Sturdy tie rod design • Pneumatic end-position cushioning adjustable at both ends • Optionally without end-position cushioning and position sensing, resulting in a price advantage • Optionally with spacer bolt attachment • For position sensing
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Standards-based cylinders




Type	Standards-based cylinders, Clean Design DSBF-C	Round cylinders DSNU 	Round cylinders ESNU
Mode of operation	Double-acting	Double-acting	Single-acting, pushing
Piston diameter	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm
Theoretical force at 6 bar, advancing	415 ... 7363 N	23 ... 295 N	19 ... 271 N
Stroke	1 ... 2800 mm	1 ... 500 mm	1 ... 50 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends
Description	<ul style="list-style-type: none"> • ISO 15552 • Increased corrosion protection • Easy-to-clean design • FDA-approved lubrication and sealing on the basic design • Long service life thanks to optional dry-running seal • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • For position sensing 	<ul style="list-style-type: none"> • ISO 6432 • Wide range of variants for customised applications • Good running performance and long service life • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • ISO 6432 • Wide range of variants for customised applications • Good running performance and long service life • Piston rod with female or male thread • For position sensing
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Product overview



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Round cylinders

Pneumatic drives





Type	 Round cylinders DSNU	 Round cylinders DSNU	 Round cylinders ESNU
Mode of operation	Double-acting	Double-acting	Single-acting, pushing
Piston diameter	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm	32 mm, 40 mm, 50 mm, 63 mm	32 mm, 40 mm, 50 mm, 63 mm
Theoretical force at 6 bar, advancing	23 ... 295 N	482.5 ... 1870.3 N	406 ... 1765 N
Stroke	1 ... 500 mm	1 ... 500 mm	1 ... 50 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends
Description	<ul style="list-style-type: none"> • ISO 6432 • Wide range of variants for customised applications • Good running performance and long service life • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • Wide range of variants for customised applications • Good running performance and long service life • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • Wide range of variants for customised applications • Good running performance and long service life • Piston rod with female or male thread • For position sensing
→ Page/online	107	107	107

Round cylinders

Type	 Round cylinders ESNU	 Round cylinders EG-PK
Mode of operation	Single-acting, pushing	Single-acting, pushing
Piston diameter	32 mm, 40 mm, 50 mm, 63 mm	2.5 mm, 4 mm, 6 mm
Theoretical force at 6 bar, advancing	406 ... 1765 N	1.9 ... 11.8 N
Stroke	1 ... 50 mm	5... 25 mm
Cushioning	Elastic cushioning rings/plates at both ends	At one end, non-adjustable, no cushioning
Description	<ul style="list-style-type: none"> • Wide range of variants for customised applications • Good running performance and long service life • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • Micro cylinder • Barbed fitting for plastic tubing with standard I.D. • Without position sensing
→ Page/online	107	eg-pk





Stainless-steel cylinders

01

Type	 Round cylinders CRDSNU, CRDSNU-B	 Round cylinders CRDSNU, CRDSNU-B	 Standards-based cylinders CRDNG, CRDNGS	 Round cylinders CRHD
Mode of operation	Double-acting	Double-acting	Double-acting	Double-acting
Piston diameter	12 mm, 16 mm, 20 mm, 25 mm	32 mm, 40 mm, 50 mm, 63 mm	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm
Theoretical force at 6 bar, advancing	68 ... 295 N	483 ... 1870 N	483 ... 7363 N	483 ... 4712 N
Stroke	1 ... 500 mm	1 ... 500 mm	10 ... 2000 mm	10 ... 500 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Pneumatic cushioning, adjustable at both ends	Pneumatic cushioning, adjustable at both ends
Description	<ul style="list-style-type: none"> • ISO 6432 • Corrosion resistant against aggressive ambient conditions • Easy-to-clean design • Long service life thanks to optional dry-running seal • Wide range of variants for customised applications • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • For position sensing 	<ul style="list-style-type: none"> • Corrosion resistant against aggressive ambient conditions • Easy-to-clean design • Long service life thanks to optional dry-running seal • Wide range of variants for customised applications • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • For position sensing 	<ul style="list-style-type: none"> • ISO 15552 (ISO 6431, VDMA 24562) • Corrosion resistant against aggressive ambient conditions • Easy-to-clean design • Variants: through piston rod, heat-resistant design • Threaded mounting, mounting via accessories • For position sensing 	<ul style="list-style-type: none"> • Corrosion resistant against aggressive ambient conditions • Easy-to-clean design, optimised for the most exacting demands • Great flexibility thanks to different end caps • Piston rod with male thread • For position sensing
→ Page/online	125	125	125	125

Pneumatic drives





Compact, short-stroke and flat cylinders

Type	 Compact cylinders ADN	 Compact cylinders AEN	 Compact cylinders ADN-S, AEN-S	 Compact cylinders, multimount DPDM
Mode of operation	Double-acting	Single-acting, pushing, pulling	Double-acting, single-acting	Double-acting, single-acting
Piston diameter	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	6 mm, 10 mm	6 mm, 10 mm, 16 mm, 20 mm, 25 mm, 32 mm
Theoretical force at 6 bar, advancing	51 ... 7363 N	56 ... 4416 N	13 ... 47 N	17 ... 483 N
Stroke	1 ... 500 mm	1 ... 25 mm	5 ... 10 mm	5 ... 50 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning	Elastic cushioning rings/plates at both ends	No cushioning	Elastic cushioning rings/plates at both ends
NEW			• New series	• New series
Description	<ul style="list-style-type: none"> • Up to 50% less installation space than comparable standards-based cylinders to ISO 15552 • Piston rod with female or male thread • Wide range of variants for customised applications • For position sensing • ISO 21287 	<ul style="list-style-type: none"> • Up to 50% less installation space than comparable standards-based cylinders to ISO 15552 • Piston rod with female or male thread • Wide range of variants for customised applications • For position sensing • ISO 21287 	<ul style="list-style-type: none"> • Minimal fitting space • High forces in a compact size • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • Mounting via through-hole and via female thread • Compact design • Piston rod variants • For position sensing
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Product overview

01 Compact, short-stroke and flat cylinders

Pneumatic drives




Type	 Short-stroke cylinders ADVC, AEVC ★	 Compact cylinders ADNGF	 Compact cylinders ADN-EL	 Compact cylinders CDC
Mode of operation	Double-acting, pushing, single-acting	Double-acting	Double-acting	Double-acting
Piston diameter	4 mm, 6 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, guide rod with yoke	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm
Theoretical force at 6 bar, advancing	4.9 ... 4712 N	68 ... 4712 N	188 ... 4712 N	141 ... 3016 N
Stroke	2.5 ... 25 mm	1 ... 400 mm	10 ... 500 mm	1 ... 500 mm
Cushioning	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends
Description	<ul style="list-style-type: none"> • Very short overall length • High forces in a compact size • Piston rod with female or male thread • For position sensing via proximity sensor for T-slot and for C-slot • Mounting hole pattern according to VDMA 24562 as of Ø 32 mm 	<ul style="list-style-type: none"> • Mounting hole pattern to ISO 21287 • Piston rod secured against rotation by a guide rod and yoke plate • Plain-bearing guide • Optionally with through piston rod • For position sensing 	<ul style="list-style-type: none"> • With end-position locking at both ends, front or rear • For position sensing • Piston rod with female or male thread • Mounting hole pattern to ISO 21287 	<ul style="list-style-type: none"> • Up to 50% less installation space than comparable standards-based cylinders to ISO 15552 • Easy-to-clean design • Increased corrosion protection • Wide range of variants for customised applications • Piston rod with female or male thread • For position sensing • ISO 21287
→ Page/online	165	187	adn-el	cdc

Compact, short-stroke and flat cylinders

Type	 Flat cylinders DZF	 Flat cylinders DZH	 Flat cylinders EZH
Mode of operation	Double-acting	Double-acting	Pushing, single-acting
Piston diameter	Oval piston, equivalent diameter, 12 mm, 18 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm	Oval piston, equivalent diameter, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm	Square piston rod, equivalent diameter, 3 mm, 6 mm, 12 mm, 22 mm
Theoretical force at 6 bar, advancing	51 ... 1870 N	104 ... 1870 N	3.8 ... 205 N
Stroke	1 ... 320 mm	1 ... 1000 mm	10 ... 50 mm
Cushioning	Elastic cushioning rings/plates at both ends	Pneumatic cushioning, adjustable at both ends	No cushioning
Description	<ul style="list-style-type: none"> • Extremely flat design • Protected against rotation thanks to special piston shape • Ideal for manifold assembly • Wide range of mounting options • Piston rod with female or male thread • For position sensing 	<ul style="list-style-type: none"> • Flat design • Protected against rotation thanks to special piston shape • Ideal for manifold assembly • Wide range of mounting options • Piston rod with male thread • For position sensing 	<ul style="list-style-type: none"> • Extremely flat design • Protected against rotation thanks to special piston shape • Wide range of mounting options • For position sensing
→ Page/online	dzf	dzh	ezh




Cartridge cylinders and multimount cylinders

01

Type	 Compact cylinders, multimount DPDM	 Multimount cylinders DMM, EMM, DMML, EMLL	 Cartridge cylinders EGZ
Mode of operation	Double-acting	Double-acting, pushing, single-acting	Pushing, single-acting
Piston diameter	6 mm, 10 mm, 16 mm, 20 mm, 25 mm, 32 mm	10 mm, 16 mm, 20 mm, 25 mm, 32 mm	6 mm, 10 mm, 16 mm
Theoretical force at 6 bar, advancing	17 ... 483 N	37 ... 483 N	13.9 ... 109 N
Stroke	5 ... 50 mm	1 ... 50 mm	5 ... 15 mm
Cushioning	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends	No cushioning
NEW	<ul style="list-style-type: none"> New series 		
Description	<ul style="list-style-type: none"> Mounting via through-hole and via female thread Compact design Piston rod variants For position sensing 	<ul style="list-style-type: none"> Wide range of mounting options Wide selection of piston rod variants Piston rod with male thread For position sensing 	<ul style="list-style-type: none"> Minimal fitting space Installation with or without mounting components Piston rod with male thread
→ Page/online	157	dmm	egz

Pneumatic drives

Cylinders with clamping unit



Type	 Standards-based cylinders with clamping cartridge DSBC-C	 Compact cylinders with clamping cartridge ADN-KP	 Round cylinders with clamping cartridge DSNU-KP
Mode of operation	Double-acting	Double-acting	Double-acting
Piston diameter	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm
Theoretical force at 6 bar, advancing	483 ... 7363 N	188 ... 4712 N	30 ... 295 N
Stroke	10 ... 2000 mm	10 ... 500 mm	1 ... 500 mm
Cushioning	Elastic cushioning rings/plates at both ends, pneumatic cushioning, self-adjusting at both ends, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends
Description	<ul style="list-style-type: none"> Piston rod can be clamped in any position Piston rod can be held in position for long periods even with alternating loads, fluctuating operating pressure or leaks in the system Mounting hole pattern to ISO 15552 Piston rod with female or male thread For position sensing 	<ul style="list-style-type: none"> Piston rod can be held in any position Piston rod can be held in position for long periods even with alternating loads, fluctuating operating pressure in the system or loss of pressure Mounting hole pattern to ISO 21287 Piston rod with female or male thread For position sensing 	<ul style="list-style-type: none"> Piston rod can be held in any position Piston rod can be held in position for long periods even with alternating loads, fluctuating operating pressure in the system or loss of pressure Mounting hole pattern to ISO 6432 For position sensing
→ Page/online	dsbc-c	43	107

Product overview





01

Cylinders with clamping unit




Pneumatic drives

		
Type	Round cylinders with clamping cartridge DSNU-KP	Cylinders with clamping unit DNCKE, DNCKE-S
Mode of operation	Double-acting	Double-acting
Piston diameter	32 mm, 40 mm, 50 mm, 63 mm	40 mm, 63 mm, 100 mm
Theoretical force at 6 bar, advancing	483 ... 1870 N	754 ... 4712 N
Stroke	1 ... 500 mm	10 ... 2000 mm
Cushioning	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning, pneumatic cushioning, adjustable at both ends	Pneumatic cushioning, adjustable at both ends
Description	<ul style="list-style-type: none"> Piston rod can be clamped in any position Piston rod can be held in position for long periods even with alternating loads, fluctuating operating pressure in the system or loss of pressure For position sensing 	<ul style="list-style-type: none"> Piston rod can be held and braked in any position Variant DNCKE-...-S approved for use in safety-oriented parts of control systems Mounting hole pattern to ISO 15552 Piston rod with male thread For position sensing
→ Page/online	107	dncke


Rodless cylinders

				
Type	Linear drives DLGF	Linear drives DGC-K	Linear drives DGC-G, DGC-GF, DGC-KF	Linear drives with heavy-duty guide DGC-HD
Piston diameter	20 mm, 25 mm, 32 mm, 40 mm	18 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm	8 mm, 12 mm, 18 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm	18 mm, 25 mm, 40 mm
Theoretical force at 6 bar, advancing	188 ... 754 N	153 ... 3016 N	30 ... 1870 N	153 ... 754 N
Stroke	50 ... 1000 mm	1 ... 8500 mm	1 ... 8500 mm	1 ... 5000 mm
Cushioning	Pneumatic cushioning, self-adjusting at both ends	Pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, pneumatic cushioning, adjustable at both ends, shock absorber, hard characteristic curve, shock absorber, soft characteristic curve	Shock absorber, hard characteristic curve, shock absorber, soft characteristic curve
Position sensing	Via proximity sensor	Via proximity sensor	Via proximity sensor	Via proximity sensor
NEW	<ul style="list-style-type: none"> New series 			
Description	<ul style="list-style-type: none"> Extremely flat design Basic design or recirculating ball bearing guide 	<ul style="list-style-type: none"> Compact design: 30% narrower than the basic variant DGC-G Basic drive without guide, for simple drive functions Low moving dead weight Symmetrical design 	<ul style="list-style-type: none"> Basic design, plain or recirculating ball bearing guide All settings accessible from one side Optionally with variable end stops and intermediate position module Software tool available for bearing calculation Optional: NSF-H1 lubricant for the food zone (see www.festo.com/sp/dgc > "Certificates" tab) Optional: clamping unit for holding loads 	<ul style="list-style-type: none"> For maximum loads and torques thanks to duo rail guide Very good operating performance under torque load Long service life Ideal as a basic axis for linear gantries and cantilever axes Wide range of options for mounting on drives
→ Page/online	197	213	227	257




Rodless cylinders

Type	 Linear drives SLG	 Linear drives DGO	 Linear drives SLM
Piston diameter	8 mm, 12 mm, 18 mm	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm
Theoretical force at 6 bar, advancing	30 ... 153 N	68 ... 754 N	68 ... 754 N
Stroke	100 ... 900 mm	10 ... 4000 mm	10 ... 1500 mm
Cushioning	Elastic cushioning rings/plates at both ends, shock absorber, hard characteristic curve	Elastic cushioning rings/plates at both ends, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, shock absorber, hard characteristic curve
Position sensing	Via proximity sensor	Via proximity sensor	Via proximity sensor, via inductive sensors
Description	<ul style="list-style-type: none"> Extremely flat design Highest precision thanks to integrated recirculating ball bearing guide Adjustable end stops Choice of supply ports Available with intermediate position module 	<ul style="list-style-type: none"> Magnetic power transmission Pressure-tight and zero leakage Dirt-proof and dust-proof 	<ul style="list-style-type: none"> Magnetic power transmission Recirculating ball bearing guide: combination of slide unit and rodless linear drive Individual choice of end-position cushioning and sensing
→ Page/online	slg	dgo	slm

Software tool

Mass moment of inertia		Juggling pencils and pocket calculators is now a thing of the past. No matter whether you have discs, blocks, push-on flanges, grippers, etc., this tool does the job of calculating all the mass moments of inertia. Just save, send or print and you're finished.	This tool can be found <ul style="list-style-type: none"> on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button or on the DVD under "Engineering Tools"
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Semi-rotary drives



Type	 Swivel modules DRVS	★  Swivel modules DSM	 Swivel modules DSM-B, DSM-HD-B
Size	6, 8, 12, 16, 25, 32, 40	6, 8, 10	12, 16, 25, 32, 40, 63
Theoretical torque at 6 bar	0.15 ... 20 Nm	0.15 ... 1.7 Nm	1.25 ... 80 Nm
Permissible mass moment of inertia	6.5 ... 350 kgcm ²	0.00065 ... 0.0026 kgm ²	0.005 ... 0.50 kgm ²
Position sensing	Via proximity sensor	Via proximity sensor, none	Via proximity sensor
Swivel angle	0 ... 270°	0 ... 240°	0 ... 270°
Description	<ul style="list-style-type: none"> Double-acting semi-rotary drive with rotary vane Lighter than other semi-rotary drives Fixed swivel angle, adjustable swivel angle possible with the help of accessories Housing protected against splash water and dust 	<ul style="list-style-type: none"> Double-acting semi-rotary drive with rotary vane or with tandem rotary vanes Fixed swivel angle or infinitely adjustable swivel angle With spigot or hollow flanged shaft With elastic cushioning rings/plates at both ends 	<ul style="list-style-type: none"> Double-acting semi-rotary drive with rotary vane, with tandem rotary vanes or with heavy-duty bearing Swivel angle is infinitely adjustable over the entire swivel range With elastic cushioning rings/plates at both ends, adjustable or with shock absorbers at both ends, self-adjusting
→ Page/online	269	281	293

Product overview



01

Semi-rotary drives


Pneumatic drives

		
Type	Swivel modules DRRD	Swivel/linear drive units DSL-B
Size	8, 10, 12, 16, 20, 25, 32, 35, 40, 50, 63	16, 20, 25, 32, 40
Theoretical torque at 6 bar	0.2 ... 112 Nm	1.25 ... 20 Nm
Permissible mass moment of inertia	15 ... 420,000 kgcm ²	0.35 ... 40 kgcm ²
Position sensing	Via proximity sensor	Via proximity sensor
Swivel angle	180°	0 ... 272°
Description	<ul style="list-style-type: none"> • Twin-piston rotary drive, power transmission via rack and pinion principle • Very high accuracy in the end positions • Very high bearing load capacity • Very good axial run-out at the flanged shaft 	<ul style="list-style-type: none"> • Rotary and linear motion can be controlled individually or simultaneously • High repetition accuracy • With plain or recirculating ball bearing guide • Through piston rod
→ Page/online	313	dsl




Tandem and high-force cylinders

		
Type	High-force cylinders ADNH	Tandem cylinders DNCT
Piston diameter	25 mm, 40 mm, 63 mm, 100 mm	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm
Theoretical force at 6 bar, advancing	1036 ... 18281 N	898 ... 14244 N
Stroke	1 ... 150 mm	2 ... 500 mm
Description	<ul style="list-style-type: none"> • Max. 4 cylinders can be combined • Thrust increase • Only 2 connections are required to pressurise all cylinders • Piston rod with female or male thread • For position sensing • Mounting hole pattern to ISO 21287 	<ul style="list-style-type: none"> • Max. 2 cylinders can be combined • Thrust and return force increase • Piston rod with male thread • For position sensing • Mounting hole pattern to ISO 15552
→ Page/online	adnh	dncr




Multi-position cylinders

	
Type	Multi-position cylinders ADNMM
Piston diameter	25 mm, 40 mm, 63 mm, 100 mm
Theoretical force at 6 bar, advancing	295 ... 4712 N
Max. total of all individual strokes	1000 mm, 2000 mm
Description	<ul style="list-style-type: none"> • Mounting hole pattern to ISO 21287 • Piston rod with female or male thread • 2 ... 5 cylinders can be combined • Max. 5 positions can be approached • For position sensing
→ Page/online	adnm

Drives with slides

Type	 Mini slides DGSL	 Mini slides DGST	 Mini slides DGSC
Piston diameter	6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm	6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm	6 mm
Theoretical force at 6 bar, advancing	17 ... 483 N	34 ... 589 N	17 N
Stroke	10 ... 200 mm	10 ... 200 mm	10 mm
Cushioning	Short elastic cushioning rings/plates at both ends, no cushioning, elastic cushioning rings/plates at both ends with fixed stop, elastic cushioning rings/plates at both ends, shock absorber, self-adjusting, progressive, at both ends, with reducing sleeve, shock absorber, progressive, at both ends	Elastic cushioning at both ends, without end-position cushioning, elastic cushioning at both ends, non-adjustable, with end-position cushioning	Elastic cushioning rings/plates at both ends
Position sensing	Via proximity sensor	Via proximity sensor	None
NEW		• New series	
Description	<ul style="list-style-type: none"> • High load capacity and positioning accuracy • Maximum movement precision thanks to ground-in ball bearing cage guide • Maximum flexibility thanks to 8 sizes • Reliable in the event of pressure drop thanks to clamping cartridge or end-position locking • Wide variety of mounting and attachment options • Compact design 	<ul style="list-style-type: none"> • Powerful twin-piston drive • Shortest mini slide on the market • Precision recirculating ball bearing guide • Versatile mounting options 	<ul style="list-style-type: none"> • Smallest guided slide unit on the market • Precision ball bearing cage guide: reliable and high-quality process • Long service life thanks to housing made from high-alloy steel • Low break-away pressure and uniform movement thanks to minimal friction of guide and seal
→ Page/online	337	359	dgsc

Drives with slides




Type	 Mini slides SLF	 Mini slides SLS	 Mini slides SLT
Piston diameter	6 mm, 10 mm, 16 mm	6 mm, 10 mm, 16 mm	6 mm, 10 mm, 16 mm, 20 mm, 25 mm
Theoretical force at 6 bar, advancing	17 ... 121 N	17 ... 121 N	34 ... 590 N
Stroke	10 ... 80 mm	5 ... 30 mm	10 ... 200 mm
Cushioning	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends	CC: shock absorber at both ends, elastic cushioning rings/plates at both ends
Position sensing	Via proximity sensor	Via proximity sensor	Via proximity sensor
Description	<ul style="list-style-type: none"> • Flat design • Ball bearing cage guide • Versatile mounting options • Easy adjustment of end positions 	<ul style="list-style-type: none"> • Flat design • Ball bearing cage guide • Versatile mounting options 	<ul style="list-style-type: none"> • Powerful twin-piston drive • Ball bearing cage guide • Versatile mounting options • Easy adjustment of end positions
→ Page/online	slf	sls	385

Product overview




01

Drives with guide rods

Pneumatic drives




Type	 Guided drives DFM, DFM-B	 Guided drives, Clean Design DGRF	 Compact cylinders ADNGF
Piston diameter	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm
Theoretical force at 6 bar, advancing	68 ... 4712 N	189 ... 1870 N	68 ... 4712 N
Stroke	10 ... 400 mm	10 ... 400 mm	1 ... 400 mm
Cushioning	Elastic cushioning rings/plates at both ends, pneumatic cushioning, adjustable at both ends; shock absorber, soft characteristic curve	Self-adjusting pneumatic end-position cushioning, elastic cushioning rings/plates at both ends, pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning
Position sensing	Via proximity sensor	Via proximity sensor	Via proximity sensor
Description	<ul style="list-style-type: none"> • Drive and guide unit in a single housing • Plain or recirculating ball bearing guide • High resistance to torques and lateral forces • Wide range of mounting options • Wide range of variants for customised applications 	<ul style="list-style-type: none"> • Easy-to-clean design • Increased corrosion protection • FDA-approved lubrication and sealing on the basic design • Hygienic mounting of the sensors possible • Compact design with high guide precision and load capacity • Long service life thanks to optional dry-running seal • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed 	<ul style="list-style-type: none"> • Mounting hole pattern to ISO 21287 • Piston rod secured against rotation by a guide rod and yoke plate • Plain-bearing guide • Optionally with through piston rod • For position sensing
→ Page/online	399	417	187

Drives with guide rods

Type	 Mini-guided drives DFC	 Twin-piston cylinders DPZ	 Twin-piston cylinders DPZJ
Piston diameter	4 mm, 6 mm, 10 mm	10 mm, 16 mm, 20 mm, 25 mm, 32 mm	10 mm, 16 mm, 20 mm, 25 mm, 32 mm
Theoretical force at 6 bar, advancing	7.5 ... 47 N	60 ... 966 N	60 ... 724 N
Stroke	5 ... 30 mm	10 ... 100 mm	10 ... 100 mm
Cushioning	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends	Elastic cushioning rings/plates at both ends
Position sensing	Via proximity sensor, none	Via proximity sensor	Via proximity sensor
Description	<ul style="list-style-type: none"> • Smallest guided drive • High precision and load capacity • Minimal space requirement • Drive and guide unit in a single housing • Plain or recirculating ball bearing guide 	<ul style="list-style-type: none"> • Twin pistons provide twice the force in half the space • Plain or recirculating ball bearing guide • Precision stroke adjustment in the end position 	<ul style="list-style-type: none"> • With yoke plate on rear of cylinder for higher lateral forces and precision • Twin pistons provide twice the force in half the space • Plain or recirculating ball bearing guide • Precision stroke adjustment in the end position
→ Page/online	dfc	dpz	dpzj


Stopper cylinders

01


Type	 Stopper cylinders DFSP	 Stopper cylinders DFST	 Stopper cylinders STAF
Piston diameter	16 mm, 20 mm, 32 mm, 40 mm, 50 mm	50 mm, 63 mm, 80 mm	32 mm, 80 mm
Permissible impact force on the advanced piston rod	710 ... 6280 N	3000 ... 6000 N	480 ... 14600 N
Stroke	5 ... 30 mm	30 ... 40 mm	20 ... 40 mm
Position sensing	Via proximity sensor	Via proximity sensor	Via proximity sensor
Toggle lever position sensing		Via inductive sensors	
Description	<ul style="list-style-type: none"> • Trunnion version with/without female thread, with/without protection against rotation • Roller version with protection against rotation • Compact design • Sensor slots on 3 sides • Long service life thanks to very good cushioning characteristics and sturdy piston rod guide • Workpiece carriers, pallets and packages weighing up to 90 kg can be safely stopped 	<ul style="list-style-type: none"> • Toggle lever design • Integrated, adjustable shock absorber for smooth and adapted stopping • Up to 800 kg impact load • For position sensing on the piston • Lever locking mechanism • Toggle lever deactivator 	<ul style="list-style-type: none"> • Roller version, toggle lever design • Absorption of high lateral forces • Direct mounting of solenoid valves on flange plate
→ Page/online	425	437	sta

Pneumatic drives

Clamping cylinders

Type	 Clamping modules EV
Clamping area	10x30, 15x40, 15x63, 20x120, 20x180, 20x75, Ø 12, Ø 16, Ø 20, Ø 25, Ø 32, Ø 40, Ø 50, Ø 63
Stroke	3 ... 5 mm
Description	<ul style="list-style-type: none"> • Compact cylinder without piston rod, with diaphragm • Single-acting, with reset function • Flat design • Hermetically sealed • Pressure plates and foot mounting as accessories
→ Page/online	ev

Linear/swivel clamps

Type	 Linear/swivel clamps CLR
Piston diameter	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm
Theoretical clamping force at 6 bar	51 ... 1682 N
Clamping stroke	10 ... 50 mm
Swivel angle	90°+/- 2°, 90°+/- 3°, 90°+/- 4°
Description	<ul style="list-style-type: none"> • Swivelling and clamping in one step • Adjustable swivel direction • Clamping fingers as accessories • Optionally with dust and welding spatter protection • Double-acting • For position sensing
→ Page/online	clr

Product overview

01

Hinge cylinders



Hinge cylinder
DFAW

Type	Hinge cylinder DFAW
Piston diameter	50 mm, 63 mm, 80 mm
Stroke	10 ... 200 mm
Theoretical force at 6 bar, advancing	1178 ... 3016 N
Position sensing	Via proximity sensor
Cushioning	Self-adjusting pneumatic end-position cushioning
Description	<ul style="list-style-type: none"> • Clamping of components during the welding process • Double-acting • Easy to mount thanks to swivel bearing on the bearing cap • Integrated flow control • Integrated, self-adjusting end-position cushioning • Variants with clamping unit
→ Page/online	dfaw

Pneumatic drives

Bellows actuators



Bellows actuator
EB

Type	Bellows actuator EB
Size	80, 145, 165, 215, 250, 325, 385
Stroke	20 ... 230 mm
Description	<ul style="list-style-type: none"> • Use as a spring element or for reducing oscillations • Single-bellows or double-bellows cylinder • High forces with a short stroke • Uniform movement: no stick-slip effect • Use in dusty environments or in water • Maintenance-free
→ Page/online	eb

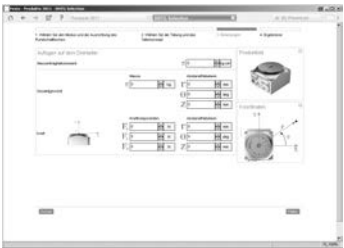
Fluidic muscle



Fluidic muscle
DMSP

Type	Fluidic muscle DMSP
Size	5, 10, 20, 40
Theoretical force at 6 bar	140 ... 6000 N
Nominal length	30 ... 9000 mm
Max. contraction	20% of nominal length, 25% of nominal length
Description	<ul style="list-style-type: none"> • With press-fitted connection • Up to 30% less weight: a superb force/weight ratio • Single-acting, pulling • Three integrated adapter variants • 10 times the initial force of a comparable pneumatic cylinder • Uniform movement: no stick-slip effect • Hermetically sealed design offers protection against dust, dirt and fluids
→ Page/online	dmsp

Software tool

<p>Rotary indexing table</p>		<p>This tool helps you to select the right rotary indexing table of the type DHTG from Festo for your application. Let yourself be guided by the program – enter the general parameters and you will receive at least one suggestion for the product best suited to your application.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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Rotary indexing tables



Rotary indexing tables
DHTG

Type	Rotary indexing tables DHTG
Size	65, 90, 140, 220
Theoretical torque at 6 bar	2.1 ... 58.9 Nm
Indexing stations	2 ... 24
Description	<ul style="list-style-type: none"> • For swivelling or separating tasks • Sturdy mechanical system • Easy planning and commissioning • Rotary table diameters: 65, 90, 140, 220 mm • Free control of rotational direction
→ Page/online	dhtg

Linear actuators for process automation



Linear actuators with displacement encoder
DFPI



Linear actuators with displacement encoder
DFPI-NB3P





Linear actuators Copac
DLP

Type	Linear actuators with displacement encoder DFPI	Linear actuators with displacement encoder DFPI-NB3P	Linear actuators Copac DLP
Design	Piston rod, cylinder barrel	Piston rod, cylinder barrel	Piston rod
Mode of operation	Double-acting	Double-acting	Double-acting
Size of valve actuator	100, 125, 160, 200, 250, 320	100, 125, 160, 200, 250, 320	80, 100, 125, 160, 200, 250, 320
Flange hole pattern	F07, F10, F14		
Operating pressure	3 ... 8 bar	3 ... 8 bar	2 ... 8 bar
Ambient temperature	-20 ... 80 °C	-20 ... 80	-20 ... 80 °C
Description	<ul style="list-style-type: none"> • Mounting interfaces for process valves to DIN 3358 • Integrated air supply • Optionally with integrated displacement encoder or fully integrated positioner • IP65, IP67, IP69K, NEMA4 • ATEX certification 	<ul style="list-style-type: none"> • Mounting interfaces to ISO 15552 • Sturdy tie rod design • Optionally with integrated displacement encoder or fully integrated positioner • IP65, IP67, IP69K, NEMA4 • ATEX certification 	<ul style="list-style-type: none"> • Mounting interfaces for process valves to DIN 3358 • Port pattern as per NAMUR to VDI/VDE 3845 • Integrated air supply • ATEX certification
→ Page/online	dfpi	dfpi	dtp

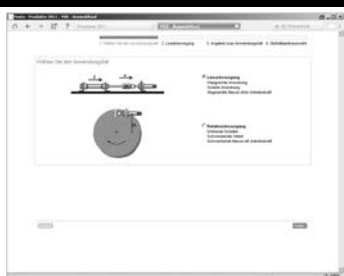
Product overview

01 Quarter turn actuators for process automation





Pneumatic drives

		NEW	
Type	Quarter turn actuators DFPD	★	Quarter turn actuators DAPS
Design	Rack and pinion		Scotch yoke system
Mode of operation	Double-acting, single-acting		Double-acting, single-acting
Size of valve actuator	10, 20, 40, 80, 120, 160, 240, 300, 480, 700, 900, 1200, 2300		0008, 0015, 0030, 0053, 0060, 0090, 0106, 0120, 0180, 0240, 0360, 0480, 0720, 0960, 1440, 1920, 2880, 3840, 4000, 5760, 8000
Flange hole pattern	F03, F04, F05, F14, F0507, F0710, F1012, F1216		F03, F04, F05, F07, F10, F12, F14, F16, F25
Operating pressure	2 ... 8 bar		1 ... 8.4 bar
Ambient temperature	-20 ... 80 °C		-50 ... 150 °C
NEW	<ul style="list-style-type: none"> Additional versions 		
Description	<ul style="list-style-type: none"> Uniform torque characteristic across the entire rotation angle range of 90° in the double-acting version Process valve connection to ISO 5211 Mounting hole pattern to VDI/VDE 3845 Sturdy, non-slip and easy-to-clean aluminium housing Long service life, low wear Increased corrosion protection 		<ul style="list-style-type: none"> High breakaway torques Approved in accordance with Directive 2014/34/EU (ATEX) Flange hole pattern to ISO 5211 Mounting hole pattern to VDI/VDE 3845 Optionally with handwheel as manual emergency override Corrosion-resistant variant made from stainless steel
→ Page/online	dfpd		daps

Software tool




<p>Shock absorbers</p> 	<p>Whether diagonal or vertical, curved or straight, lever or disc, all types of cushioned movements are taken into account. The software tool always recommends the best shock absorber.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button or on the DVD under "Engineering Tools"
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Shock absorbers

				
Type	Shock absorbers DYSR	Shock absorbers YSR-C	Shock absorbers YSRW	Shock absorbers YSRW-DGC
Stroke	8 ... 60 mm	4 ... 60 mm	8 ... 34 mm	For Ø 8 ... 63 mm
Max. energy absorption per stroke	4 ... 384 J	0.6 ... 380 J	1.3 ... 70 J	
Cushioning	Adjustable	Self-adjusting	Self-adjusting, soft characteristic curve	Self-adjusting, soft characteristic curve
Description	<ul style="list-style-type: none"> Hydraulic shock absorber with spring return Adjustable cushioning hardness 	<ul style="list-style-type: none"> Hydraulic shock absorber with path-controlled flow control function Rapidly increasing cushioning force curve Short cushioning stroke Suitable for rotary drives 	<ul style="list-style-type: none"> Hydraulic shock absorber with path-controlled flow control function Gently increasing cushioning force curve Long cushioning stroke Suitable for low-vibration operation Short cycle times possible 	<ul style="list-style-type: none"> For linear drives DGC Gently increasing cushioning force curve Sizes 12, 18, 25, 32, 40, 50, 63
→ Page/online	dysr	ysr-c	ysrw	ysrw-dgc



Shock absorbers

01



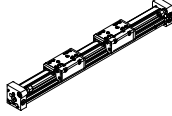

			
Type	Shock absorbers YSRWJ	Shock absorbers DYEF-Y1, DYEF-Y1F	Shock absorbers DYSC
Stroke	8 ... 14 mm	0.9 ... 7 mm	4 ... 25 mm
Max. energy absorption per stroke	1 ... 3 J	0.005 ... 1.2 J	0.6 ... 100 J
Cushioning	Self-adjusting, soft characteristic curve	P cushioning with metal fixed stop, P cushioning without metal fixed stop	Self-adjusting
Description	<ul style="list-style-type: none"> Cushioning with self-adjusting, progressive hydraulic shock absorber Gently increasing cushioning force curve Adjustable cushioning stroke End-position sensing with proximity sensor SME/SMT-8 Precision end-position adjustment 	<ul style="list-style-type: none"> Mechanical shock absorber with flexible rubber buffer Elastic rubber buffer allows a defined metal end position Adjustable cushioning hardness Ideal for cushioning low energy With precise metal end position 	<ul style="list-style-type: none"> Hydraulic shock absorber with path-controlled flow control function Rapidly increasing cushioning force curve Short cushioning stroke Suitable for rotary drives With metal fixed stop
→ Page/online	ysrwj	dyef	dysc

Pneumatic drives

Shock absorbers

		
Type	Shock absorbers DYSW	Hydraulic cushioning cylinders DYHR
Stroke	6 ... 20 mm	20 ... 60 mm
Max. energy absorption per stroke	0.8 ... 12 J	32 ... 384 J
Cushioning	Self-adjusting, soft characteristic curve	Adjustable
Description	<ul style="list-style-type: none"> Hydraulic shock absorber with path-controlled flow control function Gently increasing cushioning force curve Long cushioning stroke Suitable for low-vibration operation Short cycle times possible With metal fixed stop 	<ul style="list-style-type: none"> Hydraulic cushioning cylinder for constant, slow braking speeds across the entire stroke Braking speed can be precisely adjusted Built-in compression spring returns the piston rod to the initial position Suitable for slow feed speeds in the range up to 0.1 m/s
→ Page/online	dysw	dyhr

Cylinder mounting parts and accessories for pneumatic drives




				
Type	Mounting components ★	Piston rod attachments ★	Guide axes DGC-FA	Guide units FEN, FENG
Size			8, 12, 18, 25, 32, 40, 50, 63	8/10, 12/16, 20, 25, 32, 40, 50, 63, 80, 100
Stroke			1 ... 8500 mm	1 ... 500 mm
Round material to be clamped				
Static holding force				
Description	<ul style="list-style-type: none"> Mounting kits DARQ Direct mountings Foot mountings Flange mountings Swivel mountings Clevis feet LNG, trunnion supports LNZ Slot nuts NST/NSTL Centring pins/sleeves NSTH 	<ul style="list-style-type: none"> Rod clevises SG, CRSG Rod eyes SGS Coupling pieces KSG Self-aligning rod couplers FK Adapters AD 	<ul style="list-style-type: none"> Without drive With recirculating ball bearing guide With guide and freely movable slide Higher torsional resistance Reduced vibrations with dynamic loads For supporting force and torque capacity in multi-axis applications 	<ul style="list-style-type: none"> For protecting standards-based cylinders against rotation at high torque loads Plain or recirculating ball bearing guide High guide precision for workpiece handling
→ Page/online	n_015001	n_03150	dgc-fa	fen

Product overview

01

Cylinder mounting parts and accessories for pneumatic drives

Pneumatic drives

			
Type	Clamping cartridges KP	Clamping units KPE, KEC, KEC-S	Clamping units, clamping components DADL
Size			16, 20, 25, 32, 35, 40, 50, 63
Stroke			
Round material to be clamped	4 ... 32 mm	4 ... 32 mm	
Static holding force	80 ... 7500 N	80 ... 8000 N	
Description	<ul style="list-style-type: none"> For in-house assembly of clamping units Not certified for use in safety-oriented control systems 	<ul style="list-style-type: none"> KPE: ready-to-install combination of clamping cartridge KP and housing KEC: for use as a holding device (static application) KEC-S: for safety-related applications 	<ul style="list-style-type: none"> Clamping unit DADL-EL: for semi-rotary drive DRRD, for mechanical locking in the end positions to prevent unwanted movement in unpressurised condition Clamping component DADL-EC: for semi-rotary drive DRRD, for securing an intermediate position in combination with the clamping unit DADL-EL Without drive
→ Page/online	kp	kpe	dadl

Customised components – for your specific requirements



Drives with customised designs

Can't find the pneumatic drive you need in our catalogue? We can offer you customised components that are tailored to your specific requirements.

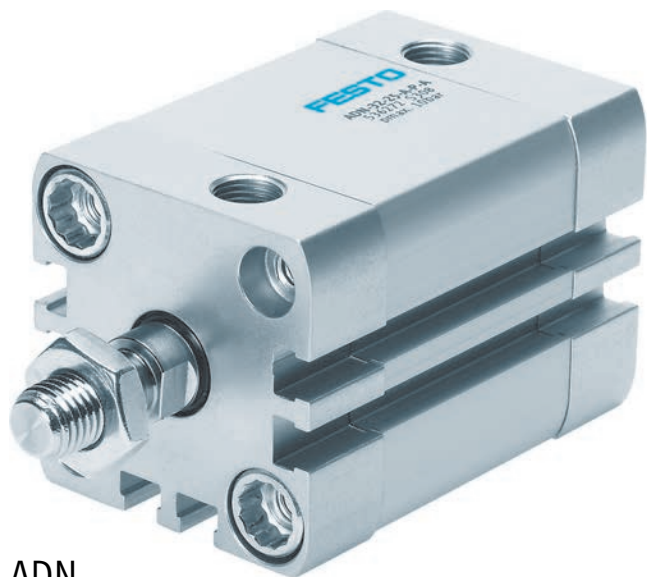
Common product modifications:

- Materials for special ambient conditions
- Customised dimensions
- Special strokes
- Customised mounting options
- Implementation of special cylinder functions (cylinder/valve combinations, single-acting principle, etc.)

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help. → www.festo.com/contact



Festo can also supply special variants like telescopic cylinders on request – please contact us.



ADN
Double-acting



AEN
Single-acting

Gain space and save money during engineering

- + With compact dimensions
- + With the right variant
- + Thanks to standardised interfaces to ISO 21287

Cylinders with piston rod > Standards-based cylinders > Compact cylinders, to ISO 21287

ADN ★
Double-acting

AEN
Single-acting

Cylinders with piston rod > Standards-based cylinders >

Compact cylinders, to ISO 21287


ADN ★ / AEN

 Overview, configuration and ordering
→ www.festo.com/catalogue/adn




 Additional information, support and user documentation
→ www.festo.com/sp/adn




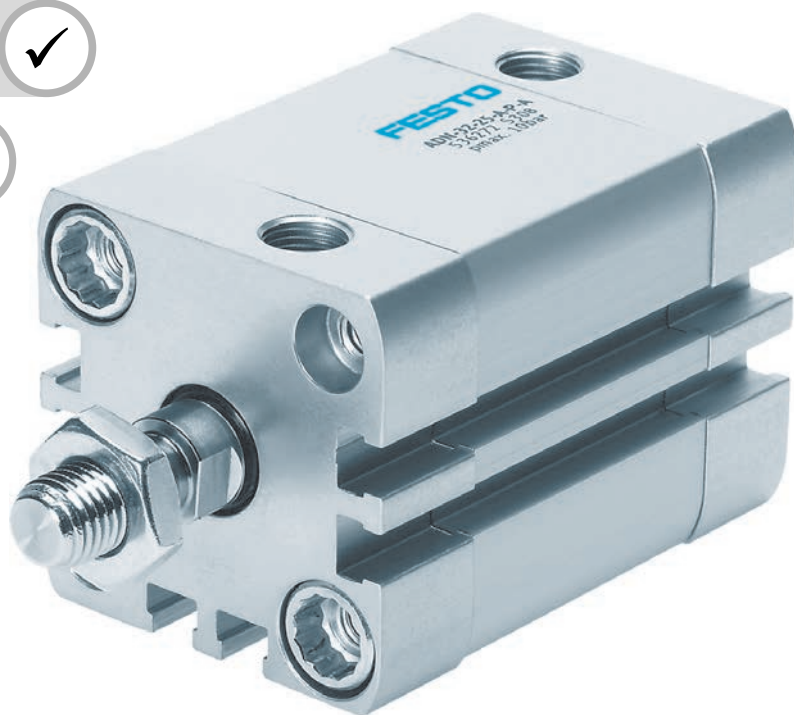
 Quick ordering of basic designs
→ page 48



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + Piston diameter 12 ... 125 mm
- + Conforms to ISO 21287
- + With self-adjusting pneumatic end-position cushioning PPS
- + Up to 50% less installation space than comparable standards-based cylinders to ISO 15552
- + For position sensing
- + High flexibility thanks to the wide range of variants
- + Piston rod with female or male thread
- + Wide range of variants

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options										→ Page/ online
				A	I	P	PPS	A	Q	S2	S6	TT		
Double-acting	ADN – Basic design													
	12, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125	1 ... 500	68 ... 7363	■	■	■	■	■	■	■	■	■	■	46
Double-acting	ADN- ... -EL – With end-position locking													
	20, 25, 32, 40, 50, 63, 80, 100	–	–	–	–	–	–	–	–	–	–	–	–	adn
Single-acting	AEN – Pushing													
	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	1 ... 25	59 ... 4510	■	■	■	–	■	–	–	–	■	–	50
	AEN-...-Z – Pulling													
Single-acting	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	1 ... 25	59 ... 4510	■	■	■	–	■	–	–	–	■	–	aen
	AEN-...-Q – Protected against rotation with square piston rod													
Single-acting	16, 20, 25, 32, 40, 50, 63, 80, 100	1 ... 25	59 ... 4510	■	■	■	–	■	–	–	–	■	–	50
	Double-acting	ADNH – High-force cylinder												
25, 40, 63, 100		1 ... 150	542 ... 18,281	■	■	■	–	■	–	–	–	■	–	adnh
ADNM – Multi-position cylinder														
Double-acting	25, 40, 63, 100	1 ... 150	295 ... 4712	■	■	■	–	■	–	–	–	■	–	adnm
	ADNGF – Non-rotating with yoke													
Double-acting	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	–	–	–	–	–	■	–	–	–	■	■	–	189

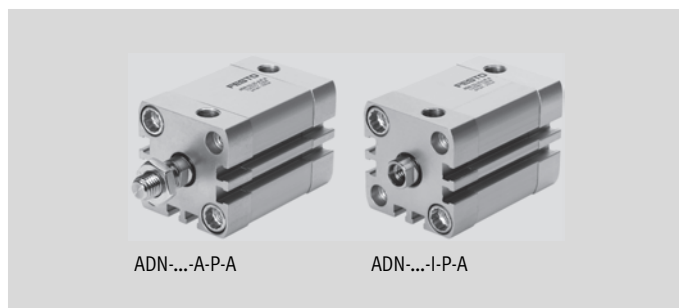
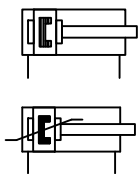
Product options

A	Male thread	Q	Square piston rod	K5	Special piston rod thread	S10	Slow speed
I	Female thread	S1	Reinforced piston rod	K8	Extended piston rod	S11	Low friction
P	Elastic cushioning rings/plates at both ends	S2	Through piston rod	K10	Smooth anodised aluminium piston rod	R3	High corrosion protection
PPS	Pneumatic cushioning, self-adjusting at both ends	S20	Through, hollow piston rod	S6	Heat-resistant seals up to max. 120°C	R8	Dust protection
A	Position sensing	K2	Extended male piston rod thread			TL	Laser etched rating plate
						TT	Low temperature

Compact cylinders ADN ★ to ISO 21287

01

Data sheet – Double-acting



Pneumatic drives

Technical data							Dimensions → Page 56	
Piston Ø			12	16	20	25	32	40
Pneumatic connection			M5	M5	M5	M5	G1/8	G1/8
Piston rod thread	Female		M3	M4	M6	M6	M8	M8
	Male		M5	M6	M8	M8	M10x1.25	M10x1.25
Stroke		[mm]	1 ... 300				1 ... 400	
Cushioning	ADN...-P		Elastic cushioning rings/plates at both ends					
	ADN...-PPS		-			Pneumatic cushioning, self-adjusting at both ends		
Cushioning length	ADN...-PPS	[mm]	-		3	3.5	4	5
Theoretical force at 6 bar, advancing	ADN...	[N]	68	121	188	295	483	754
	ADN...-S2	[N]	51	90	141	247	415	686
Theoretical force at 6 bar, retracting	ADN...	[N]	51	90	141	247	415	686
	ADN...-S2	[N]	51	90	141	247	415	686

Piston Ø			50	63	80	100	125	
Pneumatic connection			G1/8	G1/8	G1/8	G1/8	G1/4	
Piston rod thread	Female		M10	M10	M12	M12	M16	
	Male		M12x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	
Stroke		[mm]	1 ... 400		1 ... 500			
Cushioning	ADN...-P		Elastic cushioning rings/plates at both ends					
	ADN...-PPS		Pneumatic cushioning, self-adjusting at both ends					
Cushioning length	ADN...-PPS	[mm]	6	7	7.5	10	-	
Theoretical force at 6 bar, advancing	ADN...	[N]	1178	1870	3016	4712	7363	
	ADN...-S2	[N]	1057	1750	2827	4524	7069	
Theoretical force at 6 bar, retracting	ADN...	[N]	1057	1750	2827	4524	7069	
	ADN...-S2	[N]	1057	1750	2827	4524	7069	

Operating conditions			12	16	20	25	32	40	50	63	80	100	125
Operating pressure	ADN...	[bar]	1 ... 10		0.6 ... 10								
	ADN...-PPS	[bar]	-		1.5 ... 10			1 ... 10		-			
	ADN...-Q	[bar]	1.3 ... 10		1 ... 10		0.8 ... 10			0.6 ... 10			
	ADN...-S2	[bar]	1.5 ... 10	1.3 ... 10	1.2 ... 10		1 ... 10			0.8 ... 10			
	ADN...-TT	[bar]	-		1.5 ... 10			1 ... 10		-			
Ambient temperature ¹⁾	ADN...	[°C]	-20 ... +80										
	ADN...-S6	[°C]	0 ... +120										
	ADN...-TT	[°C]	-		-40 ... +80						-		

1) Note operating range of proximity sensors.

Materials			12	16	20	25	32	40	50	63	80	100	125
Piston rod			High-alloy steel										
Bearing cap			Anodised aluminium								Coated die-cast aluminium		Anodised aluminium
Cylinder barrel			Smooth anodised wrought aluminium alloy										
End cap			Anodised aluminium								Coated die-cast aluminium		Anodised aluminium
Seals	ADN...		TPE-U (PUR)										
	ADN...-S6		FPM										

Order code – Double-acting

01

Type	ADN	Double-acting compact cylinder
Piston Ø [mm]		
	Stroke [mm]	
12	5, 10, 15, 20, 25, 30, 40	1 ... 300
16	5, 10, 15, 20, 25, 30, 40, 50	1 ... 300
20, 25	5, 10, 15, 20, 25, 30, 40, 50, 60	1 ... 300
32, 40, 50	5, 10, 15, 20, 25, 30, 40, 50, 60, 80	1 ... 400
63	10, 15, 20, 25, 30, 40, 50, 60, 80	1 ... 400
80, 100	10, 15, 20, 25, 30, 40, 50, 60, 80	1 ... 500
125	–	1 ... 500
Piston rod thread		
I	Female thread	
A	Male thread	
Cushioning		
P	Elastic cushioning rings/plates at both ends	
PPS	Pneumatic cushioning, self-adjusting at both ends	¹
Position sensing		
A	Via proximity sensor	
Protection against rotation		
Q	Square piston rod	
Piston rod		
–	Piston rod at one end	
S2	Through piston rod	
Temperature resistance		
S6	Heat-resistant seals up to max. 120°C	
Low temperature		
TT	Temperature resistance down to max. –40°C	²

¹ Only with piston Ø 20 ... 100
Not with temperature resistance S6 and low temperature TT.
Minimum stroke 5 mm.

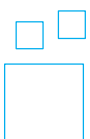
² Only with piston Ø 20 ... 100
Not with temperature resistance S6.

Order example:

ADN-50-50-A-P-A

Double-acting compact cylinder ADN - piston diameter 50 mm - stroke 50 mm - male thread - elastic cushioning rings/plates at both ends - position sensing via proximity sensor - piston rod at one end

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Cylinders with piston rod > Standards-based cylinders >

Compact cylinders ADN ★ to ISO 21287

01

★ Quick ordering¹⁾

P – Elastic cushioning rings/plates at both ends

Pneumatic drives

Part no.	Type
Piston Ø 12 mm	
536204	ADN-12-5-A-P-A
536205	ADN-12-10-A-P-A
536206	ADN-12-15-A-P-A
536207	ADN-12-20-A-P-A
536208	ADN-12-25-A-P-A
536209	ADN-12-30-A-P-A
536210	ADN-12-40-A-P-A
536211	ADN-12-5-I-P-A
536212	ADN-12-10-I-P-A
536213	ADN-12-15-I-P-A
536214	ADN-12-20-I-P-A
536215	ADN-12-25-I-P-A
536216	ADN-12-30-I-P-A
536217	ADN-12-40-I-P-A
Piston Ø 16 mm	
536219	ADN-16-5-A-P-A
536220	ADN-16-10-A-P-A
536221	ADN-16-15-A-P-A
536222	ADN-16-20-A-P-A
536223	ADN-16-25-A-P-A
536224	ADN-16-30-A-P-A
536225	ADN-16-40-A-P-A
536331	ADN-16-50-A-P-A
536226	ADN-16-5-I-P-A
536227	ADN-16-10-I-P-A
536228	ADN-16-15-I-P-A
536229	ADN-16-20-I-P-A
536230	ADN-16-25-I-P-A
536231	ADN-16-30-I-P-A
536232	ADN-16-40-I-P-A
536341	ADN-16-50-I-P-A
Piston Ø 20 mm	
536234	ADN-20-5-A-P-A
536235	ADN-20-10-A-P-A
536236	ADN-20-15-A-P-A
536237	ADN-20-20-A-P-A
536238	ADN-20-25-A-P-A
536239	ADN-20-30-A-P-A
536240	ADN-20-40-A-P-A
536241	ADN-20-50-A-P-A
536352	ADN-20-60-A-P-A
536242	ADN-20-5-I-P-A
536243	ADN-20-10-I-P-A
536244	ADN-20-15-I-P-A
536245	ADN-20-20-I-P-A
536246	ADN-20-25-I-P-A
536247	ADN-20-30-I-P-A
536248	ADN-20-40-I-P-A
536249	ADN-20-50-I-P-A
536362	ADN-20-60-I-P-A

Part no.	Type
Piston Ø 25 mm	
536251	ADN-25-5-A-P-A
536252	ADN-25-10-A-P-A
536253	ADN-25-15-A-P-A
536254	ADN-25-20-A-P-A
536255	ADN-25-25-A-P-A
536256	ADN-25-30-A-P-A
536257	ADN-25-40-A-P-A
536258	ADN-25-50-A-P-A
536373	ADN-25-60-A-P-A
536259	ADN-25-5-I-P-A
536260	ADN-25-10-I-P-A
536261	ADN-25-15-I-P-A
536262	ADN-25-20-I-P-A
536263	ADN-25-25-I-P-A
536264	ADN-25-30-I-P-A
536265	ADN-25-40-I-P-A
536366	ADN-25-50-I-P-A
536383	ADN-25-60-I-P-A
Piston Ø 32 mm	
536268	ADN-32-5-A-P-A
536269	ADN-32-10-A-P-A
536270	ADN-32-15-A-P-A
536271	ADN-32-20-A-P-A
536272	ADN-32-25-A-P-A
536273	ADN-32-30-A-P-A
536274	ADN-32-40-A-P-A
536275	ADN-32-50-A-P-A
536276	ADN-32-60-A-P-A
536277	ADN-32-80-A-P-A
536278	ADN-32-5-I-P-A
536279	ADN-32-10-I-P-A
536280	ADN-32-15-I-P-A
536281	ADN-32-20-I-P-A
536282	ADN-32-25-I-P-A
536283	ADN-32-30-I-P-A
536284	ADN-32-40-I-P-A
536285	ADN-32-50-I-P-A
536286	ADN-32-60-I-P-A
536287	ADN-32-80-I-P-A
Piston Ø 40 mm	
536289	ADN-40-5-A-P-A
536290	ADN-40-10-A-P-A
536291	ADN-40-15-A-P-A
536292	ADN-40-20-A-P-A
536293	ADN-40-25-A-P-A
536294	ADN-40-30-A-P-A
536295	ADN-40-40-A-P-A
536296	ADN-40-50-A-P-A
536297	ADN-40-60-A-P-A
536298	ADN-40-80-A-P-A

Part no.	Type
Piston Ø 40 mm	
536299	ADN-40-5-I-P-A
536300	ADN-40-10-I-P-A
536301	ADN-40-15-I-P-A
536302	ADN-40-20-I-P-A
536303	ADN-40-25-I-P-A
536304	ADN-40-30-I-P-A
536305	ADN-40-40-I-P-A
536306	ADN-40-50-I-P-A
536307	ADN-40-60-I-P-A
536308	ADN-40-80-I-P-A
Piston Ø 50 mm	
536310	ADN-50-5-A-P-A
536311	ADN-50-10-A-P-A
536312	ADN-50-15-A-P-A
536313	ADN-50-20-A-P-A
536314	ADN-50-25-A-P-A
536315	ADN-50-30-A-P-A
536316	ADN-50-40-A-P-A
536317	ADN-50-50-A-P-A
536318	ADN-50-60-A-P-A
536319	ADN-50-80-A-P-A
536320	ADN-50-5-I-P-A
536321	ADN-50-10-I-P-A
536322	ADN-50-15-I-P-A
536323	ADN-50-20-I-P-A
536324	ADN-50-25-I-P-A
536325	ADN-50-30-I-P-A
536326	ADN-50-40-I-P-A
536327	ADN-50-50-I-P-A
536328	ADN-50-60-I-P-A
536329	ADN-50-80-I-P-A
Piston Ø 63 mm	
536332	ADN-63-10-A-P-A
536333	ADN-63-15-A-P-A
536334	ADN-63-20-A-P-A
536335	ADN-63-25-A-P-A
536336	ADN-63-30-A-P-A
536337	ADN-63-40-A-P-A
536338	ADN-63-50-A-P-A
536339	ADN-63-60-A-P-A
536340	ADN-63-80-A-P-A
536342	ADN-63-10-I-P-A
536343	ADN-63-15-I-P-A
536344	ADN-63-20-I-P-A
536345	ADN-63-25-I-P-A
536346	ADN-63-30-I-P-A
536347	ADN-63-40-I-P-A
536348	ADN-63-50-I-P-A
536349	ADN-63-60-I-P-A
536350	ADN-63-80-I-P-A

1) All products in this table are easy to select and quick to order.

★ Quick ordering¹⁾

P – Elastic cushioning rings/plates at both ends

Part no.	Type
Piston Ø 80 mm	
536353	ADN-80-10-A-P-A
536354	ADN-80-15-A-P-A
536355	ADN-80-20-A-P-A
536356	ADN-80-25-A-P-A
536357	ADN-80-30-A-P-A
536358	ADN-80-40-A-P-A
536359	ADN-80-50-A-P-A
536360	ADN-80-60-A-P-A
536361	ADN-80-80-A-P-A

Part no.	Type
Piston Ø 80 mm	
536363	ADN-80-10-I-P-A
536364	ADN-80-15-I-P-A
536365	ADN-80-20-I-P-A
536366	ADN-80-25-I-P-A
536367	ADN-80-30-I-P-A
536368	ADN-80-40-I-P-A
536369	ADN-80-50-I-P-A
536370	ADN-80-60-I-P-A
536371	ADN-80-80-I-P-A

PPS – Pneumatic cushioning, self-adjusting at both ends

Part no.	Type
Piston Ø 32 mm	
572655	ADN-32-10-A-PPS-A
572656	ADN-32-15-A-PPS-A
572657	ADN-32-20-A-PPS-A
572658	ADN-32-25-A-PPS-A
572659	ADN-32-30-A-PPS-A
572660	ADN-32-40-A-PPS-A
572661	ADN-32-50-A-PPS-A
572662	ADN-32-60-A-PPS-A
572663	ADN-32-80-A-PPS-A
Piston Ø 40 mm	
572673	ADN-40-10-A-PPS-A
572674	ADN-40-15-A-PPS-A
572675	ADN-40-20-A-PPS-A
572676	ADN-40-25-A-PPS-A
572677	ADN-40-30-A-PPS-A
572678	ADN-40-40-A-PPS-A
572679	ADN-40-50-A-PPS-A
572680	ADN-40-60-A-PPS-A
572681	ADN-40-80-A-PPS-A
Piston Ø 40 mm	
572664	ADN-40-10-I-PPS-A
572665	ADN-40-15-I-PPS-A
572666	ADN-40-20-I-PPS-A
572667	ADN-40-25-I-PPS-A
572668	ADN-40-30-I-PPS-A
572669	ADN-40-40-I-PPS-A
572670	ADN-40-50-I-PPS-A
572671	ADN-40-60-I-PPS-A
572672	ADN-40-80-I-PPS-A

Part no.	Type
Piston Ø 50 mm	
572691	ADN-50-10-A-PPS-A
572692	ADN-50-15-A-PPS-A
572693	ADN-50-20-A-PPS-A
572694	ADN-50-25-A-PPS-A
572695	ADN-50-30-A-PPS-A
572696	ADN-50-40-A-PPS-A
572697	ADN-50-50-A-PPS-A
572698	ADN-50-60-A-PPS-A
572699	ADN-50-80-A-PPS-A
Piston Ø 50 mm	
572682	ADN-50-10-I-PPS-A
572683	ADN-50-15-I-PPS-A
572684	ADN-50-20-I-PPS-A
572685	ADN-50-25-I-PPS-A
572686	ADN-50-30-I-PPS-A
572687	ADN-50-40-I-PPS-A
572688	ADN-50-50-I-PPS-A
572689	ADN-50-60-I-PPS-A
572690	ADN-50-80-I-PPS-A
Piston Ø 63 mm	
572709	ADN-63-10-A-PPS-A
572710	ADN-63-15-A-PPS-A
572711	ADN-63-20-A-PPS-A
572712	ADN-63-25-A-PPS-A
572713	ADN-63-30-A-PPS-A
572714	ADN-63-40-A-PPS-A
572715	ADN-63-50-A-PPS-A
572716	ADN-63-60-A-PPS-A
572717	ADN-63-80-A-PPS-A
Piston Ø 63 mm	
572700	ADN-63-10-I-PPS-A
572701	ADN-63-15-I-PPS-A
572702	ADN-63-20-I-PPS-A
572703	ADN-63-25-I-PPS-A
572704	ADN-63-30-I-PPS-A
572705	ADN-63-40-I-PPS-A
572706	ADN-63-50-I-PPS-A
572707	ADN-63-60-I-PPS-A
572708	ADN-63-80-I-PPS-A

Part no.	Type
Piston Ø 80 mm	
572727	ADN-80-10-A-PPS-A
572728	ADN-80-15-A-PPS-A
572729	ADN-80-20-A-PPS-A
572730	ADN-80-25-A-PPS-A
572731	ADN-80-30-A-PPS-A
572732	ADN-80-40-A-PPS-A
572733	ADN-80-50-A-PPS-A
572734	ADN-80-60-A-PPS-A
572735	ADN-80-80-A-PPS-A
Piston Ø 80 mm	
572718	ADN-80-10-I-PPS-A
572719	ADN-80-15-I-PPS-A
572720	ADN-80-20-I-PPS-A
572721	ADN-80-25-I-PPS-A
572722	ADN-80-30-I-PPS-A
572723	ADN-80-40-I-PPS-A
572724	ADN-80-50-I-PPS-A
572725	ADN-80-60-I-PPS-A
572726	ADN-80-80-I-PPS-A

1) All products in this table are easy to select and quick to order.

Compact cylinders AEN, to ISO 21287

01

Data sheet – Single-acting, pushing



Pneumatic drives

Technical data		Dimensions → Page 56				
Piston Ø		12	16	20	25	32
Pneumatic connection		M5	M5	M5	M5	G1/8
Piston rod thread	Female	M3	M4	M6	M6	M8
	Male	M5	M6	M8	M8	M10x1.25
Stroke	[mm]	1 ... 10		1 ... 25		
Cushioning		Elastic cushioning rings/plates at both ends				
Theoretical force at 6 bar, advancing	[N]	56	95	162	259	441

Piston Ø		40	50	63	80	100
Pneumatic connection		G1/8	G1/8	G1/8	G1/8	G1/8
Piston rod thread	Female	M8	M10	M10	M12	M12
	Male	M10x1.25	M12x1.25	M12x1.25	M16x1.5	M16x1.5
Stroke	[mm]	1 ... 25				
Cushioning		Elastic cushioning rings/plates at both ends				
Theoretical force at 6 bar, advancing	[N]	702	1098	1783	2899	4511

Operating conditions												
Piston Ø		12	16	20	25	32	40	50	63	80	100	
Operating pressure	[bar]	1.5 ... 10		1 ... 10								
Ambient temperature ¹⁾	AEN-... [°C]	-20 ... +80										
	AEN-...-S6 [°C]	0 ... +120										

1) Note operating range of proximity sensors.

Materials											
Piston Ø		12 ... 80					100				
Piston rod		High-alloy steel									
Bearing cap		Anodised aluminium					Coated die-cast aluminium				
Cylinder barrel		Smooth anodised wrought aluminium alloy									
End cap		Anodised aluminium					Coated die-cast aluminium				
Seals		TPE-U (PUR)									

Order code – Single-acting, pushing

Type		AEN	Single-acting compact cylinder, pushing
Piston Ø [mm]			
	Stroke [mm]		
12	1 ... 10		
16, 20, 25, 32, 40, 50, 63, 80, 100	1 ... 25		
Piston rod thread			
A	Male thread		
I	Female thread		
Cushioning			
P	Elastic cushioning rings/plates at both ends		
Position sensing			
A	Via proximity sensor		
Protection against rotation			
Q	Square piston rod	<input type="checkbox"/>	<input type="checkbox"/>
Temperature resistance			
S6	Heat-resistant seals up to max. 120°C		

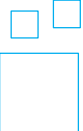
Not with piston Ø 12

Order example:

AEN-50-25-I-P-A-Q-S6

Single-acting compact cylinder AEN - piston diameter 50 mm - stroke 25 mm - female thread - elastic cushioning rings/plates at both ends - position sensing via proximity sensor - square piston rod - heat-resistant seals up to max. 120°C

Ordering – Product options

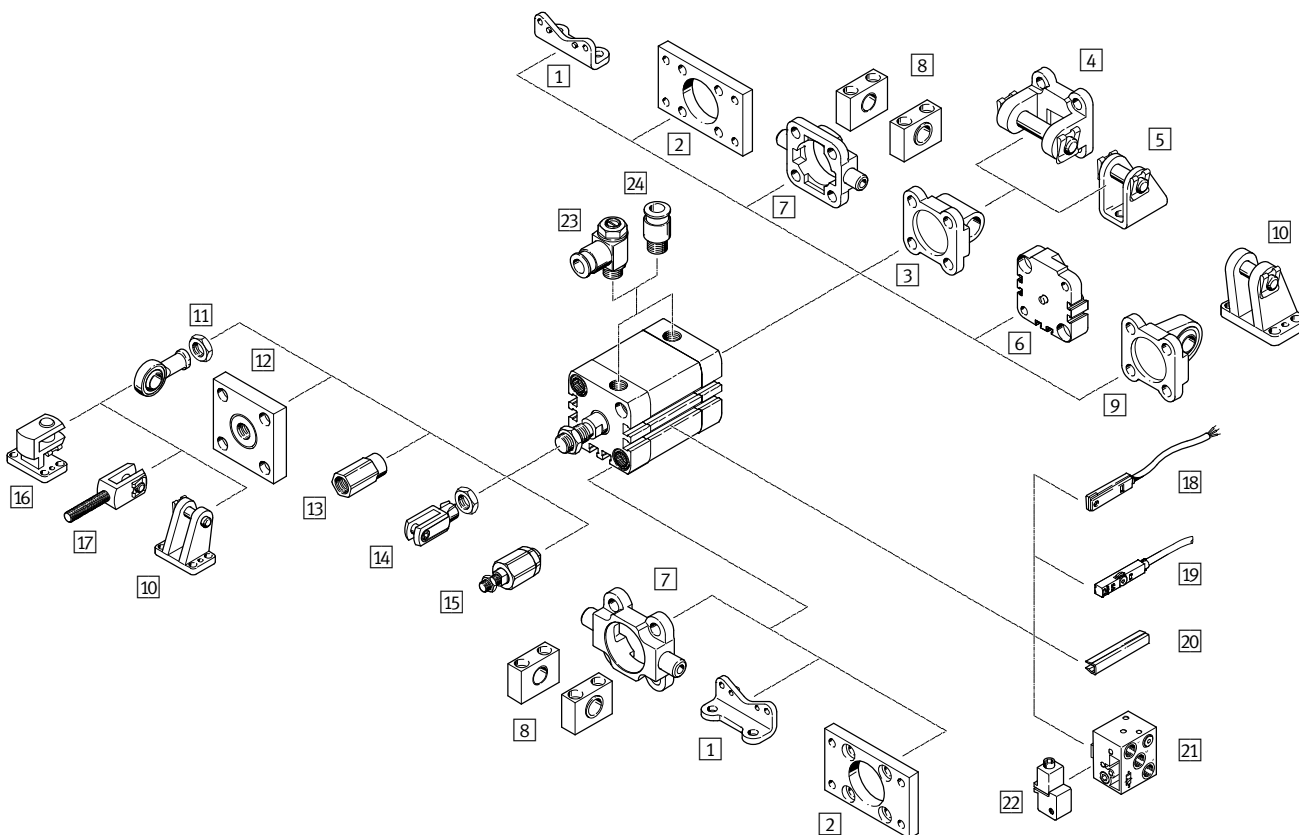
	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Cylinders with piston rod > Standards-based cylinders >

Compact cylinders ADN ★ /AEN, to ISO 21287

01 Accessories

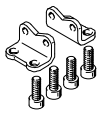
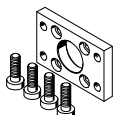
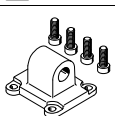
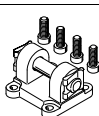

Pneumatic drives

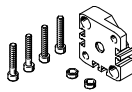
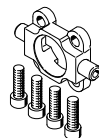
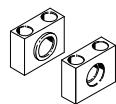
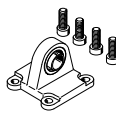
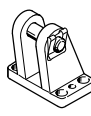
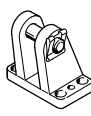


	Basic design	Q	S2	→ Page/online
1	Foot mounting HNA	■	■	53
2	Flange mounting FNC	■	■	53
3	Swivel flange SNCL	■	■	53
4	Swivel flange SNCB	■	■	53
5	Clevis foot LBN	■	■	53
	Clevis foot CRLBN	■	■	adn
6	Multi-position kit DPNA	■	■	53
7	Trunnion flange ZNCF	■	■	53
	Trunnion flange CRZNG	■	■	adn
8	Trunnion support LNZG	■	■	53
9	Swivel flange SNCS	■	■	53
10	Clevis foot LBG	■	■	53
11	Rod eye SGS	■	■	54
	Rod eye CRSGS	■	■	adn
12	Coupling piece KSG/KSZ	■	■	54
13	Adapter AD	■	■	54
14	Rod clevis SG	■	■	54
	Rod clevis CRSG	■	■	adn
15	Self-aligning rod coupler FK	■	■	54
	Self-aligning rod coupler CRFK	■	■	adn
16	Right-angle clevis foot LQG	■	■	54
17	Rod clevis SGA	■	■	54
18	Proximity sensor SME-/SMT-8 and connecting cable NEBU	■	■	55
19	Proximity sensor SME-/SMT-8M and connecting cable NEBU	■	■	55
20	Slot cover ABP-5-S	■	■	55
21	Proximity sensor SMPO-8E	■	■	adn
22	Mounting kit SMB-8E	■	■	adn
23	One-way flow control valve GRLA/GRLZ	■	■	55
24	Push-in fitting QS	■	■	1443

Compact cylinders ADN ★ /AEN, to ISO 21287

Accessories – Ordering data

	For Ø	Part no.	Type
1 Foot mounting Dimensions online: → adn			
	12	537237	HNA-12
	16	537238	HNA-16
	20	537239	HNA-20
	25	537240	HNA-25
	32	537241	HNA-32
	40	537242	HNA-40
	50	537243	HNA-50
	63	537244	HNA-63
	80	537249	HNA-80
100	537250	HNA-100	
2 Flange mounting Dimensions online: → adn			
	12	537245	FNC-12
	16	537246	FNC-16
	20	537247	FNC-20
	25	537248	FNC-25
	32	★ 174376	FNC-32
	40	★ 174377	FNC-40
	50	★ 174378	FNC-50
	63	★ 174379	FNC-63
	80	★ 174380	FNC-80
	100	174381	FNC-100
	125	174382	FNC-125
3 Swivel flange Dimensions online: → adn			
	12	537790	SNCL-12
	16	537791	SNCL-16
	20	537792	SNCL-20
	25	537793	SNCL-25
	32	★ 174404	SNCL-32
	40	★ 174405	SNCL-40
	50	★ 174406	SNCL-50
	63	★ 174407	SNCL-63
	80	★ 174408	SNCL-80
	100	174409	SNCL-100
	125	174410	SNCL-125
4 Swivel flange Dimensions online: → adn			
	32	★ 174390	SNCB-32
	40	★ 174391	SNCB-40
	50	★ 174392	SNCB-50
	63	★ 174393	SNCB-63
	80	★ 174394	SNCB-80
	100	174395	SNCB-100
	125	174396	SNCB-125
5 Clevis foot Data sheets online: → lbn			
	12, 16	★ 6058	LBN-12/16
	20, 25	★ 6059	LBN-20/25


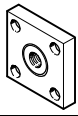
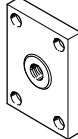

	For Ø	Part no.	Type
6 Multi-position kit Dimensions online: → adn			
	12	537263	DPNA-12
	16	537264	DPNA-16
	20	537265	DPNA-20
	25	537266	DPNA-25
	32	537267	DPNA-32
	40	537268	DPNA-40
	50	537269	DPNA-50
	63	532270	DPNA-63
	80	537271	DPNA-80
100	537272	DPNA-100	
7 Trunnion flange Dimensions online: → adn			
	32	174411	ZNCF-32
	40	174412	ZNCF-40
	50	174413	ZNCF-50
	63	174414	ZNCF-63
	80	174415	ZNCF-80
	100	174416	ZNCF-100
	125	174417	ZNCF-125
8 Trunnion support Dimensions online: → adn			
	32	32959	LNZG-32
	40, 50	32960	LNZG-40/50
	63, 80	32961	LNZG-63/80
	100, 125	32962	LNZG-100/125
9 Swivel flange Dimensions online: → adn			
	32	★ 174397	SNCS-32
	40	★ 174398	SNCS-40
	50	★ 174399	SNCS-50
	63	★ 174400	SNCS-63
	80	★ 174401	SNCS-80
	100	174402	SNCS-100
	125	174403	SNCS-125
10 Clevis foot Data sheets online: → lbg			
	32	31761	LBG-32
	40	31762	LBG-40
	50	31763	LBG-50
	63	31764	LBG-63
	80	31765	LBG-80
	100	31766	LBG-100
	125	31767	LBG-125
Clevis foot used with rod eye SGS Data sheets online: → lbg			
	32, 40	31761	LBG-32
	50, 63	31762	LBG-40
	80, 100	31763	LBG-50
		31764	LBG-63
	125	31765	LBG-80
	31766	LBG-100	



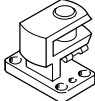

Compact cylinders ADN ★ /AEN, to ISO 21287

01

Accessories – Ordering data









Pneumatic drives

	For Ø	Part no.	Type
11 Rod eye Data sheets online: → sgs			
	16	★ 9254	SGS-M6
	20, 25	★ 9255	SGS-M8
	32, 40	★ 9261	SGS-M10x1,25
	50, 63	★ 9262	SGS-M12x1,25
	80, 100	★ 9263	SGS-M16x1,5
	125	★ 9264	SGS-M20x1,5
12 Coupling piece Data sheets online: → ksg			
	32, 40	32963	KSG-M10x1,25
	50, 63	32964	KSG-M12x1,25
	80, 100	32965	KSG-M16x1,5
	125	32966	KSG-M20x1,5
12 Coupling piece Data sheets online: → ksz			
	16	36123	KSZ-M6
	20, 25	36124	KSZ-M8
	32, 40	36125	KSZ-M10x1,25
	50, 63	36126	KSZ-M12x1,25
	80, 100	36127	KSZ-M16x1,5
	125	36128	KSZ-M20x1,5
	13 Adapter Data sheets online: → ad		
	16	157328	AD-M6-M5
		157329	AD-M6-G1/8
		157330	AD-M6-G1/4
	20, 25	157331	AD-M8-G1/8
		157332	AD-M8-G1/4
	32, 40	157333	AD-M10x1,25-G1/8
		157334	AD-M10x1,25-G1/4
	50, 63	160256	AD-M12x1,25-G1/4
		160257	AD-M12x1,25-G3/8

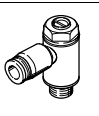

	For Ø	Part no.	Type
14 Rod clevis Data sheets online: → sg			
	16	★ 3110	SG-M6
	20, 25	★ 3111	SG-M8
	32, 40	★ 6144	SG-M10x1,25
	50, 63	★ 6145	SG-M12x1,25
	80, 100	★ 6146	SG-M16x1,5
	125	★ 6147	SG-M20x1,5
15 Self-aligning rod coupler Data sheets online: → fk			
	12	30184	FK-M5
	16	★ 2061	FK-M6
	20, 25	★ 2062	FK-M8
	32, 40	★ 6140	FK-M10x1,25
	50, 63	★ 6141	FK-M12x1,25
	80, 100	★ 6142	FK-M16x1,5
	125	★ 6143	FK-M20x1,5
16 Right-angle clevis foot for rod eye SGS Data sheets online: → lqg			
	32, 40	31768	LQG-32
	50, 63	31769	LQG-40
	80, 100	31770	LQG-50
		31771	LQG-63
	125	31772	LQG-80
		31773	LQG-100
17 Rod clevis Data sheets online: → sga			
	32, 40	32954	SGA-M10x1,25
	50, 63	10767	SGA-M12x1,25
	80, 100	10768	SGA-M16x1,25
	125	10769	SGA-M20x1,5

Accessories – Ordering data

01

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
18/19 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	12 ... 125	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	12 ... 125	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	12 ... 125	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	12 ... 125	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/C contact Data sheets → Page 1203					
	12 ... 125	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
18/19 Connecting cable, straight socket Data sheets → Page 1543					
	12 ... 125	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	12 ... 125	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3
20 Slot cover¹⁾					
	12 ... 125	–	–	151680	ABP-5-S

1) Packaging unit 2x 0.5 m.

	For Ø	Connection		Part no.	Type
		Thread	O.D.		
23 One-way flow control valve with slotted head screw, metal²⁾ for exhaust air flow control Data sheets → Page 1033					
	12, 16, 20, 25	M5	3	★ 193137	GRLA-M5-QS-3-D
	32	G1/8	4	★ 193143	GRLA-G1/8-QS-4-D
	40, 50, 63, 80, 100		6	★ 193144	GRLA-G1/8-QS-6-D
	125	G1/4	8	★ 193147	GRLA-G1/4-QS-8-D
For supply air flow control Data sheets → Page 1033					
	12, 16, 20, 25	M5	3	★ 193153	GRLZ-M5-QS-3-D
	32	G1/8	4	★ 193157	GRLZ-G1/8-QS-4-D
	40, 50, 63, 80, 100		6	★ 193158	GRLZ-G1/8-QS-6-D

2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Cylinders with piston rod > Standards-based cylinders >

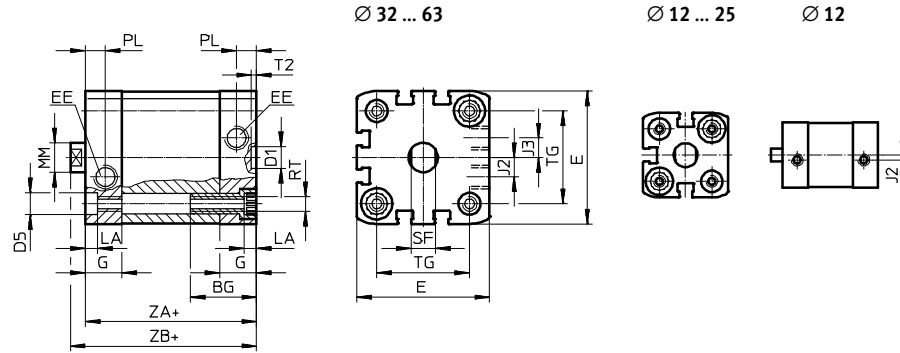
Compact cylinders ADN ★ /AEN, to ISO 21287

Download CAD data → www.festo.com

01

Dimensions

Basic design – Ø 12 ... 63



+ = plus stroke length

Pneumatic drives

Ø	BG	D1	D5	E	EE	G	J2	J3	LA
[mm]	min.	Ø H9	Ø F9						+0.2
12	17	9	6	27.5 ^{+0.3}	M5	10.5	2	-	3.5
16				29 ^{+0.3}		11			
20	35.5 ^{+0.3}		12	2.6					
25	39.5 ^{+0.3}								
32	26	12	9	47 ^{+0.3}	G1/8	15	6	5	
40				54.5 ^{+0.3}			8		
50	27		12	12		65.5 ^{+0.3}	11.5		
63					75.5 ^{+0.3}				

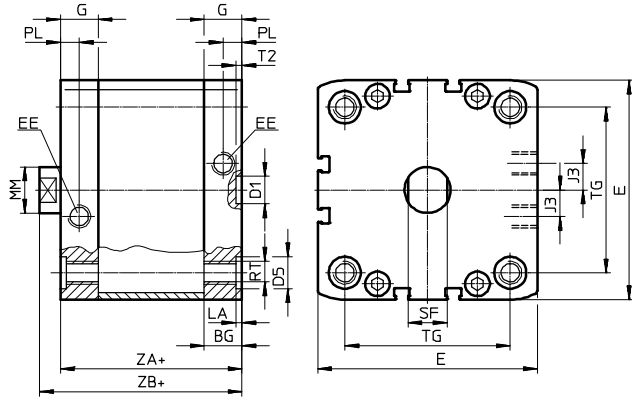
Ø	MM	PL	RT	SF	T2	TG	ZA	ZB	PPS
[mm]	Ø	+0.2		h13	+0.1	±0.2	±0.3	+1.2	+1.3
12	6	6	M4	5	2.1	16	35	39.2	-
16	8			7		18		39.7	
20	10		M5	9		22	37	42.5	42.5
25						26	39	44.5	45.3
32	12	8.2	M6	10	32.5	44	50	50.6	
40					38		45	51.1	51.7
50	16		M8	13	2.6	46.5	49	53.2	53.2
63						56.5		57.1	57

Dimensions

Download CAD data → www.festo.com

01

Basic design – Ø 80 ... 125



+ = plus stroke length

Ø [mm]	BG min.	D1 Ø H9	D5 Ø	E	EE	G	J3	LA +0.2
80	17	12	15	95.5 ^{+0.6}	G1/8	16.5	11.5	2.6
100	21.5			113.5 ^{+0.6}				
125	20		-	134.6 ^{+0.3}	G1/4	20	21.15	-

Ø [mm]	MM Ø	PL +0.2	RT	SF h13	T2 +0.1	TG ±0.2	ZA ±0.3	ZB +1.2	PPS +1.3
80	20	8.2	M10	17	2.6	72	54	62.9	63.4
100		10.5				89	67	76	76.8
125	25		M12	21		110	81	92	-

Pneumatic drives

Compact cylinders ADN ★ /AEN, to ISO 21287

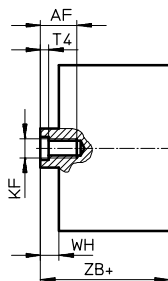
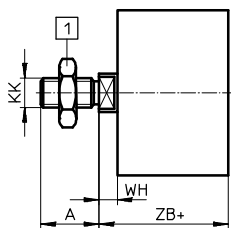
01

Dimensions

Basic design

Download CAD data → www.festo.com

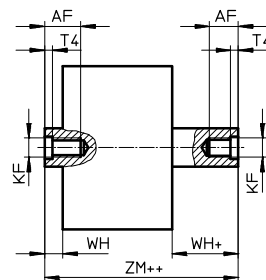
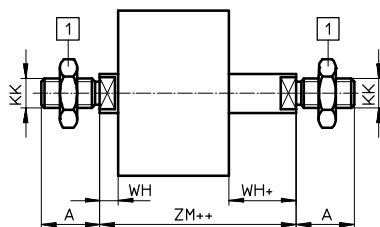
Pneumatic drives



1 Hex nut DIN 439-B only with $\varnothing 32 \dots 125$

+ = plus stroke length

S2 – Through piston rod

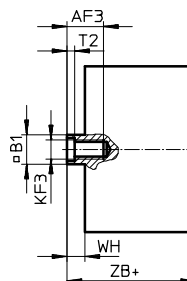
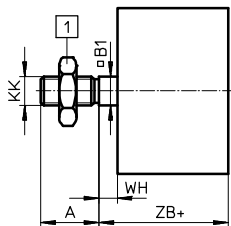


1 Hex nut DIN 439-B only with $\varnothing 32 \dots 125$

+ = plus stroke length

++ = plus 2x stroke length

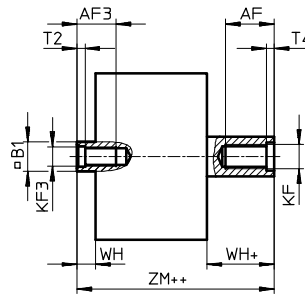
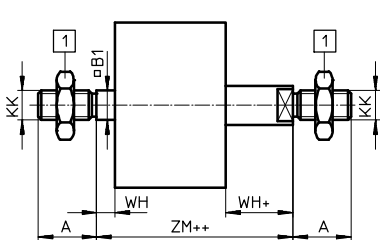
Q – Square piston rod



1 Hex nut DIN 439-B only with $\varnothing 32 \dots 125$

+ = plus stroke length

Q-S2 – Square, through piston rod

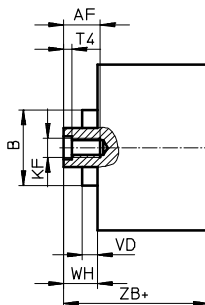
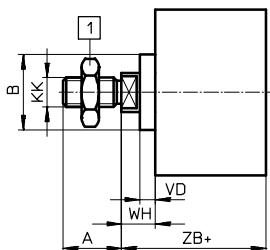


Note
The left-hand piston rod is square, the right-hand piston rod round.

+ = plus stroke length

++ = plus 2x stroke length

TT – Low temperature



1 Hex nut DIN 439-B only with $\varnothing 32 \dots 125$

+ = plus stroke length

Compact cylinders ADN ★ /AEN, to ISO 21287

Dimensions

Download CAD data → www.festo.com

01

∅ [mm]	A -0.5	A1	A2	AF min.	AF3 min.	B ∅	B1 □	D7 ∅	D8	D9 ∅	L5	KF	KF3	KK
12	10	1 ... 10	1 ... 300	8	8	-	5.5	-	-	-	-	M3	M3	M5
16	12			10	10		7	4.5		3.2	3	M4	M4	M6
20	16	1 ... 20		14	12	18	9	6		3.8	2	M6	M5	M8
25			16	14	27	10	8	4.5	3	M8	M6	M10x1.25		
32	19	1 ... 40	1 ... 500	16	14	27	10	8	-	4.5	3	M8	M6	M10x1.25
40	22			16	14	31	12	10		6	3.5	M10	M8	M12x1.25
50				20	16	31	12	10		6	3.5	M10	M8	M12x1.25
63	28	1 ... 30		20	16	31	12	10		6	3.5	M10	M8	M12x1.25
80			28	20	35	16	-	G1/8	8	-	M12	M10	M16x1.5	
100	40	1 ... 40	1 ... 500	25	24	-	20	-	G1/4	11.7	-	M16	M12	M20x1.5
125				25	24	-	20	-	G1/4	11.7	-	M16	M12	M20x1.5

∅ [mm]	T2	T3	T4	VD	WH			ZB			ZM	
					+1.3	PPS +1.4	TT +1.3	+1.2	PPS +1.3	TT +1.2		PPS
12	1.5	-	1.5	-	4.2	-	-	39.2	-	-	44.5 ^{+0.5}	-
16					4.7			39.7			45.7 ^{+0.5}	
20	2	2	2.6	5.2	5.5	5.5	10.5	42.5	42.5	47.5	49.5 ^{+0.5}	49.5 ^{+0.5}
25					5.5	5.5	10.5	44.5	45.3	49.5	51.5 ^{+0.5}	51.5 ^{+0.5}
32	2.6	2.6	3.3	6.4	6	6.5	12.5	50	50.6	56.5	57.5 ^{+0.5}	58.6 ^{+0.6}
40					6.1	6.6		51.1	51.7	57.5	58.6 ^{+0.6}	59.7 ^{+0.7}
50	3.3	3.3	4.7		8.2	8.2	14.7	53.2	53.2	59.7	62.8 ^{+0.6}	63.1 ^{+0.7}
63					8.1	8	14.6	57.1	57	63.6	66.6 ^{+0.6}	66.5 ^{+0.7}
80	4.7	4.7	6.1		8.9	9.4	15.4	62.9	63.4	69.4	73.2 ^{+0.6}	74.3 ^{+0.7}
100					9	9.8	15.5	76	76.8	82.5	86.4 ^{+0.6}	88 ^{+0.7}
125	6.1	-	7	-	11	-	-	92	-	-	104.4 ^{+0.6}	-

Cylinders with piston rod > Standards-based cylinders >

01

Pneumatic drives



Save time and money during commissioning

- + Thanks to standardised interfaces to ISO 15552
- + With standardised mounting accessories
- + With self-adjusting end-position cushioning PPS

Cylinders with piston rod > Standards-based cylinders >
Standards-based cylinders
to ISO 15552

DSBC 

Cylinders with piston rod > Standards-based cylinders >
Standards-based cylinders to ISO 15552


DSBC

 Overview, configuration and ordering
→ www.festo.com/catalogue/dsbc




 Additional information, support and user documentation
→ www.festo.com/sp/dsbc




 Quick ordering of basic designs
→ page 66



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + ISO 15552 (ISO 6431, VDMA 24562)
- + Strokes of up to 2800 mm
- + With self-adjusting pneumatic end-position cushioning PPS
- + For position sensing
- + Excellent flexibility thanks to the wide range of variants
- + Comprehensive range of accessories for just about every type of installation
- + Optionally with metal scraper

Standards-based cylinders DSBC ★ to ISO 15552

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options												
				Q	T	F	P	PPS	PPV	A	N3	T1	T3	T4	A3	...E
DSBC																
Double-acting	32, 40, 50, 63, 80, 100, 125	1 ... 2800	483 ... 7363	■	■	■	■	■	■	■	■	■	■	■	■	■

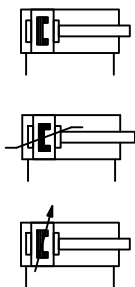
Product options

Q	With protection against rotation	T	Through piston rod	A	Position sensing	A1	Increased chemical resistance
L	Low friction	F	Female piston rod thread	N3	Standard conforms to ISO 15552	A2	Hard scraper
U	Uniform, slow movement	D3	Sensor slot on 3 sides	R3	High corrosion protection	A3	Suitable for unlubricated operation
L1	Low friction for balancer applications	P	Elastic cushioning rings/plates at both ends	T1	Heat-resistant seals up to max. 120°C	A6	Metal scraper
C	Clamping unit attached	PPS	Pneumatic cushioning, self-adjusting at both ends	T3	Low temperature	EX4	EU certification (II 2GD)
E1	End-position locking at both ends	PPV	Pneumatic cushioning, adjustable at both ends	T4	Heat-resistant seals up to max. 150°C	...E	Piston rod extension
E2	End-position locking with advanced piston rod			P2	Bellows on bearing cap	...L	Piston rod thread extension
E3	End-position locking with retracted piston rod						

Standards-based cylinders DSBC ★ to ISO 15552

01

Data sheet



Pneumatic drives

Technical data		Dimensions → Page 73						
Piston Ø		32	40	50	63	80	100	125
Pneumatic connection		G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2
Stroke								
DSBC-...	[mm]	1 ... 2800						
DSBC-...-Q	[mm]	1 ... 1500						
DSBC-...-E	[mm]	1 ... 2000						
Cushioning								
DSBC-...-P		Elastic cushioning rings/plates at both ends						
DSBC-...-PPS		Pneumatic cushioning, self-adjusting at both ends						
DSBC-...-PPV		Pneumatic cushioning, adjustable at both ends						
Cushioning length	[mm]	17	19	22	22	31	31	45
Theoretical force at 6 bar, advancing	[N]	483	754	1178	1870	3016	4712	7363
Theoretical force at 6 bar, retracting	[N]	415	633	990	1682	2721	4418	6881
Max. impact energy in the end positions								
DSBC-...	[J]	0.4 ¹⁾	0.7	1.0	1.3	1.8	2.5	3.3
DSBC-...-T1/T3/T4	[J]	0.2 ¹⁾	0.35	0.5	0.65	0.9	1.25	1.65

1) The max. impact energy in combination with the trunnion mounting kit DAMT is 0.1 J.

Operating conditions		Piston Ø						
Piston Ø		32	40	50	63	80	100	125
Operating pressure								
DSBC-...	[bar]	0.6 ... 12		0.4 ... 12			0.2 ... 10	
DSBC-...-T3	[bar]	1 ... 12					1 ... 10	
DSBC-...-A3	[bar]	1.5 ... 12		1 ... 12		0.6 ... 12		0.6 ... 10
Ambient temperature ²⁾								
DSBC-...	[°C]	-20 ... +80						
DSBC-...-T1	[°C]	0 ... +120						
DSBC-...-T3	[°C]	-40 ... +80						
DSBC-...-T4	[°C]	0 ... +150						

2) Note operating range of proximity sensors.

Materials	
Piston rod	High-alloy steel
Bearing cap	Coated die-cast aluminium
Cylinder barrel	Smooth anodised wrought aluminium alloy
End cap	Coated die-cast aluminium
Seals	TPE-U (PU)

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

Enter the type code in the search field.

Order code

		DSBC	-	-	-	-	-	-	-	-	A	-	-	-	
Type															
DSBC	Double-acting standards-based cylinder														
Protection against rotation															
-	None														
Q	With protection against rotation													[1]	
Stroke Ø [mm]															
	Stroke [mm]														
32, 40, 50, 63, 80, 100, 125	20, 25, 30, 40, 50, 60, 70, 80, 100, 125, 150, 160, 200, 250, 300, 320, 400, 500						1 ... 2800								
Piston rod															
-	Piston rod at one end														
T	Through piston rod														
Piston rod thread type															
-	Male thread														
F	Female thread														
Cushioning															
P	Elastic cushioning rings/plates at both ends														
PPS	Pneumatic cushioning, self-adjusting at both ends													[2]	
PPV	Pneumatic cushioning, adjustable at both ends														
Position sensing															
A	Via proximity sensor														
Standard															
-	Based on ISO 15552														
N3	Conforms to ISO 15552														
Temperature range															
-	Standard														
T1	Heat resistant up to max. 120°C														
T3	Low temperature														
T4	Heat resistant up to max. 150°C														
Wiper seal variant															
-	None														
A3	Suitable for unlubricated operation													[2]	
Piston rod extension															
-	None														
...E	1 ... 500 mm													[3]	

[1] Not with piston Ø 125, not with standard N3 or temperature range T3, T4 or wiper seal variant A3, only up to strokes of 1500 mm

[2] Not with temperature range T1, T3, T4

[3] Only up to strokes of 2000 mm

Order example:

DSBC-32-500-PPVA-N3T1

Double-acting standards-based cylinder - without protection against rotation - piston diameter 32 mm - stroke 500 mm - piston rod at one end - male thread - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - standard conforms to ISO 15552 - heat resistant up to max. 120°C - no wiper seal - without piston rod extension

Standards-based cylinders DSBC ★ to ISO 15552

01

★ Quick ordering¹⁾

PPS – Pneumatic cushioning, self-adjusting at both ends

Pneumatic drives

Part no.	Type
Piston Ø 32 mm	
2123085	DSBC-32-20-PPSA-N3
1376467	DSBC-32-25-PPSA-N3
2123086	DSBC-32-30-PPSA-N3
1376468	DSBC-32-40-PPSA-N3
1376469	DSBC-32-50-PPSA-N3
2123087	DSBC-32-60-PPSA-N3
2123088	DSBC-32-70-PPSA-N3
1376470	DSBC-32-80-PPSA-N3
1376471	DSBC-32-100-PPSA-N3
1376472	DSBC-32-125-PPSA-N3
2123089	DSBC-32-150-PPSA-N3
1376473	DSBC-32-160-PPSA-N3
1376474	DSBC-32-200-PPSA-N3
1376475	DSBC-32-250-PPSA-N3
2123090	DSBC-32-300-PPSA-N3
1376476	DSBC-32-320-PPSA-N3
1376477	DSBC-32-400-PPSA-N3
1376478	DSBC-32-500-PPSA-N3
Piston Ø 40 mm	
2123780	DSBC-40-20-PPSA-N3
1376903	DSBC-40-25-PPSA-N3
2123781	DSBC-40-30-PPSA-N3
1376904	DSBC-40-40-PPSA-N3
1376905	DSBC-40-50-PPSA-N3
2123782	DSBC-40-60-PPSA-N3
2123783	DSBC-40-70-PPSA-N3
1376906	DSBC-40-80-PPSA-N3
1376907	DSBC-40-100-PPSA-N3
1376908	DSBC-40-125-PPSA-N3
2123784	DSBC-40-150-PPSA-N3
1376909	DSBC-40-160-PPSA-N3
1376910	DSBC-40-200-PPSA-N3
1376911	DSBC-40-250-PPSA-N3
2123785	DSBC-40-300-PPSA-N3
1376912	DSBC-40-320-PPSA-N3
1376913	DSBC-40-400-PPSA-N3
1376914	DSBC-40-500-PPSA-N3

Part no.	Type
Piston Ø 50 mm	
2102628	DSBC-50-20-PPSA-N3
1376301	DSBC-50-25-PPSA-N3
2102629	DSBC-50-30-PPSA-N3
1376304	DSBC-50-40-PPSA-N3
1376305	DSBC-50-50-PPSA-N3
2102630	DSBC-50-60-PPSA-N3
2102631	DSBC-50-70-PPSA-N3
1376306	DSBC-50-80-PPSA-N3
1376307	DSBC-50-100-PPSA-N3
1376308	DSBC-50-125-PPSA-N3
2102632	DSBC-50-150-PPSA-N3
1376309	DSBC-50-160-PPSA-N3
1376310	DSBC-50-200-PPSA-N3
1376311	DSBC-50-250-PPSA-N3
2102633	DSBC-50-300-PPSA-N3
1376312	DSBC-50-320-PPSA-N3
1376313	DSBC-50-400-PPSA-N3
1376314	DSBC-50-500-PPSA-N3
Piston Ø 63 mm	
2126684	DSBC-63-20-PPSA-N3
1383632	DSBC-63-25-PPSA-N3
2126685	DSBC-63-30-PPSA-N3
1383633	DSBC-63-40-PPSA-N3
1383634	DSBC-63-50-PPSA-N3
2126686	DSBC-63-60-PPSA-N3
2126687	DSBC-63-70-PPSA-N3
1383635	DSBC-63-80-PPSA-N3
1383636	DSBC-63-100-PPSA-N3
1383637	DSBC-63-125-PPSA-N3
2126688	DSBC-63-150-PPSA-N3
1383638	DSBC-63-160-PPSA-N3
1383639	DSBC-63-200-PPSA-N3
1383640	DSBC-63-250-PPSA-N3
2126689	DSBC-63-300-PPSA-N3
1383641	DSBC-63-320-PPSA-N3
1383642	DSBC-63-400-PPSA-N3
1383643	DSBC-63-500-PPSA-N3

Part no.	Type
Piston Ø 80 mm	
2126636	DSBC-80-20-PPSA-N3
1383366	DSBC-80-25-PPSA-N3
2126637	DSBC-80-30-PPSA-N3
1383367	DSBC-80-40-PPSA-N3
1383368	DSBC-80-50-PPSA-N3
2126638	DSBC-80-60-PPSA-N3
2126639	DSBC-80-70-PPSA-N3
1383369	DSBC-80-80-PPSA-N3
1383370	DSBC-80-100-PPSA-N3
1383371	DSBC-80-125-PPSA-N3
2126640	DSBC-80-150-PPSA-N3
1383372	DSBC-80-160-PPSA-N3
1383373	DSBC-80-200-PPSA-N3
1383374	DSBC-80-250-PPSA-N3
2126641	DSBC-80-300-PPSA-N3
1383375	DSBC-80-320-PPSA-N3
1383376	DSBC-80-400-PPSA-N3
1383377	DSBC-80-500-PPSA-N3

1) All products in this table are easy to select and quick to order.

★ Quick ordering¹⁾

PPV – Pneumatic cushioning, adjustable at both ends

Part no.	Type
Piston Ø 32 mm	
2123069	DSBC-32-20-PPVA-N3
1376422	DSBC-32-25-PPVA-N3
2123070	DSBC-32-30-PPVA-N3
1376423	DSBC-32-40-PPVA-N3
1376424	DSBC-32-50-PPVA-N3
2123071	DSBC-32-60-PPVA-N3
2123072	DSBC-32-70-PPVA-N3
1376425	DSBC-32-80-PPVA-N3
1376426	DSBC-32-100-PPVA-N3
1376427	DSBC-32-125-PPVA-N3
2123073	DSBC-32-150-PPVA-N3
1376428	DSBC-32-160-PPVA-N3
1376429	DSBC-32-200-PPVA-N3
1376430	DSBC-32-250-PPVA-N3
2123074	DSBC-32-300-PPVA-N3
1376431	DSBC-32-320-PPVA-N3
1376432	DSBC-32-400-PPVA-N3
1376433	DSBC-32-500-PPVA-N3
Piston Ø 40 mm	
2123166	DSBC-40-20-PPVA-N3
1376656	DSBC-40-25-PPVA-N3
2123167	DSBC-40-30-PPVA-N3
1376657	DSBC-40-40-PPVA-N3
1376658	DSBC-40-50-PPVA-N3
2123224	DSBC-40-60-PPVA-N3
2123225	DSBC-40-70-PPVA-N3
1376659	DSBC-40-80-PPVA-N3
1376660	DSBC-40-100-PPVA-N3
1376661	DSBC-40-125-PPVA-N3
2123226	DSBC-40-150-PPVA-N3
1376662	DSBC-40-160-PPVA-N3
1376663	DSBC-40-200-PPVA-N3
1376664	DSBC-40-250-PPVA-N3
2123227	DSBC-40-300-PPVA-N3
1376665	DSBC-40-320-PPVA-N3
1376666	DSBC-40-400-PPVA-N3
1376667	DSBC-40-500-PPVA-N3

Part no.	Type
Piston Ø 50 mm	
2098969	DSBC-50-20-PPVA-N3
1366948	DSBC-50-25-PPVA-N3
2098970	DSBC-50-30-PPVA-N3
1366949	DSBC-50-40-PPVA-N3
1366950	DSBC-50-50-PPVA-N3
2098972	DSBC-50-60-PPVA-N3
2098973	DSBC-50-70-PPVA-N3
1366951	DSBC-50-80-PPVA-N3
1366952	DSBC-50-100-PPVA-N3
1366953	DSBC-50-125-PPVA-N3
2098974	DSBC-50-150-PPVA-N3
1366954	DSBC-50-160-PPVA-N3
1366955	DSBC-50-200-PPVA-N3
1366956	DSBC-50-250-PPVA-N3
2098975	DSBC-50-300-PPVA-N3
1366957	DSBC-50-320-PPVA-N3
1366958	DSBC-50-400-PPVA-N3
1366959	DSBC-50-500-PPVA-N3
Piston Ø 63 mm	
2125490	DSBC-63-20-PPVA-N3
1383578	DSBC-63-25-PPVA-N3
2125491	DSBC-63-30-PPVA-N3
1383579	DSBC-63-40-PPVA-N3
1383580	DSBC-63-50-PPVA-N3
2125492	DSBC-63-60-PPVA-N3
2125493	DSBC-63-70-PPVA-N3
1383581	DSBC-63-80-PPVA-N3
1383582	DSBC-63-100-PPVA-N3
1383583	DSBC-63-125-PPVA-N3
2125494	DSBC-63-150-PPVA-N3
1383584	DSBC-63-160-PPVA-N3
1383585	DSBC-63-200-PPVA-N3
1383586	DSBC-63-250-PPVA-N3
2125495	DSBC-63-300-PPVA-N3
1383587	DSBC-63-320-PPVA-N3
1383588	DSBC-63-400-PPVA-N3
1383589	DSBC-63-500-PPVA-N3

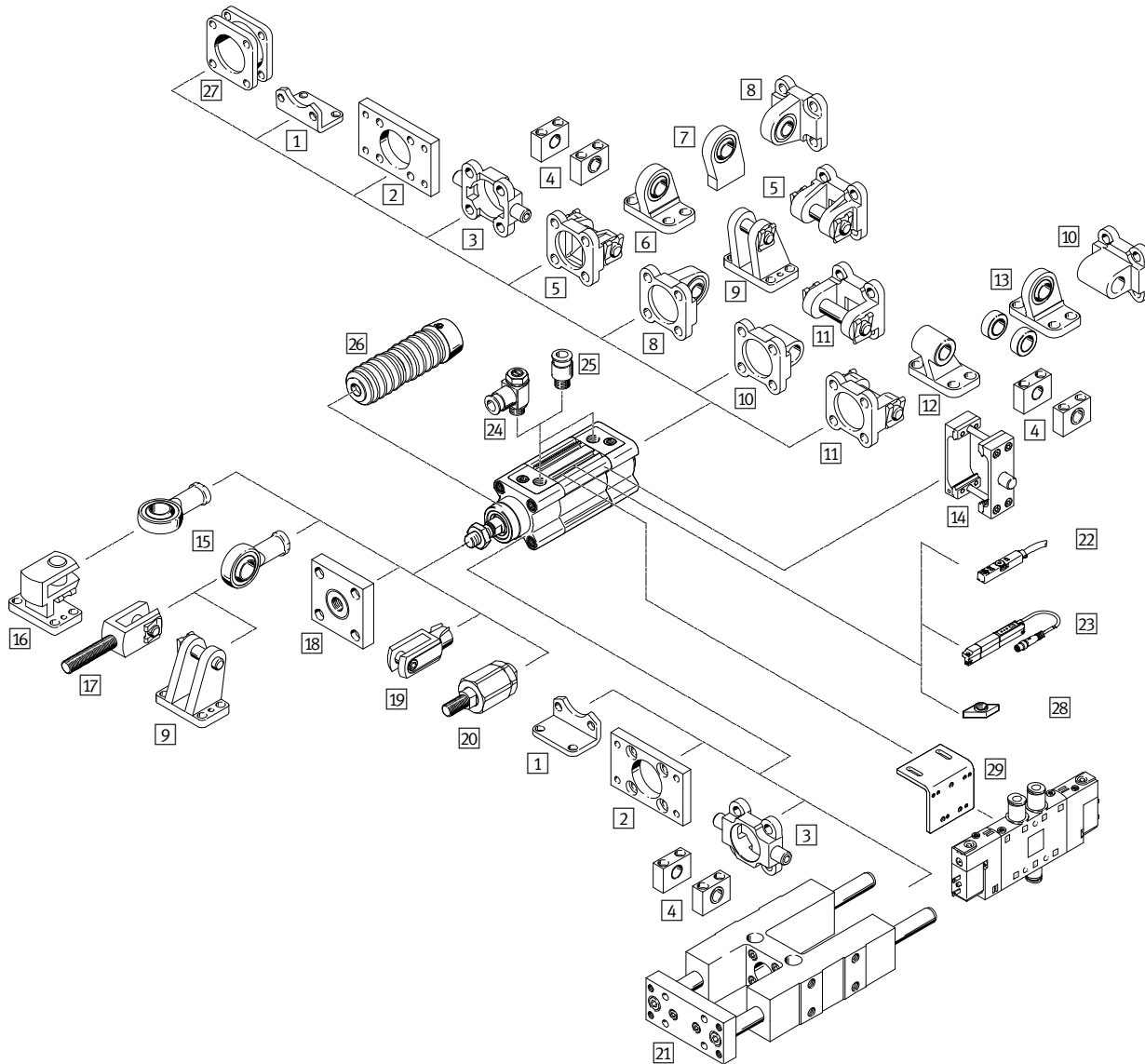
Part no.	Type
Piston Ø 80 mm	
2126594	DSBC-80-20-PPVA-N3
1383333	DSBC-80-25-PPVA-N3
2126595	DSBC-80-30-PPVA-N3
1383334	DSBC-80-40-PPVA-N3
1383335	DSBC-80-50-PPVA-N3
2126597	DSBC-80-60-PPVA-N3
2126598	DSBC-80-70-PPVA-N3
1383336	DSBC-80-80-PPVA-N3
1383337	DSBC-80-100-PPVA-N3
1383338	DSBC-80-125-PPVA-N3
2126599	DSBC-80-150-PPVA-N3
1383339	DSBC-80-160-PPVA-N3
1383340	DSBC-80-200-PPVA-N3
1383341	DSBC-80-250-PPVA-N3
2126600	DSBC-80-300-PPVA-N3
1383342	DSBC-80-320-PPVA-N3
1383343	DSBC-80-400-PPVA-N3
1383344	DSBC-80-500-PPVA-N3

1) All products in this table are easy to select and quick to order.

Standards-based cylinders DSBC ★ to ISO 15552

01 Accessories

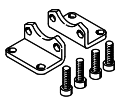
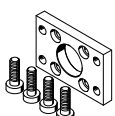
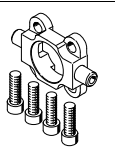
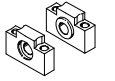
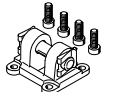
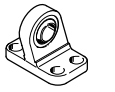

Pneumatic drives

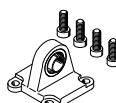
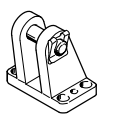
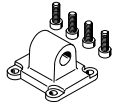
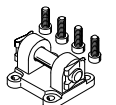

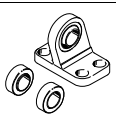


		→ Page/online
1	Foot mounting HNC Foot mounting CRHNC	69 dsbc
2	Flange mounting FNC Flange mounting CRFNG	69 dsbc
3	Trunnion flange ZNCF Trunnion flange CRZNG	69 dsbc
4	Trunnion support LNZG Trunnion support CRLNZG	69 dsbc
5	Swivel flange SNC	69
6	Clevis foot LSNG	69
7	Clevis foot LSNSG	69
8	Swivel flange SNCS	69
9	Clevis foot LBG	69
10	Swivel flange SNCL	69
11	Swivel flange SNCB	69
12	Clevis foot LNG	69
13	Clevis foot LSN	69
14	Trunnion mounting kit DAMT	70
15	Rod eye SGS Rod eye CRSGS	70 dsbc

		→ Page/online
16	Right-angle clevis foot LQG	70
17	Rod clevis SGA	70
18	Coupling piece KSG Coupling piece KSZ	70 70
19	Rod clevis SG Rod clevis CRSG	70 dsbc
20	Self-aligning rod coupler FK Self-aligning rod coupler CRFK	70 dsbc
21	Guide unit FENG	70
22	Proximity sensor SME/SMT-8M	71
23	Position sensor SMAT/SDAT	72
24	One-way flow control valve GRLA	72
25	Push-in fitting QS	1443
26	Bellows kit DADB	dsbc
27	Multi-position kit DPNC	71
28	Slot nut ABAN	72
29	Mounting kit DAVM	dsbc
-	Slot cover ABP-5-S	70

Accessories – Ordering data

	For Ø		Part no.	Type
1 Foot mounting Dimensions online: → dsbc				
	32	★	174369	HNC-32
	40	★	174370	HNC-40
	50	★	174371	HNC-50
	63	★	174372	HNC-63
	80	★	174373	HNC-80
	100		174374	HNC-100
	125		174375	HNC-125
2 Flange mounting Dimensions online: → dsbc				
	32	★	174376	FNC-32
	40	★	174377	FNC-40
	50	★	174378	FNC-50
	63	★	174379	FNC-63
	80	★	174380	FNC-80
	100		174381	FNC-100
	125		174382	FNC-125
3 Trunnion flange Dimensions online: → dsbc				
	32		174411	ZNCF-32
	40		174412	ZNCF-40
	50		174413	ZNCF-50
	63		174414	ZNCF-63
	80		174415	ZNCF-80
	100		174416	ZNCF-100
	125		174417	ZNCF-125
4 Trunnion support Dimensions online: → lnzg				
	32		32959	LNZG-32
	40, 50		32960	LNZG-40/50
	63, 80		32961	LNZG-63/80
	100, 125		32962	LNZG-100/125
5 Swivel flange Dimensions online: → dsbc				
	32	★	174383	SNC-32
	40	★	174384	SNC-40
	50	★	174385	SNC-50
	63	★	174386	SNC-63
	80	★	174387	SNC-80
	100		174388	SNC-100
125		174389	SNC-125	
6 Clevis foot Data sheets online: → lsng				
	32		31740	LSNG-32
	40		31741	LSNG-40
	50		31742	LSNG-50
	63		31743	LSNG-63
	80		31744	LSNG-80
	100		31745	LSNG-100
125		31746	LSNG-125	
7 Clevis foot Data sheets online: → lsnsg				
	32		31747	LSNSG-32
	40		31748	LSNSG-40
	50		31749	LSNSG-50
	63		31750	LSNSG-63
	80		31751	LSNSG-80
	100		31752	LSNSG-100
	125		31753	LSNSG-125

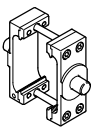



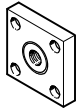
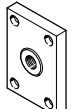
	For Ø		Part no.	Type
8 Swivel flange Dimensions online: → dsbc				
	32	★	174397	SNCS-32
	40	★	174398	SNCS-40
	50	★	174399	SNCS-50
	63	★	174400	SNCS-63
	80	★	174401	SNCS-80
	100		174402	SNCS-100
	125		174403	SNCS-125
9 Clevis foot Data sheets online: → lbg				
	32		31761	LBG-32
	40		31762	LBG-40
	50		31763	LBG-50
	63		31764	LBG-63
	80		31765	LBG-80
	100		31766	LBG-100
	125		31767	LBG-125
10 Swivel flange Dimensions online: → dsbc				
	32	★	174404	SNCL-32
	40	★	174405	SNCL-40
	50	★	174406	SNCL-50
	63	★	174407	SNCL-63
	80	★	174408	SNCL-80
	100		174409	SNCL-100
	125		174410	SNCL-125
11 Swivel flange Dimensions online: → dsbc				
	32	★	174390	SNCB-32
	40	★	174391	SNCB-40
	50	★	174392	SNCB-50
	63	★	174393	SNCB-63
	80	★	174394	SNCB-80
	100		174395	SNCB-100
	125		174396	SNCB-125
12 Clevis foot Data sheets online: → lng				
	32	★	33890	LNG-32
	40	★	33891	LNG-40
	50	★	33892	LNG-50
	63	★	33893	LNG-63
	80	★	33894	LNG-80
	100		33895	LNG-100
	125		33896	LNG-125
13 Clevis foot Data sheets online: → lsn				
	32		5561	LSN-32
	40		5562	LSN-40
	50		5563	LSN-50
	63		5564	LSN-63
	80		5565	LSN-80
	100		5566	LSN-100
	125		6987	LSN-125



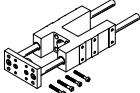
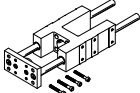

Standards-based cylinders DSBC ★ to ISO 15552

01

Accessories – Ordering data

Pneumatic drives

	For Ø	Part no.	Type
14 Trunnion mounting kit Dimensions online: → dsbc			
	32	★ 2213233	DAMT-V1-32-A
	40	★ 2214899	DAMT-V1-40-A
	50	★ 2214909	DAMT-V1-50-A
	63	★ 2214971	DAMT-V1-63-A
	80	★ 163529	DAMT-V1-80-A
	100	163530	DAMT-V1-100-A
	125	1812524	DAMT-V8-125-A
15 Rod eye Data sheets online: → sgs			
	32	★ 9261	SGS-M10x1,25
	40	★ 9262	SGS-M12x1,25
	50, 63	★ 9263	SGS-M16x1,5
	80, 100	★ 9264	SGS-M20x1,5
	125	10774	SGS-M27x2
	16 Right-angle clevis foot Data sheets online: → lqg		
	32	31768	LQG-32
	40	31769	LQG-40
	50	31770	LQG-50
	63	31771	LQG-63
	80	31772	LQG-80
	100	31773	LQG-100
	125	31774	LQG-125
17 Rod clevis Data sheets online: → sga			
	32	32954	SGA-M10x1,25
	40	10767	SGA-M12x1,25
	50, 63	10768	SGA-M16x1,5
	80, 100	10769	SGA-M20x1,5
	125	10770	SGA-M27x2
18 Coupling piece Data sheets online: → ksg			
	32	32963	KSG-M10x1,25
	40	32964	KSG-M12x1,25
	50, 63	32965	KSG-M16x1,5
	80, 100	32966	KSG-M20x1,5
	125	32967	KSG-M20x1,5
18 Coupling piece Data sheets online: → ksz			
	32	36125	KSZ-M10x1,25
	40	36126	KSZ-M12x1,25
	50, 63	36127	KSZ-M16x1,5
	80, 100	36128	KSZ-M20x1,5

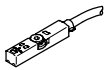
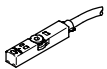
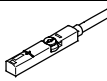
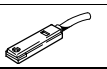
	For Ø	Part no.	Type
19 Rod clevis Data sheets online: → sg			
	32	★ 6144	SG-M10x1,25
	40	★ 6145	SG-M12x1,25
	50, 63	★ 6146	SG-M16x1,5
	80, 100	★ 6147	SG-M20x1,5
	125	14987	SG-M27x2-B
20 Self-aligning rod coupler Data sheets online: → fk			
	32	★ 6140	FK-M10x1,25
	40	★ 6141	FK-M12x1,25
	50, 63	★ 6142	FK-M16x1,5
	80, 100	★ 6143	FK-M20x1,5
	125	10485	FK-M27x2
	21 Guide unit for variable strokes from 10 ... 500 mm, with recirculating ball bearing guide Data sheets online: → feng		
	32	34487	FENG-32-...-KF ¹⁾
	40	34488	FENG-40-...-KF ¹⁾
	50	34489	FENG-50-...-KF ¹⁾
	63	34490	FENG-63-...-KF ¹⁾
	80	34491	FENG-80-...-KF ¹⁾
	100	34492	FENG-100-...-KF ¹⁾
	21 Guide unit for variable strokes from 10 ... 500 mm, with plain-bearing guide Data sheets online: → feng		
	32	34481	FENG-32-...-GF ¹⁾
	40	34482	FENG-40-...-GF ¹⁾
	50	34483	FENG-50-...-GF ¹⁾
	63	34484	FENG-63-...-GF ¹⁾
	80	34485	FENG-80-...-GF ¹⁾
	100	34486	FENG-100-...-GF ¹⁾
	Slot cover²⁾		
	32 ... 125	151680	ABP-5-S

1) Enter required stroke. Order example: the order code for an appropriate guide unit for the standards-based cylinder DSBC-40-250 is FENG-40-250-KF (guide unit FENG · piston diameter 40 mm · stroke 250 mm · with recirculating ball bearing guide).



2) Packaging unit 2x 0.5 m.

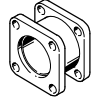
Accessories – Ordering data

01

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
22 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	32 ... 125	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	32 ... 125	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	32 ... 125	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	32 ... 125	Contacting, cable	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE

Pneumatic drives

	For Ø	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	32 ... 125	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	32 ... 125	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541367	NEBU-M12W5-K-2.5-LE3
			5.0	★ 541370	NEBU-M12W5-K-5-LE3

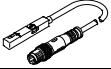

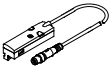
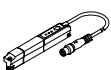

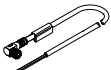
	For Ø	Part no.	Type
27 Multi-position kit Data sheets online: → dsbc			
	32	174418	DPNC-32
	40	174419	DPNC-40
	50	174420	DPNC-50
	63	174421	DPNC-63
	80	174422	DPNC-80
	100	174423	DPNC-100
	125	174424	DPNC-125


Standards-based cylinders DSBC ★ to ISO 15552

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Accessories – Ordering data

Pneumatic drives

	For Ø	Switching output Connection	Cable length [m]	Part no.	Type
23 Position sensor for T-slot Data sheets online: → Position sensor					
	32 ... 125	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
	32 ... 125	0 ... 10 V, 4 ... 20 mA, 4-pin	–	540191	SMAT-8E-S50-IU-M8
	32 ... 125	0 ... 10 V, 4 ... 20 mA, 4-pin	0.3	570134	SMAT-8E-S50-IU-E-0,3-M8D
	32 ... 125	4 ... 20 mA, 4-pin	0.3	1531265	SDAT-MHS-M50-1L-SA-E-0,3-M8
				1531266	SDAT-MHS-M80-1L-SA-E-0,3-M8
				1531267	SDAT-MHS-M100-1L-SA-E-0,3-M8
				1531268	SDAT-MHS-M125-1L-SA-E-0,3-M8
				1531269	SDAT-MHS-M160-1L-SA-E-0,3-M8
Connecting cable, straight socket Data sheets → Page 1543					
	32 ... 125	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8G4-K-5-LE4
Angled socket Data sheets → Page 1543					
	32 ... 125	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5	551345	NEBU-M8W4-K-5-LE4

Function	For Ø	Connection		Part no.	Type
		Thread	O.D.		
24 One-way flow control valve for exhaust air flow control¹⁾ with slotted head screw, metal Data sheets → Page 1033					
	32	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
	40, 50	G1/4	6	★ 193146	GRLA-1/4-QS-6-D
	63, 80	G3/8	8	★ 193150	GRLA-3/8-QS-8-D
	100, 125	G1/2	12	★ 193152	GRLA-1/2-QS-12-D

1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For Ø	Part no.	Type
28 Slot nut			
	32 ... 125	8028500	ABAN-8-1M4-5-P2 ²⁾
		8028501	ABAN-8-1M4-5-P100 ³⁾

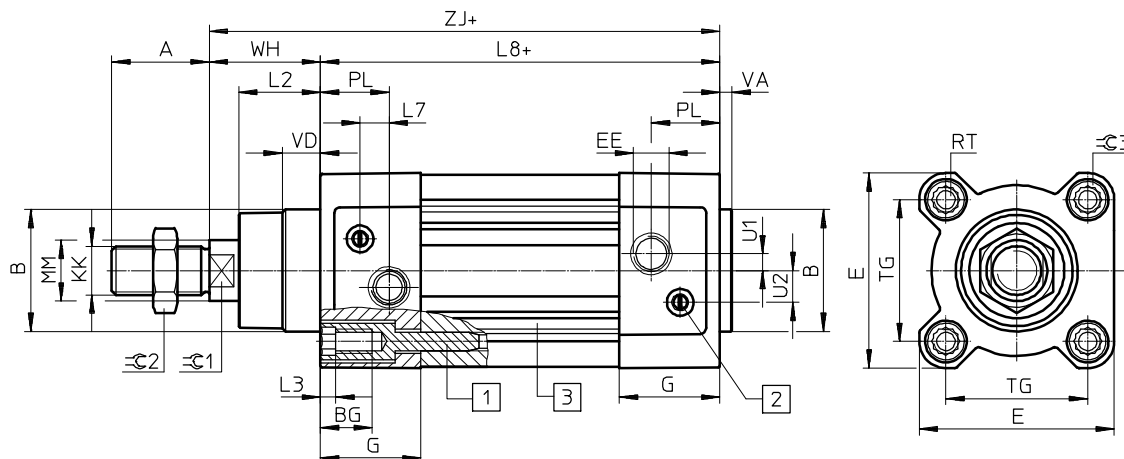
2) Packaging unit 2 pieces.
3) Packaging unit 100 pieces.

Dimensions

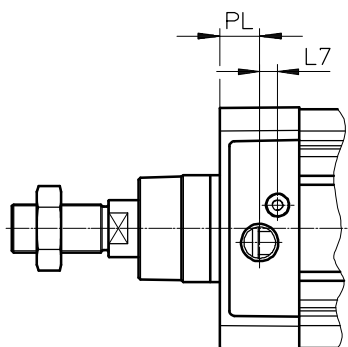
Download CAD data → www.festo.com

01

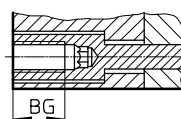
Basic design and A3 – Unlubricated operation



Ø 125



Ø 80 ... 125



+ = plus stroke length

- 1 Socket head screw with female thread for mounting components
- 2 Regulating screw for adjustable end-position cushioning
- 3 Slot for proximity sensor

Ø	A	B	BG	E	EE	G	U2	U1	KK	L2	L3	L7	L8
[mm]	-0.5	Ø d11	min.	+0.5		-0.2	±0.1	±0.1			max.		±0.4
32	22	30	16	45	G1/8	28	5.7	5.25	M10x1.25	18 _{-0.2}	5	6.5	94
40	24	35	16	54	G1/4	33	8	4	M12x1.25	21.3 _{-0.2}	5	7.5	105
50	32	40	16	64	G1/4	33	10.4	5.5	M16x1.5	26.8 _{-0.2}	5	9.5	106
63	32	45	16	75	G3/8	40.5	12.75	6.25	M16x1.5	27 _{-0.2}	5	9	121
80	40	45	17	93	G3/8	43	12.5	8	M20x1.5	34.2 _{-0.2}	-	11	128
100	40	55	17	110	G1/2	48	13.5	10	M20x1.5	38 _{-0.2}	-	7.5	138
125	54	60	20	136	G1/2	44.7	13	8	M27x2	45.5 _{-0.3}	-	10	160

Ø	MM Ø	PL	RT	TG	VA	VD	WH	ZJ	≡C1	≡C2	≡C3
[mm]		±0.1		±0.3		+0.5	+2.2	+1.8			
32	12	19.5	M6	32.5	4 _{-0.2}	10	25	119.1	10	16	6
40	16	22.5	M6	38	4 _{-0.2}	10.5	28.7	133.9	13	18	6
50	20	22.5	M8	46.5	4 _{-0.2}	11.5	35.6	141.8	17	24	8
63	20	27.5	M8	56.5	4 _{-0.2}	15	35.9	157.1	17	24	8
80	25	30	M10	72	4 _{-0.2}	15.7	45.4	173.6	22	30	6
100	25	31.5	M10	89	4 _{-0.2}	19.2	49.3	187.5	22	30	6
125	32	22.5	M12	110	6 _{-0.3}	20.5	64.1	225	27	41	8

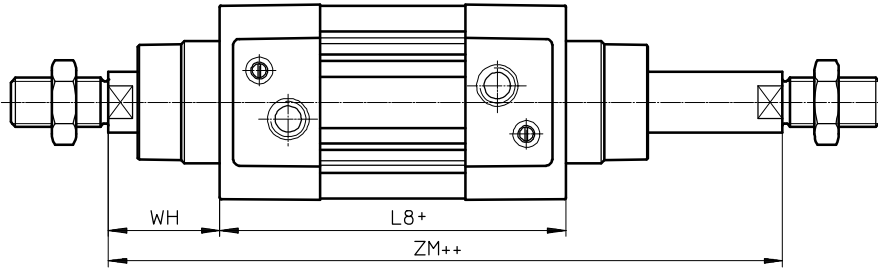
Standards-based cylinders DSBC ★ to ISO 15552

01

Dimensions

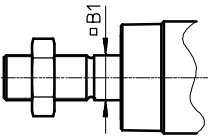
Download CAD data → www.festo.com

T – Through piston rod



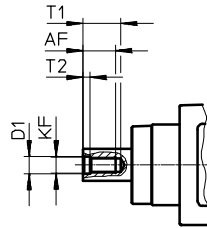
+ = plus stroke length
++ = plus 2x stroke length

Q – With protection against rotation



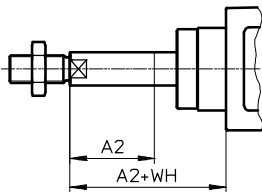
Note
Protection against rotation at one end in combination with the variant T.

F – Female thread



Note
Female thread at both ends in combination with the variant T.

...E – Piston rod extension



Note
Piston rod extension at one end in combination with the variant T.
Piston rod extension only at the square piston rod in combination with the variant T and Q.

∅	A2		AF	B1	D1	KF
	min.	max.				
32	1	500	12	10	6.4	M6
40	1	500	12	12	8.4	M8
50	1	500	16	16	10.5	M10
63	1	500	16	16	10.5	M10
80	1	500	20	20	13	M12
100	1	500	20	20	13	M12
125	1	500	32	–	17	M16

∅	L8	T1	T2	WH	ZM
[mm]	±0.4	max.		+2.2	+1
32	94	16	2.6	25	146.1
40	105	16	3.3	28.7	164.8
50	106	21	4.7	35.6	179.8
63	121	21	4.7	35.9	195.4
80	128	26.5	6.1	45.4	221
100	138	26.5	6.1	49.3	238.8
125	160	40	8	64.1	290

Pneumatic drives



Save time and money during commissioning

- + Thanks to standardised interfaces to ISO 15552
- + With standardised mounting accessories
- + With self-adjusting end-position cushioning PPS

Cylinders with piston rod > Standards-based cylinders >
Standards-based cylinders
to ISO 15552

DSBG

Ø 32 ... 125 mm

Cylinders with piston rod > Standards-based cylinders >
Standards-based cylinders to ISO 15552

DSBG



Overview, configuration and ordering
→ www.festo.com/catalogue/dsbg



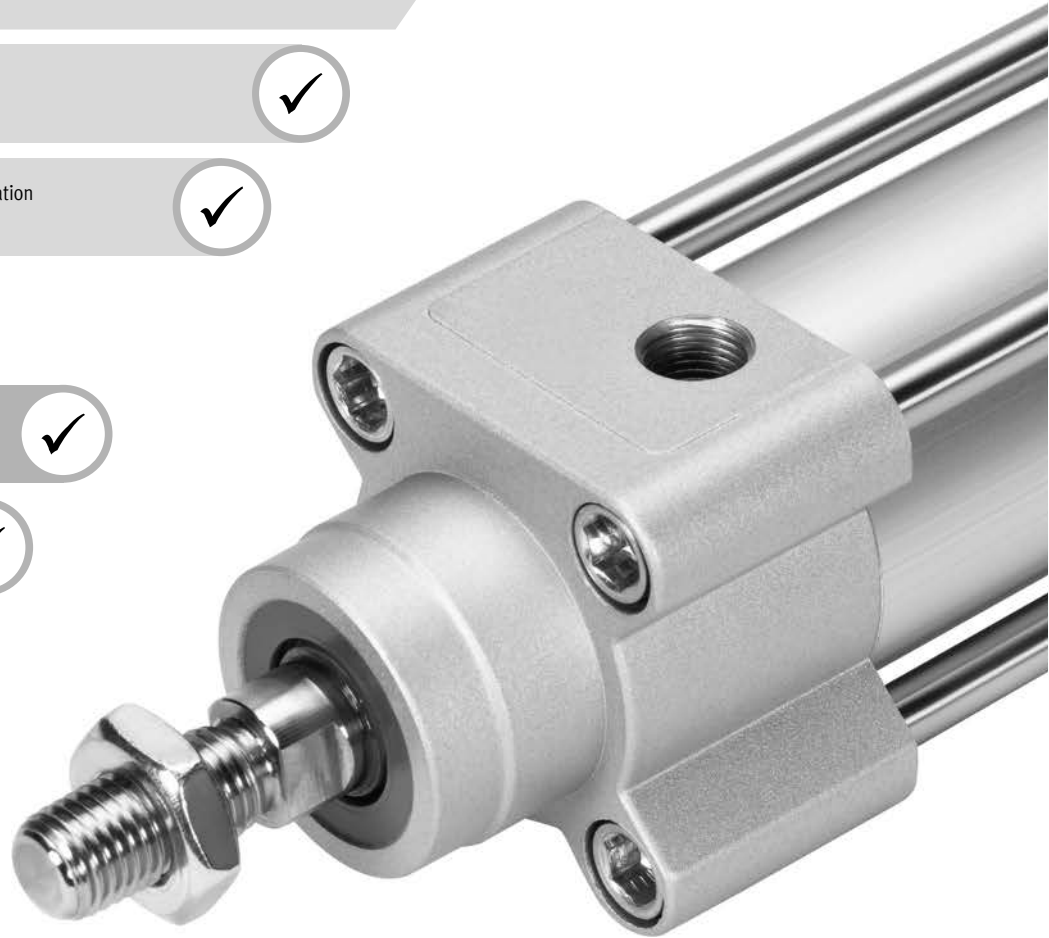
Additional information, support and user documentation
→ www.festo.com/sp/dsbg



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



Spare parts service



- + ISO 15552 (ISO 6431, VDMA 24562)
- + Strokes of up to 2800 mm
- + With self-adjusting pneumatic end-position cushioning PPS
- + Sturdy tie rod design
- + For contactless position sensing
- + Comprehensive range of accessories for just about every type of installation
- + Optionally with protection against rotation
- + Optionally with metal scraper

Standards-based cylinders DSBG, to ISO 15552

Product range overview – Piston Ø 32 ... 125

01

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options														
				Q	T	F	P	PPS	PPV	A	N3	T1	T3	T4	A3	...V	...E	
DSBG																		
Double-acting	32, 40, 50, 63, 80, 100, 125	1 ... 2800	483 ... 7363	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Product options

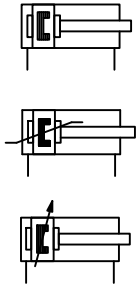
Q	With protection against rotation	P	Elastic cushioning rings/plates at both ends	T1	Heat-resistant seals up to max. 120 °C	...E	Piston rod extension
L	Low friction	PPS	Pneumatic cushioning, self-adjusting at both ends	T3	Low temperature	...L	Piston rod thread extension
U	Uniformly slow movement	PPV	Pneumatic cushioning, adjustable at both ends	T4	Heat-resistant seals up to max. 150 °C	...S	Shortened piston rod thread
L1	Low friction for balancer applications	A	Position sensing	P2	Protective bellows on bearing cap	M...	Piston rod thread type
T	Through piston rod	N3	Standard conforms to ISO 15552	A2	Hard scraper	...LB2	Thread length of stud bolts on bearing cap
F	Female piston rod thread	R3	High corrosion protection	A3	Suitable for unlubricated operation	...LB3	Thread length of stud bolts on end cap
				A6	Metal scraper		
				EX4	EU certification (II 2GD)		
				...V	Swivel mounting position		

Pneumatic drives

Standards-based cylinders DSBG, to ISO 15552

01

Data sheet – Piston Ø 32 ... 125



Pneumatic drives

Technical data		Dimensions → Page 85						
Piston Ø		32	40	50	63	80	100	125
Pneumatic connection		G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2
Stroke								
DSBG-...	[mm]	1 ... 2800						
DSBG-...-Q	[mm]	1 ... 1500						
DSBG-...-E	[mm]	1 ... 2000						
Cushioning								
DSBG-...-P		Elastic cushioning rings/plates at both ends						
DSBG-...-PPS		Pneumatic cushioning, self-adjusting at both ends						
DSBG-...-PPV		Pneumatic cushioning, adjustable at both ends						
Cushioning length	[mm]	17	19	22	22	31	31	45
Theoretical force at 6 bar, advancing	[N]	483	754	1178	1870	3016	4712	7363
Theoretical force at 6 bar, retracting	[N]	415	633	990	1682	2721	4418	6881
Max. impact energy in the end positions								
DSBG-...	[J]	0.4	0.7	1.0	1.3	1.8	2.5	3.3
DSBG-...-T1, T3, T4	[J]	0.2	0.35	0.5	0.65	0.9	1.25	1.65

Operating conditions		Piston Ø						
		32	40	50	63	80	100	125
Operating pressure								
DSBG-...	[bar]	0.6 ... 12		0.4 ... 12			0.2 ... 10	
DSBG-...-T3	[bar]	1 ... 12					1 ... 10	
DSBG-...-A3	[bar]	1.5 ... 12		1 ... 12		0.6 ... 12		0.6 ... 10
Ambient temperature ¹⁾								
DSBG-...	[°C]	-20 ... +80						
DSBG-...-T1	[°C]	0 ... +120						
DSBG-...-T3	[°C]	-40 ... +80						
DSBG-...-T4	[°C]	0 ... +150						

1) Note operating range of proximity sensors.

Materials	
Piston rod	High-alloy steel
Bearing cap	Coated die-cast aluminium
Cylinder barrel	Anodised wrought aluminium alloy
End cap	Coated die-cast aluminium
Seals	TPE-U (PU), NBR

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Standards-based cylinders DSBG, to ISO 15552

Order code – Piston \varnothing 32 ... 125

01

Pneumatic drives

Type		DSBG	
DSBG	Standards-based cylinder, double-acting		
Protection against rotation			
–	Without		
Q	With protection against rotation ^[1]		
Piston \varnothing [mm]			
		Stroke [mm]	
32, 40, 50, 63, 80, 100, 125	25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	1 ... 2800	
Piston rod			
–	Piston rod at one end		
T	Through piston rod		
Piston rod thread type			
–	Male thread		
F	Female thread		
Cushioning			
P	Elastic cushioning rings/plates at both ends		
PPS	Pneumatic cushioning, self-adjusting at both ends ^[2]		
PPV	Pneumatic cushioning, adjustable at both ends		
Position sensing			
A	For proximity sensor		
Standard			
–	Based on ISO 15552		
N3	Conforms to ISO 15552		
Temperature range			
–	Standard		
T1	0 ... +120 °C		
T3	–40 ... +80 °C		
T4	0 ... +150 °C		
Wiper seal variant			
–	None		
A3	Suitable for unlubricated operation ^[2]		
Swivel mounting position			
–	Without		
...V	0 ... 2800 mm		
Piston rod extension			
–	Without		
...E	1 ... 500 mm ^[3]		

^[1] Not with piston \varnothing 125, not with standard N3 or temperature range T3, T4

or wiper seal variant A3 only up to strokes of 1500 mm

^[2] Not with temperature range T1, T3, T4

^[3] Only up to strokes of 2000 mm

Order example:

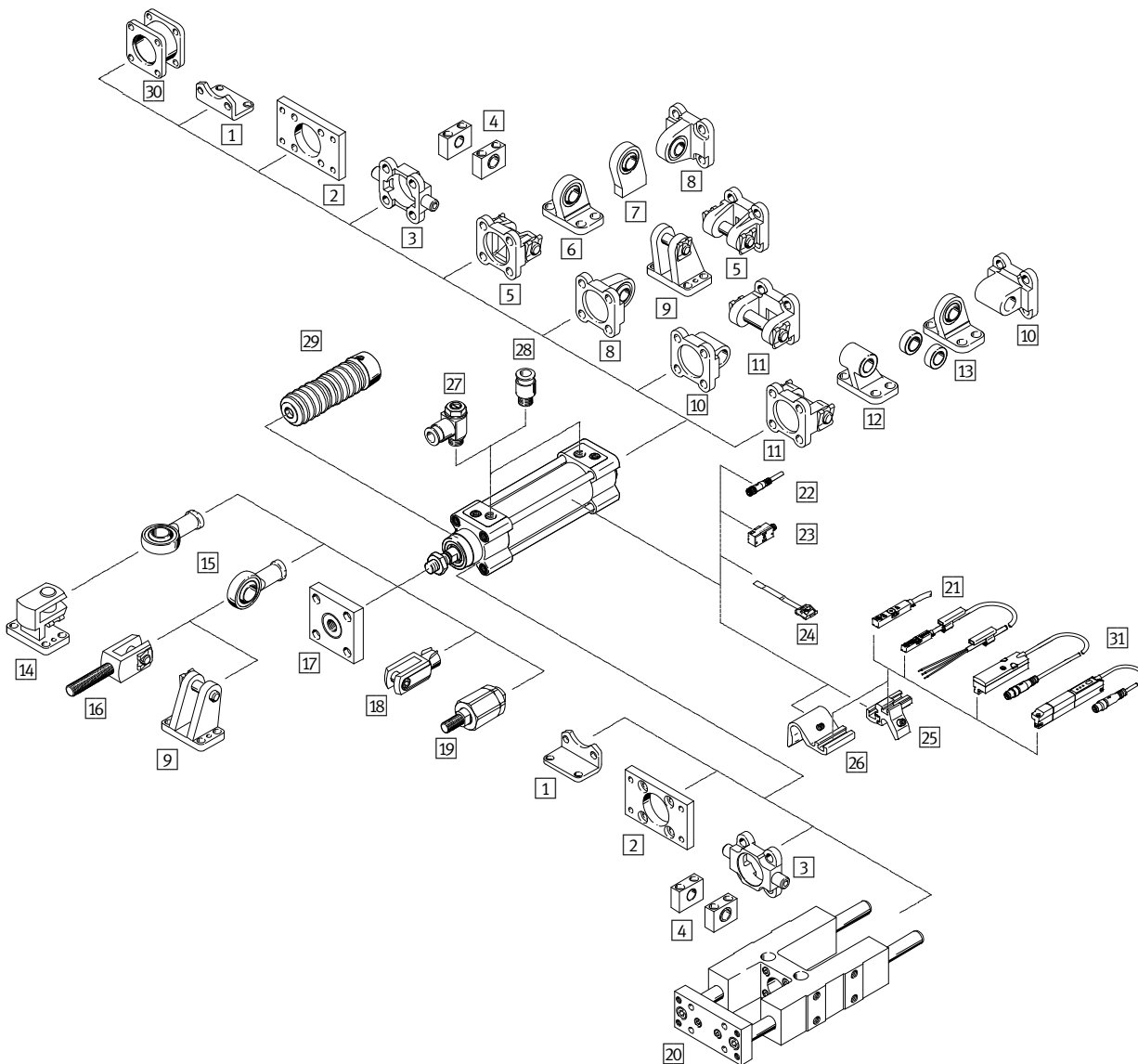
DSBG-32-500-PPVA-N3T1

Double-acting standards-based cylinder - without protection against rotation - piston diameter 32 mm - stroke 500 mm - piston rod at one end - male thread - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - conforms to ISO 15552 - heat resistant up to max. 120 °C - no wiper seal variant - without swivel mounting position - without piston rod extension

Standards-based cylinders DSBG, to ISO 15552

01 Accessories – Piston Ø 32 ... 125

Pneumatic drives

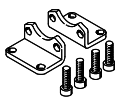
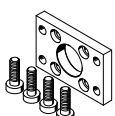
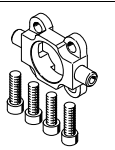
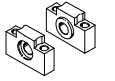
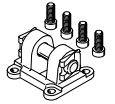
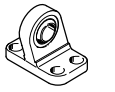



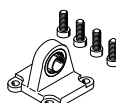
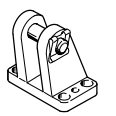
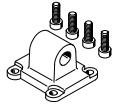
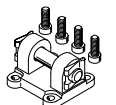
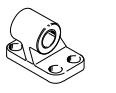
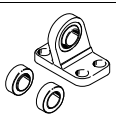
		→ Page/online
1	Foot mounting HNC	81
	Foot mounting CRHNC	dsbg
2	Flange mounting FNC	81
	Flange mounting CRFNG	dsbg
3	Trunnion flange ZNCF	81
	Trunnion flange CRZNG	dsbg
4	Trunnion support LNZG	81
	Trunnion support CRLNZG	dsbg
5	Swivel flange SNC	81
6	Clevis foot LSNG	81
7	Clevis foot LSNSG	81
8	Swivel flange SNCS	81
	Swivel flange CRSNCS/SNCS-R3	dsbg
9	Clevis foot LBG	81
	Clevis foot LBG-R3	dsbg
10	Swivel flange SNCL	81
11	Swivel flange SNCB	81
	Swivel flange SNCB-R3	dsbg
12	Clevis foot LNG	81
	Clevis foot CRLNG	dsbg
13	Clevis foot LSN	81
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15	Rod eye SGS	82
	Rod eye CRSGS	dsbg
16	Rod clevis SGA	82
17	Coupling piece KSG	82
	Coupling piece KSZ	82
18	Rod clevis SG	82
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19	Self-aligning rod coupler FK	82
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20	Guide unit FENG	82
21	Proximity sensor SME/SMT-8M	83
22	Connecting cable NEBU	83
23	Proximity sensor SMPO-1	83
24	Mounting kit SMBS	83
25	Mounting kit SMBZ	83
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29	Bellows kit DADB	dsbg
30	Multi-position kit DPNC	84
31	Position transmitter SMAT-8M/SDAT	84

Standards-based cylinders DSBG, to ISO 15552

Accessories – Ordering data – Piston Ø 32 ... 125





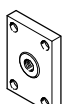
	For Ø		Part no.	Type
1 Foot mounting Dimensions online: → dsbg				
	32	★	174369	HNC-32
	40	★	174370	HNC-40
	50	★	174371	HNC-50
	63	★	174372	HNC-63
	80	★	174373	HNC-80
	100		174374	HNC-100
	125		174375	HNC-125
2 Flange mounting Dimensions online: → dsbg				
	32	★	174376	FNC-32
	40	★	174377	FNC-40
	50	★	174378	FNC-50
	63	★	174379	FNC-63
	80	★	174380	FNC-80
	100		174381	FNC-100
	125		174382	FNC-125
3 Trunnion flange Dimensions online: → dsbg				
	32		174411	ZNCF-32
	40		174412	ZNCF-40
	50		174413	ZNCF-50
	63		174414	ZNCF-63
	80		174415	ZNCF-80
	100		174416	ZNCF-100
	125		174417	ZNCF-125
4 Trunnion support Dimensions online: → lnzg				
	32		32959	LNZG-32
	40, 50		32960	LNZG-40/50
	63, 80		32961	LNZG-63/80
	100, 125		32962	LNZG-100/125
5 Swivel flange Dimensions online: → dsbg				
	32	★	174383	SNC-32
	40	★	174384	SNC-40
	50	★	174385	SNC-50
	63	★	174386	SNC-63
	80	★	174387	SNC-80
	100		174388	SNC-100
125		174389	SNC-125	
6 Clevis foot Data sheets online: → lsng				
	32		31740	LSNG-32
	40		31741	LSNG-40
	50		31742	LSNG-50
	63		31743	LSNG-63
	80		31744	LSNG-80
	100		31745	LSNG-100
	125		31746	LSNG-125
7 Clevis foot Data sheets online: → lsnsg				
	32		31747	LSNSG-32
	40		31748	LSNSG-40
	50		31749	LSNSG-50
	63		31750	LSNSG-63
	80		31751	LSNSG-80
	100		31752	LSNSG-100
	125		31753	LSNSG-125



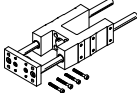
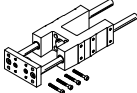
	For Ø		Part no.	Type
8 Swivel flange Dimensions online: → dsbg				
	32	★	174397	SNCS-32
	40	★	174398	SNCS-40
	50	★	174399	SNCS-50
	63	★	174400	SNCS-63
	80	★	174401	SNCS-80
	100		174402	SNCS-100
	125		174403	SNCS-125
9 Clevis foot Data sheets online: → lbg				
	32		31761	LBG-32
	40		31762	LBG-40
	50		31763	LBG-50
	63		31764	LBG-63
	80		31765	LBG-80
	100		31766	LBG-100
	125		31767	LBG-125
10 Swivel flange Dimensions online: → dsbg				
	32	★	174404	SNCL-32
	40	★	174405	SNCL-40
	50	★	174406	SNCL-50
	63	★	174407	SNCL-63
	80	★	174408	SNCL-80
	100		174409	SNCL-100
	125		174410	SNCL-125
11 Swivel flange Dimensions online: → dsbg				
	32	★	174390	SNCB-32
	40	★	174391	SNCB-40
	50	★	174392	SNCB-50
	63	★	174393	SNCB-63
	80	★	174394	SNCB-80
	100		174395	SNCB-100
	125		174396	SNCB-125
12 Clevis foot Data sheets online: → lng				
	32	★	33890	LNG-32
	40	★	33891	LNG-40
	50	★	33892	LNG-50
	63	★	33893	LNG-63
	80	★	33894	LNG-80
	100		33895	LNG-100
	125		33896	LNG-125
13 Clevis foot Data sheets online: → lsn				
	32		5561	LSN-32
	40		5562	LSN-40
	50		5563	LSN-50
	63		5564	LSN-63
	80		5565	LSN-80
	100		5566	LSN-100
	125		6987	LSN-125

Standards-based cylinders DSBG, to ISO 15552

01 Accessories – Ordering data – Piston Ø 32 ... 125

Pneumatic drives

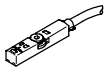
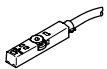
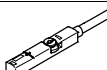
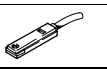
	For Ø	Part no.	Type
14 Right-angle clevis foot Data sheets online: → lqg			
	32	31768	LQG-32
	40	31769	LQG-40
	50	31770	LQG-50
	63	31771	LQG-63
	80	31772	LQG-80
	100	31773	LQG-100
	125	31774	LQG-125
15 Rod eye Data sheets online: → sgs			
	32	★ 9261	SGS-M10x1,25
	40	★ 9262	SGS-M12x1,25
	50, 63	★ 9263	SGS-M16x1,5
	80, 100	★ 9264	SGS-M20x1,5
	125	10774	SGS-M27x2
16 Rod clevis Data sheets online: → sga			
	32	32954	SGA-M10x1,25
	40	10767	SGA-M12x1,25
	50, 63	10768	SGA-M16x1,5
	80, 100	10769	SGA-M20x1,5
125	10770	SGA-M27x2	
17 Coupling piece Data sheets online: → ksg			
	32	32963	KSG-M10x1,25
	40	32964	KSG-M12x1,25
	50, 63	32965	KSG-M16x1,5
	80, 100	32966	KSG-M20x1,5
	125	32967	KSG-M27x2
17 Coupling piece Data sheets online: → ksz			
	32	36125	KSZ-M10x1,25
	40	36126	KSZ-M12x1,25
	50, 63	36127	KSZ-M16x1,5
	80, 100	36128	KSZ-M20x1,5

	For Ø	Part no.	Type
18 Rod clevis Data sheets online: → sg			
	32	★ 6144	SG-M10x1,25
	40	★ 6145	SG-M12x1,25
	50, 63	★ 6146	SG-M16x1,5
	80, 100	★ 6147	SG-M20x1,5
	125	14987	SG-M27x2-B
19 Self-aligning rod coupler Data sheets online: → fk			
	32	★ 6140	FK-M10x1,25
	40	★ 6141	FK-M12x1,25
	50, 63	★ 6142	FK-M16x1,5
	80, 100	★ 6143	FK-M20x1,5
	125	10485	FK-M27x2
20 Guide unit for variable strokes from 10 ... 500 mm, with recirculating ball bearing guide Data sheets online: → feng			
	32	34487	FENG-32-...-KF ¹⁾
	40	34488	FENG-40-...-KF ¹⁾
	50	34489	FENG-50-...-KF ¹⁾
	63	34490	FENG-63-...-KF ¹⁾
	80	34491	FENG-80-...-KF ¹⁾
	100	34492	FENG-100-...-KF ¹⁾
20 Guide unit for variable strokes from 10 ... 500 mm, with plain-bearing guide Data sheets online: → feng			
	32	34481	FENG-32-...-GF ¹⁾
	40	34482	FENG-40-...-GF ¹⁾
	50	34483	FENG-50-...-GF ¹⁾
	63	34484	FENG-63-...-GF ¹⁾
	80	34485	FENG-80-...-GF ¹⁾
100	34486	FENG-100-...-GF ¹⁾	


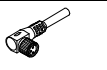
1) Enter required stroke. Order example: the order code for an appropriate guide unit for the standards-based cylinder DSBG-40-250 is FENG-40-250-KF (guide unit FENG - piston diameter 40 mm - stroke 250 mm - with recirculating ball bearing guide).

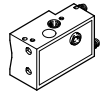
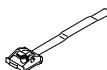
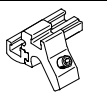

Accessories – Ordering data – Piston Ø 32 ... 125

01

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
21	Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206				
	32 ... 125	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	32 ... 125	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	32 ... 125	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	32 ... 125	Contacting, cable	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE

Pneumatic drives

	For Ø	Connection	Cable length [m]	Part no.	Type
22	Connecting cable, straight socket Data sheets → Page 1543				
	32 ... 125	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	32 ... 125	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541367	NEBU-M12W5-K-2.5-LE3
			5.0	★ 541370	NEBU-M12W5-K-5-LE3

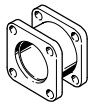
	For Ø	Part no.	Type
23	Proximity sensor in block design, magnetic reed – N/O contact, pneumatic Data sheets online: → smeo		
	32 ... 100	31008	SMPO-1-H-B
24 Mounting kit for proximity sensor SMPO-1			
	32 ... 100	151226	SMBS-2
25 Mounting kit for proximity sensor SME/SMT-8			
	32 ... 100	537806	SMBZ-8-32/100
	32 ... 100	★ 538937	SMBR-8-8/100-S6
26 Mounting kit for proximity sensor SME/SMT-8			
	125	1451483	DASP-M4-125-A

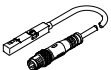
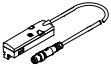
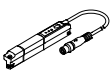
Cylinders with piston rod > Standards-based cylinders >


Standards-based cylinders DSBG, to ISO 15552

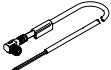
01 Accessories – Ordering data – Piston Ø 32 ... 125


Pneumatic drives

	For Ø	Part no.	Type
30 Multi-position kit Data sheets online: → dsbg			
	32	174418	DPNC-32
	40	174419	DPNC-40
	50	174420	DPNC-50
	63	174421	DPNC-63
	80	174422	DPNC-80
	100	174423	DPNC-100

	For Ø	Switching output connection	Cable length [m]	Part no.	Type
31 Position sensor for T-slot Data sheets online: → Position sensor					
	32 ... 125	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
	125	0 ... 10 V, 4 ... 20 mA, 4-pin	–	540191	SMAT-8E-S50-IU-M8
	125	0 ... 10 V, 4 ... 20 mA, 4-pin	0.3	570134	SMAT-8E-S50-IU-E-0,3-M8D
		32 ... 125	4 ... 20 mA, 4-pin	0.3	1531265
1531266					SDAT-MHS-M80-1L-SA-E-0.3-M8
1531267					SDAT-MHS-M100-1L-SA-E-0.3-M8
1531268					SDAT-MHS-M125-1L-SA-E-0.3-M8
1531269					SDAT-MHS-M160-1L-SA-E-0.3-M8

Connecting cable, straight socket				Data sheets → Page 1543	
	32 ... 125	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8W4-K-5-LE4

Angled socket				Data sheets → Page 1543	
	32 ... 125	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5	551345	NEBU-M8W4-K-5-LE4

Function	For Ø	Connection		Part no.	Type
		Thread	O.D.		
27 One-way flow control valve for exhaust air flow control¹⁾ with slotted head screw, metal Data sheets → Page 1033					
	32	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
	40, 50	G1/4	6	★ 193146	GRLA-1/4-QS-6-D
	63, 80	G3/8	8	★ 193150	GRLA-3/8-QS-8-D
	100, 125	G1/2	12	★ 193152	GRLA-1/2-QS-12-D

1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

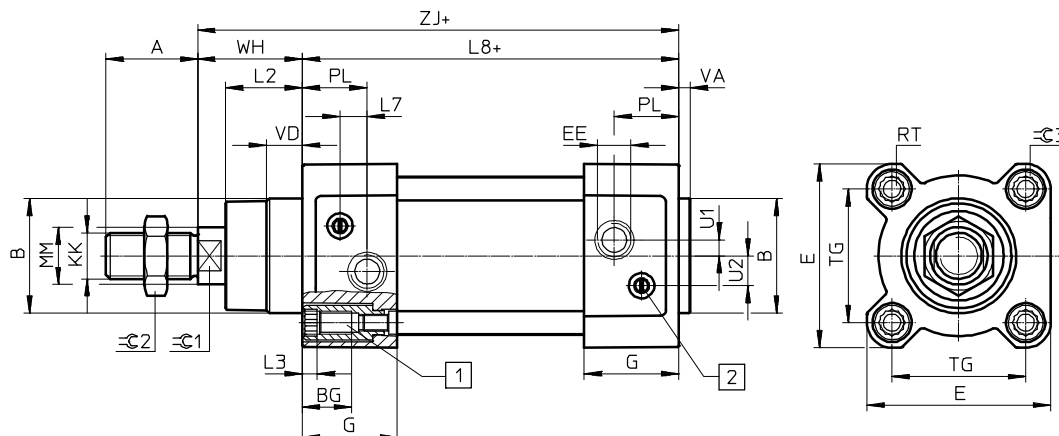
Standards-based cylinders DSBG, to ISO 15552

Dimensions – Piston Ø 32 ... 125

Download CAD data → www.festo.com

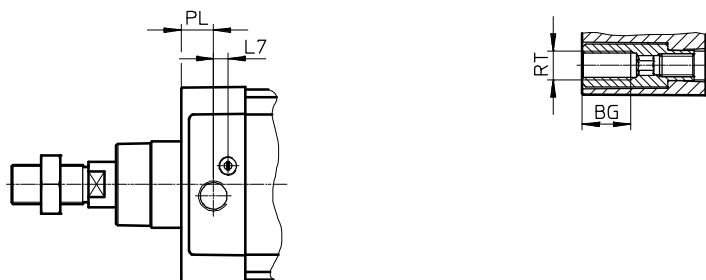
01

Basic design and A3 – Unlubricated operation



Ø 125

Ø 80 ... 125

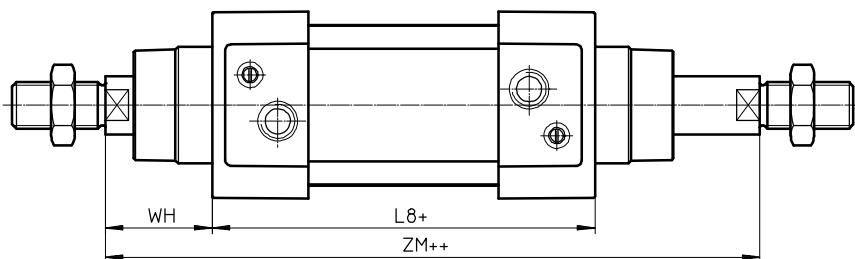


+ = plus stroke length

1 Socket head screw with female thread for mounting components

2 Regulating screw for adjustable end-position cushioning

T – Through piston rod



+ = plus stroke length

++ = plus 2x stroke length

Ø	A	B	BG	I	EE	G	U2	U1	KK	L2	L3	L7	L8
[mm]	-0.5	Ø d11	min.	+0.5		-0.2	±0.1	±0.1			max.		±0.4
32	22	30	16	45	G1/8	28	5.7	5.25	M10x1.25	18 _{-0.2}	5	6.5	94
40	24	35	16	54	G1/4	33	8	4	M12x1.25	21.3 _{-0.2}	5	7.5	105
50	32	40	16	64	G1/4	33	10.4	5.5	M16x1.5	26.8 _{-0.2}	5	9.5	106
63	32	45	16	75	G3/8	40.5	12.75	6.25	M16x1.5	27 _{-0.2}	5	9	121
80	40	45	17	93	G3/8	43	12.5	8	M20x1.5	34.2 _{-0.2}	–	11	128
100	40	55	17	110	G1/2	48	13.5	10	M20x1.5	38 _{-0.2}	–	7.5	138
125	54	60	20	136	G1/2	44.7	13	8	M27x2	45 _{-0.3}	–	10	160

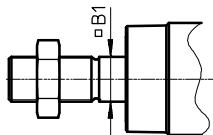
Ø	MM	PL	RT	TG	VA	VD	WH	ZJ	ZM	C1	C2	C3
[mm]	Ø	±0.1		±0.3		+0.5	+2.2	+1.8	+1			
32	12	19.5	M6	32.5	4 _{-0.2}	10	25	119.1	146.1	10	16	6
40	16	22.5	M6	38	4 _{-0.2}	10.5	28.7	133.9	164.8	13	18	6
50	20	22.5	M8	46.5	4 _{-0.2}	11.5	35.6	141.8	179.8	17	24	8
63	20	27.5	M8	56.5	4 _{-0.2}	15	35.9	157.1	195.4	17	24	8
80	25	30	M10	72	4 _{-0.2}	15.7	45.4	173.6	221	22	30	6
100	25	31.5	M10	89	4 _{-0.2}	19.2	49.3	187.5	238.8	22	30	6
125	32	22.5	M12	110	6 _{-0.3}	20.5	64.1	225	290	27	41	8

Standards-based cylinders DSBG, to ISO 15552

01 Dimensions – Piston \varnothing 32 ... 125

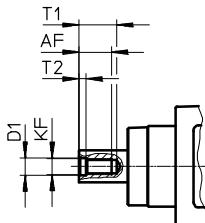
Download CAD data → www.festo.com

Q – With protection against rotation



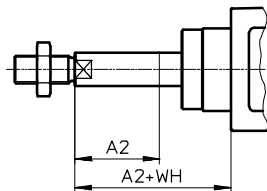
Note
In combination with variant T, the piston rod is protected against rotation at one end.

F – Female thread



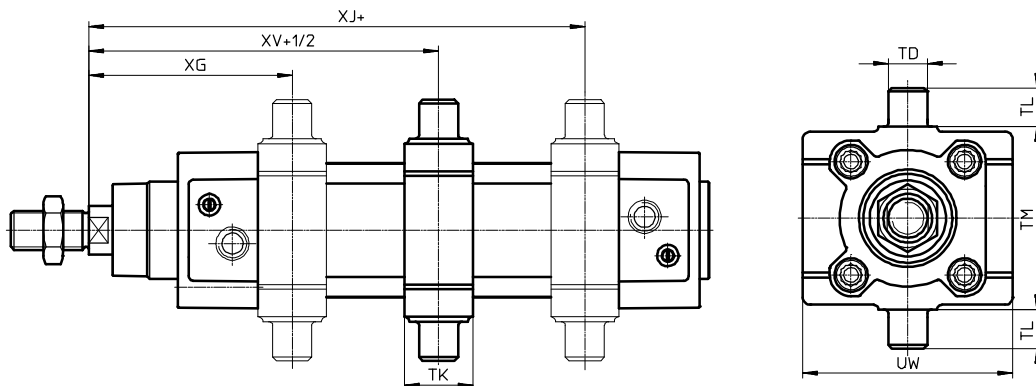
Note
In combination with variant T, the piston rod has female threads at both ends.

...E – Piston rod extension



Note
Piston rod extension at one end in combination with the variant T.
Piston rod extension only at the square piston rod in combination with the variant T and Q.

...V – Swivel mounting position

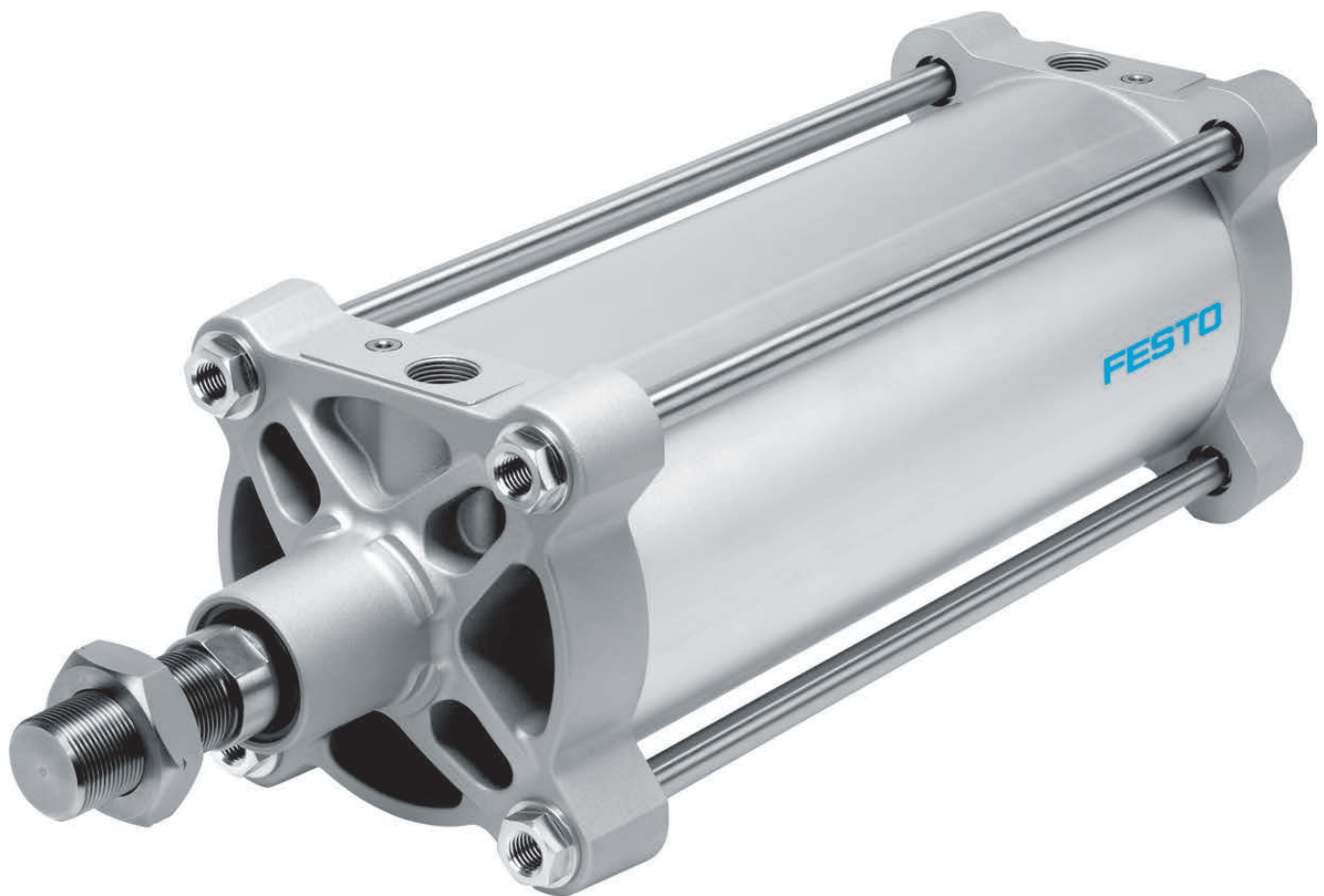


Note
The dimensions for the swivel mounting position (...V) refer to the basic design without piston rod extension. The swivel mounting can be moved at any time.

+ = plus stroke length
+1/2 = plus half stroke length

\varnothing [mm]	A2		AF	B1	D1	KF	T1	T2	WH
	min.	max.	min.				max.		+2.2
32	1	500	12	10	6.4	M6	16	2.6	25
40	1	500	12	12	8.4	M8	16	3.3	28.7
50	1	500	16	16	10.5	M10	21	4.7	35.6
63	1	500	16	16	10.5	M10	21	4.7	35.9
80	1	500	20	20	13	M12	26.5	6.1	45.4
100	1	500	20	20	13	M12	26.5	6.1	49.3
125	1	500	32	–	17	M16	40	8	64.1

\varnothing [mm]	TD	TK	TL	TM	UW	XG	XJ	XV
	\varnothing e9		h14	h14		min.	max.	
32	12	20	12	50	65	64±1.4	81±1.4	73±1.4
40	16	25	16	63	72	74.2±1.4	88.4±1.4	81.2±1.4
50	16	28	16	75	86	82.6±1.4	94.8±1.4	88.6±1.4
63	20	30	20	90	98	91.4±1.8	101.6±1.8	96.4±1.8
80	20	32	20	110	110	104.4±1.8	114.6±1.8	109.4±1.8
100	25	38	25	132	136	116.3±1.8	120.5±1.8	118.3±1.8
125	25	44	25	160	160	131.7±1.8	158.3±1.8	145±1.8



Save costs

- + When position sensing and adjustable cushioning are not required
- + Thanks to standardised interfaces to ISO 15552
- + With standardised mounting accessories

Cylinders with piston rod > Standards-based cylinders >
Standards-based cylinders
to ISO 15552

DSBG

∅ 160 ... 320 mm

Cylinders with piston rod > Standards-based cylinders >

Standards-based cylinders to ISO 15552


DSBG

 Overview, configuration and ordering
→ www.festo.com/catalogue/dsbg




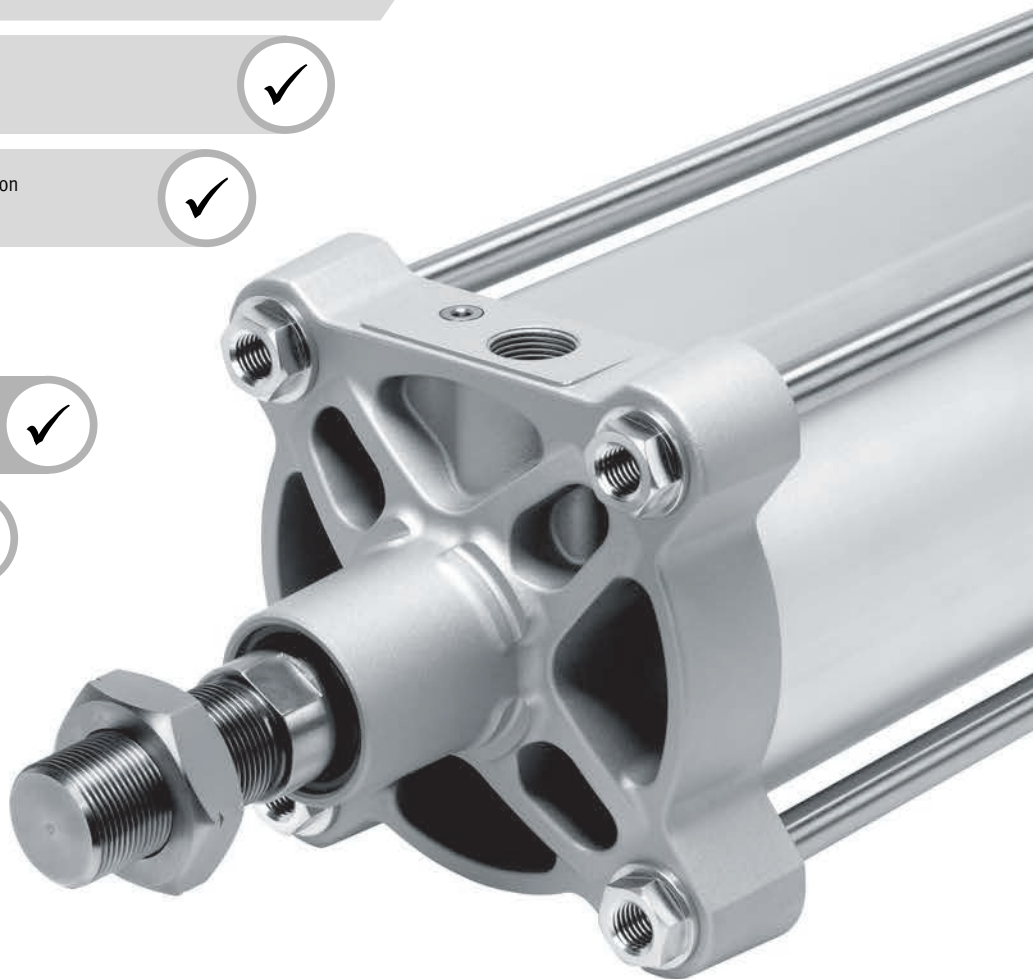
 Additional information, support and user documentation
→ www.festo.com/sp/dsbg



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + ISO 15552 (ISO 6431, VDMA 24562)
- + Sturdy tie rod design
- + For contactless position sensing
- + Comprehensive range of accessories for just about every type of installation
- + Optionally without sensing and without pneumatic end-position cushioning (price advantage)

Standards-based cylinders DSBG, to ISO 15552

Product range overview – Piston Ø 160 ... 320

Type/function	PistonØ [mm]	Stroke [mm]	Force [N]	Product options					
				V	T	P	PPV	A	N3
DSBG									
Double-acting	160	1 ... 2700	12064	■	■	■	■	■	■
	200	1 ... 2700	18850	■	■	■	■	■	■
	250	1 ... 2250	29452	–	■	■	■	■	■
	320	1 ... 2250	48255	–	■	■	■	■	■

Type/function	PistonØ [mm]	Product options						
		T1	T4	...Y	...I	B1	B2	B3
DSBG								
Double-acting	160	■	■	–	■	■	■	■
	200	■	■	–	■	■	■	■
	250	■	–	■	■	■	■	■
	320	■	–	■	■	■	■	■

Product options

V With central swivel mounting
 T Through piston rod
 F Piston rod thread type
 P Elastic cushioning rings/plates at both ends
 PPV Pneumatic cushioning, adjustable at both ends

A Position sensing
 N3 Standard conforms to ISO 15552
 R3 High corrosion protection
 T1 Heat-resistant seals up to max. 120 °C
 T4 Heat-resistant seals up to max. 150 °C
 A6 Metal scraper
 EX4 EU certification (II 2GD)

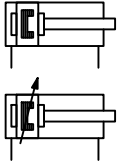
...Y Trunnion flange mounting position (positive-locking)
 ...E Piston rod extension
 ...L Piston rod thread extension
 ...S Piston rod thread shortening
 M... Piston rod thread version

B1 Integrated stud bolts at both ends
 B2 Integrated stud bolts on bearing cap
 B3 Integrated stud bolts on end cap
 ...LB2 Thread length of spacer bolts on bearing cap
 ...LB3 Thread length of spacer bolts on end cap

Standards-based cylinders DSBG, to ISO 15552

01

Data sheet – Piston Ø 160 ... 320



Pneumatic drives

Technical data		Dimensions → Page 94			
Piston Ø		160	200	250	320
Pneumatic connection		G3/4	G3/4	G1	G1
Stroke ¹⁾					
DSBG-...	[mm]	1 ... 2700		1 ... 2250	
DSBG-...-E	[mm]	1 ... 2000			
Cushioning					
DSBG-...-P		Elastic cushioning rings/plates at both ends			
DSBG-...-PPV		Pneumatic cushioning, adjustable at both ends			
Cushioning length	[mm]	48		55	65
Theoretical force at 6 bar, advancing	[N]	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	[N]	11310	18096	28274	46385
Max. impact energy in the end positions					
DSBG-...	[J]	3.3	4.8	7.2	12.6
DSBG-...-T1/-T4	[J]	2.3	4	4.2	6

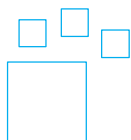
1) In combination with the position sensing option, the minimum stroke is 10 mm.

Operating conditions	
Operating pressure	[bar] 0.6 ... 10
Ambient temperature ²⁾	
DSBG-...	[°C] -20 ... +80
DSBG-...-T1	[°C] 0 ... +120
DSBG-...-T4	[°C] 0 ... +150

2) Note operating range of proximity sensors

Materials	
Piston rod	High-alloy steel
Bearing cap	Coated die-cast aluminium/cast aluminium
Cylinder barrel	Anodised wrought aluminium alloy
End cap	Coated die-cast aluminium/cast aluminium
Seals	TPE-U (PU), NBR

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or

→ www.festo.com/catalogue/...

Enter the type code in the search field.

Standards-based cylinders DSBG, to ISO 15552

Order code – Piston Ø 160 ... 320

01

DSBG		
Type		
DSBG	Standards-based cylinder, double-acting	
Central swivel mounting		
–	Without	
V	Centrally clamped [1]	
Piston Ø [mm]		
	Stroke [mm]	
160, 200	25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	1 ... 2700
250, 320	–	1 ... 2250
Piston rod		
–	Piston rod at one end	
T	Through piston rod	
Cushioning		
P	Elastic cushioning rings/plates at both ends	
PPV	Pneumatic cushioning, adjustable at both ends	
Position sensing		
A	Via proximity sensor [4]	
Standard		
N3	Conforms to ISO 15552	
Temperature range		
–	Standard	
T1	0 ... +120°C	
T4	0 ... +150°C [1]	
Trunnion flange mounting position		
–	Without	
...Y	Positive-locking screw connection [2][3][6]	
Piston rod extension		
–	Without	
...E	1 ... 500 mm [5]	
Integrated stud bolts		
–	Without	
B1	At both ends	
B2	On bearing cap	
B3	On end cap	

[1] Only for piston Ø 160, 200

[2] Only for piston Ø 250

[3] Only for piston Ø 320

[4] Minimum stroke 10 mm

[5] Only up to strokes of 2000 mm

[6] Piston Ø 250: 198 ... 2459 mm
Piston Ø 320: 226 ... 2483 mm**Order example:**

DSBG-160-500-PPVA-N3T1-M36-B2

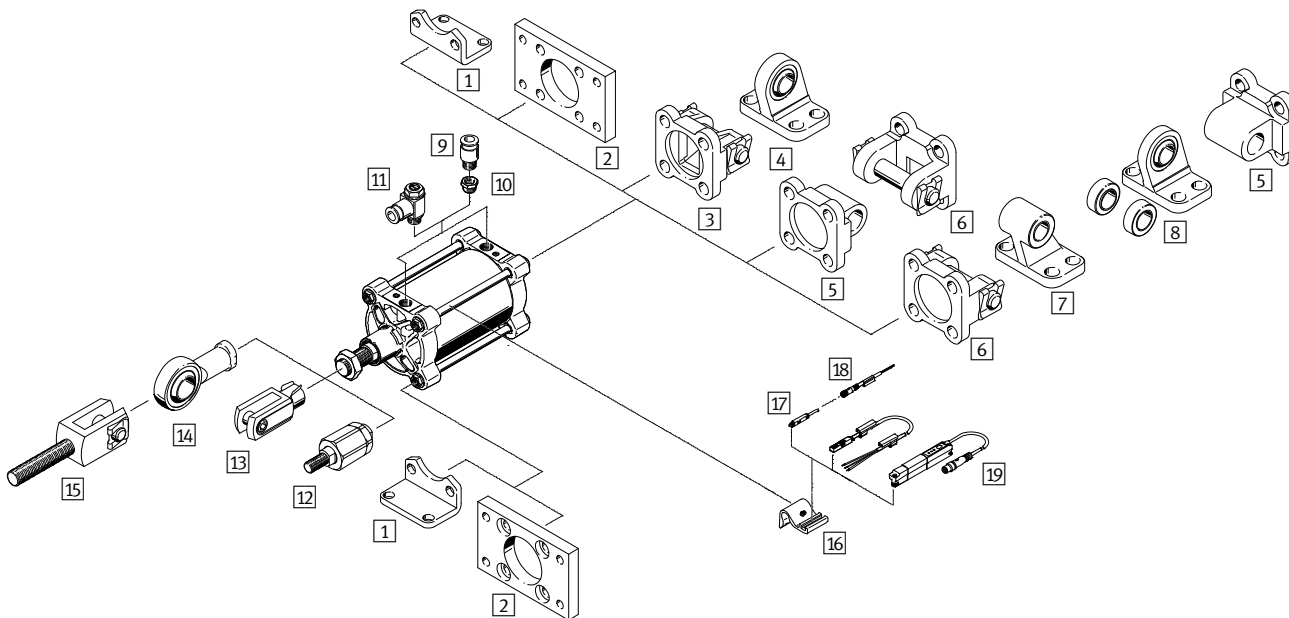
Double-acting standards-based cylinder - without central swivel mounting - piston diameter 160 mm - stroke 500 mm - piston rod at one end - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - conforms to standard ISO 15552 - heat resistant up to max. 120 °C - without trunnion flange mounting position - without piston rod extension - with piston rod thread M36 - with integrated stud bolts on bearing cap

Cylinders with piston rod > Standards-based cylinders >

Standards-based cylinders DSBG, to ISO 15552

01 Accessories – Piston Ø 160 ... 320

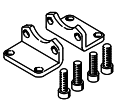
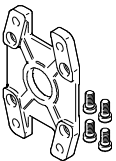
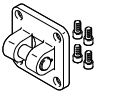
Pneumatic drives

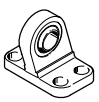
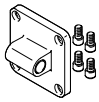
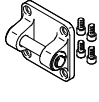


	For Ø	→ Page/online
1	Foot mounting HNG	160 ... 320 92
2	Flange mounting FNG	160 ... 320 92
3	Swivel flange SNG	160, 200 92
4	Clevis foot LSNG	160, 200 92
5	Swivel flange SNGL	160, 200 92
6	Swivel flange SNGB	160 ... 320 92
7	Clevis foot LN/LNG	160 ... 320 93
8	Clevis foot LSN	160 ... 320 93
9	Push-in fitting QS	160, 200 1443
10	Reducing nipple NPFC	160, 200 93
	Reducing nipple D	250, 320 93
11	One-way flow control valve GRLA	160, 200 1031

	For Ø	→ Page/online
12	Self-aligning rod coupler FK	160, 200 93
13	Rod clevis SG	160 ... 320 93
14	Rod eye SGS	160 ... 320 93
15	Rod clevis SGA	160, 200 93
16	Sensor bracket DASP	160 ... 320 93
17	Proximity sensor SME/SMT-8M	160 ... 320 93
18	Connecting cable NEBU	160 ... 320 93
19	Position transmitter SMAT-8M/SDAT	160, 200 dsbg
-	Trunnion support LNZG	160 ... 320 92

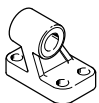
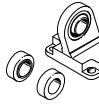


Accessories – Ordering data – Piston Ø 160 ... 320





	For Ø	Part no.	Type
1 Foot mounting 	Dimensions online: → dsbg		
	160	34476	HNG-160
	200	34477	HNG-200
	250	157510	HNG-250
	320	157511	HNG-320
2 Flange mounting 	Dimensions online: → dsbg		
	160	34478	FNG-160
	200	34479	FNG-200
	250	157508	FNG-250
	320	157509	FNG-320
3 Swivel flange 	Dimensions online: → dsbg		
	160	152597	SNG-160
	200	152598	SNG-200





	For Ø	Part no.	Type
4 Clevis foot 	Dimensions online: → lsng		
	160	152599	LSNG-160
	200	152600	LSNG-200
5 Swivel flange 	Data sheets online: → dsbg		
	160	151534	SNGL-160
	200	151535	SNGL-200
6 Swivel flange 	Dimensions online: → dsbg		
	160	34547	SNGB-160
	200	562455	SNGB-200-B
	250	157512	SNGB-250
	320	157513	SNGB-320



Standards-based cylinders DSBG, to ISO 15552

Accessories – Ordering data – Piston Ø 160 ... 320

	For Ø	Part no.	Type
7 Clevis foot Dimensions online: → ln			
	160	9037	LN-160
	200	33898	LNG-200
	250	9039	LN-250
	320	9040	LN-320
8 Clevis foot Data sheets online: → lsn			
	160	6988	LSN-160
	200	6989	LSN-200
	250	6990	LSN-250
	320	6991	LSN-320
10 Reducing nipple Data sheets online: → npfc			
	160, 200	8030313	NPFC-R-G34-G12-MF
	250, 320	197634	D-1/2I-1A
12 Self-aligning rod coupler Data sheets online: → fk			
	160, 200	10746	FK-M36x2

	For Ø	Part no.	Type
13 Rod clevis Data sheets online: → sg			
	160, 200	9581	SG-M36x2
	250	9582	SG-M42x2
	320	9583	SG-M48x2
14 Rod eye Data sheets online: → sgs			
	160, 200	10775	SGS-M36x2
	250	10776	SGS-M42x2
	320	10777	SGS-M48x2
15 Rod clevis Data sheets online: → sga			
	160, 200	10771	SGA-M36x2
16 Sensor bracket for proximity sensor SME/SMT-8 Data sheets online: → dsbg			
	160, 200	155813	DASP-M4-125-A
	250	1456781	DASP-M4-250-A
	320	3015256	DASP-M4-320-A

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
17 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	160 ... 320	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	160 ... 320	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	160 ... 320	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1201					
	160 ... 320	Contacting, cable	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE

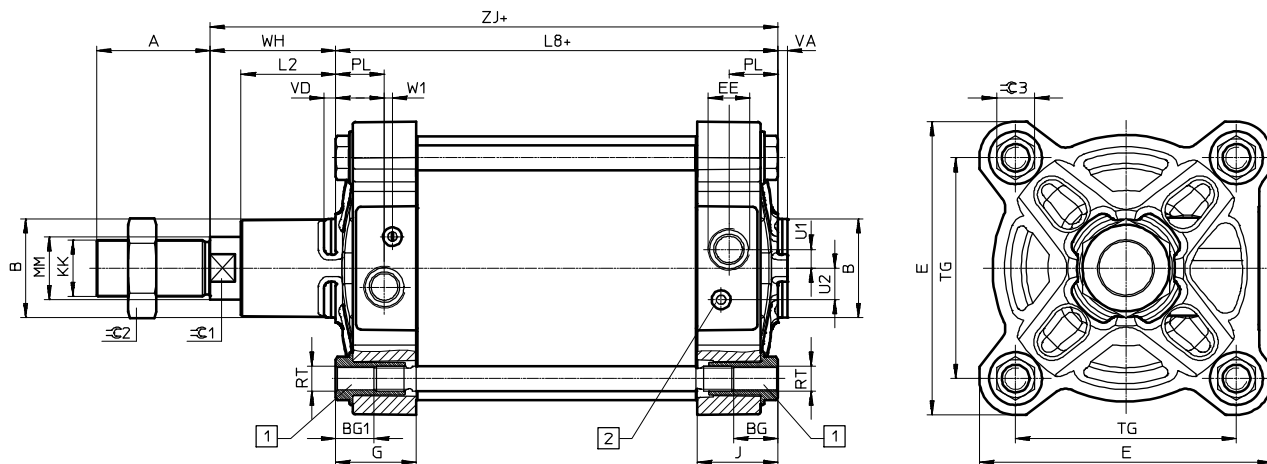
	For Ø	Connection	Cable length [m]	Part no.	Type
18 Connecting cable, straight socket Data sheets → Page 1543					
	160 ... 320	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Connecting cable, angled socket Data sheets → Page 1543					
	160 ... 320	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

Cylinders with piston rod > Standards-based cylinders >

Standards-based cylinders DSBG, to ISO 15552

01 Dimensions – Piston Ø 160 ... 320

Basic design

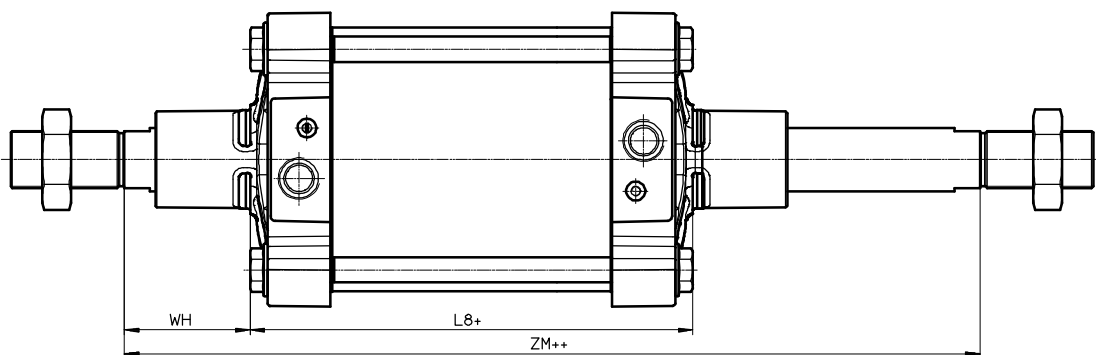


+ = plus stroke length

1 Socket head screw with female thread for mounting components

2 Regulating screw for adjustable end-position cushioning (PPV)

T – Through piston rod



+ = plus stroke length

++ = plus 2x stroke length

∅	A	B	BG	BG1	I	EE	G	J
[mm]	-0.5	∅ d11	min.	±0.5	±0.5			
160	72	65	24	25	186	G3/4	50.7	50.7
200	72	75	24	25	230	G3/4	46.9	46.7
250	84	90	25	26	284	G1	51.2	51.2
320	96	110	28	29	347	G1	58.2	58.2

∅	KK	L2	L8	MM	PL	RT	TG	U1	U2
[mm]							±1.1		
160	M36x2	60	180±1	40	31	M16	140	12	20
200	M36x2	70	180±1.2	40	30	M16	175	12	20
250	M42x2	80	200±1.6	50	32	M20	220	25	25
320	M48x2	90	220±2.2	63	37.5	M24	270	25	25

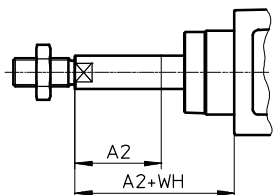
∅	VA	VD	W1	WH	ZJ	ZM	∅C1	∅C2	∅C3
[mm]	-1				±1				
160	6	7	5	80±1.3	260	342±1	36	55	24 _{h13}
200	6	6.5	5	95±1.4	275	372±1.2	36	55	24 _{h13}
250	10	13.7	3	105±1.5	305	410±1.6	46	65	41 _{h14}
320	10	10.7	1.5	120±1.5	340	462±1	55	75	50 _{h14}

Pneumatic drives

Standards-based cylinders DSBG, to ISO 15552

Dimensions – Piston \varnothing 160 ... 320

...E – Piston rod extension

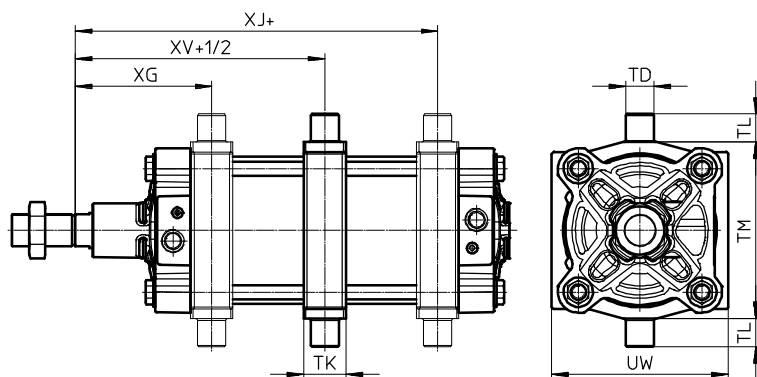


Note

Piston rod extension at one end in combination with variant T.

\varnothing [mm]	A2		WH
	min.	max.	
160	1	500	80 \pm 1.3
200	1	500	95 \pm 1.4
250	1	500	105 \pm 1.5
320	1	500	120 \pm 1.5

V – Central swivel mounting



Note

The swivel mounting is mounted centrally on delivery but can be moved at any time.

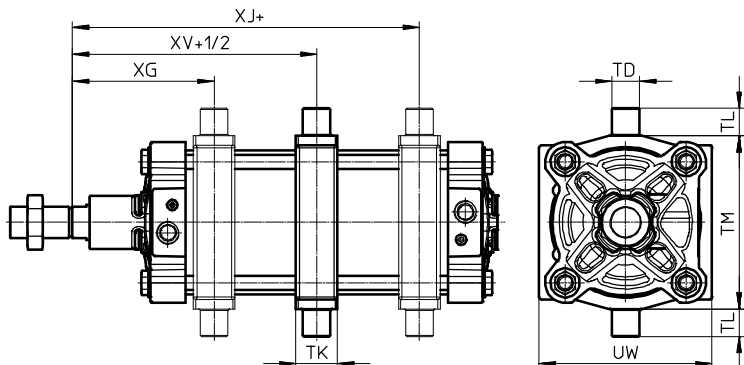
+ = plus stroke length
+1/2 = plus half stroke length

\varnothing [mm]	TD \varnothing e8	TK	TL	TM	UW	XG	XJ	XV
160	32	48	32	200	200	157.5	182.5	170
200	32	48	32	250	240	169	200.5	185

Standards-based cylinders DSBG, to ISO 15552

01 Dimensions – Piston Ø 160 ... 320

...Y – Trunnion flange mounting position

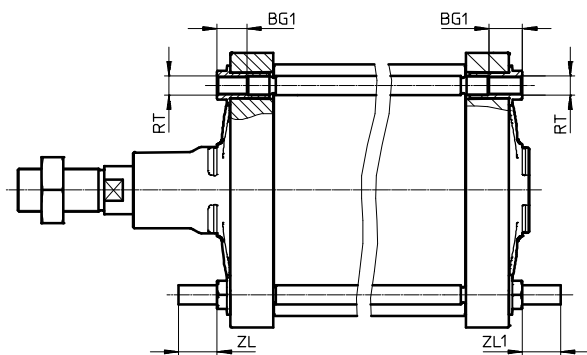


Note
 The dimensions for the trunnion flange mounting position (...Y) refer to the basic design without piston rod extension.
 The swivel mounting has a positive-locking screw connection. This means that the position cannot be changed at a later date.

+ = plus stroke length
 +1/2 = plus half stroke length

Ø	TD	TK	TL	TM	UW	XG	XJ	XV
[mm]	Ø e8		h14	h14		±2.4	±2.4	±2.4
250	40	60	40	320	319	198	209	205
320	50	70	50	400	385	226	233	230

B1/B2/B3 – Integrated stud bolt



Ø	BG	BG1	RT	ZL	ZL1 ¹⁾
[mm]		±0.5		±0.5	
160	24	25	M16	32	32
200	24	25	M16	32	32
250	25	26	M20	40	40
320	28	29	M24	50	50

1) Tolerances depending on variant:
 B1: ZL1 = +1/-2; B3: ZL1 = ±0.5

Pneumatic drives



Save time and money during maintenance and commissioning

- + Thanks to easy-to-clean clean design
- + Thanks to increased corrosion protection
- + With self-adjusting end-position cushioning PPS

Cylinders with piston rod > Standards-based cylinders >
Standards-based cylinders,
to ISO 15552, clean design

DSBF-C

Cylinders with piston rod > Standards-based cylinders >

Standards-based cylinders, to ISO 15552, clean design


DSBF-C

 Overview, configuration and ordering
→ www.festo.com/catalogue/dsbf




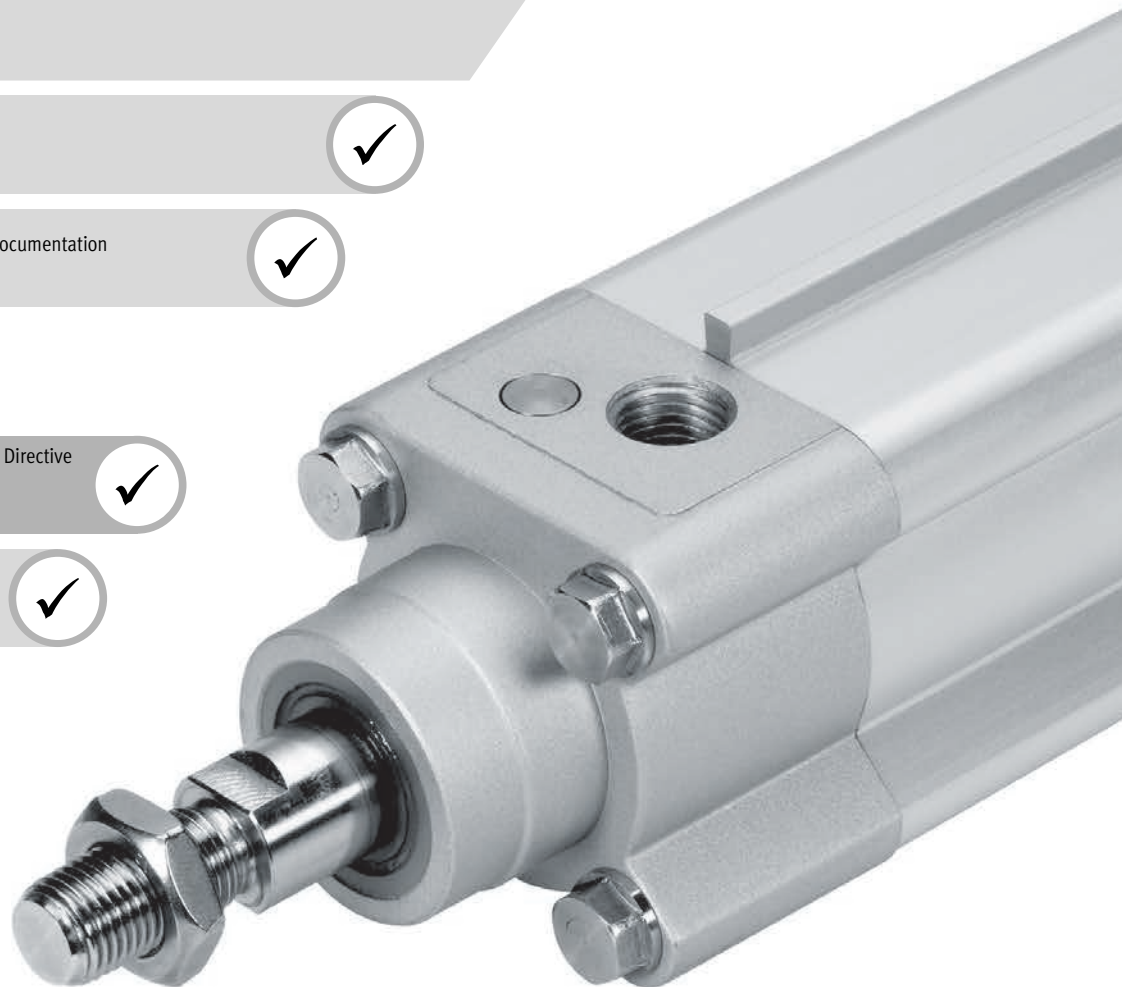
 Additional information, support and user documentation
→ www.festo.com/sp/dsbf



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + ISO 15552 with increased corrosion protection
- + Resistant to conventional cleaning agents
- + FDA-approved lubrication and sealing on the basic variant
- + Hygienic mounting of the sensors possible
- + With self-adjusting pneumatic end-position cushioning PPS
- + Optional dry-running seal for long service life, even with frequent cleaning

Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options												
				T	F	P	PPV	PPS	N3	T1	T3	T4	A3	...E	R	
DSBF-C																
Double-acting	32, 40, 50, 63, 80, 100, 125	1 ... 2800	483 ... 7363	■	■	■	■	■	■	■	■	■	■	■	■	■

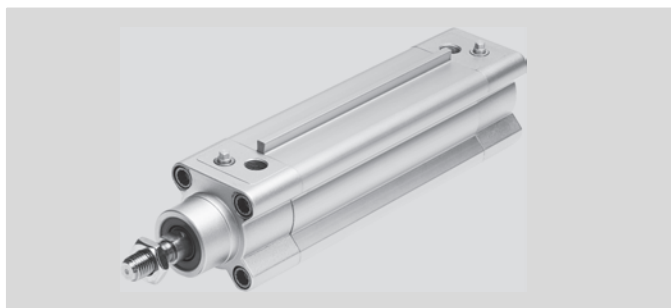
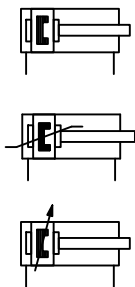
Product options

L	Low friction	P	Elastic cushioning rings/plates at both ends	T1	Heat-resistant seals up to max. 120 °C	A3	Suitable for unlubricated operation
U	Uniform, slow movement	PPS	Pneumatic cushioning, self-adjusting at both ends	T3	Low temperature	EX4	EU certification (II 2GD)
T	Through piston rod	PPV	Pneumatic cushioning, adjustable at both ends	T4	Heat-resistant seals up to max. 150 °C	...E	Piston rod extension
F	Female piston rod thread	A	Position sensing	A1	Increased chemical resistance	...L	Piston rod thread extension
		N3	Standard conforms to ISO 15552	A2	Hard scraper	R	Mounting rail for sensors

Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

01

Data sheet



Pneumatic drives

Technical data		Dimensions → Page 105						
Piston Ø		32	40	50	63	80	100	125
Pneumatic connection		G1/8	G1/4	1/4	G3/8	G3/8	G1/2	G1/2
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2
Stroke								
DSBF-...	[mm]	1 ... 2800						
DSBF-...-E	[mm]	1 ... 2000						
Cushioning								
DSBF-...-P		Elastic cushioning rings/plates at both ends						
DSBF-...-PPS		Pneumatic cushioning, self-adjusting at both ends						
DSBF-...-PPV		Pneumatic cushioning, adjustable at both ends						
Cushioning length	PPV [mm]	17	19	22	22	31	31	45
Min. stroke with position sensing ¹⁾	[mm]	18	17	13	10	10	10	10
Theoretical force at 6 bar, advancing	[N]	483	754	1178	1870	3016	4712	7363
Theoretical force at 6 bar, retracting	[N]	415	633	990	1682	2721	4418	6881
Max. impact energy in the end positions								
DSBF-...	[J]	0.4	0.7	1.0	1.3	1.8	2.5	3.3
DSBF-...-T1/T3/T4	[J]	0.2	0.35	0.5	0.65	0.9	1.25	1.65

1) Values apply to proximity sensor SMT-C1, the minimum stroke for proximity sensor CRSMT-8M is 10 mm.

Operating conditions		Piston Ø						
Piston Ø		32	40	50	63	80	100	125
Operating pressure								
DSBF-...	[bar]	0.6 ... 12			0.4 ... 12			0.2 ... 10
DSBF-...-T3	[bar]	1 ... 12						1 ... 10
DSBF-...-A3	[bar]	1.5 ... 12		1 ... 12	0.6 ... 12		0.6 ... 10	
Ambient temperature ²⁾								
DSBF-...	[°C]	-20 ... +80						
DSBF-...-T1	[°C]	0 ... +120						
DSBF-...-T3	[°C]	-40 ... +80						
DSBF-...-T4	[°C]	0 ... +150						

2) Note operating range of proximity sensors

Materials	
Piston rod	High-alloy stainless steel
Bearing cap	Coated die-cast aluminium
Cylinder barrel	Anodised wrought aluminium alloy
End cap	Coated die-cast aluminium
Seals	NBR, PUR

Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

Order code

DSBF - C - - - - - A - N3 - - - R	
Type	
DSBF	Standards-based cylinder
Version	
C	Easy-to-clean design
Piston Ø [mm]	
	Stroke [mm]
32, 40, 50, 63, 80, 100, 125	25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
	1 ... 2800
Piston rod	
-	Piston rod at one end
T	Through piston rod
Piston rod thread type	
-	Male thread
F	Female thread
Cushioning	
P	Elastic cushioning rings/plates at both ends
PPS	Pneumatic cushioning, self-adjusting at both ends ^[1]
PPV	Pneumatic cushioning, adjustable at both ends
Position sensing	
A	Via proximity sensor
Standard	
N3	Conforms to ISO 15552
Temperature range	
-	Standard
T1	Heat resistant up to max. 120 °C ^[2]
T3	Low temperature ^[2]
T4	Heat resistant up to max. 150 °C ^[2]
Wiper ring variant	
-	None
A3	Suitable for unlubricated operation
Piston rod extension	
...E	1 ... 500 mm ^[3]
Sensor mounting	
R	Mounting rail for sensors

^[1] Not with temperature range T1, T3, T4

^[2] Not with wiper seal variant A3

^[3] Only up to strokes of 2000 mm

Order example:

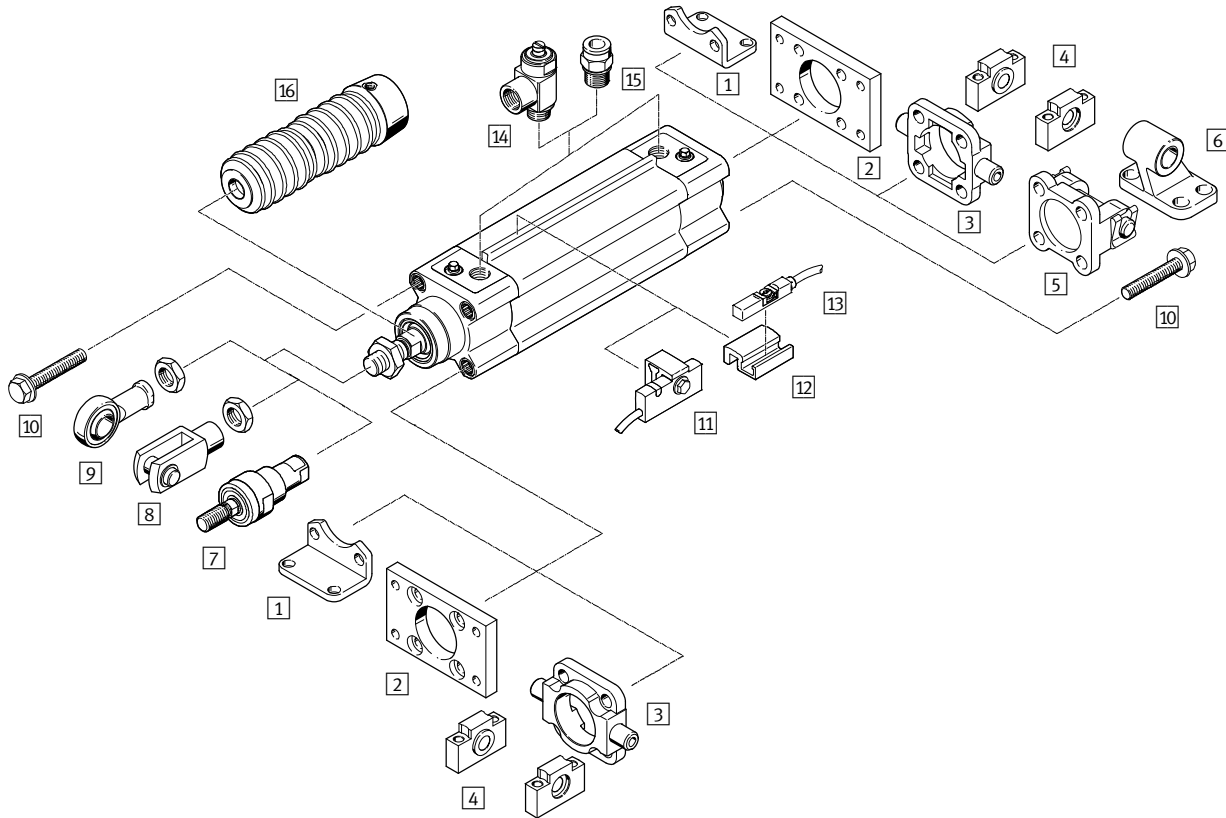
DSBF-C-32-500-PPVA-N3T1-200E-R

Standards-based cylinder - easy-to-clean design - piston diameter 32 mm - stroke 500 mm - piston rod at one end - male thread - pneumatic cushioning, self-adjusting at both ends - position sensing via proximity sensor - standard conforms to ISO 15552 - heat resistant up to max. 120 °C - no wiper seal variant - piston rod extension 200 mm - mounting rail for sensors

Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

01 Accessories

Pneumatic drives

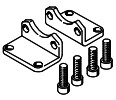

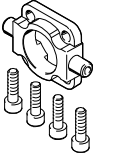
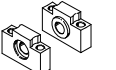
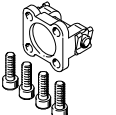








	→ Page/online
1 Foot mounting CRHNC	103
2 Flange mounting CRFNG	103
3 Trunnion flange CRZNG	103
4 Trunnion support CRLNZG	103
5 Swivel flange SNCB- ... -R3	103
6 Clevis foot CRLNG	103
7 Self-aligning rod coupler CRFK	103
8 Rod clevis CRSG	103

	→ Page/online
9 Rod eye CRSGS	103
10 Blanking screw DAMD	103
11 Proximity sensor SMT-C1	104
12 Mounting kit SMB-8-C	104
13 Proximity sensor CRSMT-8M	104
14 One-way flow control valve CRGRLA	104
15 Push-in fitting NPQH/CRQS/CRQSL	dsbf
16 Bellows kit DADB	dsbf

Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

Accessories – Ordering data

	For Ø	Part no.	Type
1 Foot mounting Dimensions online: → dsbf			
	32	176937	CRHNC-32
	40	176938	CRHNC-40
	50	176939	CRHNC-50
	63	176940	CRHNC-63
	80	176941	CRHNC-80
	100	176942	CRHNC-100
	125	176943	CRHNC-125
2 Flange mounting Dimensions online: → dsbf			
	32	161846	CRFNG-32
	40	161847	CRFNG-40
	50	161848	CRFNG-50
	63	161849	CRFNG-63
	80	161850	CRFNG-80
	100	161851	CRFNG-100
	125	185363	CRFNG-125
3 Trunnion flange Dimensions online: → dsbf			
	32	161852	CRZNG-32
	40	161853	CRZNG-40
	50	161854	CRZNG-50
	63	161855	CRZNG-63
	80	161856	CRZNG-80
	100	161857	CRZNG-100
	125	185362	CRZNG-125
4 Trunnion support Dimensions online: → crlnzc			
	32	161874	CRLNZG-32
	40, 50	161875	CRLNZG-40/50
	63, 80	161876	CRLNZG-63/80
	100, 125	161877	CRLNZG-100/125
5 Swivel flange Dimensions online: → dsbf			
	32	176944	SNCB-32-R3
	40	176945	SNCB-40-R3
	50	176946	SNCB-50-R3
	63	176947	SNCB-63-R3
	80	176948	SNCB-80-R3
	100	176949	SNCB-100-R3
	125	176950	SNCB-125-R3

	For Ø	Part no.	Type
6 Clevis foot Data sheets online: → crlng			
	32	161840	CRLNG-32
	40	161841	CRLNG-40
	50	161842	CRLNG-50
	63	161843	CRLNG-63
	80	161844	CRLNG-80
	100	161845	CRLNG-100
	125	176951	CRLNG-125
7 Self-aligning rod coupler Data sheets online: → crfk			
	32	2305778	CRFK-M10x1,25
	40	2305779	CRFK-M12x1,25
	50, 63	2490673	CRFK-M16x1,5
	80, 100	2545677	CRFK-M20x1,5
8 Rod clevis Data sheets online: → crrsg			
	32	13569	CRSG-M10x1,25
	40	13570	CRSG-M12x1,25
	50, 63	13571	CRSG-M16x1,5
	80, 100	13572	CRSG-M20x1,5
	125	185361	CRSG-M27x2
9 Rod eye Data sheets online: → crsgs			
	32	195582	CRSGS-M10x1,25
	40	195583	CRSGS-M12x1,25
	50, 63	195584	CRSGS-M16x1,5
	80, 100	195585	CRSGS-M20x1,5
	125	195586	CRSGS-M27x2
10 Blanking screw¹⁾			
	32, 40	1355016	DAMD-PS-M6-12-R1
	50, 63	650121	DAMD-PS-M8-16-R1
	80, 100	1355026	DAMD-PS-M10-16-R1

1) Packaging unit 4 pieces.


Cylinders with piston rod > Standards-based cylinders >


Standards-based cylinders DSBF-C, to ISO 15552, Clean Design


01


Accessories – Ordering data


Pneumatic drives


	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
11 Proximity sensor, magneto-resistive – N/O contact Data sheets online: → smt					
	32 ... 125	PNP, cable	5.0	571339	SMT-C1-PS-24V-K-5,0-OE
		PNP, plug	0.3	571342	SMT-C1-PS-24V-K-0,3-M8D
		PNP, plug	0.3	571341	SMT-C1-PS-24V-K-0,3-M12

	For Ø	Connection	Cable length [m]	Part no.	Type
12 Mounting kit Data sheets online: → dsbf					
	32 ... 125	For CRSMT-8M	–	1806790	SMB-8-C

	For Ø	Connection	Cable length [m]	Part no.	Type
13 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → crsmt-8m					
	32 ... 125	PNP, cable	5.0	574380	CRSMT-8M-PS-24V-K-5,0-OE
		PNP, cable	10.0	574381	CRSMT-8M-PS-24V-K-10,0-OE
		PNP, plug	0.3	574383	CRSMT-8M-PS-24V-K-0,3-M8D
		PNP, plug	0.3	574382	CRSMT-8M-PS-24V-K-0,3-M12

	For Ø	Connection	Cable length [m]	Part no.	Type
13 Connecting cable, straight socket Data sheets → Page 1543					
	32 ... 125	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3

	For Ø	Connection	Cable length [m]	Part no.	Type
Angled socket Data sheets → Page 1543					
	32 ... 125	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

	For Ø	Connection	Part no.	Type
		Thread		
14 One-way flow control valve with slotted head screw, stainless steel for exhaust air flow control Data sheets online: → grla				
	32	G1/8	161404	CRGRLA-1/8-B
	40, 50	G1/4	161405	CRGRLA-1/4-B
	63, 80	G3/8	161406	CRGRLA-3/8-B
	100	G1/2	161407	CRGRLA-1/2-B

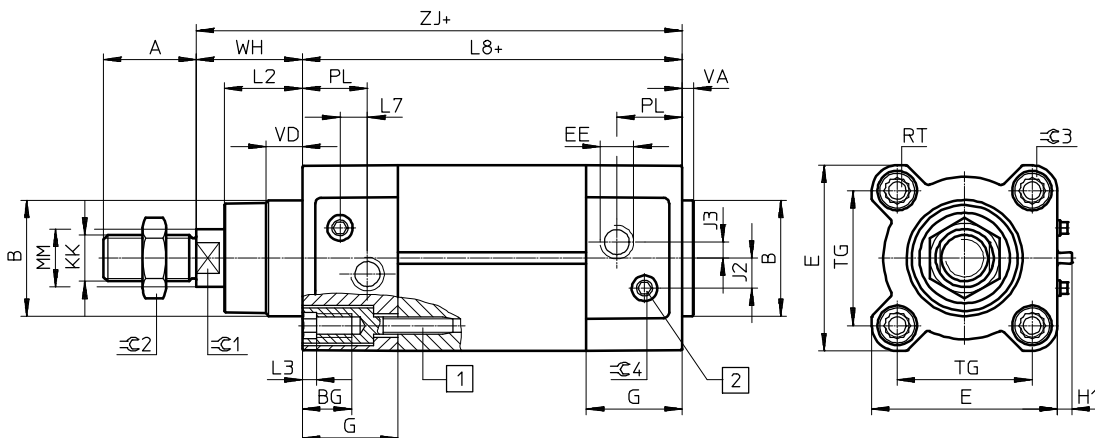
Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

Dimensions

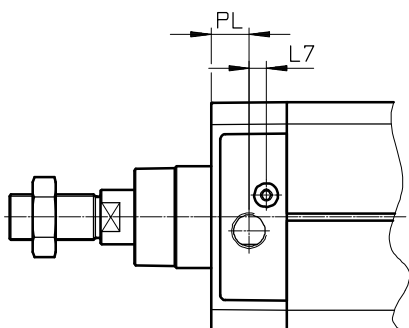
Download CAD data → www.festo.com

01

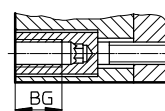
Basic design and A3 – Unlubricated operation



Ø 125



Ø 80 ... 125



+ = plus stroke length

1 Socket head screw with female thread for mounting components

2 Regulating screw for adjustable end-position cushioning

Pneumatic drives

Ø	A	B	BG	E	EE	G	H1	J2	J3
[mm]	-0.5	Ø d11	min.	+0.5		-0.2	±0.2	±0.1	±0.1
32	22	30	16	45	G1/8	28	5	5.7	5.3
40	24	35	16	54	G1/4	33	5	8	4
50	32	40	16	64	G1/4	33	5	10.4	5.5
63	32	45	16	75	G3/8	40.5	5	12.8	6.3
80	40	45	17	93	G3/8	43	5	12.5	8
100	40	55	17	110	G1/2	48	5	13.5	10
125	54	60	20	136	G1/2	44.7	5	13	8

Ø	KK	L2	L3	L7	L8	MM	PL	RT	TG
[mm]			max.		±0.4	Ø	±0.1		±0.3
32	M10x1.25	18 _{-0.2}	5	6.5	94	12	19.5	M6	32.5
40	M12x1.25	21.3 _{-0.2}	5	7.5	105	16	22.5	M6	38
50	M16x1.5	26.8 _{-0.2}	5	9.5	106	20	22.5	M8	46.5
63	M16x1.5	27 _{-0.2}	5	9	121	20	27.5	M8	56.5
80	M20x1.5	34.2 _{-0.2}	-	11	128	25	30	M10	72
100	M20x1.5	38 _{-0.2}	-	7.5	138	25	31.5	M10	89
125	M27x2	45.5 _{-0.3}	-	10	160	32	22.5	M12	110

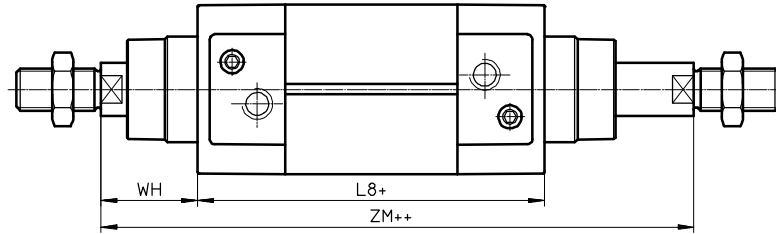
Ø	VA	VD	WH	ZJ	≡C1	≡C2	≡C3	≡C4
[mm]		+0.5	+2.2	+1.8				
32	4 _{-0.2}	10	25	119.1	10	16	6	4
40	4 _{-0.2}	10.5	28.7	133.9	13	18	6	4
50	4 _{-0.2}	11.5	35.6	141.8	17	24	8	4
63	4 _{-0.2}	15	35.9	157.1	17	24	8	4
80	4 _{-0.2}	15.7	45.4	173.6	22	30	6	4
100	4 _{-0.2}	19.2	49.3	187.5	22	30	6	5
125	6 _{-0.3}	20.5	64.1	225	27	41	8	5

Standards-based cylinders DSBF-C, to ISO 15552, Clean Design

01

Dimensions

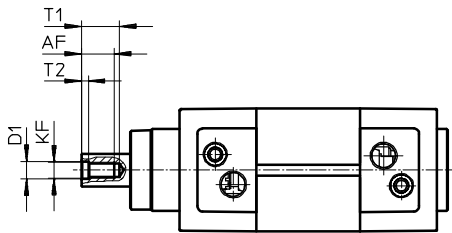
T – Through piston rod



Download CAD data → www.festo.com

+ = plus stroke length
++ = plus 2x stroke length

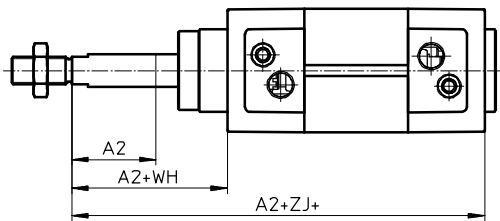
F – Piston rod with female thread



Note

In combination with variant T, the piston rod has female threads at both ends.

...E – Piston rod extension



Note

Piston rod extension at one end in combination with variant T.

+ = plus stroke length

∅ [mm]	A2 max.	AF	D1	KF	L8 ±0.4
32	500	12	6.4 ^{+0.2}	M6	94
40		12	8.4 ^{+0.2}	M8	105
50		16	10.5 ^{+0.2}	M10	106
63		16	10.5 ^{+0.2}	M10	121
80		20	13 ^{+0.1}	M12	128
100		20	13 ^{+0.1}	M12	138
125		32	17 ^{+0.1}	M16	160

∅ [mm]	T1	T2 +0.2	WH +2.2	ZJ +1.8	ZM +1
32	16	2.6	26	119.1	146.1
40	16	3.3	28.7	133.9	164.8
50	21	4.7	35.6	141.8	179.8
63	21	4.7	35.9	157.1	195.4
80	26.5	6.1	45.4	173.6	221
100	26.5	6.1	49.3	187.5	238.8
125	40	8	65	225	290

Pneumatic drives



DSNU
Double-acting



ESNU
Single-acting

Save time and money during commissioning

- + Thanks to standardised interfaces to ISO 6432 for piston diameter 8 ... 25 mm
- + With standardised mounting accessories
- + With self-adjusting pneumatic end-position cushioning PPS

Cylinders with piston rod > Standards-based cylinders > Round cylinders

DSNU ★

Double-acting

ESNU

Single-acting

Cylinders with piston rod > Standards-based cylinders >

Round cylinders


DSNU  /ESNU

 Overview, configuration and ordering
→ www.festo.com/catalogue/dsnu



 Additional information, support and user documentation
→ www.festo.com/sp/dsnu



 Quick ordering of basic designs
→ page 112



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



- + ISO 6432 (piston diameter 8 ... 25 mm)
- + With self-adjusting pneumatic end-position cushioning PPS
- + For position sensing
- + Wide range of variants
- + Good running performance and long service life
- + Piston rod with female or male thread
- + Comprehensive range of accessories for just about every type of installation

Product range overview

Type/function	Version	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options								→ Page/ online	
					P	PPV	PPS	A	Q	S2	K8	S6		
Double-acting	DSNU													
	Basic design to ISO 6432	8, 10, 12, 16, 20, 25	1 ... 500	30 ... 295	■	■	■	■	■	■	■	■	■	110
	Basic design	32, 40, 50, 63	1 ... 500	483 ... 1870	■	■	■	■	■	■	■	■	■	110
	MQ – Plain end cap, lateral connection	8, 10, 12, 16, 20, 25, 32, 40, 50, 63	1 ... 500	30 ... 1870	■	■	■	■	■	–	■	■	■	110
	MA – Plain end cap, axial connection				■	–	–	■	■	–	■	■	■	dsnu
MH – Direct mounting				■	■	–	■	■	–	■	■	■		
Single-acting	ESNU													
	Basic design to ISO 6432	8, 10, 12, 16, 20, 25	1 ... 50	24 ... 270	■	–	–	■	–	–	■	–	■	116
	Basic design	32, 40, 50, 63	1 ... 50	442 ... 1763	■	–	–	■	–	–	■	–	■	116
	MA – Plain end cap, axial connection	8, 10, 12, 16, 20, 25	1 ... 50	24 ... 1763	■	–	–	■	–	–	■	–	■	esnu

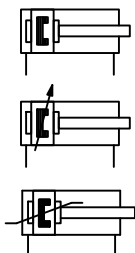
Product options

P	Elastic cushioning rings/plates at both ends	MQ	Alternative plain cylinder end cap, lateral connection	S2	Through piston rod	K5	Special piston rod thread
PPV	Pneumatic cushioning, adjustable at both ends	MA	Alternative plain cylinder end cap, axial connection	KP	With clamping unit	K6	Shortened male piston rod thread
PPS	Pneumatic cushioning, self-adjusting at both ends	MH	Alternative cylinder end cap, direct mounting	K8	Extended piston rod	S10	Slow speed
A	Position sensing	Q	With protection against rotation	S6	Heat-resistant seals up to max. 120 °C	S11	Low friction
				K2	Extended male piston rod thread	R3	High corrosion protection
				K3	Female piston rod thread	R8	Wiper ring
						A6	Metal scraper

Round cylinders DSNU ★

01

Data sheet – Double-acting



Pneumatic drives

Technical data											Dimensions → Page 122	
Piston Ø	8	10	12	16	20	25	32	40	50	63		
Conforms to standard	ISO 6432										–	
Pneumatic connection	M5	M5	M5	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8		
Piston rod end	Male thread											
Piston rod thread	M4	M4	M6	M6	M8	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5		
Stroke ¹⁾	[mm] 1 ... 100		1 ... 200		1 ... 320		1 ... 500					
Cushioning												
DSNU-...-P	Elastic cushioning rings/plates at both ends											
DSNU-...-PPV	–		Pneumatic cushioning, adjustable at both ends									
DSNU-...-PPS	–		Pneumatic cushioning, self-adjusting at both ends									
Cushioning length												
DSNU-...-PPV	[mm]	–	9	12	15	17	14	18	20	21		
DSNU-...-PPS	[mm]	–		12	15	17	14	18	20	21		
Theoretical force at 6 bar, advancing	[N]	30	47	68	121	189	295	483	753	1178	1870	
Theoretical force at 6 bar, retracting	[N]	23	40	51	104	158	247	415	633	990	1682	

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing. Longer strokes on request.

Operating conditions

Operating conditions											
Piston Ø	8	10	12	16	20	25	32	40	50	63	
Operating pressure	[bar]	1.5 ... 10 ²⁾			1 ... 10						
Ambient temperature ³⁾											
DSNU-...	[°C]	–20 ... +80									
DSNU-...-S6	[°C]	0 ... +120									

2) Piston Ø 12 mm, PPV – pneumatic cushioning, adjustable at both ends 2 ... 10 bar.

3) Note operating range of proximity sensors.

Materials

Piston rod	High-alloy stainless steel
Bearing cap	Colourless anodised wrought aluminium alloy
Cylinder barrel	High-alloy stainless steel
End cap	Colourless anodised wrought aluminium alloy
Seals	
DSNU-...	NBR, TPE-U (PU)
DSNU-...-S6	FPM

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Order code – Double-acting

Type		DSNU	-	-	-	-	A	-	-	-	-
DSNU	Double-acting round cylinder										
Piston Ø [mm]											
	Stroke [mm]										
8, 10	10, 15, 20, 25, 30, 40, 50, 60, 80, 100	1 ... 100									
12	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 125, 160, 200	1 ... 200									
16	10, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100, 125, 150, 160, 200	1 ... 200									
20	10, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100, 125, 150, 160, 200, 250, 300, 320	1 ... 320									
25	10, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100, 125, 150, 160, 200, 250, 300, 320, 400, 500	1 ... 500									
32, 40, 50, 63	25, 40, 50, 80, 100, 125, 160, 200, 250, 320	1 ... 500									
Cushioning											
P	Elastic cushioning rings/plates at both ends										
PPV	Pneumatic cushioning, adjustable at both ends										1
PPS	Pneumatic cushioning, self-adjusting at both ends										2
Position sensing											
A	For proximity sensor										3
Alternative cylinder end cap											
MQ	Plain end cap, lateral connection										4
Piston rod											
-	Piston rod at one end										
S2	Through piston rod										
Extended piston rod [mm]											
... K8	1 ... 150										5
Temperature resistance											
S6	Heat-resistant seals up to max. 120 °C										6

1 Not with piston Ø 8, 10

2 Not with piston Ø 8, 10, 12

3 Minimum stroke: 10 mm

4 Not with piston rod type S2

5 Piston Ø 8, 10: 1 ... 50 mm

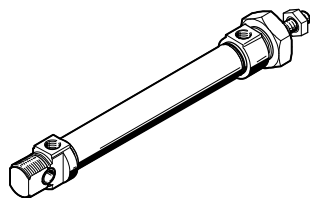
Piston Ø 12, 16: 1 ... 100 mm

Piston Ø 20: 1 ... 110 mm

Piston Ø 25: 1 ... 150 mm

6 Not for DSNU-12-...-PPV

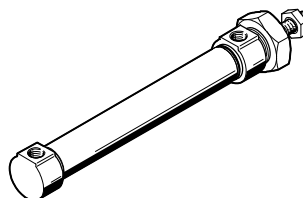
Basic design

**Order example:**

DSNU-25-40-PPV-A

Double-acting round cylinder DSNU - piston diameter 25 mm - stroke 40 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - piston rod at one end - no extended piston rod - no heat-resistant seal

MQ – Plain cylinder end cap, lateral air connection

**Order example:**

DSNU-25-40-PPV-A-MQ

Double-acting round cylinder DSNU - piston diameter 25 mm - stroke 40 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - cylinder end cap, lateral connection - piston rod at one end - no extended piston rod - no heat-resistant seal

Round cylinders DSNU ★

01

★ Quick ordering¹⁾

P – Elastic cushioning rings/plates at both ends

Pneumatic drives

Part no.	Type
Piston Ø 12 mm	
19189	DSNU-12-10-P-A
1908255	DSNU-12-15-P-A
1908256	DSNU-12-20-P-A
19190	DSNU-12-25-P-A
1908257	DSNU-12-30-P-A
19191	DSNU-12-40-P-A
19192	DSNU-12-50-P-A
1908258	DSNU-12-60-P-A
19193	DSNU-12-80-P-A
19194	DSNU-12-100-P-A
19195	DSNU-12-125-P-A
19196	DSNU-12-160-P-A
19197	DSNU-12-200-P-A
Piston Ø 16 mm	
19198	DSNU-16-10-P-A
1908259	DSNU-16-15-P-A
1908260	DSNU-16-20-P-A
19199	DSNU-16-25-P-A
1908261	DSNU-16-30-P-A
1908262	DSNU-16-35-P-A
19200	DSNU-16-40-P-A
19201	DSNU-16-50-P-A
1908263	DSNU-16-60-P-A
1908264	DSNU-16-70-P-A
19202	DSNU-16-80-P-A
19203	DSNU-16-100-P-A
19204	DSNU-16-125-P-A
19205	DSNU-16-160-P-A
1908265	DSNU-16-150-P-A
19206	DSNU-16-200-P-A

Part no.	Type
Piston Ø 20 mm	
19207	DSNU-20-10-P-A
1908282	DSNU-20-15-P-A
1908283	DSNU-20-20-P-A
19208	DSNU-20-25-P-A
1908284	DSNU-20-30-P-A
1908285	DSNU-20-35-P-A
19209	DSNU-20-40-P-A
19210	DSNU-20-50-P-A
1908286	DSNU-20-60-P-A
1908287	DSNU-20-70-P-A
19211	DSNU-20-80-P-A
19212	DSNU-20-100-P-A
19213	DSNU-20-125-P-A
1908288	DSNU-20-150-P-A
19214	DSNU-20-160-P-A
19215	DSNU-20-200-P-A
19216	DSNU-20-250-P-A
19217	DSNU-20-300-P-A
34718	DSNU-20-320-P-A

Part no.	Type
Piston Ø 25 mm	
19218	DSNU-25-10-P-A
1908305	DSNU-25-15-P-A
1908306	DSNU-25-20-P-A
19219	DSNU-25-25-P-A
1908307	DSNU-25-30-P-A
1908308	DSNU-25-35-P-A
19220	DSNU-25-40-P-A
19221	DSNU-25-50-P-A
1908309	DSNU-25-60-P-A
1908310	DSNU-25-70-P-A
19222	DSNU-25-80-P-A
19223	DSNU-25-100-P-A
19224	DSNU-25-125-P-A
1908311	DSNU-25-150-P-A
19225	DSNU-25-160-P-A
19226	DSNU-25-200-P-A
19227	DSNU-25-250-P-A
19228	DSNU-25-300-P-A
34719	DSNU-25-320-P-A

1) All products in this table are easy to select and quick to order.

★ Quick ordering¹⁾

PPV – Pneumatic cushioning, adjustable at both ends

Part no.	Type
Piston Ø 16 mm	
1908266	DSNU-16-10-PPV-A
1908267	DSNU-16-15-PPV-A
1908268	DSNU-16-20-PPV-A
33973	DSNU-16-25-PPV-A
1908269	DSNU-16-30-PPV-A
1908270	DSNU-16-35-PPV-A
19229	DSNU-16-40-PPV-A
19230	DSNU-16-50-PPV-A
1908271	DSNU-16-60-PPV-A
1908272	DSNU-16-70-PPV-A
19231	DSNU-16-80-PPV-A
19232	DSNU-16-100-PPV-A
19233	DSNU-16-125-PPV-A
1908273	DSNU-16-150-PPV-A
19234	DSNU-16-160-PPV-A
19235	DSNU-16-200-PPV-A

Part no.	Type
Piston Ø 20 mm	
1908289	DSNU-20-10-PPV-A
1908290	DSNU-20-15-PPV-A
1908291	DSNU-20-20-PPV-A
33974	DSNU-20-25-PPV-A
1908292	DSNU-20-30-PPV-A
1908293	DSNU-20-35-PPV-A
19236	DSNU-20-40-PPV-A
19237	DSNU-20-50-PPV-A
1908294	DSNU-20-60-PPV-A
1908295	DSNU-20-70-PPV-A
19238	DSNU-20-80-PPV-A
19239	DSNU-20-100-PPV-A
19240	DSNU-20-125-PPV-A
1908296	DSNU-20-150-PPV-A
19241	DSNU-20-160-PPV-A
19242	DSNU-20-200-PPV-A
19243	DSNU-20-250-PPV-A
19244	DSNU-20-300-PPV-A
34720	DSNU-20-320-PPV-A

Part no.	Type
Piston Ø 25 mm	
1908312	DSNU-25-10-PPV-A
1908313	DSNU-25-15-PPV-A
1908314	DSNU-25-20-PPV-A
33975	DSNU-25-25-PPV-A
1908315	DSNU-25-30-PPV-A
1908316	DSNU-25-35-PPV-A
19245	DSNU-25-40-PPV-A
19246	DSNU-25-50-PPV-A
1908317	DSNU-25-60-PPV-A
1908318	DSNU-25-70-PPV-A
19247	DSNU-25-80-PPV-A
19248	DSNU-25-100-PPV-A
19249	DSNU-25-125-PPV-A
1908319	DSNU-25-150-PPV-A
19250	DSNU-25-160-PPV-A
19251	DSNU-25-200-PPV-A
19252	DSNU-25-250-PPV-A
19253	DSNU-25-300-PPV-A
34721	DSNU-25-320-PPV-A

PPS – Pneumatic cushioning, self-adjusting at both ends

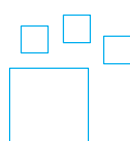
Part no.	Type
Piston Ø 16 mm	
1908274	DSNU-16-10-PPS-A
1908275	DSNU-16-15-PPS-A
1908276	DSNU-16-20-PPS-A
559263	DSNU-16-25-PPS-A
1908277	DSNU-16-30-PPS-A
1908278	DSNU-16-35-PPS-A
559264	DSNU-16-40-PPS-A
559265	DSNU-16-50-PPS-A
1908279	DSNU-16-60-PPS-A
1908280	DSNU-16-70-PPS-A
559266	DSNU-16-80-PPS-A
559267	DSNU-16-100-PPS-A
559268	DSNU-16-125-PPS-A
1908281	DSNU-16-150-PPS-A
559269	DSNU-16-160-PPS-A
559270	DSNU-16-200-PPS-A

Part no.	Type
Piston Ø 20 mm	
1908297	DSNU-20-10-PPS-A
1908298	DSNU-20-15-PPS-A
1908299	DSNU-20-20-PPS-A
559271	DSNU-20-25-PPS-A
1908300	DSNU-20-30-PPS-A
1908301	DSNU-20-35-PPS-A
559272	DSNU-20-40-PPS-A
559273	DSNU-20-50-PPS-A
1908302	DSNU-20-60-PPS-A
1908303	DSNU-20-70-PPS-A
559274	DSNU-20-80-PPS-A
559275	DSNU-20-100-PPS-A
559276	DSNU-20-125-PPS-A
1908304	DSNU-20-150-PPS-A
559277	DSNU-20-160-PPS-A
559278	DSNU-20-200-PPS-A
559279	DSNU-20-250-PPS-A
559280	DSNU-20-300-PPS-A
559281	DSNU-20-320-PPS-A

Part no.	Type
Piston Ø 25 mm	
1908320	DSNU-25-10-PPS-A
1908321	DSNU-25-15-PPS-A
1908322	DSNU-25-20-PPS-A
559282	DSNU-25-25-PPS-A
1908323	DSNU-25-30-PPS-A
1908324	DSNU-25-35-PPS-A
559283	DSNU-25-40-PPS-A
559284	DSNU-25-50-PPS-A
1908325	DSNU-25-60-PPS-A
1908326	DSNU-25-70-PPS-A
559285	DSNU-25-80-PPS-A
559286	DSNU-25-100-PPS-A
559287	DSNU-25-125-PPS-A
1908327	DSNU-25-150-PPS-A
559288	DSNU-25-160-PPS-A
559289	DSNU-25-200-PPS-A
559290	DSNU-25-250-PPS-A
559291	DSNU-25-300-PPS-A
559292	DSNU-25-320-PPS-A

1) All products in this table are easy to select and quick to order.

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

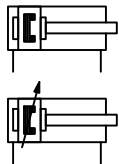
The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Round cylinders DSNU-Q

01 Data sheet – Double-acting with protection against rotation

Pneumatic drives



Technical data		Dimensions → Page 122								
Piston Ø		12	16	20	25	32	40	50	63	
Based on standard		ISO 6432					–			
Pneumatic connection		M5	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	
Piston rod end		Male thread								
Piston rod thread		M6	M6	M8	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5	
Stroke ¹⁾	[mm]	5 ... 160		5 ... 200	5 ... 250	5 ... 300	5 ... 400		5 ... 500	
Cushioning										
DSNU-...-P	Elastic cushioning rings/plates at both ends	–				Elastic cushioning rings/plates at both ends				
DSNU-...-PPV	–	Pneumatic cushioning, adjustable at both ends								
Cushioning length PPV	[mm]	–	12	15	17	14	18	20	21	
Theoretical force at 6 bar, advancing	[N]	68	121	189	295	483	753	1178	1870	
Theoretical force at 6 bar, retracting	[N]	51	104	158	247	415	633	990	1682	
Max. torque at the piston rod	[Nm]	0.10	0.10	0.20	0.45	0.8	1.1	1.5	1.5	

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing. Longer strokes on request.

Operating conditions		Dimensions → Page 122							
Piston Ø		12	16	20	25	32	40	50	63
Operating pressure	[bar]	1.5 ... 10 ²⁾		1 ... 10					
Ambient temperature ³⁾									
DSNU-...	[°C]	–20 ... +80							
DSNU-Q-...-S6	[°C]	–				0 ... +120			

2) Piston Ø: 12 mm, PPV – pneumatic cushioning, adjustable at both ends 2 ... 10 bar.
3) Note operating range of proximity sensors.

Materials	
Piston rod	High-alloy stainless steel
Bearing cap	Colourless anodised wrought aluminium alloy
Cylinder barrel	High-alloy stainless steel
End cap	Colourless anodised wrought aluminium alloy
Seals	NBR, TPE-U (PU)

Ordering – Product options

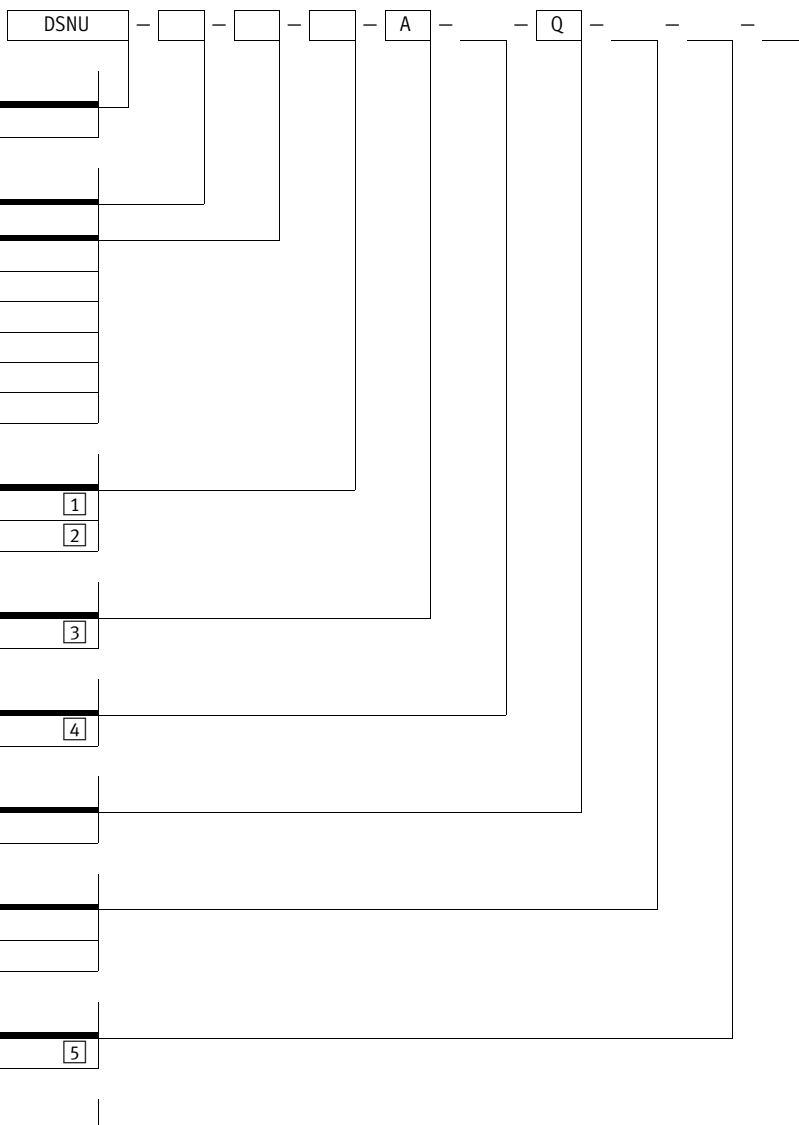
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Order code – Double-acting with protection against rotation



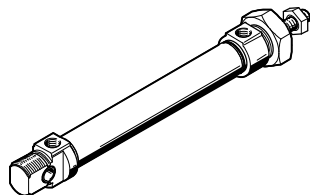
- [1] Not with piston Ø 16, 20, 25
- [2] Not with piston Ø 12

- [3] Minimum stroke: 10 mm
- [4] Not with piston rod type S2

- [5] Piston Ø 12, 16: 1 ... 100 mm
Piston Ø 20: 1 ... 110 mm
Piston Ø 25: 1 ... 150 mm
Piston Ø 32 ... 63: 1 ... 500 mm

- [6] Only with piston Ø 32 ... 63

Basic design

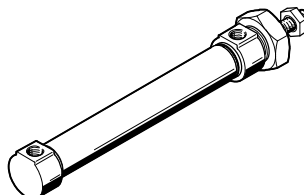


Order example:

DSNU-25-40-PPV-A-Q

Double-acting round cylinder DSNU - piston diameter 25 mm - stroke 40 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - square piston rod - piston rod at one end - no extended piston rod - no heat-resistant seal

MQ – Plain cylinder end cap, lateral air connection



Order example:

DSNU-25-40-PPV-A-MQ-Q

Double-acting round cylinder DSNU - piston diameter 25 mm - stroke 40 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - cylinder end cap, lateral connection - square piston rod - piston rod at one end - no extended piston rod - no heat-resistant seal

Round cylinders ESNU

01

Data sheet – Single-acting



Pneumatic drives

Technical data											Dimensions → Page 122
Piston Ø	8	10	12	16	20	25	32	40	50	63	
Conforms to standard	ISO 6432										–
Pneumatic connection	M5	M5	M5	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	
Piston rod end	Male thread										
Piston rod thread	M4	M4	M6	M6	M8	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5	
Stroke [mm]	1 ... 50										
Cushioning	Elastic cushioning rings/plates at both ends										
Theoretical force at 6 bar, advancing [N]	24	41	61	107	169	270	442	688	1071	1763	
Theoretical spring return force											
10 mm stroke [N]	4.9	4.9	6.3	13.2	18.3	22.9	36	60	95	95	
25 mm stroke [N]	4.1	4.1	5.4	11.9	16.5	21.2	30	50	82	82	
50 mm stroke [N]	2.8	4.8	3.9	9.8	13.6	18.5	20	30	60	60	

Operating conditions											
Piston Ø	8	10	12	16	20	25	32	40	50	63	
Operating pressure [bar]	1.5 ... 10				1.2 ... 10						
Ambient temperature ¹⁾ [°C]	–20 ... +80										

1) Note operating range of proximity sensors.

Materials	
Piston rod	High-alloy stainless steel
Bearing cap	Colourless anodised wrought aluminium alloy
Cylinder barrel	High-alloy stainless steel
End cap	Colourless anodised wrought aluminium alloy
Seals	NBR, TPE-U (PU)

Order code – Single-acting

Type		ESNU		-		-		-		P		-		A		-	
ESNU		Single-acting round cylinder															
Piston Ø [mm]																	
		Stroke [mm]															
8, 10, 12, 16, 20, 25, 32, 40, 50, 63		10, 25, 50		1 ... 50													
Cushioning																	
P		Elastic cushioning rings/plates at both ends															
Position sensing																	
A		Via proximity sensor		1													
Extended piston rod [mm]																	
... K8		1 ... 50															

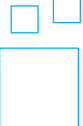
1 Minimum stroke: 10 mm

Order example:

ESNU-25-50-P-A

Single-acting round cylinder ESNU - piston diameter 25 mm - stroke 50 mm - elastic cushioning rings/plates at both ends - position sensing via proximity sensor

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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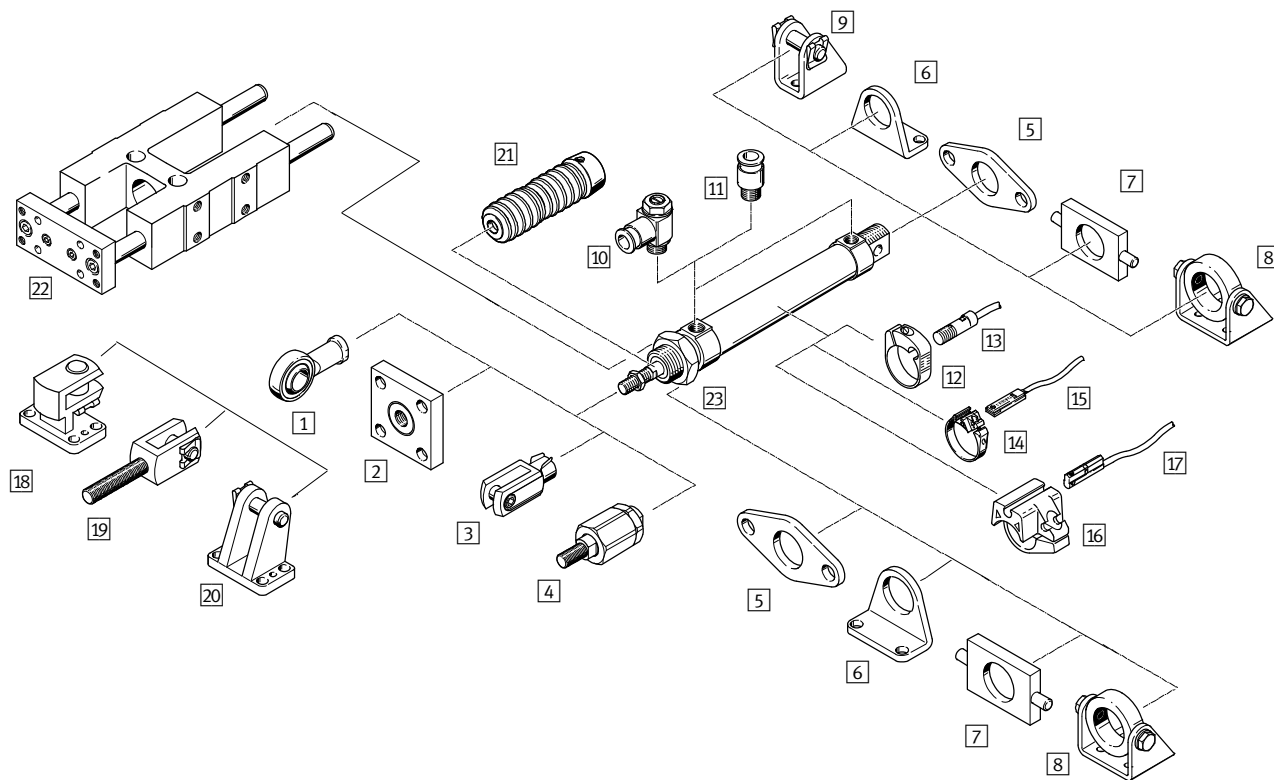
Cylinders with piston rod > Standards-based cylinders >

Round cylinders DSNU ★ /ESNU

01


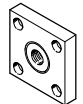
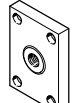



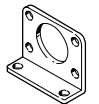
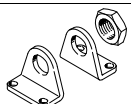
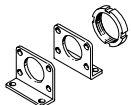
Accessories





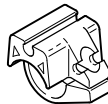

Pneumatic drives



	PistonØ	DSNU/ESNU	DSNU-			→ Page/online
			MQ	Q	S2	
1 Rod eye SGS	8 ... 63	■	■	■	■	119
Rod eye CRSGS	12 ... 63	■	■	■	■	dsnu
2 Coupling piece KSG/KSZ	12 ... 63	■	■	■	■	119
3 Rod clevis SG	8 ... 63	■	■	■	■	119
Rod clevis CRSG	12 ... 63	■	■	■	■	dsnu
4 Self-aligning rod coupler FK	8 ... 63	■	■	■	■	119
Self-aligning rod coupler CRFK	25 ... 63	■	■	■	■	dsnu
5 Flange mounting FBN	8 ... 63	■	■	■	■	119
Flange mounting CRFBN/CRFV	12 ... 63	■	■	■	■	dsnu
6 Foot mounting HBN	8 ... 63	■	■	■	■	119
Foot mounting CRHBN/CRH	12 ... 63	■	■	■	■	dsnu
7 Swivel mounting WBN	8 ... 63	■	■	■	■	119
8 Swivel mounting SBN	20 ... 63	■	■	■	■	119
9 Clevis foot LBN	8 ... 63	■	-	■	-	119
Clevis foot CRLBN	12 ... 63	■	-	■	-	dsnu
10 One-way flow control valve GRLA/GRLZ	8 ... 63	■	■	■	■	120
One-way flow control valve CRGRLA	8 ... 63	■	■	■	■	dsnu
11 Push-in fitting QS	8 ... 63	■	■	■	■	1443
12 Mounting kit SMBR	8 ... 25	■	■	■	■	119
Mounting kit CRSMBR	12 ... 63	■	■	■	■	dsnu
13 Proximity sensor SMEO/SMT0	8 ... 25	■	■	■	■	120
Proximity sensor CRSMEO-4	8 ... 63	■	■	■	■	dsnu
14 Mounting kit SMBR-8	8 ... 63	■	■	■	■	119
15 Proximity sensor SME/SMT-8	8 ... 63	■	■	■	■	120
16 Mounting kit SMBR-10	8 ... 63	■	■	■	■	119
17 Proximity sensor SME/SMT-10	8 ... 63	■	■	■	■	120
18 Right-angle clevis foot LQG	32 ... 63	■	■	■	■	121
19 Rod clevis SGA	32 ... 63	■	■	■	■	121
20 Clevis foot LBG	32 ... 63	■	■	■	■	121
21 Bellows kit DADB	12 ... 63	■	■	-	■	dsnu
22 Guide unit FEN	8 ... 25	■	■	-	■	121
23 Hex nut MSK	16 ... 25	■	■	■	■	121

Accessories – Ordering data

	For Ø	Part no.	Type
1 Rod eye Data sheets online: → sgs			
	8, 10	9253	SGS-M4
	12, 16	★ 9254	SGS-M6
	20	★ 9255	SGS-M8
	25, 32	★ 9261	SGS-M10x1,25
	40	★ 9262	SGS-M12x1,25
	50, 63	★ 9263	SGS-M16x1,5
2 Coupling piece Data sheets online: → ksg			
	25, 32	32963	KSG-M10x1,25
	40	32964	KSG-M12x1,25
	50, 63	32965	KSG-M16x1,5
2 Coupling piece Data sheets online: → ksz			
	12, 16	36123	KSZ-M6
	20	36124	KSZ-M8
	25, 32	36125	KSZ-M10x1,25
	40	36126	KSZ-M12x1,25
	50, 63	36127	KSZ-M15x1,5
	3 Rod clevis Data sheets online: → sg		
	8, 10	6532	SG-M4
	12, 16	★ 3110	SG-M6
	20	★ 3111	SG-M8
	25, 32	★ 6144	SG-M10x1,25
	40	★ 6145	SG-M12x1,25
	50, 63	★ 6146	SG-M16x1,5
4 Self-aligning rod coupler Data sheets online: → fk			
	8, 10	6528	FK-M4
	12, 16	★ 2061	FK-M6
	20	★ 2062	FK-M8
	25, 32	★ 6140	FK-M10x1,25
	40	★ 6141	FK-M12x1,25
	50, 63	★ 6142	FK-M16x1,5
5 Flange mounting Dimensions online: → dsnu			
	8, 10	5129	FBN-8/10
	12, 16	5130	FBN-12/16
	20, 25	5131	FBN-20/25
	32	195855	FBN-32
	40	195856	FBN-40
	50	195857	FBN-50
	63	195858	FBN-63
6 Foot mounting Dimensions online: → dsnu			
	8, 10	5123	HBN-8/10x1
		5124	HBN-8/10x2
	12, 16	★ 5125	HBN-12/16x1
		★ 5126	HBN-12/16x2
	20, 25	★ 5127	HBN-20/25x1
	★ 5128	HBN-20/25x2	
	32	195851	HBN-32x2
	40	195852	HBN-40x2
	50	195853	HBN-50x2
	63	195854	HBN-63x2



	For Ø	Part no.	Type	
7 Swivel mounting Dimensions online: → dsnu				
	8, 10	8608	WBN-8/10x1	
	12, 16	8609	WBN-12/16	
	20, 25	8610	WBN-20/25	
	32	195863	WBN-32	
	40	195864	WBN-40	
	50, 63	195865	WBN-50/63	
8 Swivel mounting Dimensions online: → dsnu				
	20, 25	539927	SBN-20/25	
	32	539924	SBN-32	
	40	539925	SBN-40	
	50, 63	539926	SBN-50/63	
9 Clevis foot Data sheets online: → lbn				
	8, 10	6057	LBN-8/10	
	12, 16	★ 6058	LBN-12/16	
	20, 25	★ 6059	LBN-20/25	
	32	195860	LBN-32	
	40	195861	LBN-40	
	50, 63	195862	LBN-50/63	
12/14/16 Mounting kit for proximity sensor				
	SMT/SME-8			
	8	175091	SMBR-8-8	
	10	175092	SMBR-8-10	
	12	★ 175093	SMBR-8-12	
	16	★ 175094	SMBR-8-16	
	20	★ 175095	SMBR-8-20	
	25	★ 175096	SMBR-8-25	
	32	175097	SMBR-8-32	
	40	175098	SMBR-8-40	
	50	175099	SMBR-8-50	
	63	175100	SMBR-8-63	
	SMT/SME-10			
	8	175101	SMBR-10-8	
	10	173227	SMBR-10-10	
	12	175102	SMBR-10-12	
	16	173228	SMBR-10-16	
	20	175103	SMBR-10-20	
	25	175104	SMBR-10-25	
	32	175105	SMBR-10-32	
	40	175106	SMBR-10-40	
	50	175107	SMBR-10-50	
	63	175108	SMBR-10-63	
	Round design SMT0/SME0-4			
	8	19272	SMBR-8	
	10	19273	SMBR-10	
	12	19274	SMBR-12	
	16	19275	SMBR-16	
	20	19276	SMBR-20	
		25	19277	SMBR-25

Round cylinders DSNU ★ /ESNU



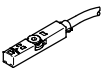
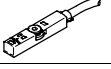
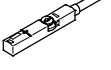





01

Accessories – Ordering data

Pneumatic drives



	For Ø	Connection		Part no.	Type
		Thread	O.D.		
10 One-way flow control valve with slotted head screw, metal¹⁾ for exhaust air flow control Data sheets → Page 1033					
	12, 16	M5	3	★ 193137	GRLA-M5-QS-3-D
	20, 25	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
	32	G1/8	6	★ 193144	GRLA-1/8-QS-6-D
	40	G1/4	6	★ 193146	GRLA-1/4-QS-6-D
	50	G1/4	8	★ 193147	GRLA-1/4-QS-8-D
	63	G3/8	8	★ 193150	GRLA-3/8-QS-8-D
For supply air flow control Data sheets → Page 1033					
	12, 16	M5	3	★ 193153	GRLZ-M5-QS-3-D
	20, 25	G1/8	4	★ 193157	GRLZ-1/8-QS-4-D
	32	G1/8	4	★ 193158	GRLZ-1/8-QS-6-D



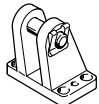
1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

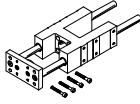

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
	8 ... 25	PNP, cable	2.5	152836	SMT0-4U-PS-K-LED-24
		PNP, plug	–	152742	SMT0-4U-PS-S-LED-24
		NPN, cable	2.5	152837	SMT0-4U-NS-K-LED-24
		NPN, plug	–	152743	SMT0-4U-NS-S-LED-24
Magnetic reed – N/O contact Data sheets online: → smeo					
	8 ... 25	Contacting, cable	2.5	36198	SME0-4U-K-LED-24
		Contacting, cable	5.0	175401	SME0-4U-K5-LED-24
		Contacting, plug	–	151526	SME0-4U-S-LED-24-B
15 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	8 ... 63	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	8 ... 63	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	8 ... 63	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Data sheets → Page 1203					
	8 ... 63	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/C contact Data sheets → Page 1203					
	8 ... 63	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
17 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	8 ... 63	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
		PNP, plug	0.3	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
Magnetic reed – N/O contact Data sheets → Page 1218					
	8 ... 63	Contacting, cable	2.5	★ 551365	SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3	★ 551367	SME-10M-DS-24V-E-0,3-L-M8D
		Contacting, cable	2.5	★ 551369	SME-10M-ZS-24V-E-2,5-L-OE
	8 ... 63	Contacting, cable	2.5	173210	SME-10-KL-LED-24
		Contacting, plug	0.3	173212	SME-10-SL-LED-24

Accessories – Ordering data

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	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
13/15/17 Connecting cable, straight socket Data sheets → Page 1543					
	8 ... 63	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	8 ... 63	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

	For Ø	Part no.	Type
18 Right-angle clevis foot Data sheets online: → lqg			
	32	31768	LQG-32
	40	31769	LQG-40
	50	31770	LQG-50
	63	31771	LQG-63
19 Rod clevis Data sheets online: → sga			
	32	32954	SGA-M10x1,25
	40	10767	SGA-M12x1,25
	50, 63	10768	SGA-M16x1,5
20 Clevis foot Data sheets online: → lbg			
	32	31761	LBG-32
	40	31762	LBG-40
	50	31763	LBG-50
	63	31764	LBG-63

	For Ø	Stroke	Part no.	Type
22 Guide unit for variable strokes Data sheets online: → fen				
	With recirculating ball bearing guide		Data sheets online: → fen	
	8, 10	1 ... 100	35197	FEN-8/10-...-KF
	12, 16	1 ... 200	33481	FEN-12/16-...-KF
	20	2 ... 250	33482	FEN-20-...-KF
	25	2 ... 250	33483	FEN-25-...-KF
	With plain-bearing guide		Data sheets online: → fen	
	8, 10	1 ... 100	35196	FEN-8/10-...-GF
	12, 16	1 ... 200	19168	FEN-12/16-...-GF
20	2 ... 250	19169	FEN-20-...-GF	
25	2 ... 250	19170	FEN-25-...-GF	
23 Hex nut				
	16	–	189007	MSK-M16X1,5
	20, 25	–	189009	MSK-M22X1,5

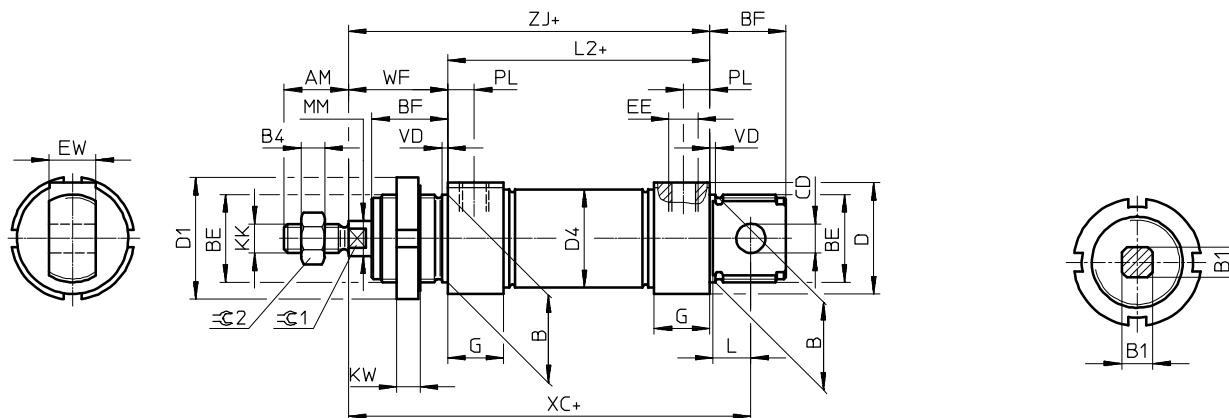
Dimensions

Basic design – Ø 32 ... 63

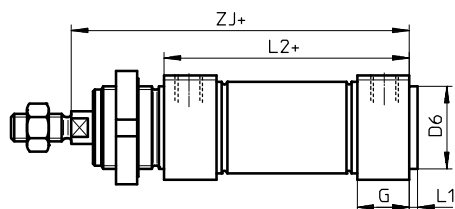
Download CAD data → www.festo.com

Q – Square piston rod

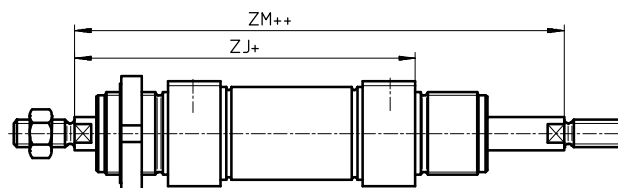
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MQ – Lateral air connection



S2 – Through piston rod



Note

The thread types at both piston rod ends are identical. In combination with variant Q, the left-hand piston rod end is square, the right-hand piston rod end round.

+ = plus stroke length
++ = plus 2x stroke length

Ø [mm]	AM	B Ø h9	B1 □	B4	BE M30x1.5 M38x1.5 M45x1.5	BF	CD Ø E10	D Ø	D1 Ø	D4 Ø	D6 Ø	EE	EW	G
32	22	30	10	5	M30x1.5	26	10	38	42	33.6	30	G1/8	16	19
40	24	38	12	6	M38x1.5	30	12	46	50	41.6	38	G1/4	18	25
50	32	45	16	8	M45x1.5	33	16	57	60	52.4	45		21	
63								70				65.4		

Ø [mm]	KK	KW	L	L1	L2	MM Ø	PL	VD	WF	XC ±1	ZJ	ZM	⊖C1	⊖C2
32	M10x1.25	8	13	3	69.5	12	9	2	34	117.5	103.5	137.5	10	16
40	M12x1.25	10	15	4	84.6	16	12	3	39	139.6	123.6	162.6	13	17
50	M16x1.5		16		86.2	20			44	147.2	130.2	174.2		
63					94.2	13	45		156.2	139.2	184.2			

Cylinders with piston rod > Standards-based cylinders >

01

Pneumatic drives



CRDSNU



CRDNG



CRHD

Save time and money during commissioning and maintenance

- + With self-adjusting end-position cushioning PPS
- + Thanks to extremely easy-to-clean clean design
- + Thanks to maximum corrosion protection

Cylinders with piston rod > Stainless-steel cylinders > Standards-based and round cylinders, stainless steel

CRDSNU
CRDNG
CRHD

Cylinders with piston rod > Stainless-steel cylinders >

Standards-based and round cylinders, stainless steel


CRDSNU, CRDNG, CRHD

 Overview, configuration and ordering
→ www.festo.com/catalogue/crdsnu



 Additional information, support and user documentation
→ www.festo.com/sp/crdsnu



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + CRDSNU: ISO 6432 (piston diameter 12 ... 25 mm)
- + CRDSNU: with self-adjusting pneumatic end-position cushioning PPS
- + CRDNG: ISO 15552 (piston diameter 32 ... 125 mm)
- + For position sensing
- + Double-acting
- + Adjustable cushioning

Round cylinders CRDSNU/CRHD/CRDNG

Product range overview

Type/function	Version	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options							→ Page/ online
					P	PPV	PPS	A	S2	K8	S6	
Double-acting	CRDSNU – Cylinder barrel, end caps: high-alloy stainless steel											
	Basic design to ISO 6432	12, 16, 20, 25	1 ... 500	68 ... 295	■	■	■	■	■	■	■	128
	Basic design	32, 40, 50, 63	1 ... 500	483 ... 1870	■	■	■	■	■	■	■	128
	MQ – Bearing cap without swivel mounting	12, 16, 20, 25, 32, 40, 50, 63	1 ... 500	68 ... 1870	■	■	■	■	-	■	■	128
	MG – Bearing cap without mounting thread				■	■	■	■	-	■	■	crdrives
	CRHD											
	MQ – Bearing cap with male thread	32, 40, 50, 63, 80, 100	1 ... 500	483 ... 4712	-	■	-	■	-	-	■	131
	MC – End cap with clevis	32, 40, 50, 63, 80, 100	1 ... 500	483 ... 4712	-	■	-	■	-	-	■	131
	MS – End cap with lug	32, 40, 50, 63, 80, 100	1 ... 500	483 ... 4712	-	■	-	■	-	-	■	131
	CRDNG – Cylinder barrel: high-alloy stainless steel; end caps: stainless steel casting											
	Basic design to ISO 15552	32, 40, 50, 63, 80, 100, 125	10 ... 2000	121 ... 295	-	■	-	■	■	-	■	134
	CRDNGS with swivel bearing – Cylinder barrel: high-alloy stainless steel; end caps: stainless steel casting											
	Basic design to ISO 15552	32, 40, 50, 63, 80, 100, 125	10 ... 2000	121 ... 295	-	■	-	■	-	-	■	134

01

Pneumatic drives

Product options – CRDSNU

P	Elastic cushioning rings/plates at both ends	MQ	Alternative cylinder end cap Bearing cap without swivel mounting	A2	Dust protection (hard scraper)	K5	Special piston rod thread
PPV	Pneumatic cushioning, adjustable at both ends	MG	Bearing cap without mounting thread	A3	Unlubricated operation	K8	Extended piston rod
PPS	Pneumatic cushioning, self-adjusting at both ends	A1	Increased chemical resistance	S2	Through piston rod	S6	Heat-resistant seals up to max. 120°C
A	Position sensing			K2	Extended male piston rod thread	TT	Low temperature
				K3	Female piston rod thread	EX4	EU certification (II 2GD)

Product options – CRHD

PPV	Pneumatic cushioning, adjustable at both ends	MQ	Alternative cylinder end cap Bearing cap with male thread	MS	Alternative cylinder end cap End cap with lug	S6	Heat-resistant seals up to max. 120°C
A	Position sensing	MC	Alternative cylinder end cap End cap with clevis				

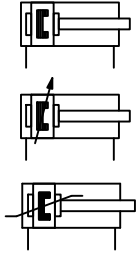
Product options – CRDNG/CRDNGS

PPV	Pneumatic cushioning, adjustable at both ends	A	Position sensing	S6	Heat-resistant seals up to max. 120°C
		S2	Through piston rod		

Round cylinders CRDSNU

01

Data sheet



Pneumatic drives

Technical data		Dimensions → Page 140								
Piston Ø		12	16	20	25	32	40	50	63	
Conforms to standard		ISO 6432					-			
Pneumatic connection		M5	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	
Piston rod end		Male thread								
Piston rod thread		M6	M6	M8	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5	
Stroke ¹⁾	[mm]	1 ... 200		1 ... 320		1 ... 500				
Cushioning										
CRDSNU-...-P		Elastic cushioning rings/plates at both ends								
CRDSNU-...-PPV		-		Pneumatic cushioning, adjustable at both ends						
CRDSNU-...-PPS		-		Pneumatic cushioning, self-adjusting at both ends						
Cushioning length										
CRDSNU-...-PPV	[mm]	-	-	15	17	14	18	20	21	
CRDSNU-...-PPS	[mm]	-	12	15	17	14	18	20	21	
Theoretical force at 6 bar, advancing	[N]	68	121	188	295	483	754	1178	1870	
Theoretical force at 6 bar, retracting	[N]	51	104	158	247	415	633	990	1682	

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing. Longer strokes on request.

Operating conditions		Dimensions → Page 140							
Piston Ø		12	16	20	25	32	40	50	63
Operating pressure	[bar]	1 ... 10							
Ambient temperature ²⁾									
CRDSNU-...	[°C]	-20 ... +80							
CRDSNU-...-S6	[°C]	0 ... +120							

2) Note operating range of proximity sensors.

Materials	
Piston rod	High-alloy stainless steel
Bearing cap	High-alloy stainless steel
Cylinder barrel	High-alloy stainless steel
End cap	High-alloy stainless steel
Seals	
CRDSNU-...	NBR, TPE-U (PUR) media seal (modified for resistance to hydrolysis and cleaning)
CRDSNU-...-S6	FPM

Order code

01

Type		CRDSNU	-	-	-	-	A	-	-	-	-
CRDSNU	Double-acting round cylinder										
Piston Ø [mm]											
	Stroke [mm]										
12, 16	1 ... 200										
20	1 ... 320										
25, 32, 40, 50, 63	1 ... 500										
Cushioning											
P	Elastic cushioning rings/plates at both ends										
PPV	Pneumatic cushioning, adjustable at both ends										
PPS	Pneumatic cushioning, self-adjusting at both ends										
Position sensing											
A	Via proximity sensor										
Alternative cylinder end cap											
MQ	Bearing cap without swivel mounting										
Piston rod											
-	Piston rod at one end										
S2	Through piston rod										
Extended piston rod [mm]											
... K8	1 ... 100										
Temperature resistance											
S6	Heat-resistant seals up to max. 120°C										

Pneumatic drives

[1] Not with piston Ø 12, 16

[3] Not with cylinder end cap MQ

[4] Not with cushioning PPS

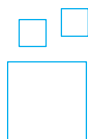
[2] Not with piston Ø 12

Order example:

CRDSNU-25-40-PPV-A

Double-acting round cylinder CRDSNU - piston diameter 25 mm - stroke 40 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - bearing cap with mounting thread/end cap with swivel mounting - piston rod at one end - no extended piston rod - no heat-resistant seal

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

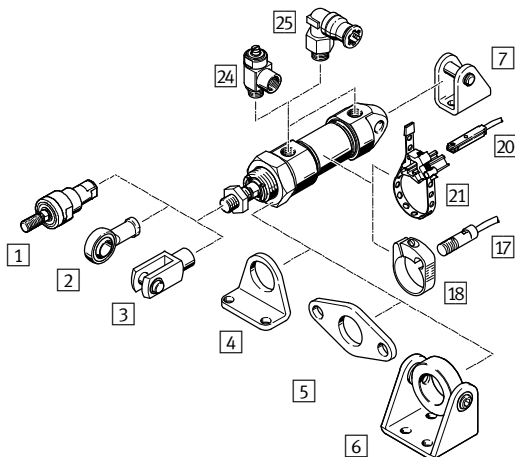
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Round cylinders CRDSNU

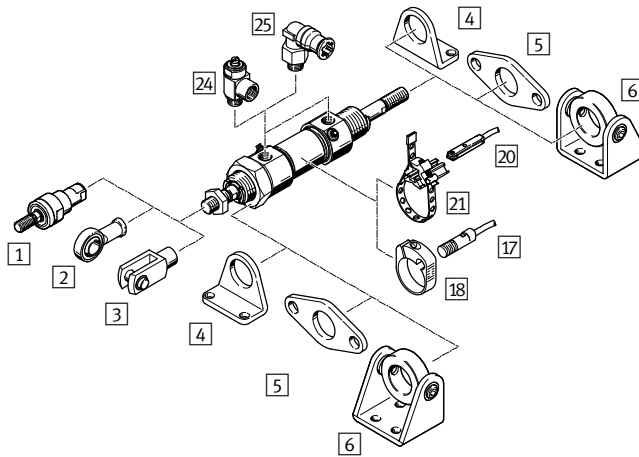
01

Accessories

Basic design Ø 12 ... 25

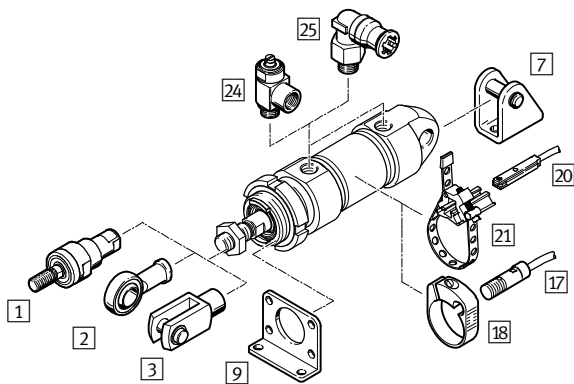


S2 – Through piston rod

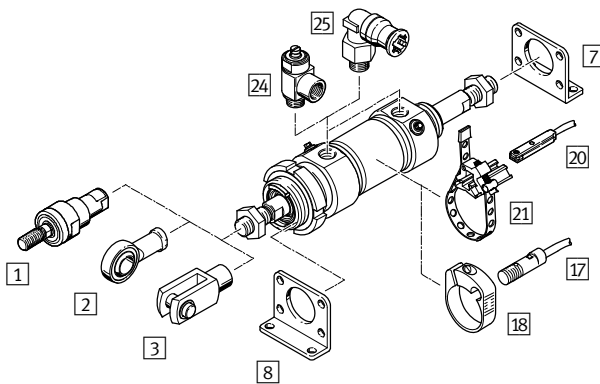


	CRDSNU	CRDSNU-		→ Page/ online
		MQ	S2	
1 Self-aligning rod coupler CRFK	■	■	■	137
2 Rod eye CRSGS	■	■	■	137
3 Rod clevis CRSG	■	■	■	137
4 Foot mounting CRHBN	■	■	■	137
5 Flange mounting CRFBN	■	■	■	137
6 Swivel mounting CRSNB	■	■	■	137
7 Clevis foot CRLBN	■	-	-	137
17 Proximity sensor CRSME0-4	■	■	■	138
18 Mounting kit CRSMBR	■	■	■	138
20 Proximity sensor CRSMT-8	■	■	■	138
21 Mounting kit SMBR	■	■	■	138
24 One-way flow control valve CRGRLA	■	■	■	139
25 Push-in fitting CRQS	■	■	■	crqs

Basic design Ø 32 ... 63



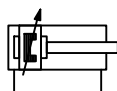
S2 – Through piston rod



	CRDSNU	CRDSNU-		→ Page/ online
		MQ	S2	
1 Self-aligning rod coupler CRFK	■	■	■	137
2 Rod eye CRSGS	■	■	■	137
3 Rod clevis CRSG	■	■	■	137
7 Clevis foot CRLBN	■	-	-	137
8 Foot mounting CRH	-	-	■	137
9 Flange mounting CRFV	■	■	-	137
17 Proximity sensor CRSME0-4	■	■	■	138
18 Mounting kit CRSMBR	■	■	■	138
20 Proximity sensor CRSMT-8	■	■	■	138
21 Mounting kit SMBR	■	■	■	138
24 One-way flow control valve CRGRLA	■	■	■	139
25 Push-in fitting CRQS	■	■	■	crqs

Pneumatic drives

Data sheet



01

Pneumatic drives

Technical data		Dimensions → Page 142					
Piston Ø		32	40	50	63	80	100
Pneumatic connection		G1/8	G1/8	G1/4	G3/8	G3/8	G3/8
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5
Stroke	[mm]	1 ... 500					
Cushioning		Pneumatic cushioning, adjustable at both ends					
Cushioning length	[mm]	17	19.5	21	21	31	31
Theoretical force at 6 bar, advancing	[N]	483	754	1178	1870	3016	4712
Theoretical force at 6 bar, retracting	[N]	415	633	990	1682	2721	4418

Operating conditions							
Piston Ø		32	40	50	63	80	100
Operating pressure	[bar]	1 ... 10					
Ambient temperature ¹⁾							
CRHD-...	[°C]	-20 ... +80					
CRHD-...-S6	[°C]	0 ... +120					

1) Note operating range of proximity sensors

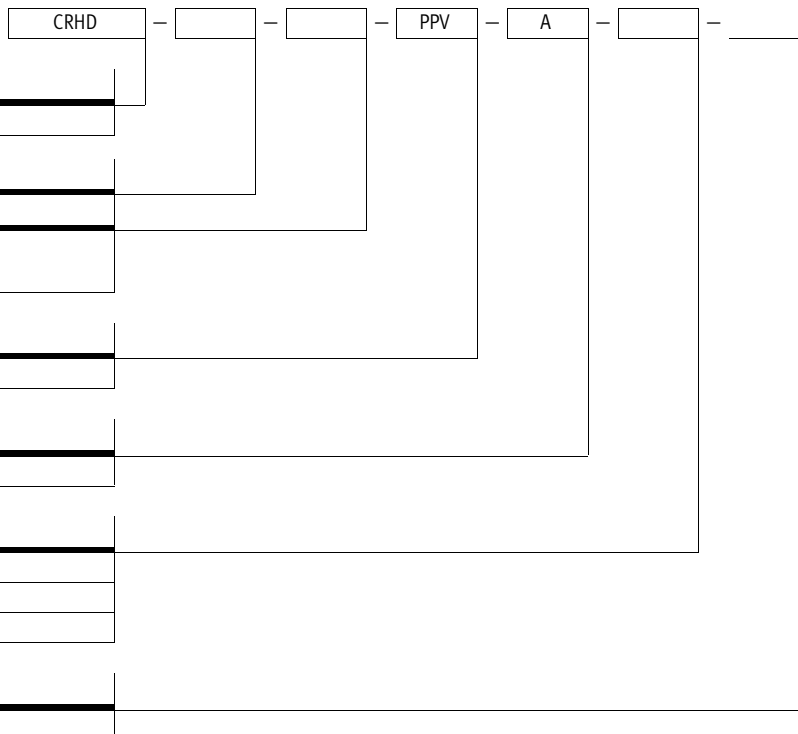
Materials							
Piston rod		High-alloy stainless steel					
Bearing cap		High-alloy stainless steel					
Cylinder barrel		High-alloy stainless steel					
End cap		High-alloy stainless steel					
Seals							
CRHD-...		NBR, TPE-U (PUR) media seal (modified for resistance to hydrolysis and cleaning)					
CRHD-...-S6		FPM					

Round cylinders CRHD

01

Order code

Pneumatic drives

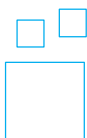


Order example:

CRHD-100-80-PPV-A-MQ

Double-acting round cylinder CRHD - piston diameter 100 mm - stroke 80 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - bearing cap with male thread - no heat-resistant seal

Ordering – Product options



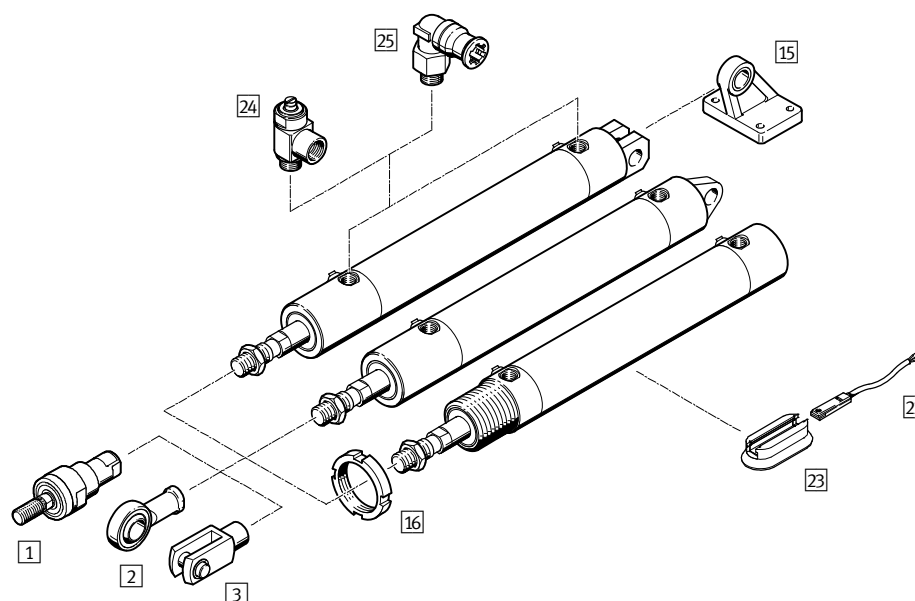
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Accessories



01

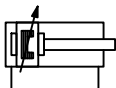
Pneumatic drives

	CRHD-			→ Page/online
	MQ	MC	MS	
1 Self-aligning rod coupler CRFK	■	■	■	137
2 Rod eye CRSGS	■	■	■	137
3 Rod clevis CRSG	■	■	■	137
15 Clevis foot CRLMC	-	■	-	137
16 Nut CR	■	-	-	137
22 Proximity sensor CRSMT	■	■	■	138
23 Mounting kit CRSMB-8-32/100	■	■	■	138
24 One-way flow control valve CRGRLA	■	■	■	139
25 Push-in fittings CRQS	■	■	■	crqs

Standards-based cylinders CRDNG

01

Data sheet



Pneumatic drives

Technical data		Dimensions → Page 141						
Piston Ø		32	40	50	63	80	100	125
Conforms to standard		ISO 15552						
Pneumatic connection		G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
Piston rod end		Male thread						
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2
Stroke	[mm]	1 ... 2000						
Cushioning		Pneumatic cushioning, adjustable at both ends						
Cushioning length	[mm]	19	21	23	23	30	30	40
Theoretical force at 6 bar, advancing	[N]	483	754	1178	1870	3016	4712	7363
Theoretical force at 6 bar, retracting	[N]	415	633	990	1682	2721	4418	6881

Operating conditions		Dimensions → Page 141						
Piston Ø		32	40	50	63	80	100	125
Operating pressure	[bar]	0.6 ... 10						
Ambient temperature ¹⁾								
CRDNG-.../CRDNGS-...	[°C]	-20 ... +80						
CRDNG/CRDNGS-...-S6	[°C]	0 ... +120						

1) Note operating range of proximity sensors

Materials	
Piston rod	High-alloy stainless steel
Bearing cap	Stainless steel casting
Cylinder barrel	High-alloy stainless steel
End cap	Stainless steel casting
Seals	
CRDNG-.../CRDNGS-...	NBR, TPE-U (PUR) media seal (modified for resistance to hydrolysis and cleaning)
CRDNG/CRDNGS-...-S6	FPM

Order code

		CRDNG	-		-		-	PPV	-	A	-		-		
Type															
CRDNG	Double-acting standards-based cylinder														
CRDNGS	Double-acting standards-based cylinder with swivel flange														
Piston Ø [mm]															
	Stroke [mm]														
32, 40, 50, 63, 80, 100, 125	1 ... 2000														
Cushioning															
PPV	Pneumatic cushioning, adjustable at both ends														
Position sensing															
A	Via proximity sensor														
Piston rod															
-	Piston rod at one end														
S2	Through piston rod 1														
Temperature resistance															
S6	Heat-resistant seals up to max. 120°C														

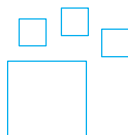
1 Not with temperature resistance S6

Order example:

CRDNG-100-30-PPV-A

Double-acting standards-based cylinder without swivel flange CRDNG - piston diameter 100 mm - stroke 30 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - piston rod at one end - no heat-resistant seal

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

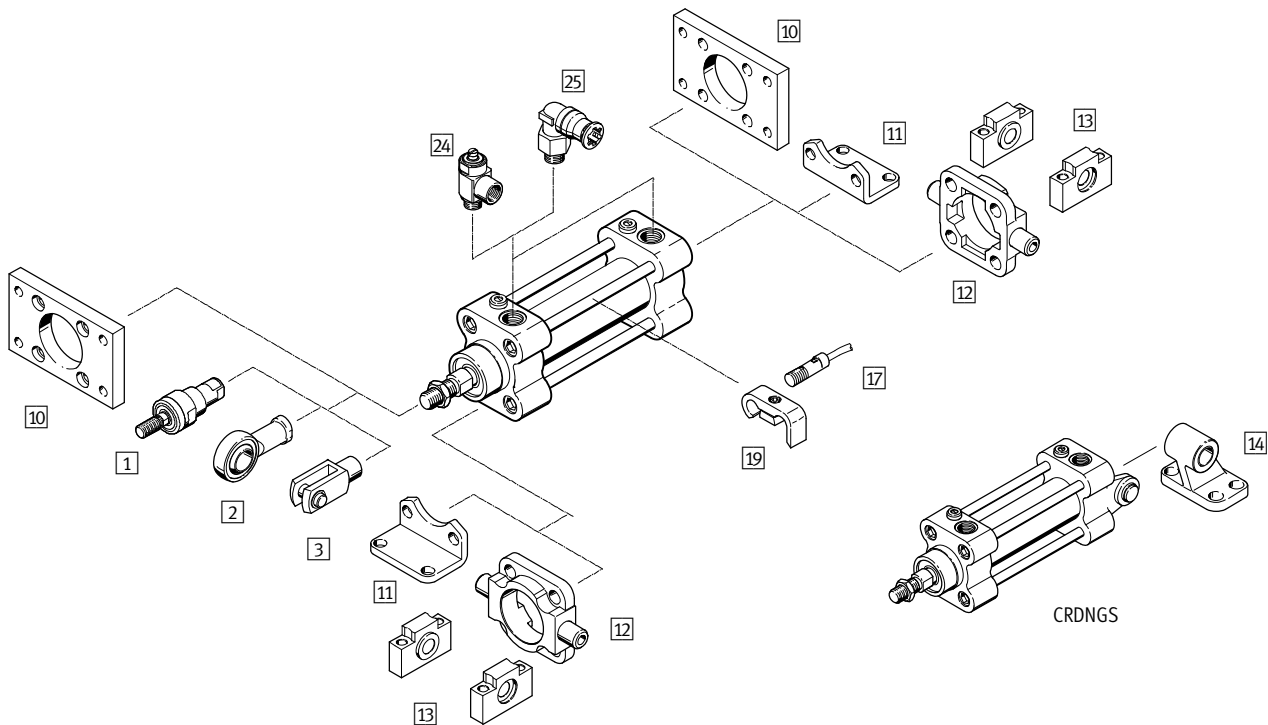
The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Standards-based cylinders CRDNG








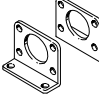
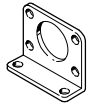
01 Accessories


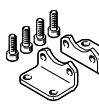
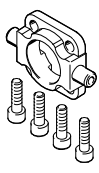
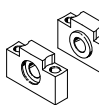
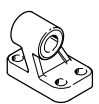
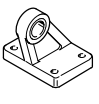

Pneumatic drives



	CRDNG	CRDNGS	→ Page/online
1 Self-aligning rod coupler CRFK	■	■	137
2 Rod eye CRSGS	■	■	137
3 Rod clevis CRSG	■	■	137
10 Flange mounting CRFNG	■	-	137
11 Foot mounting CRHNC	■	-	137
12 Trunnion flange CRZNG	■	-	137
13 Trunnion support CRLNZG	■	-	137
14 Clevis foot CRLNG	-	■	137
17 Proximity sensor CRSMEO-4	■	■	138
19 Mounting kit CRSMB	■	■	138
24 One-way flow control valve CRGRLA	■	■	139
25 Push-in fittings CRQS	■	■	qs

Accessories – Ordering data

	For Ø	Part no.	Type
1 Self-aligning rod coupler Data sheets online: → crfk			
	25, 32	2305778	CRFK-M10x1,25
	40	2305779	CRFK-M12x1,25
	50, 63	2490673	CRFK-M16x1,5
	80, 100	2545677	CRFK-M20x1,5
2 Rod eye Data sheets online: → crsgs			
	12, 16	195580	CRSGS-M6
	20	195581	CRSGS-M8
	25, 32	195582	CRSGS-M10x1,25
	40	195583	CRSGS-M12x1,25
	50, 63	195584	CRSGS-M16x1,5
	80, 100	195585	CRSGS-M20x1,5
3 Rod clevis Data sheets online: → crsg			
	12, 16	13567	CRSG-M6
	20	13568	CRSG-M8
	25, 32	13569	CRSG-M10x1,25
	40	13570	CRSG-M12x1,25
	50, 63	13571	CRSG-M16x1,5
	80, 100	13572	CRSG-M20x1,5
4 Foot mounting¹⁾ Dimensions online: → crdsnu			
	12	161866	CRHBN-12/16x1
	16	162999	CRHBN-12/16x2
	20	161867	CRHBN-20/25x1
	25	162998	CRHBN-20/25x2
5 Flange mounting Dimensions online: → crdsnu			
	12, 16	161864	CRFBN-12/16
	20	161865	CRFBN-20/25
	25	161865	CRFBN-20/25
6 Swivel mounting Dimensions online: → crdsnu			
	20	552904	CRSBN-20/25
	25	552904	CRSBN-20/25
7 Clevis foot Dimensions online: → crdsnu			
	12, 16	161862	CRLBN-12/16
	20, 25	161863	CRLBN-20/25
	32	195866	CRLBN-32
	40	195867	CRLBN-40
	50, 63	195868	CRLBN-50/63
8 Foot mounting Dimensions online: → crdsnu			
	32	162951	CRH-32
	40	162952	CRH-40
	50	162953	CRH-50
	63	162954	CRH-63
9 Flange mounting Dimensions online: → crdsnu			
	32	161858	CRFV-32
	40	161859	CRFV-40
	50	161860	CRFV-50
	63	161861	CRFV-63

	For Ø	Part no.	Type
10 Flange mounting Dimensions online: → crdng			
	32	161846	CRFNG-32
	40	161847	CRFNG-40
	50	161848	CRFNG-50
	63	161849	CRFNG-63
	80	161850	CRFNG-80
	100	161851	CRFNG-100
	125	185363	CRFNG-125
11 Foot mounting Dimensions online: → crdsnu			
	32	176937	CRHNC-32
	40	176938	CRHNC-40
	50	176939	CRHNC-50
	63	176940	CRHNC-63
	80	176941	CRHNC-80
	100	176942	CRHNC-100
	125	176943	CRHNC-125
12 Trunnion flange Dimensions online: → crdng			
	32	161852	CRZNG-32
	40	161853	CRZNG-40
	50	161854	CRZNG-50
	63	161855	CRZNG-63
	80	161856	CRZNG-80
	100	161857	CRZNG-100
	125	183362	CRZNG-125
13 Trunnion support Dimensions online: → crdng			
	32	161874	CRLNZG-32
	40, 50	161875	CRLNZG-40/50
	63, 80	161876	CRLNZG-63/80
	100, 125	161877	CRLNZG-100/125
14 Clevis foot Dimensions online: → crdng			
	32	161840	CRLNG-32
	40	161841	CRLNG-40
	50	161842	CRLNG-50
	63	161843	CRLNG-630
	80	161844	CRLNG-80
	100	161845	CRLNG-100
	125	176951	CRLNG-125
15 Clevis foot Dimensions online: → crhd			
	32	197320	CRLMC-32
	40	197321	CRLMC-40
	50	197322	CRLMC-50
	63	197323	CRLMC-63
	80	197324	CRLMC-80
	100	197325	CRLMC-100
16 Nut Dimensions online: → crhd			
	32	197326	CR-M30x1,5
	40	197327	CR-M38x1,5
	50, 63	197328	CR-M45x1,5
	80, 100	197329	CR-M50x2

1) CRHBN-...x1: 1 foot
CRHBN-...x2: 2 feet. 1 nut


Cylinders with piston rod > Stainless-steel cylinders >


Round cylinders CRDSNU/CRHD/CRDNG


01


Accessories – Ordering data

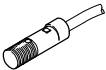
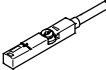
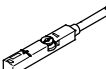
Pneumatic drives

	For Ø	Part no.	Type
18 Mounting kit for proximity sensor CRSMEO-4 Dimensions online: → crdsnu			
	For round cylinder CRDSNU		
	12	164581	CRSMBR-12
	16	164582	CRSMBR-16
	20	164583	CRSMBR-20
	25	164584	CRSMBR-25
	32	163888	CRSMBR-32
	40	163889	CRSMBR-40
	50	163890	CRSMBR-50
	63	163891	CRSMBR-63

	For round cylinder CRDNG	Part no.	Type	
19 Mounting kit for proximity sensor CRSMEO-4 Dimensions online: → crdng				
	32	161763	CRSMB-32	
	40	161764	CRSMB-40	
	50	161765	CRSMB-50	
	63	161766	CRSMB-63	
	80	161767	CRSMB-80	
	100	161768	CRSMB-100	
		125	185365	CRSMB-125



	For round cylinder CRDSNU	Part no.	Type
21 Mounting kit for proximity sensor CRSMT-8 Dimensions online: → crdsnu			
		★ 538937	SMBR-8-8/100-S6


	For round cylinder CRHD	Part no.	Type
23 Mounting kit for proximity sensor CRSMT-8 Dimensions online: → crhd			
		525565	CRSMB-8-32/100


	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
17 Proximity sensor, magnetic reed – N/O contact Dimensions online: → crsmeo					
	12 ... 125	Corrosion-resistant, cable, 3-wire	2.5	161775	CRSMEO-4-K-LED-24
20 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	12 ... 100	PNP, cable, 3-wire	5.0	574380	CRSMT-8M-PS-24V-K-5,0-OE
		PNP, cable, 3-wire	10.0	574381	CRSMT-8M-PS-24V-K-10,0-OE
		PNP, plug, 3-pin	0.3	574383	CRSMT-8M-PS-24V-K-0,3-M8D
		PNP, plug, 3-pin	0.3	574382	CRSMT-8M-PS-24V-K-0,3-M12
22 Magneto-resistive – N/O contact Data sheets → Page 1206					
	12 ... 100	PNP, cable, 3-wire	2.5	525563	CRSMT-8-PS-K-LED-24
	12 ... 100	PNP, cable, 3-wire	5.0	525564	CRSMT-8-PS-K5-LED-24

Accessories – Ordering data

01

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	12 ... 100	Cable, M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		Cable, M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	12 ... 100	Cable, M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		Cable, M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

	Connection Thread	For push-in fitting	Part no.	Type
23 One-way flow control valves CRGRLA – Material: electrolytically polished stainless steel casting Dimensions online: → crgrla				
	M5	CRQS/CRQSL/CRQST	161403	CRGRLA-M5-B
	G1/8		161404	CRGRLA-1/8-B
	G1/4		161405	CRGRLA-1/4-B
	G3/8		161406	CRGRLA-3/8-B
	G1/2		161407	CRGRLA-1/2-B

	Connection Thread	Volume [l]	Part no.	Type
Air reservoir CRVZS – Material: high-alloy stainless steel Dimensions online: → crvzs				
	G1/8	0.1	160233	CRVZS-0,1
	G1/4	0.4	160234	CRVZS-0,4
	G1/4	0.75	160235	CRVZS-0,75
	G1/2	2	160236	CRVZS-2
	G1, G3/8	5	192159	CRVZS-5
	G1, G3/8	10	160237	CRVZS-10

Pneumatic drives

Round cylinders CRDSNU

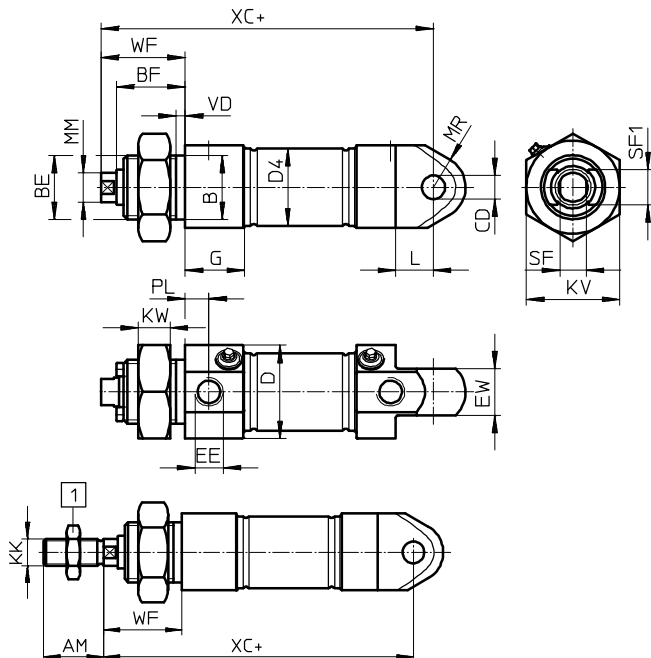
Download CAD data → www.festo.com

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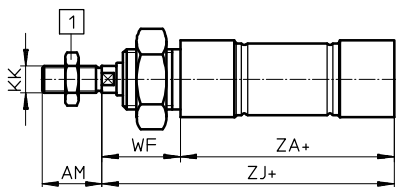
Dimensions

Basic design – Ø 12 ... 25

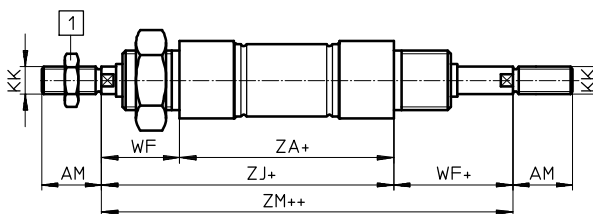
Pneumatic drives



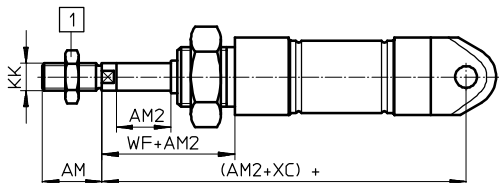
MQ – Lateral air connection



S2 – Through piston rod



K8 – Extended piston rod



1 Piston rod nut is not included in the scope of delivery with Ø 12 ... 20.

+ = plus stroke length
++ = plus 2x stroke length

Ø	AM	AM2	B	BE	BF	CD	D	D4	EE	EW	G	KK	KV
[mm]		max.	Ø h9			Ø H8	Ø	Ø					
12	16	1 ... 100	16	M16x1.5	18	6	20	13.3	M5	12	9.5	M6	24
16	16	1 ... 100	16	M16x1.5	18	6	20	17.3	M5	12	9.7	M6	24
20	20	1 ... 100	22	M22x1.5	20.7	8	30	21.3	G1/8	16	20.5	M8	32
25	22	1 ... 100	22	M22x1.5	23.5	8	32	26.5	G1/8	16	20.5	M10x1.25	32

Ø	KW	L	MM	MR	PL	ST	SF1	VD	WF	XC	ZA	ZJ	ZM
[mm]			Ø							±1			
12	8	10	6	8	6	5	9	3.5	22	75	50	72	95
16	8	10	6	8	6	5	9	3.5	22	82	56	78	101
20	11	13	8	11	8.2	7	12	3.5	24	95	68	92	117
25	11	13	10	11	8.2	9	12	3.5	28	104	69.5	97.5	126

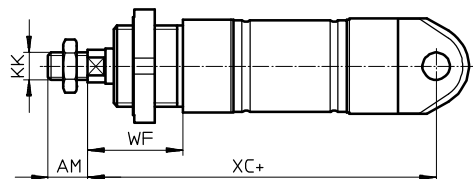
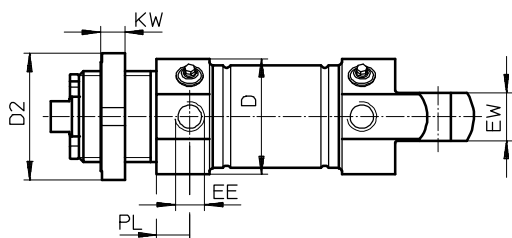
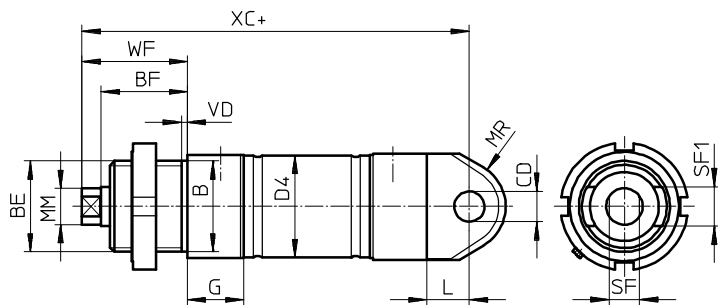
Dimensions

Basic design – Ø 32 ... 63

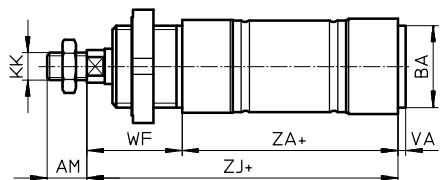
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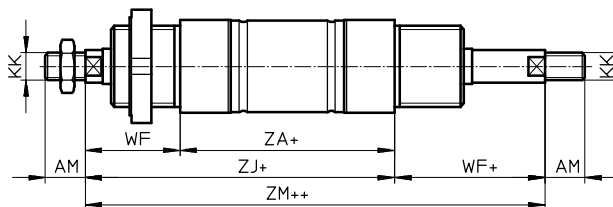
Pneumatic drives



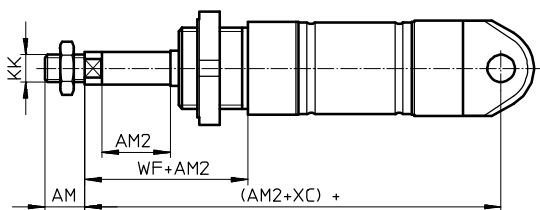
MQ – Lateral air connection



S2 – Through piston rod



K8 – Extended piston rod



+ = plus stroke length
++ = plus 2x stroke length

Ø	AM	AM2	B	BA	BE	BF	CD	D	D2	D4	EE	EW	G	KK
[mm]		max.	Ø h9	h9			Ø H8	Ø	Ø	Ø				
32	22	1 ... 500	30	30	M30x1.5	28.4	10	38	42	33.6	G1/8	16	18.6	M10x1.25
40	24	1 ... 500	38	38	M38x1.5	32	12	49	50	41.6	G1/4	18	24.7	M12x1.25
50	32	1 ... 500	45	45	M45x1.5	36.4	16	57	60	52.4	G1/4	21	24.4	M16x1.5
63	32	1 ... 500	45	45	M45x1.5	36.4	16	70	60	65.4	G3/8	21	27.4	M16x1.5

Ø	KW	L	MM	MR	PL	ST	SF1	VA	VD	WF	XC	ZA	ZJ	ZM
[mm]			Ø								±1			
32	8	14	12	15	9	10	13	3	4.3	34	118	69.5	104	138
40	10	16	16	19	12	13	18	4	4.3	39	140	84.6	124	163
50	10	17	20	22.5	12	17	22	4	4.3	44	147	86.2	130	175
63	10	17	20	22.5	13	17	22	4	4.3	44	156	94.2	139	183

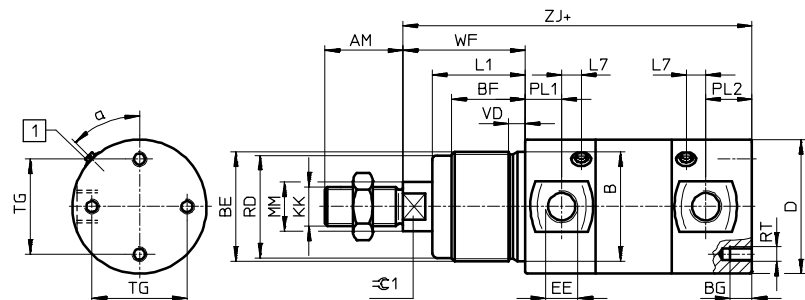
Round cylinders CRHD

01

Dimensions

Download CAD data → www.festo.com

CRHD- ... -MQ – Bearing cap with male thread



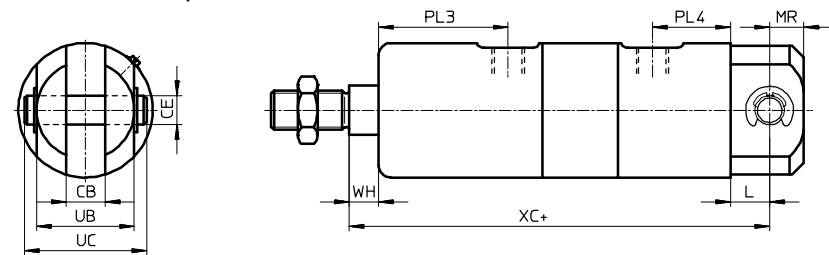
1 Regulating screw for end-position cushioning

+ = plus stroke length

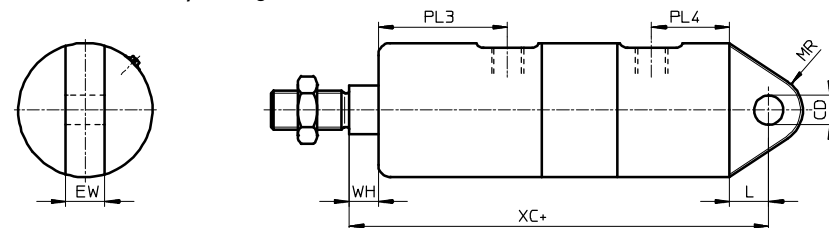
∅	α	AM	B ∅ h9	BE	BF	BG	D ∅	EE	KK	L1
32	50°	22	30	M30x1.5	25	8	36	G1/8	M10x1.25	30
40	45°	24	38	M38x1.5	29	8	45	G1/8	M12x1.25	35
50	45°	32	45	M45x1.5	30	8	55	G1/4	M16x1.5	38
63	45°	32	45	M45x1.5	30	10	68	G3/8	M16x1.5	38
80	45°	40	50	M50x2	30	15	86	G3/8	M20x1.5	38
100	45°	40	50	M50x2	30	15	106	G3/8	M20x1.5	38

∅	L7	MM ∅	RD ∅	RT	PL1	PL2	TG	VD	WF	ZJ	≈G1
32	5	12	27	M5	13	21	22	7	38	120	10
40	8	16	35	M6	15	18	30	7	45	135	13
50	5	20	42	M6	15	19	39	6.25	50	143	17
63	8	20	42	M8	17	24	49	6.25	50	158	17
80	9	25	47	M10	18	31	65	7.5	50	174	22
100	13	25	47	M10	22	30	82	7.5	50	189	22

CRHD- ... -MC – End cap with clevis



CRHD- ... -MS – End cap with lug



+ = plus stroke length

∅	CB	CD ∅	CE ∅	EW	L	MR	PL3	PL4	UB	UC	WH	XC
[mm]	+0.2/+0.1	H9	e8	-0.1/-0.2					-0.1/-0.2			
32	10	10	10	10	15	12	43	28	26	35	8	142
40	12	12	12	12	16	14	50	27	32	43	10	160
50	16	12	12	16	16	14	53	30	40	51	12	170
63	16	16	16	16	22	18	55	34	40	53	12	190
80	20	16	16	20	22	20	56	45	60	73	12	210
100	20	20	20	20	27	25	60	43.5	60	73	12	230

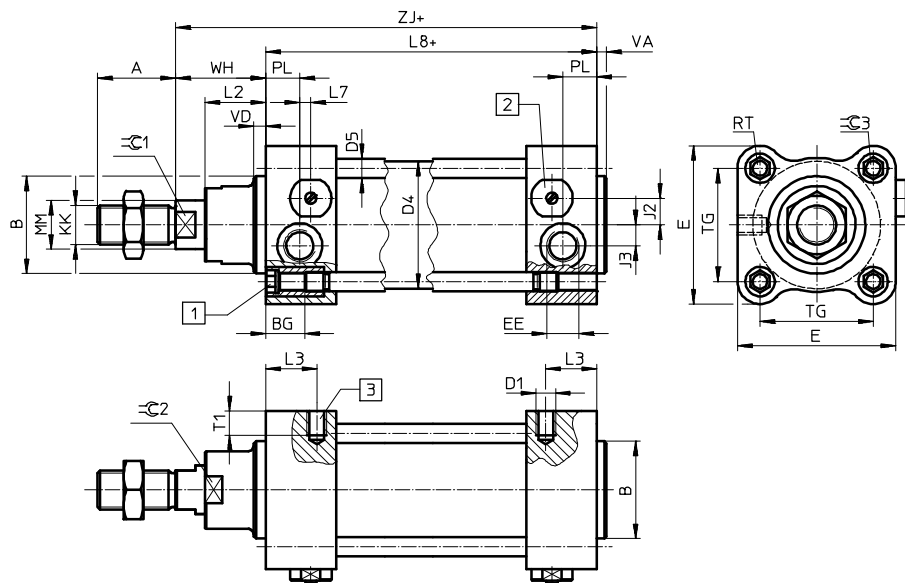
Pneumatic drives

Dimensions

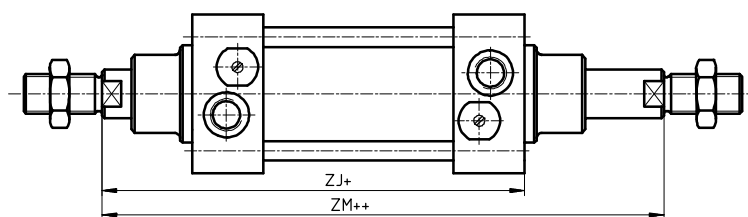
Basic design – Ø 32 ... 125

Download CAD data → www.festo.com

01



S2 – Through piston rod



- 1 Socket head screw with female thread
- 2 Cover for adjustable end-position cushioning
- 3 Threaded hole for direct mounting

+ = plus stroke length
++ = plus 2x stroke length

Ø	A	B	BG	D1	D4	D5	E	EE	J2	J3	KK	L2	L3
[mm]		Ø e11			Ø	Ø							
32	22	30	16	M6	33.6	6	50	G1/8	7	5.7	M10x1.25	16	13
40	24	35	16	M6	41.6	6	55	G1/4	10	6.5	M12x1.25	18	16.5
50	32	40	16	M8	52.4	8	65	G1/4	11.5	8.6	M16x1.5	25	21
63	32	45	16	M10	65.4	8	75	G3/8	14.5	12	M16x1.5	25	22
80	40	45	23	M10	82.8	10	100	G3/8	15	13	M20x1.5	31	22.5
100	40	55	23	M12	102.8	10	120	G1/2	23	14	M20x1.5	36	22.5
125	54	60	23	M12	128.6	12	145	G1/2	28.5	8	M27x2	46	23.5

Ø	L7	L8	MM	PL	RT	T1	TG	VA	VD	WH	ZJ	ZM	≈C1	≈C2	≈C3
[mm]			Ø												
32	5.3	94 +0.4	12	13	M6	9	32.5	4	6	26	120	148	10	26	6
40	2.5	105 +0.4/-0.6	16	14	M6	9	38	4	6	30	135	167	13	30	6
50	4.5	106 +0.4/-0.6	20	14	M8	10	46.5	4	6	37	143	183	17	34	8
63	5	121 +0.4/-0.6	20	18	M8	12	56.5	4	6	37	158	199	17	36	8
80	6	128 +0.4/-0.6	25	17	M10	15	72	4	7	46	174	222	22	41	10
100	9	138 +0.4/-0.6	25	18	M10	18	89	4	7	51	189	240	22	41	10
125	4.5	160 +0.4/-0.6	32	27	M12	18	110	6	6	66	226	292	27	50	12

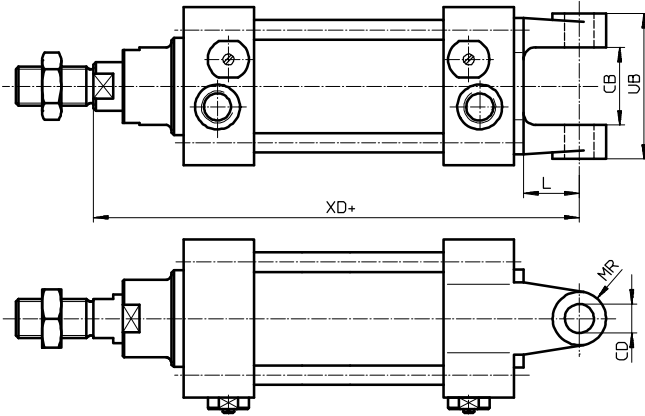
Round cylinders CRDNGS

Download CAD data → www.festo.com

01

Dimensions

Basic design – Ø 32 ... 125

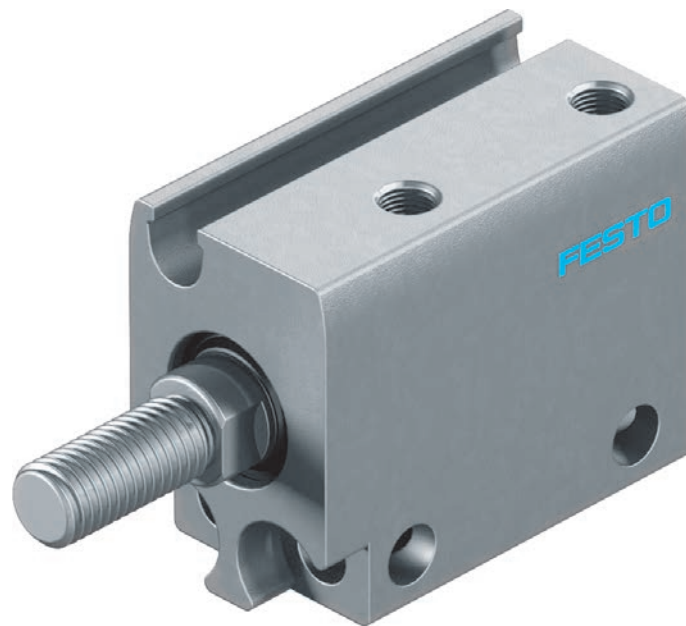


+ = plus stroke length

Ø	CB	CD	L	MR	UB	XD
[mm]	H14	Ø H9				
32	26	10	18	9	45	142
40	28	12	21	10	52	160
50	32	12	23	11	60	170
63	40	16	28	13	70	190
80	50	16	32	13	90	210
100	60	20	37	17	110	230
125	70	25	44	23	130	276

Pneumatic drives

New New series



Gain space and save money during engineering

- + With compact dimensions
- + With extra-short length
- + With increased mounting flexibility

Cylinders with piston rod > Compact, short-stroke and flat cylinders >
Short-stroke cylinders

ADN-S

Double-acting

AEN-S

Single-acting

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Short-stroke cylinders

ADN-S / AEN-S



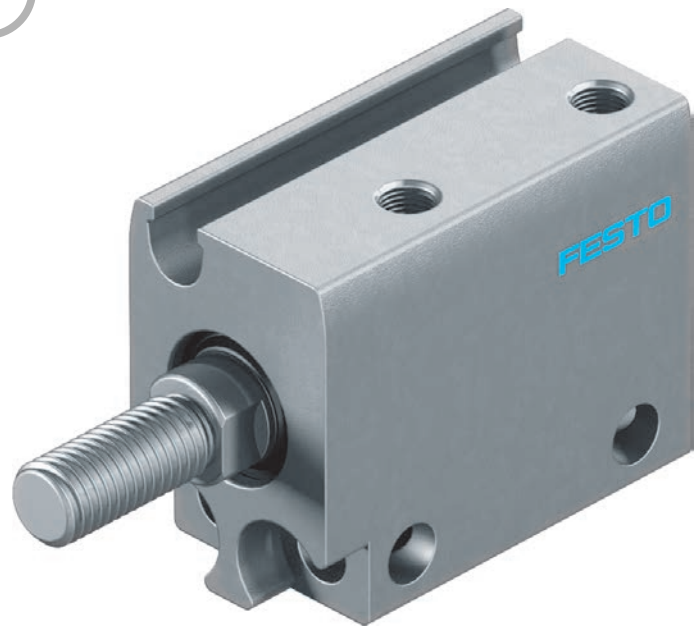
Overview, configuration and ordering

→ www.festo.com/catalogue/adn-s



Additional information, support and user documentation

→ www.festo.com/sp/adn-s



- + Piston diameters 6 and 10 mm
- + Requires minimal installation space
- + Additional mounting holes
- + For position sensing

NEW

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Compact cylinders ADN-S/AEN-S

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options			→ Page/online
				A	I	A	
Double-acting	ADN-S						
	6, 10	5, 10	17 / 47	■	■	■	148
Single-acting	AEN-S – Pushing						
	6, 10	5, 10	13 / 41.7	■	■	■	150

Product options

A Male thread

I Female thread

A Position sensing

01

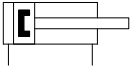
Pneumatic drives

Compact cylinders ADN-S

NEW

01

Data sheet – Double-acting



Pneumatic drives

Technical data		Dimensions → Page 153	
Piston Ø	6	10	
Pneumatic connection	M3		
Piston rod end	Female thread		
	Male thread		
Stroke [mm]	5, 10		
Theoretical force at 6 bar, advancing [N]	17	47	
Theoretical force at 6 bar, retracting [N]	9.4	30.2	

Operating conditions			
Piston Ø	6	10	
Operating pressure ¹⁾ [bar]	1.5 ... 8	1 ... 8	
Ambient temperature ²⁾ [°C]	-10 ... +60		

- 1) The minimum pressure values in retracting direction may be slightly higher after an extended idle time.
- 2) Note operating range of proximity sensors.

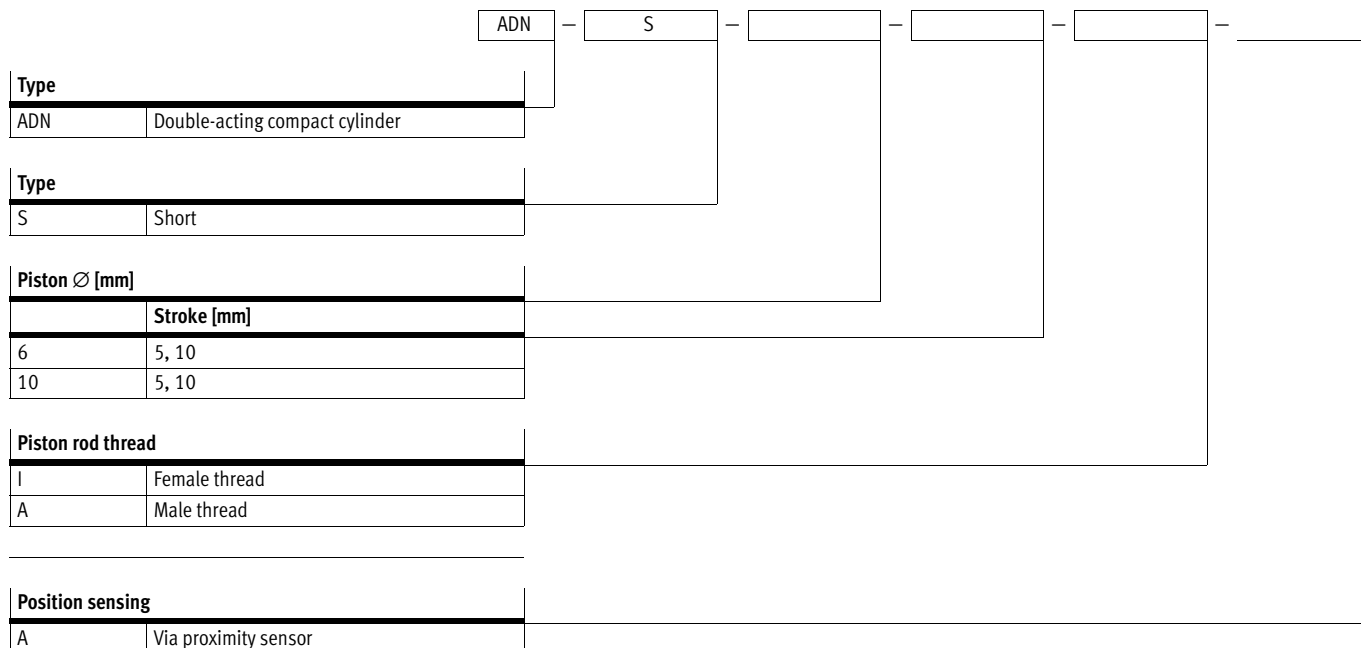
Materials	
Housing	Smooth anodised wrought aluminium alloy
Piston rod	High-alloy stainless steel
Seals	NBR
	TPE-U (PU)

NEW

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Compact cylinders ADN-S

Order code – Double-acting



01

Pneumatic drives

Order example:

ADN-S-6-10-I-A

Double-acting compact cylinder ADN - short type - piston diameter 6 mm - stroke 10 mm - female thread - position sensing via proximity sensor

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

2018/11 – Subject to change

★ Generally ready for shipping ex works in 24 hours

→ www.festo.com/catalogue/...

149

Compact cylinders AEN-S

NEW

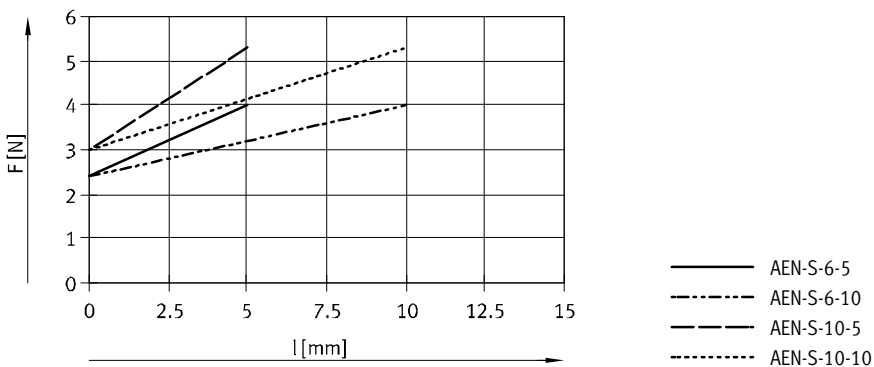
Pneumatic drives

Data sheet – Single-acting



Technical data		Dimensions → Page 155	
Piston Ø	6	10	
Pneumatic connection	M3		
Piston rod end	Female thread		
	Male thread		
Stroke [mm]	5, 10		
Theoretical force at 6 bar, advancing [N]	13	41.7	

Theoretical spring force for retraction



Operating conditions			
Piston Ø	6	10	
Operating pressure [bar]	2.5 ... 8	1.5 ... 8	
Ambient temperature ¹⁾ [°C]	-10 ... +60		

1) Note operating range of proximity sensors.

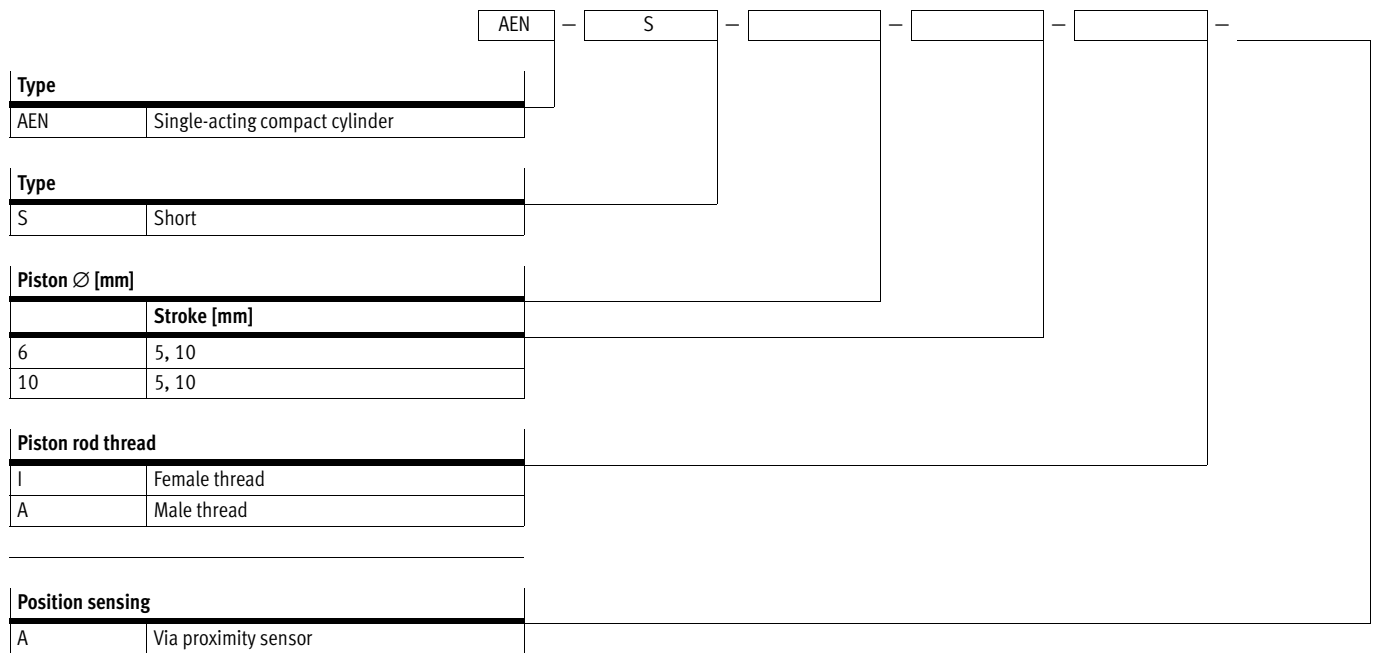
Materials	
Housing	Anodised wrought aluminium alloy
Piston rod	High-alloy stainless steel
Seals	NBR
	TPE-U (PU)

NEW

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Compact cylinders AEN-S

Order code – Double-acting



01

Pneumatic drives

Order example:

AEN-S-6-10-I-A

Single-acting compact cylinder AEN - short type - piston diameter 6 mm - stroke 10 mm - female thread - position sensing via proximity sensor

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.






The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

01

Accessories – Ordering data

Pneumatic drives

	Switching output, connection	Cable length [m]		Part no.	Type
Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1217					
	PNP, plug	0.3	★	551375	SMT-10M-PS-24V-E-0,3-L-M8D
	PNP, cable	2.5	★	551373	SMT-10M-PS-24V-E-2,5-L-OE
Proximity sensor for C-slot, magnetic reed – N/O contact Data sheets → Page 1217					
	Contacting, plug	0.3	★	551367	SME-10M-DS-24V-E-0,3-L-M8D
	Contacting, cable	2.5	★	551365	SME-10M-DS-24V-E-2,5-L-OE
	Contacting, cable	2.5	★	551369	SME-10M-ZS-24V-E-2,5-L-OE
Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1217					
	PNP, plug	0.3		547863	SMT-10G-PS-24V-E-0,3Q-M8D
	PNP, cable	2.5		547862	SMT-10G-PS-24V-E-2,5Q-OE
	NPN, plug	0.3		8065029	SMT-10G-NS-24V-E-0,3Q-M8D
	NPN, cable	2.5		8065030	SMT-10G-NS-24V-E-2,5Q-OE
Connecting cable, straight socket Data sheets → Page 1543					
	M8x1, 3-pin	2.5	★	541333	NEBU-M8G3-K-2.5-LE3
		5.0	★	541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	M8x1, 3-pin	2.5	★	541338	NEBU-M8W3-K-2.5-LE3
		5.0	★	541341	NEBU-M8W3-K-5-LE3

NEW

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

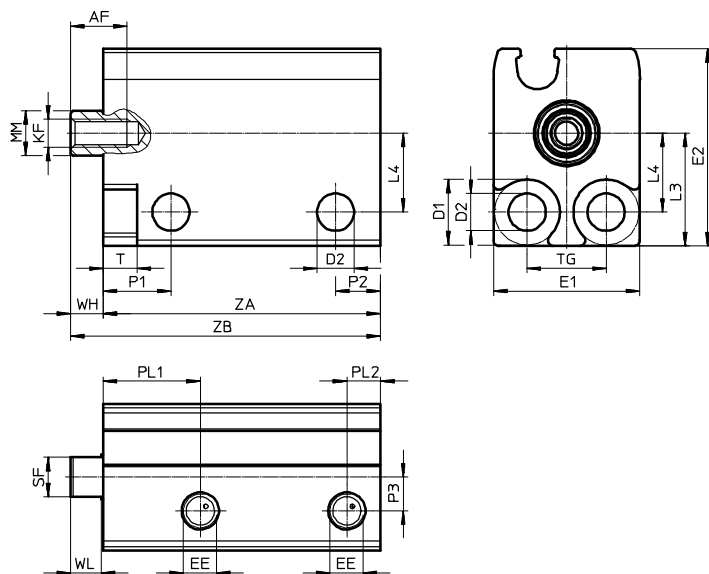
Compact cylinders ADN-S

Download CAD data → www.festo.com

01

Dimensions

With female thread



Pneumatic drives

∅	AF	D1	D2	EE	E1	E2	KF	L3	L4	MM
[mm]	min.	∅ H13	∅		max.	max.				
6	5	5.8	3.3	M3	13	17.5	M2.5	10	7	4
10	6				13.5	20.5	M3	11	8	6

∅	P1	P2	P3	PL2	SF	T	TG	WH	WL
[mm]							±0.1		
6	6	4	3	3	3.5	3	7	3	2.7
10			3.2		5				

∅	Stroke	Position sensing	PL1	ZA	ZB
[mm]	[mm]			+0.3	+0.35
6	5	-	8.6	20.5	23.5
		■	8.6	24.5	27.5
	10	-	8.6	25.5	28.5
10	5	■	8.6	29.5	32.5
		-	9.2	20.5	23.5
	10	-	9.2	25.5	28.5
10	10	-	9.2	25.5	28.5
		■	9.9	29.5	32.5

Compact cylinders ADN-S

NEW

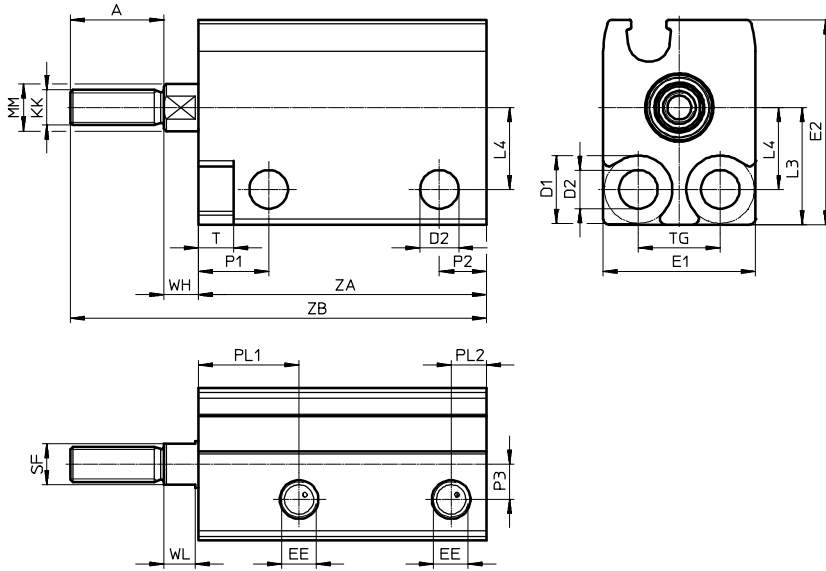
Download CAD data → www.festo.com

01

Dimensions

With male thread

Pneumatic drives



∅	A	D1 ∅	D2 ∅	EE	E1	E2	KK	L3	L4	MM
[mm]		H13			max.	max.				
6	8	5.8	3.3	M3	13	17.5	M3	10	7	4
10	10				13.5	20.5	M4	11	8	6

∅	P1	P2	P3	PL2	SF	T	TG	WH	WL
[mm]							±0.1		
6	6	4	3	3	3.5	3	7	3	2.7
10			3.2		5				

∅	Stroke [mm]	Position sensing	PL1	ZA +0.3	ZB +0.35
6	5	-	8.6	20.5	23.5
		■	8.6	24.5	27.5
	10	-	8.6	25.5	28.5
		■	8.6	29.5	32.5
10	5	-	9.2	20.5	23.5
		■	9.9	24.5	27.5
	10	-	9.2	25.5	28.5
		■	9.9	29.5	32.5

NEW

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Compact cylinders AEN-S

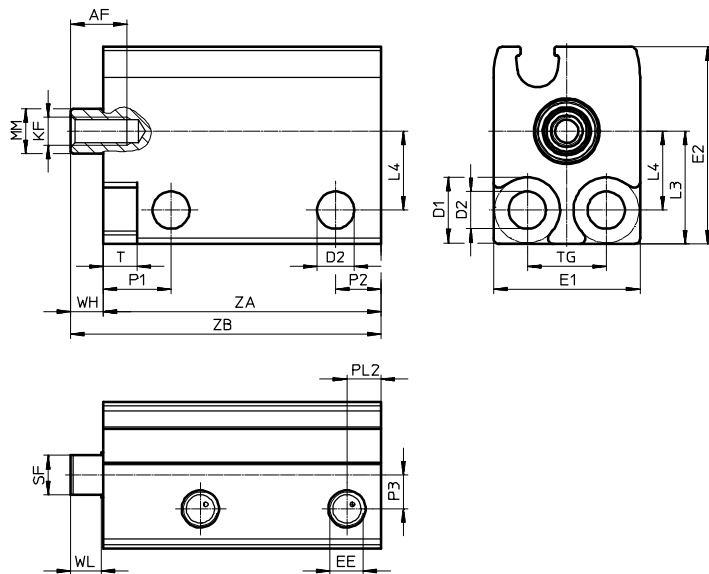
Dimensions

With female thread

Download CAD data → www.festo.com

01

Pneumatic drives



∅	AF	D1	D2	EE	E1	E2	KF	L3	L4	MM
[mm]	min.	∅ H13	∅		max.	max.				
6	5	5.8	3.3	M3	13	17.5	M2.5	10	7	4
10	6				13.5	20.5	M3	11	8	6

∅	P1	P2	P3	PL2	SF	T	TG	WH	WL
[mm]							±0.1		
6	6	4	3	3	3.5	3	7	3	2.7
10			3.2		5				

∅	Stroke	Position sensing	ZA	ZB
[mm]	[mm]		+0.3	+0.35
6	5	-	20.5	23.5
		■	24.5	27.5
	10	-	25.5	28.5
		■	29.5	32.5
10	5	-	20.5	23.5
		■	24.5	27.5
	10	-	25.5	28.5
		■	29.5	32.5

Compact cylinders AEN-S

NEW

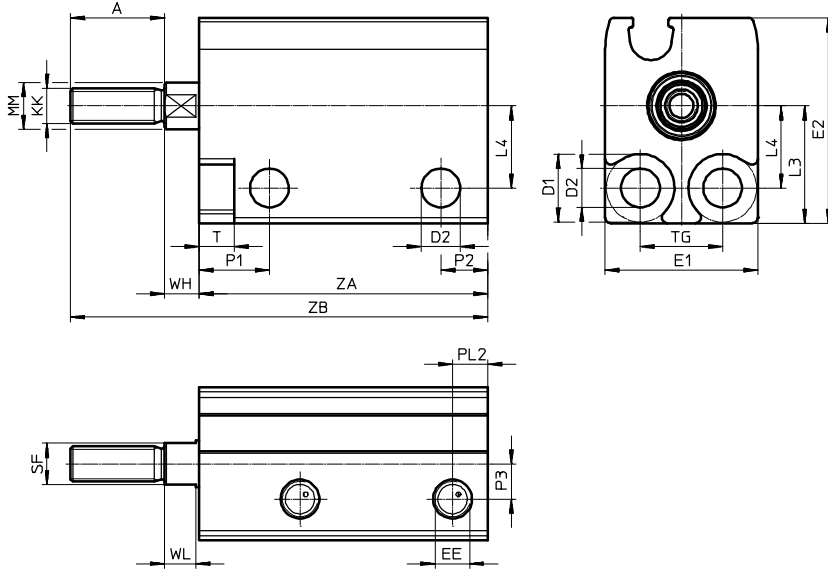
Download CAD data → www.festo.com

01

Dimensions

With male thread

Pneumatic drives

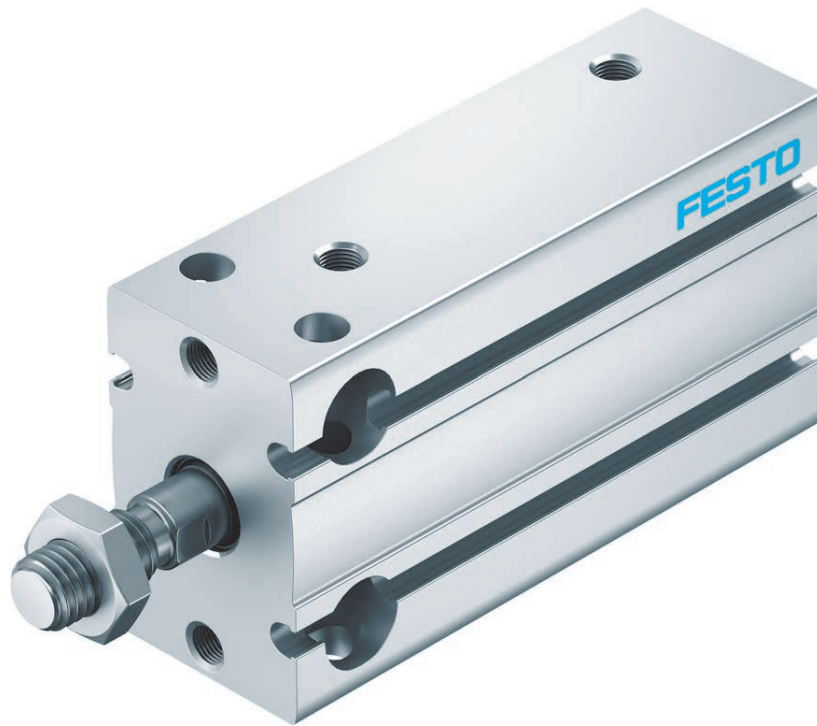


∅	A	D1 ∅	D2 ∅	EE	E1	E2	KK	L3	L4	MM
[mm]		H13			max.	max.				
6	8	5.8	3.3	M3	13	17.5	M3	10	7	4
10	10				13.5	20.5	M4	11	8	6

∅	P1	P2	P3	PL2	SF	T	TG	WH	WL
[mm]							±0.1		
6	6	4	3	3	3.5	3	7	3	2.7
10			3.2		5				

∅	Stroke [mm]	Position sensing	ZA	ZB
[mm]			+0.3	+0.35
6	5	-	20.5	23.5
		■	24.5	27.5
	10	-	25.5	28.5
		■	29.5	32.5
10	5	-	20.5	23.5
		■	24.5	27.5
	10	-	25.5	28.5
		■	29.5	32.5

New New series



Multi-talented in all situations

- + Wide range of mounting options
- + Perfect for all applications with linear movements and short stroke
- + Sturdy and reliable

Cylinders with piston rod > Compact, short-stroke and flat cylinders >
Compact cylinders, multimount

DPDM

Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Compact cylinders, multimount

DPDM



Overview, configuration and ordering

→ www.festo.com/catalogue/dpdm



Additional information, support and user documentation

→ www.festo.com/sp/dpdm



- + With and without protection against rotation
- + Easy mounting thanks to wide range of mounting interfaces
- + With piston rod at one end, through piston rod or through and hollow piston rod

NEW

Cylinders with piston rod > Short-stroke cylinders and compact cylinders >

Compact cylinders DPDM, multimount

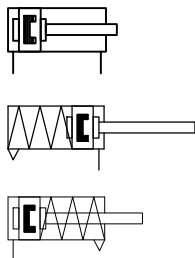
01

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options					
				Q	T	H	P	A	T1
DPDM									
Double-acting	6, 10, 16, 20, 25, 32	5 ... 50	17 ... 483	■	■	■	■	■	-
Single-acting, pushing	6, 10, 16, 20, 25, 32	5 ... 15	13 ... 415	■	-	-	■	■	-
Single-acting, pulling	6, 10, 16, 20, 25, 32	5 ... 15	13 ... 415	■	-	-	■	■	-

Product options

Q	Protection against rotation, double-acting	T	Through piston rod at one end	P	Elastic cushioning rings/plates at both ends	A	Position sensing
S	Single-acting, pushing	H	Through, hollow piston rod	T1	Heat-resistant seals up to max. 120°C		
P	Single-acting, pulling						

Data sheet

Technical data							Dimensions → Page 163
Piston Ø		6	10	16	20	25	32
Pneumatic connection		M5	M5	M5	M5	M5	G1/8
Piston rod thread		M3	M4	M6	M8	M10x1.25	M10x1.25
Stroke							
DPDM-...-P	[mm]	5, 10, 15, 20, 25, 30		5, 10, 15, 20, 25, 30, 40, 50			
DPDM-...-S/P	[mm]	5, 10, 15					
Theoretical force at 6 bar, advancing							
DPDM-...		17	47	121	188	295	483
DPDM-...-S		13	38	100	160	269	445
DPDM-...-T/H		13	40	104	158	247	415
Theoretical force at 6 bar, retracting							
DPDM-...		13	40	104	158	247	415
DPDM-...-P		9	31	93	130	221	377
Cushioning ¹⁾		Elastic cushioning rings/plates at both ends					

1) With piston Ø 6 in combination with the function "Single-acting, pushing", the cushioning is only at the bearing cap.

Operating conditions							
Piston Ø		6	10	16	20	25	32
Operating pressure							
DPDM-...	[bar]	1.8 ... 8		1.5 ... 8		1 ... 8	
DPDM-Q-...	[bar]	1.5 ... 10		1.5 ... 10		1 ... 8	
DPDM-...-S/-P	[bar]	2.5 ... 8		2 ... 8		1.5 ... 8	
Ambient temperature ¹⁾							
DPDM-...	[°C]	-10 ... +80					
DPDM-...-T1	[°C]	-		0 ... +120			

1) Note operating range of proximity sensors.

01

Data sheet

Materials	
Housing	Wrought aluminium alloy
Piston rod	High-alloy stainless steel
Seals	
DPDM-...	NBR/TPE-U(PU)
DPDM-...-T1	HNBR/FPM

Order code

Pneumatic drives

DPDM		-	-	-	-	-	-	-	-	P	A	-	-
Type													
DPDM	Cylinder												
Protection against rotation													
-	None												
Q	With protection against rotation												
Piston Ø													
	Stroke [mm]												
6	5, 10, 15, 20, 25, 30												
10	5, 10, 15, 20, 25, 30												
16	5, 10, 15, 20, 25, 30, 40, 50												
20	5, 10, 15, 20, 25, 30, 40, 50												
25	5, 10, 15, 20, 25, 30, 40, 50												
32	5, 10, 15, 20, 25, 30, 40, 50												
Function													
-	Double-acting												
S	Single-acting, pushing	1											
P	Single-acting, pulling	1											
Piston rod													
-	Piston rod at one end												
T	Through piston rod	2											
H	Through, hollow piston rod	2											
Cushioning													
P	Elastic cushioning rings/plates at both ends												
Position sensing													
A	Via proximity sensor												
Position sensing													
-	Standard												
T1	0 ... +120°C	2 3											

1 Only with stroke 5, 10, 15 mm

2 Not with S/P

3 Not with T/H

Order example:

DPDM-16-30-T-PA

Compact cylinder DPDM - piston diameter 16 mm - stroke 30 mm - double-acting - through piston rod - elastic cushioning rings/plates at both ends - position sensing via proximity sensor - standard temperature range

NEW

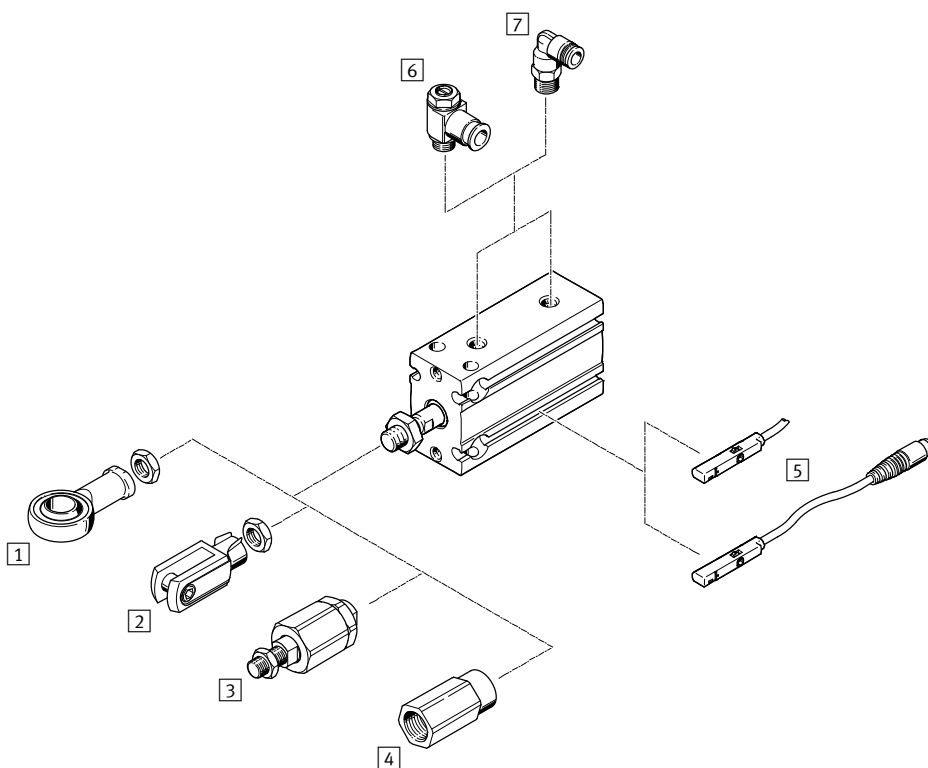
Cylinders with piston rod > Short-stroke cylinders and compact cylinders >

Compact cylinders DPDM, multimount

Accessories

01

Pneumatic drives



		→ Page/online
1	Rod eye SGS	162
2	Rod clevis SG	162
3	Self-aligning rod coupler FK	162
4	Adapter AD	162

		→ Page/online
5	Proximity sensor SME-/SMT-8, SMT10	162
6	One-way flow control valve GRLA/VFOH	162
7	Push-in fitting QS	1443
-	Connecting cable NEBU	162

Compact cylinders DPDM, multimount



01

Accessories – Ordering data

Pneumatic drives

	For Ø	Part no.	Type
1 Rod eye SGS Data sheets online: → sgs			
	10	9253	SGS-M4
	16	★ 9254	SGS-M6
	20	★ 9255	SGS-M8
	25	★ 9261	SGS-M10x1,25
	32	★ 9261	SGS-M10x1,25
2 Rod clevis SG Data sheets online: → sg			
	10	6532	SG-M4
	16	★ 3110	SG-M6
	20	★ 3111	SG-M8
	25	★ 6144	SG-M10x1,25
	32	★ 6144	SG-M10x1,25

	For Ø	Part no.	Type
3 Self-aligning rod coupler FK Data sheets online: → fk			
	10	6528	FK-M4
	16	★ 2061	FK-M4
	20	★ 2062	FK-M4
	25	★ 6140	FK-M10x1,25
	32	★ 6140	FK-M10x1,25
4 Adapter AD Data sheets online: → ad			
	10	–	–
	16	157328	AD-M6-M5
		157329	AD-M8-1/8
	20	157331	AD-M8-1/8
		157332	AD-M8-1/4
	25	157333	AD-M10x1,25-1/8
		157334	AD-M10x1,25-1/4
	32	157333	AD-M10x1,25-1/8
157334		AD-M10x1,25-1/4	

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
5 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	6 ... 20	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
		NPN, cable	2.5	★ 551377	SMT-10M-NS-24V-E-2,5-L-OE
		NPN, plug	0.3	★ 551379	SMT-10M-NS-24V-E-0,3-L-M8D
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	25, 32	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-K-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-K-0,3-M8D
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-K-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-K-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	25, 32	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-K7,5-OE

	For size	Switching output, connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 20	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	16 ... 20	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

	For Ø	Connection		Part no.	Type
		Thread	O.D.		
6 One-way flow control valve Data sheets → Page 1031					
	6, 10, 16, 20, 25	M5	4	★ 193138	GRLA-M5-QS-4-D
			6	★ 193139	GRLA-M5-QS-6-D
			4	★ 197577	GRLA-M5-QS-4-RS-D
			6	★ 197578	GRLA-M5-QS-6-RS-D
	32	G1/8	3	★ 193144	GRLA-1/8-QS-6-D
			4	★ 193145	GRLA-1/8-QS-8-D
			6	★ 197581	GRLA-1/8-QS-6-RS-D
			8	★ 534337	GRLA-1/8-QS-8-RS-D

NEW

Cylinders with piston rod > Short-stroke cylinders and compact cylinders >

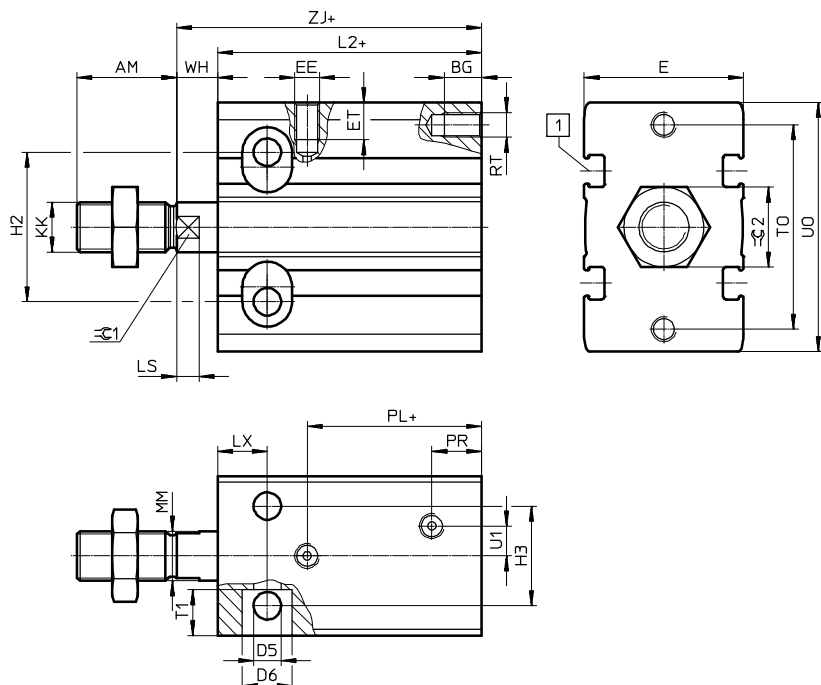
Compact cylinders DPDM, multimount

Dimensions

Download CAD data → www.festo.com

01

Basic design



- 1 Slot for proximity sensor:
 Ø 6 ... 20: SMT-10
 Ø 25, 32: SMT/SME-8

+ = plus stroke length

Ø	AM	BG	D5 Ø	D6	E	EE	ET	H2
[mm]					+0.3			
6	7	5	3.2	6	13	M5	4	10
10	10	5	3.2	6	15	M5	4.5	13
16	12	6	4.3	7.5	20	M5	4.5	19
20	16	7.5	5.5	10	26	M5	6	24
25	20	7.5	5.5	10	32	M5	7.5	30
32	20	9	6.6	11	40	G1/8	8.5	40

Ø	H3	KK	L2	LS	LX	MM Ø	PL	PR
[mm]				-0.1				
6	7	M3	33	-	7	3	17.5	9.5
10	9	M4	35	-	7	4	19.5	9.5
16	13	M6	40	3	7	6	24.1	11
20	16	M8	46	4	9	8	26.5	11
25	20	M10x1.25	48	4.5	10	10	30	10
32	24	M10x1.25	48	4.5	11	12	27	11

Ø	RT	T1	T0	U1	U0	WH ¹⁾	ZJ	⊖C1	⊖C2
[mm]								h13	
6	M3	5	17	-	22	2	35	-	5.5
10	M3	5	19	-	24	2	37	-	7
16	M4	6	27	-	32	5	45	5	10
20	M5	8.2	33	6	40	6	52	7	13
25	M5	9.2	41	6	50	7	55	9	17
32	M6	12	52	9	62	8	56	10	17

1) WH is measured when the piston rod is in the end position

Pneumatic drives

Compact cylinders DPDM, multimount

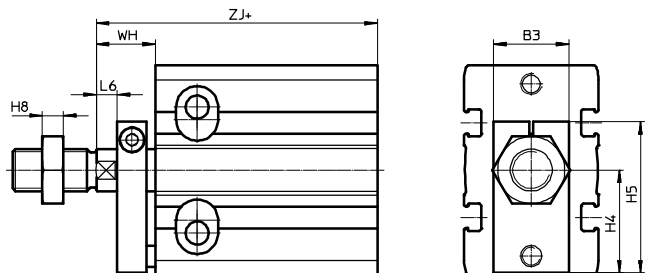
NEW

Download CAD data → www.festo.com

Pneumatic drives

01 Dimensions

Q – With protection against rotation

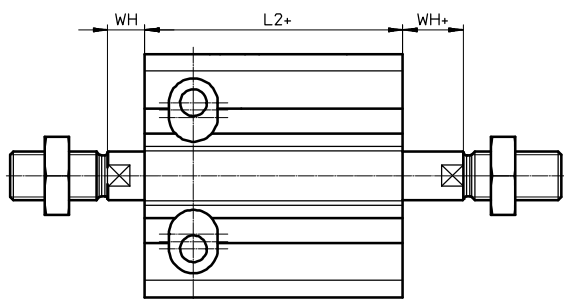


+ = plus stroke length

∅ [mm]	B3	H4	H5	H8	L6	WH	ZJ
6	11	10.5	17.5	1.8	–	9	42
10	14	11.5	19.5	2.2	–	9	44
16	15	15.5	24	3.2	3	12	52
20	15	19.5	29	4	4	13	59
25	18	24.5	36	5	5	14	62
32	20	30.5	45	5	6	15	63

T – Through piston rod

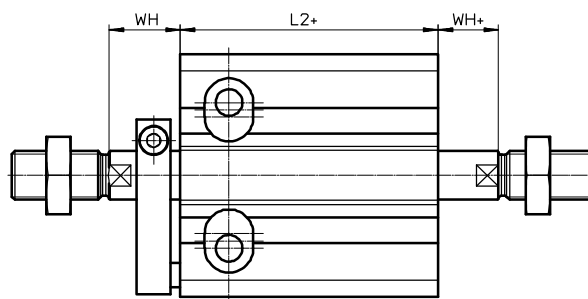
DPDM- ... -T



+ = plus stroke length

∅ [mm]	L2	WH	WH+
6	33	2	2
10	35	2	2
16	40	5	5
20	46	6	6
25	48	7	7
32	48	8	8

DPDM-Q- ... -T

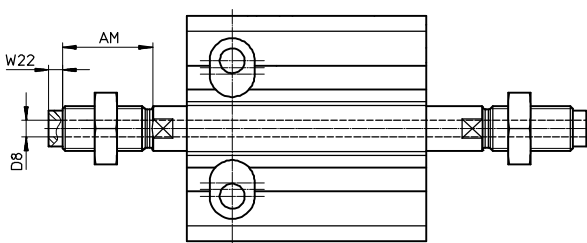


+ = plus stroke length

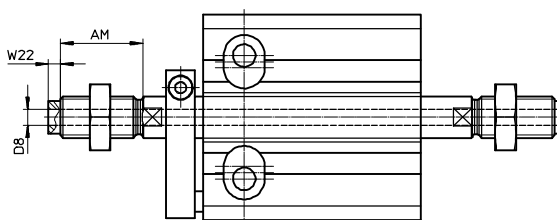
∅ [mm]	L2	WH	WH+
6	33	9	2
10	35	9	2
16	40	12	5
20	46	13	6
25	48	14	7
32	48	15	8

H – Through, hollow piston rod

DPDM- ... -H



DPDM-Q- ... -H



+ = plus stroke length

∅ [mm]	AM	D8 ∅	W22
16	12	2.3	3
20	16	3.2	2
25	20	3.8	3
32	20	4.5	3



ADVC
Double-acting



AEVC
Single-acting

Gain space and save money during engineering

- + With extremely compact dimensions
- + With maximum clamping forces
- + Thanks to standard hole pattern to VDMA 24562

Cylinders with piston rod > Compact, short-stroke and flat cylinders > Short-stroke cylinders

ADVC ★
Double-acting

AEVC ★
Single-acting


Cylinders with piston rod > Compact, short-stroke and flat cylinders >

Short-stroke cylinders


ADVC★ /AEVC★

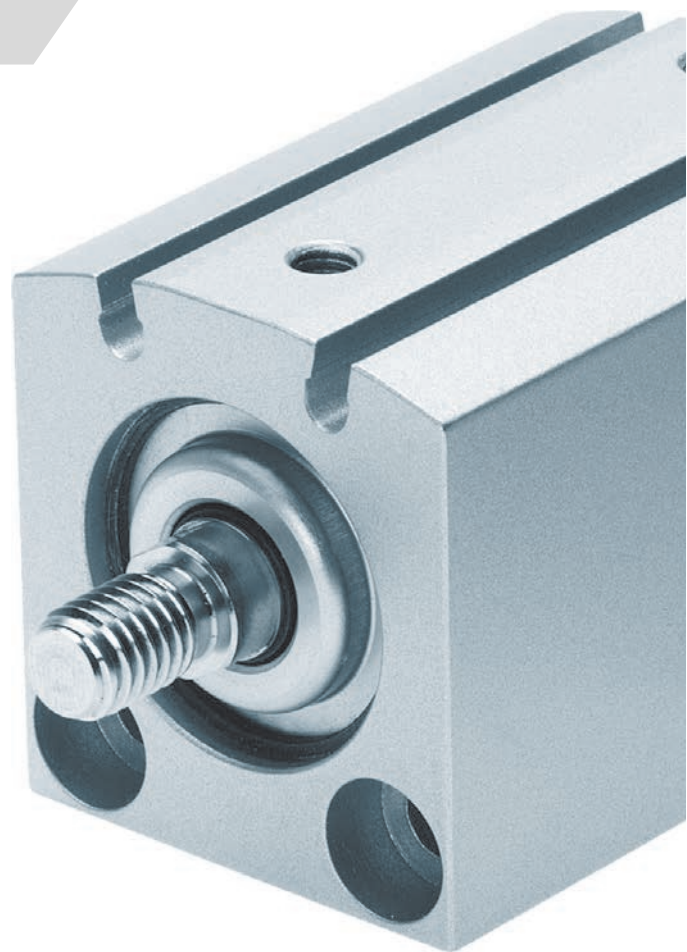
 Overview, configuration and ordering
→ www.festo.com/catalogue/advc



 Additional information, support and user documentation
→ www.festo.com/sp/advc



 Quick ordering of basic designs
→ page 169



- + Short-stroke cylinder with standard hole pattern to VDMA 24562 from diameter 32 mm
- + Minimal space required
- + High clamping forces in a compact size
- + For position sensing via proximity sensors for T-slot and for C-slot
- + Piston rod with female or male thread

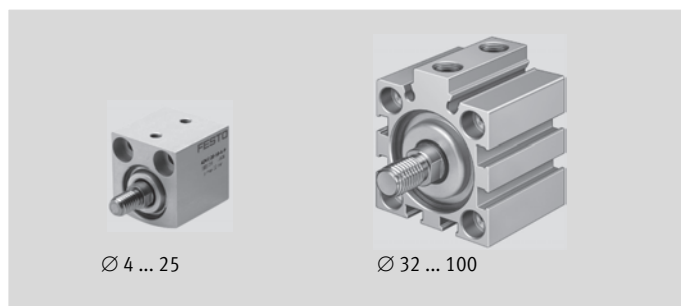
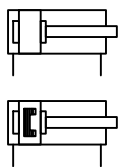
Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options					→ Page/ online
				Piston rod thread			P	A	
				A	I	–	P	A	
Double-acting	ADVC								
	4	2.5, 5	7.5	■	–	■	■	–	167
	6, 10	5, 10	17 ... 47	■	–	■	■	■	
	12	5, 10	68	■	■	■	■	■	
	16, 20, 25	5, 10, 15, 20, 25	121 ... 295	■	■	–	■	■	
	32, 40	5, 10, 15, 20, 25	483, 754	■	■	–	■	■	
50, 63, 80, 100	10, 15, 20, 25	1178 ... 4712	■	■	–	■	■		
Single-acting	AEVC								
	4	2.5, 5	5	■	–	■	■	–	171
	6, 10	5, 10	11 ... 41	■	–	■	■	■	
	12	5, 10	59	■	■	■	■	■	
	16, 20, 25	5, 10, 25	105 ... 270	■	■	–	■	■	
	32	5, 10, 25	450	■	■	–	■	■	
40, 50, 63, 80, 100	10, 25	700 ... 4500	■	■	–	■	■		

Product options

A	Male thread	P	Elastic cushioning rings/plates at both ends
I	Female thread	A	Position sensing
–	Without thread		

Data sheet – Double-acting



Technical data							Dimensions → Page 178	
Piston Ø		4	6	10	12	16	20	25
Pneumatic connection		M3	M3	M5	M5	M5	M5	M5
Female piston rod thread		–	–	–	M3	M4	M5	M5
Male piston rod thread		M2	M3	M4	M5	M6	M8	M8
Stroke		2.5, 5		5, 10		5, 10, 15, 20, 25		
Cushioning		Elastic cushioning rings/plates at both ends						
Theoretical force at 6 bar, advancing	[N]	7.5	17	47	68	121	189	295
Theoretical force at 6 bar, retracting	[N]	5.7	13	40	51	91	141	247
<hr/>								
Piston Ø		32	40	50	63	80	100	
Pneumatic connection		G1/8	G1/8	G1/8	G1/8	G1/8	G1/4	
Female piston rod thread		M6	M6	M8	M8	M10	M12	
Male piston rod thread		M10x1.25	M10x1.25	M12x1.25	M12x1.25	M16x1.5	M20x1.5	
Stroke		5, 10, 15, 20, 25		10, 15, 20, 25				
Cushioning		Elastic cushioning rings/plates at both ends						
Theoretical force at 6 bar, advancing	[N]	483	754	1178	1870	3016	4712	
Theoretical force at 6 bar, retracting	[N]	415	686	1056	1750	2847	4418	

Short-stroke cylinders ADVC ★

01

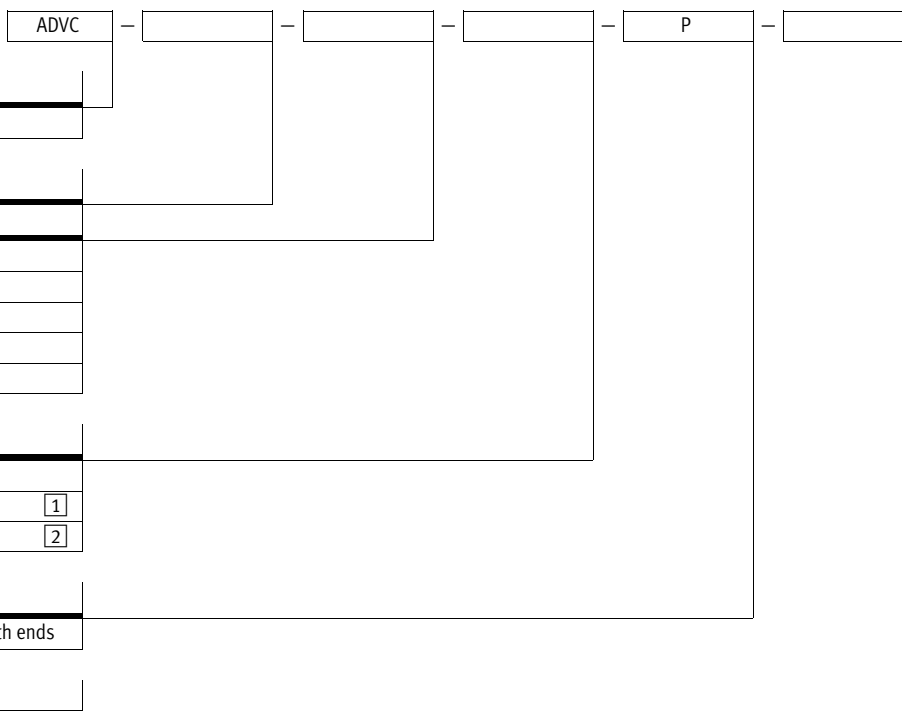
Data sheet – Double-acting

Operating conditions		4	6	10	12	16	20	25	32	40	50	63	80	100
Piston Ø														
Operating pressure	[bar]	2 ... 8	1.5 ... 8	1 ... 8	1 ... 10				0.6 ... 10					
Ambient temperature ¹⁾	[°C]	-20 ... +80												

1) Note operating range of proximity sensors.

Materials		4	6 ... 100
Piston Ø			
Piston rod		Anodised wrought aluminium alloy	High-alloy steel
Bearing cap		Anodised wrought aluminium alloy	
Cylinder barrel		Anodised wrought aluminium alloy	
End cap		Anodised wrought aluminium alloy	
Seals		HNBR, NBR	HNBR, TPE-U (PU)

Order code – Double-acting



Type	
ADVC	Double-acting short-stroke cylinder

Piston Ø [mm]	
	Stroke [mm]
4	2.5, 5
6, 10, 12	5, 10
16, 20, 25	5, 10, 15, 20, 25
32, 40	5, 10, 15, 20, 25
50, 63, 80, 100	10, 15, 20, 25

Piston rod thread	
A	Male thread
I	Female thread 1
-	Without thread 2

Cushioning	
P	Elastic cushioning rings/plates at both ends

Position sensing	
-	None
A	Via proximity sensor 3

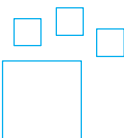
- 1 Not with piston Ø 4, 6 and 10
- 2 Only with piston Ø 4, 6, 10 and 12
- 3 From piston Ø 6

Order example:

ADVC-12-10-A-P-A

Double-acting short-stroke cylinder ADVC - piston diameter 12 mm - stroke 10 mm - male thread - elastic cushioning rings/plates at both ends - position sensing via proximity sensor

Ordering – Product options




Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or

→ www.festo.com/catalogue/...

Enter the type code in the search field.

Short-stroke cylinders ADVC  Quick ordering¹⁾

Male thread

Part no.	Type
Piston Ø 12 mm	
188094	ADVC-12-5-A-P
188095	ADVC-12-10-A-P
188092	ADVC-12-5-A-P-A
188093	ADVC-12-10-A-P-A
Piston Ø 16 mm	
188123	ADVC-16-5-A-P
188124	ADVC-16-10-A-P
188125	ADVC-16-15-A-P
188126	ADVC-16-20-A-P
188127	ADVC-16-25-A-P
188118	ADVC-16-5-A-P-A
188119	ADVC-16-10-A-P-A
188120	ADVC-16-15-A-P-A
188121	ADVC-16-20-A-P-A
188122	ADVC-16-25-A-P-A
Piston Ø 20 mm	
188155	ADVC-20-5-A-P
188156	ADVC-20-10-A-P
188157	ADVC-20-15-A-P
188158	ADVC-20-20-A-P
188159	ADVC-20-25-A-P
188150	ADVC-20-5-A-P-A
188151	ADVC-20-10-A-P-A
188152	ADVC-20-15-A-P-A
188153	ADVC-20-20-A-P-A
188154	ADVC-20-25-A-P-A

Part no.	Type
Piston Ø 25 mm	
188187	ADVC-25-5-A-P
188188	ADVC-25-10-A-P
188189	ADVC-25-15-A-P
188190	ADVC-25-20-A-P
188191	ADVC-25-25-A-P
188182	ADVC-25-5-A-P-A
188183	ADVC-25-10-A-P-A
188184	ADVC-25-15-A-P-A
188185	ADVC-25-20-A-P-A
188186	ADVC-25-25-A-P-A
Piston Ø 32 mm	
188219	ADVC-32-5-A-P
188220	ADVC-32-10-A-P
188221	ADVC-32-15-A-P
188222	ADVC-32-20-A-P
188223	ADVC-32-25-A-P
188214	ADVC-32-5-A-P-A
188215	ADVC-32-10-A-P-A
188216	ADVC-32-15-A-P-A
188217	ADVC-32-20-A-P-A
188218	ADVC-32-25-A-P-A

Part no.	Type
Piston Ø 40 mm	
188247	ADVC-40-5-A-P
188248	ADVC-40-10-A-P
188249	ADVC-40-15-A-P
188250	ADVC-40-20-A-P
188251	ADVC-40-25-A-P
188242	ADVC-40-5-A-P-A
188243	ADVC-40-10-A-P-A
188244	ADVC-40-15-A-P-A
188245	ADVC-40-20-A-P-A
188246	ADVC-40-25-A-P-A
Piston Ø 50 mm	
188272	ADVC-50-10-A-P
188273	ADVC-50-15-A-P
188274	ADVC-50-20-A-P
188275	ADVC-50-25-A-P
188268	ADVC-50-10-A-P-A
188269	ADVC-50-15-A-P-A
188270	ADVC-50-20-A-P-A
188271	ADVC-50-25-A-P-A
Piston Ø 63 mm	
188296	ADVC-63-10-A-P
188297	ADVC-63-15-A-P
188298	ADVC-63-20-A-P
188299	ADVC-63-25-A-P
188292	ADVC-63-10-A-P-A
188293	ADVC-63-15-A-P-A
188294	ADVC-63-20-A-P-A
188295	ADVC-63-25-A-P-A

1) All products in this table are easy to select and quick to order.

Cylinders with piston rod > Short-stroke cylinders and compact cylinders >

Short-stroke cylinders ADVC ★

01

★ Quick ordering¹⁾

Female thread

Pneumatic drives

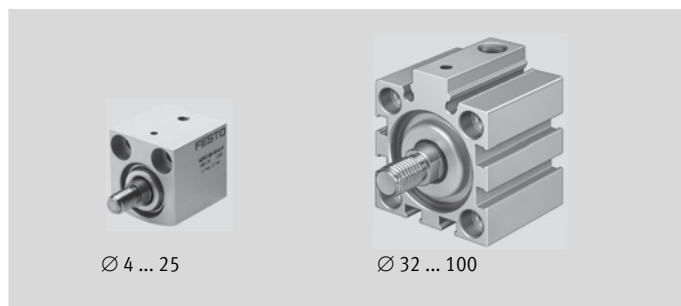
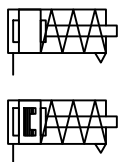
Part no.	Type
Piston Ø 12 mm	
188090	ADVC-12-5-I-P
188091	ADVC-12-10-I-P
188088	ADVC-12-5-I-P-A
188089	ADVC-12-10-I-P-A
Piston Ø 16 mm	
188113	ADVC-16-5-I-P
188114	ADVC-16-10-I-P
188115	ADVC-16-15-I-P
188116	ADVC-16-20-I-P
188117	ADVC-16-25-I-P
188108	ADVC-16-5-I-P-A
188109	ADVC-16-10-I-P-A
188110	ADVC-16-15-I-P-A
188111	ADVC-16-20-I-P-A
188112	ADVC-16-25-I-P-A
Piston Ø 20 mm	
188145	ADVC-20-5-I-P
188146	ADVC-20-10-I-P
188147	ADVC-20-15-I-P
188148	ADVC-20-20-I-P
188149	ADVC-20-25-I-P
188140	ADVC-20-5-I-P-A
188141	ADVC-20-10-I-P-A
188142	ADVC-20-15-I-P-A
188143	ADVC-20-20-I-P-A
188144	ADVC-20-25-I-P-A

Part no.	Type
Piston Ø 25 mm	
188177	ADVC-25-5-I-P
188178	ADVC-25-10-I-P
188179	ADVC-25-15-I-P
188180	ADVC-25-20-I-P
188181	ADVC-25-25-I-P
188172	ADVC-25-5-I-P-A
188173	ADVC-25-10-I-P-A
188174	ADVC-25-15-I-P-A
188175	ADVC-25-20-I-P-A
188176	ADVC-25-25-I-P-A
Piston Ø 32 mm	
188209	ADVC-32-5-I-P
188210	ADVC-32-10-I-P
188211	ADVC-32-15-I-P
188212	ADVC-32-20-I-P
188213	ADVC-32-25-I-P
188204	ADVC-32-5-I-P-A
188205	ADVC-32-10-I-P-A
188206	ADVC-32-15-I-P-A
188207	ADVC-32-20-I-P-A
188208	ADVC-32-25-I-P-A

Part no.	Type
Piston Ø 40 mm	
188237	ADVC-40-5-I-P
188238	ADVC-40-10-I-P
188239	ADVC-40-15-I-P
188240	ADVC-40-20-I-P
188241	ADVC-40-25-I-P
188232	ADVC-40-5-I-P-A
188233	ADVC-40-10-I-P-A
188234	ADVC-40-15-I-P-A
188235	ADVC-40-20-I-P-A
188236	ADVC-40-25-I-P-A
Piston Ø 50 mm	
188264	ADVC-50-10-I-P
188265	ADVC-50-15-I-P
188266	ADVC-50-20-I-P
188267	ADVC-50-25-I-P
188260	ADVC-50-10-I-P-A
188261	ADVC-50-15-I-P-A
188262	ADVC-50-20-I-P-A
188263	ADVC-50-25-I-P-A
Piston Ø 63 mm	
188288	ADVC-63-10-I-P
188289	ADVC-63-15-I-P
188290	ADVC-63-20-I-P
188291	ADVC-63-25-I-P
188284	ADVC-63-10-I-P-A
188285	ADVC-63-15-I-P-A
188286	ADVC-63-20-I-P-A
188287	ADVC-63-25-I-P-A

1) All products in this table are easy to select and quick to order.

Data sheet – Single-acting



Ø 4 ... 25

Ø 32 ... 100

Technical data		Dimensions → Page 185						
Piston Ø		4	6	10	12	16	20	25
Pneumatic connection		M3	M3	M5	M5	M5	M5	M5
Female piston rod thread		–	–	–	M3	M4	M5	M5
Male piston rod thread		M2	M3	M4	M5	M6	M8	M8
Stroke [mm]		2.5, 5	5, 10			5, 10, 25		
Cushioning		Elastic cushioning rings/plates at both ends						
Theoretical force at 6 bar, advancing	[N]	5	11	41	59	105	170	270
Theoretical force at 6 bar, retracting	[N]	1	3	3	4	5	10 ¹⁾	15
Piston Ø		32	40	50	63	80	100	
Pneumatic connection		G1/8	G1/8	G1/8	G1/8	G1/8	G1/4	
Female piston rod thread		M6	M6	M8	M8	M10	M12	
Male piston rod thread		M10x1.25	M10x1.25	M12x1.25	M12x1.25	M16x1.5	M20x1.5	
Stroke		5, 10, 25	10, 25					
Cushioning		Elastic cushioning rings/plates at both ends						
Theoretical force at 6 bar, advancing	[N]	450	700	1120	1800	2900	4500	
Theoretical force at 6 bar, retracting	[N]	22	28	40	50	85	140	

1) AEVC-63-5 = 5 N.

Operating conditions		4	6	10	12	16	20	25	32	40	50	63	80	100
Operating pressure	[bar]	2.5 ... 8	2 ... 8	1.5 ... 8	1.5 ... 10				1 ... 10					
Ambient temperature ²⁾	[°C]	–20 ... +80												

2) Note operating range of proximity sensors.

Materials		4	6 ... 100
Piston rod		Anodised wrought aluminium alloy	High-alloy steel
Bearing cap		Anodised wrought aluminium alloy	
Cylinder barrel		Anodised wrought aluminium alloy	
End cap		Anodised wrought aluminium alloy	
Seals		HNBR, NBR	HNBR, TPE-U (PU)

Short-stroke cylinders AEVC ★

01

Order code – Single-acting

Pneumatic drives

AEVC		-		-		-		-	P	-	
Type											
AEVC	Single-acting short-stroke cylinder										
Piston Ø [mm]											
	Stroke [mm]										
4	2.5, 5										
6, 10, 12	5, 10										
16, 20, 25	5, 10, 25										
32	5, 10, 25										
40, 50, 63, 80, 100	10, 25										
Piston rod thread											
A	Male thread										
I	Female thread 1										
-	Without thread 2										
Cushioning											
P	Elastic cushioning rings/plates at both ends										
Position sensing											
-	None										
A	Via proximity sensor 3										

- 1 Not with piston Ø 4, 6 and 10
- 2 Only with piston Ø 4, 6, 10 and 12
- 3 From piston Ø 6

Order example:

AEVC-63-10-I-P-A

Single-acting short-stroke cylinder - piston diameter 63 - stroke 10 mm - female thread - elastic cushioning rings/plates at both ends - position sensing via proximity sensor

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Male thread

Part no.	Type
Piston Ø 12 mm	
188086	AEVC-12-5-A-P
188087	AEVC-12-10-A-P
Piston Ø 16 mm	
188105	AEVC-16-5-A-P
188106	AEVC-16-10-A-P
188107	AEVC-16-25-A-P
Piston Ø 20 mm	
188137	AEVC-20-5-A-P
188138	AEVC-20-10-A-P
188139	AEVC-20-25-A-P

Part no.	Type
Piston Ø 25 mm	
188169	AEVC-25-5-A-P
188170	AEVC-25-10-A-P
188171	AEVC-25-25-A-P
Piston Ø 32 mm	
188201	AEVC-32-5-A-P
188202	AEVC-32-10-A-P
188203	AEVC-32-25-A-P
Piston Ø 40 mm	
188230	AEVC-40-10-A-P
188231	AEVC-40-25-A-P

Part no.	Type
Piston Ø 50 mm	
188258	AEVC-50-10-A-P
188259	AEVC-50-25-A-P
Piston Ø 63 mm	
188282	AEVC-63-10-A-P
188283	AEVC-63-25-A-P

Female thread

Part no.	Type
Piston Ø 12 mm	
188082	AEVC-12-5-I-P
188083	AEVC-12-10-I-P
Piston Ø 16 mm	
188099	AEVC-16-5-I-P
188100	AEVC-16-10-I-P
188101	AEVC-16-25-I-P
Piston Ø 20 mm	
188131	AEVC-20-5-I-P
188132	AEVC-20-10-I-P
188133	AEVC-20-25-I-P

Part no.	Type
Piston Ø 25 mm	
188163	AEVC-25-5-I-P
188164	AEVC-25-10-I-P
188165	AEVC-25-25-I-P
Piston Ø 32 mm	
188195	AEVC-32-5-I-P
188196	AEVC-32-10-I-P
188197	AEVC-32-25-I-P

Part no.	Type
Piston Ø 40 mm	
188226	AEVC-40-10-I-P
188227	AEVC-40-25-I-P
Piston Ø 50 mm	
188254	AEVC-50-10-I-P
188255	AEVC-50-25-I-P
Piston Ø 63 mm	
188278	AEVC-63-10-I-P
188279	AEVC-63-25-I-P

1) All products in this table are easy to select and quick to order.

Cylinders with piston rod > Short-stroke cylinders and compact cylinders >

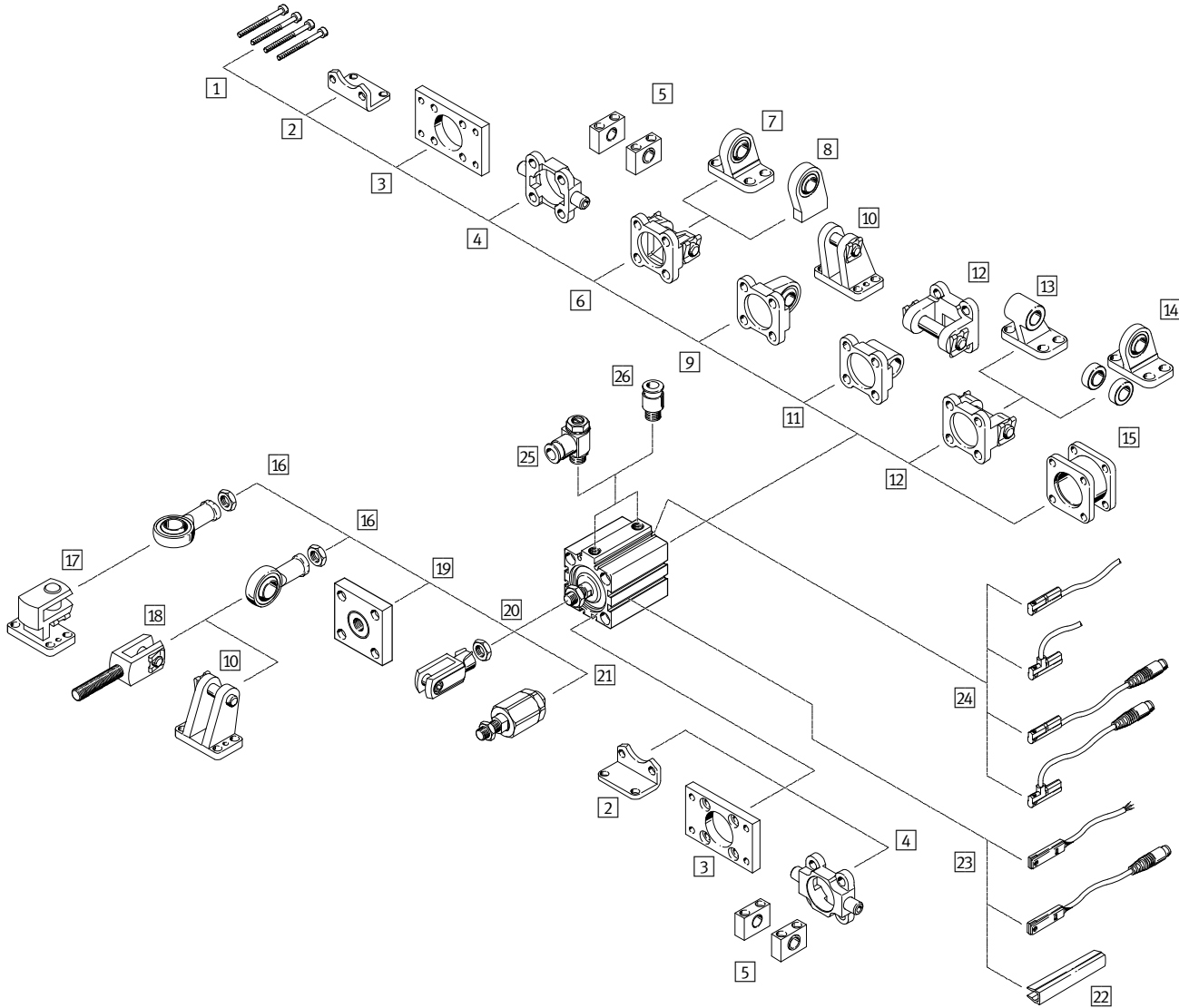
Short-stroke cylinders ADVC ★ /AEVC ★

01

Accessories

Ø 32 ... 100

Pneumatic drives



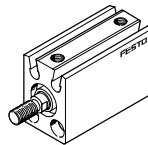
Ø 4 ... 25

Without position sensing



Ø 6 ... 25


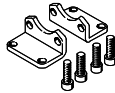
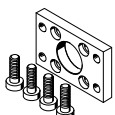
With position sensing

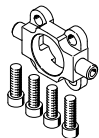
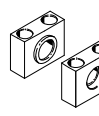
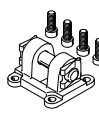


Accessories

	Piston Ø	→ Page/online		
		4, 6, 12	10, 16 ... 25	32 ... 100
1 Mounting screws (not included in the scope of delivery)	■ DIN 84	■ DIN 912	■ DIN 912	-
1 Mounting screws for Ø 80, 100 (not included in the scope of delivery)	-	-	■	175
2 Foot mounting HNC	-	-	■	175
3 Flange mounting FNC	-	-	■	175
4 Trunnion flange ZNCF	-	-	■	175
5 Trunnion support LNZG	-	-	■	175
6 Swivel flange SNC	-	-	■	175
7 Clevis foot LSNG	-	-	■	176
8 Clevis foot LSNSG	-	-	■	176
9 Swivel flange SNCS	-	-	■	176
10 Clevis foot LBG	-	-	■	176
11 Swivel flange SNCL	-	-	■	176
12 Swivel flange SNCB	-	-	■	176
13 Clevis foot LNG	-	-	■	176
14 Clevis foot LSN	-	-	■	176
15 Multi-position kit DPNC	-	-	■	176
16 Rod eye SGS	-	■	■	176
17 Right-angle clevis foot LQG	-	■	■	176
18 Rod clevis SGA	-	-	■	176
19 Coupling piece KSG	-	-	■	176
20 Rod clevis SG	-	■	■	176
21 Self-aligning rod coupler FK	■ Ø 12	■	■	177
22 Slot cover ABP-5-S	-	-	■	177
23 Proximity sensor SMT-/SME-8 and connecting cable NEBU	-	-	■	177
24 Proximity sensor SMT-/SME-10 and connecting cable NEBU	-	■	-	177
25 One-way flow control valve GRLA	■	■	■	177
26 Push-in fitting QS	■	■	■	1443

Accessories – Ordering data

	For Ø	Part no.	Type
1 Screw¹⁾			
	80, 100		HNC, FNC, SNC, SNCS, SNCL, SNCB M10x30
	80		ZNCF M10x40
	100		ZNCF M10x50
2 Foot mounting Dimensions online: → advc			
	32	★ 174369	HNC-32
	40	★ 174370	HNC-40
	50	★ 174371	HNC-50
	63	★ 174372	HNC-63
	80	★ 174373	HNC-80
	100	174374	HNC-100
3 Flange mounting Dimensions online: → advc			
	32	★ 174376	FNC-32
	40	★ 174377	FNC-40
	50	★ 174378	FNC-50
	63	★ 174379	FNC-63
	80	★ 174380	FNC-80
	100	174381	FNC-100

	For Ø	Part no.	Type
4 Trunnion flange Dimensions online: → advc			
	32	174411	ZNCF-32
	40	174412	ZNCF-40
	50	174413	ZNCF-50
	63	174414	ZNCF-63
	80	174415	ZNCF-80
	100	174416	ZNCF-100
5 Trunnion support Dimensions online: → lnzg			
	32	32959	LNZG-32
	40, 50	32960	LNZG-40/50
	63, 80	32961	LNZG-63/80
	100	32962	LNZG-100/125
6 Swivel flange Dimensions online: → advc			
	32	★ 174383	SNC-32
	40	★ 174384	SNC-40
	50	★ 174385	SNC-50
	63	★ 174386	SNC-63
	80	★ 174387	SNC-80
	100	174388	SNC-100



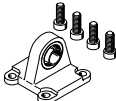
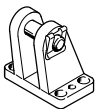
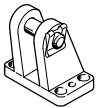
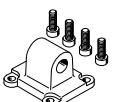
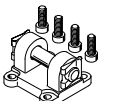
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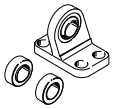




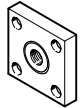

Short-stroke cylinders ADVC ★ /AEVC ★

01

Accessories – Ordering data

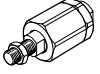

Pneumatic drives



	For Ø	Part no.	Type
7 Clevis foot Data sheets online: → lsng			
	32	31740	LSNG-32
	40	31741	LSNG-40
	50	31742	LSNG-50
	63	31743	LSNG-63
	80	31744	LSNG-80
	100	31745	LSNG-100
8 Clevis foot Data sheets online: → lsnsg			
	32	31747	LSNSG-32
	40	31748	LSNSG-40
	50	31749	LSNSG-50
	63	31750	LSNSG-63
	80	31751	LSNSG-80
	100	31752	LSNSG-100
9 Swivel flange Dimensions online: → advc			
	32	★ 174397	SNCS-32
	40	★ 174398	SNCS-40
	50	★ 174399	SNCS-50
	63	★ 174400	SNCS-63
	80	★ 174401	SNCS-80
	100	174402	SNCS-100
10 Clevis foot used with swivel flange SNCS Data sheets online: → lbg			
	32	31761	LBG-32
	40	31762	LBG-40
	50	31763	LBG-50
	63	31764	LBG-63
	80	31765	LBG-80
	100	31766	LBG-100
10 Clevis foot used with rod eye SGS Data sheets online: → lbg			
	32, 40	31761	LBG-32
	50, 63	31762	LBG-40
	80	31763	LBG-50
		31764	LBG-63
	100	31765	LBG-80
		31766	LBG-100
11 Swivel flange Dimensions online: → advc			
	32	★ 174404	SNCL-32
	40	★ 174405	SNCL-40
	50	★ 174406	SNCL-50
	63	★ 174407	SNCL-63
	80	★ 174408	SNCL-80
	100	174409	SNCL-100
12 Swivel flange Dimensions online: → advc			
	32	★ 174390	SNCB-32
	40	★ 174391	SNCB-40
	50	★ 174392	SNCB-50
	63	★ 174393	SNCB-63
	80	★ 174394	SNCB-80
	100	174395	SNCB-100

	For Ø	Part no.	Type
13 Clevis foot Data sheets online: → lng			
	32	★ 33890	LNG-32
	40	★ 33891	LNG-40
	50	★ 33892	LNG-50
	63	★ 33893	LNG-63
	80	★ 33894	LNG-80
	100	33895	LNG-100
14 Clevis foot Data sheets online: → lsn			
	32	5561	LSN-32
	40	5562	LSN-40
	50	5563	LSN-50
	63	5564	LSN-63
	80	5565	LSN-80
	100	5566	LSN-100
15 Multi-position kit Dimensions online: → advc			
	32	174418	DPNC-32
	40	174419	DPNC-40
	50	174420	DPNC-50
	63	174421	DPNC-63
	80	174422	DPNC-80
	100	174423	DPNC-100
16 Rod eye Data sheets online: → sgs			
	10	9253	SGS-M4
	16	★ 9254	SGS-M6
	20, 25	★ 9255	SGS-M8
	32, 40	★ 9261	SGS-M10x1,25
	50, 63	★ 9262	SGS-M12x1,25
	80	★ 9263	SGS-M16x1,5
	100	★ 9264	SGS-M20x1,5
17 Right-angle clevis foot Data sheets online: → lqg			
	32, 40	31768	LQG-32
	50, 63	31769	LQG-40
	80	31770	LQG-50
		31771	LQG-63
	100	31772	LQG-80
		31773	LQG-100
18 Rod clevis Data sheets online: → sga			
	32, 40	32954	SGA-M10x1,25
	50, 63	10767	SGA-M12x1,25
	80	10768	SGA-M16x1,5
	100	10769	SGA-M20x1,5
19 Coupling piece Data sheets online: → ksg			
	32, 40	32963	KSG-M10x1,25
	50, 63	32964	KSG-M12x1,25
	80	32965	KSG-M16x1,5
	100	32966	KSG-M20x1,5
20 Rod clevis Data sheets online: → sg			
	10	6532	SG-M4
	16	★ 3110	SG-M6
	20, 25	★ 3111	SG-M8
	32, 40	★ 6144	SG-M10x1,25
	50, 63	★ 6145	SG-M12x1,25
	80	★ 6146	SG-M16x1,5
	100	★ 6147	SG-M20x1,5

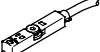
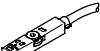
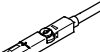
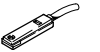
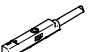

Accessories – Ordering data

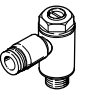
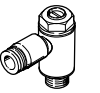
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	For Ø	Part no.	Type
21 Self-aligning rod coupler Data sheets online: → fk			
	10	6528	FK-M4
	12	30984	FK-M5
	16	★ 2061	FK-M6
	20, 25	★ 2062	FK-M8
	32, 40	★ 6140	FK-M10x1,25
	50, 63	★ 6141	FK-M12x1,25
	80	★ 6142	FK-M16x1,5
	100	★ 6143	FK-M20x1,5
22 Slot cover¹⁾			
	32, 40, 50, 63, 80, 100	151680	ABP-5-S

	Cable length [m]	Part no.	Type
23/24 Connecting cable, straight socket Data sheets → Page 1543			
	2.5 m	★ 541333	NEBU-M8G3-K-2.5-LE3
	5.0 m	★ 541334	NEBU-M8G3-K-5-LE3
	2.5 m	★ 541363	NEBU-M12G5-K-2.5-LE3
	5.0 m	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543			
	2.5 m	★ 541338	NEBU-M8W3-K-2.5-LE3
	5.0 m	★ 541341	NEBU-M8W3-K-5-LE3
	2.5 m	★ 541367	NEBU-M12W5-K-2.5-LE3
	5.0 m	★ 541370	NEBU-M12W5-K-5-LE3

1) Packaging unit 2x 0.5 m.

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
23 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	32 ... 100	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	32 ... 100	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	32 ... 100	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	32 ... 100	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
24 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	6 ... 25	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
Magnetic reed – N/O contact Data sheets → Page 1220					
	6 ... 25	Contacting, cable	2.5	173210	SME-10-KL-LED-24
		Contacting, plug	0.3	173212	SME-10-SL-LED-24

Function	For Ø	Connection		Part no.	Type
		Thread	O.D.		
25 One-way flow control valve with slotted head screw, metal²⁾ for exhaust air flow control Data sheets → Page 1031					
	10, 12, 16, 20	M5	3	★ 193137	GRLA-M5-QS-3-D
	25		4	★ 193138	GRLA-M5-QS-4-D
	32	G1/8	6	★ 193144	GRLA-1/8-QS-6-D
	40, 50, 63, 80		8	★ 193145	GRLA-1/8-QS-8-D
	100		8	★ 193147	GRLA-1/4-QS-8-D
For supply air flow control Data sheets → Page 1031					
	10, 12, 16, 20	M5	3	★ 193153	GRLZ-M5-QS-3-D
	25		4	★ 193154	GRLZ-M5-QS-4-D
	32	G1/8	6	★ 193158	GRLZ-1/8-QS-6-D
	40, 50, 63, 80		8	★ 193159	GRLZ-1/8-QS-8-D

2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

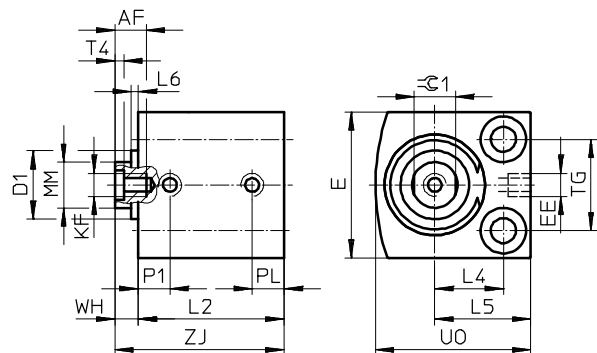
Short-stroke cylinders ADVC ★

01

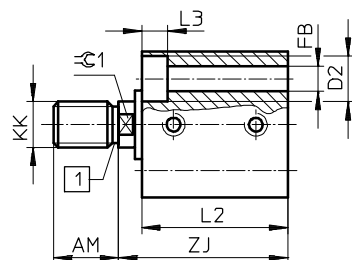
Dimensions

Without position sensing – Ø 4 ... 25

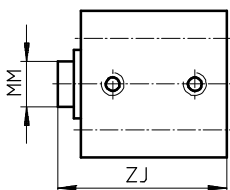
ADVC...-I-P – With female thread



ADVC...-A-P – With male thread



ADVC...-P – Without thread



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Note

Ø 4

Do not exceed the maximum screw-in depth of 3 mm and maximum tightening torque of 0.7 Nm.

Ø 10

The bearing cap can protrude up to 0.65 mm depending on the tolerance position.

Ø 12

The bearing cap can protrude up to 0.35 mm depending on the tolerance position.

1 No undercut with diameter 4/6/10.

Pneumatic drives

Ø	Stroke	AF	AM	D1	D2	E	EE	FB	KF	KK	L2	L3
[mm]	[mm]	min.	-0.5	Ø max.	Ø	max.		Ø			+0.2	
4	2.5	-	6	-	3.3 ^{+0.1}	10	M3	1.8	-	M2	13	1.8
	5										15.5	
6	5	-	6	-	5 ^{+0.1}	13	M3	2.9	-	M3	16	2.9
	10										21	
10	5	-	8	7.5	5.8 ^{+0.1}	18	M5	3.4	-	M4	21	3.4
	10										24	
12	5	8	8	10.7	6 ^{H13}	20	M5	3.4	M3	M5	23	3.4
	10										28	
16	5	10	12	-	8 ^{H13}	25	M5	4.5	M4	M6	23	4.6
	10										28	
	15										33	
	20										38	
	25										43	
20	5	12	12	-	10 ^{H13}	32	M5	5.5	M5	M8	27	5.7
	10										32	
	15										37	
	20										42	
	25										47	
25	5	12	12	-	10 ^{H13}	38	M5	5.5	M5	M8	27.5	5.7
	10										32.5	
	15										37.5	
	20										42.5	
	25										47.5	

Short-stroke cylinders ADVC ★

Dimensions

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∅	Stroke	L4	L5	L6	MM	P1	PL	T4	TG	UO	WH	ZJ	≙1
[mm]	[mm]			max.	∅				±0.1	max.		±0.8	
4	2.5	4	6.5	-	2	3.7	3.2	-	5.8	10	1	14	-
	5											16.5	
6	5	6	9	-	3	4.7	3	-	7	14	1	17	-
	10											22	
10	5	8	11.5	0.7	4	5.2	5.2	-	11	19	1.5	22.5	-
	10					6	5.5					25.5	
12	5	9	13	0.4	6	5.75	5.75	1.5	13	22	4	27	5
	10					9	6					32	
16	5	11.5	16.5	-	8	6	6	2	15	27	4	27	7
	10					32							
	15					37							
	20					42							
	25					47							
20	5	15	21	-	10	7.5	7	2	20	34	5	32	9
	10											37	
	15											42	
	20											47	
	25											52	
25	5	15.5	21.5	-	10	8	6.5	2	26	37	5	32.5	9
	10											37.5	
	15											42.5	
	20											47.5	
	25											52.5	

Pneumatic drives

Short-stroke cylinders ADVC ★

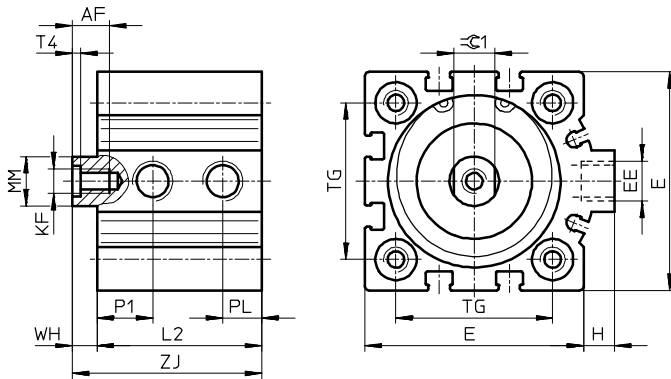
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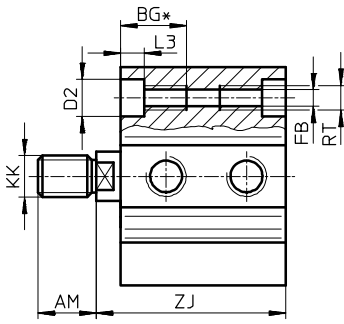
Dimensions

Without position sensing – Ø 32 ... 100

ADVC-...-I-P – With female thread




ADVC-...-A-P – With male thread



Pneumatic drives

Ø	AF	AM	BG ¹⁾	D2	E	EE	FB	H	KF	KK ²⁾
[mm]	min.	-0.5	min.	Ø F9	max.		Ø			
32	12	14	21.7	9	45	G1/8	5.2	7	M6	M10x1.25
40	12	14	21.7	9	53.5	G1/8	5.2	7	M6	M10x1.25
50	16	16	22.8	11	63.5	G1/8	6.8	7	M8	M12x1.25
63	16	16	22.8	11	75	G1/8	6.8	7.5	M8	M12x1.25
80	20	22	25	14	93	G1/8	8.5	7	M10	M16x1.5
100	24	28	25	14	113	G1/4	8.5	13	M12	M20x1.5

1) Continuous thread with shorter sizes.
 2) Nut for piston rod thread included in the scope of delivery.

Short-stroke cylinders ADVC 

Dimensions

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∅	Stroke	L2	L3	MM ∅	P1	PL	RT	T4	TG	WH	ZJ	≡C1
[mm]	[mm]	+0.2							±0.1		±0.8	
32	5	34	5.7	12	9	8.5	M6	2.6	32.5	6	40	10
	10	39									45	
	15	44									50	
	20	49									55	
	25	54									60	
40	5	34.5	5.7	12	11	9	M6	2.6	38	6	40.5	10
	10	39.5									45.5	
	15	44.5									50.5	
	20	49,5									55.5	
	25	54.5									60.5	
50	10	38	6.8	16	11.3	9.5	M8	3.3	46.5	8	46	13
	15	43									51	
	20	48									56	
	25	53									61	
63	10	45	6.8	16	12.5	11.5	M8	3.3	56.5	8	53	13
	15	50									58	
	20	55									63	
	25	60									68	
80	10	50	9	20	15	15	M10	4.7	72	8	58	17
	15	55									63	
	20	60									68	
	25	65									73	
100	10	59	9	25	16.5	19	M10	6.1	89	10	69	22
	15	64									74	
	20	69									79	
	25	74									84	

Pneumatic drives

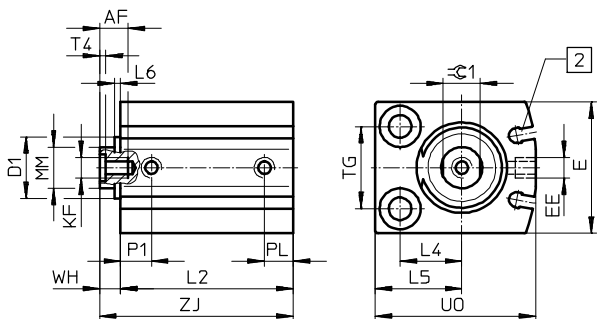
Short-stroke cylinders ADVC ★

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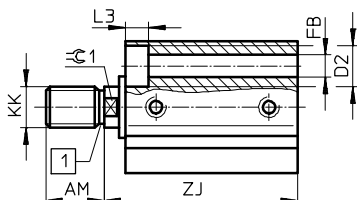
Dimensions

With position sensing – Ø 6 ... 25

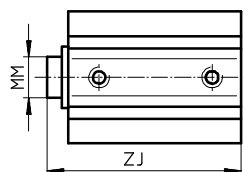
ADVC...-I-P-A – With female thread



ADVC...-A-P-A – With male thread



ADVC...-P-A – Without thread



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Note

Ø 10

The bearing cap can protrude up to 0.65 mm depending on the tolerance position.

Ø 12

The bearing cap can protrude up to 0.35 mm depending on the tolerance position.

1 No undercut with diameter 6/10.

2 Slot for proximity sensor SME/SMT-10

Pneumatic drives

Ø [mm]	Stroke [mm]	AF min.	AM -0.5	D1 Ø max.	D2 Ø	E max.	EE	FB Ø	KF	KK	L2 +0.2	L3
6	5	-	6	-	5 +0.1	16	M3	2.9	-	M3	25.5	2.9
	10										30.5	
10	5	-	8	7.5	5.8 +0.1	21	M5	3.4	-	M4	27	3.4
	10										32	
12	5	8	8	10.7	6 H13	24	M5	3.4	M3	M5	36	3.4
	10										41	
16	5	10	12	-	8 H13	28	M5	4.5	M4	M6	35	4.6
	10										40	
	15										45	
	20										50	
	25										55	
20	5	12	12	-	10 H13	32	M5	5.5	M5	M8	37	5.7
	10										42	
	15										47	
	20										52	
	25										57	
25	5	12	12	-	10 H13	38	M5	5.5	M5	M8	37	5.7
	10										42	
	15										47	
	20										52	
	25										57	

Short-stroke cylinders ADVC ★

Dimensions

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∅	Stroke	L4	L5	L6	MM	P1	PL	T4	TG	UO	WH	ZJ	≈1
[mm]	[mm]			max.	∅				±0.1	max.		±0.8	
6	5	5	8	-	3	5.2	3	-	10	16	1	26.5	-
	10											31.5	
10	5	7	10.5	0.7	4	6	6	-	14	22	1.5	28.5	-
	10											33.5	
12	5	8	12	0.4	6	7	6	1.5	16	26	4	40	5
	10											45	
16	5	12	17	-	8	8	6	2	18	32	4	39	7
	10											44	
	15											49	
	20											54	
20	5	15	21	-	10	7.5	7	2	20	39	5	59	9
	10											42	
	15											47	
	20											52	
25	5	15.5	21.5	-	10	10	6	2	26	42	5	57	9
	10											62	
	15											42	
	20											47	
25	5	15.5	21.5	-	10	10	6	2	26	42	5	52	9
	10											57	
	15											62	
	20											52	
25	5	15.5	21.5	-	10	10	6	2	26	42	5	57	9
	10											62	
	15											42	
	20											47	

Pneumatic drives

Short-stroke cylinders ADVC ★

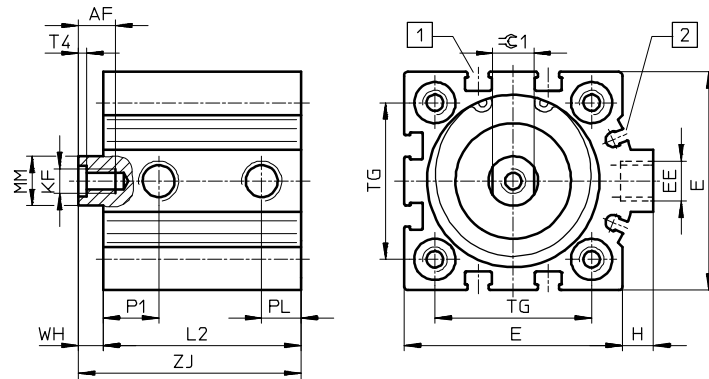
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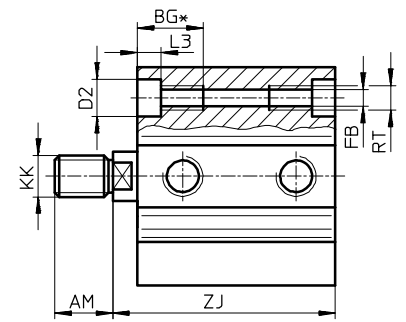
Dimensions

With position sensing – Ø 32 ... 100

ADVC-...-I-P-A – With female thread



ADVC-...-A-P-A – With male thread



- 1 Slot for proximity sensor SME/SMT-8
- 2 Slot for proximity sensor SME/SMT-10

Ø	AF	AM	BG ¹⁾	D2	E	EE	FB	H	KF	KK ²⁾
[mm]	min.	-0.5	min.	Ø F9	max.		Ø			
32	12	14	21.7	9	45	G1/8	5.2	7	M6	M10x1.25
40	12	14	21.7	9	53.5	G1/8	5.2	7	M6	M10x1.25
50	16	16	22.8	11	63.5	G1/8	6.8	7	M8	M12x1.25
63	16	16	22.8	11	75	G1/8	6.8	7.5	M8	M12x1.25
80	20	22	25	14	93	G1/8	8.5	7	M10	M16x1.5
100	24	28	25	14	113	G1/4	8.5	13	M12	M20x1.5

- 1) Continuous thread with shorter sizes.
- 2) Nut for piston rod thread included in the scope of delivery.

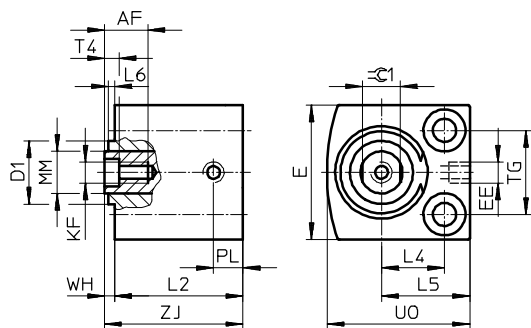
Ø	Stroke	L2	L3	MM	P1	PL	RT	T4	TG	WH	ZJ	⊖C1
[mm]	[mm]	+0.2		Ø					±0.1		±0.8	
32	5	38	5.7	12	9	8.5	M6	2.6	32.5	6	44	10
	10	43									49	
	15	48									54	
	20	53									59	
	25	58									64	
40	5	43	5.7	12	13.5	9.5	M6	2.6	38	6	49	10
	10	48									54	
	15	53									59	
	20	58									64	
	25	63									69	
50	10	48	6.8	16	11.3	9.5	M8	3.3	46.5	8	56	13
	15	53									61	
	20	58									66	
	25	63									71	
63	10	51	6.8	16	12.5	10.5	M8	3.3	56.5	8	59	13
	15	56									64	
	20	61									69	
	25	66									74	
80	10	59	9	20	15	8.5	M10	4.7	72	8	67	17
	15	64									72	
	20	69									77	
	25	74									82	
100	10	68	9	25	16.5	10.5	M10	6.1	89	10	78	22
	15	73									83	
	20	78									88	
	25	83									93	

Short-stroke cylinders AEVC ★

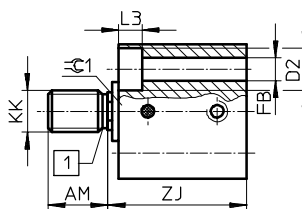
Dimensions

Without position sensing – Ø 4 ... 25

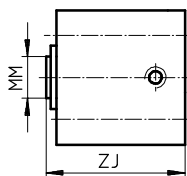
AEVC-...-I-P – With female thread



AEVC-...-A-P – With male thread



AEVC-...-P – Without thread



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Note
 Ø 10
 The bearing cap can protrude up to 0.65 mm depending on the tolerance position.
 Ø 12
 The bearing cap can protrude up to 0.35 mm depending on the tolerance position.
 1 No undercut with diameter 4/6/10.

Pneumatic drives

Ø [mm]	Stroke [mm]	AF min.	AM -0.5	D1 Ø max.	D2 Ø	E max.	EE	FB Ø	KF	KK	L2 +0.2	L3
4	2.5	-	6	-	3.3 ^{+0.1}	10	M3	1.8	-	M2	13	1.8
	5										15.5	
6	5	-	6	-	5 ^{+0.1}	13	M3	2.9	-	M3	16	2.9
	10										23.4	
10	5	-	8	7.5	5.8 ^{+0.1}	18	M5	3.4	-	M4	16	3.4
	10										23	
12	5	8	8	10.7	6 ^{H13}	20	M5	3.4	M3	M5	16	3.4
	10										27.5	
16	5	10	12	-	8 ^{H13}	25	M5	4.5	M4	M6	20	4.6
	10										27.5	
	25										47	
20	5	8	12	-	10 ^{H13}	32	M5	5.5	M5	M8	20	5.7
	10	12									30.5	
	25	48.5										
25	5	12	12	-	10 ^{H13}	38	M5	5.5	M5	M8	26.1	5.7
	10										31.1	
	25										50.2	

Ø [mm]	Stroke [mm]	L4	L5	L6 max.	MM Ø	PL	T4	TG ±0.1	U0 max.	WH	ZJ ±0.8	⊕C1
4	2.5	4	6.5	-	2	3.2	-	5.8	10	1	14	-
	5										16.5	
6	5	6	9	-	3	3	-	7	14	1	17	-
	10										24.4	
10	5	8	11.5	0.7	4	5.5	-	11	19	1	17	-
	10										24	
12	5	9	13	0.4	6	6	1.5	13	22	1	17	-
	10										28.5	
16	5	11.5	16.5	-	8	6	2	15	27	1	21	7
	10										28.5	
	25										48	
20	5	15	21	-	10	7	2	20	34	1	21	9
	10										31.5	
	25										49.5	
25	5	15.5	21.5	-	10	6.5	2	26	37	1	27.1	9
	10										32.1	
	25										51.2	

Short-stroke cylinders AEVC ★

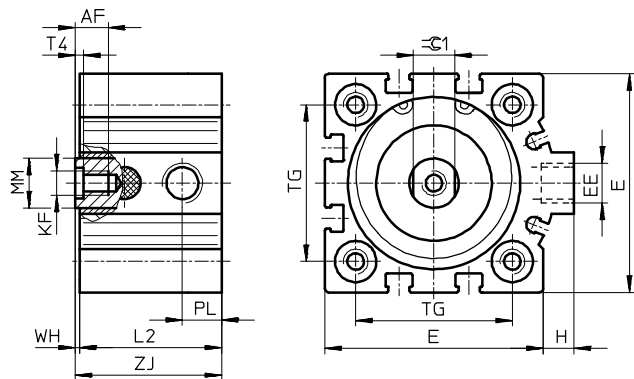
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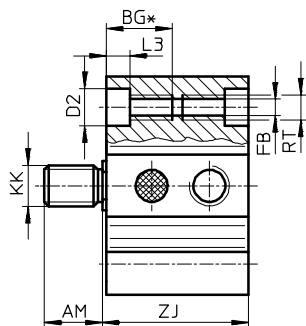
Dimensions

Without position sensing – Ø 32 ... 100

AEVC...-I-P – With female thread



AEVC...-A-P – With male thread

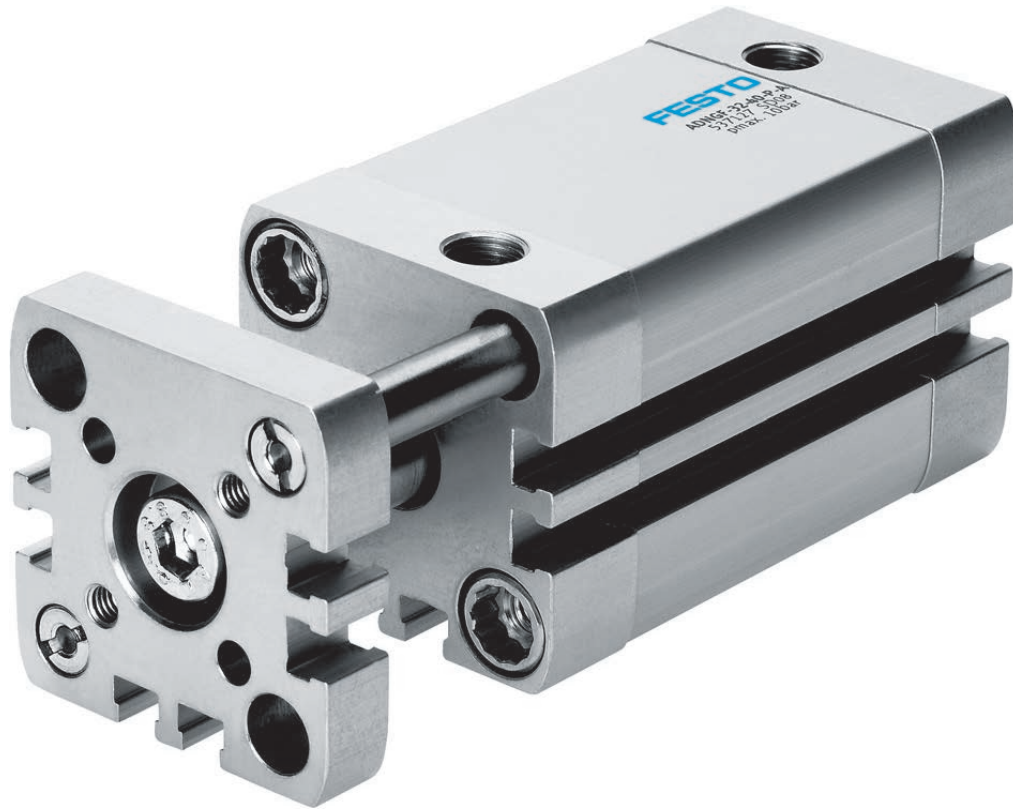


Pneumatic drives

Ø	Stroke	AF	AM	BG ¹⁾	D2	E	EE	FB	H	KF	KK ²⁾	L2	L3	MM	PL	RT	T4	TG	WH	ZJ	⊖C1
[mm]	[mm]	min.	-0.5	min.	∅ F9	max.		∅				+0.2		∅				±0.1		±0.8	
32	5	12	14	21.7	9	45	G1/8	5.2	7	M6	M10x1.25	26	5.7	12	9.5	M6	2.6	32.5	1	27	10
	35											36									
	50											51									
40	10	12	14	21.7	9	53.5	G1/8	5.2	7	M6	M10x1.25	34.5	5.7	12	9.5	M6	2.6	38	1	35.5	10
	54.5											55.5									
50	10	16	16	22.8	11	63.5	G1/8	6.8	7	M8	M12x1.25	30.6	6.8	16	9.5	M8	3.3	46.5	0.5	31.1	13
	53											53.5									
63	10	16	16	22.8	11	75	G1/8	6.8	7.5	M8	M12x1.25	35	6.8	16	11.5	M8	3.3	56.5	1	36	13
	57											58									
80	10	20	22	25	14	93	G1/8	8.5	7	M10	M16x1.5	52	9	20	15	M10	4.7	72	1	53	17
	67											68									
100	10	24	28	25	14	113	G1/4	8.5	13	M12	M20x1.5	59	9	25	19	M10	6.1	89	1	60	22
	74											75									

1) Continuous thread with shorter sizes.

2) Nut for male piston rod thread included in the scope of delivery.



Gain space and save money during engineering

- + With compact dimensions
- + With integrated protection against rotation
- + Thanks to standardised interfaces to ISO 21287

Drives with guides > Drives with guide rods >
Compact cylinders,
standard hole pattern

ADNGF

Drives with guides > Drives with guide rods >

Compact cylinders, standard hole pattern

ADNGF



Overview, configuration and ordering

→ www.festo.com/catalogue/adngf

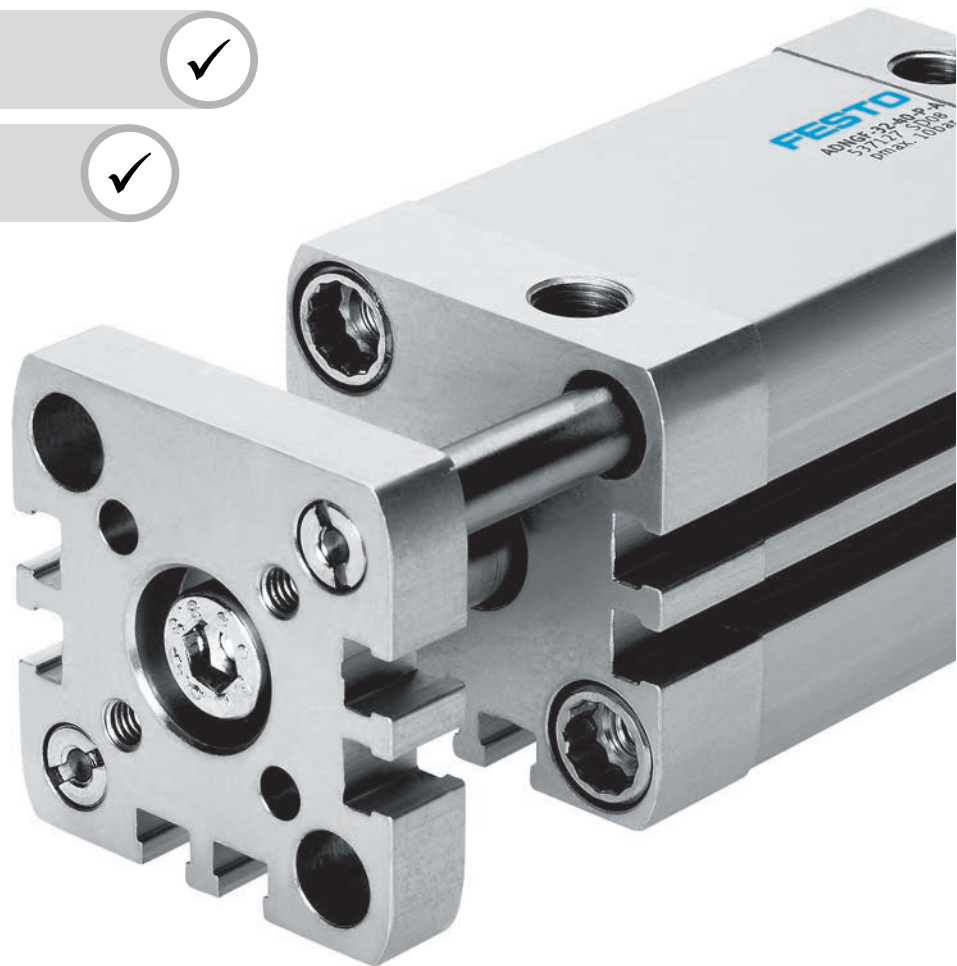


Additional information, support and user documentation

→ www.festo.com/sp/adngf



Spare parts service



- + Mounting hole pattern to ISO 21287
- + Piston rod secured against rotation by means of guide rods and a yoke plate
- + Robust plain-bearing guide
- + For position sensing
- + Optionally with through piston rod

Compact cylinders ADNGF, standard hole pattern

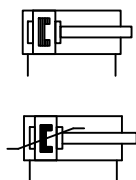
Product range overview

Type/function	Version	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options				
					P	PPS	A	S2	S6
ADNGF									
Double-acting	Non-rotating with yoke	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	1 ... 400	68 ... 4712	■	■	■	■	■

Product options

P	Elastic cushioning rings/plates at both ends	A	Position sensing	S6	Heat-resistant seals up to max. 120°C
PPS	Pneumatic cushioning, self-adjusting at both ends	S2	Through piston rod	TL	Laser etched rating plate

Data sheet – Double-acting



Technical data		Dimensions → Page 194										
Piston Ø		12	16	20	25	32	40	50	63	80	100	
Pneumatic connection		M5	M5	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8	
Stroke		1 ... 200			3 ... 200		5 ... 300					5 ... 400
Cushioning	ADNGF-...-P	Elastic cushioning rings/plates at both ends										
	ADNGF-...-PPS	-			Pneumatic cushioning, self-adjusting at both ends							
Cushioning length	ADNGF-...-PPS [mm]	-			3	3.5	4	5	6	7	7.5	10
Theoretical force at 6 bar, advancing	ADNGF-... [N]	68	121	188	295	483	754	1178	1870	3016	4712	
	ADNGF-...-S2 [N]	51	90	141	247	415	686	1057	1750	2827	4524	
Theoretical force at 6 bar, retracting	ADNGF-... [N]	51	90	141	247	415	686	1057	1750	2827	4524	
	ADNGF-...-S2 [N]	51	90	141	247	415	686	1057	1750	2827	4524	

Drives with guides > Drives with guide rods >

Compact cylinders ADNGF, standard hole pattern

01

Data sheet – Double-acting

Operating conditions			12	16	20	25	32	40	50	63	80	100
Piston Ø												
Operating pressure	ADNGF...	[bar]	1.5 ... 10				1 ... 10					
	ADNGF...-PPS	[bar]	-			1.9 ... 10			1.4 ... 10			
	ADNGF...-S2	[bar]	1.5 ... 10				1 ... 10					
Ambient temperature ¹⁾	ADNGF...	[°C]	-20 ... +80									
	ADNGF...-S6	[°C]	0 ... +120									

1) Note operating range of proximity sensors.

Materials			12 ... 80	100
Piston Ø				
End cap			Anodised aluminium	Coated die-cast aluminium
Cylinder barrel			Anodised aluminium	
Piston rod			High-alloy steel	
Seals	ADNGF...		TPE-U(PUR)	
	ADNGF...-S6		FPM	

Pneumatic drives

Order code

		ADNGF	-		-		-		-	A	-		-		
Type		ADNGF	Double-acting compact cylinder												
Piston Ø [mm]															
	Stroke [mm]														
12	5, 10, 15, 20, 25, 30, 40	1 ... 200													
16	5, 10, 15, 20, 25, 30, 40, 50	1 ... 200													
20, 25	5, 10, 15, 20, 25, 30, 40, 50, 60	3 ... 200													
32, 40, 50	5, 10, 15, 20, 25, 30, 40, 50, 60, 80	5 ... 300													
63, 80	10, 15, 20, 25, 30, 40, 50, 60, 80	5 ... 300													
100	10, 15, 20, 25, 30, 40, 50, 60, 80	5 ... 400													
Cushioning		P	Elastic cushioning rings/plates at both ends												
		PPS	Pneumatic cushioning, self-adjusting at both ends 1												
Position sensing		A	Via proximity sensor												
Piston rod		-	Yoke plate at one end												
		S2	Through piston rod												
Temperature resistance		S6	Heat-resistant seals up to max. 120°C 2												

1 Not with piston Ø 12, 16
Not with temperature resistance S6.
Minimum stroke 5 mm

2 Maximum stroke 250 mm

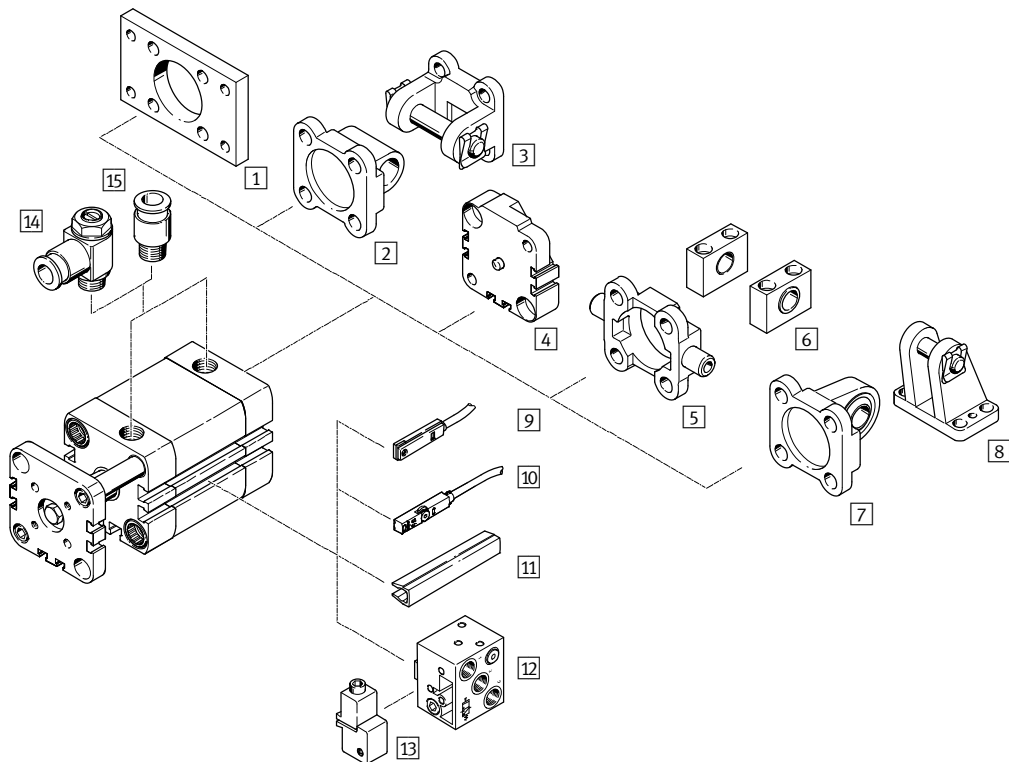
Order example:

ADNGF-50-50-P-A-S2-S6

Double-acting compact cylinder ADNGF - piston diameter 50 mm - stroke 50 mm - elastic cushioning rings/plates at both ends - position sensing via proximity sensor - through piston rod - heat-resistant seals up to max. 120°C

Compact cylinders ADNGF, standard hole pattern

Accessories



01

Pneumatic drives

		Basic design	S2	→ Page/online
1	Flange mounting FNC	■	■	191
2	Swivel flange SNCL	■	-	191
3	Swivel flange SNCB	■	-	191
4	Multi-position kit DPNA	■	-	192
5	Trunnion flange ZNCF	■	■	192
6	Trunnion support LNZG	■	■	192
7	Swivel flange SNCS	■	-	192
8	Clevis foot LBG	■	-	192

		Basic design	S2	→ Page/online
9	Proximity sensor SME-/SMT-8	■	■	192
10	Proximity sensor SME-/SMT-8M	■	■	192
11	Slot cover ABP-5-S	■	■	193
12	Proximity sensor SMPO-8E	■	■	smpo-8e
13	Mounting kit SMB-8E	■	■	smb-8e
14	One-way flow control valve GRLA/GRLZ	■	■	193
15	Push-in fitting QS	■	■	1443
-	Connecting cable NEBU	■	■	193

Accessories – Ordering data

	For Ø	Part no.	Type
1 Flange mounting Dimensions online: → adngf			
	12	537245	FNC-12
	16	537246	FNC-16
	20	537247	FNC-20
	25	537248	FNC-25
	32	★ 174376	FNC-32
	40	★ 174377	FNC-40
	50	★ 174378	FNC-50
	63	★ 174379	FNC-63
	80	★ 174380	FNC-80
100	174381	FNC-100	
2 Swivel flange Dimensions online: → adn			
	12	537790	SNCL-12
	16	537791	SNCL-16
	20	537792	SNCL-20
	25	537793	SNCL-25

	For Ø	Part no.	Type
2 Swivel flange Dimensions online: → adn			
	32	★ 174404	SNCL-32
	40	★ 174405	SNCL-40
	50	★ 174406	SNCL-50
	63	★ 174407	SNCL-63
	80	★ 174408	SNCL-80
	100	174409	SNCL-100
3 Swivel flange Dimensions online: → adn			
	32	★ 174390	SNCB-32
	40	★ 174391	SNCB-40
	50	★ 174392	SNCB-50
	63	★ 174393	SNCB-63
	80	★ 174394	SNCB-80
100	174395	SNCB-100	

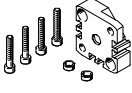
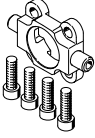
Drives with guides > Drives with guide rods >

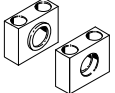
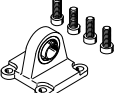

Compact cylinders ADNGF, standard hole pattern

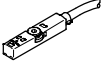
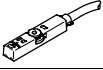
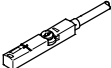


01

Accessories – Ordering data

Pneumatic drives

	For Ø	Part no.	Type
4 Multi-position kit Dimensions online: → adn			
	12	537263	DPNA-12
	16	537264	DPNA-16
	20	537265	DPNA-20
	25	537266	DPNA-25
	32	537267	DPNA-32
	40	537268	DPNA-40
	50	537269	DPNA-50
	63	537270	DPNA-63
	80	537271	DPNA-80
	100	537272	DPNA-100
5 Trunnion flange Dimensions online: → adn			
	32	174411	ZNCF-32
	40	174412	ZNCF-40
	50	174413	ZNCF-50
	63	174414	ZNCF-63
	80	174415	ZNCF-80
	100	174416	ZNCF-100



	For Ø	Part no.	Type
6 Trunnion support Dimensions online: → adn			
	32	32959	LNZG-32
	40, 50	32960	LNZG-40/50
	63, 80	32961	LNZG-63/80
	100	32962	LNZG-100/125
7 Swivel flange Dimensions online: → adn			
	32	★ 174397	SNCS-32
	40	★ 174398	SNCS-40
	50	★ 174399	SNCS-50
	63	★ 174400	SNCS-63
	80	★ 174401	SNCS-80
	100	174402	SNCS-100
8 Clevis foot Dimensions online: → adn			
	32	31761	LBG-32
	40	31762	LBG-40
	50	31763	LBG-50
	63	31764	LBG-63
	80	31765	LBG-80
	100	31766	LBG-100


	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
9/10 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	12 ... 100	PNP, cable	2.5	★ 574335	SMT-8M-PS-24V-K-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-PS-24V-K-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-PS-24V-K-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-NS-24V-K-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-NS-24V-K-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	12 ... 100	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-K7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	12 ... 100	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	12 ... 100	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/C contact Data sheets → Page 1203					
	12 ... 100	Contacting, cable	7.5	160251	SME-8-O-K-LED-24

Compact cylinders ADNGF, standard hole pattern



Accessories – Ordering data

01

	For Ø	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	12 ... 100	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	12 ... 100	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541367	NEBU-M12W5-K-2.5-LE3
			5.0	★ 541370	NEBU-M12W5-K-5-LE3

	For Ø	Part no.	Type
11 Slot cover¹⁾			
	12 ... 100	151680	ABP-5-S

1) Packaging unit 2x 0.5 m.

Function	For Ø	Connection		Part no.	Type
		Thread	O.D.		
14 One-way flow control valve with slotted head screw, metal²⁾ Data sheets → Page 1033					
for exhaust air flow control					
	12, 16, 20, 25	M5	3	★ 193137	GRLA-M5-QS-3-D
	32	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
	40, 50, 63, 80, 100		6	★ 193144	GRLA-1/8-QS-6-D
For supply air flow control Data sheets → Page 1033					
	12, 16, 20, 25	M5	3	★ 193153	GRLZ-M5-QS-3-D
	32	G1/8	4	★ 193157	GRLZ-1/8-QS-4-D
	40, 50, 63, 80, 100		6	★ 193158	GRLZ-1/8-QS-6-D

2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Drives with guides > Drives with guide rods >

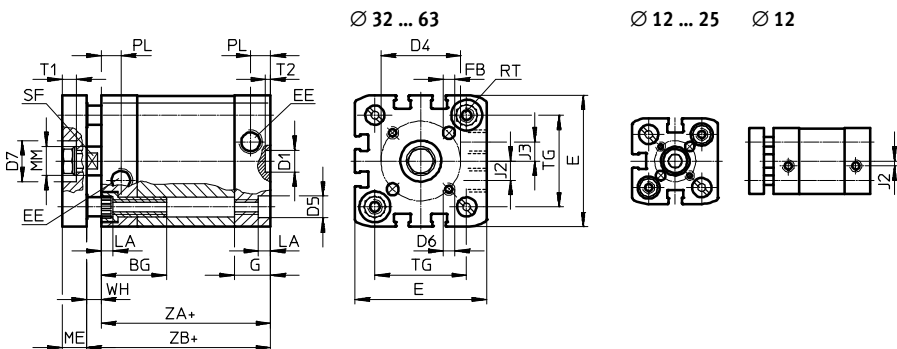
Compact cylinders ADNGF, standard hole pattern

Download CAD data → www.festo.com

01

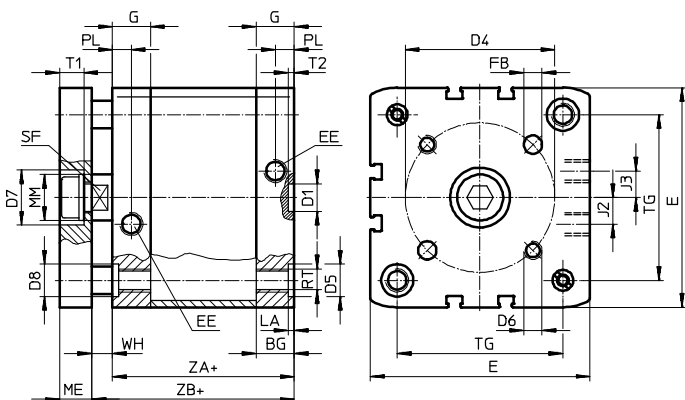
Dimensions

Basic design – Ø 12 ... 63



+ = plus stroke length

Basic design – Ø 80, 100



+ = plus stroke length

Ø	BG	D1	D4	D5	D6	D7	D8	E	EE	FB	G	J2	J3	LA	
[mm]	min.	Ø H9	±0.1	Ø		Ø H9				Ø H8				+0.2	
12	17	9	12	6 ^{F9}	M3	-	-	27.5 ^{+0.3}	M5	3	10.5	2	-	3.5	
16			14		M4			29 ^{+0.3}			11				
20	19.5		17	9 ^{F9}	M5	14		35.5 ^{+0.3}		4	12	5	15	2.6	5
25			22			39.5 ^{+0.3}									
32	26	12	28	12 ^{F9}	M6	22	47 ^{+0.3}	G1/8	6	15	8	6	5	2.6	
40			33				54.5 ^{+0.3}								
50	27		42	15	M8	24	65.5 ^{+0.3}		8	16.5	11.5	8	6	5	
63			50				75.5 ^{+0.3}								
80	17	21.5	65	15	M10	24	95.5 ^{+0.6}	10	21.5	20	20	20	2.6		
100	21.5		80				113.5 ^{+0.6}								

Ø	ME	MM	PL	RT	SF	T1	T2	TG	WH		ZA	ZB	
[mm]		Ø h8	+0.2		h13		+0.1	±0.2	+1.3	PPS +1.4	±0.3	+1.2	PPS +1.3
12	6	6	6	M4	5	-	2.1	16	4.2	-	35	39.2	-
16		8			7			18	4.7			39.7	
20	8	10		M5	9	5		22	5.5	5.5	37	42.5	42.5
25					26	5		39					
32	10	12	8.2	M6	10	6	32.5	6	6.5	44	50	50.6	
40					38	6.1	6.6	45	51.1				51.7
50	12	16		M8	13	7.5	46.5	7.7	8.2	49	52.7	53.2	
63					56.5	7.5	8	56.5	57				
80	14	20	M10	17	10.5	72	8.9	9.4	54	62.9	63.4		
100				10.5	89	9	9.8	67				76	76.8

Pneumatic drives

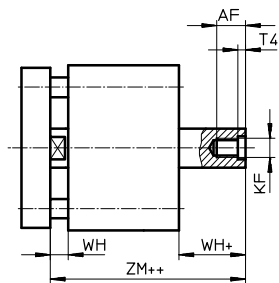
Compact cylinders ADFG, standard hole pattern

Dimensions

Download CAD data → www.festo.com

01

S2 – Through piston rod



+ = plus stroke length
++ = plus 2x stroke length

Ø [mm]	AF min.	Kf	T4	WH		ZM	
				P +1.3	PPS +1.4	P	PPS
12	8	M3	1.5	4.2	-	44.5 ^{+0.5}	-
16	10	M4		4.7		45.7 ^{+0.5}	
20	14	M6	2.6	5.5	5.5	49.5 ^{+0.5}	49.5 ^{+0.5}
25						51.5 ^{+0.5}	51.5 ^{+0.5}
32	16	M8	3.3	6	6.5	57.5 ^{+0.5}	58.6 ^{+0.6}
40				6.1	6.6	58.6 ^{+0.6}	59.7 ^{+0.7}
50	20	M10	4.7	8.2	8.2	62.0 ^{+0.6}	63.1 ^{+0.7}
63				8.1	8	65.4 ^{+0.6}	66.5 ^{+0.7}
80				8.9	9.4	73.2 ^{+0.6}	74.3 ^{+0.7}
100		9	9.8	86.4 ^{+0.6}	88 ^{+0.7}		

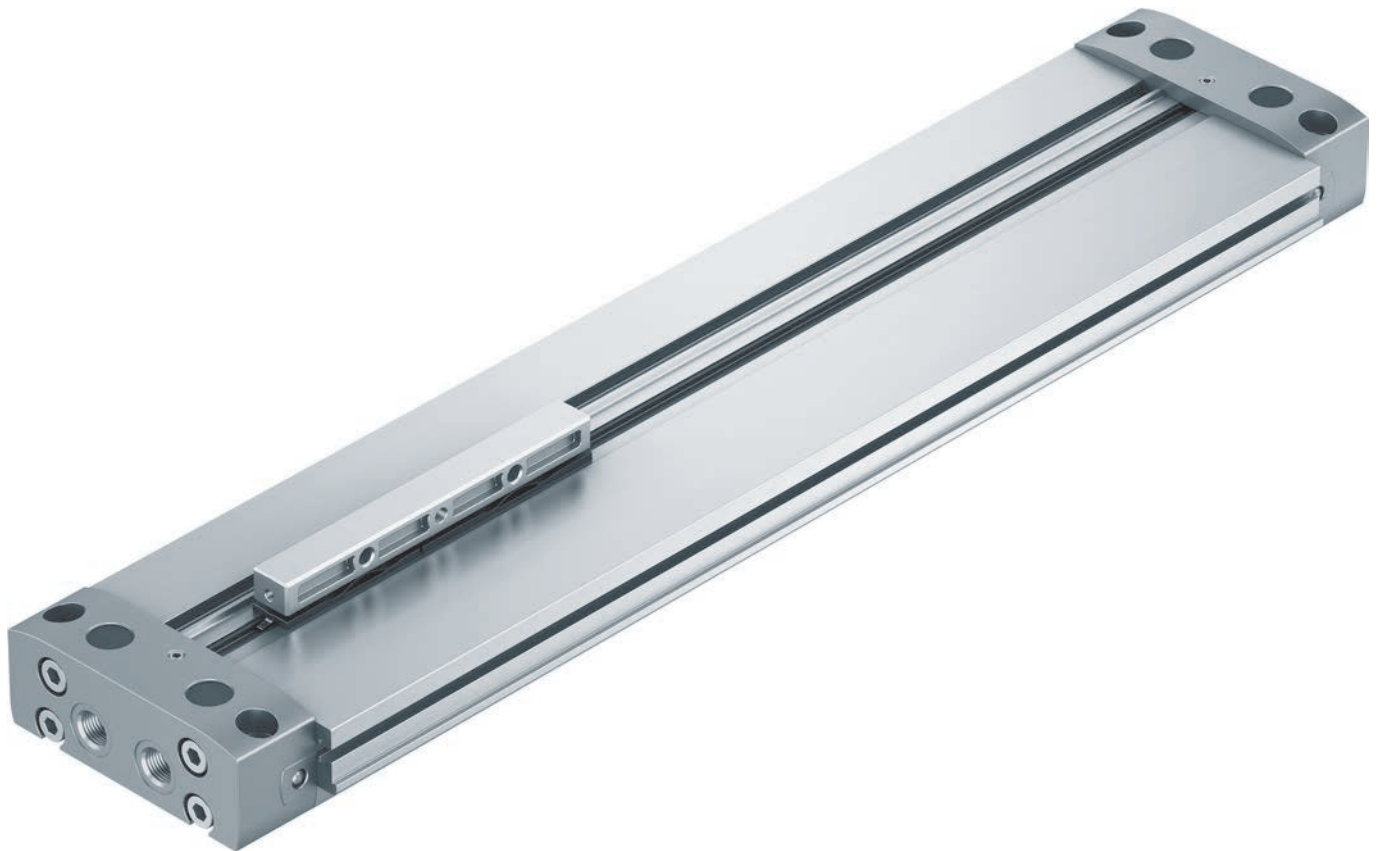
Pneumatic drives

Drives with guides > Drives with guide rods >

01

Pneumatic drives

New New series



Impressive on its own but also a great team player!

- + Suitable for table mounting
- + Loads and devices can be mounted directly on the slide
- + Extremely flat
- + Ideal for applications in small parts assembly

Rodless cylinders > Mechanically coupled cylinders >
Linear drives

DLGF

Rodless cylinders > Mechanically coupled cylinders >

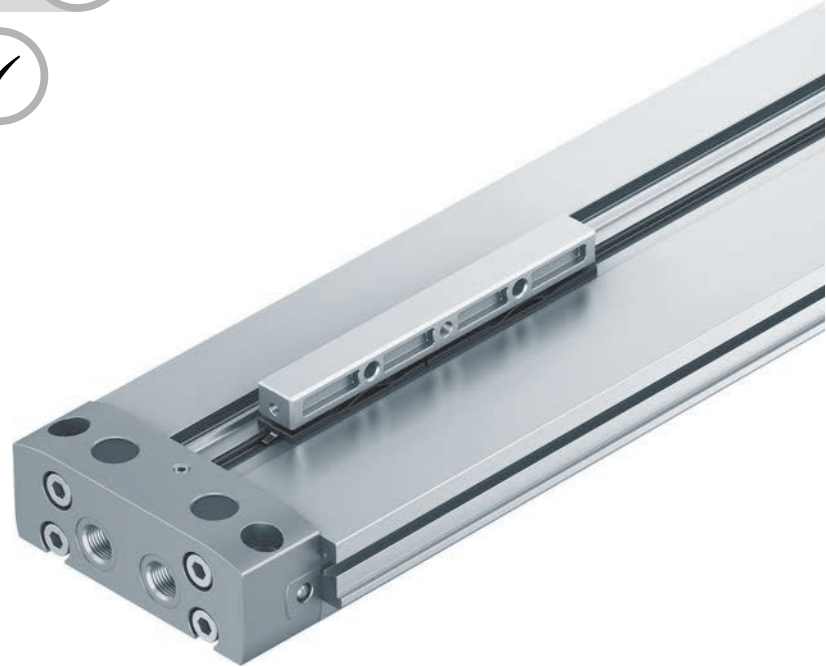
Linear drives

DLGF

 Overview, configuration and ordering
→ www.festo.com/catalogue/dlgf



 Additional information, support and user documentation
→ www.festo.com/sp/dlgf



- + Piston diameter 20 ... 40 mm
- + Stroke lengths from 50 ... 1000 mm
- + Guide backlash = 0 mm
- + For medium and large loads
- + Very good operating behaviour under torque load

NEW

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DLGF

01

Product range overview

Type/function	Piston \varnothing [mm]	Stroke [mm]	Force [N]	Product options			→ Page/ online
				PPS	A	W	
Double-acting	DLGF-...-KF – Recirculating ball bearing guide						
	20, 25, 32, 40	50 ... 1000	188 ... 754	■	■	■	200
Double-acting	DLGF-...-G – Basic design						
	20, 25, 32, 40	50 ... 1000	188 ... 754	■	■	■	203

Product options

PPS Pneumatic cushioning, self-adjusting at both ends

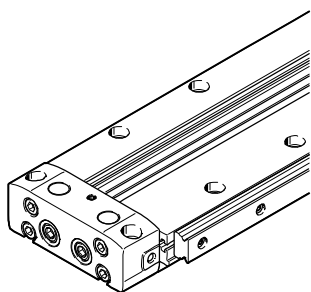
A Position sensing

W Profile design without mounting holes

Profile design

with mounting holes

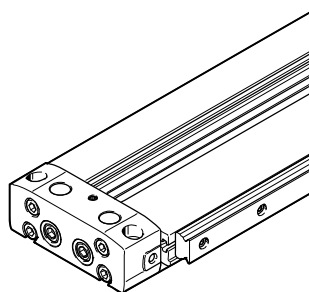
- In the end cap: Yes
- In the profile: Yes



Profile design

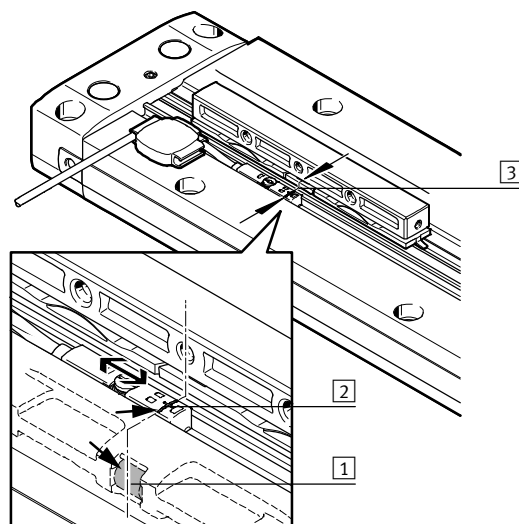
without mounting holes

- In the end cap: Yes
- In the profile: No



Easy preassembly of the proximity sensors

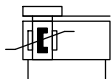
The magnet [1] for sensing the slide position is located in the centre of the slide. The cross [2] on the proximity sensor SMT-8M-A marks the location of the switching point. The switching point is set when both locations are level [3].



Linear drives DLGF-KF, with recirculating ball bearing guide

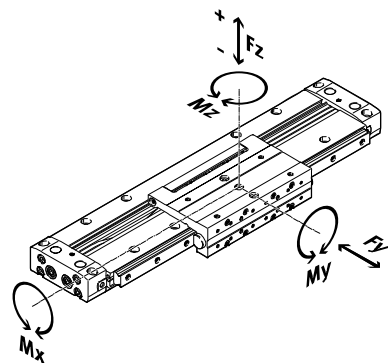
NEW

01 Data sheet



Technical data

Dimensions → Page 207



Piston Ø	20	25	32	40
Pneumatic connection	M5	G1/8	G1/8	G1/4
Stroke	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000			
Cushioning	Pneumatic cushioning, self-adjusting at both ends			
Cushioning length [mm]	9.6	9	11.6	12.9
Theoretical force at 6 bar [N]	188	295	483	754
Max. permissible force F_y [N]	600	1000	1300	1700
Max. permissible force F_{z+} [N]	400	700	950	1150
Max. permissible force F_{z-} [N]	700	1200	1600	2000
Max. permissible torque M_x [Nm]	5.4	12.3	30	54
Max. permissible torque M_y [Nm]	15	30	50	90
Max. permissible torque M_z [Nm]	15	30	50	90

Operating conditions

Piston Ø	20	25	32	40
Operating pressure [bar]	2 ... 8		1.5 ... 8	
Ambient temperature ¹⁾ [°C]	0 ... +60			

1) Note operating range of proximity sensors.

Materials

End cap	Coated die-cast aluminium
Housing	Anodised aluminium
Seals	NBR
	TPE-U(PU)

Pneumatic drives

NEW

Rodless cylinders > Mechanically coupled cylinders >

Linear drives, DLGF-KF, with recirculating ball bearing guide

Order code

		DLGF	-	KF	-		-		-	PPS	A	-
Type		DLGF	Linear drive									
Guide		KF	Recirculating ball bearing guide									
Piston Ø [mm]												
Stroke [mm]												
20	50, 100, 150, 200, 250, 300, 350, 400, 450,											
25	500, 550, 600, 650, 700, 750, 800, 850, 900,											
32	950, 1000											
40												
Cushioning		PPS	Pneumatic cushioning, self-adjusting at both ends									
Position sensing		A	Via proximity sensor									
Profile design												
-	With mounting holes											
W	Without mounting holes											

01


Pneumatic drives

Order example:

DLGF-KF-32-300-PPSA-W

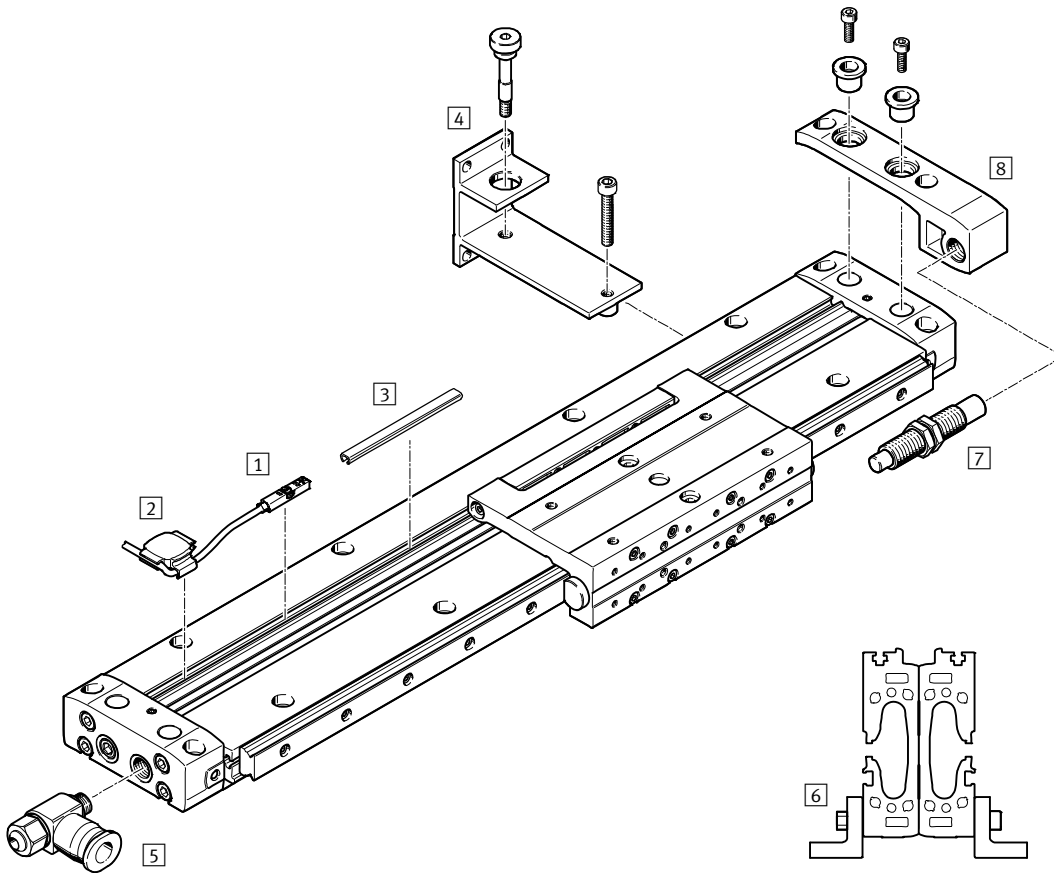
Linear drive DLGF - recirculating ball bearing guide - piston diameter 32 mm - stroke 300 mm - pneumatic cushioning, self-adjusting at both ends - position sensing via proximity sensor - without mounting holes

Ordering – Product options

	<input type="checkbox"/> Configurable product	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or</p> <p>→ www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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01 Accessories

Pneumatic drives



		→ Page/online
1	Proximity sensor SMT-8M	206
2	Cable holder DADG	206
3	Slot cover ABP-5-S1	206
4	Profile mounting DAMH-L8-P	206
5	One-way flow control valve GRLA	206

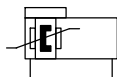
		→ Page/online
6	Profile mounting DAMH-L8-PL	206
7	Shock absorber DYSS	206
8	Shock absorber retainer DAYP-L8	206
-	Connector sleeve ZBV	206
-	Connecting cable NEBU	206

NEW

Rodless cylinders > Mechanically coupled cylinders >

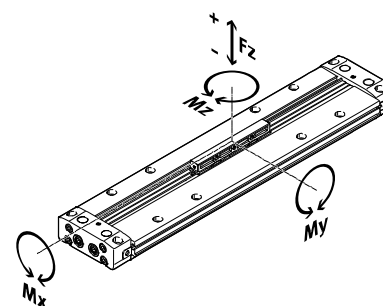
Linear drives DLGF-G

Data sheet



Technical data

Dimensions → Page 210



Pneumatic drives

Piston Ø	20	25	32	40
Pneumatic connection	M5	G1/8	G1/8	G1/4
Stroke [mm]	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000			
Cushioning	Pneumatic cushioning, self-adjusting at both ends			
Cushioning length ¹⁾ [mm]	9.6	9	11.6	12.9
Theoretical force at 6 bar [N]	188	295	483	754
Max. permissible force Fz+ [N]	54	95	138	456
Max. permissible force Fz- [N]	98	164	276	662
Max. permissible torque Mx [Nm]	0.6	1.1	1.8	7.7
Max. permissible torque My [Nm]	2.2	4.5	7.6	37.6
Max. permissible torque Mz [Nm]	0.7	1.4	2.9	11.2

Operating conditions				
Piston Ø	20	25	32	40
Operating pressure [bar]	2 ... 8		1.5 ... 8	
Ambient temperature ¹⁾ [°C]	0 ... +60			

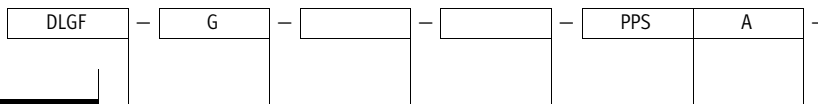
1) Note operating range of proximity sensors.

Materials	
End cap	Coated die-cast aluminium
Housing	Anodised aluminium
Seals	NBR TPE-U(PU)

01

Order code

Pneumatic drives



Type	
DLGF	Linear drive

Guide	
G	Basic design

Piston Ø [mm]	
Stroke [mm]	
20	50, 100, 150, 200, 250, 300, 350, 400, 450,
25	500, 550, 600, 650, 700, 750, 800, 850,
32	900, 950, 1000
40	

Cushioning	
PPS	Pneumatic cushioning, self-adjusting at both ends

Position sensing	
A	Via proximity sensor

Profile design	
-	With mounting holes
W	Without mounting holes

Order example:

DLGF-G-32-300-PPSA-W

Linear drive DLGF - basic design - piston diameter 32 mm - stroke 300 mm - pneumatic cushioning, self-adjusting at both ends - position sensing via proximity sensor - without mounting holes

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

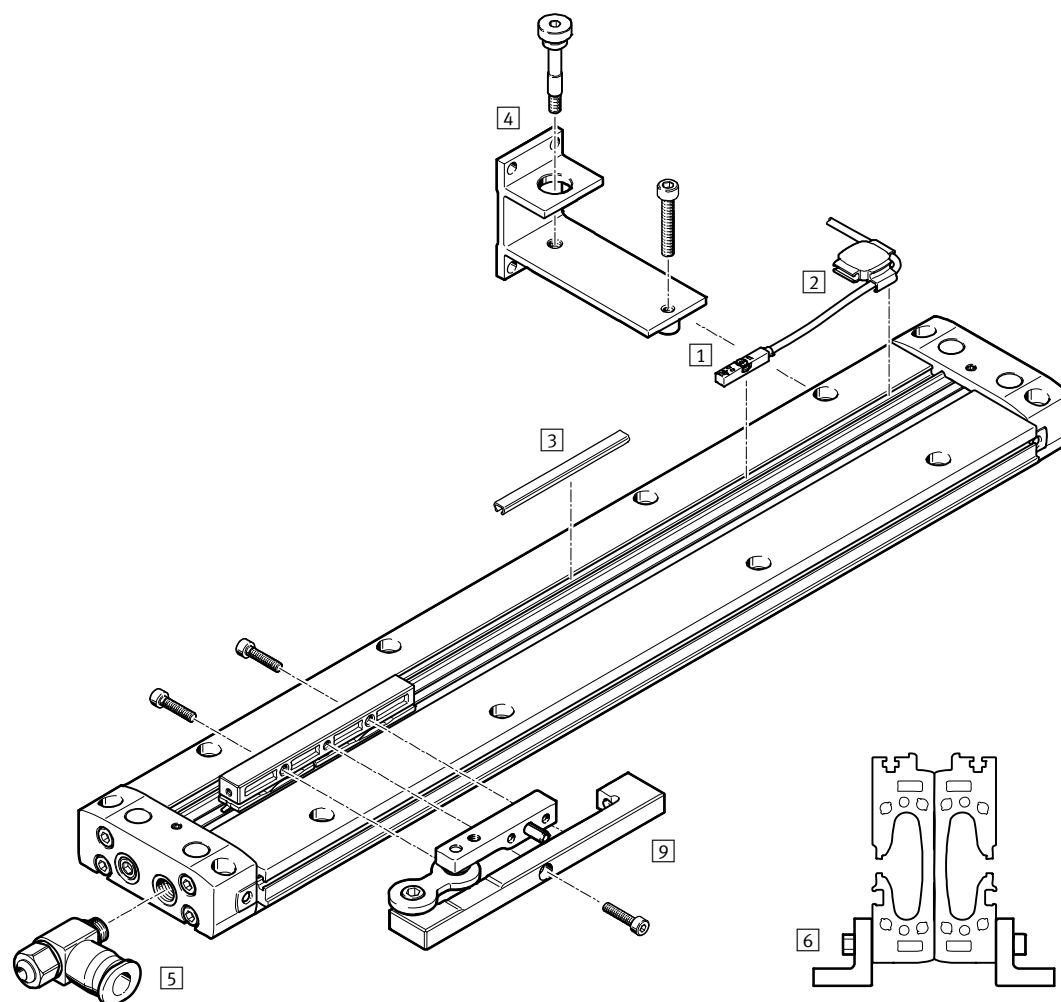
NEW

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DLGF-G

Accessories

01



Pneumatic drives

		→ Page/online
1	Proximity sensor SMT-8M	206
2	Cable holder DADG	206
3	Slot cover ABP-5-S1	206
4	Profile mounting DAMH-L8-P	206
5	One-way flow control valve GRLA	206

		→ Page/online
6	Profile mounting DAMH-L8-PL	206
9	Moment compensator DARD-L8	206
-	Connector sleeve ZBV	206
-	Connecting cable NEBU	206



01

Accessories – Ordering data

Pneumatic drives

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
1 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	20 ... 40	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D

	For Ø	Part no.	Type
2 Cable holder DADG			
	20 ... 40	8069000	DADG-HL-N8-P2
3 Slot cover ABP¹⁾			
	20 ... 40	563360	ABP-5-S1
4 Profile mounting DAMH-L8-P1			
	20	8069009	DAMH-L8-20-P1
	25	8069010	DAMH-L8-25-P1
	32	8069011	DAMH-L8-32-P1
	40	8069012	DAMH-L8-40-P1
5 One-way flow control valve GRLA			
	20	★ 193137	GRLA-M5-QS-3-D
		★ 193138	GRLA-M5-QS-4-D
	25, 32	★ 193142	GRLA-1/8-QS-3-D
		★ 193143	GRLA-1/8-QS-4-D
		★ 193144	GRLA-1/8-QS-6-D
	40	★ 193146	GRLA-1/4-QS-6-D
		★ 193147	GRLA-1/4-QS-8-D
★ 193148		GRLA-1/4-QS-10-D	

	For Ø	Part no.	Type
6 Profile mounting DAMH-L8-PL1			
	20	8069013	DAMH-L8-20-PL1
	25	8069014	DAMH-L8-25-PL1
	32	8069015	DAMH-L8-32-PL1
	40	8069016	DAMH-L8-40-PL1
7 Shock absorber DYSS			
	20	8069001	DYSS-7-5-Y1F
	25	8069002	DYSS-8-8-Y1F
	32	8069003	DYSS-10-10-Y1F
	40	8069004	DYSS-12-12-Y1F
8 Shock absorber retainer DAYP-L8			
	20	8069005	DAYP-L8-20
	25	8069006	DAYP-L8-25
	32	8069007	DAYP-L8-32
	40	8069008	DAYP-L8-40
9 Moment compensator DARD-L8			
	20	8081466	DARD-L8-20-S
	25	4134871	DARD-L8-25-S
	32	8081467	DARD-L8-32-S
	40	4448222	DARD-L8-40-S

1) Packaging unit 2x 0.5 m

	For Ø	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	20 ... 40	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	20 ... 40	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

	For Ø	Comment	Part no.	Type
Connector sleeve				
	25, 32	For centring in combination with direct mounting of mini slides DGSL	548005	ZBV-9-7
	40		548006	ZBV-12-9

NEW

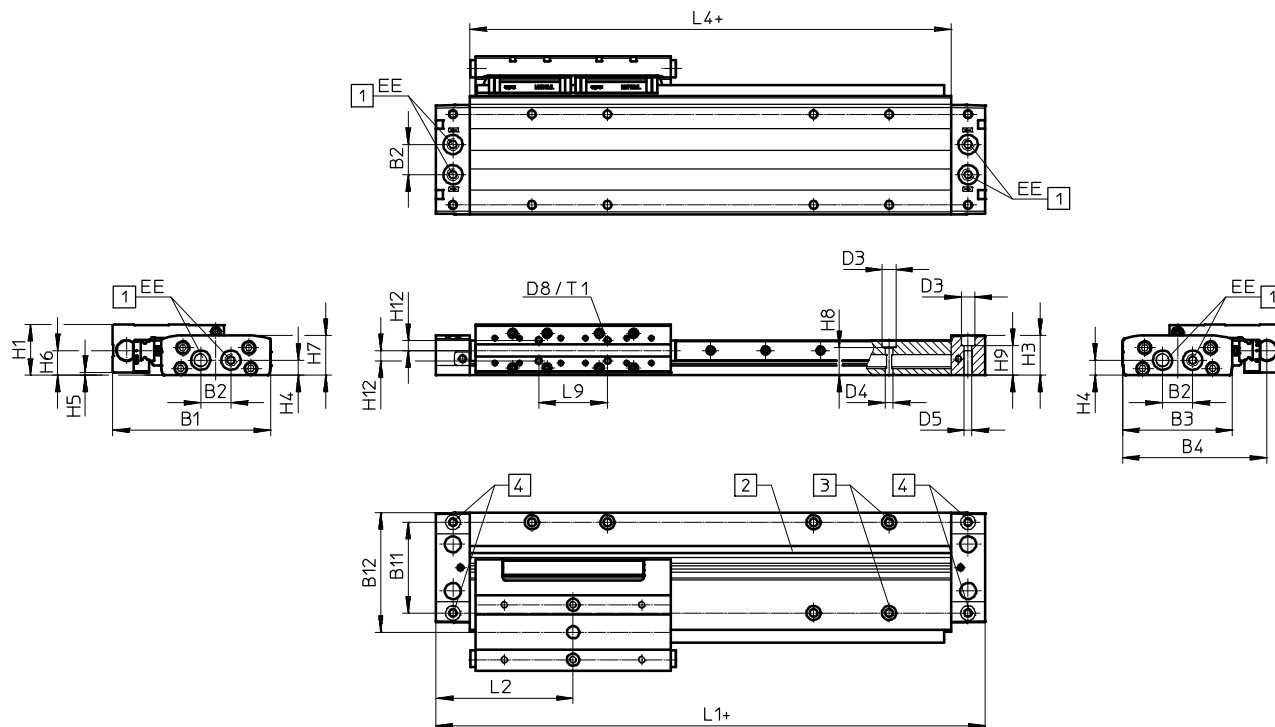
Rodless cylinders > Mechanically coupled cylinders >

Linear drives DLGF-KF

Dimensions

Download CAD data → www.festo.com

01



+ plus stroke length

- 1 Supply ports
- 2 Slot for proximity sensor
- 3 Mounting holes for accessories
→ Page 208
- 4 Mounting holes

Matching O-rings for supply ports underneath:
 For piston Ø 20: Ø 5x2
 For piston Ø 25: Ø 12x2
 For piston Ø 32: Ø 12x2
 For piston Ø 40: Ø 16x2

Ø	B1	B2	B3	B4	B11	B12	D3	D4
[mm]							Ø	Ø
20	105	17	71.8	95	60	78	8	4.7
25	115	22	79.8	105	66	87	10	5.8
32	145	26	99.6	134.5	82	115	11	6.8
40	175	32	119.8	160.5	100	141	11	6.8

Ø	D5	D8	EE	H1	H3	H4	H5	H6	H7
[mm]	Ø								
20	4.5	M4	M5	32	21	9	1.5	15	24
25	5.5	M4	G1/8	37	25.5	11	2	18	29
32	6.5	M5	G1/8	45	32	14	2	19	35
40	6.6	M6	G1/4	52	39.5	19.5	3	24	42.7

Ø	H8	H9	H12	L1	L2	L4	L9	T1	Stroke tolerance
[mm]				±0.35					
20	15.6	17.6	7.5	160	80	120	45	7	+1.5
25	20.1	21.8	7.5	200	100	150	50	9	
32	24.6	26.5	10	230	115	170	80	10	
40	32.1	34.7	12.5	300	150	238.8	125	10	

Pneumatic drives

Linear drives DLGF-KF

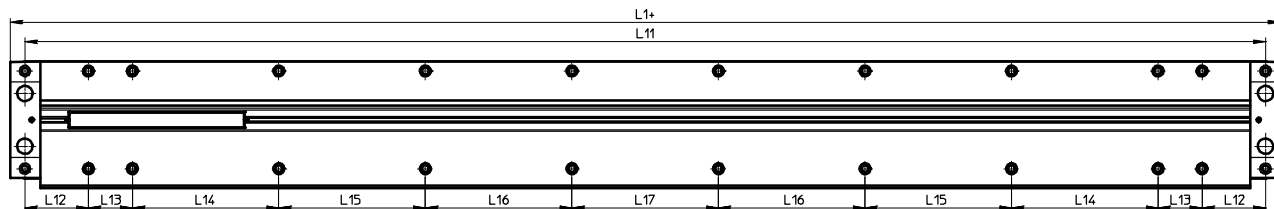
NEW

01

Dimensions

Download CAD data → www.festo.com

Mounting holes



Pneumatic drives

Dimension	L1				L11				L12				L13			
	20	25	32	40	20	25	32	40	20	25	32	40	20	25	32	40
Stroke																
50	210	250	280	350	190	225	250	320	55	57.5	65	65	40	55	60	20
100	260	300	330	400	240	275	300	370					65	80	80	45
150	310	350	380	450	290	325	350	420					90	105	110	70
200	360	400	430	500	340	375	400	470					40	55	60	20
250	410	450	480	550	390	425	450	520					65	80	80	45
300	460	500	530	600	440	475	500	570					90	105	110	70
350	510	550	580	650	490	525	550	620					40	55	60	20
400	560	600	630	700	540	575	600	670					65	80	80	45
450	610	650	680	750	590	625	650	720					90	105	110	70
500	660	700	730	800	640	675	700	770					40	55	60	20
550	710	750	780	850	690	725	750	820					65	80	80	45
600	760	800	830	900	740	775	800	870					90	105	110	70
650	810	850	880	950	790	825	850	920					40	55	60	20
700	860	900	930	1000	840	875	900	970					65	80	80	45
750	910	950	980	1050	890	925	950	1020					90	105	110	70
800	960	1000	1030	1100	940	975	1000	1070					40	55	60	20
850	1010	1050	1080	1150	990	1025	1050	1120					65	80	80	45
900	1060	1100	1130	1200	1040	1075	1100	1170					90	105	110	70
950	1110	1150	1180	1250	1090	1125	1150	1220					40	55	60	20
1000	1160	1200	1230	1300	1140	1175	1200	1370					65	80	80	45

Dimension	L14				L15				L16				L17			
	20	25	32	40	20	25	32	40	20	25	32	40	20	25	32	40
Stroke																
50	-	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-
100																
150																
200				150									150	150	150	
250																
300																
350	150	150	150	150	-	-	-	-	-	-	-	-	-	-	-	150
400																
450																
500								150					150	150	150	-
550																
600																
650	150	150	150	150	150	150	150	150	-	-	-	-	-	-	-	150
700																
750																
800												150	150	150	150	-
850																
900																
950	150	150	150	150	150	150	150	150	150	150	150	150	-	-	-	150
1000																

NEW

Rodless cylinders > Mechanically coupled cylinders >

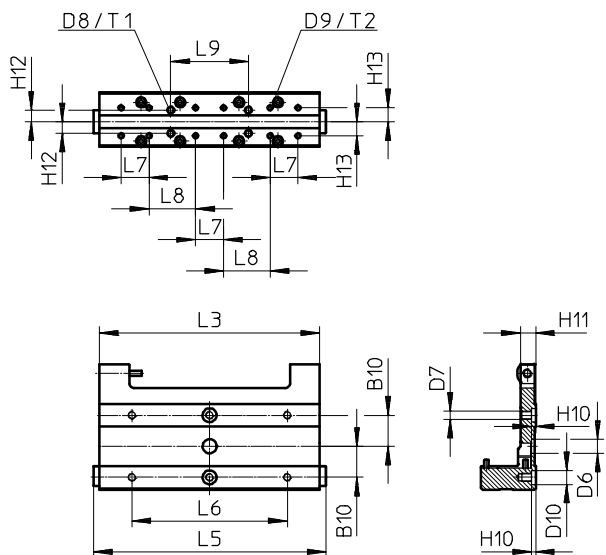
Linear drives DLGF-KF

Download CAD data → www.festo.com

01

Dimensions

Slide



∅	B10	D6 ∅ H7	D7	D8	D9	D10 ∅	H10	H11	H12
[mm]									
20	20	7	M4	M4	M3	7	2.5	8.8	7.5
25	20	9	M5	M4	M3	9	2.5	9.8	7.5
32	20	9	M5	M5	M4	9	2.5	10.3	10
40	20	12	M6	M6	M4	–	2.5	10.3	12.5

∅	H13	L3	L5	L6	L7	L8	L9	T1	T2
[mm]									
20	8	112	119.8	64	16	20	45	7	7
25	9	142	149.8	100	18	30	50	9	7
32	11	161	170	100	22	35	80	10	7.5
40	13	230.6	239.6	140	26	62	125	10	8

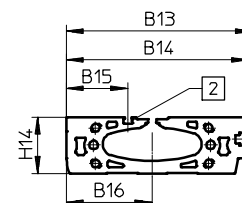
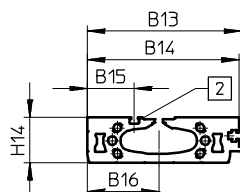
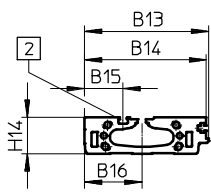
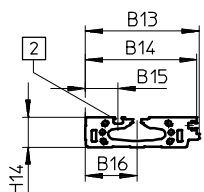
Profile barrel

∅ 20

∅ 25

∅ 32

∅ 40

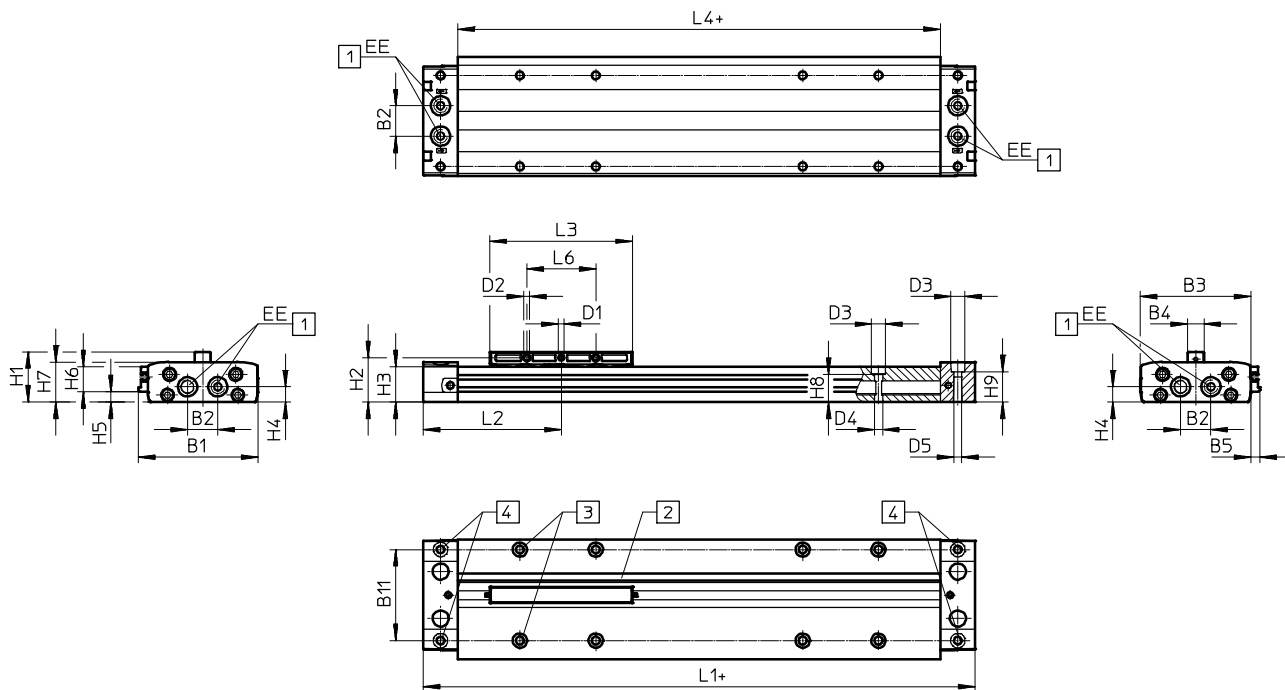


2 Slot for proximity sensor

∅	B13	B14	B15	B16	H14
[mm]					
20	79.5	78	23	36	21
25	86.5	85	27	40	25.5
32	108	106	33	50	32
40	130	127.5	43	60	39.5

Pneumatic drives

Dimensions



- + plus stroke length
- 1 Supply ports
- 2 Slot for proximity sensor
- 3 Mounting holes for accessories
→ Page 211
- 4 Mounting holes

Matching O-rings for supply ports underneath:
 For piston Ø 20: Ø 5x2
 For piston Ø 25: Ø 10x2
 For piston Ø 32: Ø 12x2
 For piston Ø 40: Ø 16x2

Ø	B1	B2	B3	B4	B5	B11	D1	D2	D3
[mm]								Ø	Ø
20	79.5	17	71.8	12	7.6	60	M4	4.2	8
25	86.5	22	79.8	12	6.6	66	M4	4.2	10
32	108	26	99.6	16	8.2	82	M4	4.2	11
40	130	32	119.8	16	10.1	100	M4	4.2	11

Ø	D4	D5	EE	H1	H2	H3	H4	H5	H6
[mm]	Ø	Ø							
20	4.7	4.5	M5	31.5	27	21	9	5	16
25	5.8	5.5	G1/8	36.5	32	25.5	11	7.3	18.2
32	6.8	6.5	G1/8	44.5	40	32	14	8.1	23.9
40	6.8	6.6	G1/4	51.5	46.5	39.5	19.5	10.8	28.7

Ø	H7	H8	H9	L1	L2	L3	L4	L6	Stroke tolerance
[mm]				±0.05					
20	24	15.6	17.6	160	80	87.6	120	40	+1.5
25	29	20.1	21.8	200	100	103.2	150	50	
32	35	24.6	26.5	230	115	121.6	170	60	
40	42.7	32.1	34.7	300	150	180	238.8	70	

NEW

Rodless cylinders > Mechanically coupled cylinders >

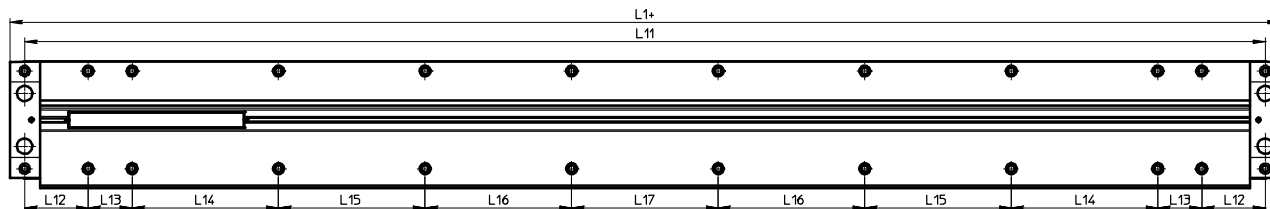
Linear drives DLGF-G

Dimensions

Download CAD data → www.festo.com

01

Mounting holes



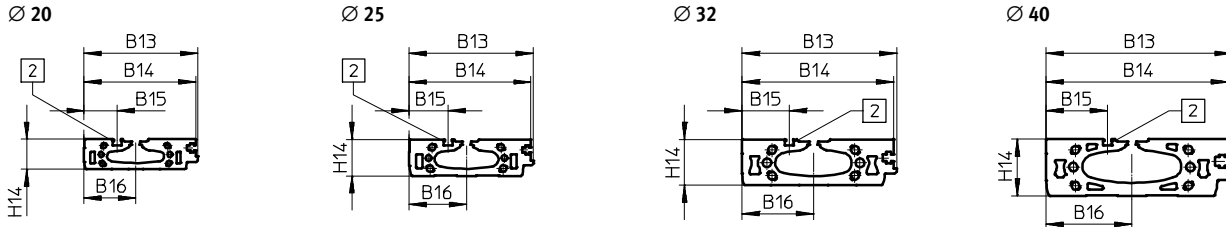
Dimension	L1				L11				L12				L13			
	20	25	32	40	20	25	32	40	20	25	32	40	20	25	32	40
Stroke																
50	210	250	280	350	190	225	250	320	55	57.5	65	65	40	55	60	20
100	260	300	330	400	240	275	300	370					65	80	80	45
150	310	350	380	450	290	325	350	420					90	105	110	70
200	360	400	430	500	340	375	400	470					40	55	60	20
250	410	450	480	550	390	425	450	520					65	80	80	45
300	460	500	530	600	440	475	500	570					90	105	110	70
350	510	550	580	650	490	525	550	620					40	55	60	20
400	560	600	630	700	540	575	600	670					65	80	80	45
450	610	650	680	750	590	625	650	720					90	105	110	70
500	660	700	730	800	640	675	700	770					40	55	60	20
550	710	750	780	850	690	725	750	820					65	80	80	45
600	760	800	830	900	740	775	800	870					90	105	110	70
650	810	850	880	950	790	825	850	920					40	55	60	20
700	860	900	930	1000	840	875	900	970					65	80	80	45
750	910	950	980	1050	890	925	950	1020					90	105	110	70
800	960	1000	1030	1100	940	975	1000	1070					40	55	60	20
850	1010	1050	1080	1150	990	1025	1050	1120					65	80	80	45
900	1060	1100	1130	1200	1040	1075	1100	1170					90	105	110	70
950	1110	1150	1180	1250	1090	1125	1150	1220					40	55	60	20
1000	1160	1200	1230	1300	1140	1175	1200	1370					65	80	80	45

Dimension	L14				L15				L16				L17			
	20	25	32	40	20	25	32	40	20	25	32	40	20	25	32	40
Stroke																
50	-	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-
100																
150																
200				150									150	150	150	
250																
300																
350	150	150	150	150	-	-	-	-	-	-	-	-	-	-	-	150
400																
450																
500								150					150	150	150	-
550																
600																
650	150	150	150	150	150	150	150	150	-	-	-	-	-	-	-	150
700																
750																
800												150	150	150	150	-
850																
900																
950	150	150	150	150	150	150	150	150	150	150	150	150	-	-	-	150
1000																

Pneumatic drives

Dimensions

Profile barrel



2 Slot for proximity sensor

Ø	B13	B14	B15	B16	H14
[mm]					
20	79.5	78	23	36	21
25	86.5	85	27	40	25.5
32	108	106	33	50	32
40	130	127.5	43	60	39.5



Gain space and save money

- + Thanks to a housing that is 30% narrower than on the DGC-G
- + Thanks to a symmetrical design
- + Thanks to an attractively priced drive function with no guide

Rodless cylinders > Mechanically coupled cylinders >
Linear drives

DGC-K

Rodless cylinders > Mechanically coupled cylinders >

Linear drives


DGC-K

 Overview, configuration and ordering
→ www.festo.com/catalogue/dgc-k




 Additional information, support and user documentation
→ www.festo.com/sp/dgc-k



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + Compact design: 30% narrower than the basic variant DGC-G
- + Symmetrical design
- + Low moving dead weight
- + Without guide, for simple drive functions
- + Easy assembly and installation
- + Optional: Lubricant with NSF-H1 approval for the food industry

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options					→ Page/ online
				PPV	A	GK	D2	FK	
Double-acting	DGC-...-K – Compact design								
	18, 25, 32, 40, 50, 63, 80	1 ... 8500	153 ... 3016	■	■	■	■	■	215
	DGC-...-G – Basic design								
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 8500	30 ... 1870	■	■	–	–	■	230
	DGC-...-GF – Plain-bearing guide								
	18, 25, 32, 40, 50, 63	1 ... 8500	153 ... 1870	■	■	–	–	–	233
DGC-...-KF – Recirculating ball bearing guide									
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 8500	30 ... 1870	■	■	–	–	–	236
DGC-...-HD – Heavy-duty design									
	18, 25, 40	10 ... 5000	153 ... 754	–	–	–	–	–	260
Without drive	DGC-FA – Passive guide axis								
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 5000	–	–	–	–	–	–	dgc-fa

01

Pneumatic drives

Product options

PPV Pneumatic cushioning, adjustable at both ends

A Position sensing

GK Basic design

GV Extended piston rod

D2 Supply port at both ends

H1 Lubrication approved for use in food applications

FK Moment compensator

EX2 EU certification (II 3GD)

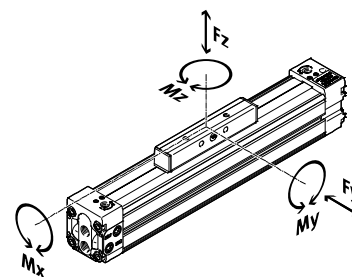
EX3 EU certification (II 2G)

Data sheet



Technical data

Dimensions → Page 222



Piston Ø	18	25	32	40	50	63	80
Pneumatic connection	M5	G1/8		G1/4		G3/8	G1/2
Stroke [mm]	1 ... 3000	1 ... 8500			1 ... 6000	1 ... 5000	1 ... 3000 ¹⁾
Cushioning	Pneumatic cushioning, adjustable at both ends						
Cushioning length [mm]	16	18	20	30			83
Theoretical force at 6 bar [N]	153	295	483	754	1178	1870	3016
Max. permissible force F_z [N]	120	330	480	800	1200	1600	2500
Max. permissible torque M_x [Nm]	0.8	1.2	1.9	3.8	6	5.7	30.6
Max. permissible torque M_y [Nm]	11	20	40	60	120	150	400
Max. permissible torque M_z [Nm]	1	3	5	8	15	24	100

1) Additional strokes on request.

Linear drives DGC-K

01

Data sheet

Operating conditions

Piston Ø		18	25	32	40	50	63	80	
Operating pressure	[bar]	2 ... 8				1.5 ... 8			
Ambient temperature ¹⁾	[°C]	-10 ... +60							

1) Note operating range of proximity sensors.

Materials

Piston Ø		18	25	32	40	50	63	80	
End cap		Die-cast aluminium				Gravity die-cast aluminium			
Seals		NBR							
		TPE-U (PU)							

Pneumatic drives

Order code



Type

DGC	Linear drive
-----	--------------

Guide

K	Compact
---	---------

Piston Ø [mm]

Piston Ø [mm]	Stroke [mm]
18	1 ... 3000
25, 32, 40	1 ... 8500
50	1 ... 6000
63	1 ... 5000
80	1 ... 3000

Cushioning

PPV	Pneumatic cushioning, adjustable at both ends
-----	---

Position sensing

A	Via proximity sensor
---	----------------------

Basic design

GK	Standard piston
----	-----------------

Supply port

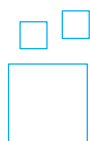
-	At one end
D2	At both ends

Order example:

DGC-K-25-200-PPV-A-GK

Linear drive DGC - compact - piston diameter 25 mm - stroke 200 mm - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor - standard piston - supply port at one end

Ordering – Product options



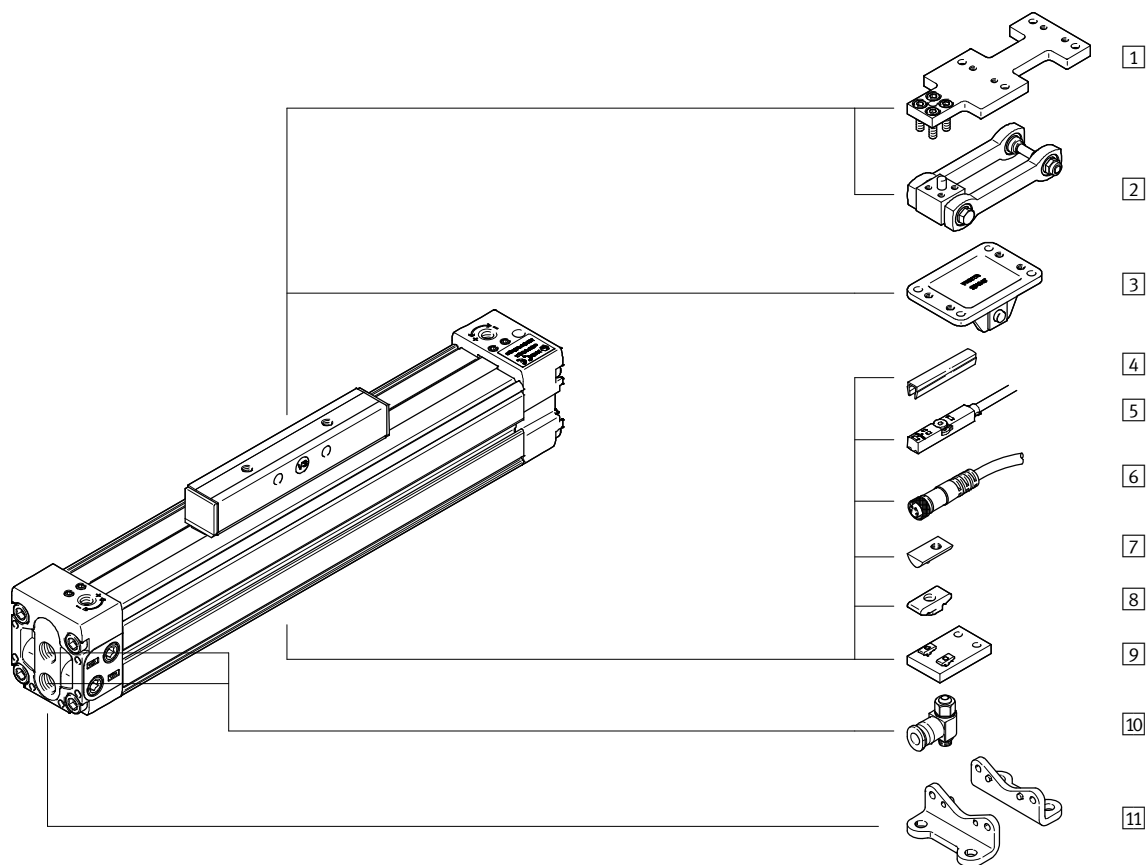
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Accessories



		→ Page/online
1	Adapter plate DAMF	218
2	Moment compensator DARD-...-M	218
3	Moment compensator DARD-...-S	218
4	Slot cover ABP	218
5	Proximity sensor SMT-8M/SME-8M	218
6	Connecting cable NEBU	218

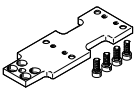
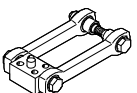
		→ Page/online
7	Slot nut for mounting slot NST	218
8	Slot nut for mounting slot ABAN	219
9	Central support MUP	219
10	One-way flow control valve GRLA	219
11	Foot mounting HP	219

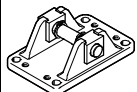

Linear drives DGC-K

01



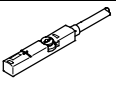

Accessories – Ordering data



Pneumatic drives

	For Ø	Part no.	Type
1 Adapter plate Dimensions online: → dgc			
	18	2349281	DAMF-18-FKP
	25	2349282	DAMF-25-FKP
	32	2349283	DAMF-32-FKP
	40	2349284	DAMF-40-FKP
	50	2349285	DAMF-50-FKP
	63	2349286	DAMF-63-FKP
	80	2349287	DAMF-80-FKP
2 Moment compensator Dimensions online: → dgc			
	18	2349274	DARD-L1-18-M
	25	2349275	DARD-L1-25-M
	32	2349276	DARD-L1-32-M
	40	2349277	DARD-L1-40-M
	50	2349278	DARD-L1-50-M
	63	2349279	DARD-L1-63-M
	80	2349280	DARD-L1-80-M

	For Ø	Part no.	Type
3 Moment compensator Dimensions online: → dgc			
	18	8001411	DARD-L1-18-S
	25	8001412	DARD-L1-32-S
	32	8001413	DARD-L1-32-S
	40	8001413	DARD-L1-40-S
	50	8001414	DARD-L1-63-S
	63	8001414	DARD-L1-63-S
	80	8001415	DARD-L1-80-S
4 Slot cover¹⁾			
	32, 40	151681	ABP-5
	50, 63, 80	151682	ABP-8
	18, 25, 32, 40,	563360	ABP-5-S1
	50, 63, 80		

1) Packaging unit 2x 0.5 m.




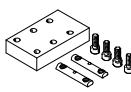
	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
5 Proximity sensor for T-slot, magneto-resistive – N/O contact²⁾ Data sheets → Page 1206					
	18 ... 80	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	18 ... 80	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	18 ... 80	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	18 ... 80	Contacting, cable	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE

	For Ø	Connection	Cable length [m]	Part no.	Type
6 Connecting cable, straight socket Data sheets → Page 1543					
	18 ... 80	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	18 ... 80	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541367	NEBU-M12W5-K-2.5-LE3
			5.0	★ 541370	NEBU-M12W5-K-5-LE3


2) When using the variant DGC-K...D2 (supply port at both ends), it is only possible to use proximity sensors that can be inserted in the slot from above.

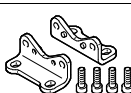
Accessories – Ordering data

01

	For Ø	Part no.	Type
7/8 Slot nut Dimensions online: → dgc			
	18, 25	526091	NST-HMV-M4-2) ³⁾
	32, 40	150914	NST-5-M5
	50, 63, 80	150915	NST-8-M6
	18, 25	8003032	ABAN-1M4-5 ¹⁾
9 Central support Dimensions online: → dgc			
	18	150736	MUP-18/25
		1711704	MUP-18/25-P
	25	150736	MUP-25/25
		1711704	MUP-18/25-P
	32	150737	MUP-32
	40	150738	MUP-40
	50	150739	MUP-50
	63	150800	MUP-63
80	158455	MUP-80	

Pneumatic drives

	For Ø	Connection		Part no.	Type
		Thread	O.D.		
10 One-way flow control valve with slotted head screw, metal Data sheets → Page 1031					
	18	M5	3	★ 193137	GRLA-M5-QS-3-D
			6	★ 193139	GRLA-M5-QS-6-D
	25, 32	G1/8	8	★ 534337	GRLA-1/8-QS-8-RS-D
			8	★ 534339	GRLA-1/4-QS-8-RS-D
	63	G3/8	8	★ 534342	GRLA-3/8-QS-8-RS-D
	80	G1/2	12	★ 193152	GRLA-1/2-QS-12-D

	For Ø	Part no.	Type
11 Foot mounting Dimensions online: → dgc			
	18	158472	HP-18
	25	150731	HP-25
	32	150732	HP-32
	40	150733	HP-40
	50	150734	HP-50
	63	150735	HP-63
	80	158453	HP-80

1) Packaging unit 4 pieces.

2) Packaging unit 10 pieces.

3) Piston size 18 and 25 cannot be used with DGC-...D2 (supply port at both ends).

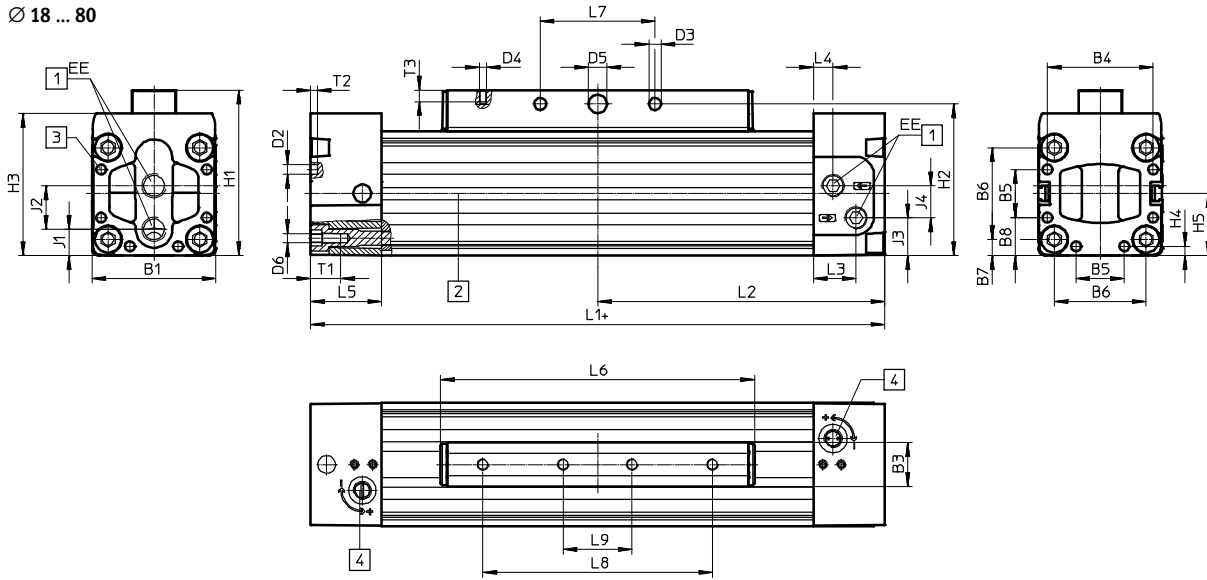
Linear drives DGC-K

01

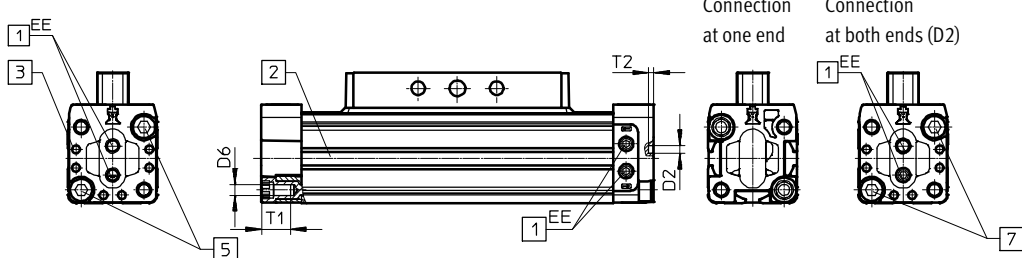
Dimensions

Download CAD data → www.festo.com

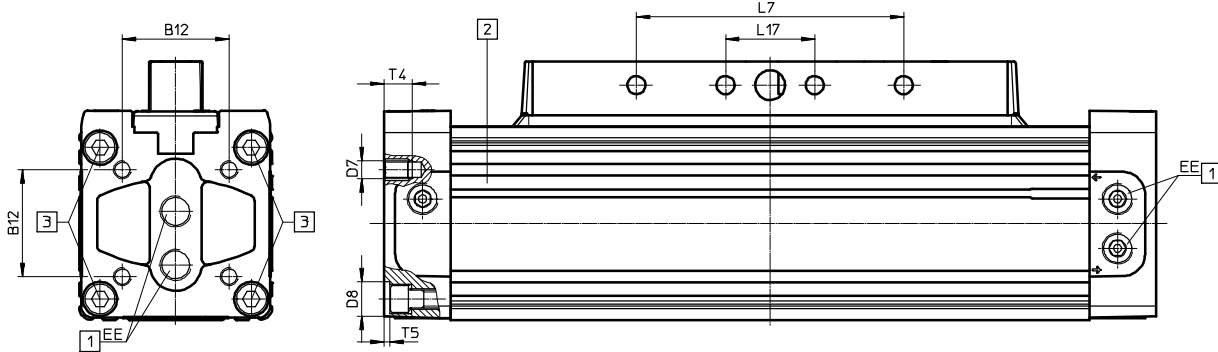
Ø 18 ... 80



Ø 18



Ø 80



- 1 Supply port options on 3 sides
- 2 Slot for proximity sensor

- 3 Mounting hole for foot mounting HP
- 4 Regulating screw for adjustable end-position cushioning

- 5 No mounting thread with Ø 18 + plus stroke length
- 7 No mounting thread with Ø 18, in combination with variant D2

Pneumatic drives

Dimensions

Download CAD data → www.festo.com

01

∅	B1	B3	B4	B5	B6	B7	B8	B12	D2	D3
[mm]		±0.2							∅	∅
18	34 ^{+0.2/-0.05}	12	28	7	24	5	13.5	–	3	5.2
25	45 ^{+0.4}	19	39.1	18	32.5	6.3	13.5	–	3.3	5.2
32	54 ^{+0.4}	19	46	21	40	7	16.5	–	4.3	5.2
40	64 ^{+0.4}	21	53	28	49	7.5	18	–	4.3	6.5
50	90 ^{+0.4}	24	76	44	72	9	23	–	6.3	8.5
63	106 ^{+0.4}	24	89	44	83	11.5	31	–	6.3	8.5
80	130 ^{+0.8}	36	–	–	102	14	29	72	–	12.2

∅	D4	D5	D6	D7	D8	EE	H1	H2	H3	H4	H5
[mm]		∅			∅						
18	M5	6 ^{H7}	M5	–	–	M5	49.8	43.8	37.6	3	17
25	M5	8 ^{H7}	M4	–	–	G1/8	63	57	51	3	22.5
32	M5	8 ^{H7}	M5	–	–	G1/8	72	66	61.8	4	27
40	M6	10 ^{H7}	M5	–	–	G1/4	86	78	71.8	5.5	32
50	M8	12 ^{H7}	M6	–	–	G1/4	115	106	99	7	45
63	M8	12 ^{H7}	M8	–	–	G3/8	131	122	115	8.5	53
80	M12	20 ^{H10}	–	M12	23	G1/2	174	158	140.5	–	85

∅	J1	J2	J3	J4	L1		L2		L3	L4	L5
					GK	GV	GK	GV			
[mm]											
18	10.7	11.1	12.2	10.4	150	230	75	115	5	5	15.5
25	9	16.7	15.7	13	200	300	100	150	17	7	25
32	11.4	19	17.1	14	250	380	125	190	18.5	8.5	31
40	13.5	22	19.5	21	300	470	150	235	11.5	11.5	31
50	21	30.8	27	29.3	350	550	175	275	14	14	34
63	25	36	32	33	400	650	200	325	13.5	13.5	34
80	37	36	48.1	33.3	520	–	260	–	19	19	45

∅	L6		L7	L8	L9	L17	T1	T2	T3	T4	T5
	GK	GV									
[mm]											
18	85	165	30±0.1	60±0.1	–	–	11	2	10	–	–
25	109	209	30±0.1	50±0.1	–	–	13	2	7.5	–	–
32	135	265	50±0.1	100±0.1	30±0.1	–	13.2	3	7.5	–	–
40	171	341	70±0.1	130±0.1	40±0.1	–	13.2	4	10.5	–	–
50	206	406	80±0.1	150±0.1	50±0.1	–	15.2	6	12.5	–	–
63	234	484	110±0.1	190±0.1	70±0.1	–	21.2	6	12.5	–	–
80	334	–	180±0.15	230±0.15	115±0.15	60±0.15	–	–	19	18	4

Length tolerance		≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000	≤ 6000	≤ 7000	≤ 8000	≤ 9000
For stroke	[mm]									
L1	[mm]	±0.45	±0.55	±0.70	±0.75	±0.80	±0.85	±1.10	±1.15	±1.20

Linear drives DGC-K

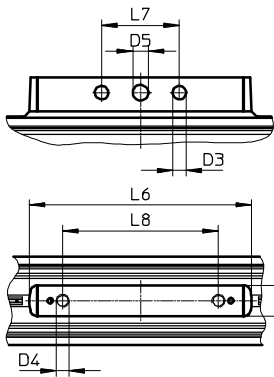
01

Dimensions

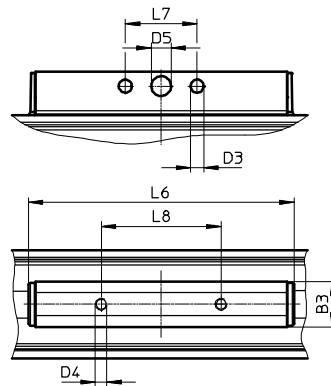
Download CAD data → www.festo.com

GK – Standard piston

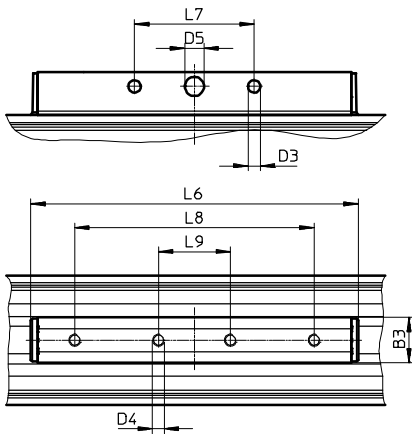
Ø 18



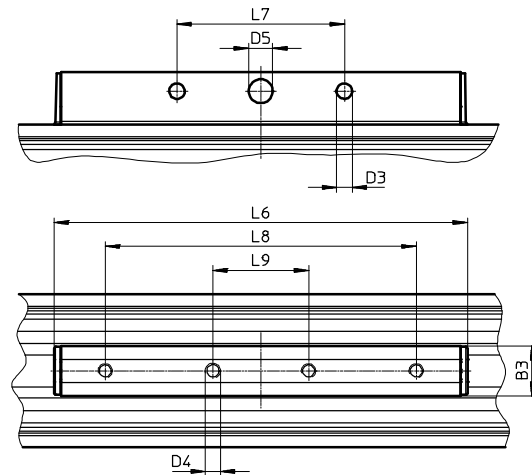
Ø 25



Ø 32



Ø 40



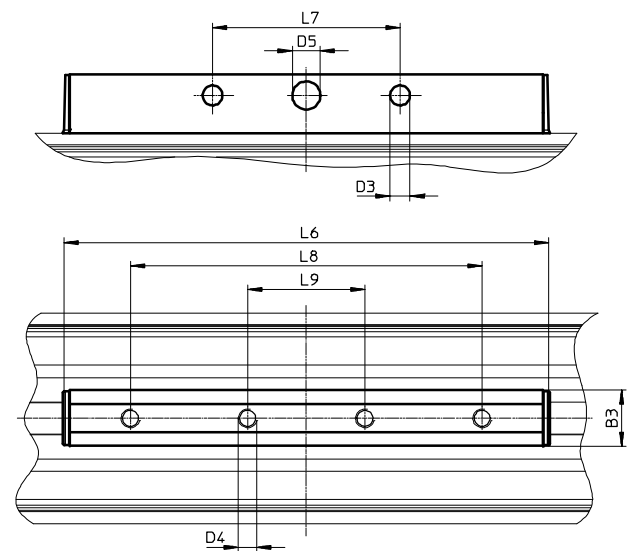
Pneumatic drives

Ø	B3	D3	D4	D5	L6	L7	L8	L9
[mm]	±0.2	Ø +0.2		Ø H7		±0.1	±0.1	±0.1
18	12	5.2	M5	6	85	30	60	–
25	19	5.2	M5	8	109	30	50	–
32	19	5.2	M5	8	135	50	100	30
40	21	6.5	M6	10	171	70	130	40

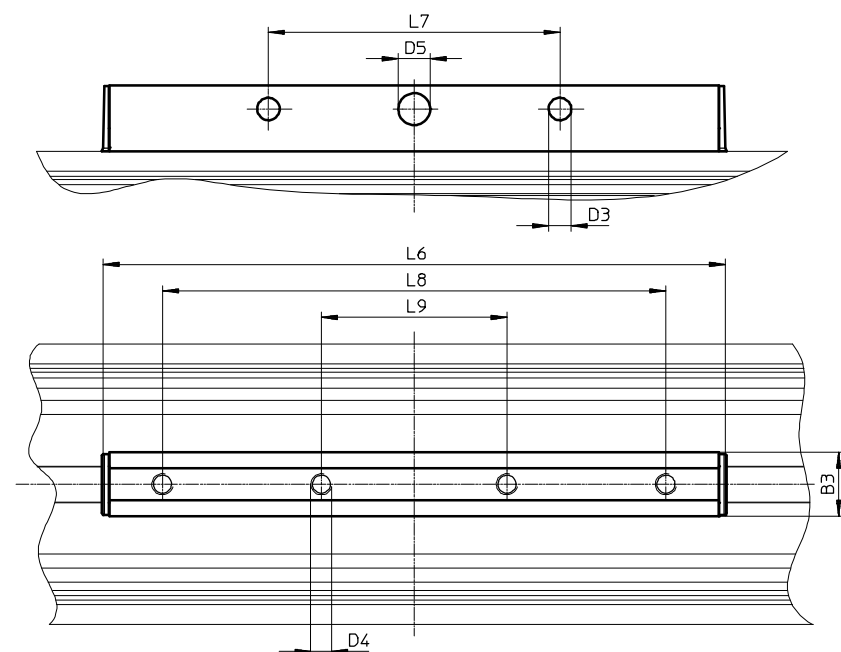
Dimensions

GK – Standard piston

Ø 50



Ø 63



Ø	B3	D3	D4	D5	L6	L7	L8	L9
[mm]	±0.2	Ø +0.2		Ø H7		±0.1	±0.1	±0.1
50	24	8.5	M8	12	206	80	150	50
63	24	8.5	M8	12	234	110	190	70

Linear drives DGC-K

01

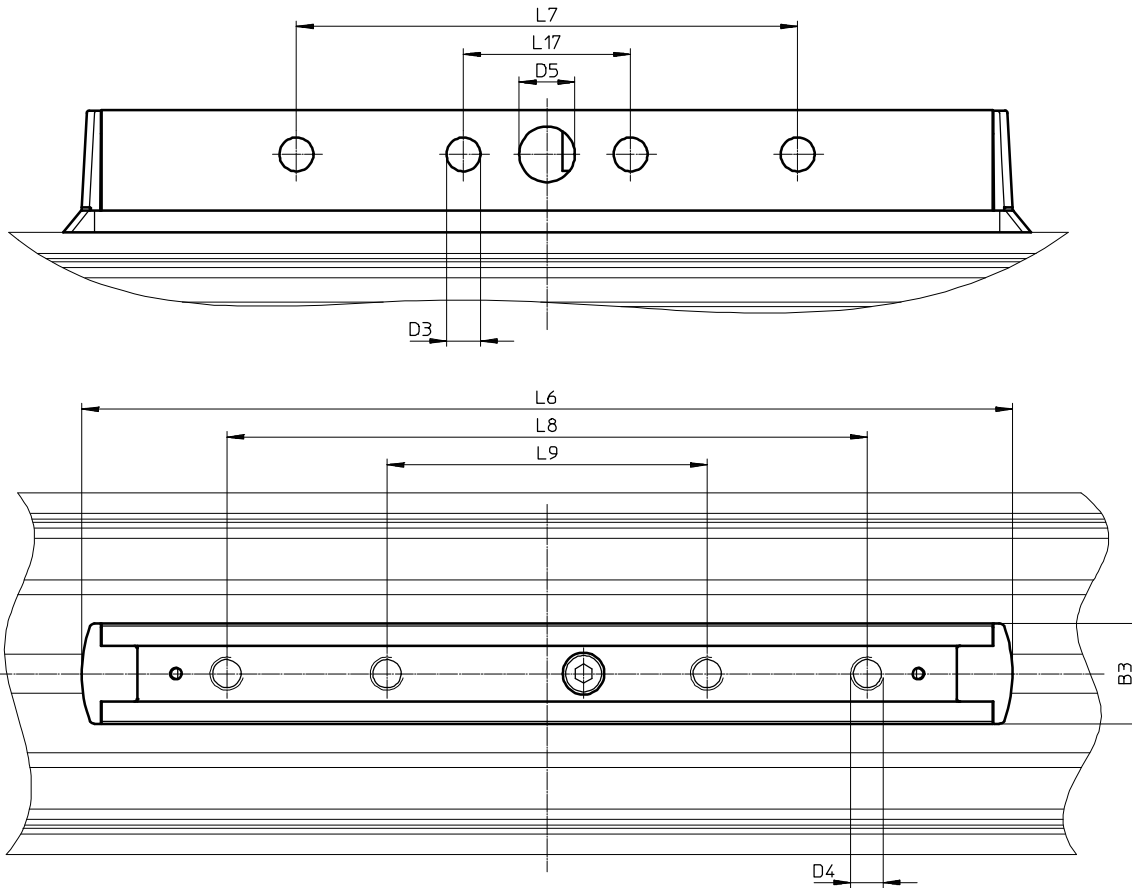
Dimensions

Download CAD data → www.festo.com

GK – Standard piston

∅ 80

Pneumatic drives

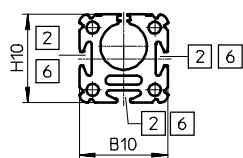


∅	B3	D3	D4	D5	L6	L7	L8	L9	L17
[mm]	±0.2	∅ +0.2		∅ H10		±0.15	±0.15	±0.15	
80	36	12.2	M12	20	334	180	230	115	60

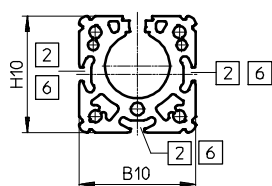
Dimensions

Profile barrel

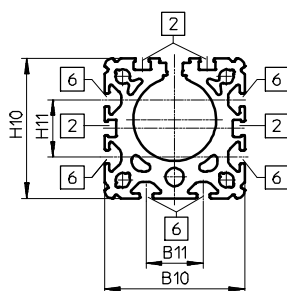
Ø 18



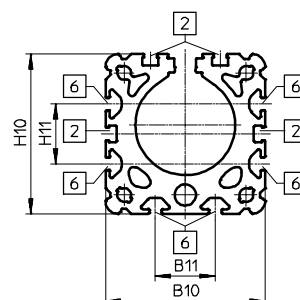
Ø 25



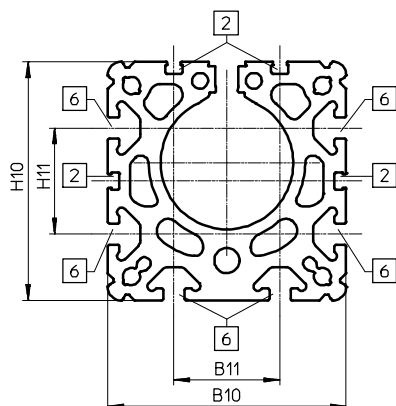
Ø 32



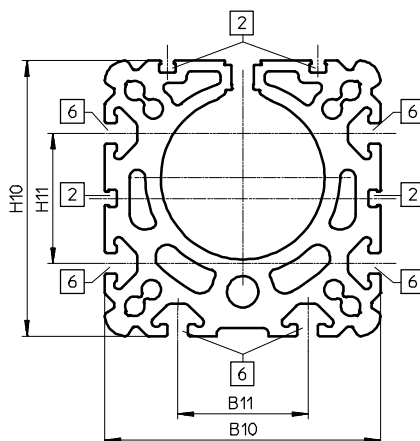
Ø 40



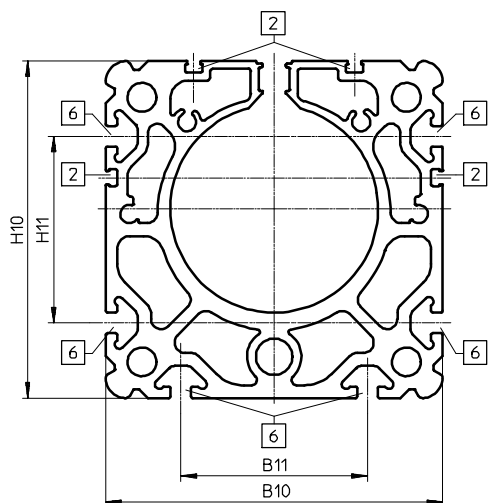
Ø 50



Ø 63



Ø 80



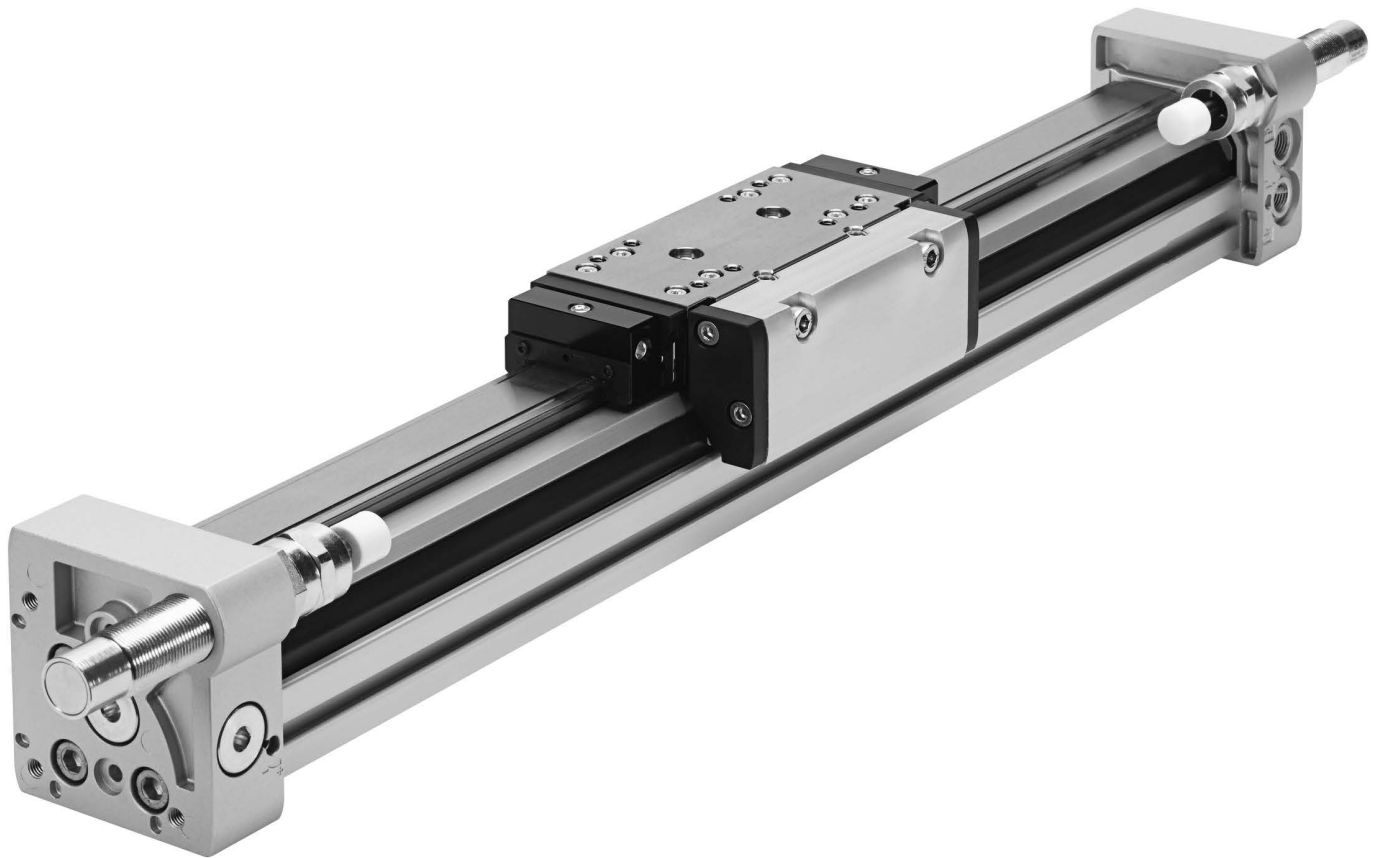
- 2 Slot for proximity sensor
- 6 Mounting slot for slot nut

Ø	B10	B11	H10	H11
[mm]				
18	34	–	34	–
25	45	–	45	–
32	54	22	54	22
40	64	24	64	24
50	90	40	90	40
63	106	50	106	50
80	130	72	130	72

Rodless cylinders > Mechanically coupled cylinders >

01

Pneumatic drives



Gain time and increase safety

- + Thanks to all connections being accessible from one side
- + Thanks to quick and easy mounting
- + With the optional integrated clamping unit

Rodless cylinders > Mechanically coupled cylinders >
Linear drives

DGC

DGC-G
DGC-GF
DGC-KF

Rodless cylinders > Mechanically coupled cylinders >

Linear drives


DGC

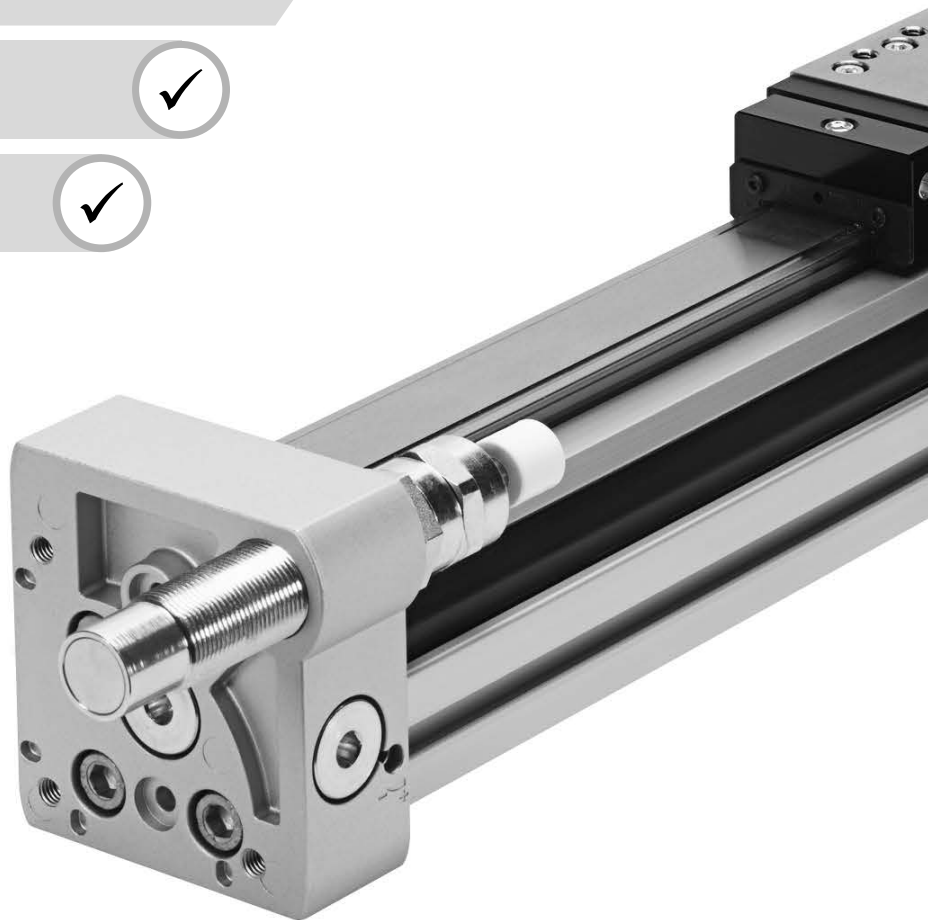
 Overview, configuration and ordering
→ www.festo.com/catalogue/dgc



 Additional information, support and user documentation
→ www.festo.com/sp/dgc



 Spare parts service



- + Basic design, plain or recirculating ball bearing guide
- + High-precision guide
- + Optimised sealing system
- + All settings accessible from one side
- + Optionally with variable end stops and intermediate position module
- + Optional: NSF-H1 lubricant for the food industry
- + Optional: clamping unit for holding loads

Product range overview

Type/function	PistonØ [mm]	Stroke [mm]	Force [N]	Product options					→ Page/ online
				P	PPV	YSR	YSRW	A	
Double-acting	DGC-...-K – Compact design								
	18, 25, 32, 40, 50, 63, 80	1 ... 8500	153 ... 3016	-	■	-	-	■	215
	DGC-...-G – Basic design								
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 8500	30 ... 1870	■	■	■	■	■	230
	DGC-...-GF – Plain-bearing guide								
	18, 25, 32, 40, 50, 63	1 ... 8500	153 ... 1870	-	■	■	■	■	233
	DGC-...-KF – Recirculating ball bearing guide								
8, 12, 18, 25, 32, 40, 50, 63	1 ... 8500	30 ... 1870	■	■	■	■	■	236	
DGC-...-HD – Heavy-duty design									
18, 25, 40	10 ... 5000	153 ... 754	-	-	■	■	■	260	
Without drive	DGC-FA – Passive guide axis								
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 5000	-	■	-	■	■	-	dgc-fa

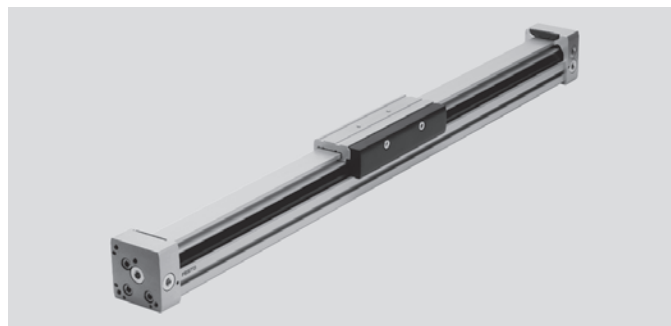
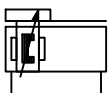
Product options

N	NPT thread	YSRW	Self-adjusting shock absorber, progressive	H1	Food-safe lubrication	1H	Clamping unit
P	Elastic cushioning rings/plates at both ends	A	Position sensing	C	Lubrication adapter	PN	Pneumatically actuated clamping unit
PPV	Pneumatic cushioning, adjustable at both ends	DL	Supply port at the left end or at both ends	KL	Additional slide on left	EX2	EU certification (II 3GD)
YSR	Self-adjusting shock absorber	GP	Protected recirculating ball bearing guide	KR	Additional slide on right	EX3	EU certification (II 2G)
						O	Without operating instructions

Linear drives DGC-G, basic design

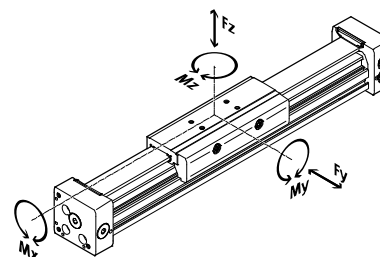
01

Data sheet



Technical data

Dimensions → Page 241



Piston Ø		8	12	18	25	32	40	50	63	
Pneumatic connection		M5			G1/8		G1/4	G3/8		
Stroke	[mm]	1 ... 1500	1 ... 2000	1 ... 3000	1 ... 8500			1 ... 5000		
Cushioning										
DGC-...-P		Elastic cushioning rings/plates at both ends			-					
DGC-...-PPV		-			Pneumatic cushioning, adjustable at both ends					
DGC-...-YSR...		Self-adjusting shock absorber at both ends			-					
Cushioning length ¹⁾	[mm]	-			16.5	15.5	17.5	29.5	29.8	31.1
Theoretical force at 6 bar	[N]	30	68	153	295	483	754	1178	1870	
Max. permissible force F_y	[N]	150	300	70	180	250	370	480	650	
Max. permissible force F_z	[N]	150	300	340	540	800	1100	1600	2000	
Max. permissible torque M_x	[Nm]	0.5	1.3	1.9	4	9	12	20	26	
Max. permissible torque M_y	[Nm]	2	5	12	20	40	60	150	150	
Max. permissible torque M_z	[Nm]	2	5	4	5	12	25	37	48	

1) With PPV cushioning.

Operating conditions

Piston Ø		8	12	18	25	32	40	50	63
Operating pressure	[bar]	2.5 ... 8			2 ... 8		1.5 ... 8		
Ambient temperature ²⁾	[°C]	+5 ... +60		-10 ... +60					

2) Note operating range of proximity sensors.

Materials

Guide rail	Anodised aluminium
Slide	Anodised aluminium
End cap	Anodised aluminium
Cylinder barrel	Anodised aluminium
Piston seal	TPE-U (PU)
Sealing band/cover band	TPE-U (PU)
Slide elements	PA

Order code

		DGC	-		-		-	G	-		-	A
Type		DGC	Linear drive									
Piston Ø [mm]												
	Stroke [mm]											
8	1 ... 1500											
12	1 ... 2000											
18	1 ... 3000											
25, 32, 40	1 ... 8500											
50, 63	1 ... 5000											
Guide		G	Basic design									
Cushioning												
P	Elastic cushioning rings/ plates at both ends	1										
PPV	Pneumatic cushioning, adjustable at both ends	2										
YSR	Self-adjusting shock absorber at both ends	1										
YSRW	Self-adjusting progressive shock absorber at both ends	1										
Position sensing		A	Via proximity sensor									

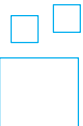
- 1 Only with piston Ø 8 and 12
- 2 Not with piston Ø 8 and 12

Order example:

DGC-25-200-G-PPV-A

Linear drive DGC - piston diameter 25 mm - stroke 200 mm - basic design - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Linear drives DGC-G, basic design

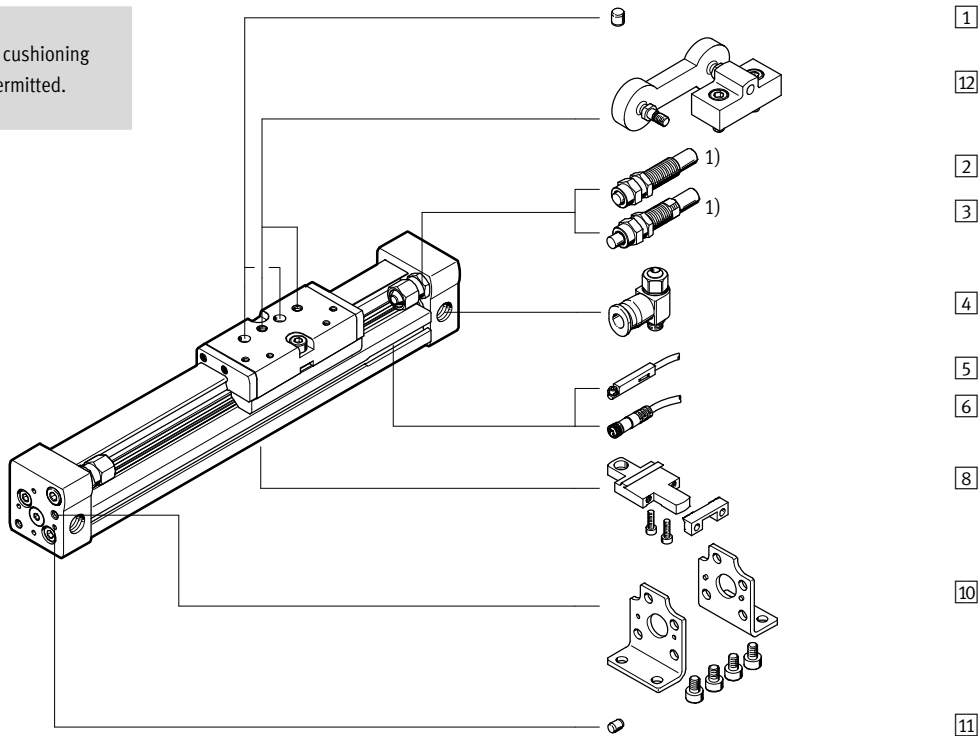
01

Accessories

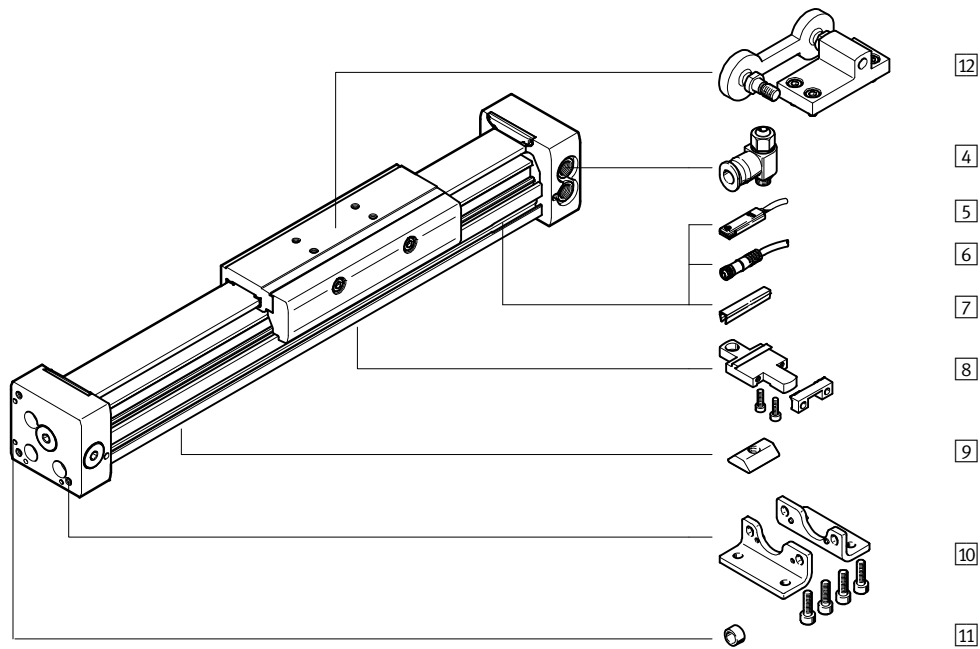
DGC-8/-12

Note

1) Operation without cushioning components is not permitted.



DGC-18 ... 63



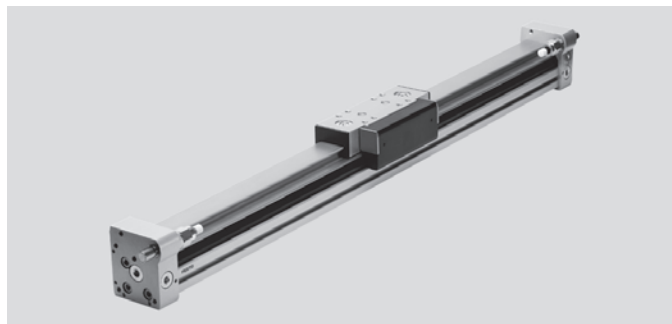
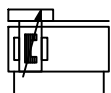
	→ Page/online
1 Centring pin ZBS ¹⁾	238
2 Shock absorber YSR	231
3 Shock absorber YSRW-DGC	238
4 One-way flow control valve GRLA	239
5 Proximity sensor SME/SMT	239
6 Connecting cable NEBU	239

	→ Page/online
7 Slot cover ABP-S	240
8 Profile mounting MUC	240
9 Slot nut HMBN	240
10 Foot mounting HPC	240
11 Centring pin ZBS/centring sleeve ZBH	238
12 Moment compensator FKC	240

1) Included in the scope of delivery of the drive.

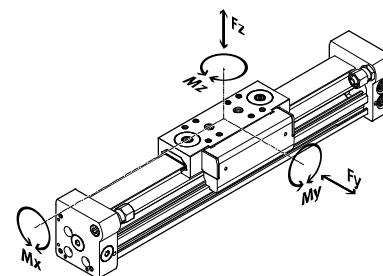
Linear drives DGC-GF, with plain-bearing guide

Data sheet



Technical data

Dimensions → Page 246



Piston Ø	18	25	32	40	50	63
Pneumatic connection	M5	G1/8		G1/4		G3/8
Stroke [mm]	1 ... 3000	1 ... 8500			1 ... 5000	
Cushioning	Pneumatic cushioning, adjustable at both ends					
DGC-...-PPV	Pneumatic cushioning, adjustable at both ends					
DGC-...-YSR...	Self-adjusting shock absorber at both ends					
Cushioning length ¹⁾ [mm]	16.5	15.5	17.5	29.5	29.8	31.1
Theoretical force at 6 bar [N]	153	295	483	754	1178	1870
Max. permissible force F_y [N]	440	640	900	1380	1500	2300
Max. permissible force F_z [N]	540	1300	1800	2000	2870	4460
Max. permissible torque M_x [Nm]	3.4	8.5	15	28	54	96
Max. permissible torque M_y [Nm]	20	40	70	110	270	450
Max. permissible torque M_z [Nm]	8.5	20	33	54	103	187

1) With PPV cushioning.

Operating conditions

Piston Ø	18	25	32	40	50	63
Operating pressure [bar]	2 ... 8			1.5 ... 8		
Ambient temperature ²⁾ [°C]	-10 ... +60					

2) Note operating range of proximity sensors.

Materials

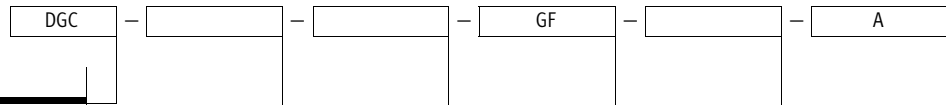
Guide rail	Anodised aluminium
Slide	Anodised aluminium
End cap	Anodised aluminium
Cylinder barrel	Anodised aluminium
Piston seal	TPE-U (PU)
Sealing band/cover band	TPE-U (PU)
Slide elements	PA

Linear drives DGC-GF, with plain-bearing guide

01

Order code

Pneumatic drives



Type	
DGC	Linear drive

Piston Ø [mm]	
Stroke [mm]	
18	1 ... 3000
25, 32, 40	1 ... 8500
50, 63	1 ... 5000

Guide	
GF	Plain-bearing guide

Cushioning	
PPV	Pneumatic cushioning, adjustable at both ends
YSR	Self-adjusting shock absorber at both ends
YSRW	Self-adjusting progressive shock absorber at both ends

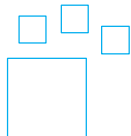
Position sensing	
A	Via proximity sensor

Order example:

DGC-18-250-GF-PPV-A

Linear drive DGC - piston diameter 18 mm - stroke 250 mm - plain-bearing guide - pneumatic cushioning, adjustable at both ends - position sensing via proximity sensor

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

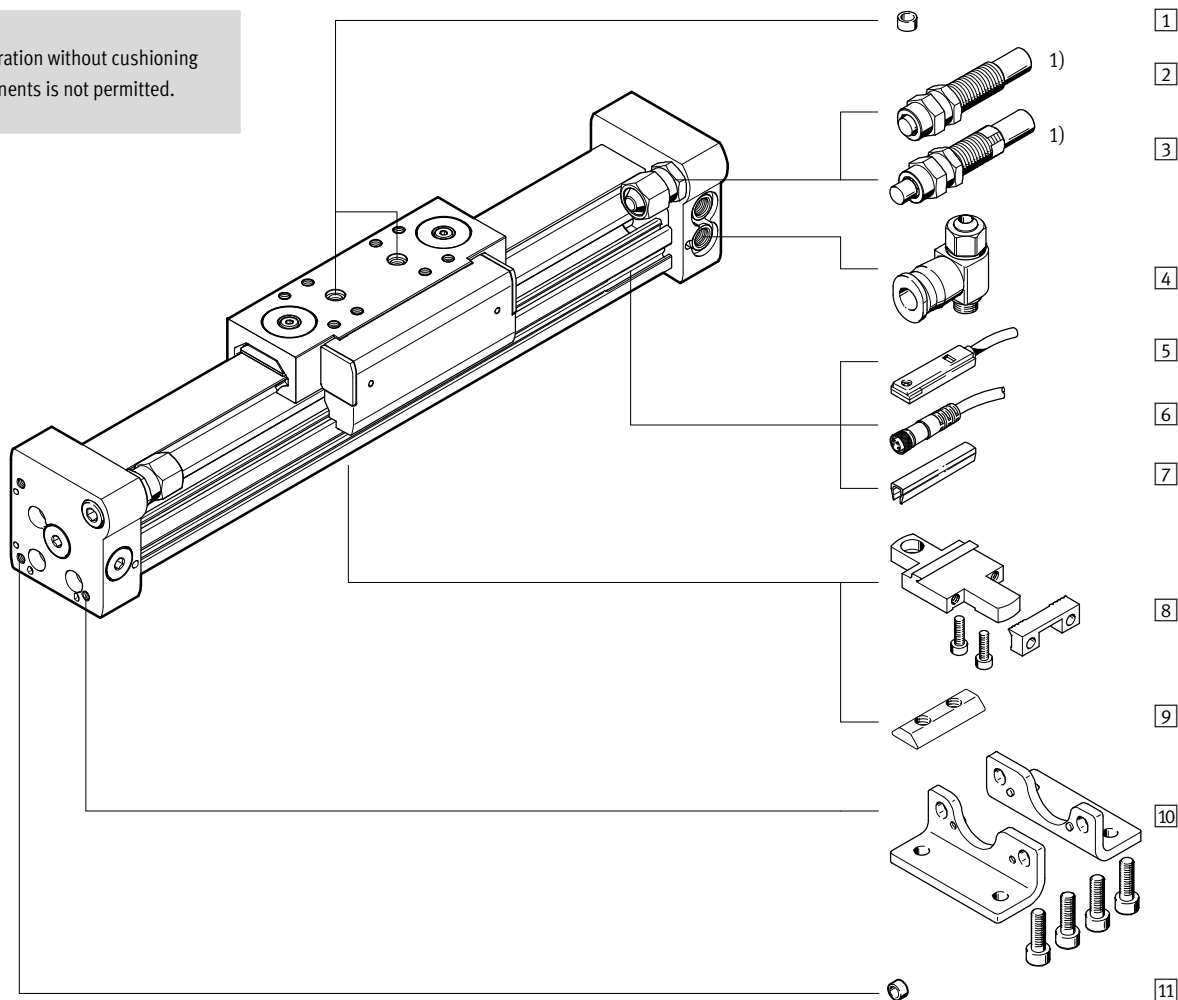
Enter the type code in the search field.

Linear drives DGC-GF, with plain-bearing guide

Accessories

Note

1) Operation without cushioning components is not permitted.



01
Pneumatic drives

		→ Page/online
1	Centring pin ZBS/centring sleeve ZBH ¹⁾	238
2	Shock absorber YSR	234
3	Shock absorber YSRW-DGC	238
4	One-way flow control valve GRLA	239
5	Proximity sensor SME-/SMT-8	239
6	Connecting cable NEBU	239

		→ Page/online
7	Slot cover ABP-S	240
8	Profile mounting MUC	240
9	Slot nut HMBN	240
10	Foot mounting HPC	240
11	Centring sleeve ZBH	238

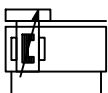
1) Included in the scope of delivery of the axis.

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-KF, with recirculating ball bearing guide

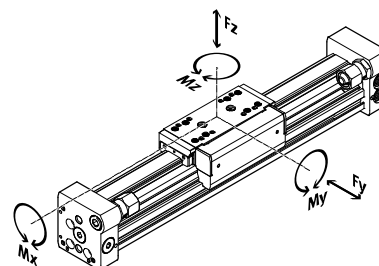
01

Data sheet



Technical data

Dimensions → Page 251



Piston Ø	8	12	18	25	32	40	50	63
Pneumatic connection	M5			G1/8		G1/4	G3/8	
Stroke [mm]	1 ... 1300	1 ... 1900	1 ... 3000	1 ... 8500			1 ... 5000	
Cushioning								
DGC-...-P	Elastic cushioning rings/plates at both ends		-					
DGC-...-PPV	-		Pneumatic cushioning, adjustable at both ends					
DGC-...-YSR...	Self-adjusting shock absorber at both ends							
Cushioning length ¹⁾ [mm]	-		16.5	15.5	17.5	29.5	29.8	31.1
Theoretical force at 6 bar [N]	30	68	153	295	483	754	1178	1870
Max. permissible force F_y [N]	300	650	1850	3050	3310	6890	6890	15200
Max. permissible force F_z [N]	300	650	1850	3050	3310	6890	6890	15200
Max. permissible torque M_x [Nm]	1.7	3.5	16	36	54	144	144	529
Max. permissible torque M_y [Nm]	4.5	10	51	97	150	380	634	1157
Max. permissible torque M_z [Nm]	4.5	10	51	97	150	380	634	1157

1) With PPV cushioning.

Operating conditions

Piston Ø	8	15	18	25	32	40	50	63
Operating pressure [bar]	2.5 ... 8		2 ... 8			1.5 ... 8		
Ambient temperature ²⁾ [°C]	-10 ... +60							

2) Note operating range of proximity sensors.

Materials

Guide rail	High-alloy steel
Slide	High-alloy steel
End cap	Anodised aluminium
Cylinder barrel	Anodised aluminium
Piston seal	TPE-U (PU)
Sealing band/cover band	TPE-U (PU)
Slide elements	PA

Linear drives DGC-KF, with recirculating ball bearing guide

Order code

DGC		-		-		-	KF	-		-	A
Type											
DGC	Linear drive										
Piston Ø [mm]											
	Stroke [mm]										
8	1 ... 1300										
12	1 ... 1900										
18	1 ... 3000										
25, 32, 40	1 ... 8500										
50, 63	1 ... 5000										
Guide											
KF	Recirculating ball bearing guide										
Cushioning											
P	Elastic cushioning rings/ plates at both ends										1
PPV	Pneumatic cushioning, adjustable at both ends										2
YSR	Self-adjusting shock absorber at both ends										
YSRW	Self-adjusting progressive shock absorber at both ends										
Position sensing											
A	Via proximity sensor										

1 Only with piston Ø 8 and 12

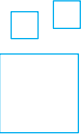
2 Not with piston Ø 8 and 12

Order example:

DGC-12-200-KF-YSRW-A

Linear drive DGC - piston diameter 12 mm - stroke 200 mm - recirculating ball bearing guide - shock absorber at both ends, self-adjusting, progressive - position sensing via proximity sensor

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-KF, with recirculating ball bearing guide

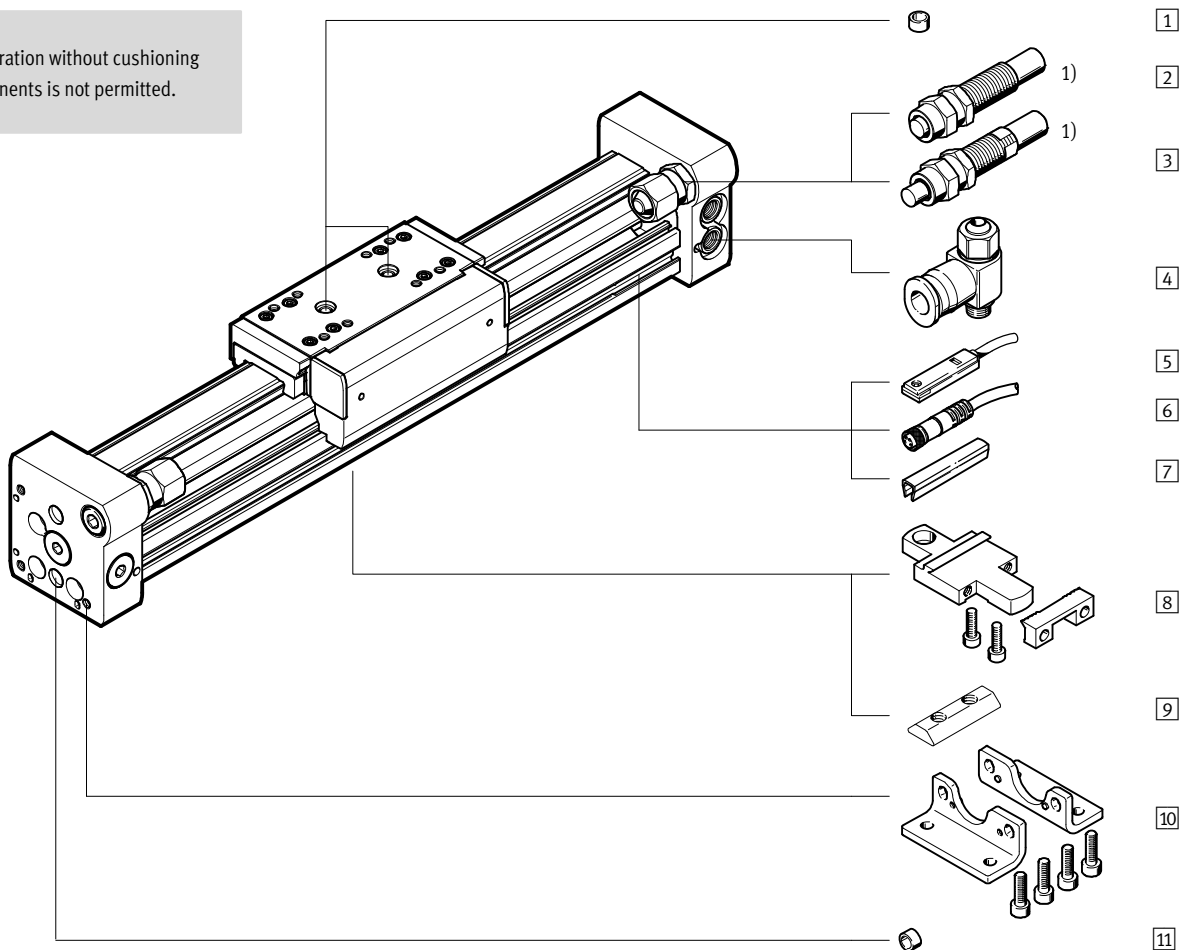
Pneumatic drives

01

Accessories

Note

1) Operation without cushioning components is not permitted.



		→ Page/online
1	Centring pin ZBS/centring sleeve ZBH ¹⁾	238
2	Shock absorber YSR	237
3	Shock absorber YSRW-DGC	238
4	One-way flow control valve GRLA	239
5	Proximity sensor SME-/SMT-8	239
6	Connecting cable NEBU	239

		→ Page/online
7	Slot cover ABP-S	240
8	Profile mounting MUC	240
9	Slot nut HMBN	240
10	Foot mounting HPC	240
11	Centring pin ZBS/centring sleeve ZBH	238

1) Included in the scope of delivery of the axis.

Accessories – Ordering data


	For Ø	Description	Part no.	Type
	1 Centring pin/sleeve¹⁾ Data sheets online: → zbh			
	For DGC-G			
	8, 12	For slide	150928	ZBS-5
	8, 12	For end cap	525273	ZBS-2
	50, 63		150927	ZBH-9
	For DGC-GF			
	18	For slide	150928	ZBS-5
	25 ... 63		150927	ZBH-9
	50, 63	For end cap	150927	ZBH-9
	For DGC-KF			
	8, 12, 18	For slide	150928	ZBS-5
	25 ... 63		150927	ZBH-9
	8, 12	For end cap	525273	ZBS-2
18		150928	ZBS-5	
25 ... 63		150927	ZBH-9	

1) Packaging unit 10 pieces.








	For Ø	Description	Part no.	Type
	3 Shock absorber			
	For DGC-G			
	8	–	540344	YSRW-DGC-8
	12	–	540345	YSRW-DGC-12
	For DGC-GF			
	18	–	540346	YSRW-DGC-18-GF
	25	–	540348	YSRW-DGC-25-GF
	32	–	540350	YSRW-DGC-32-GF
	40	–	540352	YSRW-DGC-40-GF
	50	–	1232870	YSRW-DGC-40/50-B
	63	–	543069	YSRW-DGC-63
	For DGC-KF			
	18	–	540347	YSRW-DGC-18-KF
	25	–	540349	YSRW-DGC-25-KF
	32	–	540351	YSRW-DGC-32-KF
40	–	1232870	YSRW-DGC-40/50-B	
50	–	1232870	YSRW-DGC-40/50-B	
63	–	543069	YSRW-DGC-63	



Accessories – Ordering data

01

	For Ø	Connection		Part no.	Type
		Thread	O.D.		
	8, 12	M5	3	★ 193137	GRLA-M5-QS-3-D
	18		6	★ 193139	GRLA-M5-QS-6-D
	25, 32	G1/8	8	★ 534337	GRLA-1/8-QS-8-RS-D
	40, 50	G1/4	8	★ 534339	GRLA-1/4-QS-8-RS-D
	63	G3/8	8	★ 534342	GRLA-3/8-QS-8-RS-D

1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
	8, 12	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
Magnetic reed – N/O contact Data sheets → Page 1218					
	8, 12	Contacting, cable	2.5	★ 551365	SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3	★ 551367	SME-10M-DS-24V-E-0,3-L-M8D
		Contacting, cable	2.5	★ 551369	SME-10M-ZS-24V-E-2,5-L-OE
Data sheets → Page 1220					
	8, 12	Contacting, cable	2.5	173210	SME-10-KL-LED-24
		Contacting, plug	0.3	173212	SME-10-SL-LED-24
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	18 ... 63	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	18 ... 63	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	18 ... 63	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	18 ... 63	Contacting, cable	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE

	For Ø	Connection	Cable length [m]	Part no.	Type
	18 ... 63	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	18 ... 63	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541367	NEBU-M12W5-K-2.5-LE3
			5.0	★ 541370	NEBU-M12W5-K-5-LE3


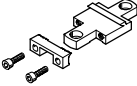

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC

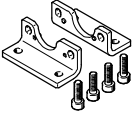
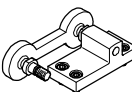
01

Accessories – Ordering data

Pneumatic drives

	For Ø	Part no.	Type
7 Slot cover¹⁾			
	18 ... 63	151680	ABP-5-S
8 Profile mounting Dimensions online: → dgc			
	8	526384	MUC-8
	12	526387	MUC-12
	18	531752	MUC-18
	25	531753	MUC-25
	32	531754	MUC-32
	40	531755	MUC-40
	50	531756	MUC-50
63	531757	MUC-63	
9 Slot nut²⁾ Dimensions online: → dgc			
	25, 32, 40	547264	HMBN-5-1M5
	50, 63	186566	HMBN-5-2M5

- 1) Packaging unit 2x 0.5 m.
- 2) Packaging unit 10 pieces.

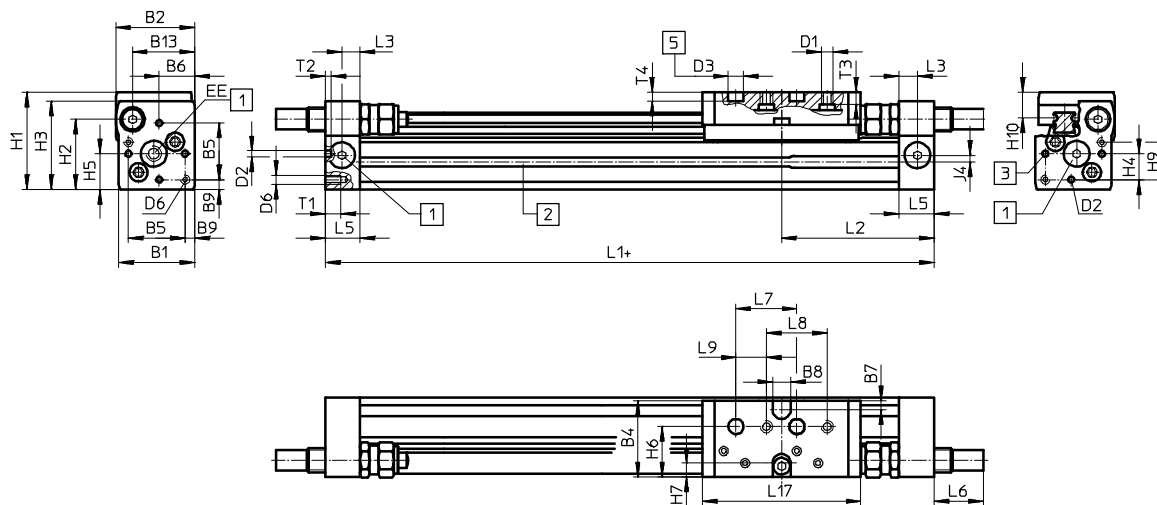
	For Ø	Part no.	Type
10 Foot mounting Dimensions online: → dgc			
	8	526385	HPC-8
	12	526388	HPC-12
	18	533667	HPC-18
	25	533668	HPC-25
	32	533669	HPC-32
	40	533670	HPC-40
	50	545236	HPC-50
63	545237	HPC-63	
12 Moment compensator Dimensions online: → dgc			
	8	529350	FKC-8/12
	12	529350	FKC-8/12
	18	538714	FKC-18
	25	538715	FKC-25
	32	538961	FKC-32
	40	538962	FKC-40
	50	545240	FKC-50/63
63	545240	FKC-50/63	

Dimensions

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01

∅ 8, 12



- 1** Supply port options on 3 sides
- 2** Slot for proximity sensor
- 3** Mounting hole for foot mounting or centring pin
- 5** Hole for centring pin ZBS + plus stroke length

∅	B1	B2	B4	B5	B6	B7	B8	B9	B13	D1	D2	D3	D6
[mm]							±0.05	±0.1			∅ H8	∅ H7	
8	25	26	25.5	18.6	11.7	3	6	3.2	20.5	M4	2	5	M3
12	30.2	31	30.5	20.6	13.5	3	8	4.8	25	M4	2	5	M4

∅	EE	H1	H2	H3	H4	H5	H6	H7	H9	H10	J4	L1	L2
[mm]													
8	M5	32	23	29	8.5	11.7	16.5	4.5	12.3	8.7	2.2	100	50.1
12	M5	37.5	28.5	34.5	8.7	13.5	20.5	5	14.7	9.8	3	125	62.4

∅	L3	L5	L6			L7	L8	L9	L17	T1	T2	T3	T4	Stroke tolerance
			P	YSR	YSRW									
[mm]						±0.03	±0.1	±0.1					+0.2	
8	6	11.4	0	16	16.2	20	20	10	52	5	2	4	3	0 ... 1.7
12	8	15.9	0	11.3	12.3	20	20	10	65	6	2	5	3	

Length tolerance		For stroke [mm]		≤ 1000	≤ 2000
L1	[mm]	+0.90			+1.10

Profile

∅ 8

∅ 12



- 1** Sensor slot for proximity sensor

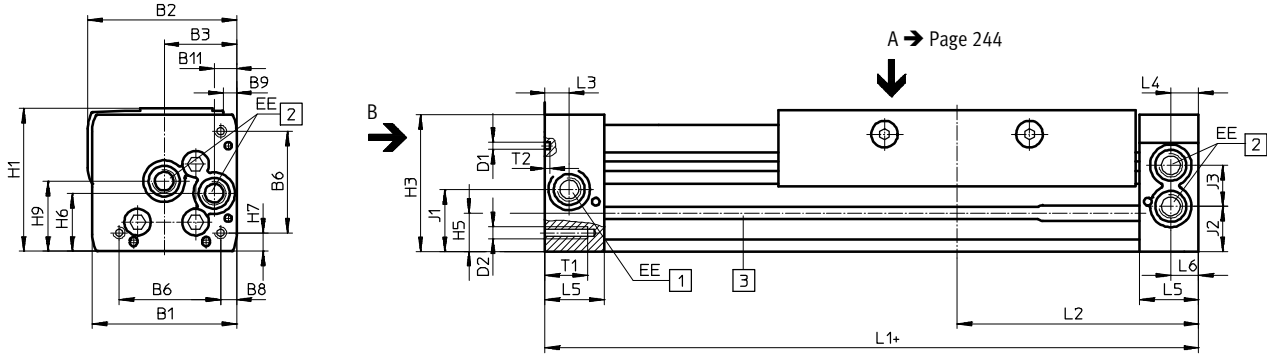
Linear drives DGC-G, basic design

01

Dimensions

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Ø 18 ... 40

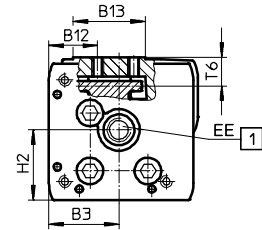
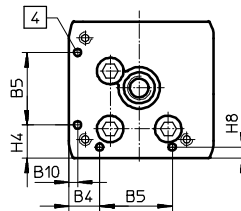
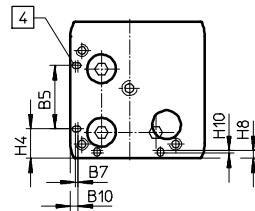


View B

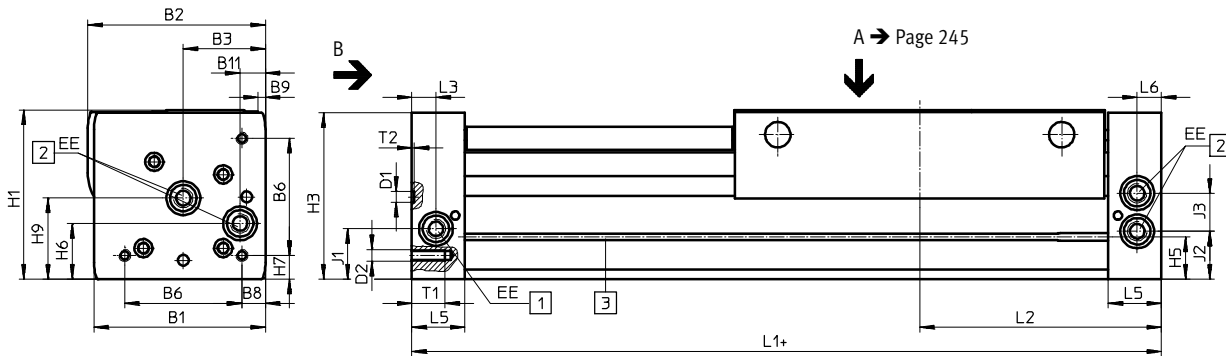
Ø 18

Ø 25 ... 40

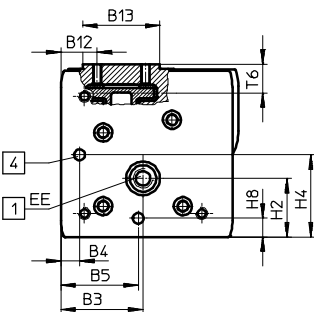
Ø 18 ... 40



Ø 50, 63



View B



+ plus stroke length

- 1 Supply port options on 2 sides
- 2 Supply port options on 2 sides, for supply port at one end
- 3 Sensor slot for proximity sensor
- 4 Mounting hole for foot mounting HPC

Linear drives DGC-G, basic design

Dimensions

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01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
[mm]					±0.05					
18	44.5	46.3	19.5	8.8	21	31	0.3	3.8	3.3	2.4
25	59.8	61.6	30	12.65	30	42		6.65	5.6	3.5
32	73	75.5	38.5	5.7	63.1	57.5		8.5	5	14
40	91	94.5	45	17.2	55	65		12.2	5.3	8
50	113	122	60	8	52.8	81.6	–	12	0	–
63	142	147	68	15.5	68	97	–	19.5	6	–

∅	B11	B12	B13	D1	D2	EE	H1	H2	H3	H4
[mm]				∅						±0.2
18	5.5	19.3	20	2±0.05	M4	M5	49.8	23.1	48.3	10.3
25	9.3	20.15	30	3±0.05	M5	G1/8	58.5	29	56.5	13
32	14.9	20.5	35	3±0.05	M6	G1/8	73	30	71.5	5.7
40	16.5	19.8	45	4±0.05	M6	G1/4	88	41.5	85	17.2
50	21	24	64	9 ^{H7}	M8	G1/4	120	38.5	116	52.8
63	21	30	64	9 ^{H7}	M10	G3/8	140	48.5	137.5	68

∅	H5	H6	H7	H8	H9	H10	J1	J2	J3	L1
[mm]										
18	13.4	20	5.3	2.4	25.2	0.4	20	16.5	11	150
25	15.8	24	7	4.5	29		26.1	18.6	17	200
32	17	27.7	8.5	14	35.2		30	22	18.5	250
40	25	36.5	12.2	8	44		35	26	26	300
50	29.3	36	12	8	53	–	30.5	30.5	28	350
63	34.8	46	19.5	15.5	67	–	41.5	39.5	31.5	400

∅	L2	L3	L4	L5	L6	T1	T2	T6	Stroke tolerance
[mm]									
18	74.5	5.7	5.8	15	5.5	9	2	10.7	0 ... 2.5
25	100	10.5	10.6	24.5	10.6	17.5	2	12	
32	124.8	14.5	14.5	30.5	14.5	15	2	13.8	
40	150	14.6	14.6	33.5	14.6	20	3	16.8	
50	175	17	–	41	17	24	2.1 ^{+0.2}	20.75	
63	200	20	–	44	20	27.5	2.1 ^{+0.2}	20.75	

– | – Note: This product conforms to ISO 1179-1 and ISO 228-1.

Length tolerance		≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000	≤ 6000	≤ 7000	≤ 8000	≤ 9000
For stroke	[mm]									
L1	[mm]	+0.90	+1.10	+1.40	+1.50	+1.60	+1.70	+2.20	+2.30	+2.40

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-G, basic design

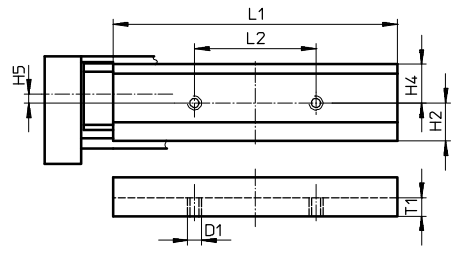
01

Dimensions

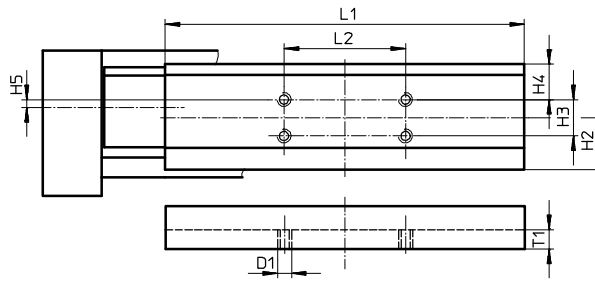
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Slide – View A

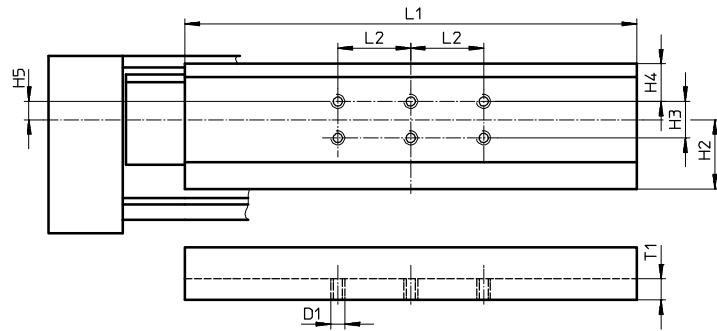
Ø 18



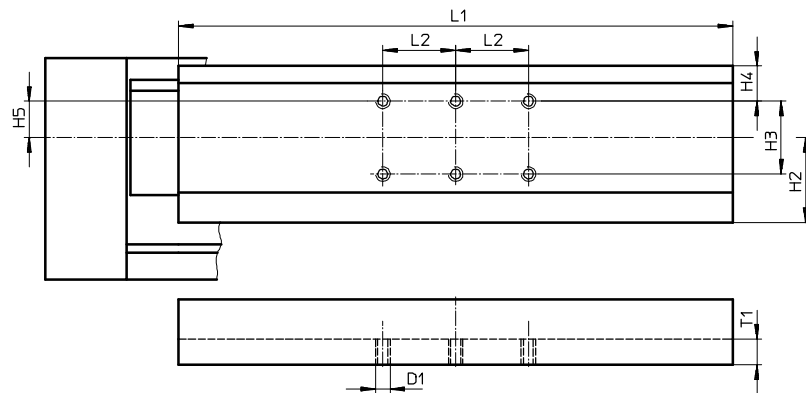
Ø 25



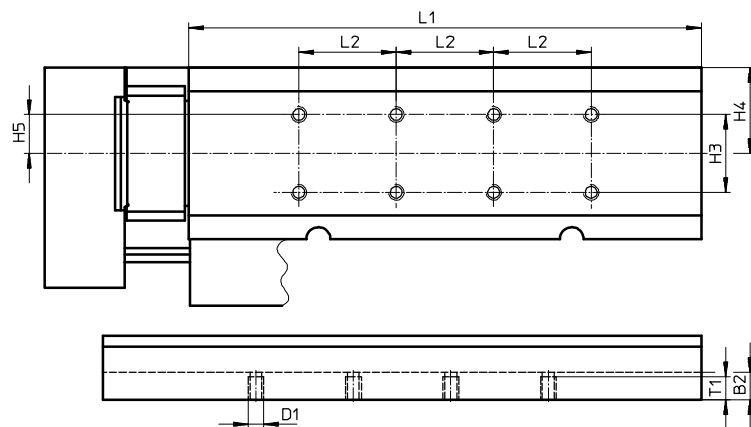
Ø 32



Ø 40



Ø 50



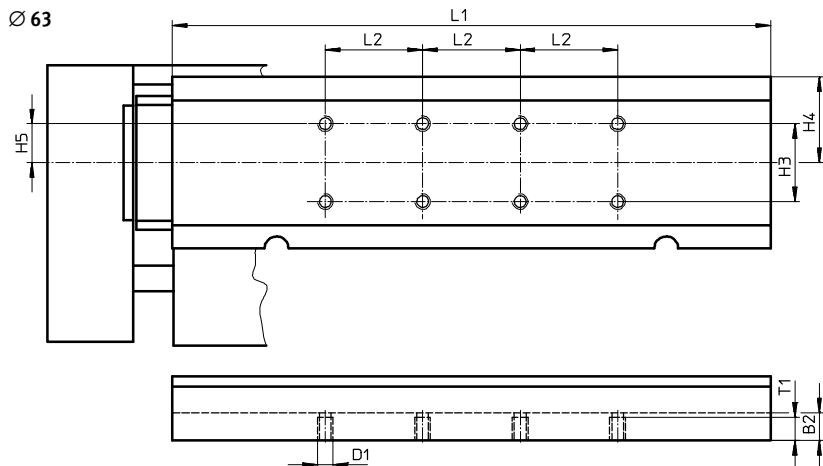
Pneumatic drives

Dimensions

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01

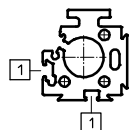
Slide – View A



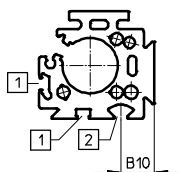
Ø	B2	D1	H2	H3	H4	H5	L1	L2	T1
[mm]			±0.1	±0.1				±0.1	
18	-	M5	15.6	-	16	2	117±0.05	50	7
25	-	M5	21.35	15	14.55	4.85	148±0.05	50	8
32	-	M5	28.5	15	15.5	7.5	186±0.05	30	8.6
40	-	M6	35	30	14.5	15	228±0.05	30	10.5
50	14	M8	-	40	44	20	263±0.1	50	13
63	14	M8	-	40	44	20	307±0.1	50	13

Profile barrel

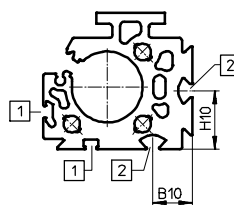
Ø 18



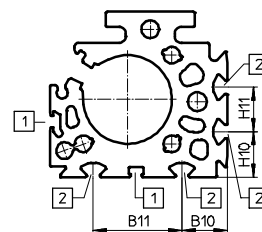
Ø 25



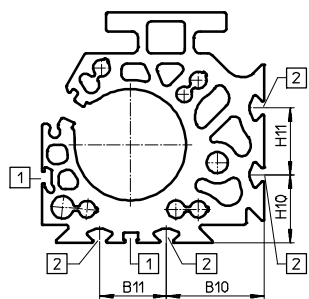
Ø 32



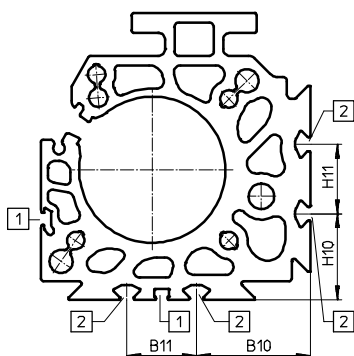
Ø 40



Ø 50



Ø 63



- 1 Sensor slot for proximity sensor
- 2 Mounting slot for slot nut

Ø	B10	B11	H10	H11
[mm]				
25	15.23	-	-	-
32	18	-	26.5	-
40	20.5	40	20.5	20
50	43.8	30	30.5	30
63	49	30	37	30

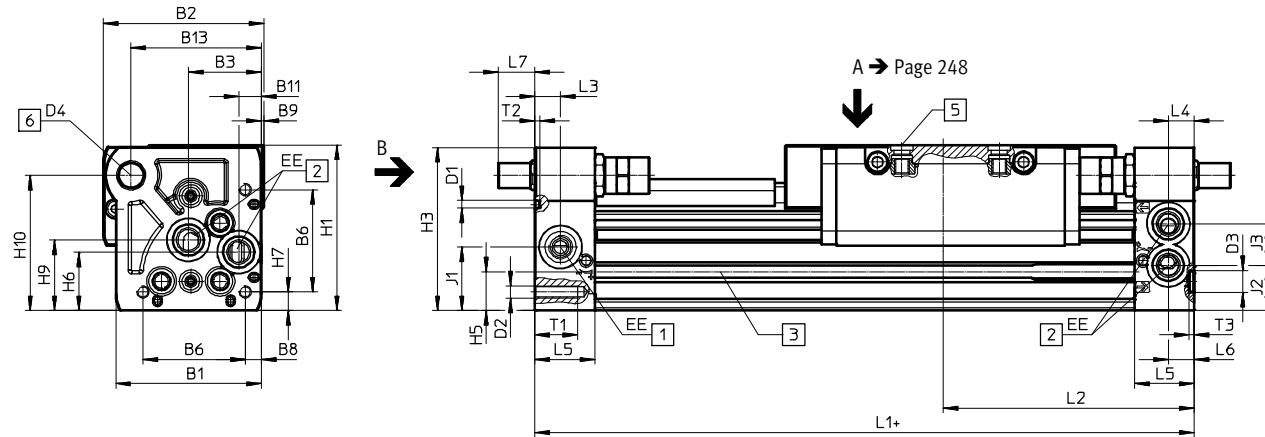
Linear drives DGC-GF, with plain-bearing guide

01

Dimensions

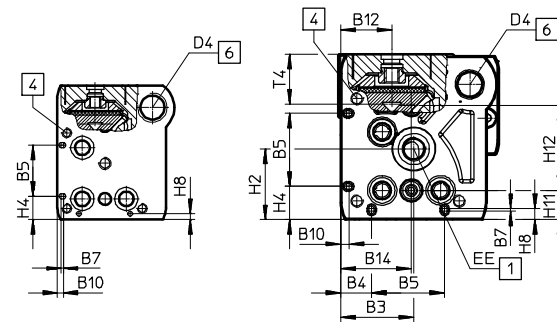
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Ø 18 ... 40

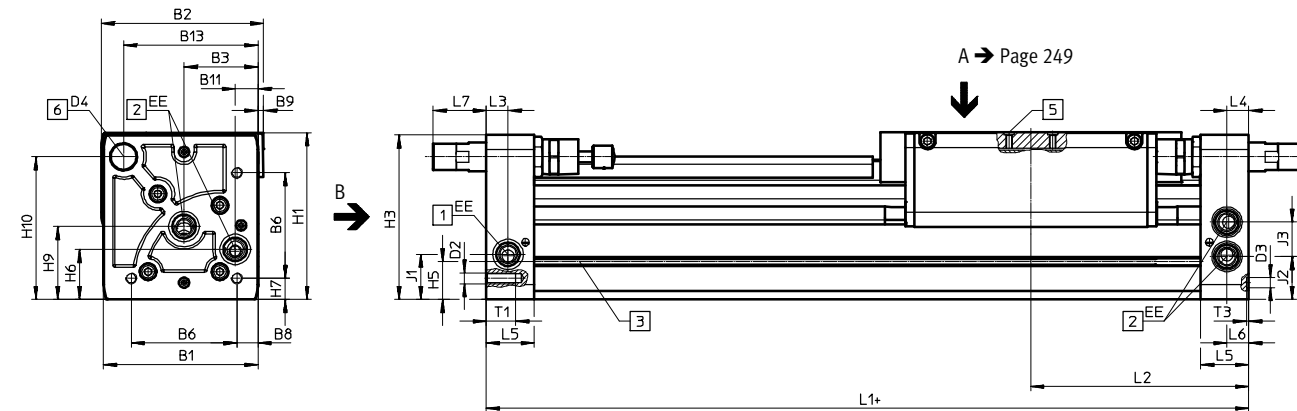


View B
Ø 18

Ø 18 ... 40

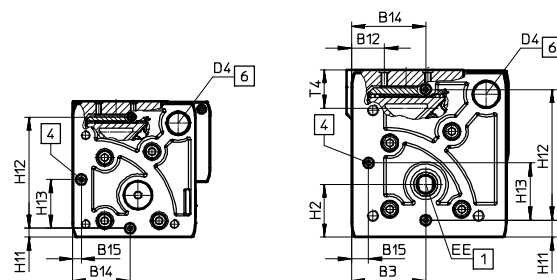


Ø 50, 63



View B
Ø 50

Ø 50/63



- + plus stroke length
- 1 Supply port options on 2 sides
- 2 Supply port options on 2 sides, for supply port at one end
- 3 Sensor slot for proximity sensor
- 4 Mounting hole for foot mounting HPC
- 5 Hole for centring pin/sleeve
- 6 Thread for end stop

Linear drives DGC-GF, with plain-bearing guide

Dimensions

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01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
[mm]					±0.05								
18	44.5	49.9	19.5	8.8	21	31	0.8	3.8	1	2.4	5.5	15.5	39
25	59.8	66	30	12.65	30	42	1	6.65	1	3.5	9.3	21	53.5
32	73	79	38.5	5.7	63.1	57.5	–	8.5	1.5	14	14.9	18	66.5
40	91	98.5	45	17.2	55	65	–	12.2	2	8	16.5	24.8	80.5
50	113	126.5	60	–	–	81.6	–	12	–	–	21	24	97
63	142	149	68	–	–	97	–	19.5	5	–	21	30	123.5

∅	B14	B15	D1	D2	D3	D4	EE	H1	H2	H3	H4	H5	H6
[mm]			∅ ±0.05		∅ H7						±0.2		
18	19.5	–	2	M4	5	M10x1	M5	56.3	23.1	55	9.6	13.4	20
25	30	–	3	M5	9	M12x1	G1/8	68	29	67	13.65	15.8	24
32	38.5	–	3	M6	9	M14x1	G1/8	78.5	30	77	5.7	17	27.7
40	45	–	4	M6	9	M16x1	G1/4	99.5	41.5	97.5	17.2	25	36.5
50	52.8 ±0.05	8	–	M8	9	M22x1.5	G1/4	124.5	38.5	122.5	–	29.3	36
63	68 ±0.05	15.5	–	M10	9	M26x1.5	G3/8	153.5	48.5	151	–	34.8	46

∅	H7	H8	H9	H10	H11	H12	H13	J1	J2	J3	L1	L2	L3
[mm]					±0.15	±0.05							
18	4.6	2.4	25.2	46	8.5	30	–	20	16.5	11	150	74.5	5.7
25	7.65	4.5	29	55.5	12	35	–	26.1	18.6	17	200	100	10.5
32	8.5	14	35.2	63.8	11.45	50	–	30	22	18.5	250	124.8	14.5
40	12.2	8	44	81.5	15	60	–	35	26	26	300	150	14.6
50	12	–	53	104.5	8 ±0.2	100	52.8	30.5	30.5	28	350	175	17
63	19.5	–	67	131	15.5 ±0.2	120	68	41.5	39.5	31.5	400	200	20

∅	L4	L5	L6	L7			T1	T2	T3	T4	Stroke tolerance
				PPV	YSR	YSRW					
[mm]									+0.2		
18	5.8	15	5.5	0	15.9	19.4	9	2	3.1	17.1	0 ... 2.5
25	10.6	24.5	10.6	0	12.5	15	17.5	2	2.1	20.5	
32	14.5	30.5	14.5	0	8.5	15.5	15	2	2.1	21.3	
40	14.6	33.5	14.6	0	12.8	21	20	3	2.1	30.7	
50	17	41	17	0	31	36.3	24	–	2.1	30.4	
63	20	44	20	0	38.3	48.3	27.5	–	2.1	36.2	

-||- Note: This product conforms to ISO 1179-1 and ISO 228-1.

Length tolerance													
∅	For stroke	[mm]	≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000	≤ 6000	≤ 7000	≤ 8000	≤ 9000		
[mm]													
18 ... 40	L1	[mm]	+0.90	+1.10	+1.40	+1.50	+1.60	+1.70	+2.20	+2.30	+2.40		
50, 63	L1	[mm]	+0.90	+1.10	+1.40	+1.50	+1.60	–	–	–	–		

Linear drives DGC-GF, with plain-bearing guide

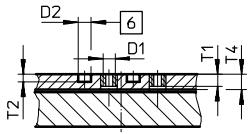
01

Dimensions

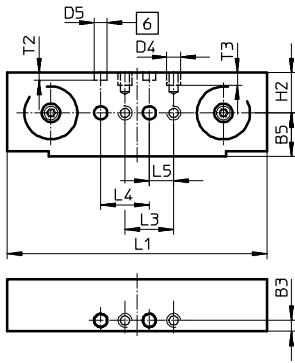
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Slide

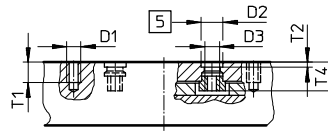
Ø 18



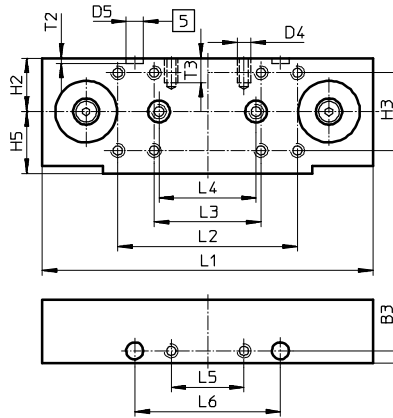
View A



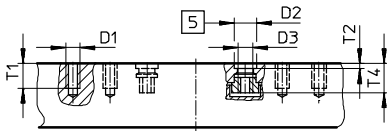
Ø 25



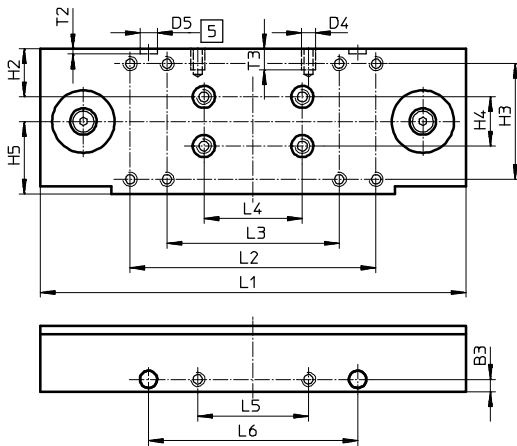
View A



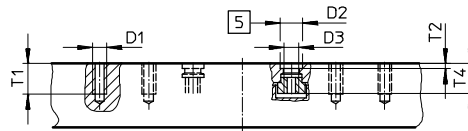
Ø 32



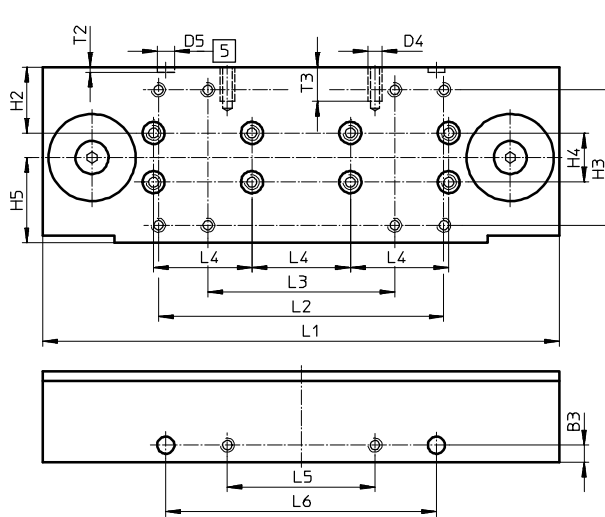
View A



Ø 40



View A



5 Hole for centring sleeve ZBH

6 Hole for centring pin ZBS

Linear drives DGC-GF, with plain-bearing guide

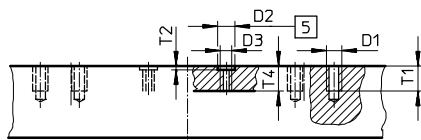
Dimensions

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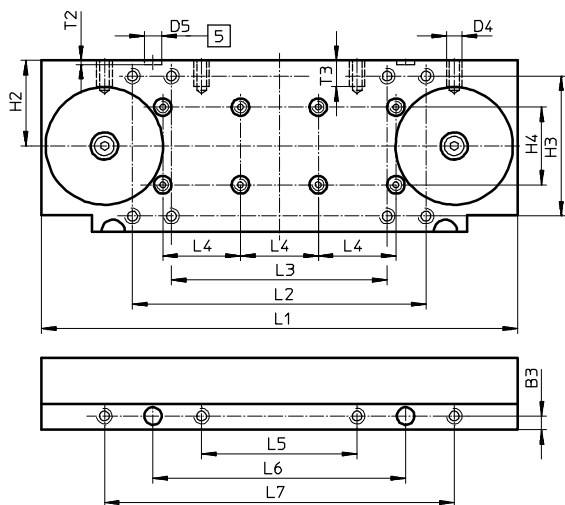
01

Slide

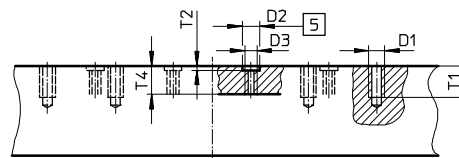
∅ 50



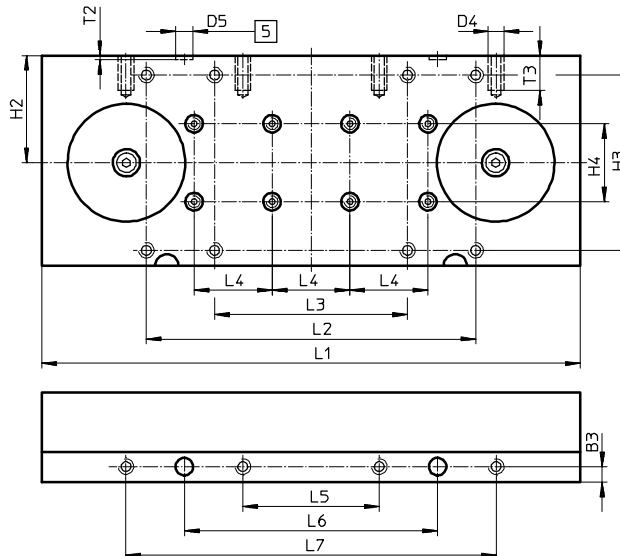
View A



∅ 63



View A



5 Hole for centring sleeve ZBH

∅	B3	D1	D2 ∅	D3	D4	D5 ∅	H2	H3	H4	H5	L1
[mm]	±0.05		H7			H7			±0.03	±0.1	±0.1
18	4.5	M5	5	–	M5	5	16.5	–	–	18	107
25	5	M5	9	M6	M5	7	22	32±0.2	–	25.5	136
32	5	M5	9	M6	M5	7	19.5	47±0.2	20	29.5	173
40	7	M5	9	M6	M6	7	26.8	55±0.2	20	34.7	210
50	7	M8	9	M6	M8	9	44	72±0.3	40	–	245
63	8	M8	9	M6	M8	9	55	90±0.3	40	–	276

∅	L2	L3	L4	L5	L6	L7	T1	T2	T3	T4
[mm]	±0.1		±0.03	±0.1	±0.05	±0.1				
18	–	20±0.1	20	10	–	–	5	3.1±0.1	5	6.3
25	74	44±0.2	40	30	60	–	8.5	2.1±0.2	10	11.8
32	100	70±0.2	40	45	85	–	10	2.1±0.2	8.5	11.8
40	116	76±0.2	40	60	110	–	12.5	2.1±0.2	14	12.1
50	151	111±0.2	40	80	130	180	13	2.1±0.2	13.5	13
63	169	99±0.2	40	70	130	190	16	2.1±0.2	18	14.5

Linear drives DGC-GF, with plain-bearing guide

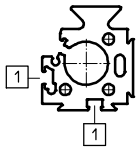
01

Dimensions

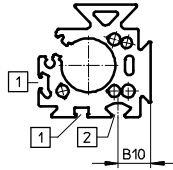
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Profile barrel

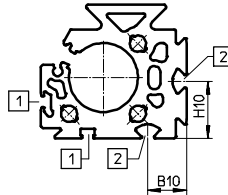
Ø 18



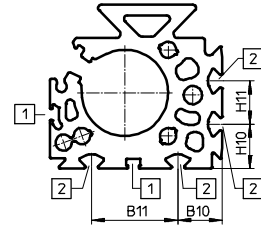
Ø 25



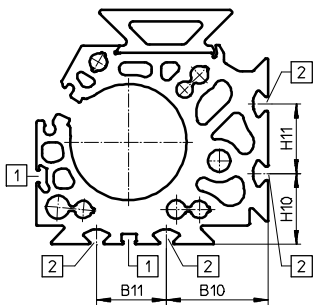
Ø 32



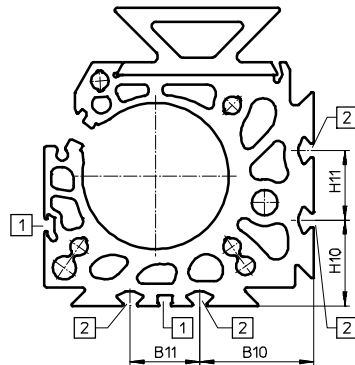
Ø 40



Ø 50



Ø 63



- 1 Sensor slot for proximity sensor
- 2 Mounting slot for slot nut

Ø	B10	B11	H10	H11
[mm]				
25	15.23	-	-	-
32	18	-	26.5	-
40	20.5	40	20.5	20
50	43.8	30	30.5	30
63	49	30	37	30

Pneumatic drives

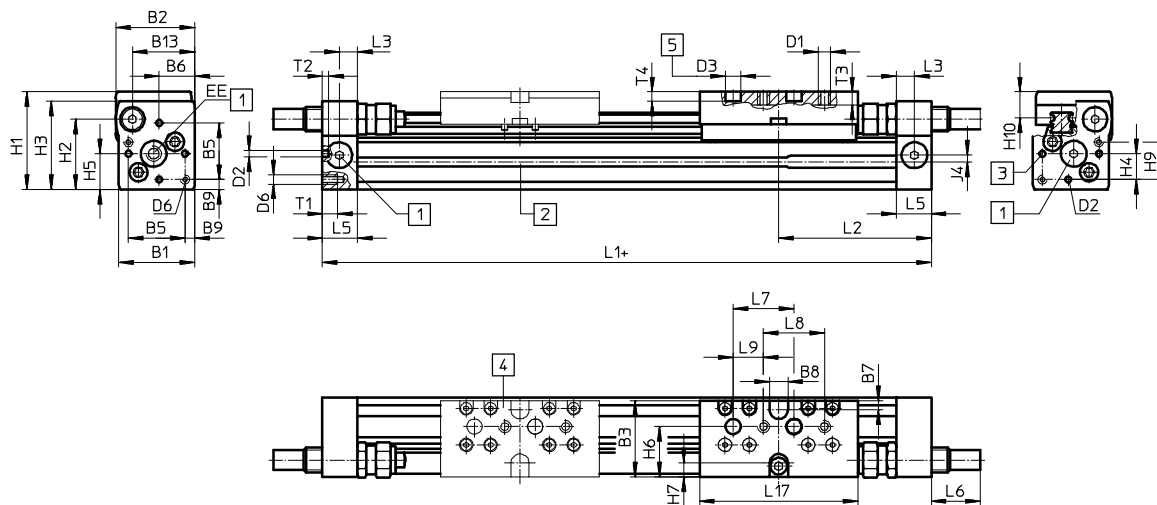
Linear drives DGC-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com

01

Ø 8, 12



- [1] Supply port options on 3 sides
- [2] Sensor slot for proximity sensor
- [3] Mounting hole for foot mounting or centring pin
- [4] Additional slide KL
- [5] Hole for centring pin ZBS
- + plus stroke length

Ø	B1	B2	B3	B5	B6	B7	B8	B9	B13	D1	D2	D3	D6
[mm]							±0.05	±0.1			Ø H8	Ø H7	
8	25	26	25	18.6	11.7	3	6	3.2	20.5	M4	2	5	M3
12	30.2	31	31	20.6	13.5	3	8	4.8	25	M4	2	5	M4

Ø	EE	H1	H2	H3	H4	H5	H6	H7	H9	H10	J4	L1	L2
[mm]													
8	M5	32	23	29	8.5	11.7	16.5	4.5	12.3	8.7	2.2	100	50.1
12	M5	37.5	28.5	34.5	8.7	13.5	20.5	5	14.7	9.8	3	125	62.4

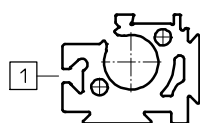
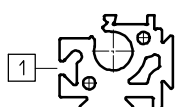
Ø	L3	L5	L6			L7	L8	L9	L17	T1	T2	T3	T4	Stroke tolerance
			P	YSR	YSRW									
[mm]						±0.03	±0.1	±0.1					+0.2	
8	6	11.4	0	16	16.2	20	20	10	52	5	2	4.3	3	0 ... 1.7
12	8	15.9	0	11.3	12.3	20	20	10	65	6	2	5	3	

Length tolerance		For stroke [mm]	
		≤ 1000	≤ 2000
L1	[mm]	+0.90	+1.10

Profile barrel

Ø 8

Ø 12



- [1] Sensor slot for proximity sensor

Rodless cylinders > Mechanically coupled cylinders >

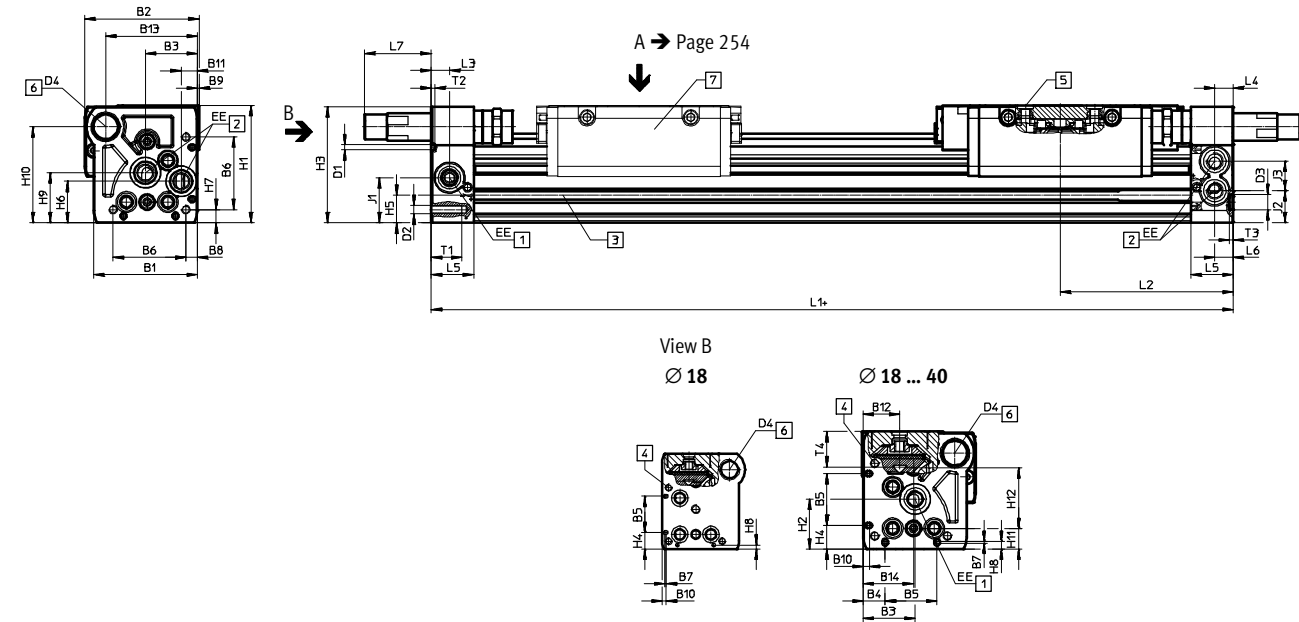
Linear drives DGC-KF, with recirculating ball bearing guide

01

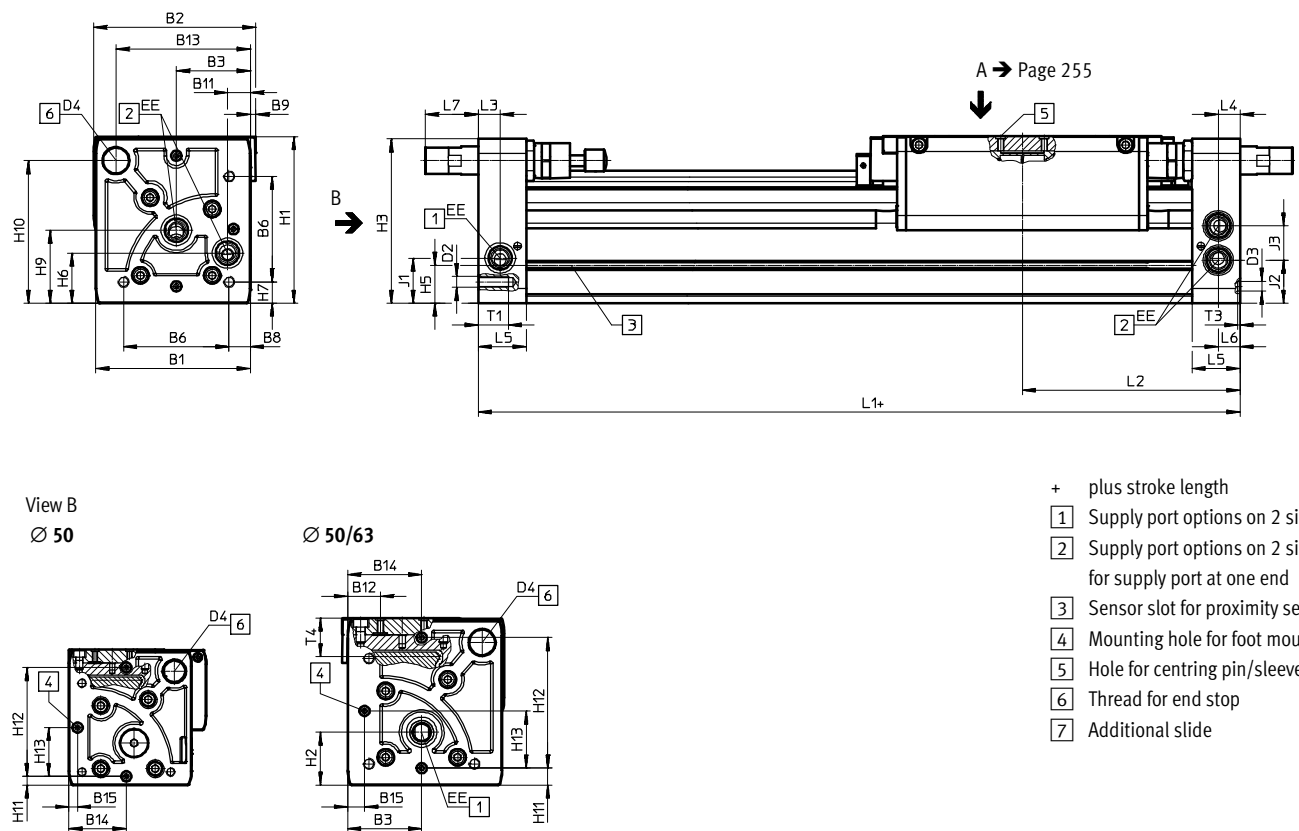
Dimensions

Download CAD data → www.festo.com

Ø 18 ... 40



Ø 50, 63



- + plus stroke length
- 1 Supply port options on 2 sides
- 2 Supply port options on 2 sides, for supply port at one end
- 3 Sensor slot for proximity sensor
- 4 Mounting hole for foot mounting HPC
- 5 Hole for centring pin/sleeve
- 6 Thread for end stop
- 7 Additional slide

Linear drives DGC-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com

01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
[mm]			±0.05	±0.1	±0.05			±0.1			
18	44.5	49.9	19.5	8.8	21	31	0.8	3.8	1	2.4	5.5
25	59.8	66	29	12.65	30	42	1	6.65	1	3.5	9.3
32	73	79	38.5	5.7	63.1	57.5	–	8.5	1.5	14	14.9
40	91	98.5	45	17.2	55	65	–	12.2	2	8	16.5
50	113	126.5	60	–	–	81.6	–	12	–	–	21
63	142	149	68	–	–	97	–	19.5	5	–	21

∅	B12	B13	B14	B15	D1	D2	D3	D4	EE	H1	H2
[mm]					∅ ±0.05		∅ H7				
18	15.5	39	19.5	–	2	M4	5	M12x1	M5	56.3	23.1
25	21	53	30	–	3	M5	9	M16x1	G1/8	68	29
32	18	65	38.5	–	3	M6	9	M16x1	G1/8	78.5	30
40	24.5	80.5	45	–	4	M6	9	M22x1.5	G1/4	99.5	41.5
50	24	97	52.8	8	–	M8	9	M22x1.5	G1/4	124.5	38.5
63	30	123.5	68	15.5	–	M10	9	M26x1.5	G3/8	153.5	48.5

∅	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13
[mm]		±0.2								±0.05	
18	55	9.6	13.4	20	4.6	2.4	25.2	46	8.5±0.15	30	–
25	67	13.65	15.8	24	7.65	4.5	29	55.5	12±0.15	35	–
32	77	13.65	17	27.7	8.5	14	35.2	63.8	11.45±0.15	50	–
40	97.5	17.2	25	36.5	12.2	8	44	81.5	15±0.15	60	–
50	122.5	–	29.3	36	12	–	53	104.5	8±0.2	100±0.05	52.8
63	151	–	34.8	46	19.5	–	67	131	15.5±0.2	120±0.05	68

∅	J1	J2	J3	L1			L2			L3	L4
				KF	KF-GP	1H-PN	KF	KF-GP	1H-PN		
[mm]											
18	20	16.5	11	150	157	–	74.5	78	–	5.7	5.8
25	26.1	18.6	17	200	205	271	100	102.5	100	10.5	10.6
32	30	22	18.5	250	250	320.5	124.8	124.8	124.8	14.5	14.5
40	35	26	26	300	312	458	150	156	150	14.6	14.6
50	30.5	30.5	28	350	–	555.8	175	–	–	17	17
63	41.5	39.5	31.5	400	–	–	200	–	–	20	20

∅	L5	L6	L7			T1	T2	T3	T6	Stroke tolerance
			PPV	YSR	YSRW					
[mm]								+0.2		
18	15	5.5	0	29.9	32.4	9	2	3.1	15	0 ... 2.5
25	24.5	10.6	0	35.6	38.6	17.5	2	2.1	17.3	
32	30.5	14.5	0	19.5	28	15	2	2.1	20	
40	33.5	14.6	0	38.5	43.5	20	3	2.1	25.7	
50	41	17	0	31	36.3	24	–	2.1	28.75	
63	44	20	0	38.3	48.3	27.5	–	2.1	36.1	

–||– Note: This product conforms to ISO 1179-1 and ISO 228-1.

Length tolerance										
For stroke	[mm]	≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000	≤ 6000	≤ 7000	≤ 8000	≤ 9000
L1	[mm]	+0.90	+1.10	+1.40	+1.50	+1.60	+1.70	+2.20	+2.30	+2.40

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-KF, with recirculating ball bearing guide

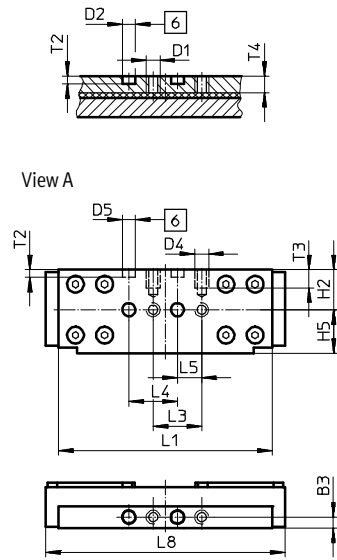
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01

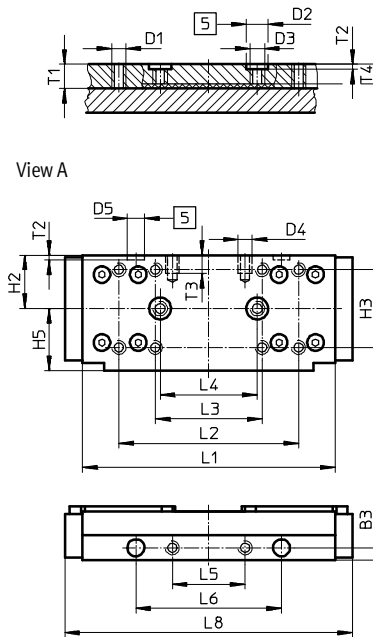
Dimensions

Slide

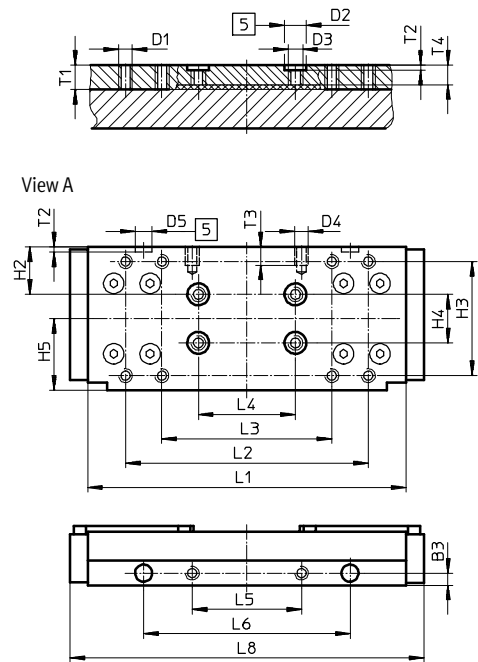
Ø 18



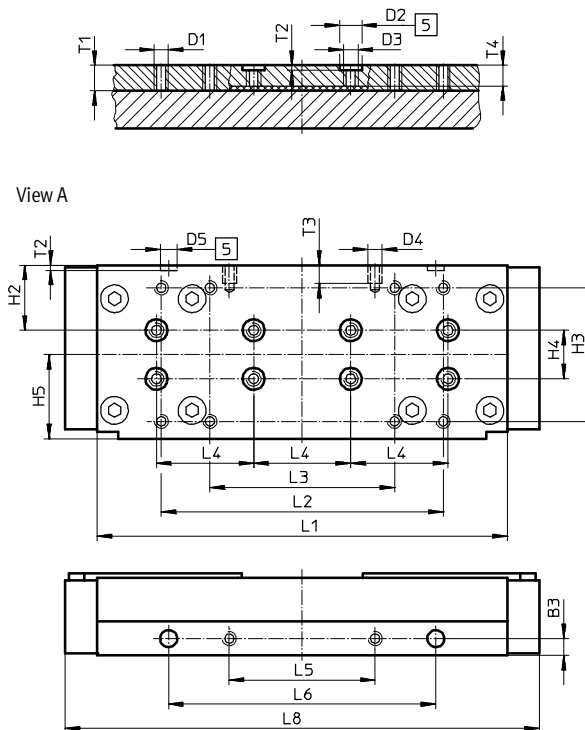
Ø 25



Ø 32



Ø 40



- 5 Hole for centring sleeve ZBH
- 6 Hole for centring pin ZBS

Pneumatic drives

Linear drives DGC-KF, with recirculating ball bearing guide

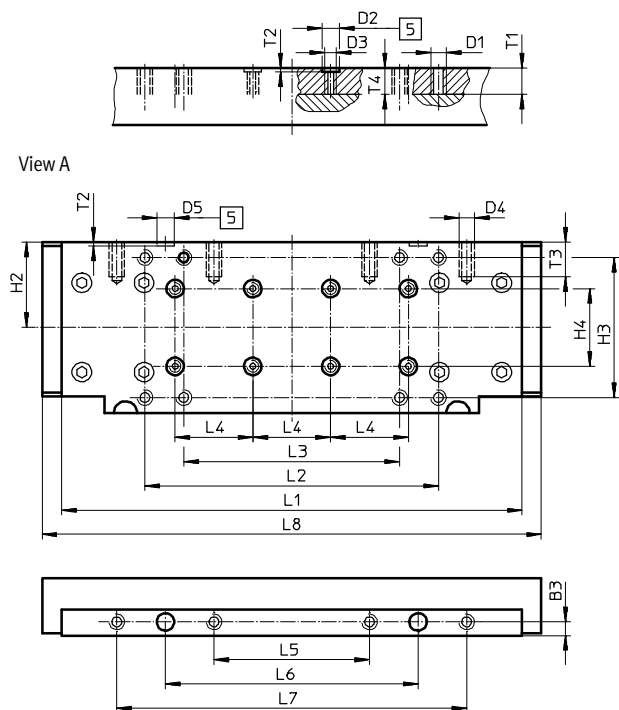
Dimensions

Download CAD data → www.festo.com

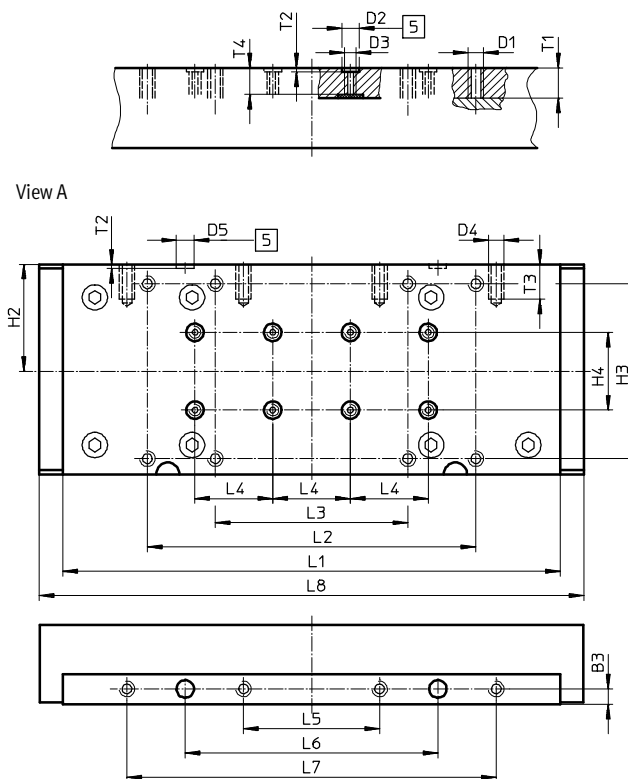
01

Slide

∅ 50



∅ 63



[5] Hole for centring sleeve ZBH

∅	B3	D1	D2	D3	D4	D5	H2	H3	H4	H5	L1
[mm]	±0.05		∅ H7			∅ H7			±0.03	±0.1	
18	4.5	M5	5	–	M5	5	16.5	–	–	18	88±0.1
25	5	M5	9	M6	M5	7	22	32±0.2	–	25.5	104±0.2
32	5	M5	9	M6	M5	7	19.5	47±0.2	20	29.5	131±0.2
40	7	M5	9	M6	M6	7	26.8	55±0.2	20	34.7	169±0.2
50	7	M8	9	M6	M8	9	44	72±0.3	40	–	237±0.1
63	8	M8	9	M6	M8	9	55	90±0.3	40	–	256±0.1

∅	L2	L3	L4	L5	L6	L7	L8	T1	T2	T3	T4
[mm]	±0.1		±0.03	±0.1	±0.05	±0.1					
18	–	20±0.1	20	10	–	–	99	–	3.1±0.1	7.5	6.7
25	74	44±0.2	40	30	60	–	118.5	10	2.1±0.2	7.5	8
32	100	70±0.2	40	45	85	–	145.7	10	2.1±0.2	7.5	8
40	116	76±0.2	40	60	110	–	195.4	10.5	2.1±0.2	7.5	8.5
50	151	111±0.2	40	80	130	180	256.8	13.5	2.1±0.2	18	13.5
63	169	99±0.2	40	70	130	190	280	15.5	2.1±0.2	18	13.6

Pneumatic drives

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-KF, with recirculating ball bearing guide

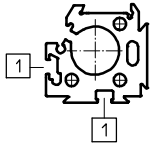
01

Dimensions

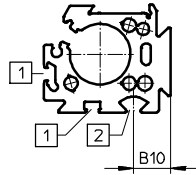
Profile barrel

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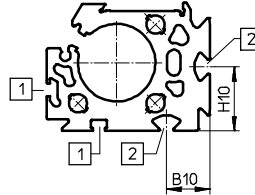
∅ 18



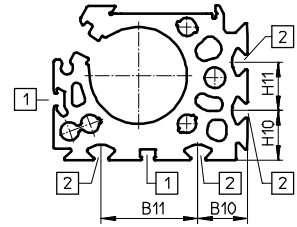
∅ 25



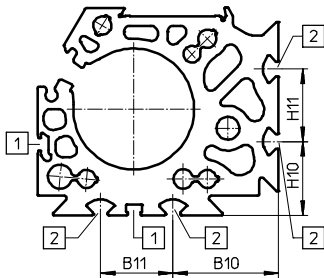
∅ 32



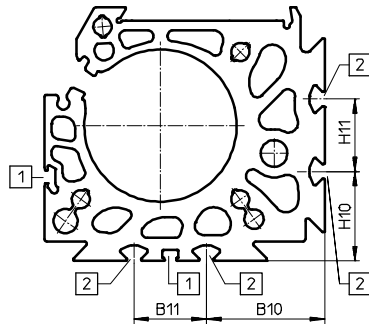
∅ 40



∅ 50



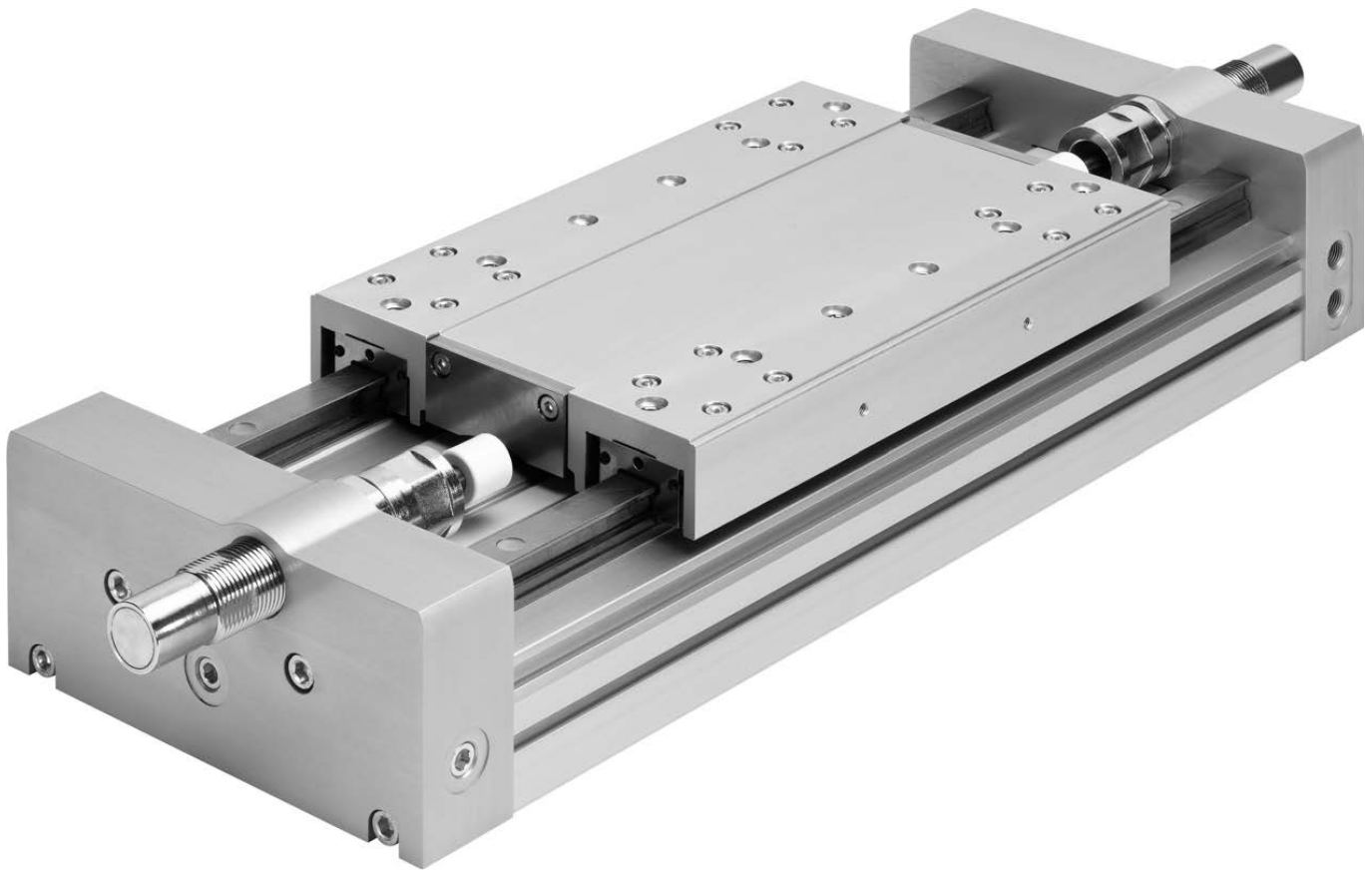
∅ 63



- 1 Sensor slot for proximity sensor
- 2 Mounting slot for slot nut

∅	B10	B11	H10	H11
[mm]				
25	15.23	-	-	-
32	18	-	26.5	-
40	20.5	40	20.5	20
50	43.8	30	30.5	30
63	49	30	37	30

Pneumatic drives



Increase your productivity and lower your costs

- + With the durable heavy-duty guide
- + Thanks to the double recirculating ball bearing guide with extremely high load capacity
- + Thanks to a wide range of mounting options

Rodless cylinders > Mechanically coupled cylinders >

Linear drives with heavy-duty guide

DGC-HD

Rodless cylinders > Mechanically coupled cylinders >

Linear drives with heavy-duty guide


DGC-HD

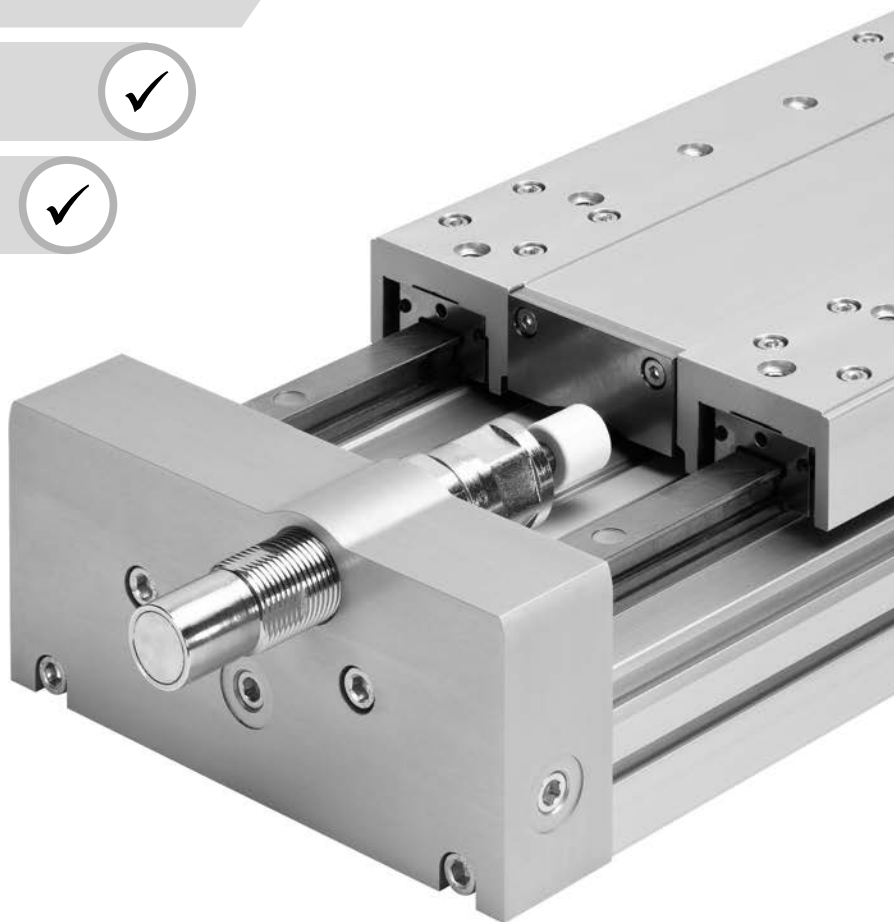
 Overview, configuration and ordering
→ www.festo.com/catalogue/dgc-hd



 Additional information, support and user documentation
→ www.festo.com/sp/dgc-hd



 Spare parts service



- + Double recirculating ball bearing guide for maximum loads and torques
- + Very good operating behaviour under torque load
- + Long service life
- + Ideal as a basic axis for linear gantries and cantilever axes
- + Excellent price/performance ratio
- + Wide range of options for mounting on drives

Linear drives DGC-HD, with heavy-duty guide

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options		→ Page/ online
				YSR	YSRW	
Double-acting	DGC-...-K – Compact design					
	18, 25, 32, 40, 50, 63, 80	1 ... 8500	153 ... 3016	–	–	215
	DGC-...-G – Basic design					
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 8500	30 ... 1870	■	■	230
	DGC-...-GF – Plain-bearing guide					
	18, 25, 32, 40, 50, 63	1 ... 8500	153 ... 1870	■	■	233
	DGC-...-KF – Recirculating ball bearing guide					
8, 12, 18, 25, 32, 40, 50, 63	1 ... 8500	30 ... 1870	■	■	236	
DGC-...-HD – Heavy-duty design						
18, 25, 40	10 ... 5000	153 ... 754	■	■	260	
Without drive	DGC-FA – Passive guide axis					
	8, 12, 18, 25, 32, 40, 50, 63	1 ... 5000	–	■	■	dgc-fa

01

Pneumatic drives

Product options

YSR Linear shock absorber, self-adjusting

YSRW Progressive shock absorber, self-adjusting

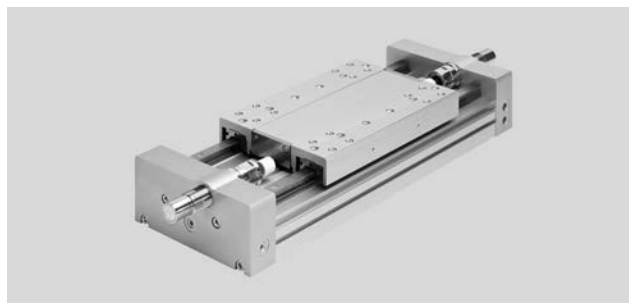
GP Standard slide, protected
KL Standard slide, left

KR Standard slide, right

Linear drives DGC-HD, with heavy-duty guide

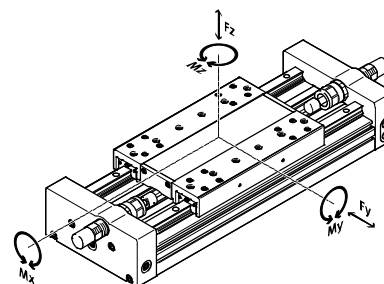
01

Data sheet



Technical data

Dimensions → Page 265



Piston Ø		18	25	40
Pneumatic connection		M5	G1/8	G1/4
Stroke	[mm]	10 ... 3000	10 ... 5000	10 ... 3500
Cushioning				
DGC-...-YSR		Linear shock absorber, self-adjusting		
DGC-...-YSRW		Progressive shock absorber, self-adjusting		
Theoretical force at 6 bar	[N]	153	295	754
Max. permissible force F_y	[N]	3650	5600	13,000
Max. permissible force F_z	[N]	3650	5600	13,000
Max. permissible torque M_x	[Nm]	140	300	900
Max. permissible torque M_y	[Nm]	275	500	1450
Max. permissible torque M_z	[Nm]	275	500	1450

Operating conditions

Piston Ø		18	25	40
Operating pressure	[bar]	2.5 ... 8		1.5 ... 8
Ambient temperature ¹⁾	[°C]	-10 ... +60		

1) Note operating range of proximity sensors.

Materials

End cap	Anodised aluminium
Slide	Anodised aluminium
Cylinder barrel	Anodised aluminium
Seals	NBR, TPE-U (PU)
Sealing band/cover band	PU/steel

Linear drives DGC-HD, with heavy-duty guide

Order code

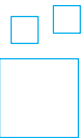
Type		DGC	–		–		–	HD	–	
DGC	Linear drive									
Piston Ø [mm]										
	Stroke [mm]									
18	10 ... 3000									
25	10 ... 5000									
40	10 ... 3500									
Guide										
HD	Heavy-duty guide									
Cushioning										
YSR	Linear shock absorber, self-adjusting									
YSRW	Progressive shock absorber, self-adjusting									

Order example:

DGC-18-200-HD-YSRW

Linear drive DGC - piston diameter 18 mm - stroke 200 mm - heavy-duty guide - progressive shock absorber, self-adjusting

Ordering – Product options

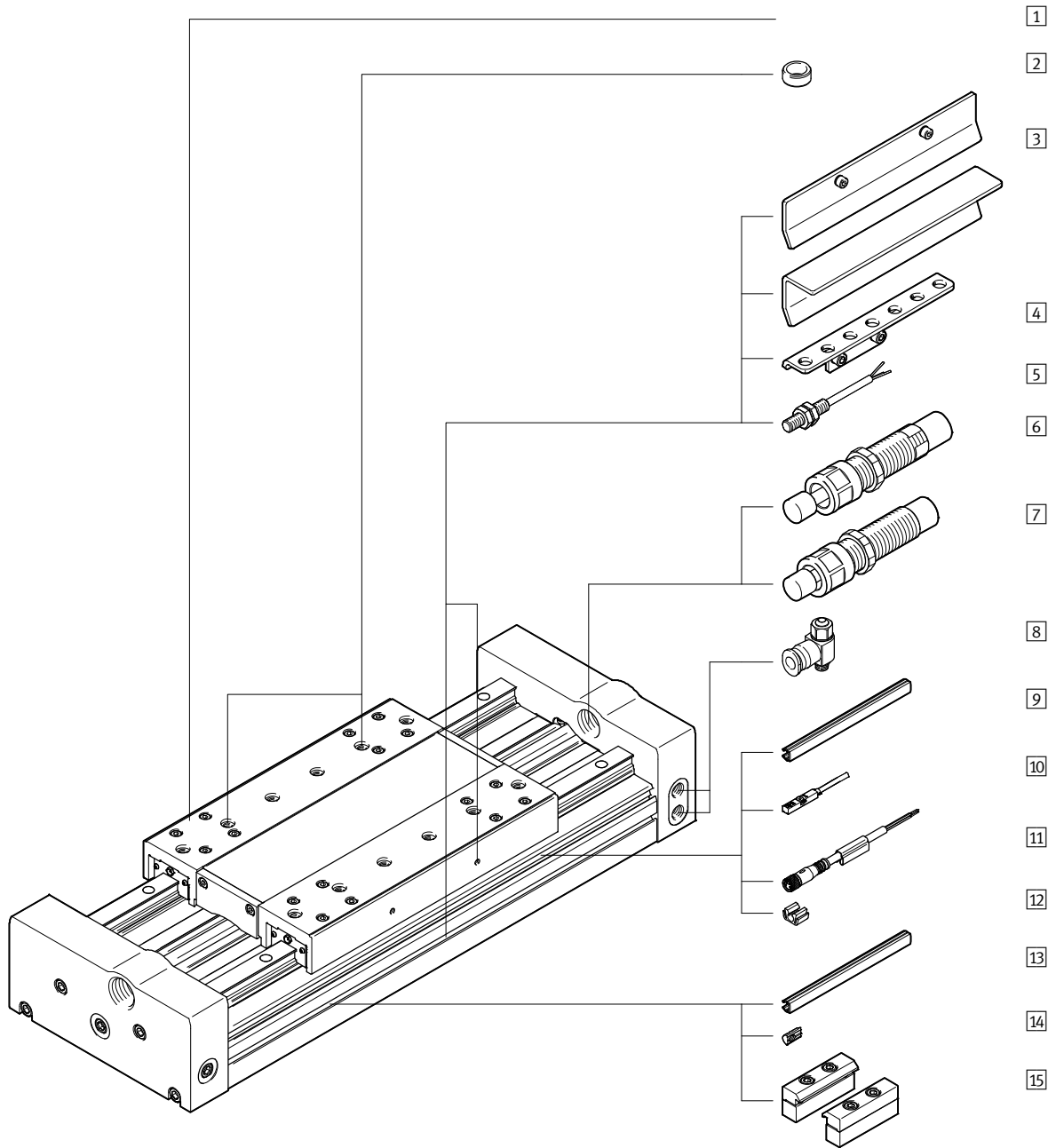
	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Linear drives DGC-HD, with heavy-duty guide

01

Accessories

Pneumatic drives


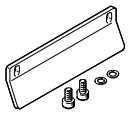

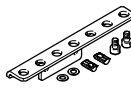


		→ Page/online
1	Linear drive DGC-HD	260
2	Centring sleeve ZBH	263
3	Switch lug SF-EGC-HD	263
4	Sensor bracket HWS-EGC	263
5	Proximity sensor, M8 SIEN	263
6	Shock absorber YSR	261
7	Shock absorber YSRW	263
8	One-way flow control valve GRLA	263

		→ Page/online
9	Slot cover ABP-S	264
10	Proximity sensor, T-slot SIES	264
10	Proximity sensor, T-slot SMT/SME-8	264
11	Connecting cable NEBU	264
12	Clip SMBK	264
13	Slot cover ABP	264
14	Slot nut NST	264
15	Profile mounting MUE	264

Linear drives DGC-HD, with heavy-duty guide

Accessories – Ordering data

	For Ø	Part no.	Type
2 Centring pin/sleeve¹⁾²⁾ Data sheets online: → zbh			
	18	150928	ZBS-5
	25, 40	150927	ZBH-9
3 Switch lug³⁾ Dimensions online: → dgc-hd			
	18	570027	SF-EGC-HD-1-125
	25	1645872	SF-EGC-HD-1-160
	40	1645866	SF-EGC-HD-1-220
3 Switch lug⁴⁾ Dimensions online: → dgc-hd			
	18	570030	SF-EGC-HD-2-125
	25	1645865	SF-EGC-HD-2-160
	40	1645868	SF-EGC-HD-2-220
4 Sensor bracket⁵⁾ Dimensions online: → dgc-hd			
	18	558057	HWS-EGC-M5
	25	558057	HWS-EGC-M5
	40	570365	HWS-EGC-M8-B

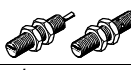
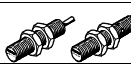
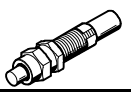
1) Packaging unit 10 pieces.

2) 2 centring pins/sleeves included in the scope of delivery of the axis.

3) For sensing via proximity sensor SIES-8M.

4) For sensing via proximity sensor SIEN-M8B or SIES-8M.

5) For proximity sensor SIEN-M8B.

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
5 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230					
	18 ... 40	PNP, cable	2.5	★ 150386	SIEN-M8B-PS-K-L
		PNP, plug	–	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230					
	18 ... 40	PNP, cable	2.5	150390	SIEN-M8B-PO-K-L
		PNP, plug	–	150391	SIEN-M8B-PO-S-L
7 Shock absorber					
	18	18	–	540351	YSRW-DGC-32-KF
	25	25	–	1232870	YSRW-DGC-40/50-B
	40	40	–	543069	YSRW-DGC-63

Function	For Ø	Connection		Part no.	Type
		Thread	O.D.		
8 One-way flow control valve with slotted head screw, metal⁶⁾ Data sheets → Page 1033					
	18	M5	6	★ 193139	GRLA-M5-QS-6-D
	25	G1/8	8	★ 534337	GRLA-1/8-QS-8-RS-D
	40	G1/4		★ 534339	GRLA-1/4-QS-8-RS-D

6) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

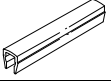
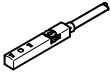
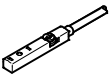
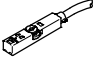
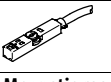
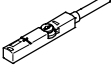
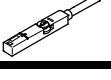


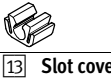
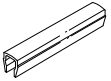

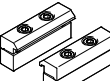
Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-HD, with heavy-duty guide

01

Accessories – Ordering data

Pneumatic drives

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
9 Slot cover¹⁾					
	18, 25, 40	–	–	563360	ABP-5-S1
10 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	18 ... 40	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
Inductive – N/C contact Data sheets → Page 1235					
	18 ... 40	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
Magneto-resistive – N/O contact Data sheets → Page 1206					
	18 ... 40	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	18 ... 40	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	18 ... 40	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	18 ... 40	Contacting, cable	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE
11 Connecting cable, straight socket Data sheets → Page 1543					
	18 ... 40	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	18 ... 40	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3
12 Clip					
	18, 25, 40	534254	SMBK-8		
13 Slot cover¹⁾					
	18	151681	ABP-5		
	25	151680	ABP-5-S		
	40	151682	ABP-8		
14 Slot nut					
	18, 25 ²⁾	150914	NST-5-M5		
	25 ³⁾ , 40	150915	NST-8-M6		
15 Profile mounting Dimensions online: → dgc-hd					
	18, 25	558043	MUE-70/80		
	40	558044	MUE-120/185		

1) Packaging unit 2x Q5 m.

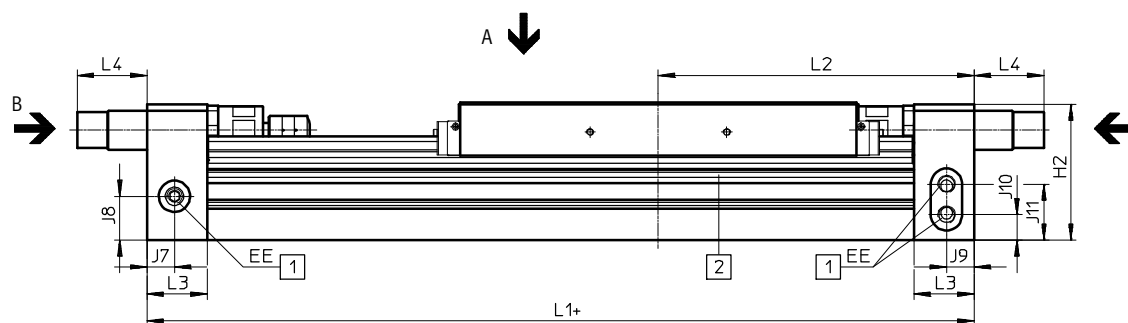
2) For mounting slot at the side.
3) For mounting slot underneath.

Linear drives DGC-HD, with heavy-duty guide

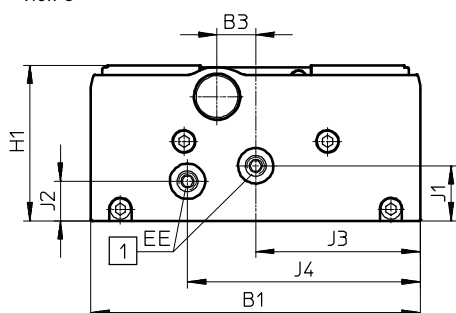
Dimensions

Download CAD data → www.festo.com

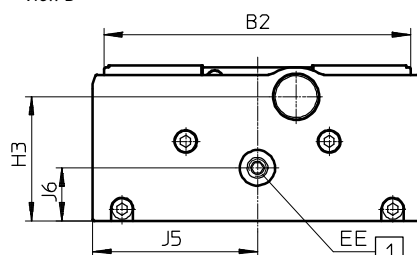
01



View C



View B



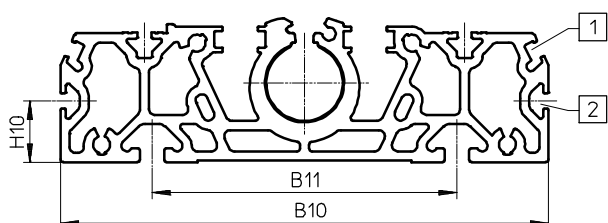
- + plus stroke length
- 1 Supply port
- 2 Slot for proximity sensor

∅	B1	B2	B3	EE	H1	H2	H3	J1	J2	J3	J4
[mm]											
18	124	120	10	M5	64	63.1	51.7	25.5	15	59	88
25	162	150.7	19	G1/8	76.5	75.5	61	27	19.4	81	114.5
40	222	204	12	G1/4	111.5	109.5	91	43	25	105	157

∅	J5	J6	J7	J8	J9	J10	J11	L1	L2	L3	L4	
[mm]											YSR	YSRW
18	59	25.5	14.9	21.6	14.9	15	25.6	306.5	153	24.5	34	20.5
25	81	26	15.4	24.3	15.4	14	31	351.5	175.5	33.5	43.8	38.8
40	111	37	25.1	31	25.1	23	45	472.5	236	44	48.3	38.3

Length tolerance		For stroke [mm]		≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000
L1	[mm]			+0.90	+1.10	+1.40	+1.50	+1.60

Profile barrel



- 1 Slot for proximity sensor
- 2 Mounting slot for slot nut

∅	B10	B11	H10
[mm]			
18	122	80	20
25	160	100	20
40	220	140	20

Pneumatic drives

Linear drives DGC-HD, with heavy-duty guide

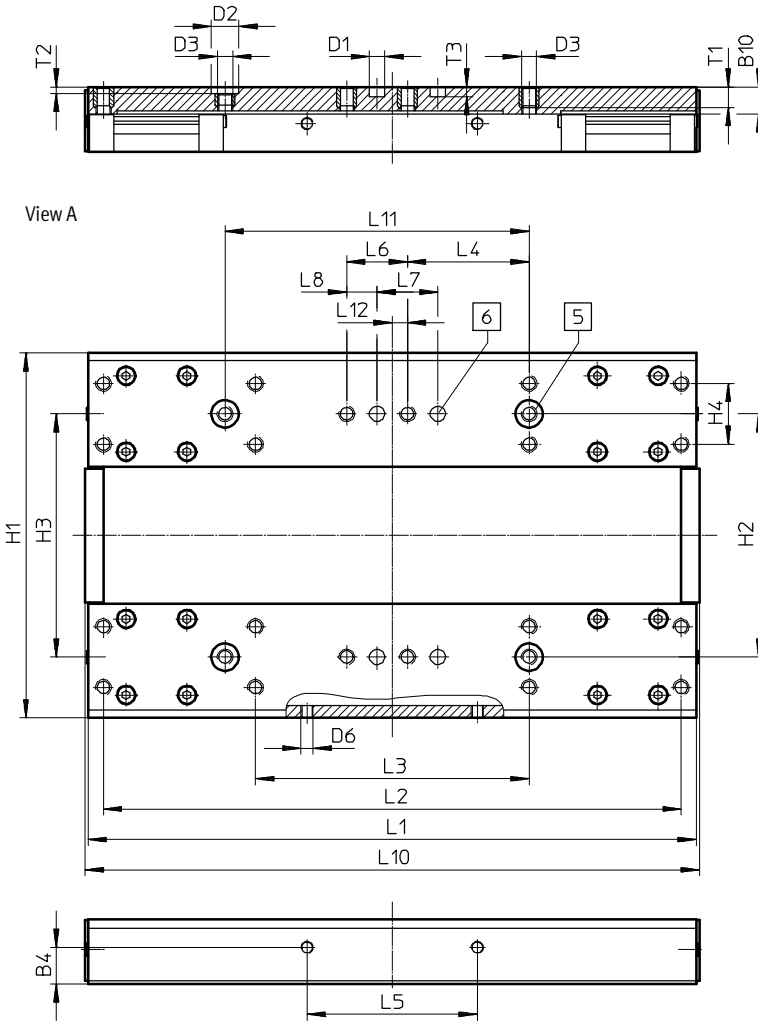
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01

Dimensions

Ø 18

Pneumatic drives



- 5 Hole for centring sleeve ZBH
- 6 Hole for centring pin ZBS

Ø	B4	B10	D1	D2	D3	D6	H1	H2	H3	H4	L1	L2
[mm]	±0.1		Ø H7	Ø H7			±0.3	±0.05		±0.1	±0.1	±0.2
18	12	8.8	5	9	M5	M4	120	80	80	20	200	190

Ø	L3	L4	L5	L6	L7	L8	L10	L11	L12	T1	T2	T3
[mm]	±0.2	±0.1	±0.2	±0.1	±0.03	±0.1		±0.03			+0.1	+0.1
18	90	40	56	20	20	10	202	100	5	7.8	2.1	3.1

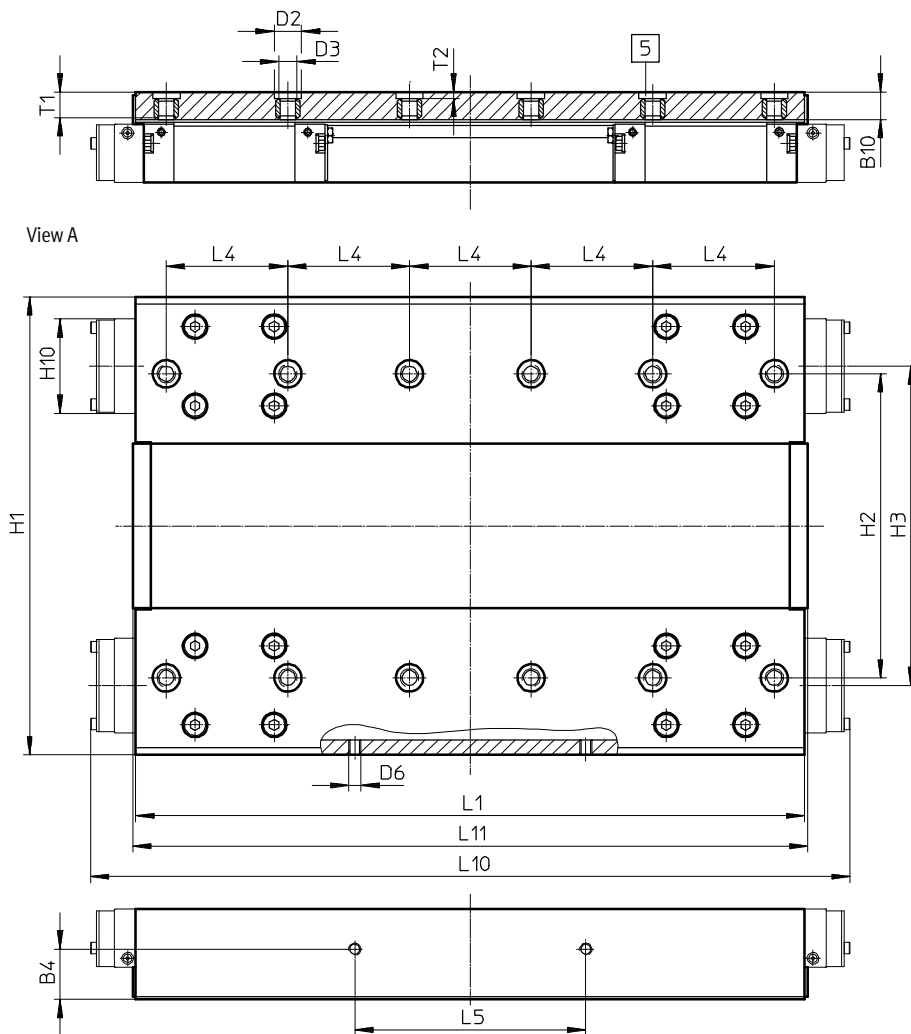
Linear drives DGC-HD, with heavy-duty guide

Dimensions

Download CAD data → www.festo.com

01

∅ 25



5 Hole for centring sleeve ZBH

∅	B4	B10*	D2 ∅	D3	D6	H1	H2	H3
[mm]	±0.1		H7			±0.3	±0.05	
25	16.5	10	9	M6	M4	150.7	100	105

∅	H10*	L1	L4	L5	L10*	L11	T1	T2
[mm]		±0.1	±0.03	±0.1				+0.1
25	31	220	40	76	249.8	222	9	2.1

* Protected version

Rodless cylinders > Mechanically coupled cylinders >

Linear drives DGC-HD, with heavy-duty guide

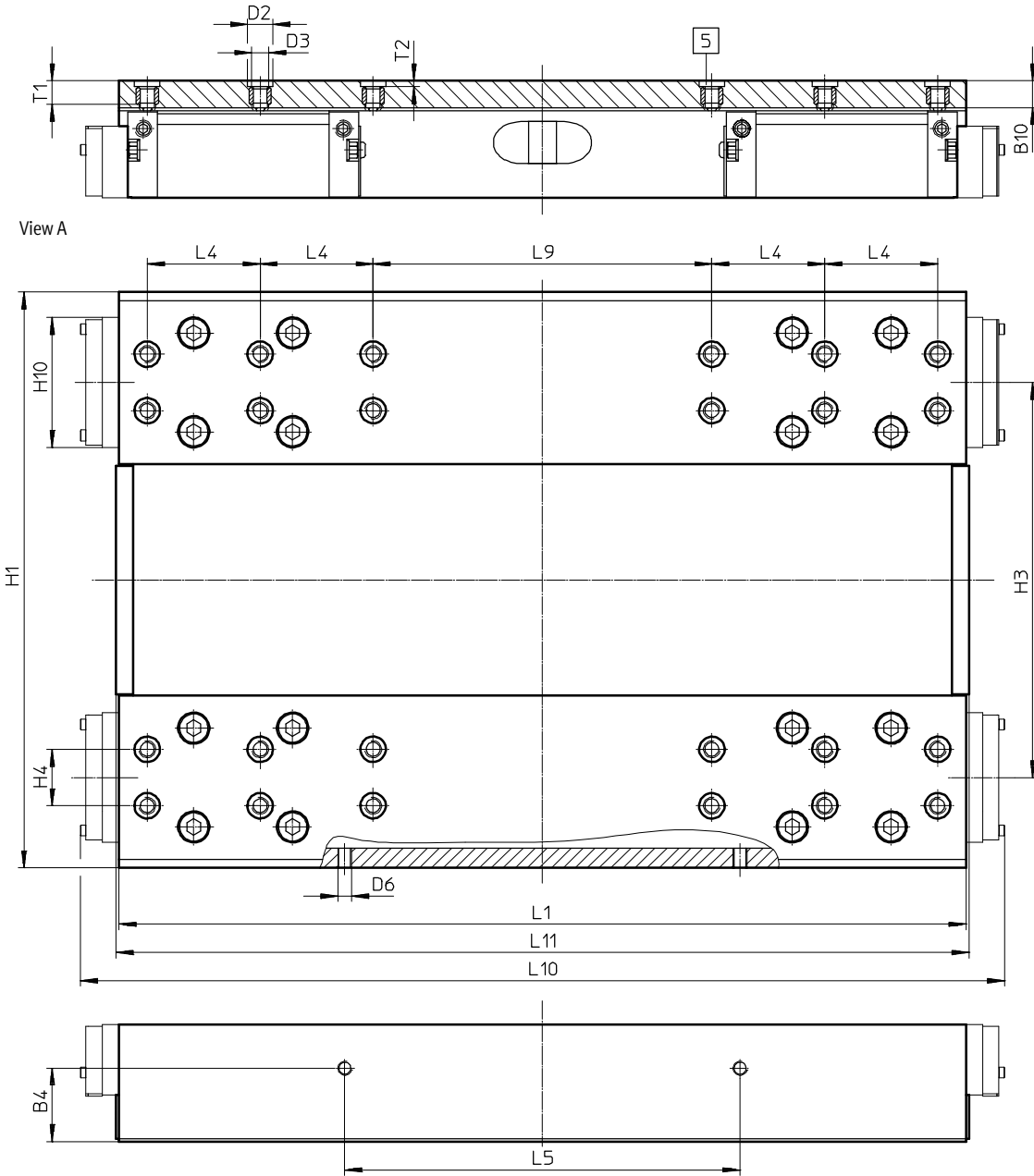
01

Dimensions

Download CAD data → www.festo.com

∅ 40

Pneumatic drives



5 Hole for centring sleeve ZBH

∅	B4	B10*	D2 ∅	D3	D6	H1	H3	H4
[mm]	±0.1		H7			±0.3		±0.05
40	26	10.5	9	M6	M5	204	140	20

∅	H10*	L1	L4	L5	L9	L10*	L11	T1	T2
[mm]		±0.1	±0.05	±0.1	±0.05				+0.1
40	46	300	40	140	120	327.3	302	9.5	2.1

* Protected version



Gain space and lower costs

- + Thanks to their compact design
- + Thanks to an attractive price
- + With the innovative sensor solution SRBS for position sensing

Semi-rotary drives › Semi-rotary drives with rotary vane ›
Semi-rotary drives

DRVS 


Semi-rotary drives > Semi-rotary drives with rotary vane >

Semi-rotary drives


DRVS

 Overview, configuration and ordering
→ www.festo.com/catalogue/drvs



 Additional information, support and user documentation
→ www.festo.com/sp/drvs



 Quick ordering of basic designs
→ page 273



 Selected types in accordance with the ATEX Directive for explosive atmospheres
→ www.festo.com/catalogue/ex



- + Modern and compact design
- + Swivel angle of 90°, 180° and 270°
- + Lighter than other semi-rotary drives
- + Housing protected against splash water and dust

Product range overview

Type/function	Version	Size	Swivel angle [°]	Torque [Nm]	Product options
DRVS					
Double-acting	With fixed swivel angle ¹⁾	6, 8	90, 180	0.15 ... 0.35	■
		12, 16, 25, 32, 40	90, 180, 270	1 ... 20	■

1) Swivel angle can be adjusted with the help of accessories.

Product options

P Elastic cushioning at both ends

EX4 EU certification (II 2GD)

Data sheet



Technical data		Dimensions → Page 277						
Size		6	8	12	16	25	32	40
Pneumatic connection		M3		M5			G1/8	
Cushioning		Elastic cushioning at both ends						
Swivel angle [°]		90, 180		90, 180, 270				
Torque at 6 bar [Nm]		0.15	0.35	1	2	5	10	20
Swivel frequency at 6 bar								
Swivel angle 90°, 180° [Hz]		3						
Swivel angle 270° [Hz]		-		2				
Max. perm. radial force ²⁾ [N]		15	20	25	30	60	200	350
Max. perm. axial force ²⁾ [N]		10		20	25	40	75	120
Cushioning angle [°]		0.5						
Max. perm. mass moment of inertia ³⁾ [kgm ² x10 ⁻⁴]		6.5	13	50	100	120	200	350

2) The axis of rotation and the centre of the drive shaft are the point of reference for the forces.

3) → See also graphs.

Operating conditions

Size		6	8	12	16	25	32	40
Operating pressure [bar]		3.5 ... 8		2.5 ... 8		2 ... 8		
Ambient temperature ⁴⁾ [°C]		0 ... +60						

4) Note operating range of proximity sensors.

Materials

Size		6	8	12	16	25	32	40	
Drive shaft		High-alloy stainless steel			Nickel-plated steel				
Housing		Anodised wrought aluminium alloy			Painted die-cast aluminium				
Rotary vane		Reinforced PET							
Ball bearing		Rolled steel							
Screws		Galvanised steel							
Shaft seal		-			PU			NBR	
Seals		TPE-U (PU)							

Semi-rotary drives DRVS ★

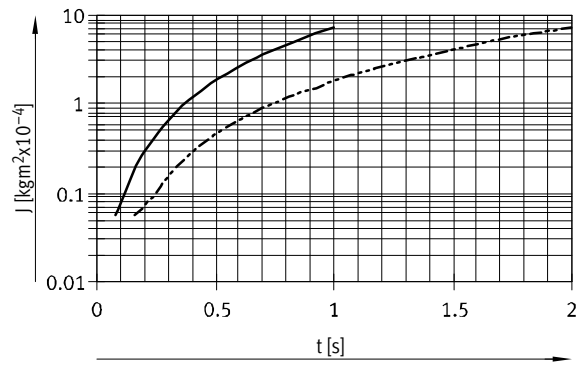
01

Data sheet

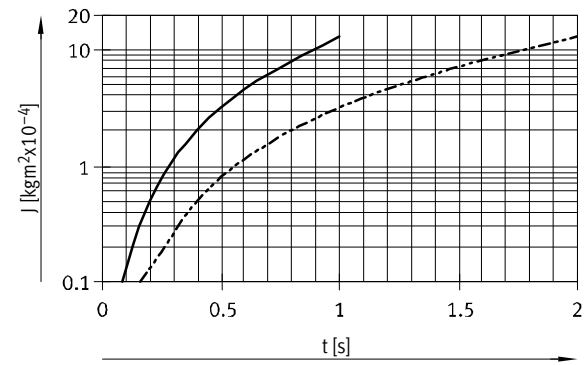
Mass moment of inertia J as a function of swivel time t

Pneumatic drives

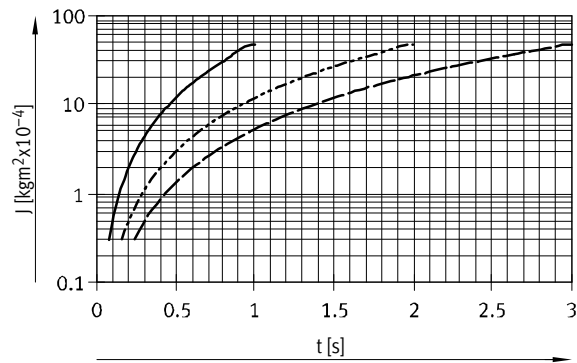
DRVS-6



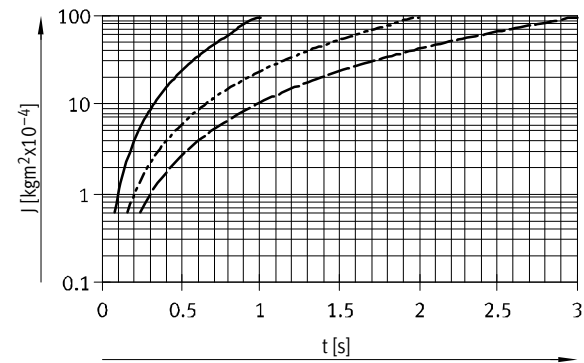
DRVS-8



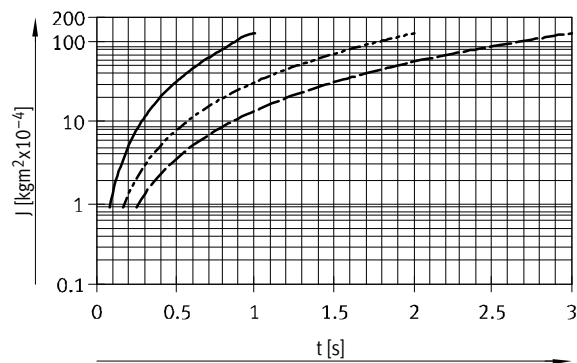
DRVS-12



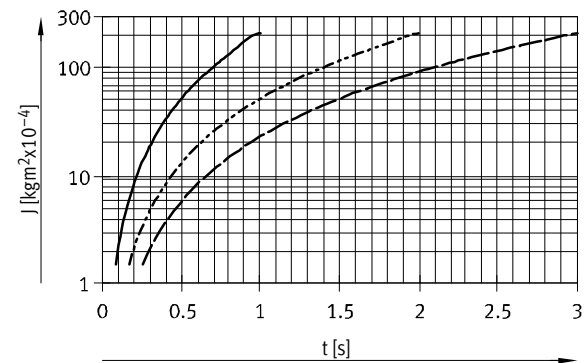
DRVS-16



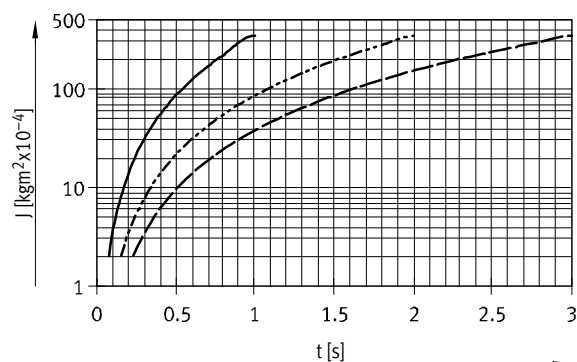
DRVS-25



DRVS-32



DRVS-40



— 90°
 - - - 180°
 - · - 270°

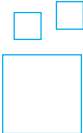
 Quick ordering¹⁾

Part no.	Type
Size 6 mm	
1845706	DRVS-6-90-P
1845707	DRVS-6-180-P
Size 8 mm	
1845708	DRVS-8-90-P
1845709	DRVS-8-180-P
Size 12 mm	
1845710	DRVS-12-90-P
1845711	DRVS-12-180-P
1845712	DRVS-12-270-P
Size 16 mm	
1845713	DRVS-16-90-P
1845714	DRVS-16-180-P
1845715	DRVS-16-270-P

Part no.	Type
Size 25 mm	
1845716	DRVS-25-90-P
1845717	DRVS-25-180-P
1845718	DRVS-25-270-P
Size 32 mm	
1845719	DRVS-32-90-P
1845720	DRVS-32-180-P
1845721	DRVS-32-270-P
Size 40 mm	
1845722	DRVS-40-90-P
1845723	DRVS-40-180-P
1845724	DRVS-40-270-P

1) All products in this table are easy to select and quick to order.

Ordering – Product options

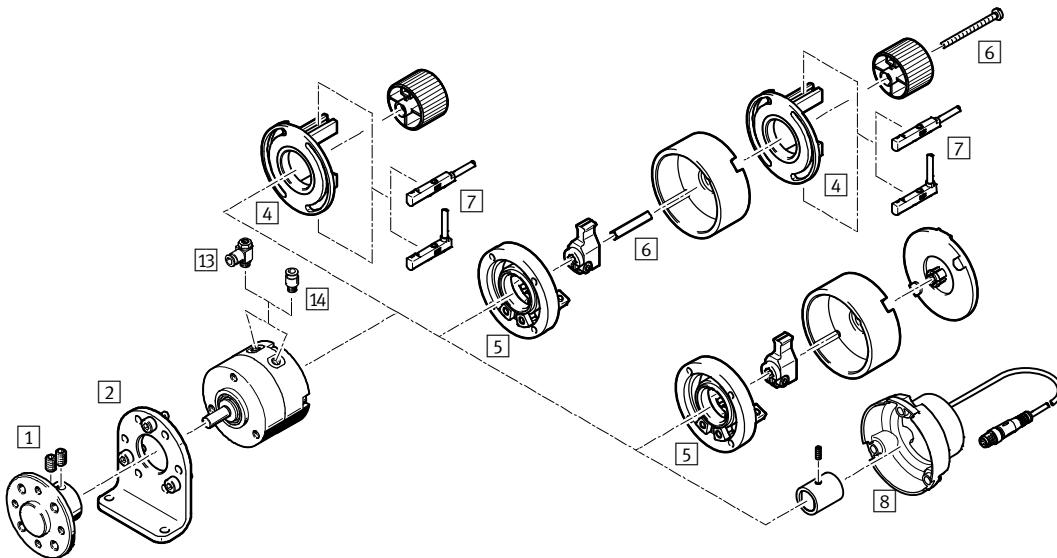
	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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Semi-rotary drives DRVS ★

01 Accessories

Size 6, 8

Pneumatic drives

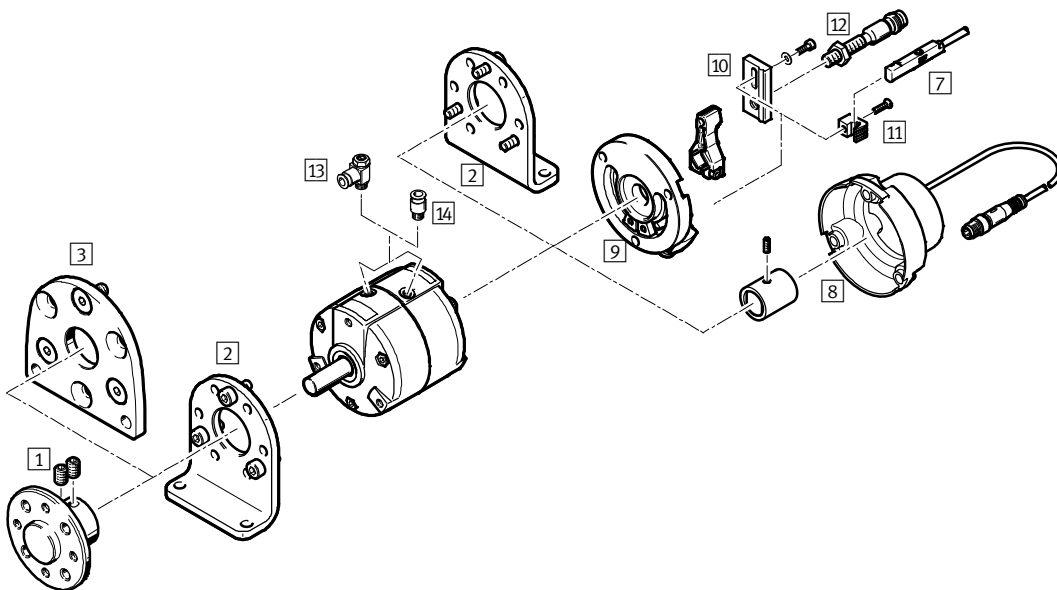


	→ Page/online
1 Push-on flange FWSR/DARF	275
2 Foot mounting DAMH ¹⁾	275
4 Mounting kit WSM-...-SME-10	275
5 Stop kit KSM	275
6 Adapter kit DADP-AK	275

	→ Page/online
7 Proximity sensor SME/SMT-10	275
8 Position sensor SRBS	275
13 One-way flow control valve GRLA	276
14 Push-in fitting QS	1443
- Connecting cable NEBU	275

1) The foot mounting can only be mounted at the front.


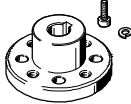
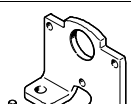
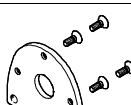
Size 12 ... 40



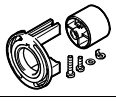
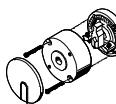
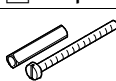
	→ Page/online
1 Push-on flange FWSR/DARF	275
2 Foot mounting DAMH	275
3 Flange mounting DAMF	275
7 Proximity sensor SME-/SMT-10	275
8 Position sensor SRBS	275
9 Adapter kit DADP-ES	276

















	→ Page/online
10 Sensor bracket SL-DSM-S	276
11 Sensor bracket SL-DSM-B	276
12 Proximity sensor SIEN	276
13 One-way flow control valve GRLA	276
14 Push-in fitting QS	1443
- Connecting cable NEBU	275

Accessories – Ordering data

	For size	Part no.	Type
1 Push-on flange¹⁾ Dimensions online: → drvs			
	6	185948	FWSR-6
	8	185949	FWSR-8
	12	4886221	DARF-Q12-12
	16	4886222	DARF-Q12-16
	25	4886223	DARF-Q12-25
	32	4886224	DARF-Q12-32
	40	4886225	DARF-Q12-40
2 Foot mounting Dimensions online: → drvs			
	6	3371840	DAMH-Q12-6
	8	3371841	DAMH-Q12-8
	12	3371842	DAMH-Q12-12
	16	3371843	DAMH-Q12-16
	25	3371844	DAMH-Q12-25
	32	3371845	DAMH-Q12-32
	40	3371846	DAMH-Q12-40
3 Flange mounting¹⁾ Dimensions online: → drvs			
	12	4965018	DAMF-Q12-12
	16	4965019	DAMF-Q12-16
	25	4965020	DAMF-Q12-25
	32	4965021	DAMF-Q12-32
	40	4965022	DAMF-Q12-40

1) Suitable for ATEX

	For size	Part no.	Type
4 Mounting kit for proximity sensor SME/SMT-10			
	6	173205	WSM-6-SME-10
	8	173206	WSM-8-SME-10
5 Stop kit			
	6	175833	KSM-6
	8	175834	KSM-8
6 Adapter kit Dimensions online: → drvs			
	6	3617044	DADP-AK-Q1-6
	8	3617045	DADP-AK-Q1-8

	For size	Switching output, connection	Cable length [m]	Part no.	Type
7 Proximity sensor for C-slot, magneto-resistive – N/O contact¹⁾ Data sheet → Page 1222					
	6 ... 40	PNP, cable	2.5		551373 SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3		551375 SMT-10M-PS-24V-E-0,3-L-M8D
Magnetic reed – N/O contact Data sheets → Page 1220					
	6 ... 40	Contacting, cable	2.5		173210 SME-10-KL-LED-24
		Contacting, plug	0.3		173212 SME-10-SL-LED-24
	12 ... 40	Contacting, cable	2.5		551365 SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3		551367 SME-10M-DS-24V-E-0,3-L-M8D
8 Position sensor Dimensions online: → srbs					
	6	Only one connecting cable is required for sensing the end positions	0.3		2619969 SRBS-Q12-6-E270-EP-1-S-M8
	8				2619972 SRBS-Q12-8-E270-EP-1-S-M8
	12				2393546 SRBS-Q12-12-E270-EP-1-S-M8
	16				2393547 SRBS-Q12-16-E270-EP-1-S-M8
	25				2393548 SRBS-Q12-25-E270-EP-1-S-M8
	32				2393549 SRBS-Q12-32-E270-EP-1-S-M8
	40				2393550 SRBS-Q12-40-E270-EP-1-S-M8
Connecting cables for position sensor SRBS, straight socket Data sheets online: → nebu					
	6 ... 40	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8G4-K-5-LE4
	6 ... 40	M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4

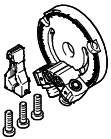
1) For size 6, 8: with mounting kit WSM-...-SME-10
For size 12 ... 40: mounted on the DRVS using sensor bracket SL-DSM-B



Semi-rotary drives DRVS ★

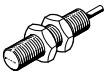
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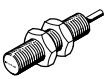
Accessories – Ordering data

Pneumatic drives

	For size	Part no.	Type
9 Stop kit Dimensions online: → drvs			
	12	2536502	DADP-ES-Q12-12
	16	2536503	DADP-ES-Q12-16
	25	2536504	DADP-ES-Q12-25
	32	2536505	DADP-ES-Q12-32
	40	2536506	DADP-ES-Q12-40


	For size	For mounting	Part no.	Type
10/ 11 Sensor bracket¹⁾				
	12 ... 40	For mounting the proximity sensor SIEN-M5	1130882	SL-DSM-S-M5-B
	12 ... 40	For mounting the proximity sensor SIEN-M8	1132360	SL-DSM-S-M8-B
	12 ... 40	For mounting the proximity sensor SME/SMT-10	550661	SL-DSM-B

	For size	Switching output, connection	Cable length [m]	Part no.	Type
12 Inductive proximity sensor – N/O contact, M5 Data sheets → Page 1230					
	12 ... 40	PNP, cable	2.5	★ 150370	SIEN-M5B-PS-K-L
		PNP, plug	–	★ 150371	SIEN-M5B-PS-S-L

	For size	Switching output, connection	Cable length [m]	Part no.	Type
N/O contact, M8					
	12 ... 40	PNP, cable	2.5	★ 150386	SIEN-M8B-PS-K-L
		PNP, plug	–	★ 150387	SIEN-M8B-PS-S-L

	For size	Connection	Cable length [m]	Part no.	Type
Connecting cables, straight socket Data sheets → Page 1543					
	6 ... 40	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3

	For size	Connection	Cable length [m]	Part no.	Type
Angled socket Data sheets → Page 1543					
	6 ... 40	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

	For size	Connection	O.D.	Part no.	Type
13 One-way flow control valve with slotted head screw, metal²⁾ for exhaust air flow control Data sheets → Page 1033					
	6, 8	M3	3	175041	GRLA-M3-QS-3
			3	★ 193137	GRLA-M5-QS-3-D
	12, 16, 25	M5	4	★ 193138	GRLA-M5-QS-4-D
3			★ 193142	GRLA-1/8-QS-3-D	
32, 40	G1/8	4	★ 193143	GRLA-1/8-QS-4-D	
		6	★ 193144	GRLA-1/8-QS-6-D	
		8	★ 193145	GRLA-1/8-QS-8-D	

1) Packaging unit 2 pieces.

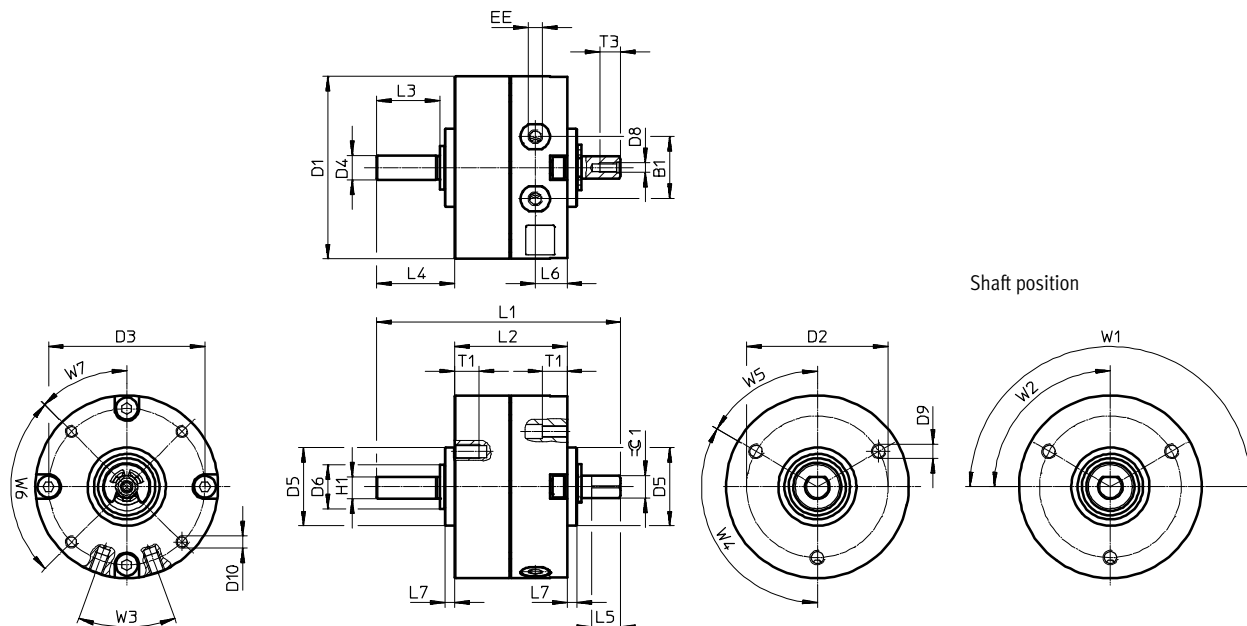
2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Dimensions

Size 6, 8

Download CAD data → www.festo.com

01



Pneumatic drives

Size	B1	D1 ∅ ±0.2	D2 ∅ ±0.1	D3 ∅ ±0.1	D4 ∅ g7	D5 ∅ f8	D6 ∅	D8	D9
6	10	29.4	24	25	4	14	8	M2	M3
8	12.8	37.4	29	32	5	16	9	M2	M3

Size	D10	EE	H1 -0.2	L1	L2	L3	L4	L5 -0.2	L6	L7
6	M2	M3	3.5	43	21	10	13	5	6	2
8	M2.5	M3	4.5	50	23	13	16	6	6.5	2

Size	T1 +0.5	T3 +0.5	W1 +5°	W2 +5°	W3	W4	W5	W6	W7	∓ 1
6	5	3.5	180°	90°	40°	120°	60°	90°	45°	3
8	5	4.3								3.5

Semi-rotary drives DRVS ★

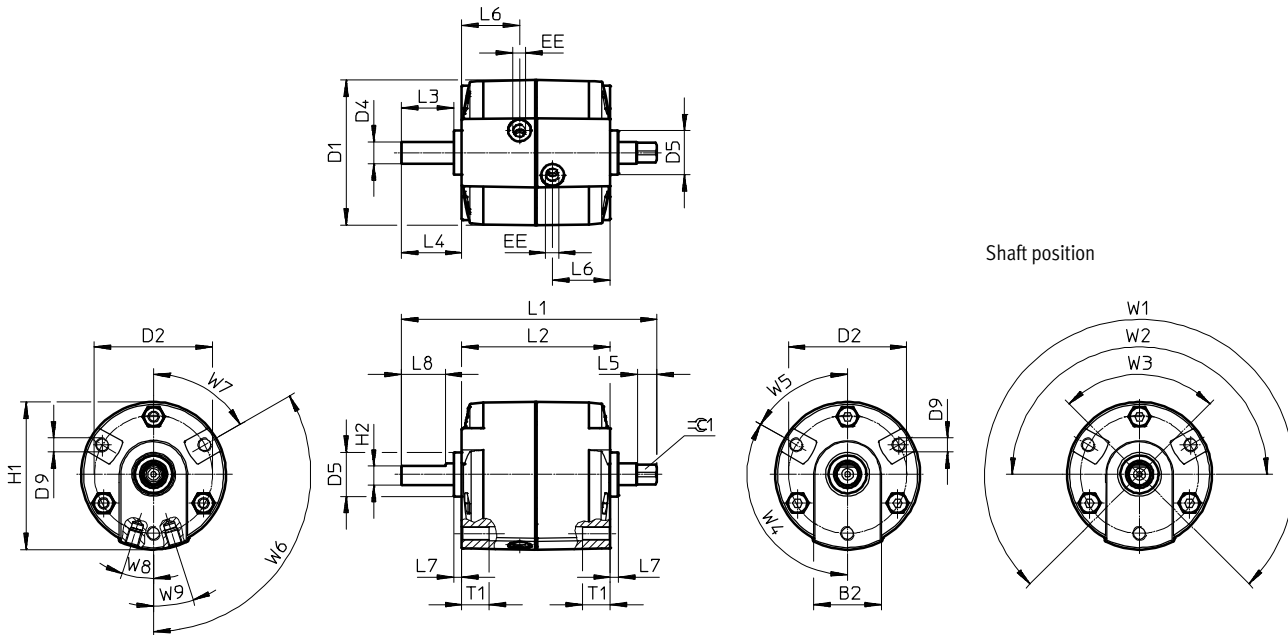
Download CAD data → www.festo.com

01

Dimensions

Size 12, 16

Pneumatic drives



Size	B2	D1 ∅	D2 ∅ ±0.2	D4 ∅ g7	D5 ∅ -0.1	D9	EE	H1
12	24	45.5	36	6	14	M4	M5	46.3
16	24.5	52.7	43	8	16	M5	M5	53.7

Size	H2 ±0.1	L1	L2 +0.6/-0.2	L3	L4	L5	L6	L7 +0.1/-0.1	L8 +0.4	T1
12	5	73+0.2/-0.1	40.5	17	20+0.4/-0.6	9±0.1	14.8	3	14	8
16	7	93+0.2/-0.2	54	19	22+0.4/-0.7	7.2+0.1	21	3	16	10

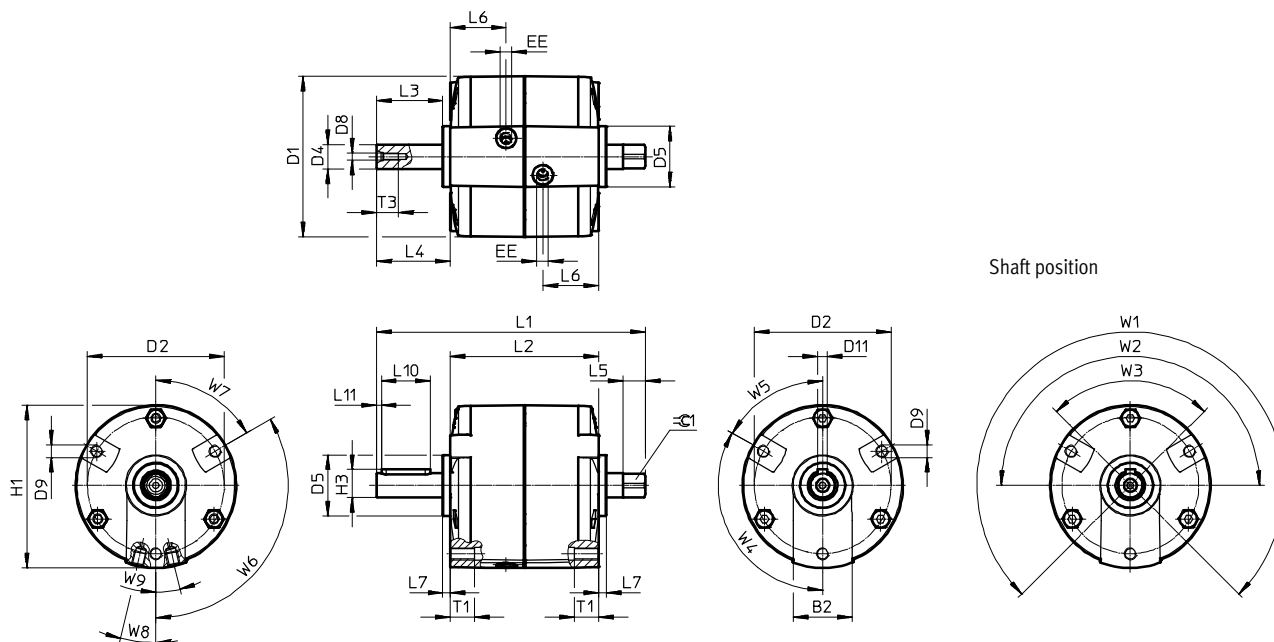
Size	W1 +7°	W2 +7°	W3 +7°	W4	W5	W6	W7	W8	W9	⊖ 1
12	270°	180°	90°	120°	60°	120°	60°	19.5°	19.5°	4.5 _{h11}
17.5°								17.5°	6 _{-0.1}	
16										

Dimensions

Size 25

Download CAD data [→ www.festo.com](http://www.festo.com)

01



Pneumatic drives

Size	B2	D1 ∅	D2 ∅ ±0.2	D4 ∅ g7	D5 ∅ -0.1	D8	D9	D11
25	24	65.7	56	10	25	M3	M5	4

Size	EE	H1	H3 -0.2	L1 +0.2/-0.3	L2 +0.3/-0.2	L3	L4 +0.3/-0.4	L5
25	M5	66.7	11.5	110.2	61	27.1	30.1	9.2

Size	L6	L7 +0.1/-0.1	L10 +0.1	L11	T1	T3 +3	W1 +7°	W2 +7°
25	23	3	20	2	10	9	270°	180°

Size	W3 +7°	W4	W5	W6	W7	W8	W9	⊖ 1 -0.1	Feather key ¹⁾
25	90°	120°	60°	120°	60°	13°	13°	8	A4x4x20

1) Included in the scope of delivery.

Semi-rotary drives DRVS ★

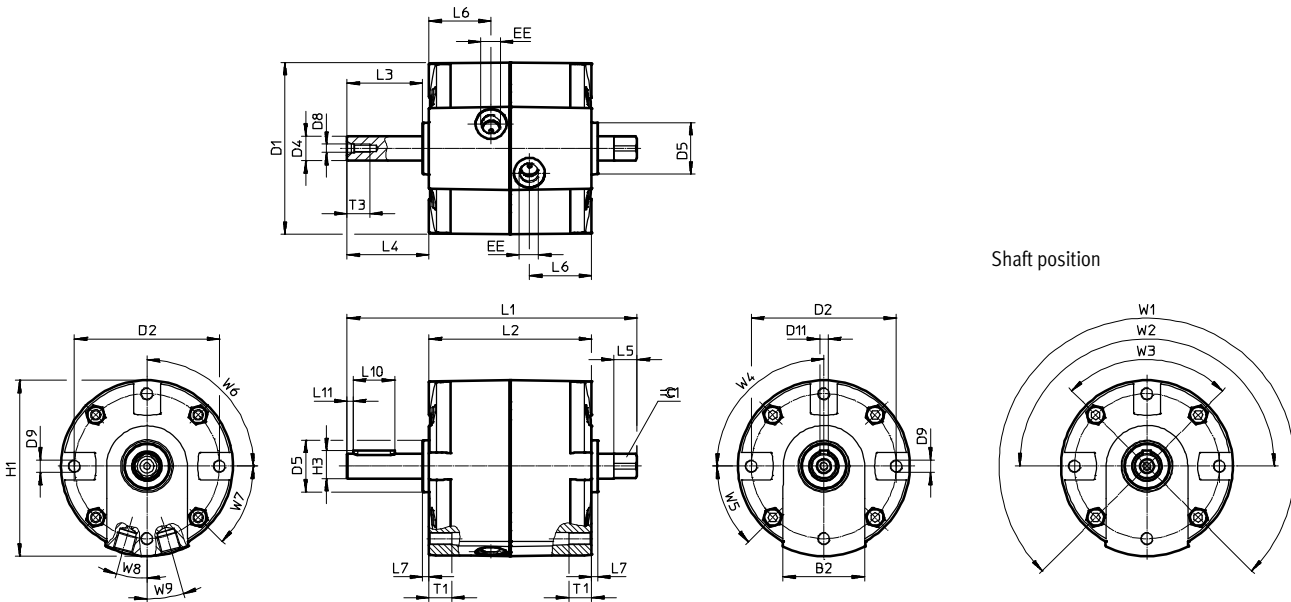
Download CAD data → www.festo.com

01

Dimensions

Size 32, 40

Pneumatic drives



Size	B2	D1 ∅	D2 ∅ ±0.2	D4 ∅ g7	D5 ∅ -0.1	D8	D9	D11 N9
32	39	83	70	12	25	M4	M6	4
40	42	100.1	87	17	30	M5	M8	5

Size	EE	H1	H3 -0.2	L1 +0.2/-0.3	L2	L3	L4 +0.3/-0.6	L5
32	G1/8	85	13.5	140	78.5+0.5/-0.1	36.5	39.5	11.2
40	G1/8	102.6	19	170	93+0.4	50.5	53.5	16+0.3

Size	L6	L7	L10 +0.1	L11	T1	T3 +3	W1 +7°	W2 +7°
32	30	3+0.1/-0.2	20+0.1	3	11	11	270°	180°
40	37	3+0.2	36.1+0.3	5	13+3	13		

Size	W3 +7°	W4	W5	W6	W7	W8	W9	≈C 1	Feather key to DIN 6885 ¹⁾
32	90°	90°	45°	90°	45°	16°	16°	10	A4x4x20
40						14.5°	14.5°	13	A5x5x36

1) Included in the scope of delivery.



Gain space and save costs

- + Thanks to their compact design
- + Thanks to the drive's durability

Semi-rotary drives › Semi-rotary drives with rotary vane ›
Semi-rotary drives

DSM

Size 6 ... 10

Semi-rotary drives > Semi-rotary drives with rotary vane >

Semi-rotary drives

DSM



Overview, configuration and ordering

→ www.festo.com/catalogue/dsm



Additional information, support and user documentation

→ www.festo.com/sp/dsm



Selected types in accordance with the ATEX Directive
for explosive atmospheres

→ www.festo.com/catalogue/ex



Spare parts service



- + Force transmitted directly to the drive shaft via a rotary vane
- + With spigot or hollow flanged shaft
- + Compact semi-rotary drives with adjustable swivel angles up to 240°
- + Elastic cushioning plates in the end positions

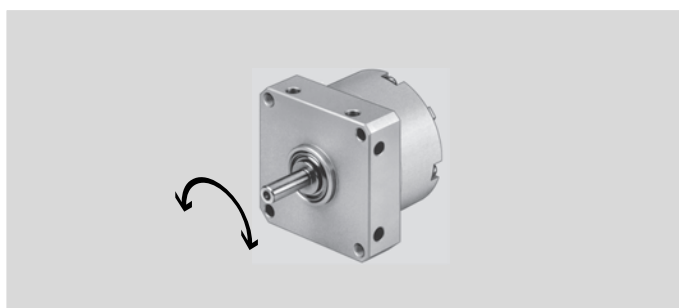
Product range overview – Size 6 ... 10

Type/function	Version	Size	Swivel angle [°]	Torque [Nm]	Product options			
					P	A	FF	FW
Double-acting	DSM							
	With fixed swivel angle	6, 8	90, 180	0.15 ... 0.35	■	■	-	■
		10	90, 180, 240	0.85	■	■	-	■
	DSM-...-FF							
	With adjustable swivel angle	6, 8	180	0.15 ... 0.35	■	■	■	■
		10	200	0.85	■	■	■	■
DSM-T...								
With tandem rotary vanes	6, 8	90, 180	0.3 ... 0.7	■	■	■	■	
	10	90, 180, 240	1.7	■	■	■	■	

Product options – Size 6 ... 10

P Elastic cushioning components at both ends A Position sensing FF Adjustable swivel angle FW Flanged shaft

Data sheet – Size 6 ... 10



Technical data		Dimensions → Page 288		
Size		6	8	10
Pneumatic connection		M3		
Cushioning		Elastic cushioning rings/plates at both ends		
Swivel angle				
Fixed	[°]	90 or 180	90 or 180	90, 180 or 240
Adjustable	[°]	0 ... 180		0 ... 200
Torque at 6 bar	[Nm]	0.15	0.35	0.85
Max. perm. swivel frequency	[Hz]	3		3 (at 240°: 2 Hz)
Max. perm. radial force ¹⁾	[N]	15	20	30
Max. perm. axial force ¹⁾	[N]	10		
Max. cushioning angle	[°]	0.5		
Max. perm. mass moment of inertia ²⁾	[kgm ²]	0.00065	0.0013	0.0026

1) On the drive shaft.

2) Maximum value → Graphs.

Operating conditions		6	8	10
Operating pressure	[bar]	3.5 ... 8		2.5 ... 8
Temperature range ³⁾	[°C]	0 ... +60		

3) Note operating range of proximity sensors.

Materials	
Drive shaft	High-alloy stainless steel
End cap	Aluminium
Housing	Anodised aluminium
Rotary vane	Glass fibre-reinforced plastic
Screws	Galvanised steel
Seals	NBR, TPE-U (PUR)

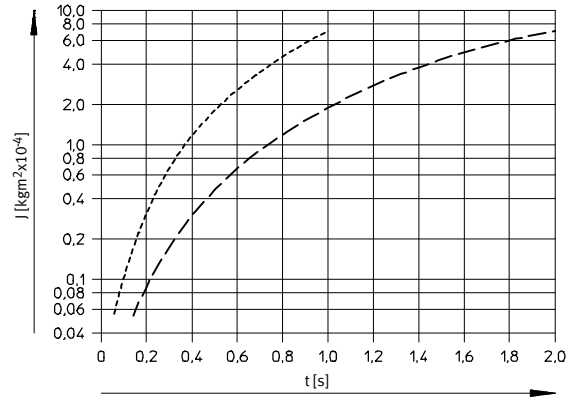
Swivel modules DSM

01

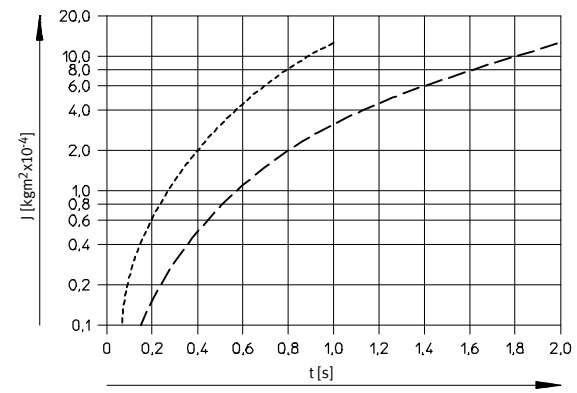
Data sheet – Size 6 ... 10

Mass moment of inertia J on the drive shaft as a function of swivel time t

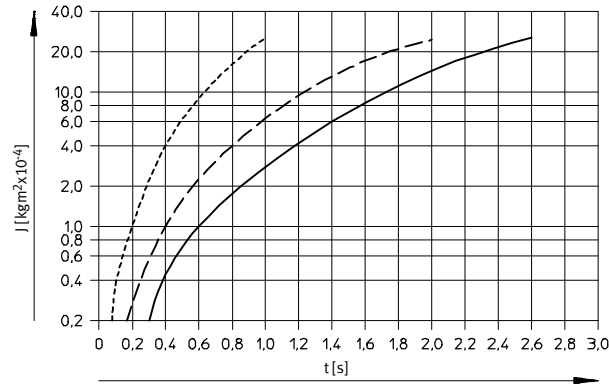
DSM-6



DSM-8



DSM-10



- - - 90°
- - - 180°
- 240°

Pneumatic drives

Order code – Size 6 ... 10

Type		DSM	-		-		-	P	-		-	
DSM	Semi-rotary drive											
Size												
	Max. swivel angle [°]											
6, 8	90, 180											<input type="checkbox"/>
10	90, 180, 240											<input type="checkbox"/>
Cushioning												
P	Elastic cushioning rings/plates at both ends											
Position sensing												
-	Without											
A	Via proximity sensor											
Swivel angle												
-	Fixed											
FF	Adjustable											
Shaft												
-	Spigot shaft											
FW	Flanged shaft											

With adjustable swivel angle only 180°

With adjustable swivel angle only 200°

Order example:

DSM-8-180-P-A-FF

Swivel module DSM - size 8 - max. swivel angle 180° - elastic cushioning at both ends - position sensing via proximity sensor - swivel angle adjustable - spigot shaft

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

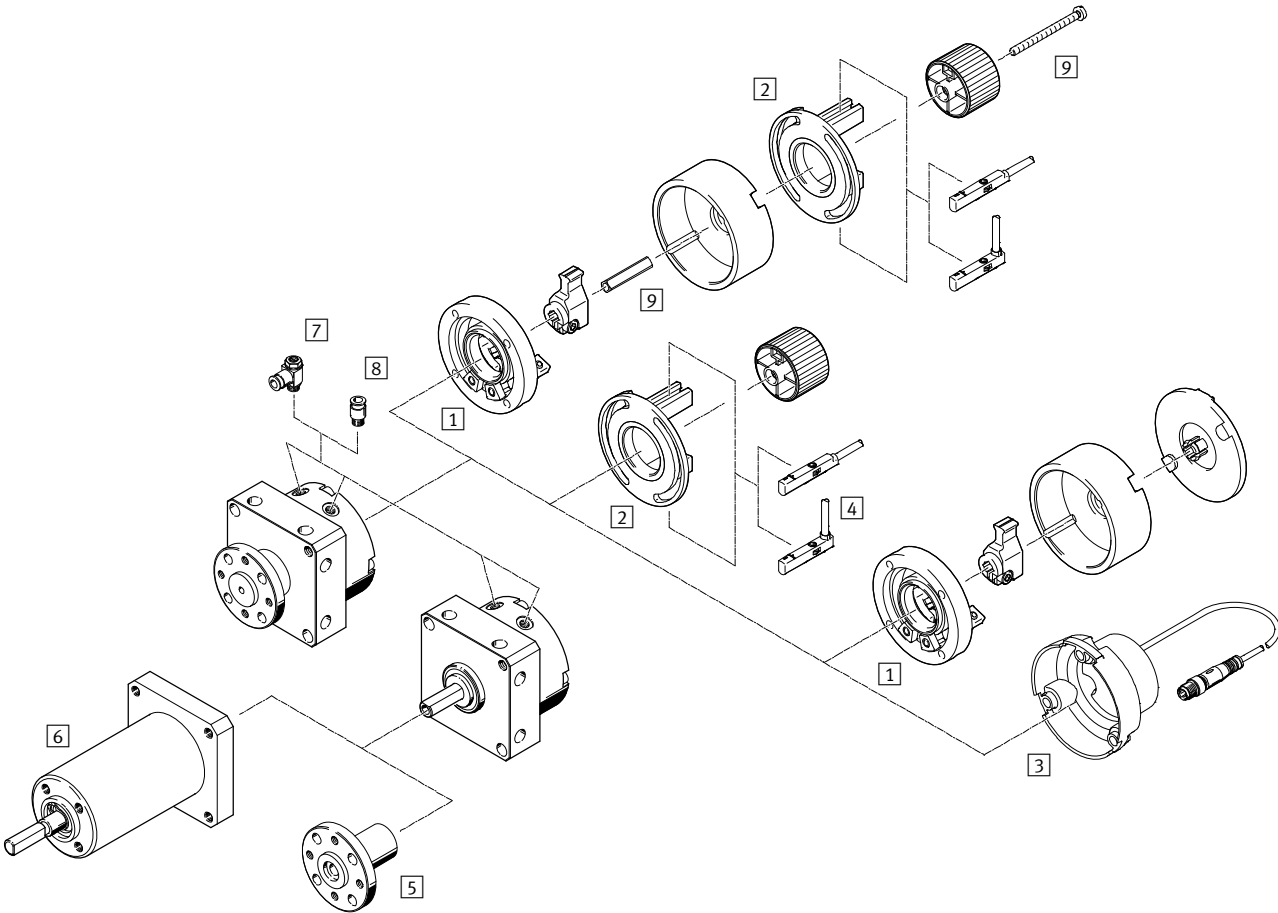
Enter the type code in the search field.

Swivel modules DSM

01

Accessories – Size 6 ... 10

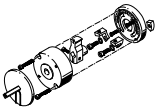

Pneumatic drives



		→ Page/online
1	Stop kit KSM	286
2	Mounting kit WSM-...-SME-10	286
3	Position sensor SRBS	287
4	Proximity sensor SME-/SMT-10	287
5	Push-on flange FWSR	287




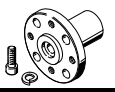
		→ Page/online
6	Freewheel unit FLSM	287
7	One-way flow control valve GRLA	287
8	Push-in fitting QSM	qs
9	Adapter kit DADP-AK	287
-	Drive/gripper connections	dsm

Accessories – Ordering data – Size 6 ... 10

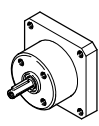
	For size	Part no.	Type
1 Stop kit			
	6	175833	KSM-6
	8	175834	KSM-8
	10	175835	KSM-10
2 Mounting kit for proximity sensor			
	6	173205	WSM-6-SME-10
	8	173206	WSM-8-SME-10
	10	173207	WSM-10-SME-10

Accessories – Ordering data – Size 6 ... 10


01

	For size	Switching output, connection	Cable length [m]	Part no.	Type
3 Position sensor Dimensions online: → srbs					
	6	–	0.3	★ 2619969	SRBS-Q12-6-E270-EP-1-S-M8
	8	–	0.3	★ 2619972	SRBS-Q12-8-E270-EP-1-S-M8
	10	–	0.3	★ 2412001	SRBS-Q1-10-E270-EP-1-S-M8
4 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	6, 8	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
Magnetic reed – N/O contact Data sheets → Page 1218					
	6, 8, 10	Contacting, cable	2.5	173210	SME-10-KL-LED-24
		Contacting, plug	0.3	173212	SME-10-SL-LED-24
5 Push-on flange Dimensions online: → dsm					
	6	–	–	185948	FWSR-6
	8	–	–	185949	FWSR-6
	10	–	–	32798	FWSR-10

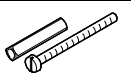
Pneumatic drives

	For size	Direction of rotation ¹⁾	Part no.	Type
6 Freewheel unit Dimensions online: → dsm				
	6	Anti-clockwise rotation	188253	FLSM-6-L
		Clockwise rotation	188522	FLSM-6-R
	8	Anti-clockwise rotation	188525	FLSM-8-L
		Clockwise rotation	188524	FLSM-8-R
	10	Anti-clockwise rotation	188527	FLSM-10-L
		Clockwise rotation	188526	FLSM-10-R

1) View of the drive shaft side.

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
7 One-way flow control valve with slotted head screw, metal²⁾ for exhaust air flow control Data sheets → Page 1033					
	6, 8, 10	M3	3	175041	GRLA-M3-QS-3

2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For size	Part no.	Type
9 Adapter kit Dimensions online: → dadp			
	6	3617044	DADP-AK-Q1-6
	8	3617045	DADP-AK-Q1-8
	10	3617046	DADP-AK-Q1-10

Swivel modules DSM

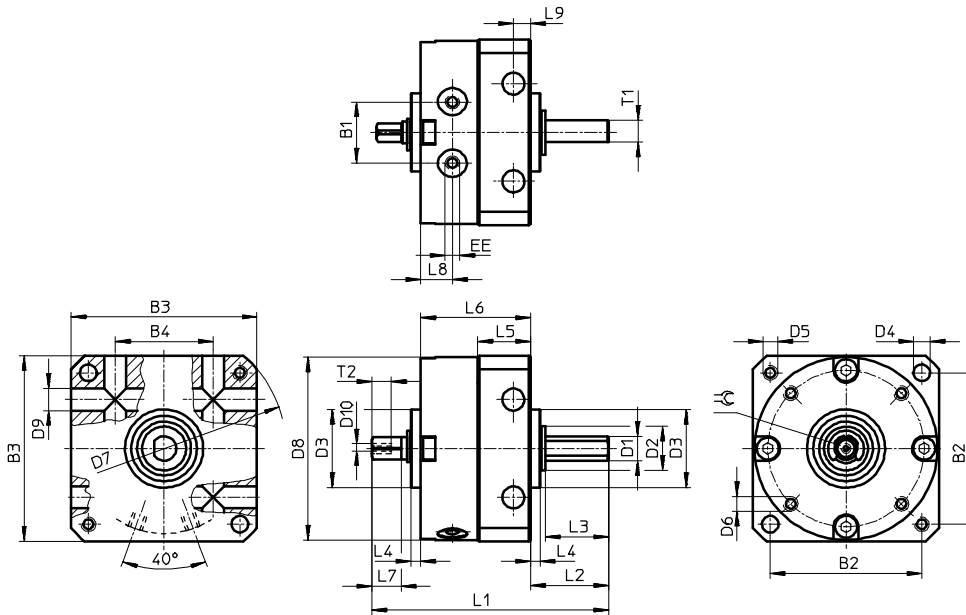
Download CAD data → www.festo.com

01

Dimensions – Size 6 ... 10

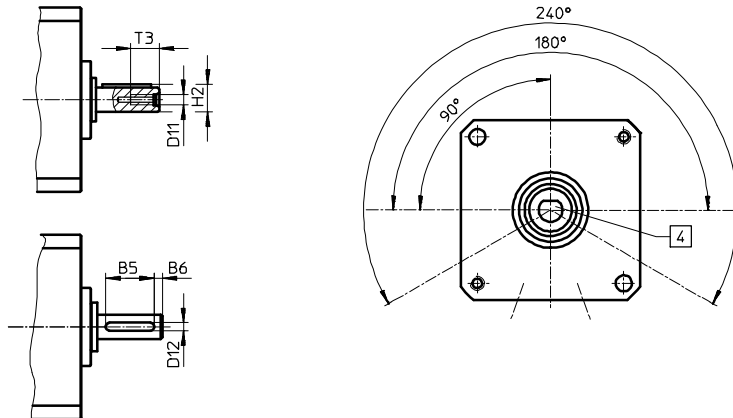
With spigot shaft and fixed stop

Pneumatic drives



Size 10

Shaft position



Note

For swivel angle tolerance → table below. The supply ports are at the bottom in this drawing.

Size	B1	B2	B3	B4	B5	B6	D1 ∅ g7	D2 ∅	D3 ∅ f8	D4 ∅ H12	D5	D6	D7 ∅ H12	D8 ∅	D9 ∅ H12	D10	D11	D12 h9
6	10	25	30	17	-	-	4	8	14	3.2	M3	M2	40	29.4	3.5	M2	-	-
8	12.8	31	38	20	-	-	5	9	16	3.2	M3	M2.5	50	37.4	3.5	M2	-	-
10	15.9	38	47	26	12	2	6	12	19	4.3	M4	M3	62	46.4	4.5	M2.5	M2.5	2

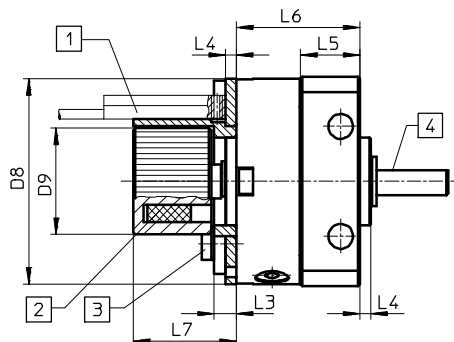
Size	EE	H2 max.	L1	L2	L3	L4	L5	L6	L7	L8	L9	T1	T2 h12	T3	∓	Swivel angle tolerance
6	M3	-	43	13	10	2	9.8	21	5	6	3	3.5	4	-	3	0/+5°
8	M3	-	50	16	13	2	11.3	23	6	6.5	3	4.5	4.3	-	3.5	0/+5°
10	M3	6.8	61	19.6	16	2	14.3	28.4	8	7.5	4	-	5	7	4.5	0/+5°

Dimensions – Size 6 ... 10

Download CAD data → www.festo.com

01

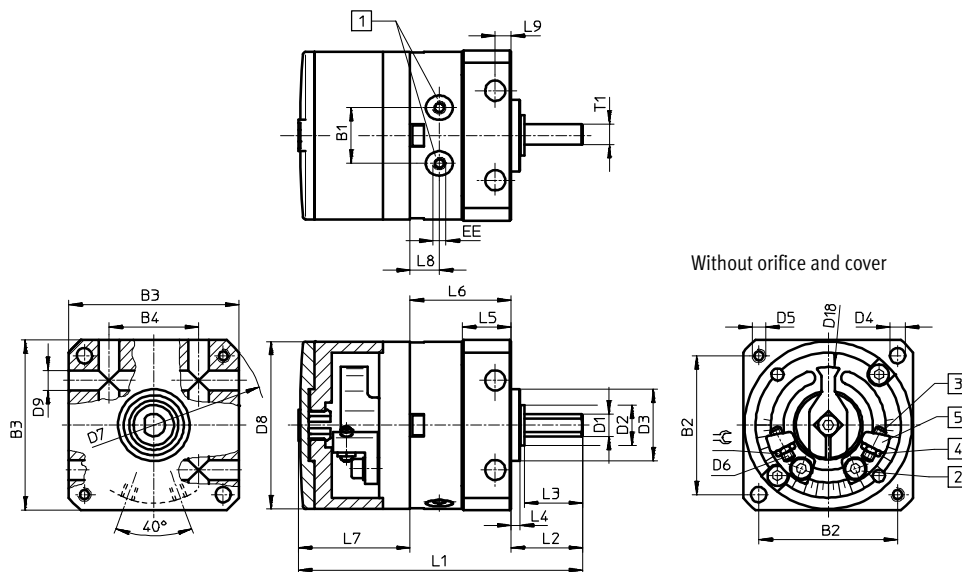
With spigot shaft, fixed stop and position sensing



- 1 Proximity sensor not included in the scope of delivery. Observe fitting space for proximity sensor and cable
- 2 Magnet position
- 3 Max. tightening torque for sensor bracket screws → table below
- 4 The flat or the feather key on the shaft indicates the position of the rotary vane

Size	D8 ∅	D9 ∅	L3	L4	L5	L6	L7	Tightening torque [Nm]
6	29.4	17.3	4	2	9.8	21	19.5	0.19
8	37.4	19.3	4	2	11.3	23	19.5	0.32
10	46.4	22.3	4	2	14.3	28	19.5	0.44

With spigot shaft, fixed stop and adjustable swivel angle



Note
The swivel angle is infinitely adjustable over the entire swivel range.
Size 6 can only be adjusted symmetrically around the centre position.

- 1 Supply ports
- 2 Locking screw for clamping the stop
- 3 End-position adjustment
- 4 Lock nut for end-position adjustment
- 5 Infinitely adjustable stops

Size	B1	B2	B3	B4	D1 ∅ g7	D2 ∅	D3 ∅ f8	D4 ∅ H12	D5	D6	D7 ∅ H12	D8 ∅	D9 ∅ H12	D18 ∅	EE
6	10	25	30	17	4	8	14	3.2	M3	M2	40	29.4	3.5	22	M3
8	12.8	31	38	20	5	9	16	3.2	M3	M2.5	50	37.4	3.5	26	M3
10	15.9	38	47	26	6	12	19	4.3	M4	M3	62	46.4	4.5	35.8	M3

Size	L1	L2	L3	L4	L5	L6	L7	L8	L9	T1	⊕	Max. swivel angle	Precision adjustment per side
6	52	13	10	2	9.8	21	17.8	6	3	3.5	4	180°+5°	+1°/-5°
8	64	16	13	2	11.3	23	24.9	6.5	3	4.5	5	180°+5°	+1°/-5°
10	76	19.6	16	2	14.3	28.4	28.2	7.5	4	-	5.5	200°+5°	+1°/-5°

Pneumatic drives

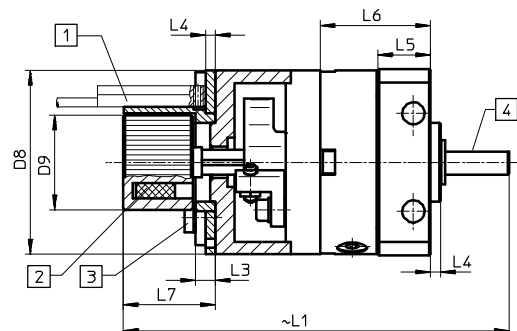
Swivel modules DSM

01

Dimensions – Size 6 ... 10

Download CAD data → www.festo.com

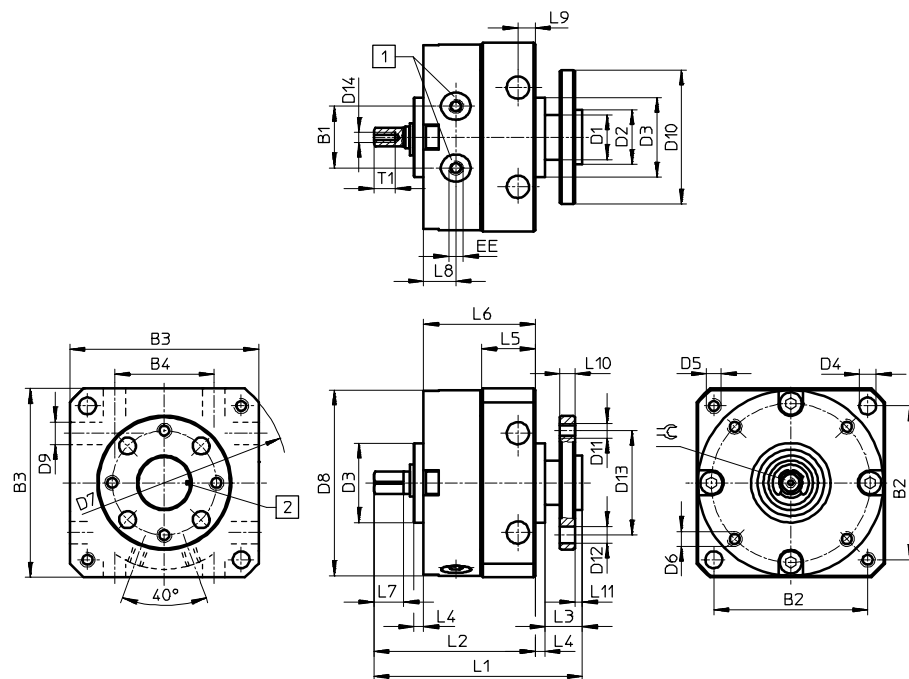
With spigot shaft, fixed stop, adjustable swivel angle and position sensing



- 1 Sensor not included in the scope of delivery. Observe fitting space for proximity sensor and cable
- 2 Magnet position
- 3 Max. tightening torque for sensor bracket screw → table below
- 4 The flat or the feather key on the shaft indicates the position of the rotary vane

Size	D8 Ø	D9	L1	L3	L4	L5	L6	L7	Tightening torque [Nm]
6	29.4	17.3	68.5	4	2	9.8	21	19.5	0.19
8	37.4	19.3	80	4	2	11.3	23	19.5	0.32
10	46.4	22.3	91.5	4	2	14.3	28.4	19.5	0.44

With flanged shaft and fixed stop



- 1 Supply ports
- 2 Mark indicating rotary vane position

Size	B1	B2	B3	B4	D1 Ø	D2 Ø	D3 Ø	D4 Ø	D5	D6	D7 Ø	D8 Ø	D9 Ø	D10 Ø	D11	D12 Ø	D13 Ø
6	10	25	30	17	8	8	14	3.2	M3	M2	40	29.4	3.5	23	M3	3.4	16
8	12.8	31	38	20	9	11	16	3.2	M3	M2.5	50	37.4	3.5	27	M3	3.4	21
10	15.9	38	47	26	10	11	19	4.3	M4	M3	62	46.4	4.5	30	M3	3.4	21

Size	D14	EE	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	T1	∠	Swivel angle tolerance
6	M2	M3	39.5	30	7.5	2	9.8	21	5	6	3	3	1.5	4	3	0/+5°
8	M2	M3	43.5	34	7.5	2	11.3	23	6	6.5	3	3	1.5	4.3	3.5	0/+5°
10	M2.5	M3	53	41.4	9.6	2	14.3	28.4	8	7.5	4	3	1.6	5	4.5	0/+5°

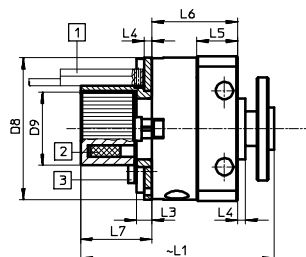
Pneumatic drives

Dimensions – Size 6 ... 10

Download CAD data → www.festo.com

01

With flanged shaft, fixed stop and position sensing

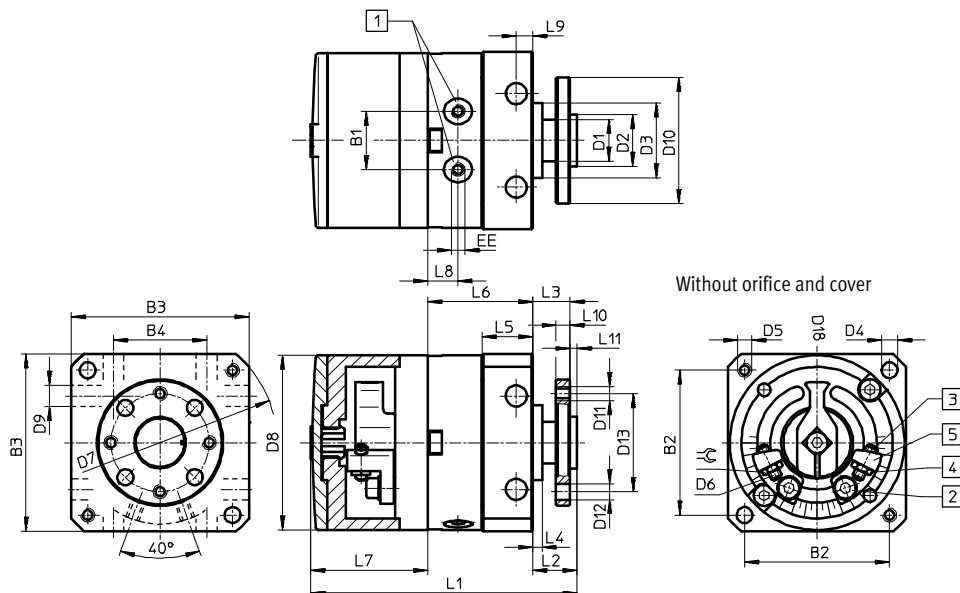


1 Proximity sensor not included in the scope of delivery. Observe fitting space for proximity sensor and cable

2 Magnet position
3 Max. tightening torque for sensor bracket screw → table below

Size	D8	D9	L1	L3	L4	L5	L6	L7	Tightening torque [Nm]
6	29.4	17.3	50	4	2	9.8	21	19.5	0.19
8	37.4	19.3	52	4	2	11.3	23	19.5	0.32
10	46.4	22.3	59.5	4	2	14.3	28.4	19.5	0.44

With flanged shaft, fixed stop and adjustable swivel angle



Note
The swivel angle is infinitely adjustable over the entire swivel range.
Size 6 can only be adjusted symmetrically around the centre position.

- 1 Supply ports
- 2 Locking screw for clamping the stop
- 3 End-position adjustment
- 4 Lock nut for end-position adjustment
- 5 Infinitely adjustable stops

Size	B1	B2	B3	B4	D1	D2	D3	D4	D5	D6	D7	D8
6	10	25	30	17	8	8	14	3.2	M3	M2	40	29.4
8	12.8	31	38	20	9	11	16	3.2	M3	M2.5	50	37.4
10	15.9	38	47	26	10	11	19	4.3	M4	M3	62	46.4

Size	D9	D10	D11	D12	D13	D18	EE	L1	L2	L3	L4
6	3.5	23	M3	3.4	16	22	M3	48	9.5	8	2
8	3.5	27	M3	3.4	21	26	M3	58	9.5	8	2
10	4.5	30	M3	3.4	21	35.8	M3	68	11.6	10	2

Size	L5	L6	L7	L8	L9	L10	L11	∓	Max. swivel angle	Precision adjustment per side
6	9.8	21	17.8	6	3	3	1.5	4	180° +5°	+1°/-5°
8	11.3	23	24.9	6.5	3	3	1.5	5	180° +5°	+1°/-5°
10	14.3	28.4	28.2	7.5	4	3	1.6	5.5	200° +5°	+1°/-5°

Pneumatic drives

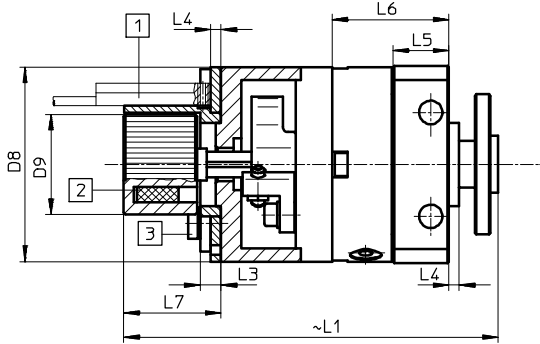
Swivel modules DSM

01

Dimensions – Size 6 ... 10

Download CAD data → www.festo.com

With flanged shaft, fixed stop, adjustable swivel angle and position sensing



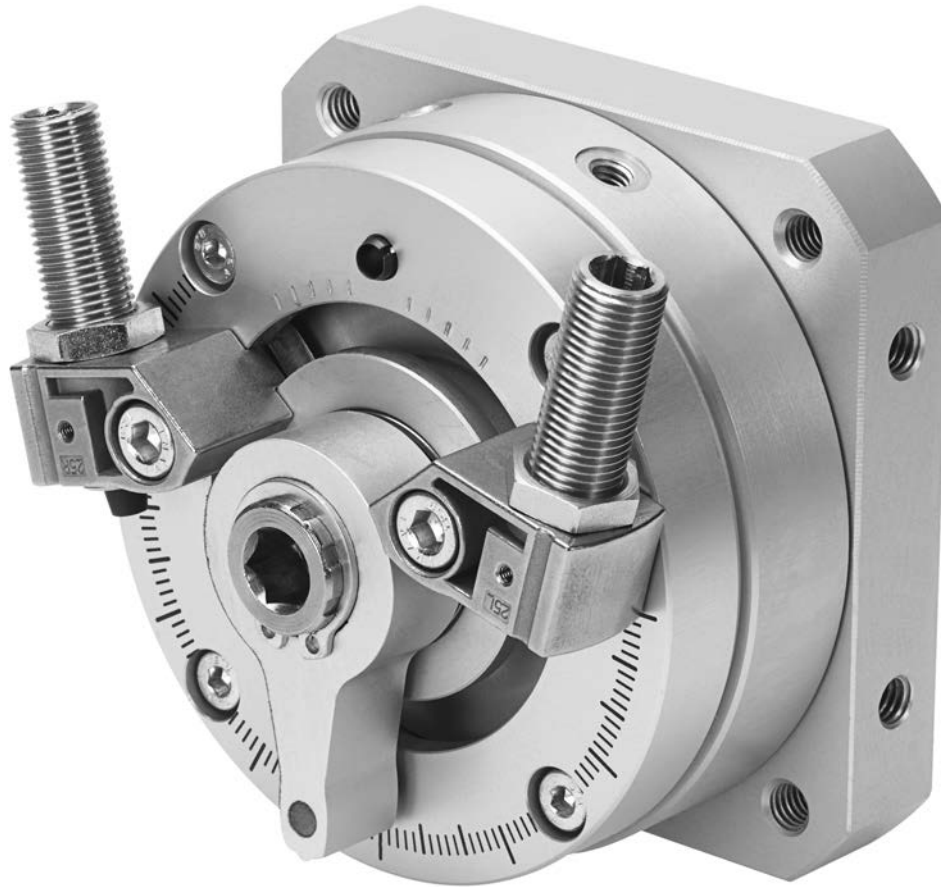
Note

The swivel angle is infinitely adjustable over the entire swivel range. Size 6 can only be adjusted symmetrically around the centre position.

- 1 Proximity sensor not included in the scope of delivery. Observe fitting space for proximity sensor and cable
- 2 Magnet position
- 3 Max. tightening torque for sensor bracket screws → table below

Size	D8 Ø	D9 Ø	L1	L3	L4	L5	L6	L7	Tightening torque [Nm]
6	29.4	17.3	65	4	2	9.8	21	19.5	0.19
8	37.4	19.3	73.5	4	2	11.3	23	19.5	0.32
10	46.4	22.3	83	4	2	14.3	28.4	19.5	0.44

Pneumatic drives



Increase productivity

- + Thanks to minimum cycle times with the right cushioning variant
- + Tandem design for option of twice the driving torque
- + Heavy-duty design for high bearing load capacity

Semi-rotary drives > Semi-rotary drives with rotary vane >
Semi-rotary drives

DSM-B

Size 12 ... 63

Semi-rotary drives > Semi-rotary drives with rotary vane >

Semi-rotary drives


DSM-B

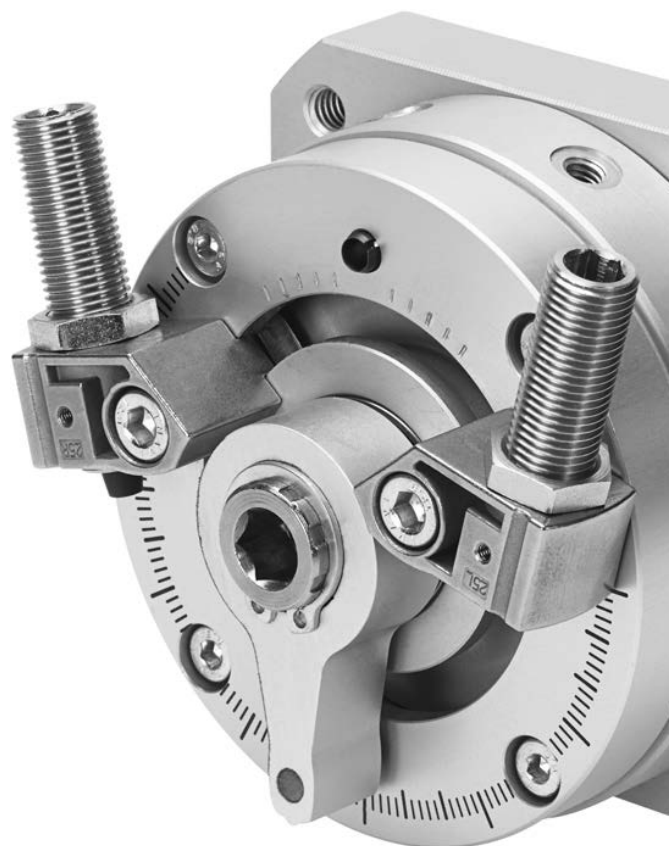
 Overview, configuration and ordering
→ www.festo.com/catalogue/dsm-b



 Additional information, support and user documentation
→ www.festo.com/sp/dsm-b



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



- + Force transmitted directly to the drive shaft via a rotary vane
- + Swivel angle freely adjustable up to 270°
- + High-performance cushioning
- + With spigot shaft, hollow flanged shaft, tandem rotary vane and spigot shaft, tandem rotary vane and flanged shaft or heavy-duty bearing (HD)

Swivel modules DSM-B

Product range overview – Size 12 ... 63-B

Type/function	Version	Size	Swivel angle [°]	Torque [Nm]	Product options						
					P	P1	CC	-	FW	A	
Double-acting	DSM- ... -B										
	Basic design	12, 16, 25, 32, 40, 63	270	1.25 ... 40	■	-	-	■	■	■	
		12, 16, 25, 32	246	1.25 ... 10	-	■	■	■	■	■	
		40, 63	240	20 ... 40	-	■	■	■	■	■	
	DSM-T ... -B										
	Tandem rotary vanes	12, 16, 25, 32, 40, 63	270	2.5 ... 80	■	-	-	■	■	■	
		12, 16, 25, 32	246	2.5 ... 20	-	-	■	■	■	■	
		40, 63	240	40 ... 80	-	-	■	■	■	■	
	DSM- ... -HD- ... -B										
	Heavy-duty bearing	12, 16, 25, 32, 40, 63	270	1.25 ... 40	-	-	-	-	-	■	
		12, 16, 25, 32	246	1.25 ... 10	-	■	■	-	-	■	
		40, 63	240	20 ... 40	-	■	■	-	-	■	

01

Pneumatic drives

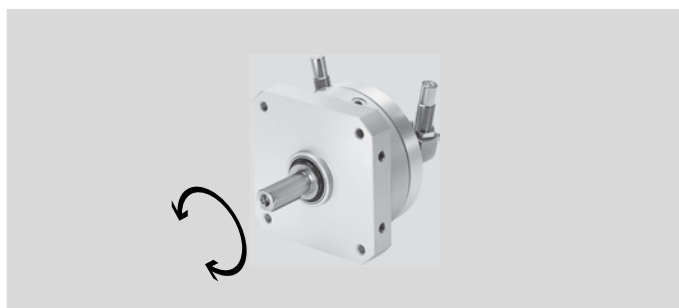
Product options – Size 12 ... 63-B

P	Elastic cushioning components at both ends, with fixed stop	P1	Adjustable elastic cushioning components at both ends, with fixed stop	CC	Self-adjusting shock absorber at both ends, with fixed stop	FW	Flanged shaft
				-	Shaft with woodruff key	HD	Heavy-duty bearing
						A	Position sensing
						B	B series

Swivel modules DSM-B

Pneumatic drives

Data sheet – Size 12 ... 63-B



Technical data		Dimensions → Page 304					
Size		12	16	25	32	40	63
Pneumatic connection		M5			G1/8		G1/4
Cushioning							
DSM-...-P		Elastic cushioning components at both ends					
DSM-...-P1		Elastic cushioning components, adjustable at both ends					
DSM-...-CC		Self-adjusting shock absorber at both ends					
Torque at 6 bar							
DSM-... [Nm]		1.25	2.5	5	10	20	40
DSM-...-T [Nm]		2.5	5	10	20	40	80
Swivel angle							
DSM-...-P [°]		270/262 ¹⁾		270			
DSM-...-P1 [°]		246				240	
DSM-...-CC [°]		246				240	
Swivel frequency (at max. swivel angle)							
DSM-...-P [Hz]		2					1.6
DSM-...-P1 [Hz]		2					1.6
DSM-...-CC [Hz]		1.5	1	0.7		0.6	
Max. perm. radial force ²⁾ [N]		45	75	120	200	350	500
Max. perm. axial force ²⁾ [N]		18	30	50	75	120	500
Max. cushioning angle							
DSM-...-P1 [°]		10	9	7.5	6.5	6.5	6
DSM-...-CC [°]		15	12	10	12	16	17.5
Max. perm. mass moment of inertia [kgm ²]		→ Page 297					

1) Restricted swivel angle in combination with sensor bracket SL-DSM-S-...
 2) On the drive shaft.

Operating conditions		Dimensions → Page 304					
Size		12	16	25	32	40	63
Operating pressure							
DSM-... [bar]		2 ... 10	1.8 ... 10	1.5 ... 10			
DSM-...-T [bar]		2.5 ... 10		2 ... 10			
Ambient temperature ³⁾ [°C]		-10 ... +60					

3) Note operating range of proximity sensors.

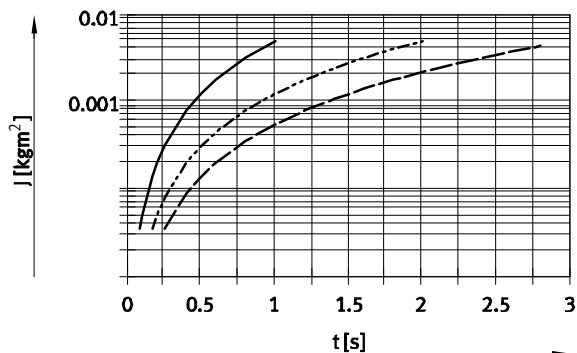
Materials	
Drive shaft	Nickel-plated steel
Housing	Anodised aluminium
Flange	Anodised aluminium
Stop lever	Anodised aluminium
Rotary vane	Glass fibre-reinforced plastic
Fixed stops	Galvanised steel
Seals	TPE-U (PUR)

Data sheet – Size 12 ... 63-B

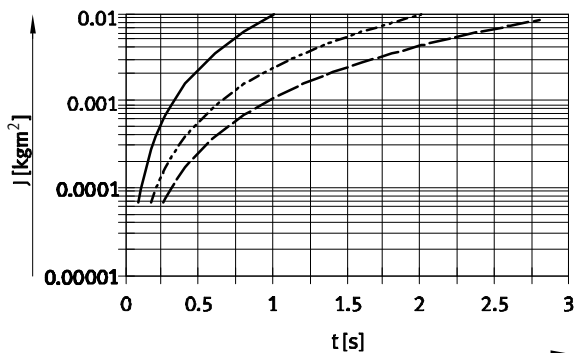
Mass moment of inertia J on the drive shaft as a function of swivel time t

With elastic cushioning components (P)

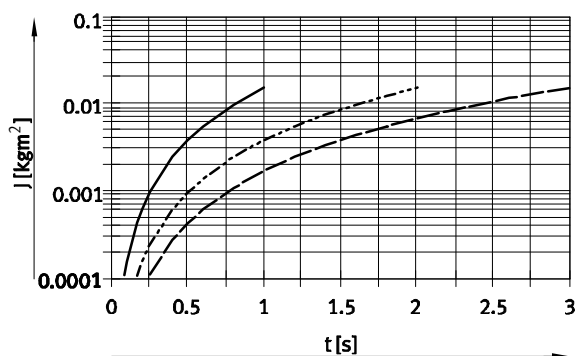
DSM-12-270-P-...



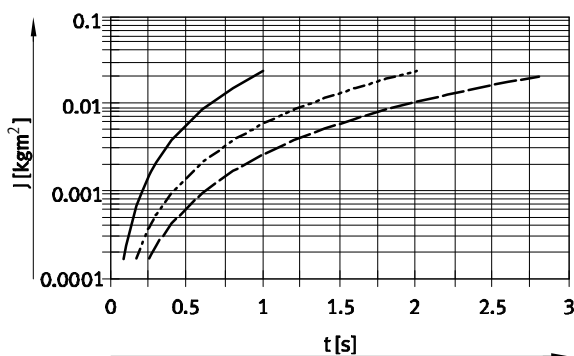
DSM-16-270-P-...



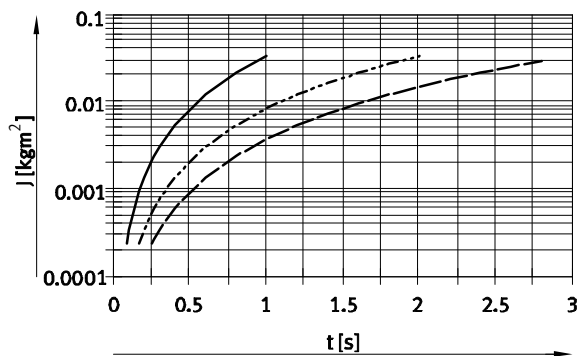
DSM-25-270-P-...



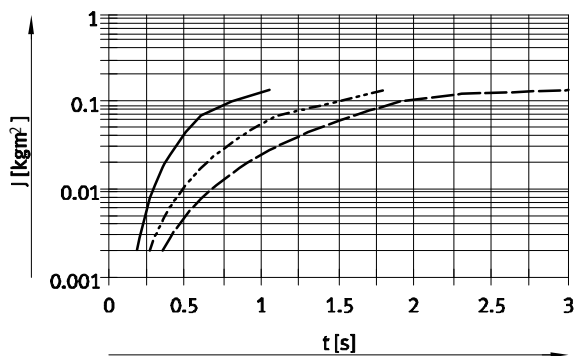
DSM-32-270-P-...



DSM-40-270-P-...



DSM-63-270-P-...



- 90°
- - - 180°
- · - · 270°

Note

Configuration software for calculating the mass moment of inertia
 → www.festo.com

Swivel modules DSM-B

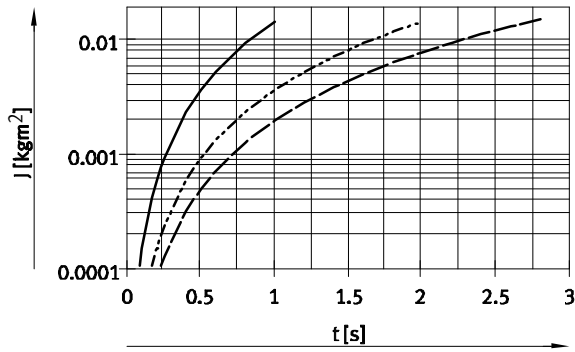
01

Data sheet – Size 12 ... 63-B

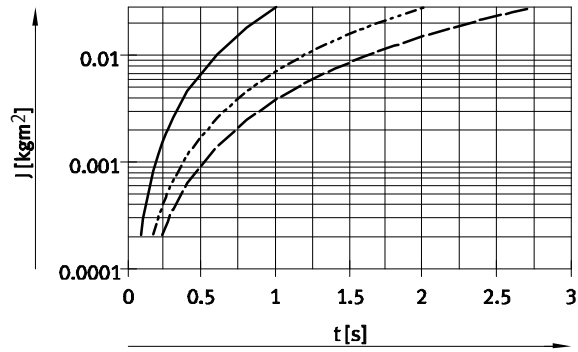
Mass moment of inertia J on the drive shaft as a function of swivel time t

With adjustable, elastic cushioning components (P1)

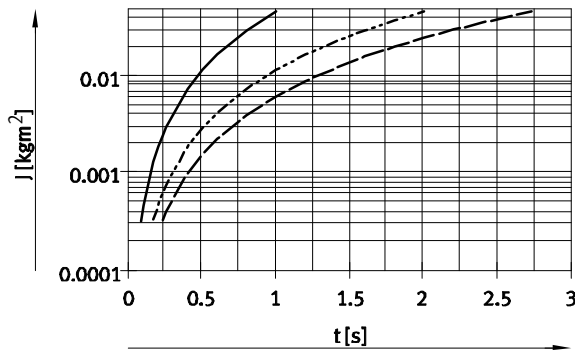
DSM-12-270-P1-...



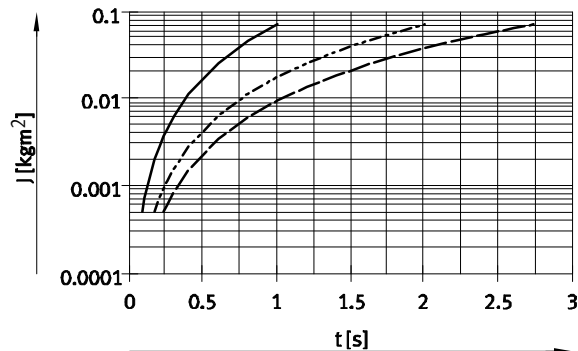
DSM-16-270-P1-...



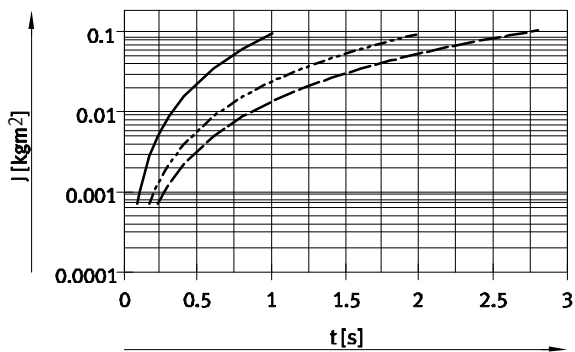
DSM-25-270-P1-...



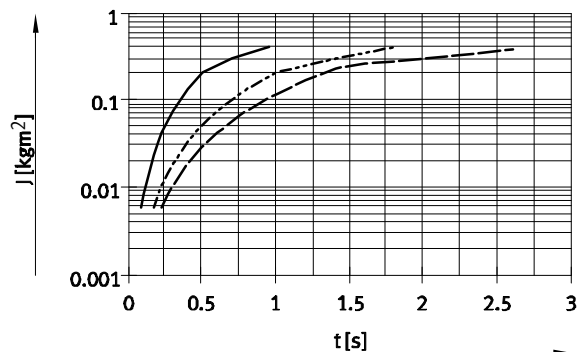
DSM-32-270-P1-...



DSM-40-270-P1-...



DSM-63-270-P1-...



- 90°
- - - 180°
- · - 240°

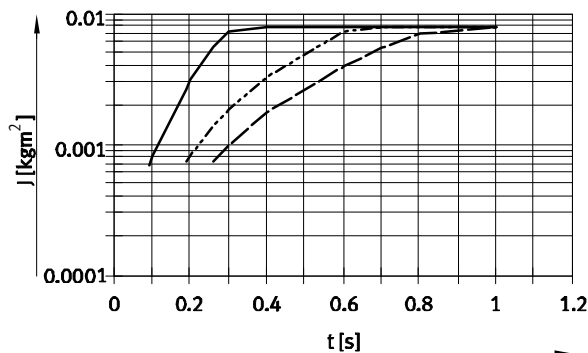
Pneumatic drives

Data sheet – Size 12 ... 63-B

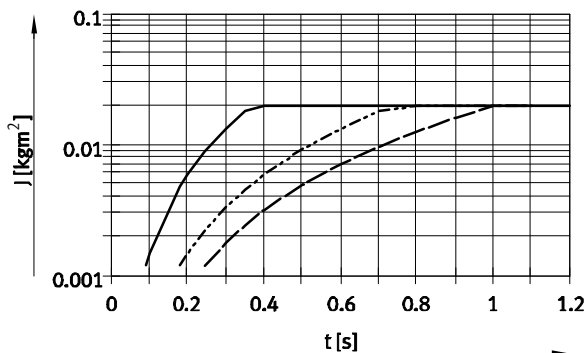
Mass moment of inertia J on the drive shaft as a function of swivel time t

With shock absorbers (CC)

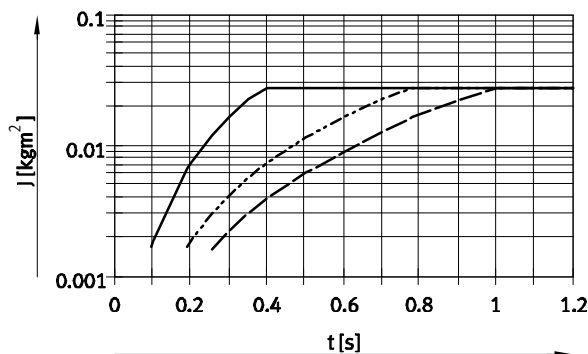
DSM-12-270-CC-...



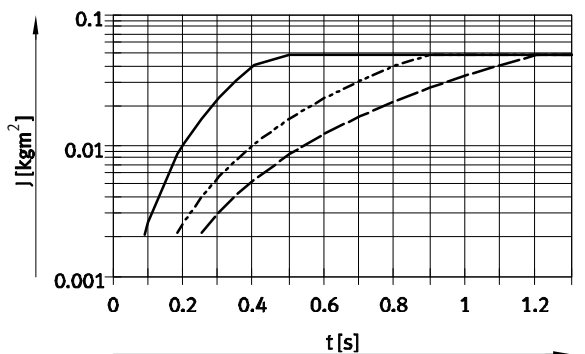
DSM-16-270-CC-...



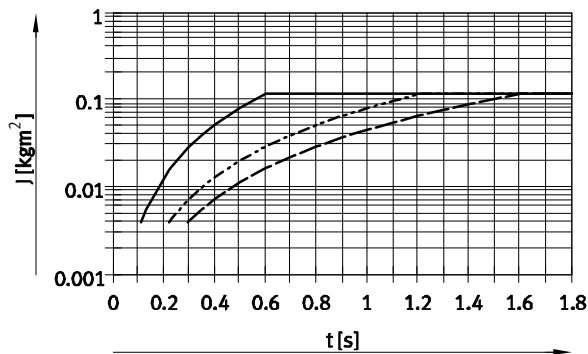
DSM-25-270-CC-...



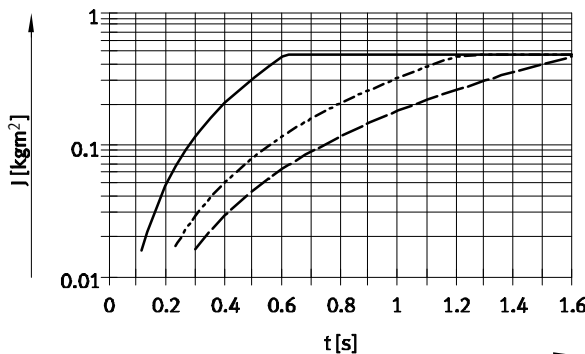
DSM-32-270-CC-...



DSM-40-270-CC-...



DSM-63-270-CC-...



- 90°
- - - 180°
- · - 240°

The graphs for the DSM-...-CC show the swivel time up to the point where the stop lever meets the shock absorber. The cushioning time of the shock absorber must be added in order to obtain the total swivel time.

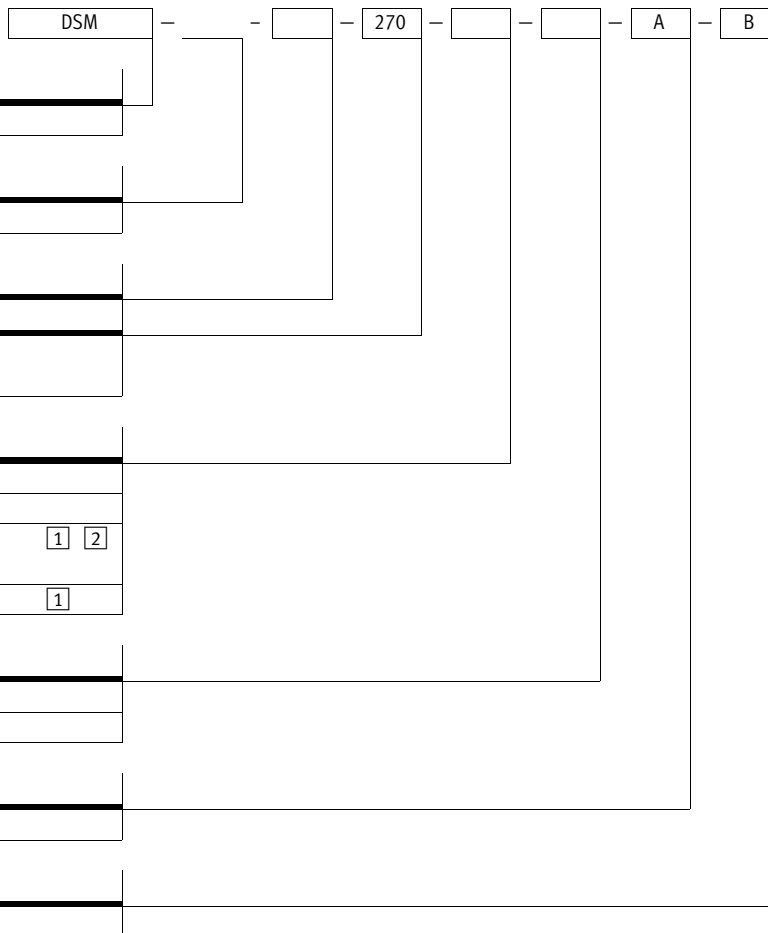
Cushioning time of the shock absorber				
Size	12/16/25	32	40	63
Cushioning time [s]	0.1	0.25	0.3	0.4

Swivel modules DSM-B

01

Order code – Size 12 ... 63-B

Pneumatic drives



- 1 Max. swivel angle 246° with size 12 ... 32.
Max. swivel angle 240° with size 40, 63.
- 2 Not with tandem rotary vanes T.

Order example:

DSM-12-270-CC-A-B

Swivel module DSM - without tandem rotary vanes - size 12 - swivel angle 270° - shock absorber at both ends - spigot shaft - position sensing via proximity sensor - B series

Ordering – Product options

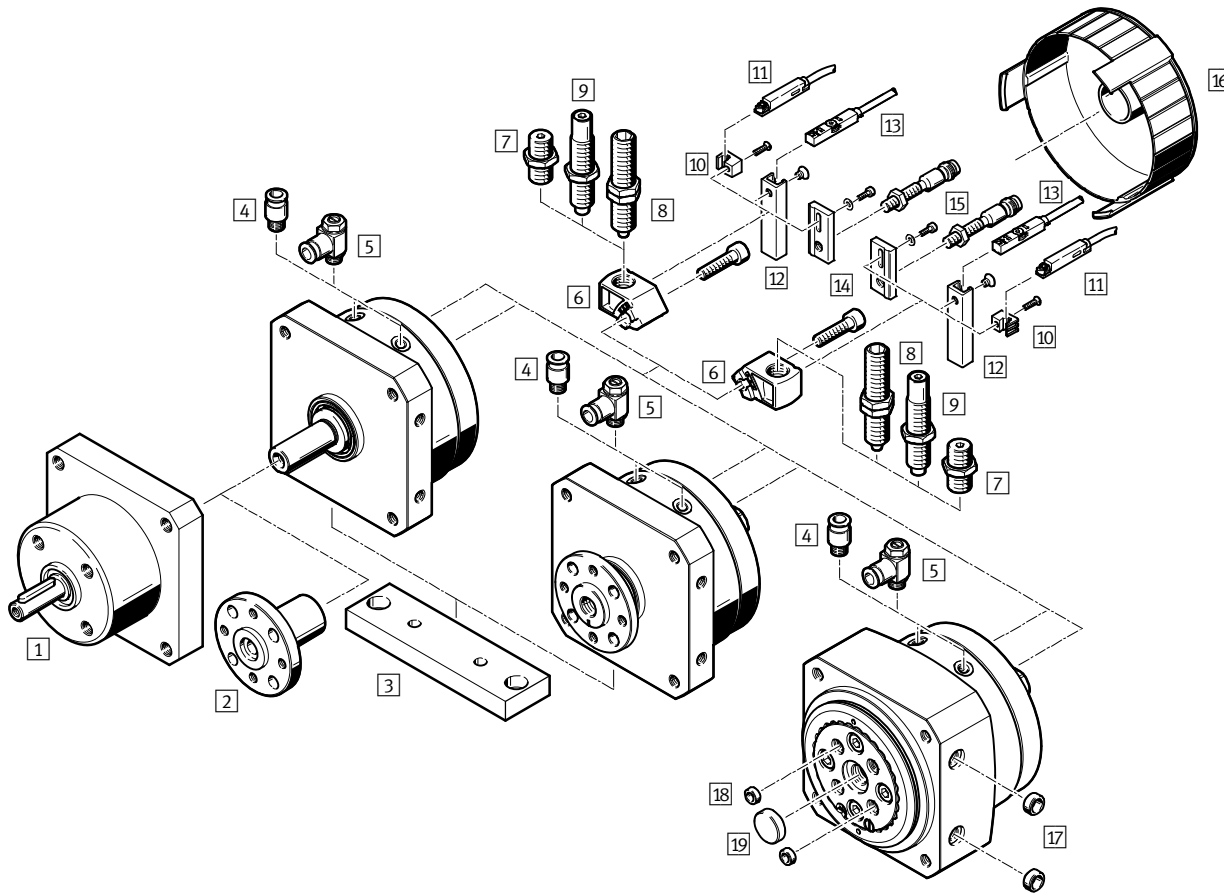
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Accessories – Size 12 ... 63-B



		→ Page/ online
1	Freewheel unit FLSM	302
2	Push-on flange FWSR	302
3	Mounting plate HSM	302
4	Push-in fitting QS	1443
5	One-way flow control valve GRLA	302
6	Shock absorber retainer DSM-...-B	302
7	Cushioning kit DSM-...-P-B (P cushioning)	302
8	Shock absorber DYEF (P1 cushioning)	302
9	Shock absorber DYSC (CC cushioning)	302
10	Sensor bracket SL-DSM-B	302
11	Proximity sensor SME-/SMT-10 for size 12 ... 40	303

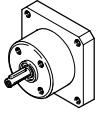
		→ Page/ online
12	Sensor bracket SL-DSM-63-B	302
13	Proximity sensor SME-/SMT-8 for size 63	303
14	Sensor bracket SL-DSM-S	302
15	Inductive proximity sensor SIEN	303
16	Cover cap AKM	303
17	Centring sleeve ZBH (for centring drive)	-
18	Centring sleeve ZBH (for centring attachments)	-
19	Centring sleeve ZBH/disc SLZZ	-
-	Connecting cable NEBU	303
-	Drive/gripper connections	dsm


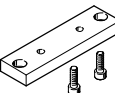
Swivel modules DSM-B

01


Accessories – Ordering data – Size 12 ... 63-B

Pneumatic drives




	For size	Direction of rotation ¹⁾	Part no.	Type
1 Freewheel unit Dimensions online: → dsm				
	12	Anti-clockwise rotation	164229	FLSM-12-L
		Clockwise rotation	164234	FLSM-12-R
	16	Anti-clockwise rotation	164230	FLSM-16-L
		Clockwise rotation	164235	FLSM-16-R
	25	Anti-clockwise rotation	164231	FLSM-25-L
		Clockwise rotation	164236	FLSM-25-R
	32	Anti-clockwise rotation	164232	FLSM-32-L
		Clockwise rotation	164237	FLSM-32-R
	40	Anti-clockwise rotation	164233	FLSM-40-L
		Clockwise rotation	164238	FLSM-40-R





	For size	Part no.	Type
2 Push-on flange Dimensions online: → dsm			
	12	14659	FWSR-12
	16	13239	FWSR-16
	25	13240	FWSR-25
	32	13241	FWSR-32
	40	14656	FWSR-40
3 Mounting plate Dimensions online: → dsm			
	12	165571	HSM-12
	16	165572	HSM-16
	25	165573	HSM-25
	32	165574	HSM-32
	40	165575	HSM-40

1) View of the drive shaft side.

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
5 One-way flow control valve with slotted head screw, metal²⁾ for exhaust air flow control Data sheets → Page 1033					
	12, 16	M5	3	★ 193137	GRLA-M5-QS-3-D
	25		4	★ 193138	GRLA-M5-QS-4-D
	32, 40	G1/8	6	★ 193144	GRLA-1/8-QS-6-D
	63	G1/4	8	★ 193147	GRLA-1/4-QS-8-D
	63	G1/4	10	★ 193148	GRLA-1/4-QS-10-D

2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For size	Part no.	Type
6 Shock absorber retainer³⁾			
	12	547900	DSM-12-B
	16	547901	DSM-16-B
	25	547902	DSM-25-B
	32	547903	DSM-32-B
	40	547904	DSM-40-B
	63	552085	DSM-63-B
7 Cushioning kit³⁾, P cushioning			
	12	550657	DSM-12-P-B
	16, 25	550658	DSM-16/25-P-B
	32	550659	DSM-32-P-B
	40	550060	DSM-40-P-B
	63	552086	DSM-63-P-B
8 Shock absorber⁴⁾, P1 cushioning Data sheets online: → dye			
	12	548373	DYEF-M8-Y1F
	16, 25	548374	DYEF-M10-Y1F
	32	548375	DYEF-M12-Y1F
	40	548377	DYEF-M16-Y1F
	63	1113706	DYEF-M22-Y1F

	For size	Part no.	Type
9 Shock absorber⁴⁾, CC cushioning Data sheets online: → dysc			
	12	548011	DYSC-5-5-Y1F
	16/25	548012	DYSC-7-5-Y1F
	32	548013	DYSC-8-8-Y1F
	40	548014	DYSC-12-12-Y1F
	63	553593	DYSC-16-18-Y1F
10/12/14 Sensor bracket			
	12, 16, 25, 32,	550661	SL-DSM-B ^{3),5)}
	40		
	63	552088	SL-DSM-63-B ^{3),6)}
	12, 16, 25, 32,	1130882	SL-DSM-S-M5-B ^{3),7)}
	40	1132360	SL-DSM-S-M8-B ^{3),8)}

3) Packaging unit 2 pieces.

4) Packaging unit 1 piece.

5) For proximity sensor SME-/SMT-10












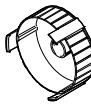
6) For proximity sensor SME-/SMT-8.

7) For inductive proximity sensor SIEN-M5.

8) For inductive proximity sensor SIEN-M8.

Accessories – Ordering data – Size 12 ... 63-B

01

	For size	Switching output, connection	Cable length [m]	Part no.	Type
11 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	12 ... 40	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
Magnetic reed – N/O contact Data sheets → Page 1218					
	12 ... 40	Contacting, cable	2.5	★ 551365	SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3	★ 551367	SME-10M-DS-24V-E-0,3-L-M8D
LED sensor Data sheets → Page 1220					
	12 ... 40	Contacting, cable	2.5	173210	SME-10-KL-LED-24
		Contacting, plug	0.3	173212	SME-10-SL-LED-24
13 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	63	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	63	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	63	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
LED sensor Data sheets → Page 1203					
	63	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
15 Inductive proximity sensor – N/O contact, M5 Data sheets → Page 1230					
	12 ... 40	PNP, cable	2.5	★ 150370	SIEN-M5B-PS-K-L
		PNP, plug	–	★ 150371	SIEN-M5B-PS-S-L
N/O contact, M8 Data sheets → Page 1230					
	12 ... 40	PNP, cable	2.5	★ 150386	SIEN-M8B-PS-K-L
		PNP, plug	–	★ 150387	SIEN-M8B-PS-S-L
11/13/15 Connecting cable, straight socket Data sheets → Page 1543					
	12 ... 63	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	12 ... 63	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
16 Cover cap Dimensions online: → dsm					
	12	–	–	549194	AKM-12
	16	–	–	549195	AKM-16
	25	–	–	549196	AKM-25
	32	–	–	549197	AKM-32
	40	–	–	549198	AKM-40

Swivel modules DSM-B

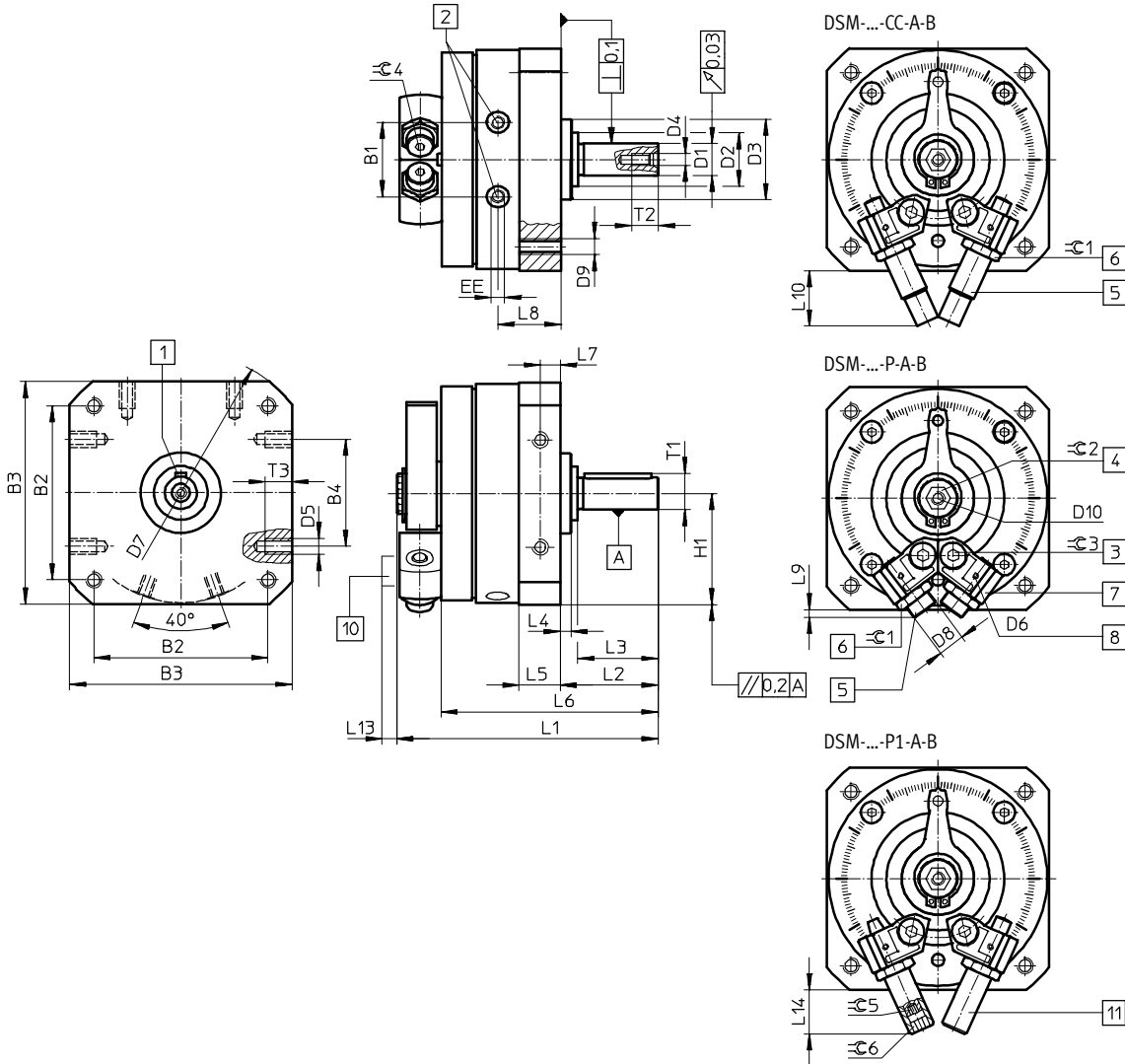
01

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

DSM- ... -B – With spigot shaft

Pneumatic drives



- 1 Woodruff key position at 0°
- 2 Supply ports
- 3 Locking screw for clamping the stop

- 4 Manual override (internal hex). The position of the internal hex is not defined

- 5 End-position adjustment
- 6 Lock nut for end-position adjustment
- 7 Infinitely adjustable stops

- 8 Mounting thread for sensor bracket
- 10 Sensor bracket
- 11 End-position adjustment

Swivel modules DSM-B

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

01

Size	B1 ±0.5	B2	B3	B4	D1 ∅ g7	D2 ∅	D3 ∅ f8	D4
12	19.8	48±0.3	59±0.3	30±0.2	8	15±0.2	24	M3
16	23.5	57±0.3	70±0.3	40±0.2	10	18 _{-0.3}	28	M3
25	28	65±0.3	83±0.3	40±0.2	12	20 _{-0.3}	30	M4
32	35.5	85±0.3	105±0.3	60±0.3	16	27 _{-0.4}	42	M5
40	43.8	105±0.3	130±0.5	80±0.3	20	36 _{-0.4}	52	M6
63	50.3	125±0.5	152 ^{+0.2}	80±0.3	25	40±0.3	70	M10

Size	D5	D6	D7 ∅	D8	D9	D10	EE
12	M4	M2	78±0.3	M8x1	M4	M4	M5
16	M5	M2	91±0.3	M10x1	M5	M5	M5
25	M6	M2	106±0.3	M10x1	M6	M5	M5
32	M8	M2	135±0.3	M12x1	M8	M5	G1/8
40	M10	M2	168±0.5	M16x1	M10	M6	G1/8
63	M10	M3	200±0.5	M22x1.5	M12	M6	G1/4

Size	H1 ±0.2	L1	L2 +0.6 -0.7	L3	L4 ±0.4	L5	L6	L7
12	29.5	68.3±0.3	24.5	20±0.2	3	10.3±0.2/-0.3	55.5±0.8	5±0.1
16	35	82.7±1	28	23±0.2	2.6	13±0.2/-0.4	67.1±0.9	6.5±0.2
25	41.5	97.5±0.5	36.5	30±0.2	4	15.2±0.2/-0.4	81±1	7.5±0.2
32	52.5	127.1±0.5	51	40±0.2	8	19.2±0.2/-0.4	107±1.1	9.5±0.2
40	65	155.5±0.6	62	50±0.3	8	23.7±0.2/-0.4	131±1.2	12±0.2
63	76	197±0.4/-0.55	75.5	60±0.3	10.5	28.5±0.3/-0.5	159.5±1.2	14±0.2

Size	L8	L9	L10	L13	L14 max.	T1 max.	T2 +2	T3 +0.2
12	16.5	3	22.7	6.5	21.2	8.8	9	8
16	20.2	7.2	26.1	6.5	22	11.2	9	8
25	23.5	2.9	20.7	6.5	17	13.5	10	10
32	30.5	3.8	29.1	6.5	23	18	12.5	12
40	36	3.4	43.5	6.5	36.5	22.5	16	15
63	45	10	72.5	4.5	–	28	22	16

Size	⌀ 1	⌀ 2	⌀ 3	⌀ 4	⌀ 5	⌀ 6	Woodruff key to DIN 6885 ¹⁾
12	10	6	2.5	2.5	2.5	2.5	A2x2x16
16	13	8	3	3	3	5	A3x3x18
25	13	8	4	3	3	6	A4x4x25
32	15	10	5	4	4	8	A5x5x36
40	19	10	6	5	5	10	A6x6x45
63	27	10	8	5	–	–	A8x7x50

1) Included in the scope of delivery.

-||- Note: This product conforms to ISO 1179-1 and ISO 228-1.

Swivel modules DSM-B

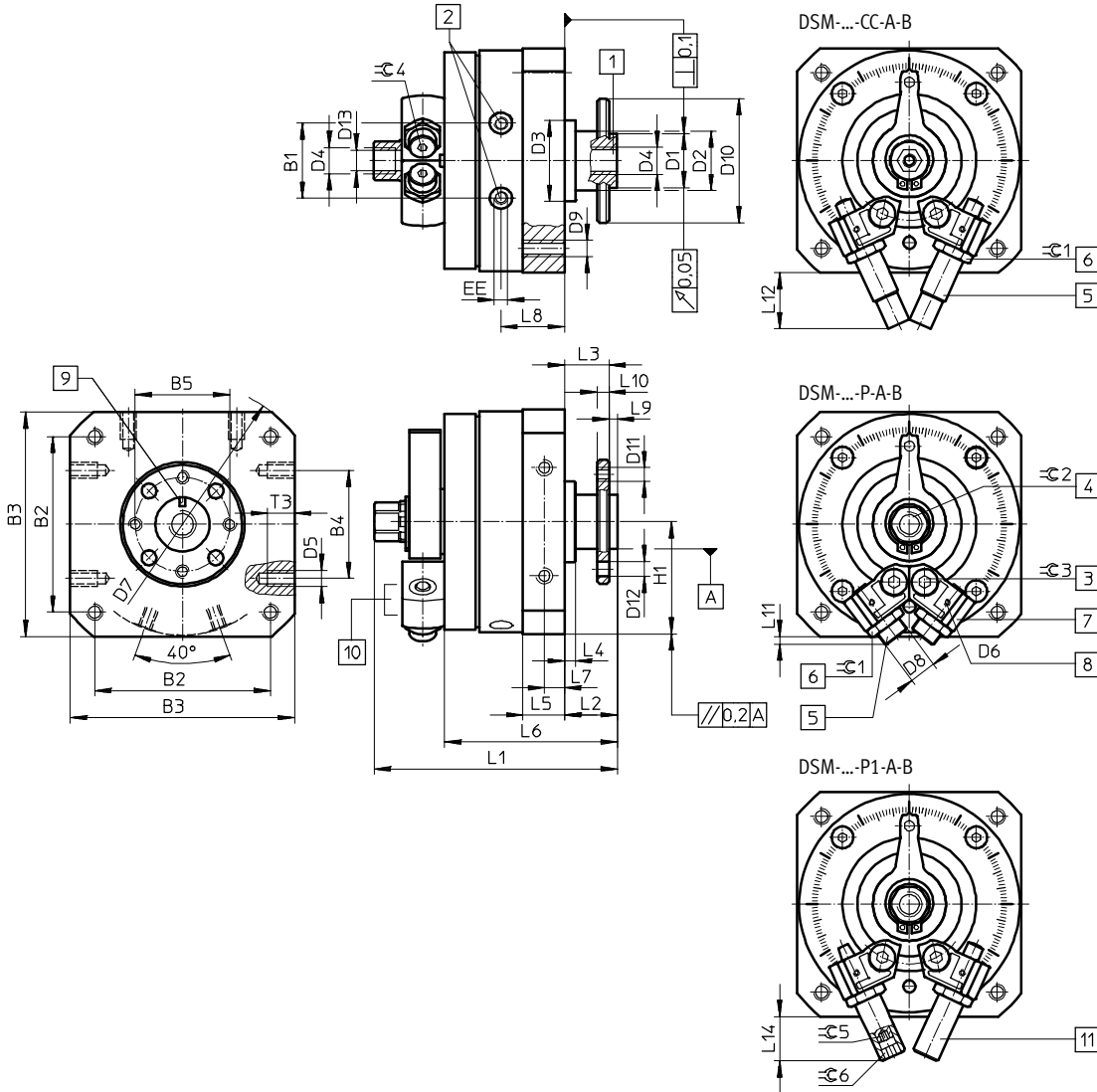
01

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

DSM- ... -B – With flanged shaft

Pneumatic drives



- 1 Flanged shaft with through-hole
- 2 Supply ports
- 3 Locking screw for clamping the stop
- 4 Manual override (internal hex). The position of the internal hex is not defined
- 5 End-position adjustment
- 6 Lock nut for end-position adjustment
- 7 Infinitely adjustable stops
- 8 Mounting thread for sensor bracket
- 9 Position of marking corresponds to position of stop
- 10 Sensor bracket
- 11 End-position adjustment

Swivel modules DSM-B

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

01

Size	B1 ±0.5	B2	B3	B4	B5	D1 ∅ f8	D2 ∅	D3 ∅ f8	D4	D5
12	19.8	48±0.3	59±0.3	30±0.2	25	14	15±0.2	24	M5	M4
16	23.5	57±0.3	70±0.3	40±0.2	28	16	18 _{-0.3}	28	M5	M5
25	28	65±0.3	83±0.3	40±0.2	35	20	20 _{-0.3}	30	G1/8	M6
32	35.5	85±0.3	105±0.3	60±0.3	45	28	27 _{-0.4}	42	G1/8	M8
40	43.8	105±0.3	130±0.5	80±0.3	54	36	36 _{-0.4}	52	G1/4	M10
63	50.3	125±0.5	152±0.2	80±0.3	64	38	40±0.3	70	G1/4	M10

Size	D6	D7 ∅	D8	D9	D10 ∅	D11	D12 H13	D13	EE	H1 ±0.2
12	M2	78±0.3	M8x1	M4	33	M3	3.4	4.2	M5	29.5
16	M2	91±0.3	M10x1	M5	38	M4	4.5	4.2	M5	35
25	M2	106±0.3	M10x1	M6	46	M5	5.5	8.6	M5	41.5
32	M2	135±0.3	M12x1	M8	60	M6	6.5	8.6	G1/8	52.5
40	M2	168±0.5	M16x1	M10	70	M8	9	11.5	G1/8	65
63	M3	200±0.5	M22x1.5	M12	88	M8	12	11.5	G1/4	76

Size	L1	L2 +0.5 -0.85	L3 +0.5 -0.62	L4 ±0.4	L5	L6 ±1	L7	L8	L9 -0.2	L10
12	67.3+0.4/-0.65	13	11	3	10.3+0.2/-0.3	44	5±0.1	16.5	2	3±0.1
16	79+0.4/-0.65	15	13	2.6	13+0.2/-0.4	54.1	6.5±0.2	20.2	2	4±0.1
25	90+0.4/-0.65	19.5	16.5	4	15.2+0.2/-0.4	64	7.5±0.2	23.5	3	4.5±0.1
32	115.8+0.4/-0.65	27	23	8	19.2+0.2/-0.4	83	9.5±0.2	30.5	4	6±0.1
40	143.8+0.4/-0.7	33	28	8	23.7+0.2/-0.4	102	12±0.2	36	5	7.5±0.1
63	177.4+0.2/-0.55	37.5	31.5	10.5	28.5+0.3/-0.5	121.5	14±0.2	45	6	9±0.2

Size	L11	L12	L14 max.	T3 +0.2	≈C 1	≈C 2	≈C 3	≈C 4	≈C 5	≈C 6
12	3	22.7	21.2	8	10	8	2.5	2.5	2.5	2.5
16	7.2	26.1	22	8	13	11	3	3	3	5
25	2.9	20.7	17	10	13	13	4	3	3	6
32	3.8	29.1	23	12	15	13	5	4	4	8
40	3.4	43.5	36.5	15	19	19	6	5	5	10
63	10	72.5	–	16	27	22	8	5	–	–

-||- Note: This product conforms to ISO 1179-1 and ISO 228-1.

Swivel modules DSM-B

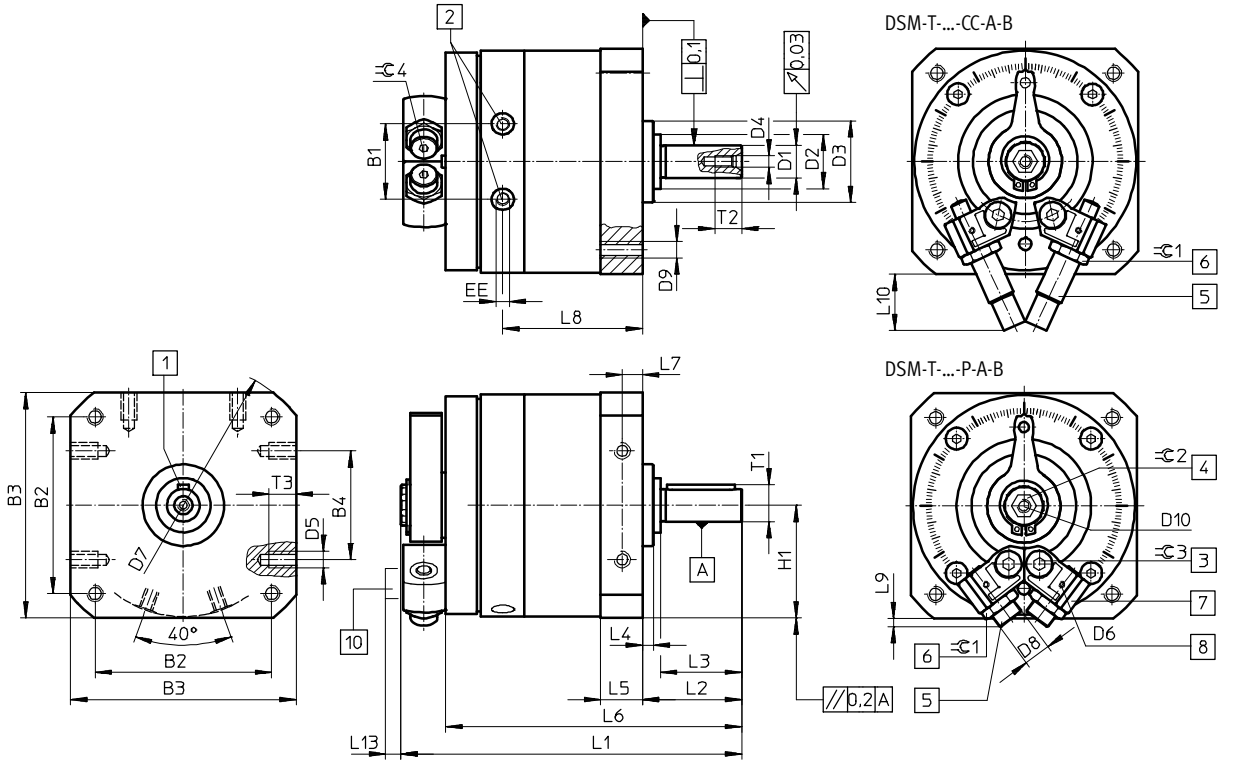
01

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

DSM-T- ... -B – With tandem rotary vanes and spigot shaft

Pneumatic drives



- | | | | |
|---------------------------------------|--|--|--------------------------------------|
| 1 Woodruff key position at 0° | 4 Manual override (internal hex).
The position of the internal hex is not defined | 5 End-position adjustment | 8 Mounting thread for sensor bracket |
| 2 Supply ports | | 6 Lock nut for end-position adjustment | |
| 3 Locking screw for clamping the stop | | 7 Infinitely adjustable stops | 10 Sensor bracket |

Swivel modules DSM-B

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

01

Size	B1 ±0.5	B2	B3	B4	D1 ∅ g7	D2 ∅	D3 ∅ f8
12	19.8	48±0.3	59±0.3	30±0.2	8	15±0.2	24
16	23.5	57±0.3	70±0.3	40±0.2	10	18 _{-0.3}	28
25	28	65±0.3	83±0.3	40±0.2	12	20 _{-0.3}	30
32	35.5	85±0.3	105±0.3	60±0.3	16	27 _{-0.4}	42
40	43.8	105±0.3	130±0.5	80±0.3	20	36 _{-0.4}	52
63	50.3	125±0.5	152 ^{+0.2}	80±0.3	25	40±0.3	70

Size	D4	D5	D6	D7 ∅	D8	D9	D10
12	M3	M4	M2	78±0.3	M8x1	M4	M4
16	M3	M5	M2	91±0.3	M10x1	M5	M5
25	M4	M6	M2	106±0.3	M10x1	M6	M5
32	M5	M8	M2	135±0.3	M12x1	M8	M5
40	M6	M10	M2	168±0.5	M16x1	M10	M6
63	M10	M10	M3	200±0.5	M22x1.5	M12	M6

Size	EE	H1 ±0.2	L1	L2 +0.6 -0.7	L3	L4 ±0.4	L5
12	M5	29.5	87.3±0.3	24.5	20±0.2	3	10.3±0.2/-0.3
16	M5	35	106.6±1	28	23±0.2	2.6	13±0.2/-0.4
25	M5	41.5	125.5±0.5	36.5	30±0.2	4	15.2±0.2/-0.4
32	G1/8	52.5	164±0.5	51	40±0.2	8	19.2±0.2/-0.4
40	G1/8	65	200.5±0.6	62	50±0.3	8	23.7±0.2/-0.4
63	G1/4	76	254.4±0.4/-0.55	75.5	60±0.3	10.5	28.5±0.3/-0.5

Size	L6	L7	L8	L9	L10	L13	T1 max.
12	74.5±0.8	5±0.1	35.5	3	22.7	6.5	8.8
16	91±0.9	6.5±0.2	44.1	7.2	26.1	6.5	11.2
25	109±1	7.5±0.2	51.5	2.9	20.7	6.5	13.5
32	144±1.1	9.5±0.2	67.4	3.8	29.1	6.5	18
40	176±1.2	12±0.2	81	3.4	43.5	6.5	22.5
63	216.5±1.2	14±0.2	99	10	72.5	4.5	28

Size	T2 +2	T3 +0.2	⌀ 1	⌀ 2	⌀ 3	⌀ 4	Woodruff key to DIN 6885 ¹⁾
12	9	8	10	6	2.5	2.5	A2x2x16
16	9	8	13	8	3	3	A3x3x18
25	10	10	13	8	4	3	A4x4x25
32	12.5	12	15	10	5	4	A5x5x36
40	16	15	19	10	6	5	A6x6x45
63	22	16	27	10	8	5	A8x7x50

1) Included in the scope of delivery.

- ¶ - Note: This product conforms to ISO 1179-1 and ISO 228-1.

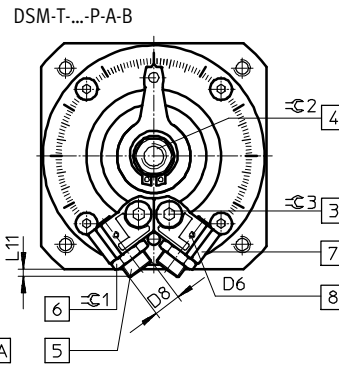
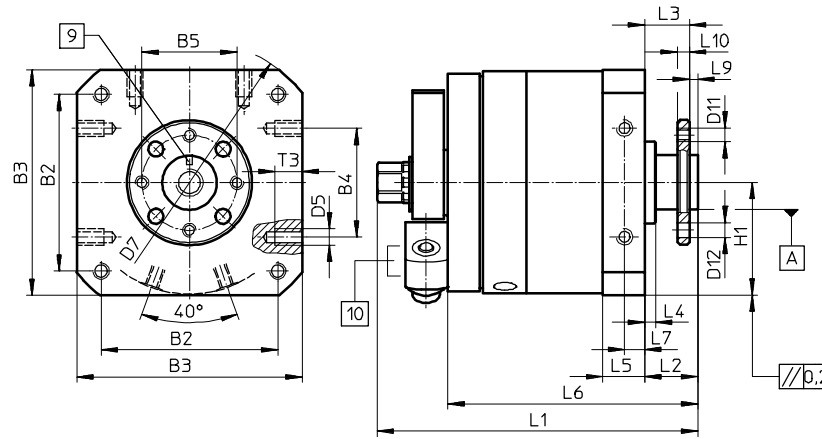
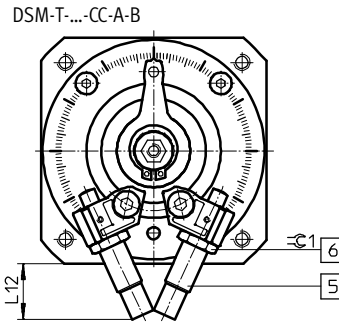
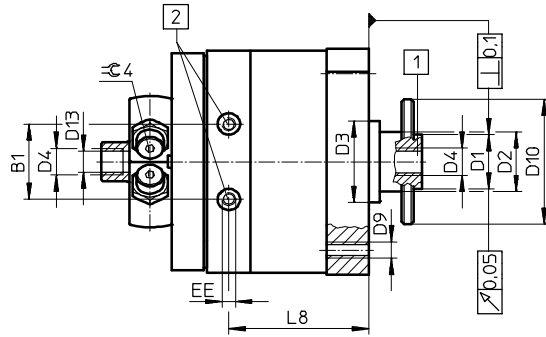
Swivel modules DSM-B

01

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

DSM-T- ... -B – With tandem rotary vanes and flanged shaft



Pneumatic drives

- 1 Flanged shaft with through-hole
- 2 Supply ports
- 3 Locking screw for clamping the stop

- 4 Manual override (internal hex). The position of the internal hex is not defined

- 5 End-position adjustment
- 6 Lock nut for end-position adjustment
- 7 Infinitely adjustable stops

- 8 Mounting thread for sensor bracket
- 9 Position of marking corresponds to position of stop
- 10 Sensor bracket

Dimensions – Size 12 ... 63-B

Download CAD data → www.festo.com

01

Size	B1 ±0.5	B2	B3	B4	B5	D1 ∅ f8	D2 ∅	D3 ∅ f8	D4
12	19.8	48±0.3	59±0.3	30±0.2	25	14	15±0.2	24	M5
16	23.5	57±0.3	70±0.3	40±0.2	28	16	18 ^{-0.3}	28	M5
25	28	65±0.3	83±0.3	40±0.2	35	20	20 ^{-0.3}	30	G ¹ / ₈
32	35.5	85±0.3	105±0.3	60±0.3	45	28	27 ^{-0.4}	42	G ¹ / ₈
40	43.8	105±0.3	130±0.5	80±0.3	54	36	36 ^{-0.4}	52	G ¹ / ₄
63	50.3	125±0.5	152±0.2	80±0.3	64	38	40±0.3	70	G ¹ / ₄

Size	D5	D6	D7 ∅	D8	D9	D10 ∅	D11	D12 H13	D13
12	M4	M2	78±0.3	M8x1	M4	33	M3	3.4	4.2
16	M5	M2	91±0.3	M10x1	M5	38	M4	4.5	4.2
25	M6	M2	106±0.3	M10x1	M6	46	M5	5.5	8.6
32	M8	M2	135±0.3	M12x1	M8	60	M6	6.5	8.6
40	M10	M2	168±0.5	M16x1	M10	70	M8	9	11.5
63	M10	M3	200±0.5	M22x1.5	M12	88	M8	12	11.5

Size	EE	H1 ±0.2	L1	L2 +0.5 -0.85	L3 +0.5 -0.62	L4 ±0.4	L5	L6 ±1	L7
12	M5	29.5	86.3+0.4/-0.65	13	11	3	10.3+0.2/-0.3	63	5±0.1
16	M5	35	103+0.4/-0.65	15	13	2.6	13+0.2/-0.4	78	6.5±0.2
25	M5	41.5	118+0.4/-0.65	19.5	16.5	4	15.2+0.2/-0.4	92	7.5±0.2
32	G ¹ / ₈	52.5	152.8+0.4/-0.65	27	23	8	19.2+0.2/-0.4	120	9.5±0.2
40	G ¹ / ₈	65	188.8+0.4/-0.7	33	28	8	23.7+0.2/-0.4	147	12±0.2
63	G ¹ / ₄	76	234.4+0.2/-0.55	37.5	31.5	10.5	28.5+0.3/-0.5	178.5	14±0.2

Size	L8	L9 -0.2	L10	L11	L12	T3 +0.2	≈C 1	≈C 2	≈C 3	≈C 4
12	35.5	2	3±0.1	3	22.7	8	10	8	2.5	2.5
16	44.1	2	4±0.1	7.2	26.1	8	13	11	3	3
25	51.5	3	4.5±0.1	2.9	20.7	10	13	13	4	3
32	67.4	4	6±0.1	3.8	29.1	12	15	13	5	4
40	81	5	7.5±0.1	3.4	43.5	15	19	19	6	5
63	99	6	9±0.2	10	72.5	16	27	22	8	5

-||- Note: This product conforms to ISO 1179-1 and ISO 228-1.

Semi-rotary drives > Semi-rotary drives with rotary vane >

01

Pneumatic drives



Increase productivity and save costs

- + Thanks to minimum cycle times with the right cushioning variant
- + With optionally integrated energy throughfeed
- + Thanks to downsizing due to the much higher bearing load capacity

Semi-rotary drives with rack and pinion >

Semi-rotary drives with twin pistons

DRRD 

Semi-rotary drives with rack and pinion >

Semi-rotary drives with twin pistons


DRRD

 Overview, configuration and ordering
→ www.festo.com/catalogue/drrd




 Additional information, support and user documentation
→ www.festo.com/sp/drrd




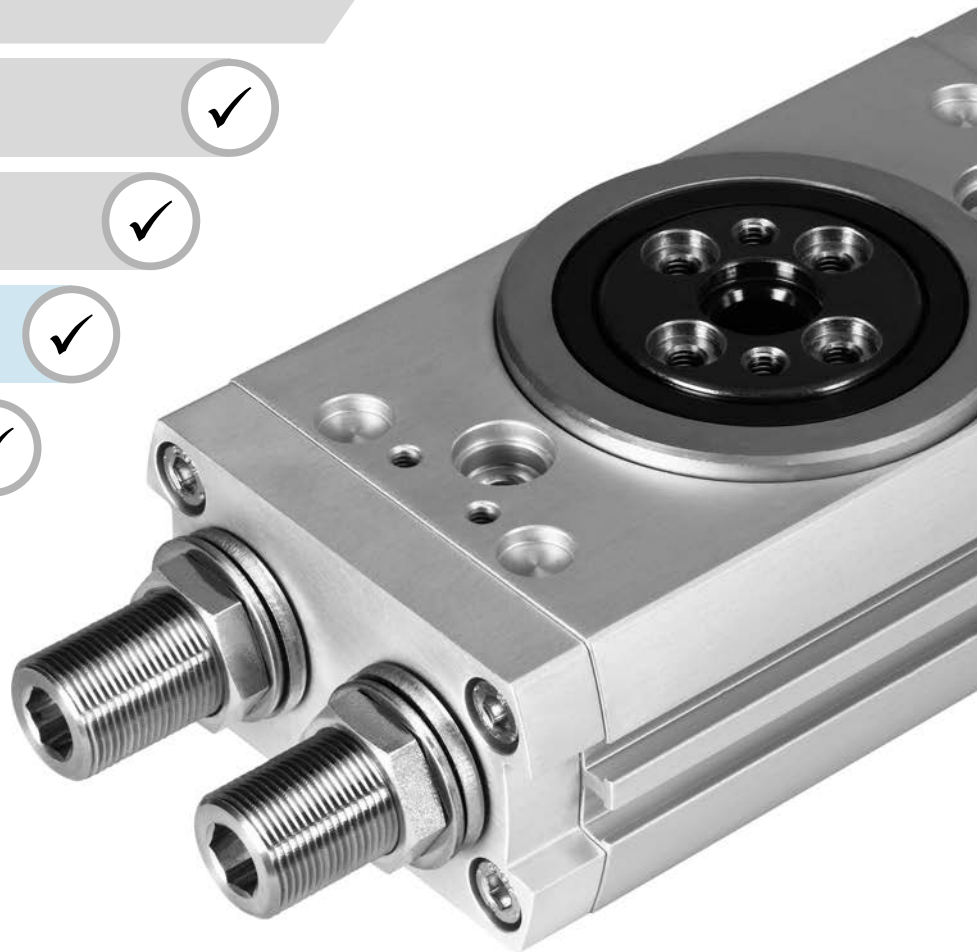
 Quick ordering of basic designs
→ page 327



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + With twin pistons based on the rack and pinion principle
- + Swivel angle freely adjustable up to 180°
- + Very high accuracy in the end positions
- + Very high bearing load capacity
- + Very good axial run-out at the flanged shaft
- + Very high mass moments of inertia

Twin piston semi-rotary drives DRRD

Product range overview

Type/function	Version	Size	Max. nominal swivel angle [°]	Torque [Nm]	Product options										→ Page/online
					FH	P	Y9	Y10	Y12	Y14	A	E1	R	SG	
DRRD															
Double-acting	Basic design	8, 10	200	0.2 ... 0.4	■	■	-	-	-	-	■	-	-	-	316
		12	200	0.8	■	■	■	-	■	-	■	-	-	-	
		16, 20	200	1.6 ... 2.4	■	■	■	-	■	■	■	■	■	■	320
		25	200	5.1	■	■	■	■	■	■	■	■	■	■	
		32	200	10.1	■	■	■	-	■	■	■	■	■	■	
		35, 40	200	15.8 ... 24.1	■	■	■	■	■	■	■	■	■	■	
		50	200	53	■	-	■	■	■	-	■	■	■	■	
		63	200	112	■	-	■	■	■	-	■	■	■	■	

Product options

FH	Hollow flanged shaft	P8	Pneumatic energy throughfeed, 8 ducts	Y10	Linear shock absorber, self-adjusting at both ends, hard	A	Position sensing
P2	Pneumatic energy throughfeed, 2 channels	P8E8	Pneumatic energy throughfeed, 8 ducts and electric, 8 signals	Y12	Linear shock absorber, self-adjusting at both ends, external	EX4	EU certification (II 2GD)
P2E2	Pneumatic energy throughfeed, 2 ducts and electric, 2 signals	P	Elastic cushioning rings/plates at both ends	Y14	Linear shock absorber, self-adjusting at both ends, soft	PS1	Intermediate position
P4	Pneumatic energy throughfeed, 4 ducts	Y9	Linear shock absorber, self-adjusting at both ends			E1	End-position locking at both ends
P4E6	Pneumatic energy throughfeed, 4 ducts and electric, 6 signals					R	Sensor mounting, external
						SG	Splash-proof
						DN	Without operating instructions

Twin piston semi-rotary drives DRRD

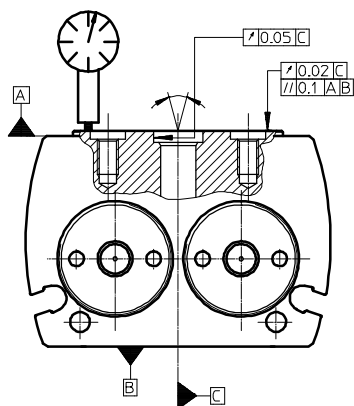
Pneumatic drives

Data sheet – Size 8 ... 12



Technical data		Dimensions → Page 330		
Size		8	10	12
Pneumatic connection		M3	M3	M5
Type of mounting		Via through-hole Via female thread		
Max. nominal swivel angle	[°]	180		
Cushioning with fixed stop				
DRRD-...-P		Elastic cushioning rings/plates at both ends		
DRRD-...-Y9		-		Linear shock absorber, self-adjusting at both ends
DRRD-...-Y12		-		Linear shock absorber, self-adjusting at both ends, external
Theoretical torque at 6 bar	[Nm]	0.2	0.4	0.8
Max. permissible mass moment of inertia				
DRRD-...-P	[kgcm ²]	15	20	80
DRRD-...-Y9	[kgcm ²]	-	-	300
DRRD-...-Y12	[kgcm ²]	-	-	300
Max. axial load (static)				
Tensile force	[N]	260	260	330
Pressure	[N]	700	1100	1400

Axial run-out in new condition ≤ 0.02 mm



Note
If, in the end positions, a torque which exceeds 50% of the theoretical torque acts against the direction of rotation, no exact end position is guaranteed. This can be avoided by using external shock absorbers (Y12) or a semi-rotary drive with double the torque.

Operating conditions		
Operating pressure		
DRRD-...-P	[bar]	3 ... 8
DRRD-...-Y9/-Y12	[bar]	2 ... 10
Ambient temperature	[°C]	-10 ... +60
Storage temperature	[°C]	-20 ... +60
Degree of protection based on EN 60529		
DRRD-...-SG		IP65

Data sheet – Size 8 ... 12

Materials

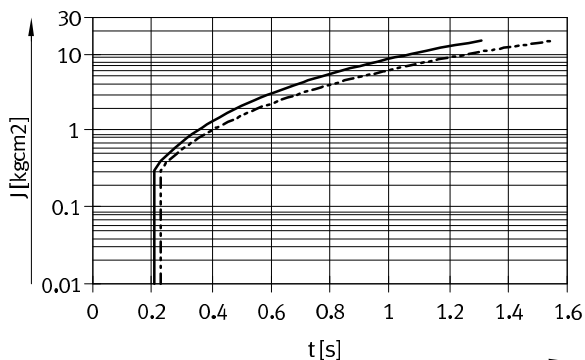
Drive shaft	High-alloy stainless steel
Housing	Smooth anodised wrought aluminium alloy
Piston	Copper base alloy
Seals	TPE-U (PU), NBR

Max. permissible mass moment of inertia J at the flanged shaft as a function of swivel time t

(at room temperature and operating pressure of 6 bar)

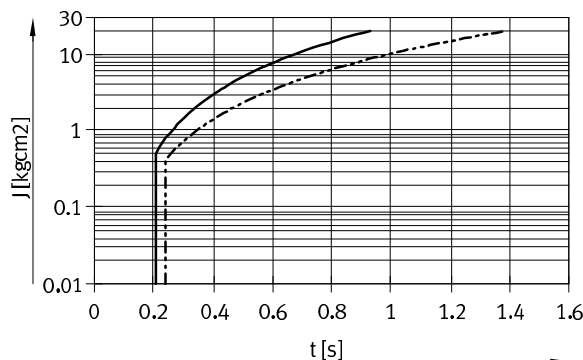
Cushioning P

Size 8



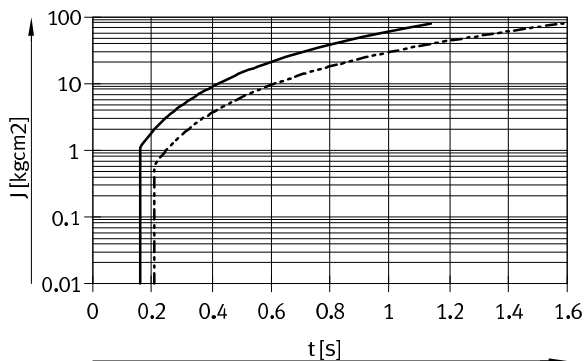
Ranges
 — DRRD-8-...-P (90°) → 0 ... 15 kgcm²
 - - - DRRD-8-...-P (180°) → 0 ... 15 kgcm²

Size 10



Ranges
 — DRRD-10-...-P (90°) → 0 ... 20 kgcm²
 - - - DRRD-10-...-P (180°) → 0 ... 20 kgcm²

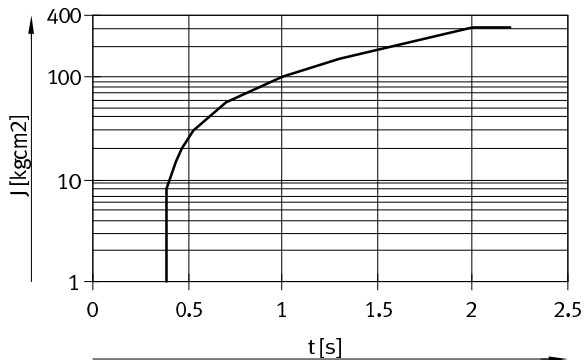
Size 12



Ranges
 — DRRD-12-...-P (90°) → 0 ... 80 kgcm²
 - - - DRRD-12-...-P (180°) → 0 ... 80 kgcm²

Cushioning Y9

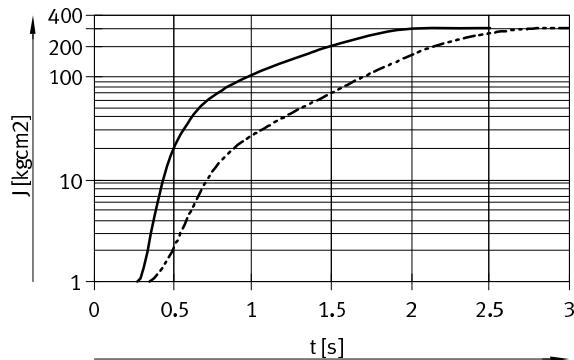
Size 12



Ranges
 — DRRD-12-180-...-Y9 (180°) → 1 ... 300 kgcm²

Cushioning Y12

Size 12



Ranges
 — DRRD-12-...-Y12 (90°) → 1 ... 300 kgcm²
 - - - DRRD-12-...-Y12 (180°) → 1 ... 300 kgcm²

Twin piston semi-rotary drives DRRD

01

Order code – Size 8 ... 12

Pneumatic drives

		DRRD	-		-	180	-	FH	-		-	A
Product type												
DRRD	Double-acting semi-rotary drive											
Size												
	Nominal swivel angle [°]											
8, 10, 12	180											
Output shaft												
FH	Flanged shaft, hollow											
Cushioning												
P	Elastic cushioning rings/plates at both ends											
Y9	Linear shock absorber, self-adjusting at both ends											1
Y12	Linear shock absorber, self-adjusting at both ends, external											1
Position sensing												
A	Via proximity sensor											

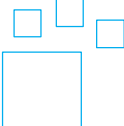
1 Not with size 8, 10

Order example:

DRRD-12-180-FH-Y9A

Semi-rotary drive DRRD - size 12 - swivel angle 180° - output shaft, hollow flanged shaft - linear shock absorber, at both ends, self-adjusting - position sensing via proximity sensor

Ordering – Product options



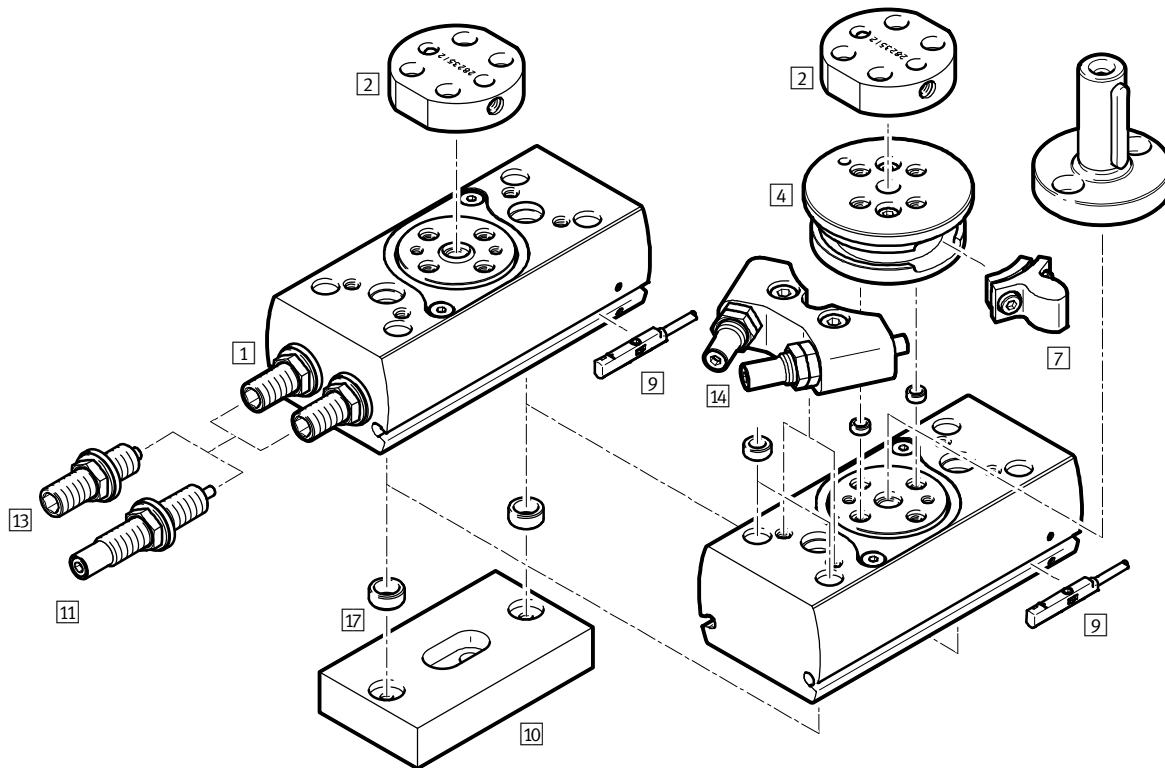
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Accessories – Size 8 ... 12



	→ Page/ online
1 Semi-rotary drive DRRD	318
2 Adapter kit DHAA	drrd
4 Flange assembly	328
7 Stop element	328
9 Proximity sensor SMT/SME	329

	→ Page/ online
10 Adapter kit DHAA	drrd
11 Shock absorber Y9	318
13 Shock absorber P	318
14 Shock absorber, external Y12	318
17 Centring sleeve ZBH	328

Twin piston semi-rotary drives DRRD ★

01

Data sheet – Size 16 ... 63



Pneumatic drives

Technical data		Dimensions → Page 330								
Size		16	20	25	32	35	40	50	63	
Pneumatic connection										
Semi-rotary drive		M5			G1/8			G1/4	G3/8	
Clamping unit DADL-EL		M5								
Type of mounting		Via through-hole Via female thread								
Swivel angle										
Nominal swivel angle	[°]	180								
Max. swivel angle	[°]	200								
With clamping unit DADL-EL	[°]	60 ... 200			55 ... 200		57 ... 200		62 ... 200	55 ... 200
Cushioning with fixed stop										
DRRD-...-P		Elastic cushioning rings/plates at both ends							-	
DRRD-...-Y9		Linear shock absorber, self-adjusting at both ends								
DRRD-...-Y10		-		Linear shock absorber, self-adjusting at both ends, hard		-		Linear shock absorber, self-adjusting at both ends, hard		
DRRD-...-Y12		Linear shock absorber, self-adjusting at both ends, external								
DRRD-...-Y14		Linear shock absorber, self-adjusting at both ends, external, soft								
Theoretical torque at 6 bar	[Nm]	1.6	2.4	5.1	10.1	15.8	24.1	53	112	
Max. permissible mass moment of inertia										
DRRD-...-P	[kgcm ²]	175	400	900	1500	2500	6700	-	-	
DRRD-...-Y9	[kgcm ²]	700	1250	1500	26,000	15,000	23,000	40,000	40,000	
DRRD-...-Y10	[kgcm ²]	-	-	5500	-	45,000	67,000	200,000	420,000	
DRRD-...-Y12	[kgcm ²]	900	1500	5500	26,000	45,000	67,000	200,000	420,000	
DRRD-...-Y14	[kgcm ²]	100	150	100	2000	2000	23,000	-	-	
Max. axial load (static)	[N]	1500	2400	2400	3750	6100	6100	9000	11,000	

Data sheet – Size 16 ... 63

01

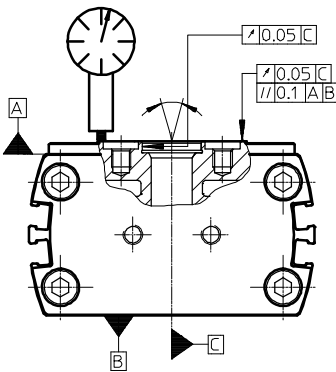
Operating conditions

Operating pressure		
DRRD-...-P	[bar]	3 ... 8
DRRD-...-Y9/-Y10/-Y12/-Y14	[bar]	2 ... 10
DRRD-... E1 DADL-EL	[bar]	5 ... 8
Ambient temperature [°C]		
-10 ... +60		
Degree of protection based on EN 60529		
DRRD-...-SG		IP65

Materials

Drive shaft	Tempered steel
End cap	Anodised wrought aluminium alloy
Housing	Smooth anodised wrought aluminium alloy
Piston	Stainless steel
Seals	TPE-U (PU), NBR

Pneumatic drives

Axial run-out in new condition < 0.05 mm

Twin piston semi-rotary drives DRRD ★

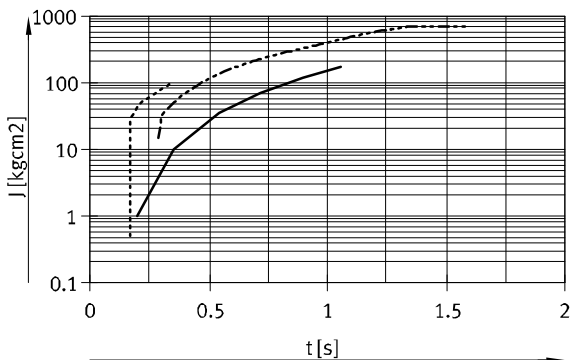
01

Data sheet – Size 16 ... 63

Max. permissible mass moment of inertia J at the flanged shaft as a function of swivel time t
(at room temperature and operating pressure of 6 bar)

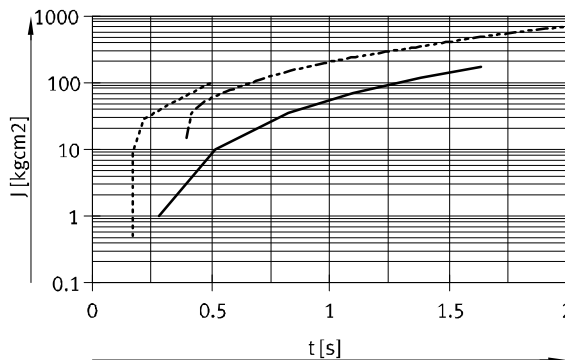
Size 16 with cushioning P, Y9/Y14

Swivel angle 90°



- | | | | |
|-----------|-----------------------|--------|---------------------------------|
| — | DRRD-16-...-P (90°) | Ranges | → 1 ... 175 kgcm ² |
| - - - | DRRD-16-...-Y9 (90°) | | → 15 ... 700 kgcm ² |
| - · - · - | DRRD-16-...-Y14 (90°) | | → 0.5 ... 100 kgcm ² |

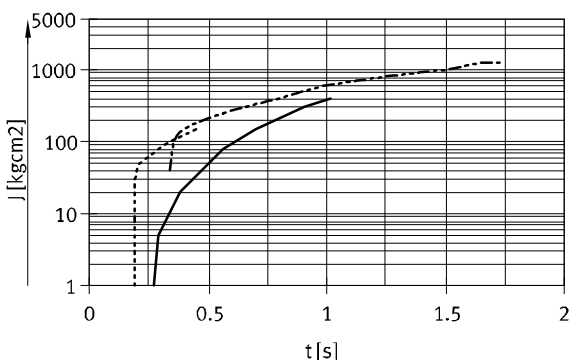
Swivel angle 180°



- | | | | |
|-----------|------------------------|--------|---------------------------------|
| — | DRRD-16-...-P (180°) | Ranges | → 1 ... 175 kgcm ² |
| - - - | DRRD-16-...-Y9 (180°) | | → 15 ... 700 kgcm ² |
| - · - · - | DRRD-16-...-Y14 (180°) | | → 0.5 ... 100 kgcm ² |

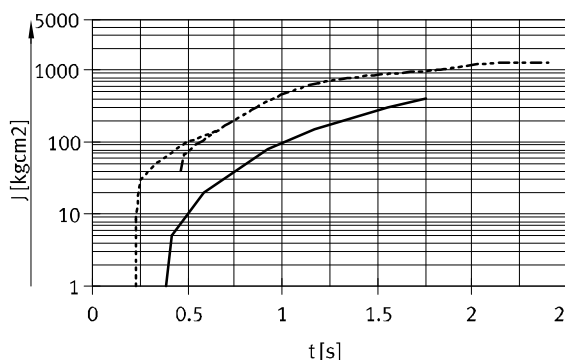
Size 20 with cushioning P, Y9/Y14

Swivel angle 90°



- | | | | |
|-----------|-----------------------|--------|---------------------------------|
| — | DRRD-20-...-P (90°) | Ranges | → 1 ... 400 kgcm ² |
| - - - | DRRD-20-...-Y9 (90°) | | → 40 ... 1250 kgcm ² |
| - · - · - | DRRD-20-...-Y14 (90°) | | → 1 ... 150 kgcm ² |

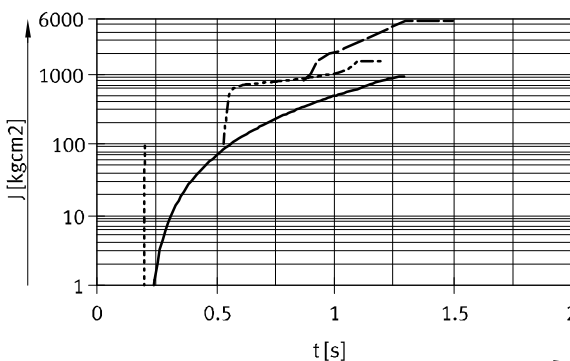
Swivel angle 180°



- | | | | |
|-----------|------------------------|--------|---------------------------------|
| — | DRRD-20-...-P (180°) | Ranges | → 1 ... 400 kgcm ² |
| - - - | DRRD-20-...-Y9 (180°) | | → 40 ... 1250 kgcm ² |
| - · - · - | DRRD-20-...-Y14 (180°) | | → 1 ... 150 kgcm ² |

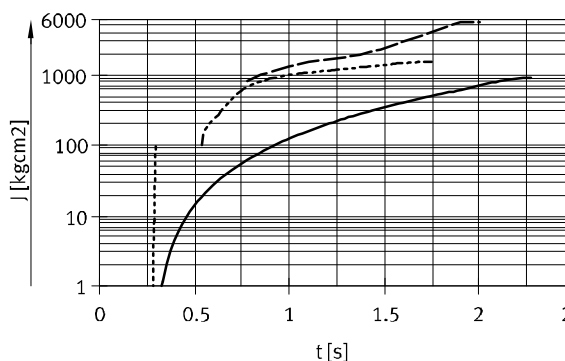
Size 25 with cushioning P, Y9/Y10/Y14

Swivel angle 90°



- | | | | |
|---------------|-----------------------|--------|----------------------------------|
| — | DRRD-25-...-P (90°) | Ranges | → 1 ... 900 kgcm ² |
| - - - | DRRD-25-...-Y9 (90°) | | → 100 ... 1500 kgcm ² |
| - · - · - | DRRD-25-...-Y10 (90°) | | → 800 ... 5500 kgcm ² |
| - · - · - · - | DRRD-25-...-Y14 (90°) | | → 1 ... 100 kgcm ² |

Swivel angle 180°



- | | | | |
|---------------|------------------------|--------|----------------------------------|
| — | DRRD-25-...-P (180°) | Ranges | → 1 ... 900 kgcm ² |
| - - - | DRRD-25-...-Y9 (180°) | | → 100 ... 1500 kgcm ² |
| - · - · - | DRRD-25-...-Y10 (180°) | | → 800 ... 5500 kgcm ² |
| - · - · - · - | DRRD-25-...-Y14 (180°) | | → 1 ... 100 kgcm ² |

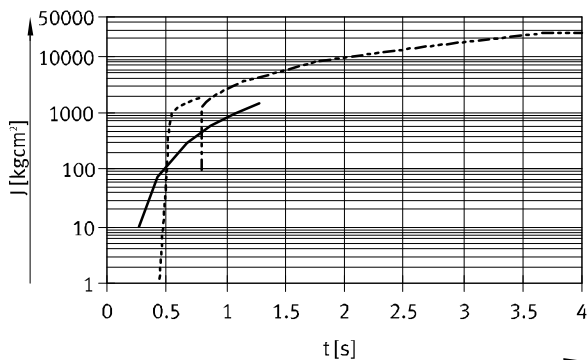
Pneumatic drives

Data sheet – Size 16 ... 63

Max. permissible mass moment of inertia J at the flanged shaft as a function of swivel time t
(at room temperature and operating pressure of 6 bar)

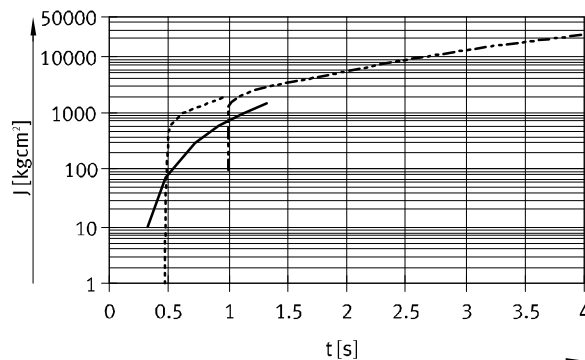
Size 32 with cushioning P, Y9/Y14

Swivel angle 90°



—	DRRD-32-...-P (90°)	Ranges	→ 10 ... 1500 kgcm ²
- - - - -	DRRD-32-...-Y9 (90°)		→ 100 ... 26,000 kgcm ²
- · - · - ·	DRRD-32-...-Y14 (90°)		→ 1 ... 2000 kgcm ²

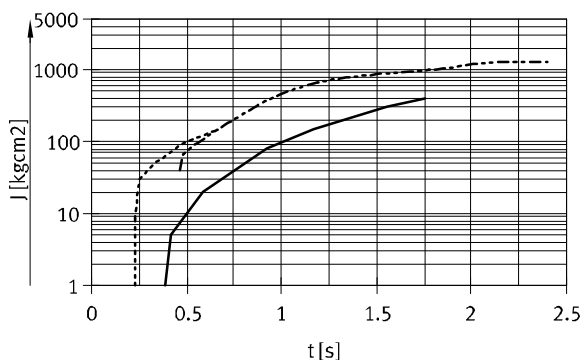
Swivel angle 180°



—	DRRD-32-...-P (180°)	Ranges	→ 10 ... 1500 kgcm ²
- - - - -	DRRD-32-...-Y9 (180°)		→ 100 ... 26,000 kgcm ²
- · - · - ·	DRRD-32-...-Y14 (180°)		→ 1 ... 2000 kgcm ²

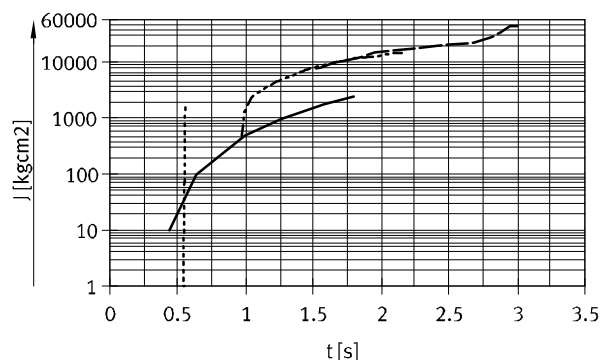
Size 35 with cushioning P, Y9/Y10/Y14

Swivel angle 90°



—	DRRD-35-...-P (90°)	Ranges	→ 10 ... 2500 kgcm ²
- - - - -	DRRD-35-...-Y9 (90°)		→ 500 ... 15,000 kgcm ²
- · - · - ·	DRRD-35-...-Y10 (90°)		→ 8000 ... 45,000 kgcm ²
- · - · - ·	DRRD-35-...-Y14 (90°)		→ 1 ... 2000 kgcm ²

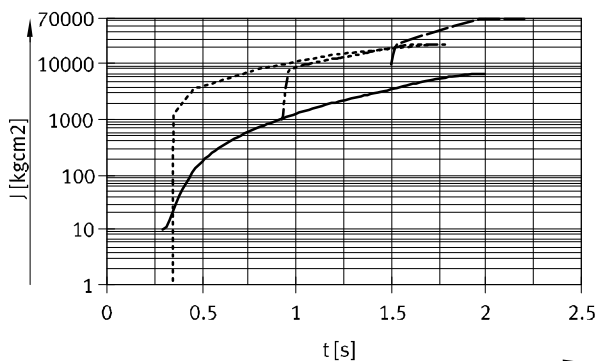
Swivel angle 180°



—	DRRD-35-...-P (180°)	Ranges	→ 10 ... 2500 kgcm ²
- - - - -	DRRD-35-...-Y9 (180°)		→ 500 ... 15,000 kgcm ²
- · - · - ·	DRRD-35-...-Y10 (180°)		→ 8000 ... 45,000 kgcm ²
- · - · - ·	DRRD-35-...-Y14 (180°)		→ 1 ... 2000 kgcm ²

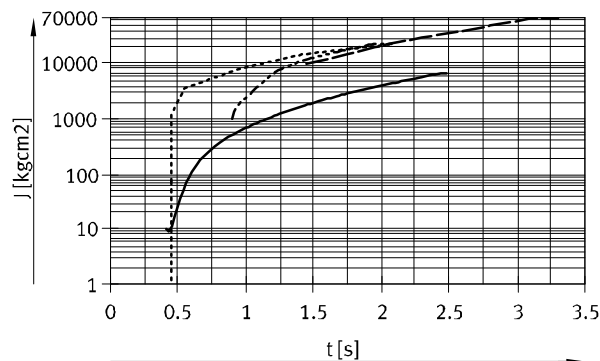
Size 40 with cushioning P, Y9/Y10/Y14

Swivel angle 90°



—	DRRD-40-...-P (90°)	Ranges	→ 10 ... 6700 kgcm ²
- - - - -	DRRD-40-...-Y9 (90°)		→ 1000 ... 23,000 kgcm ²
- · - · - ·	DRRD-40-...-Y10 (90°)		→ 10,000 ... 67,000 kgcm ²
- · - · - ·	DRRD-40-...-Y14 (90°)		→ 1 ... 23,000 kgcm ²

Swivel angle 180°



—	DRRD-40-...-P (180°)	Ranges	→ 10 ... 6700 kgcm ²
- - - - -	DRRD-40-...-Y9 (180°)		→ 1000 ... 23,000 kgcm ²
- · - · - ·	DRRD-40-...-Y10 (180°)		→ 10,000 ... 67,000 kgcm ²
- · - · - ·	DRRD-40-...-Y14 (180°)		→ 1 ... 23,000 kgcm ²

Semi-rotary drives > Semi-rotary drives with rack and pinion >

Twin piston semi-rotary drives DRRD ★

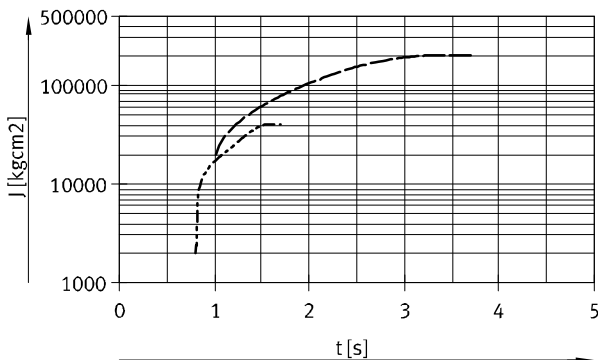
01

Data sheet – Size 16 ... 63

Max. permissible mass moment of inertia J at the flanged shaft as a function of swivel time t
(at room temperature and operating pressure of 6 bar)

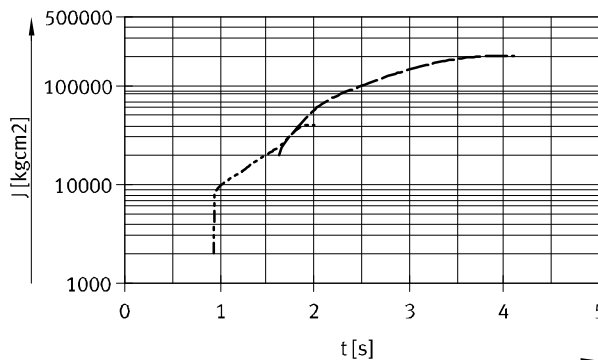
Size 50 with cushioning Y9/Y10

Swivel angle 90°



- | | | | |
|-------|-----------------------|--------|--|
| ----- | DRRD-50-...-Y9 (90°) | Ranges | → 2000 ... 40,000 kgcm ² |
| ————— | DRRD-50-...-Y10 (90°) | | → 20,000 ... 200,000 kgcm ² |

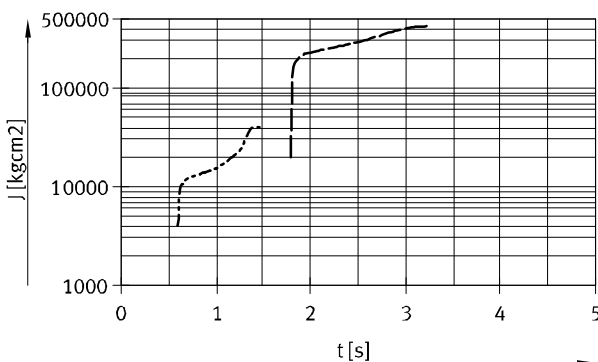
Swivel angle 180°



- | | | | |
|-------|------------------------|--------|--|
| ----- | DRRD-50-...-Y9 (180°) | Ranges | → 2000 ... 40,000 kgcm ² |
| ————— | DRRD-50-...-Y10 (180°) | | → 20,000 ... 200,000 kgcm ² |

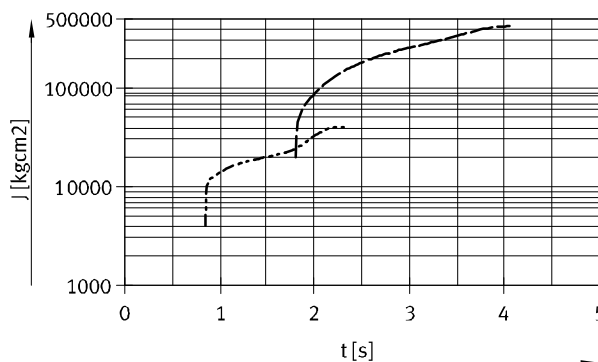
Size 63 with cushioning Y9/Y10

Swivel angle 90°



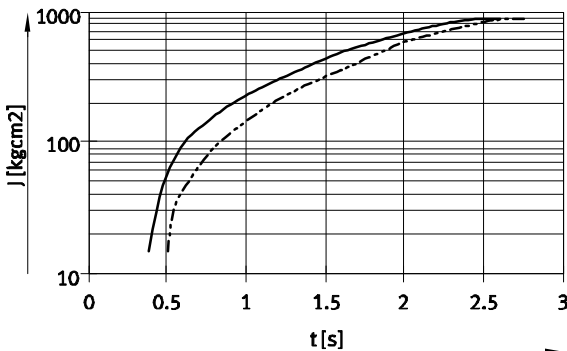
- | | | | |
|-------|-----------------------|--------|--|
| ----- | DRRD-63-...-Y9 (90°) | Ranges | → 4000 ... 40,000 kgcm ² |
| ————— | DRRD-63-...-Y10 (90°) | | → 20,000 ... 420,000 kgcm ² |

Swivel angle 180°



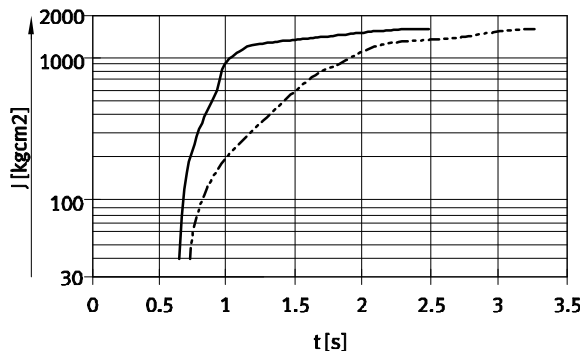
- | | | | |
|-------|------------------------|--------|--|
| ----- | DRRD-63-...-Y9 (180°) | Ranges | → 4000 ... 40,000 kgcm ² |
| ————— | DRRD-63-...-Y10 (180°) | | → 20,000 ... 420,000 kgcm ² |

Size 16 with cushioning Y12



- | | | | |
|-------|------------------------|--------|--------------------------------|
| ————— | DRRD-16-...-Y12 (90°) | Ranges | → 15 ... 900 kgcm ² |
| ----- | DRRD-16-...-Y12 (180°) | | → 15 ... 900 kgcm ² |

Size 20 with cushioning Y12



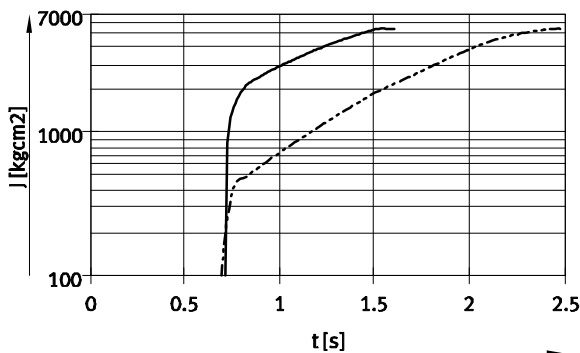
- | | | | |
|-------|------------------------|--------|---------------------------------|
| ————— | DRRD-20-...-Y12 (90°) | Ranges | → 40 ... 1600 kgcm ² |
| ----- | DRRD-20-...-Y12 (180°) | | → 40 ... 1600 kgcm ² |

Pneumatic drives

Data sheet – Size 16 ... 63

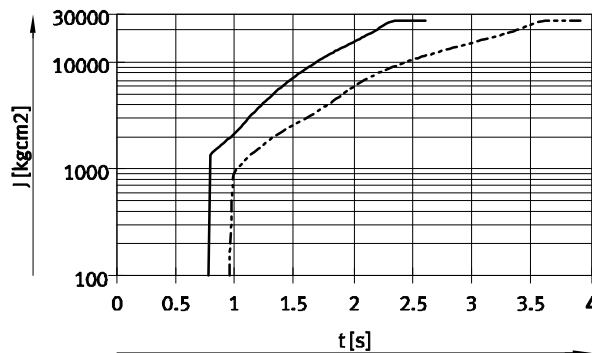
Max. permissible mass moment of inertia J at the flanged shaft as a function of swivel time t
(at room temperature and operating pressure of 6 bar)

Size 25 with cushioning Y12



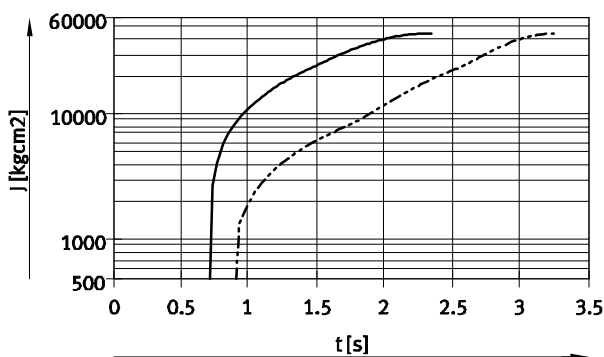
— DRRD-25-...-Y12 (90°) → 100 ... 5500 kgcm²
 - - - DRRD-25-...-Y12 (180°) → 100 ... 5500 kgcm²

Size 32 with cushioning Y12



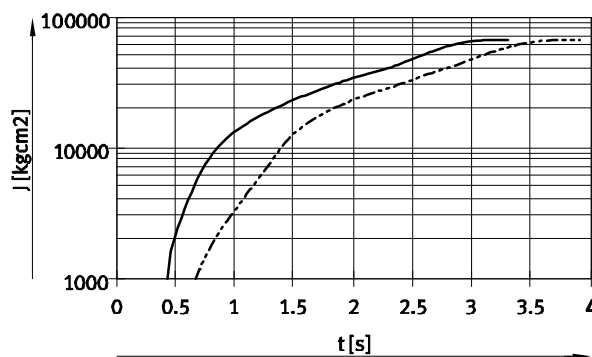
— DRRD-32-...-Y12 (90°) → 100 ... 26,000 kgcm²
 - - - DRRD-32-...-Y12 (180°) → 100 ... 26,000 kgcm²

Size 35 with cushioning Y12



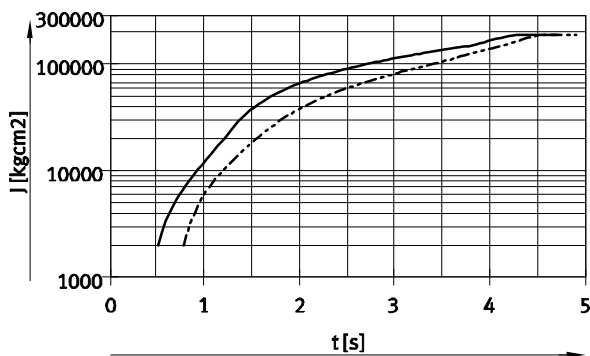
— DRRD-35-...-Y12 (90°) → 500 ... 45,000 kgcm²
 - - - DRRD-35-...-Y12 (180°) → 500 ... 45,000 kgcm²

Size 40 with cushioning Y12



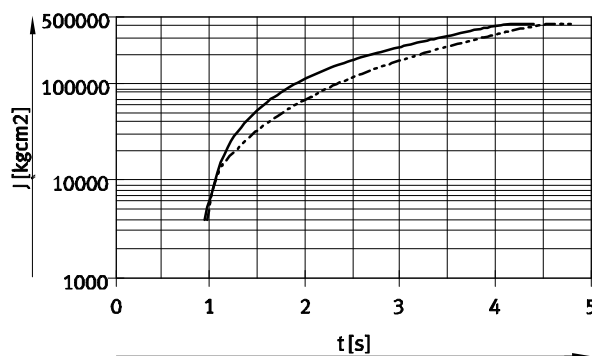
— DRRD-40-...-Y12 (90°) → 1000 ... 67,000 kgcm²
 - - - DRRD-40-...-Y12 (180°) → 1000 ... 67,000 kgcm²

Size 50 with cushioning Y12



— DRRD-50-...-Y12 (90°) → 2000 ... 200,000 kgcm²
 - - - DRRD-50-...-Y12 (180°) → 2000 ... 200,000 kgcm²

Size 63 with cushioning Y12



— DRRD-63-...-Y12 (90°) → 4000 ... 420,000 kgcm²
 - - - DRRD-63-...-Y12 (180°) → 4000 ... 420,000 kgcm²

Twin piston semi-rotary drives DRRD ★

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Order code – Size 16 ... 63

Pneumatic drives

DRRD - [] - 180 - FH - [] - A - [] - [] - []

Product type

Double-acting	
DRRD	Semi-rotary drive

Size

	Nominal swivel angle [°]
16, 20, 25, 32, 35, 40, 50, 63	180

Output shaft

FH	Flanged shaft, hollow
----	-----------------------

Cushioning

P	Elastic cushioning rings/plates at both ends	1
Y9	Linear shock absorber, self-adjusting at both ends	
Y10	Linear shock absorber, self-adjusting at both ends, hard	2
Y12	Linear shock absorber, self-adjusting at both ends, external	3
Y14	Linear shock absorber, self-adjusting at both ends, internal, soft	

Position sensing

A	Via proximity sensor
---	----------------------

End-position locking

-	Without	
E1	At both ends	4

Sensor mounting, external

-	Without
R	Mounting rail for proximity sensor

Version

-	Standard
SG	Splash-proof design

1 Not with size 50, 63

2 Not with size 16, 20, 32

3 Not with end-position locking E1 and splash-proof design SG

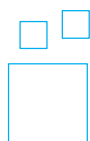
4 Not with sensor mounting R and splash-proof design SG

Order example:

DRRD-32-180-FH-Y9A-E1

Semi-rotary drive DRRD - size 32 - swivel angle 180° - output shaft, hollow flanged shaft - linear shock absorber, at both ends, self-adjusting - position sensing via proximity sensor - end-position locking at both ends - not splash-proof

Ordering – Product options




Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Twin piston semi-rotary drives DRRD 

 Quick ordering¹⁾ – Size 16 ... 63

P – Elastic cushioning rings/plates at both ends

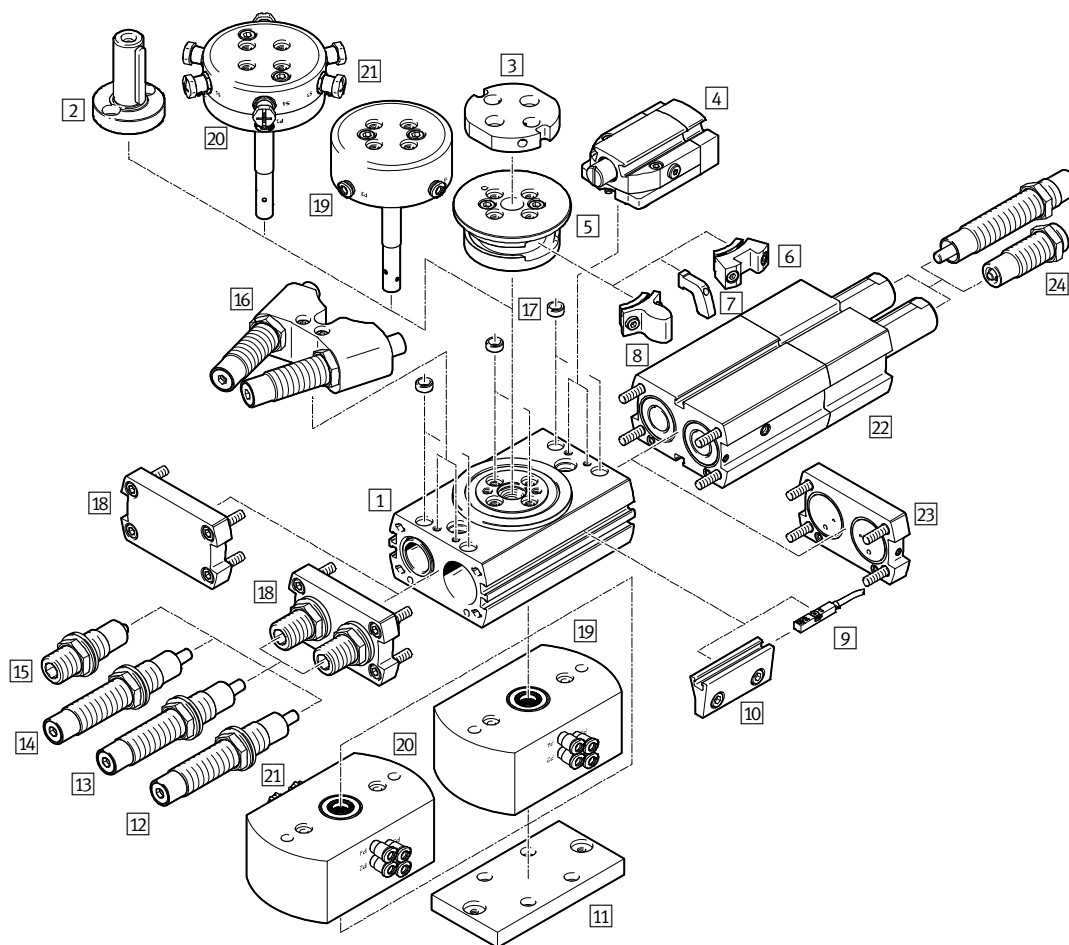
Piston Ø	Nominal swivel angle	Part no.	Type
16	180°	1577238	DRRD-16-180-FH-PA
20		1395606	DRRD-20-180-FH-PA
25		1359980	DRRD-25-180-FH-PA
32		1578512	DRRD-32-180-FH-PA
35		1526825	DRRD-35-180-FH-PA
40		1503269	DRRD-40-180-FH-PA

Y9 – Linear shock absorber, self-adjusting at both ends

Piston Ø	Nominal swivel angle	Part no.	Type
16	180°	1644389	DRRD-16-180-FH-Y9A
20		1427379	DRRD-20-180-FH-Y9A
25		1360248	DRRD-25-180-FH-Y9A
32		1578518	DRRD-32-180-FH-Y9A
35		1547102	DRRD-35-180-FH-Y9A
40		1526986	DRRD-40-180-FH-Y9A

1) All products in this table are easy to select and quick to order.

Accessories – Size 16 ... 63



	→ Page/ online
1 Semi-rotary drive DRRD	326
2 Drive shaft DARF-Q11	328
3 Adapter kit DHAA	drrd
4 End-position locking E1 (clamping unit DADL-...-EL as an accessory)	328
5 Flange assembly	328
6 Clamping component (type: DADL-EC)	328
7 Switch lug DASI-Q11-...-SL	328
8 Stop element	–
9 Proximity sensor SMT-/SME-8	329
10 Sensor mounting R (sensing kit DASI-...-KT as an accessory)	328
11 Adapter kit DHAA	drrd
12 Shock absorber Y9	326
13 Shock absorber, hard Y10	326

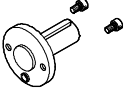
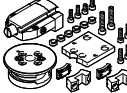
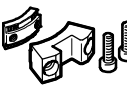

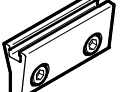

	→ Page/ online
14 Shock absorber, soft Y14	326
15 Shock absorber P	326
16 Shock absorber, external Y12	326
17 Centring sleeve ZBH	328
18 End cap	–
19 Pneumatic energy throughfeed	drrd
20 Pneumatic/electric energy throughfeed	drrd
21 Connecting cable NEBU	drrd
22 Intermediate position	drrd
23 Connection cap	drrd
24 Shock absorber	drrd
– Non-return valves GRLA	328




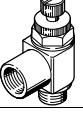

Twin piston semi-rotary drives DRRD ★

01

Accessories – Ordering data

Pneumatic drives










	For size	Part no.	Type
2 Drive shaft DARF-Q11			Data sheets online: → drrd
	12	4835942	DARF-Q11-12
	16	4835943	DARF-Q11-16
	20	4835941	DARF-Q11-20
	25	4835938	DARF-Q11-25
	32	4835940	DARF-Q11-32
	35	4835939	DARF-Q11-35/40
	40	4835939	DARF-Q11-35/40
4 Clamping unit DADL-EL			Data sheets online: → drrd
	16	1692770	DADL-EL-Q11-16
	20	1579786	DADL-EL-Q11-20
	25	1568183	DADL-EL-Q11-25
	32	1631139	DADL-EL-Q11-32
	35	1544900	DADL-EL-Q11-35/40
	40	1544900	DADL-EL-Q11-35/40
	50	1796637	DADL-EL-Q11-50
	63	1941568	DADL-EL-Q11-63
6 Clamping component DADL-EC			Data sheets online: → drrd
	16	1692496	DADL-EC-Q11-16
	20, 25	1435411	DADL-EC-Q11-20/25
	32	1631170	DADL-EC-Q11-32
	35, 40	1535091	DADL-EC-Q11-35/40
	50	1796626	DADL-EC-Q11-50
	63	1941355	DADL-EC-Q11-63
7 Switch lug DASI-...-SL			Data sheets online: → drrd
	16	1692969	DASI-Q11-16-A-SL
	20, 25	1568436	DASI-Q11-20/25-A-SL
	32	1631824	DASI-Q11-32-A-SL
	35, 40	1548155	DASI-Q11-35/40-A-SL
	50	1797021	DASI-Q11-50-A-SL
	63	1971550	DASI-Q11-63-A-SL
10 Sensor bracket DASI-...-SR¹⁾			Data sheets online: → drrd
	16	1692983	DASI-Q11-16-A-SR
	20	1581420	DASI-Q11-20-A-SR
	25	1568451	DASI-Q11-25-A-SR
	32	1631997	DASI-Q11-32-A-SR
	35	1550870	DASI-Q11-35-A-SR
	40	1548054	DASI-Q11-40-A-SR
	50	1797071	DASI-Q11-50-A-SR
	63	1971563	DASI-Q11-63-A-SR
10 Sensing kit DASI-...-KT			Data sheets online: → drrd
	16	1693008	DASI-Q11-16-A-KT
	20	1580899	DASI-Q11-20-A-KT
	25	1568461	DASI-Q11-25-A-KT
	32	1632097	DASI-Q11-32-A-KT
	35	1551144	DASI-Q11-35-A-KT
	40	1550027	DASI-Q11-40-A-KT
	50	1797135	DASI-Q11-50-A-KT
	63	1946877	DASI-Q11-63-A-KT



	For size	Part no.	Type
16 Shock absorber DYSC			Data sheets online: → drrd
	12	548011	DYSC-5-5-Y1F
	16	548012	DYSC-7-5-Y1F
	20	548013	DYSC-8-8-Y1F
	25	548014	DYSC-12-12-Y1F
	32, 35, 40	553593	DYSC-16-18-Y1F
	50	2479149	DYSC-20-18-Y1F
	63	2480234	DYSC-25-25-Y1F
17 Centring sleeve²⁾			Data sheets online: → zbh
For housing			
	8, 10	186717	ZBH-7
	12, 16, 20	150927	ZBH-9
	25	189653	ZBH-12
	32 ... 50	191409	ZBH-15
	63	8023856	ZBH-25
For flanged shaft			
	8, 10, 12	189652	ZBH-5
	16, 20	186717	ZBH-7
	25 ... 40	150927	ZBH-9
	50	189653	ZBH-12
	63	191409	ZBH-15
One-way flow control valve GRLA³⁾			
	16 ⁴⁾ , 20, 25	★ 197576	GRLA-M5-QS-3-RS-D
		★ 197577	GRLA-M5-QS-4-RS-D
	32, 35, 40	151169	GRLA-1/8-RS-B
	50	151175	GRLA-1/4-RS-B
	63	151178	GRLA-3/8-B

- 1) Packaging unit 2 pieces.
- 2) Packaging unit 10 pieces.
2 included in the scope of delivery of the semi-rotary drive or attachments.
- 3) Packaging unit 1 piece.
- 4) Strongly recommended for this size.

Accessories – Ordering data

01

	For size	Switching output, connection	Cable length [m]	Part no.	Type
9 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	8 ... 12	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
		PNP, plug	0.3	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
		PNP, cable	2.5	547862	SMT-10G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547863	SMT-10G-PS-24V-E-0,3Q-M8D
Magnetic reed – N/O contact Data sheets → Page 1218					
	8 ... 12	Contacting, cable	2.5	★ 551365	SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3	★ 551367	SME-10M-DS-24V-E-0,3-L-M8D
		Contacting, cable	2.5	★ 551369	SME-10M-ZS-24V-E-2,5-L-OE
9 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	16 ... 63	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-K-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-K-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-K-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-K-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-K-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	16 ... 63	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	16 ... 63	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Data sheets → Page 1203					
	16 ... 63	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	16 ... 63	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
Inductive – N/C contact Data sheets → Page 1235					
	16 ... 63	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D

	For size	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	8 ... 63	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	8 ... 63	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

Note

The inductive proximity sensors SIES can only be used in combination with the sensing kit DASI-...-KT.

Semi-rotary drives > Semi-rotary drives with rack and pinion >

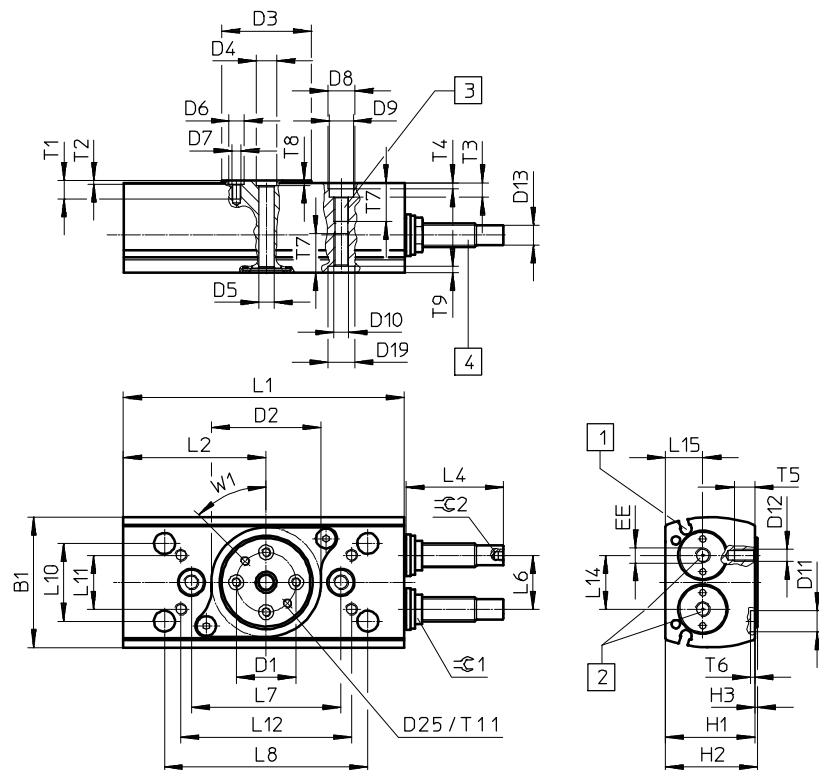
Twin piston semi-rotary drives DRRD

01

Dimensions – Size 8 ... 12

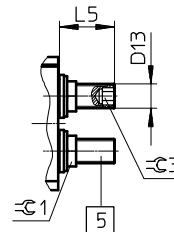
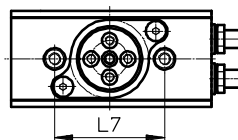
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Pneumatic drives



DRRD-8/10

DRRD-...-P



Note
Illustrated position of the flanged shaft corresponds to the mid-position (swivel angle 90°).
Dimension D25, T11 and W1 only for size 12.

- 1 Slot for proximity sensor
- 2 Supply ports
- 3 Mounting thread
- 4 Shock absorber (DRRD-...-Y9)
- 5 Cushioning components (DRRD-...-P)

Size	B1	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
	±0.25	∅ ±0.025	∅ +0.1	∅	∅ H7	∅ ±0.1	∅ H7		∅ H7	∅	
8	31.5	12	26	20.4	5	3	5	M3	7	6	M4
10	38	15	32	24	5	3	5	M3	7	6	M4
12	43.5	20	37	30	7	5	5	M3	9	8	M5

Size	D11	D12	D13	D19	D25	H1	H2	H3	L1	L2	L6
	∅ H7			∅ H7		+0.4	±0.2	+0.2/-0.6	±0.1	+0.1	
8	-	-	M6x0.5	7	-	24.5	25.25	0.75	65.6	32.2	13 ^{-0.1}
10	-	-	M6x0.5	7	-	27.5	28.25	0.75	74	38.3	15.2 ^{-0.1}
12	7	M4	M8x1	9	M3	30	30.75	0.75	93.9	47.7	18 ^{+0.1}

Size	L7	L8	L10	L11	L12	L14	L15	T1	T2	T3	T4
	±0.02	±0.2	±0.02	±0.15	±0.2		-0.1		+0.1		+0.4/-0.1
8	36	-	-	-	-	13	11.1	4.8	1.2	3.4	1.5
10	44	-	-	-	-	15.2	11.1	6.2	1.2	3.4	1.5
12	50	68	26	18	57	18	12.5	5.4	1.2	4.7	2.1

Size	T5	T6	T7	T8	T9	T11	EE	W1	∅ 1	∅ 2	∅ 3
		+0.4/-0.1		+0.1	+0.1						
8	-	-	10.5	1.2	1.6	-	M3	-	10	-	3
10	-	-	10	1.2	1.6	-	M3	-	10	-	3
12	7	1.6	13	1.6	2.1	5.5	M5	45°	10	2.5	5

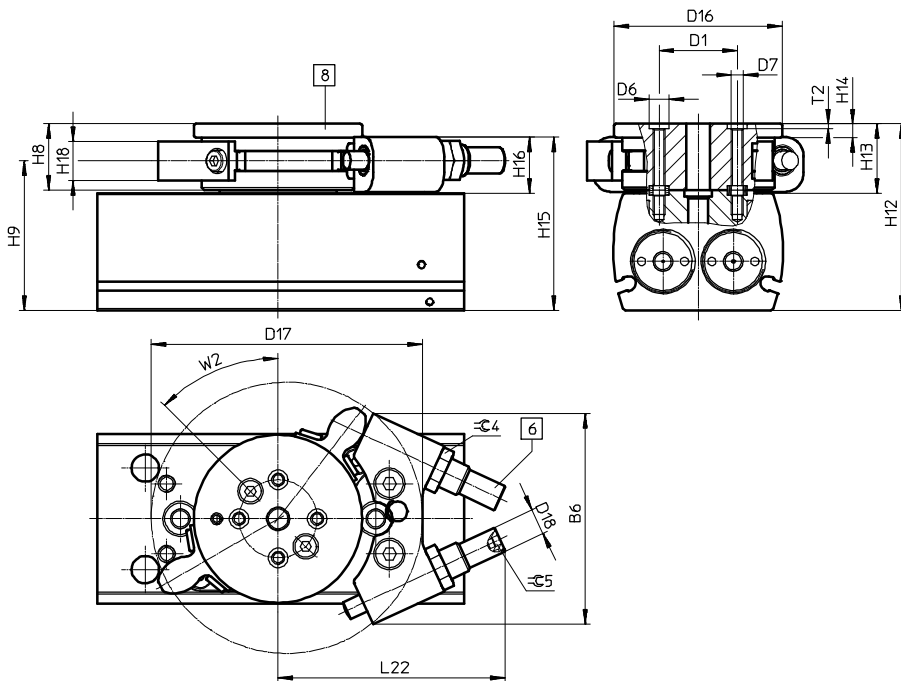
Size	Dimension with 180° swivel angle		Swivel angle adjustment range		
	L4	L5	L4 min./max.	L5 min./max.	1 mm = ...°
8	-	11.1	-	-6.1/+0.8	16.4
10	-	12.6	-	-7.6/+1.2	13.64
12	28	17	-1.9/+1.9	-11/+1.8	9.6

Dimensions – Size 8 ... 12

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01

Y12 – With external shock absorber



- 6 Shock absorber
- 8 Flange assembly

Pneumatic drives

Size	B6	D1 ∅	D6 ∅	D7	D16 ∅	D17	D18	H8	H9	H12
	±0.2	±0.025	H7					±0.1		
12	54	20	5	M3	43	69.4	M8x1	17	38.3	47.8

Size	H13	H14	H15	H16	H18	L22	T2	W2	∠ 4	∠ 5
						max.	+0.1			
12	17.8	3.5	44	14	10	58.2	1.2	45°	10	2.5

Twin piston semi-rotary drives DRRD ★

01

Dimensions – Size 16 ... 63

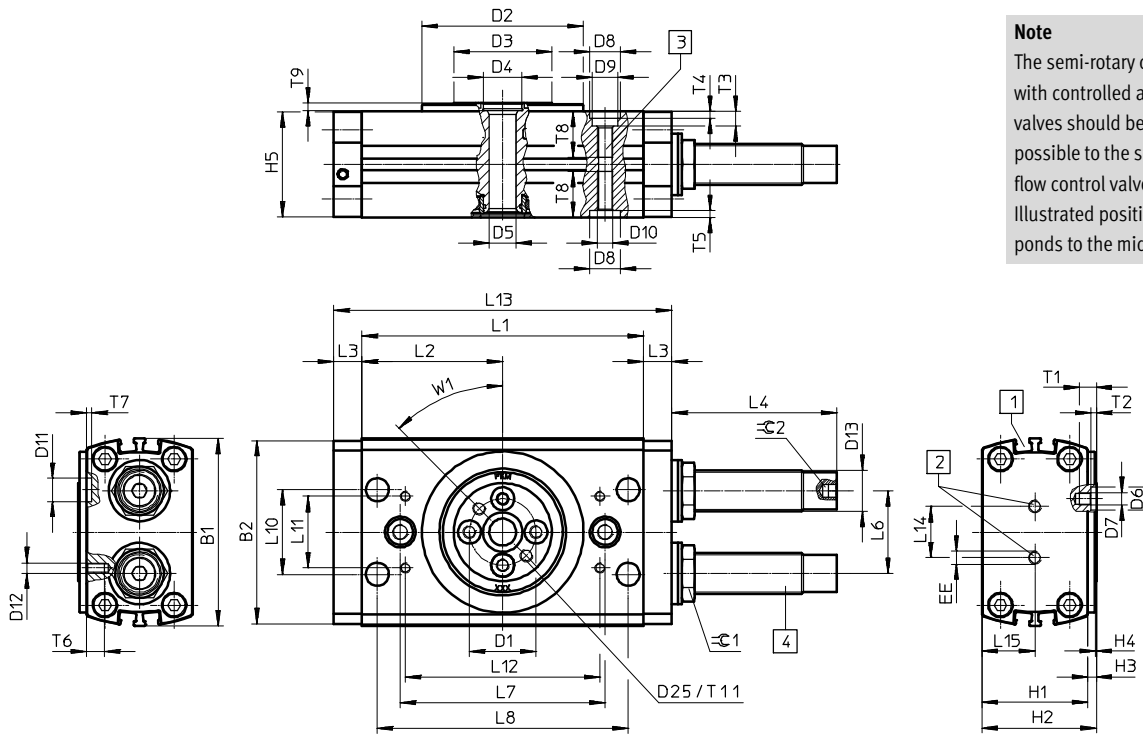
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Pneumatic drives

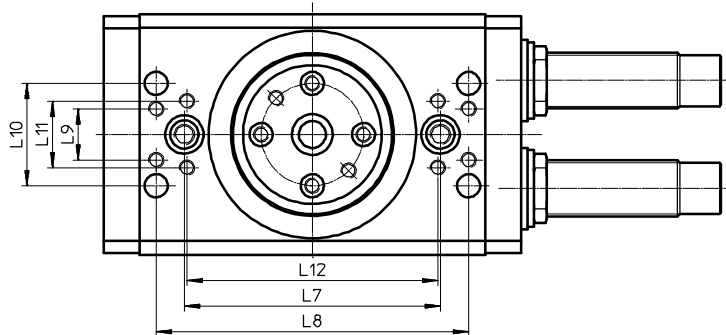
Note

The semi-rotary drive may only be operated with controlled air flow. The flow control valves should be connected as close as possible to the semi-rotary drive (e.g. one-way flow control valve GRLA-...).

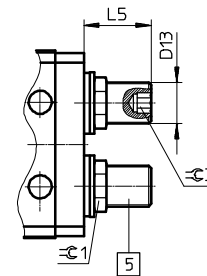
Illustrated position of the flanged shaft corresponds to the mid-position (swivel angle 90°).



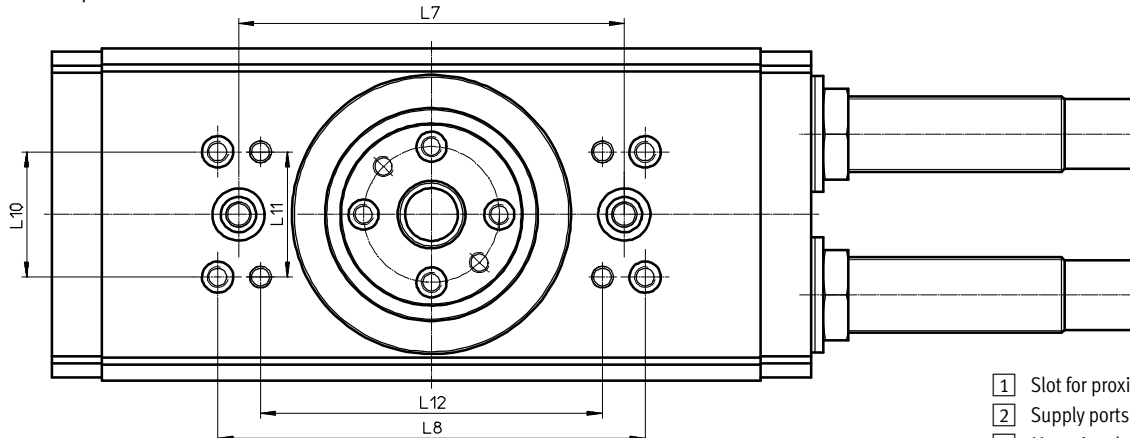
DRRD-32 ... 40




DRRD-...-P



DRRD-50/63



- 1 Slot for proximity sensor
- 2 Supply ports
- 3 Mounting thread
- 4 Shock absorber (DRRD-...-Y9/-Y10/Y14)
- 5 Cushioning components (DRRD-...-P)

Twin piston semi-rotary drives DRRD 

Dimensions – Size 16 ... 63

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01

Size	B1 ±0.25	B2	D1 ∅ ±0.025	D2 ∅ +0/-0.05	D3 ∅	D4 ∅ H7	D5 ∅ +0.15/-0.05	D6 ∅ H7	D7	D8 ∅ H7	D9 ∅	D10
16	58	56.2	21	50	32	12	8	7	M4	9	8	M5
20	65	63.4	24	56	34.9	12	8	7	M4	9	8	M5
25	73.2	71.5	26	63	38.3	15	10.5	9	M5	12	10	M6
32	94	92.6	40	81	54.2	15	10.5	9	M6	15	11	M8
35	106	104	45	91	59.9	25	10.5	9	M6	15	11	M8
40	113	111	45	91	59.9	25	21	9	M6	15	14	M10
50	132	129.9	54	110	73	25	21	12	M8	15	14	M10
63	159	157	63	135	82.8	25	21	15	M10	25	17	M12

Size	D11 ∅ H7	D12	D13	D25	H1 ±0.1	H2 +0.2/-0.1	H3 +0.3/-0.2	H4	H5	L1 ±0.1	L2	L3 ±0.1
16	7	M3	M10x1	M4	33	35.6	2.6	0.5	32.6	84	42	10.5
20	9	M4	M12x1	M5	36	39.6	3.6	0.5	35.6	86	43	11
25	9	M4	M16x1	M5	41.4	44.7	3.3	0.5	41	110	55	11
32	9	M6	M22x1.5	M6	50	55.5	5.5	1	49.6	135	67.5	14
35	9	M6	M26x1.5	M6	63	67	4	1	62.2	148	74	15
40	9	M6	M26x1.5	M6	68	72	4	1	67.2	199	99.5	15
50	15	M8	M30x1.5	M8	78	83	5	1	77.2	262	131	20
63	15	M10	M37x1.5	M10	100	107	7	2	99.2	335	167.5	25

Size	L6	L7 ±0.02	L8 ±0.2	L9 ±0.15	L10 ±0.02	L11 ±0.15	L12 ±0.2	L13	L14	L15	T1	T2 +0.1
16	23.2	64	74	–	26	22	61	105	20	16.3	5.6	1.6
20	26	70	74	–	33	14	80	108	20	17.8	6	1.6
25	32.3	80	98	–	33	14	98	132	20	20.5	6.6	2.1
32	42.2	100	122	20	40	26	98	163	30	24.8	8	2.1
35	49.6	120	130	44	26	44	105	178	42	31.1	8	2.1
40	56	120	130	44	26	44	105	229	42	33.6	8	2.1
50	64	160	160	34	34	54	132	302	50	39	10.6	2.6
63	78	170	190	60	60	60	149	385	50	49.6	14	3.1

Size	T3	T4 +0.1	T5 +0.1	T6	T7 +0.1	T8	T9 +0.1	T11	EE	W1	∠ 1	∠ 2	∠ 3
16	4.7	2.1	2.1	6.3	1.6	15	2.6	5.6	M5	45°	13	3	5
20	4.7	2.1	2.1	6.3	2.1	15	2.6	5.6	M5	45°	15	4	6
25	5.7	2.6	2.6	7	2.1	18	3.1	5.5	M5	45°	19	5	8
32	6.5	3.1	3.1	7.8	2.1	23.1	3.1	8	G1/8	45°	27	5	10
35	6.5	3.1	3.1	8.5	2.1	22.6	3.5	8	G1/8	45°	32	6	10
40	8.6	3.1	3.1	9	2.1	32	3.5	8	G1/8	45°	32	6	10
50	8.6	3.1	3.1	10.5	3.1	30	3.5	10	G1/4	45°	36	8	–
63	11	3.5	3.5	14	3.1	40	3.5	14	G3/8	45°	46	8	–

Size	Dimension with 180° swivel angle		Swivel angle adjustment range		
	L4	L5	L4 min./max.	L5 min./max.	1 mm = ...°
16	37	17.6	-20/+1.5	-12/+1.4	8.7
20	41.8	18	-21.1/+1.5	-11/+1.4	9
25	63	24.3	-28.9/+1.9	-15/+1.8	6.6
32	78.3	29.5	-34.7/+2.4	-19/+2.3	5.6
35	97.5	40.9	-34.7/+2.4	-27/+2.3	5.6
40	98.2	41.6	-53/+3.2	-28/+3.1	3.6
50	126	–	-74.5/+4.4	–	2.6
63	120	–	-71.7/+7.1	–	1.9

Semi-rotary drives > Semi-rotary drives with rack and pinion >

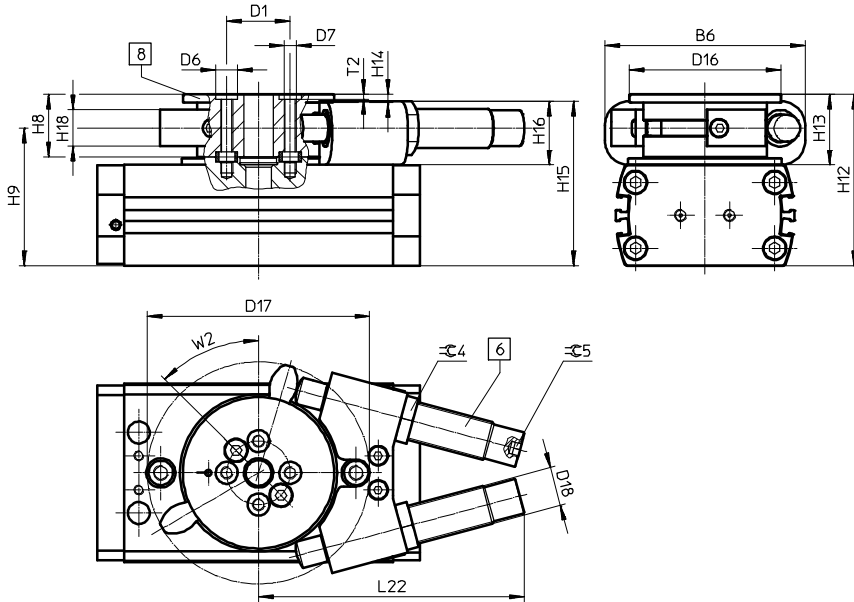
Twin piston semi-rotary drives DRRD ★

01

Dimensions – Size 16 ... 63

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Y12 – With external shock absorber



- 6 Shock absorber
- 8 Flange assembly

Size	B6	D1 ∅	D6 ∅ H7	D16 ∅	D17	D18	H8 ±0.1	H9	H12
16	±0.2 58	±0.025 21	7	49	69.4	M10x1	17	43.1	52.6
20	75	24	7	62	91	M12x1	25.6	51.2	65.2
25	82	26	9	62	91	M16x1	25.6	56.5	70.3
32	120	40	9	79	126.2	M22x1.5	31.5	68.5	87
35	133	45	9	89	146.7	M22x1.5	34	83	101
40	133	45	9	89	146.7	M22x1.5	34	88	106
50	152	54	12	110	165.2	M26x1.5	42	101.5	125
63	186	63	15	130	212.2	M30x1.5	52	129.5	159

Size	H13	H14	H15	H16	H18	L22 max.	T2 +0.1	W2	∠ 4	∠ 5
16	19.6	3.5	51	18	10	65.2	1.6	45°	13	3
20	29.2	3.5	59.5	23.5	15	85.3	1.6	45°	15	4
25	28.9	3.5	67.4	26	15	108.9	2.1	45°	19	5
32	37	4	85	35	22	149.7	2.1	45°	27	5
35	38	5	99	36	21	155.5	2.1	45°	27	5
40	38	5	104	36	21	155.5	2.1	45°	27	5
50	47	6	123	45	30	171.6	2.6	45°	32	6
63	59	6	155.5	55.5	36	228	3.1	45°	36	8

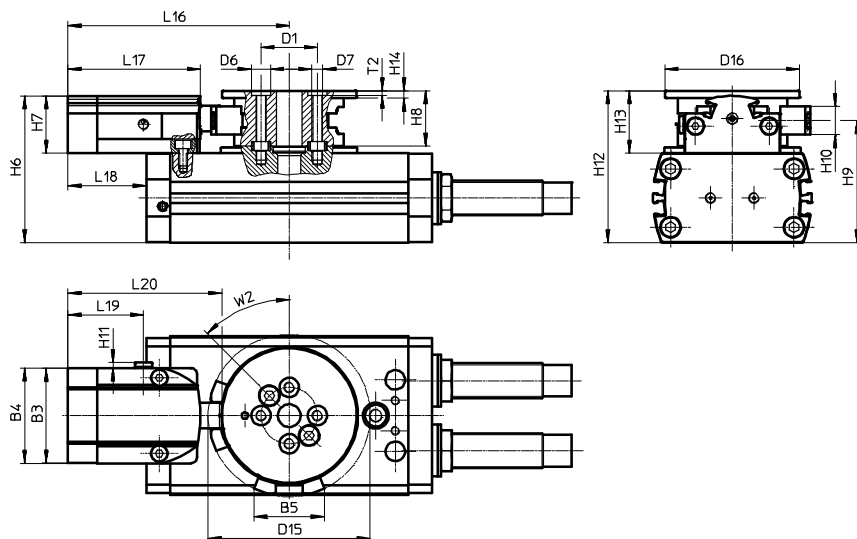
Pneumatic drives

Dimensions – Size 16 ... 63

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01

Clamping unit



Note
The cylinder can be mounted on both sides.

Pneumatic drives

Size	B3	B4	B5	D1 ∅	D6 ∅	D7	D15 ∅	D16 ∅	H6	H7	H8	H9
	±0.2	±0.2		±0.025	H7					±0.15	±0.1	
16	37.6	38	26.9	21	7	M4	61.9	49	51	18	17	43.1
20	43.6	44	32.4	24	7	M4	74.9	62	62.5	26.5	25.6	51.2
25	43.6	44	32.4	26	9	M5	74.9	62	67.9	26.5	25.6	56.5
32	43.6	44	39.4	40	9	M6	95.4	79	79	26.7	31.5	68.5
35	57.6	58	50.2	45	9	M6	110.9	89	98	35	34	83
40	57.6	58	50.2	45	9	M6	110.9	89	103	35	34	88
50	71.4	72	59.6	54	12	M8	124.3	110	123	45	42	101.5
63	71.4	72	65.8	63	15	M10	148.5	130	149	49	52	129.5

Size	H10	H11	H12	H13	H14	L16	L17	L18	L19	L20	T2	W2
											+0.1	
16	9	2.5	52.6	19.6	3.5	83	50	30.5	34	58.3	1.6	45°
20	13	2.5	65.2	29.2	3.5	102.2	61.2	48.2	34.8	71.1	1.6	45°
25	13	2.5	70.3	28.9	3.5	102.2	61.2	36.2	34.8	71.1	2.1	45°
32	17	2.5	87	37	4	112.2	61.2	30.7	34.8	71.1	2.1	45°
35	14.8	2.5	101	38	5	132.5	70.6	43.5	42.6	85.4	2.1	45°
40	14.8	2.5	106	38	5	132.5	70.6	18	42.6	85.4	2.1	45°
50	19	4.6	125	47	6	151	81	0	46	98	2.6	45°
63	22	4.6	159	59	6	163	81	-29.5	46	99.5	3.1	45°

Twin piston semi-rotary drives DRRD ★

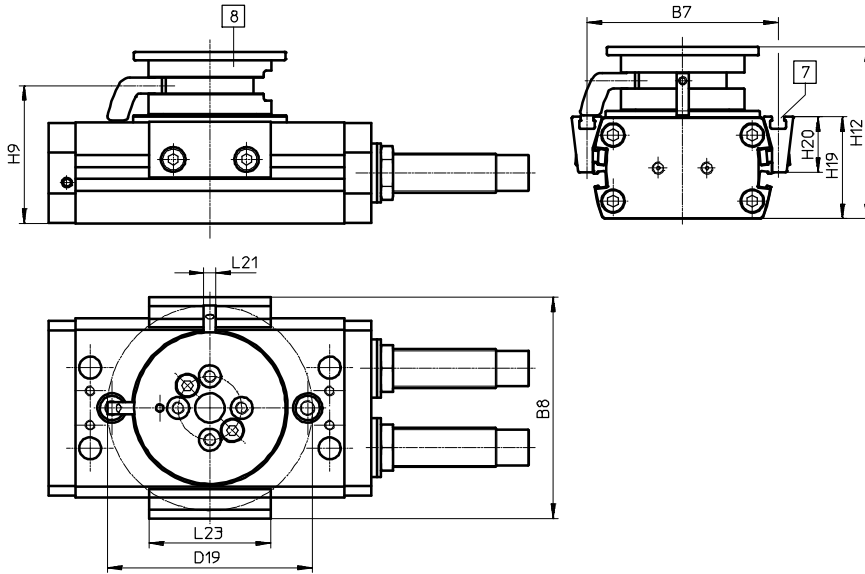
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01

Dimensions – Size 16 ... 63

Sensing kit

Pneumatic drives



- 7 Slot for proximity sensor
- 8 Flange assembly

Size	B7	B8	D19 ∅	H9	H12
16	64.4	76.1	70.9	43.1	52.6
20	74	85.7	84	51.2	65.2
25	78.2	90.7	84	56.5	70.3
32	100	113.5	107.5	68.5	87
35	116	132.9	125.2	83	101
40	118	135.8	125.2	88	106
50	136	155.3	146.6	101.5	125
63	163	185.3	173.9	129.5	159

Size	H19	H20 ±0.1	L21	L23
16	33.5	18.5	5	50
20	36.4	20.2	5	50
25	41.8	22.8	5	50
32	50.5	26.5	7	50
35	63.5	33.1	7	50
40	68.5	35.5	7	50
50	79.1	43	7	50
63	101	55	7	50



Increase productivity and safety

- + Thanks to minimum cycle times with the right cushioning variant
- + With optional clamping unit that prevents movement in the event of pressure failure


Drives with guides > Drives with slides >

Mini slides

DGSL 

Drives with guides > Drives with slides >

Mini slides

DGSL  Overview, configuration and ordering
→ www.festo.com/catalogue/dgsl Additional information, support and user documentation
→ www.festo.com/sp/dgsl Quick ordering of basic designs
→ page 342

- + High load capacity and positioning accuracy
- + Maximum movement precision thanks to ground-in ball bearing cage guide
- + Maximum flexibility thanks to eight sizes
- + Reliable in the event of pressure drop thanks to clamping unit and end-position locking
- + Versatile mounting options
- + Compact

Product range overview

Type/function	Size	Stroke [mm]	Force [N]	Product options								
				C	E3	P	P1	Y3	E	Y11	N	A
DGSL												
Double-acting	4, 6, 8, 10, 12, 16, 20, 25	10 ... 200	17 ... 483	■	■	■	■	■	■	■	■	■

Product options

N NPT thread

C Clamping unit

E3 Interlock

P Elastic cushioning without metal end position, adjustable

P1 Elastic cushioning with metal end position, adjustable

Y3 Progressive shock absorber, at both ends

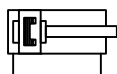
E Elastic cushioning without metal end position, adjustable, short design

Y11 Progressive shock absorber with reducing sleeve, at both ends

N No cushioning

A Position sensing

Data sheet

**Note**

Operation without cushioning components is not permitted.



Technical data							Dimensions → Page 346	
Size	4	6	8	10	12	16	20	25
Pneumatic connection	M3			M5			G1/8	
Stroke [mm]	10, 20, 30	10, 20, 30, 40, 50	10, 20, 30, 40, 50, 80	10, 20, 30, 40, 50, 80, 100	10, 20, 30, 40, 50, 80, 100, 150		10, 20, 30, 40, 50, 80, 100, 150, 200	
Cushioning								
DGSL-...-PP	Elastic cushioning without metal end position, adjustable							
DGSL-...-E	Elastic cushioning without metal end position, adjustable, short design							
DGSL-...-P1	Elastic cushioning with metal end position, adjustable							
DGSL-...-Y3	–			Progressive shock absorber, at both ends				
DGSL-...-Y11	–			Progressive shock absorber with reducing sleeve, at both ends				
DGSL-...-N	No cushioning							
Theoretical force at 6 bar, advancing [N]	17	30	47	68	121	188	295	483
Theoretical force at 6 bar, retracting [N]	13	23	40	51	104	158	247	415

Drives with guides > Drives with slides >

Mini slides DGSL ★

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Data sheet

Technical data – Clamping unit							
Size	6	8	10	12	16	20	25
Clamping type with effective direction	At both ends						
	Clamping via spring force, air to release						
Static holding force [N]	80	80	180	180	350	350	600

Technical data – End-position locking							
Size	6	8	10	12	16	20	25
Clamping type with effective direction	At both ends						
	Clamping via spring force, air to unlock						
Static holding force [N]	60	60	160	160	250	380	640

Operating conditions								
Size	4	6	8	10	12	16	20	25
Mini slide								
Min. operating pressure [bar]	2.5	1.5			1			
Max. operating pressure [bar]	8							
Ambient temperature ¹⁾ [°C]	0 ... +60							
Clamping unit								
Min. release pressure [bar]	3							
Max. operating pressure [bar]	≤ 10							
End-position locking								
Operating pressure [bar]	3 ... 8							

1) Note operating range of proximity sensors.

Materials	
Housing	Wrought aluminium alloy
End cap	Wrought aluminium alloy
Guide rail	Tempered steel
Piston rod	High-alloy stainless steel
Seals	HNBR

Pneumatic drives

Order code

		DGSL	-		-		-		-		-		A
Type													
DGSL	Mini slide												
Size													
	Stroke [mm]												
4	10, 20, 30												
6	10, 20, 30, 40, 50												
8	10, 20, 30, 40, 50, 80												
10	10, 20, 30, 40, 50, 80, 100												
12	10, 20, 30, 40, 50, 80, 100, 150												
16	10, 20, 30, 40, 50, 80, 100, 150												
20	10, 20, 30, 40, 50, 80, 100, 150, 200												
25	10, 20, 30, 40, 50, 80, 100, 150, 200												
Clamping unit													
C	Attached 1												
End-position locking													
E3	With piston rod in retracted position 1/2												
Cushioning													
P	Elastic cushioning without metal end position, adjustable												
P1	Elastic cushioning with metal end position, adjustable												
Y3	Progressive shock absorber, at both ends 3												
E	Elastic cushioning without metal end position, adjustable, short design												
Y11	Progressive shock absorber with reducing sleeve, at both ends 4												
N	No cushioning 3												
Position sensing													
A	Via proximity sensor												

1 Not with size 4.

2 Not with clamping unit C.

3 Not with size 4 and 6, minimum stroke 30 mm.

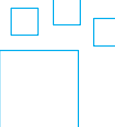
4 Not with size 4 ... 8, minimum stroke 30 mm.

Order example:

DGSL-12-100-C-Y3A

Mini slide DGSL - size 12 - stroke 100 mm - clamping unit attached - without end-position locking - progressive shock absorber at both ends - position sensing via proximity sensor

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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Mini slides DGSL ★

01

★ Quick ordering¹⁾

PA – Elastic cushioning without metal end position, adjustable

Part no.	Type
Piston Ø 8 mm	
543926	DGSL-8-10-PA
543927	DGSL-8-20-PA
543928	DGSL-8-30-PA
543929	DGSL-8-40-PA
543930	DGSL-8-50-PA
543931	DGSL-8-80-PA
Piston Ø 10 mm	
543942	DGSL-10-10-PA
543943	DGSL-10-20-PA
543944	DGSL-10-30-PA
543945	DGSL-10-40-PA
543946	DGSL-10-50-PA
543947	DGSL-10-80-PA
543948	DGSL-10-100-PA

Part no.	Type
Piston Ø 12 mm	
543961	DGSL-12-10-PA
543962	DGSL-12-20-PA
543963	DGSL-12-30-PA
543964	DGSL-12-40-PA
543965	DGSL-12-50-PA
543966	DGSL-12-80-PA
543967	DGSL-12-100-PA
543968	DGSL-12-150-PA
Piston Ø 16 mm	
543983	DGSL-16-10-PA
543984	DGSL-16-20-PA
543985	DGSL-16-30-PA
543986	DGSL-16-40-PA
543987	DGSL-16-50-PA
543988	DGSL-16-80-PA
543989	DGSL-16-100-PA
543990	DGSL-16-150-PA

Part no.	Type
Piston Ø 20 mm	
544005	DGSL-20-10-PA
544006	DGSL-20-20-PA
544007	DGSL-20-30-PA
544008	DGSL-20-40-PA
544009	DGSL-20-50-PA
544010	DGSL-20-80-PA
544011	DGSL-20-100-PA
544012	DGSL-20-150-PA
544013	DGSL-20-200-PA

Pneumatic drives

1) All products in this table are easy to select and quick to order.

Y3A – Progressive shock absorber, at both ends

Part no.	Type
Piston Ø 8 mm	
543938	DGSL-8-30-Y3A
543939	DGSL-8-40-Y3A
543940	DGSL-8-50-Y3A
543941	DGSL-8-80-Y3A
Piston Ø 10 mm	
543956	DGSL-10-30-Y3A
543957	DGSL-10-40-Y3A
543958	DGSL-10-50-Y3A
543959	DGSL-10-80-Y3A
543960	DGSL-10-100-Y3A

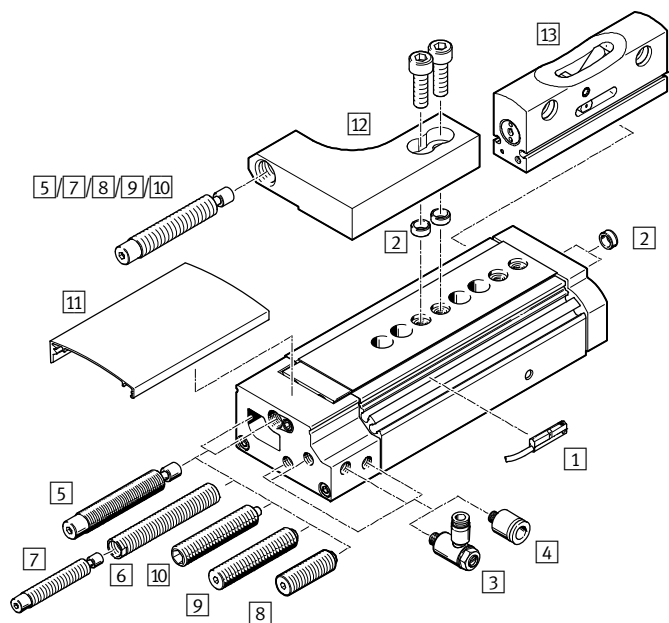
Part no.	Type
Piston Ø 12 mm	
543977	DGSL-12-30-Y3A
543978	DGSL-12-40-Y3A
543979	DGSL-12-50-Y3A
543980	DGSL-12-80-Y3A
543981	DGSL-12-100-Y3A
543982	DGSL-12-150-Y3A
Piston Ø 16 mm	
543999	DGSL-16-30-Y3A
544000	DGSL-16-40-Y3A
544001	DGSL-16-50-Y3A
544002	DGSL-16-80-Y3A
544003	DGSL-16-100-Y3A
544004	DGSL-16-150-Y3A

Part no.	Type
Piston Ø 20 mm	
544023	DGSL-20-30-Y3A
544024	DGSL-20-40-Y3A
544025	DGSL-20-50-Y3A
544026	DGSL-20-80-Y3A
544027	DGSL-20-100-Y3A
544028	DGSL-20-150-Y3A
544029	DGSL-20-200-Y3A

1) All products in this table are easy to select and quick to order.

Accessories

Note
End stops must not be removed.



		→ Page/online
1	Proximity sensor SME-/SMT-10	344
2	Centring sleeve ZBH	344
3	One-way flow control valve GRLA	344
4	Push-in fitting QSM	1443
5	Cushioning Y3	344
6	Reducing sleeve DAYH	344
7	Shock absorber DYSW	344
8	Cushioning E	344
9	Cushioning P	344
10	Cushioning P1	344

		→ Page/online
11	Cover DADS	345
12	Shock absorber retainer DADP	dgsl
13	Intermediate position attachment DADM	dgsl
-	Connector sleeve ZBV	345
-	Connecting cable NEBU	345
-	Drive/drive connections	dgsl
-	Drive/gripper connections	dgsl

Shock absorber selection

With the mini slide DGSL, shock absorbers can be replaced and the cushioning behaviour can thus be influenced (depending on the payload).

With smaller loads, the next smallest shock absorber DYSW can be installed with the help of the reducing sleeve DAYH.

This is done by removing the existing shock absorbers on the DGSL and replacing them with a smaller shock absorber as appropriate to the application.

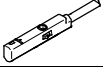
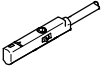

With very small loads, the shock absorber DYEF can be installed.

Drives with guides > Drives with slides >


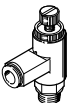
Mini slides DGSL ★

01

Accessories – Ordering data




	For size	Switching output, connection	Cable length [m]	Part no.	Type
1 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	4 ... 25	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
Magnetic reed – N/O contact Data sheets → Page 1218					
	6 ... 25	Contacting, cable	2.5	★ 551365	SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3	★ 551367	SME-10M-DS-24V-E-0,3-L-M8D
		Contacting, cable	2.5	★ 551369	SME-10M-ZS-24V-E-2,5-L-OE
2 Centring sleeve¹⁾					
	4, 6	4, 6	–	189652	ZBH-5
	8, 10, 12, 16	8, 10, 12, 16	–	186717	ZBH-7
	20, 25	20, 25	–	150927	ZBH-9



1) Packaging unit 10 pieces.

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
3 One-way flow control valve with slotted head screw, metal²⁾ for exhaust air flow control Data sheets → Page 1033					
	4, 6, 8	M3	3	175041	GRLA-M3-QS-3 ³⁾
			–	175038	GRLA-M3
	10, 12, 16	M5	4	★ 193138	GRLA-M5-QS-4-D
	20, 25	G1/8	6	★ 193144	GRLA-1/8-QS-6-D
			6	★ 197581	GRLA-1/8-QS-6-RS-D
	8	★ 534337	GRLA-1/8-QS-8-RS-D		

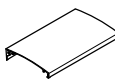
2) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.




3) Only one GRLA-M3-QS-3 can be mounted on the front with size 4.

	For size	Part no.	Type
5/7 Shock absorber Y3			
	8	548070	DYSW-4-6-Y1F
	10	548071	DYSW-5-8-Y1F
	12	548072	DYSW-7-10-Y1F
	16	548073	DYSW-8-14-Y1F
	20	548074	DYSW-10-17-Y1F
	25	548075	DYSW-12-20-Y1F
6 Reducing sleeve DAYH			
	10	1165476	DAYH-4
	12	1165480	DAYH-5
	16	1165484	DAYH-7
	20	1165488	DAYH-8
	25	1165491	DAYH-10
8 Shock absorber P1			
	4	548370	DYEF-M4-Y1F
	6	548371	DYEF-M5-Y1F
	8	548372	DYEF-M6-Y1F
	10	548373	DYEF-M8-Y1F
	12	548374	DYEF-M10-Y1F
	16	548375	DYEF-M12-Y1F
	20	548376	DYEF-M14-Y1F
	25	548377	DYEF-M16-Y1F

	For size	Part no.	Type
9 Shock absorber P			
	4	1179810	DYEF-M4-Y1
	6	1179818	DYEF-M5-Y1
	8	1179831	DYEF-M6-Y1
	10	1179834	DYEF-M8-Y1
	12	1179837	DYEF-M10-Y1
	16	1179840	DYEF-M12-Y1
	20	1179863	DYEF-M14-Y1
	25	1179879	DYEF-M16-Y1
	10 Shock absorber E		
	4	1152500	DYEF-S-M4-Y1
	6	1152507	DYEF-S-M5-Y1
	8	1152524	DYEF-S-M6-Y1
	10	1152536	DYEF-S-M8-Y1
	12	1152959	DYEF-S-M10-Y1
	16	1153004	DYEF-S-M12-Y1
	20	1153017	DYEF-S-M14-Y1
25	1153023	DYEF-S-M16-Y1	

Accessories – Ordering data

	For size	Length [mm]	Part no.	Type
11 Cover				Dimensions online: → dgs1
	4	30	1086663	DADS-AB-G6-4-30
		500	1212468	DADS-AB-G6-4-500
	6	50	1066625	DADS-AB-G6-6-50
		500	1212476	DADS-AB-G6-6-500
	8	80	1087413	DADS-AB-G6-8-80
		500	1212478	DADS-AB-G6-8-500
	10	50	1162400	DADS-AB-G6-10-50
		100	1090689	DADS-AB-G6-10-100
		500	1212479	DADS-AB-G6-10-500
	12	50	1162406	DADS-AB-G6-12-50
		150	1090732	DADS-AB-G6-12-150
		500	1212480	DADS-AB-G6-12-500
	16	50	1162410	DADS-AB-G6-16-50
		150	1066591	DADS-AB-G6-16-150
		500	1212503	DADS-AB-G6-16-500
	20	50	1162412	DADS-AB-G6-20-50
100		1162415	DADS-AB-G6-20-100	
200		1090823	DADS-AB-G6-20-200	
500		1212521	DADS-AB-G6-20-500	
25	50	1162417	DADS-AB-G6-25-50	
	100	1162419	DADS-AB-G6-25-100	
	200	1090895	DADS-AB-G6-25-200	
	500	1212523	DADS-AB-G6-25-500	

	For size	Connection	Cable length [m]	Part no.	Type
Connector sleeve¹⁾					
	8, 10	8, 10	–	548802	ZBV-M4-7
	12, 16	12, 16	–	548803	ZBV-M5-7
	20, 25	20, 25	–	548804	ZBV-M6-9
Connecting cable, straight socket Data sheets → Page 1543					
	4 ... 25	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	4 ... 25	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

1) Packaging unit 3 pieces.

Drives with guides > Drives with slides >

Mini slides DGSL ★

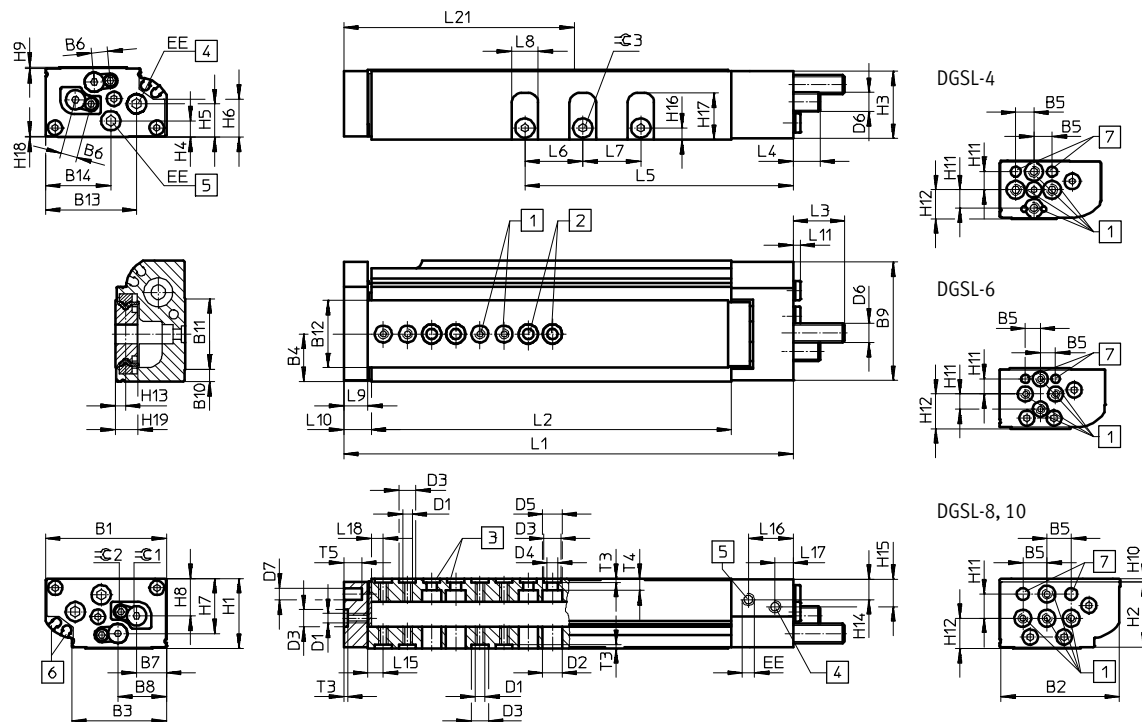
Download CAD data → www.festo.com

01

Dimensions

Size 4 ... 10

Pneumatic drives



- 1) Mounting thread (centring sleeves included in the scope of delivery)
- 2) Through-holes for mounting the drive
- 3) Centring holes (centring sleeves included in the scope of delivery)
- 4) Supply port, advancing
- 5) Supply port, retracting
- 6) Slots for proximity sensor SME/SMT-10
- 7) Centring hole
- L10 Distance between outer edge of yoke plate and housing
- L15 Distance between centre of centring hole and outer edge of slide
- L18 Distance between centre of centring hole and outer edge of housing

Size	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1
4	28	27.4	18.35	9.4	5	3.55	6.3	11.95	27.5	2	17.2	12.4	23.15	16.15	M3
6	35	34.5	26.3	13.5	5	5	8.2	13.55	34.5	3.5	19.9	20	28.1	18.9	M3
8	42	41.3	31.45	16.6	10	6	10.3	16.25	41.5	4.57	24	24.1	33	24.4	M4
10	50	49	39.2	19.65	10	6.8	12.35	20.1	49	5	29.2	28	37.7	27	M4

Size	D2	D3	D4	D5	D6	D7	EE	H1	H2	H3	H4	H5	H6	H7	H8
	∅	∅	∅	∅		∅		±0.08							
4	6.3	5 ^{H7}	3.3	6.2	M4x0.5	3 ^{H7}	M3	16	15.4	15.1	3.85	6.25	8.55	8.1	8.4
6	6.3	5 ^{H7}	3.3	6.2	M5x0.5	3 ^{H7}	M3	20	19	19.25	4.7	7.8	10.2	16.05	10.55
8	8.2	7 ^{H7}	4.3	8	M6x0.5	5 ^{H7}	M3	24	22.7	23	6.46	10.63	14.06	18.9	13.3
10	8.2	7 ^{H7}	4.3	8	M8x1	5 ^{H7}	M5	29	27.1	28	6.8	13.8	15.8	22.8	15.5

Size	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	T3	T4	T5	≈C 2 ¹⁾	≈C 3
												+0.1				
4	0.65	0.3	5	8	2.7	5.35	5.85	3.1	10.6	0.25	5.28	1.3	2.25	4	1.3	2
6	0.45	0.5	5	11.5	3.38	6.5	7.2	3.7	13.1	0.3	6.68	1.3	3.7	6	1.5	2.5
8	0.64	0.9	10	8.7	3.28	7.8	10.5	4.1	16.8	0.36	6.7	1.6	3.8	7.5	2	2.5
10	0.6	1.4	10	12.5	4.2	8.76	11.76	4.8	19.25	0.41	9	1.6	5.35	7.5	2.5	3

1) With size 4, the scope of delivery of the drive includes an Allen key.

Dimensions

Download CAD data → www.festo.com

01

Size	Stroke	L1	L2	L5	L6	L7	L8	L9	L10	L11	L15 ±0.05	L16	L17	L18 ±0.05	L21
4	10	72.1	48	28.85	–	–	6.5	5.5	6.6	2.5	4	13.25	4.95	3	31
	20	81.2	57.1	37.95	10										36
	30	91.2	67.1	47.95	11										42
6	10	81.1	54	33.1	–	–	8	8	9.6	2.5	5.1	13.25	4.95	3.5	37
	20	91.1	64	43.1	14										42
	30	101.1	74	53.1											47
	40	111.1	84	63.1											52
	50	121.1	94	73.1											57
8	10	90.2	59.6	34.6	–	–	8	10	11.6	2.5	7	14.65	6.1	5.5	41
	20	100.2	69.6	44.6	10										46
	30	110.2	79.6	54.6	16										51
	40	120.2	89.6	64.6											56
	50	142.2	111.6	74.6											67
	80	172.2	141.6	104.6											82
10	10	103.1	66	41.3	–	–	11	10	11.6	2.5	6.4	18.5	7.5	5	43
	20	112.8	75.7	51	46										
	30	122.8	85.7	61	51										
	40	132.8	95.7	71	56										
	50	142.8	105.7	81	61										
	80	186.2	149.1	111	24										83
	100	206.2	169.1	131	24										24

Pneumatic drives

Size	Cushioning	L3 max.	L4 max.	= 1	
				For adjusting the cushioning stroke	For adjusting the end position
4	P	15.2	7.8	–	1.3
	E	5.7	0	–	1.3
	P1	14	6	1.3	2.5
6	P	17.6	8.1	–	1.5
	E	6.6	0	–	1.5
	P1	15.5	5.8	1.5	3
8	P	21.1	10.7	–	2
	E	6.6	0	–	2
	P1	19	9.1	2	4
	Y3	24.3	23.9	–	2
10	P	22.8	12.5	–	2.5
	E	8.8	0	–	2.5
	P1	20.5	10.2	2.5	5
	Y3	25.5	14.9	–	2.5
	Y11	30.4	19.9	–	2

Mini slides DGSL ★

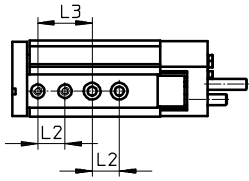
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01

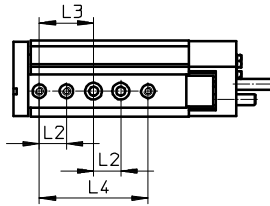
Dimensions

Hole pattern for mounting threads and centring holes

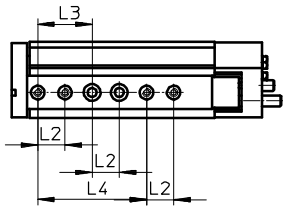
DGSL-4-10



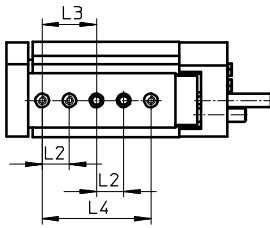
DGSL-4-20



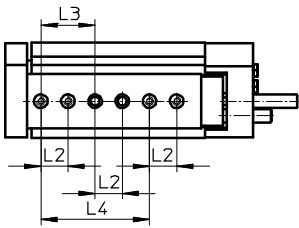
DGSL-4-30



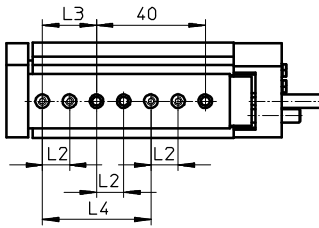
DGSL-6-10



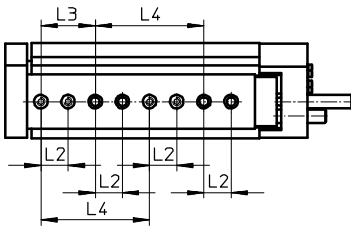
DGSL-6-20



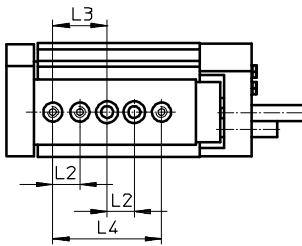
DGSL-6-30



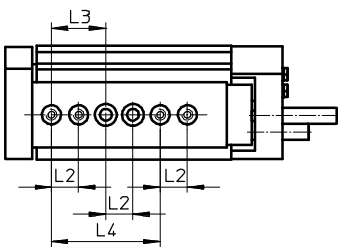
DGSL-6-40/50



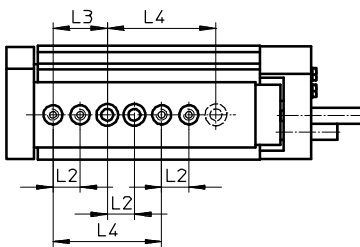
DGSL-8-10



DGSL-8-20



DGSL-8-30

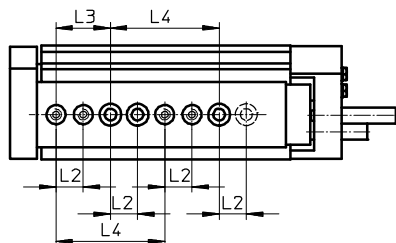


Pneumatic drives

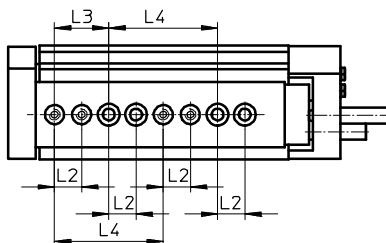
Dimensions

Hole pattern for mounting threads and centring holes

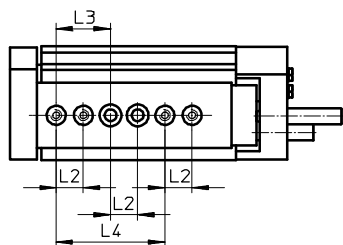
DGSL-8-40



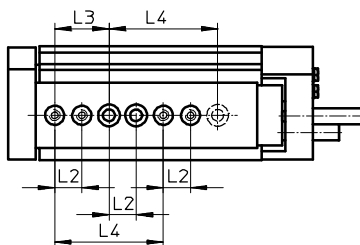
DGSL-8-50/80



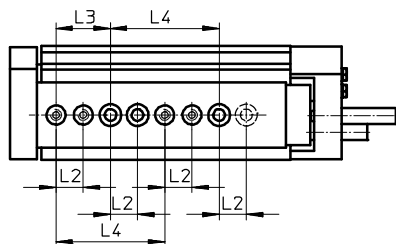
DGSL-10-10



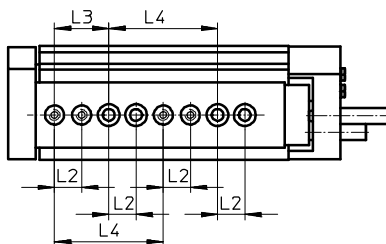
DGSL-10-20



DGSL-10-30

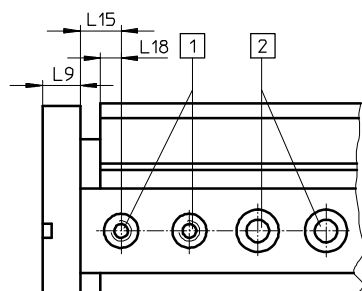


DGSL-10-40 ... 100



Distances from the yoke plate to the mounting threads and centring holes

DGSL-4 ... 10



- 1 Centring holes with thread
- 2 Through-holes for mounting the drive

Size	L2 ¹⁾	L3 ¹⁾	L4 ¹⁾	L9	L15 ±0.05	L18
4	10	20	40	5.5	4	3
6				8	5.1	3.5
8				10	7	5.5
10				10	6.4	5

1) Tolerance for centring hole ±0.02.
Tolerance for through-hole ±0.1.

Mini slides DGSL ★

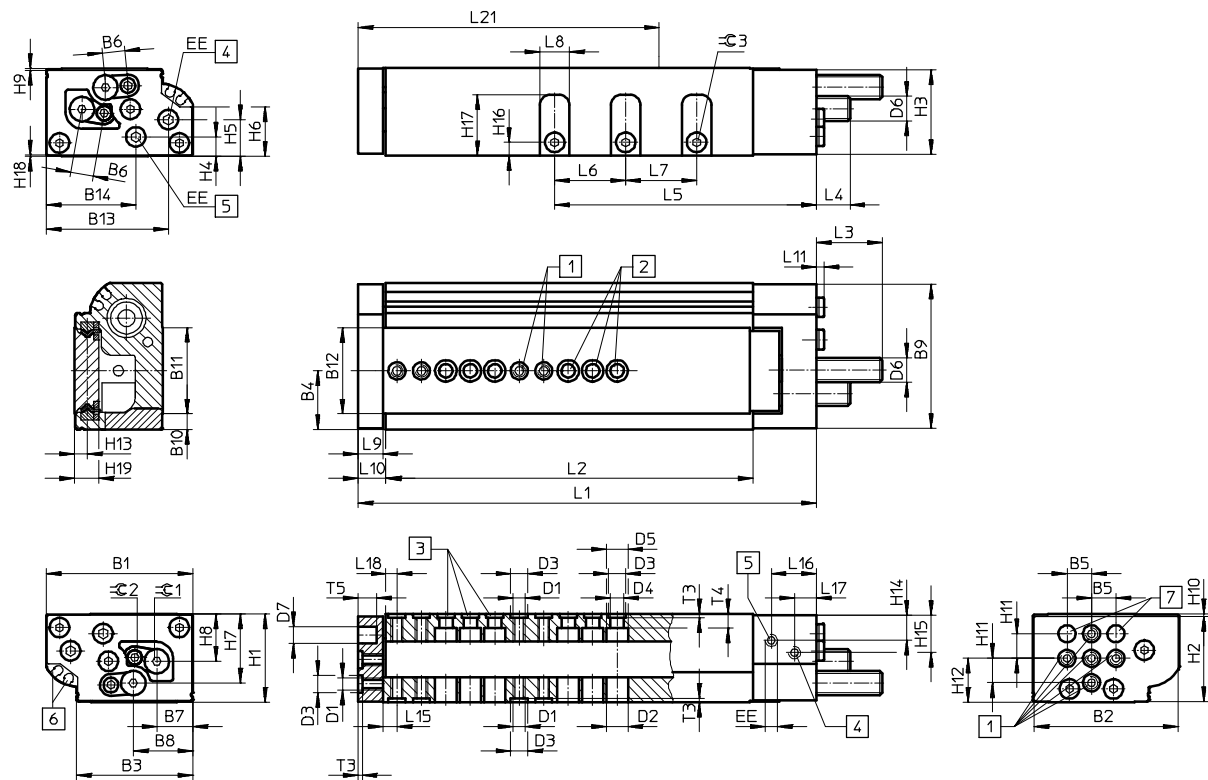
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01

Dimensions

Size 12, 16

Pneumatic drives



- 1 Mounting thread (centring sleeves included in the scope of delivery)
- 2 Through-holes for mounting the drive
- 3 Centring holes (centring sleeves included in the scope of delivery)
- 4 Supply port, advancing
- 5 Supply port, retracting
- 6 Slots for proximity sensor SME/SMT-10
- 7 Centring hole
- L10 Distance between outer edge of yoke plate and housing
- L15 Distance between centre of centring hole and outer edge of slide
- L18 Distance between centre of centring hole and outer edge of housing

Size	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1
12	60	59	47.6	24	10	9.2	14.7	24.3	59	6.45	35.25	35.2	50	36.7	M5
16	66	65	53.5	26.7	10	11.1	16.7	27.5	65	7.75	37.9	38	50.4	36.7	M5

Size	D2	D3	D4	D5	D6	D7	EE	H1	H2	H3	H4	H5	H6	H7	H8
	∅	∅	∅	∅		∅		±0.08							
12	9	7 ^{H7}	5.5	9	M10x1	8 ^{H7}	M5	36	34.8	34.7	8	15.1	20.35	28.2	19.3
16	9	7 ^{H7}	5.5	9	M12x1	8 ^{H7}	M5	40	38	39	8.5	16.7	20.6	31.7	20.8

Size	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	T3	T4	T5	∅2	∅3
												+0.1				
12	0.8	0.95	10	17.9	5.2	10.75	15.75	5.5	24.9	0.5	10.1	1.6	5.6	7.5	3	3
16	0.5	1.5	10	20	6.4	10.5	16.7	7	26.6	0.5	12.5	1.6	6.1	9	4	4

Dimensions

Download CAD data → www.festo.com

01

Size	Stroke	L1	L2	L5	L6	L7	L8	L9	L10	L11	L15 ±0.05	L16	L17	L18 ±0.05	L21
12	10	106.2	68.6	42.4	-	-	12	10	11.6	2.5	5.8	18.5	9	4.5	44
	20	116.2	78.6	52.4											49
	30	126.2	88.6	62.4											54
	40	136.2	98.6	72.4											59
	50	146.2	108.6	82.4	29	29									64
	80	197.6	160	112.4											88
	100	217.6	180	132.4											98
	150	267.6	230	182.4											124
16	10	124.1	82.5	45	-	-	14	12	13.6	2.5	6.8	21	10	5.5	54
	20	134.6	93	54.6											59
	30	144.6	103	64.6											64
	40	154.6	113	74.6											69
	50	164.6	123	84.6	35										74
	80	194.6	153	114.6											89
	100	243.6	202	134.6											113
	150	293.6	252	184.6											138

Pneumatic drives

Size	Cushioning	L3 max.	L4 max.	±0.1	
				For adjusting the cushioning stroke	For adjusting the end position
12	P	28.1	14.9	-	3
	E	8.8	0	-	3
	P1	26	12.8	3	6
	Y3	36.9	23.7	-	3
	Y11	42.2	18.7	-	2.5
16	P	42.3	26.1	-	4
	E	8.8	0	-	4
	P1	40	23.8	4	8
	Y3	51.9	35.7	-	4
	Y11	55.4	38.9	-	3

Mini slides DGSL ★

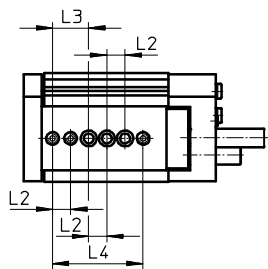
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01

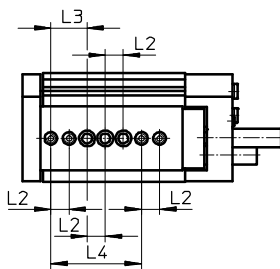
Dimensions

Hole pattern for mounting threads and centring holes

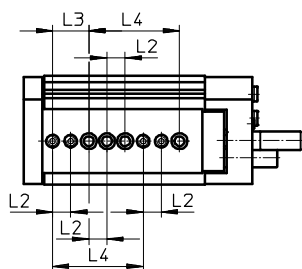
DGSL-12-10



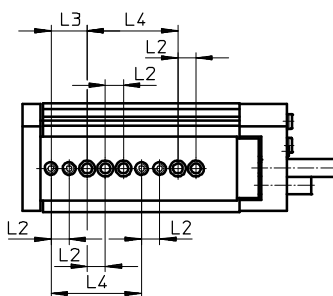
DGSL-12-20



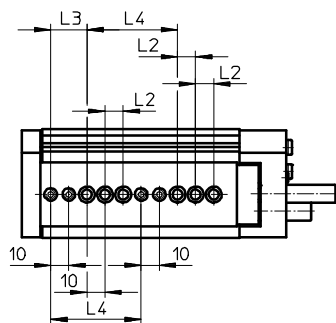
DGSL-12-30



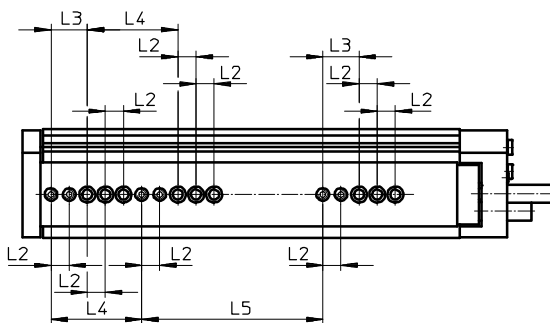
DGSL-12-40



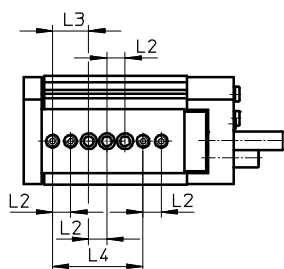
DGSL-12-50 ... 100



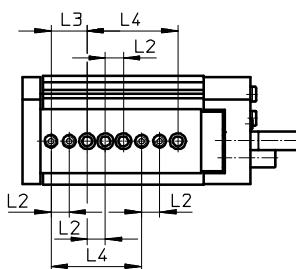
DGSL-12-150



DGSL-16-10



DGSL-16-20

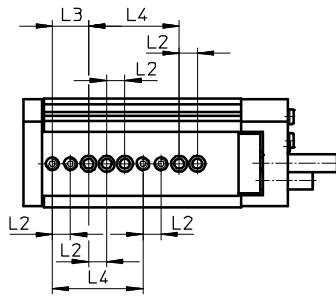


Pneumatic drives

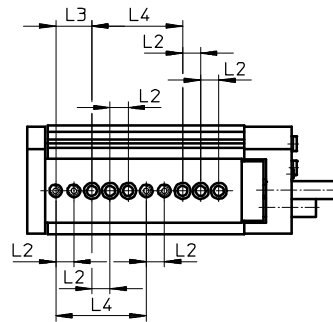
Dimensions

Hole pattern for mounting threads and centring holes

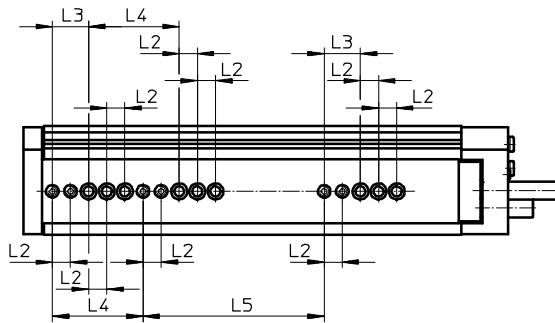
DGSL-16-30



DGSL-16-40 ... 100

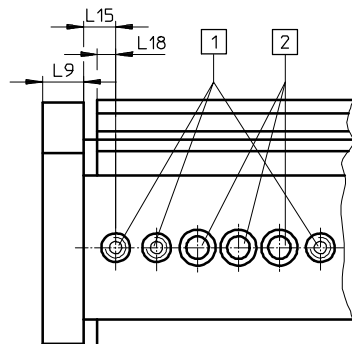


DGSL-16-150



Distances from the yoke plate to the mounting threads and centring holes

DGSL-12/16



- 1 Centring holes with thread
- 2 Through-holes for mounting the drive

Size	L2 ¹⁾	L3 ¹⁾	L4 ¹⁾	L5 ¹⁾ ±0.03	L9	L15 ±0.05	L18 ±0.05
12	10	20	50	100	10	5.8	4.5
16	10	20	50	100	12	6.8	5.5

1) Tolerance for centring hole ±0.02.
Tolerance for through-hole ±0.1.

Mini slides DGSL ★

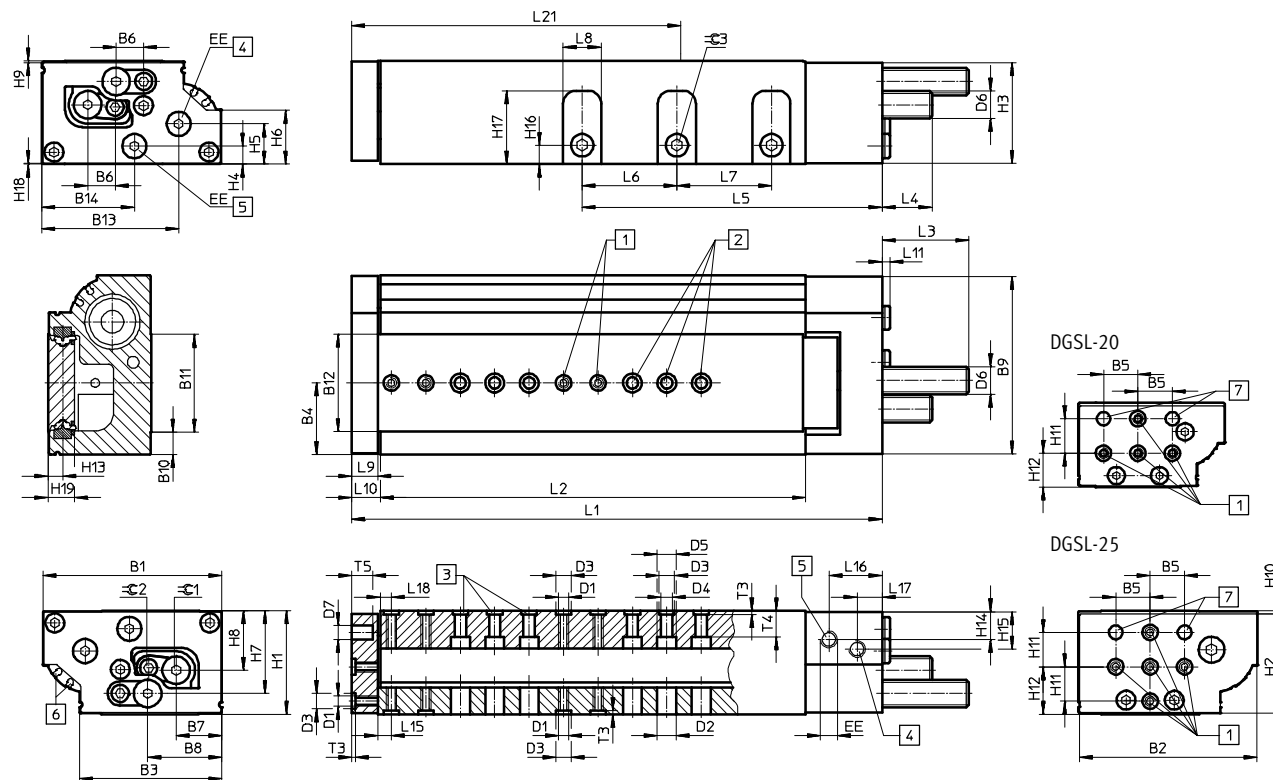
01

Dimensions

Size 20, 25

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Pneumatic drives



- 1 Mounting thread (centring sleeves included in the scope of delivery)
- 2 Through-holes for mounting the drive
- 3 Centring holes (centring sleeves included in the scope of delivery)
- 4 Supply port, advancing
- 5 Supply port, retracting
- 6 Slots for proximity sensor SME/SMT-10
- 7 Centring hole
- L10 Distance between outer edge of yoke plate and housing
- L15 Distance between centre of centring hole and outer edge of slide
- L18 Distance between centre of centring hole and outer edge of housing

Size	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1
20	85	84	68.85	34.5	20	14.15	21.4	36.35	83.4	10	48.9	49.2	64.1	48.6	M6
25	104	103	82.6	41.6	20	16.2	26.4	43.05	103	13.25	56.5	56.7	79.35	53.65	M6

Size	D2	D3	D4	D5	D6	D7	EE	H1	H2	H3	H4	H5	H6	H7	H8
20	11.2	9 ^{H7}	6.6	11	M14x1	8 ^{H7}	G1/8	49	46.5	47.7	10.3	20.6	23.2	38.2	26.1
25	11.2	9 ^{H7}	6.6	11	M16x1	8 ^{H7}	G1/8	60	57.5	58.5	10.45	23.35	31.15	47.95	34.5

Size	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	T3	T4	T5	⊙2	⊙3
20	0.5	2	20	19.6	7.55	14.7	14.7	10	33.3	0.8	14.6	2.1	8.6	10	4	5
25	1	2	20	27.5	8.55	16.55	21.5	11	42.7	0.45	15.6	2.1	15	12	5	6

Dimensions

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01

Size	Stroke	L1	L2	L5	L6	L7	L8	L9	L10	L11	L15 ±0.05	L16	L17	L18 ±0.05	L21
20	10	141.2	84.6	59.1	-	-	17	14	15.6	4.6	7.8	30.5	12	6.5	56
	20	151.2	94.6	69.1											61
	30	161.2	104.6	79.1											66
	40	171.2	114.6	89.1											71
	50	183.2	126.6	99.1											76
	80	211.2	154.6	129.1											91
	100	270.2	213.6	149.1											121
	150	333.2	276.6	199.1											152
	200	383.2	326.6	252.1											177
	25	10	157.1	96											63.7
20		167.1	106	72.2	69										
30		177.1	116	82.2	74										
40		187.1	126	92.2	79										
50		197.1	136	102.2	84										
80		253.1	192	132.2	112										
100		286.1	225	152.2	129										
150		338.1	277	202.2	154										
200		388.1	327	254.2	179										

Pneumatic drives

Size	Cushioning	L3 max.	L4 max.	≈ 1	
				For adjusting the cushioning stroke	For adjusting the end position
20	P	52.4	31.2	-	4
	E	8.8	0	-	4
	P1	50.1	28.9	4	8
	Y3	55.5	34.3	-	4
	Y11	67.4	45.9	-	4
25	P	51.9	30.5	-	5
	E	8.8	0	-	5
	P1	49.6	28.2	5	10
	Y3	65.2	43.8	-	5
	Y11	78.4	56.9	-	4

Mini slides DGSL ★

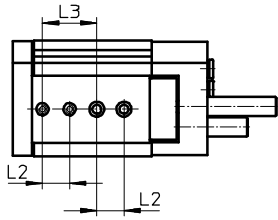
01

Dimensions

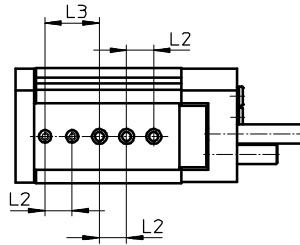
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Hole pattern for mounting threads and centring holes

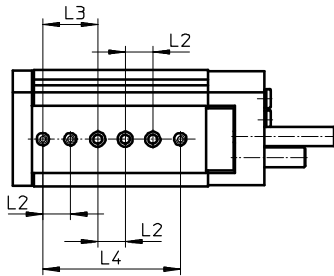
DGSL-20-10/20



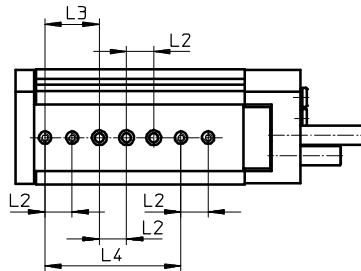
DGSL-20-30/40



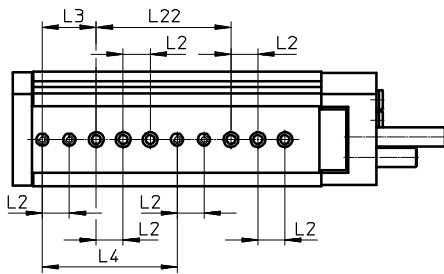
DGSL-20-50



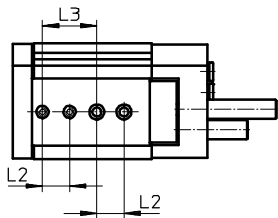
DGSL-20-80



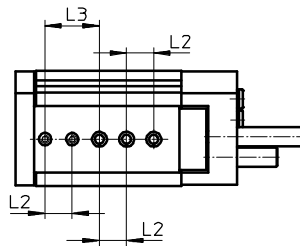
DGSL-20-100 ... 200



DGSL-25-10



DGSL-25-20

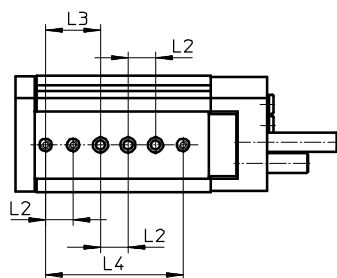


Pneumatic drives

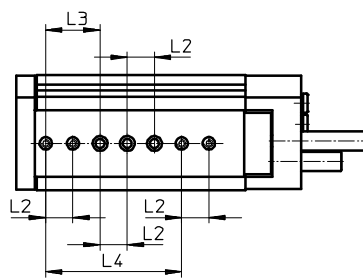
Dimensions

Hole pattern for mounting threads and centring holes

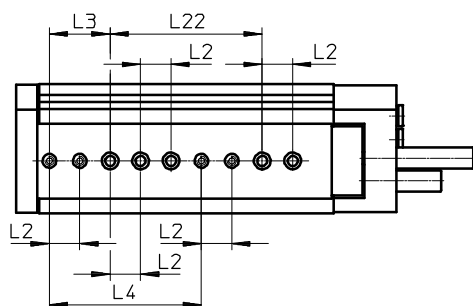
DGSL-25-30/40



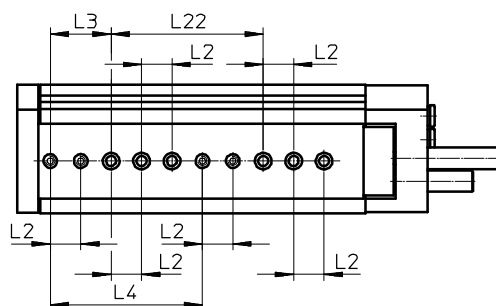
DGSL-25-50



DGSL-25-80

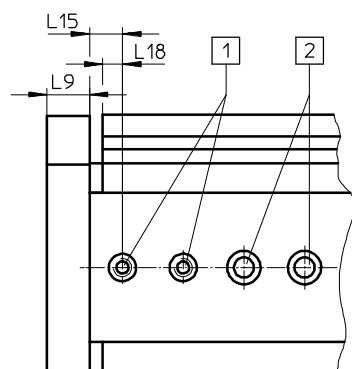


DGSL-25-100 ... 200



Distances from the yoke plate to the mounting threads and centring holes

DGSL-20, 25



- 1 Centring holes with thread
- 2 Through-holes for mounting the drive

Size	L2 ¹⁾	L3 ¹⁾	L4	L9	L15 ±0.05	L18 ±0.05	L22
20	20	40	100 ¹⁾	14	7.8	6.5	100±0.03
25	20	40	100±0.03	15	8	6.5	100 ¹⁾

1) Tolerance for centring hole ±0.02.
Tolerance for through-hole ±0.1.

Mini slides DGSL ★

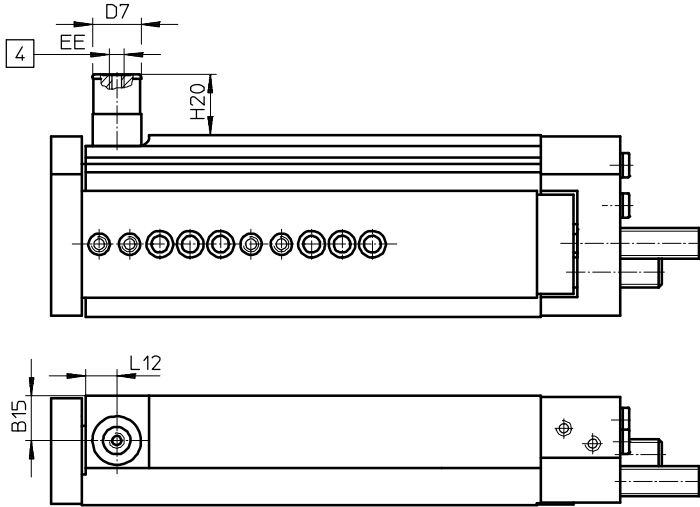
01

Dimensions

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C – Clamping unit/E3 – End-position locking

4 Supply port



Pneumatic drives

Size	B15	D7 ∅	EE	H20		L12
				DGSL... C	E3	
6	7.2	12	M5	10.7	21.2	7.3
8	9.9	12		10.5	21	7.3
10	11.2	16		11.8	21.2	10.5
12	14.8	16		10.5	19.9	10.3
16	14	20		27.5	30.5	13
20	17	20		21.3	24.3	14
25	22.55	20		17.75	20.65	14

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- + With the shortest mini slide on the market
- + Thanks to high precision and robustness

Drives with guides > Drives with slides >

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Mini slides DGST



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- + Easy end position adjustment

NEW

Drives with guides > Drives with slides >

Mini slides DGST

01

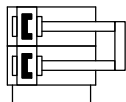
Product range overview

Type/function	Size	Stroke [mm]	Force [N]	Product options			
				E1	P	Y12	A
DGST							
Double-acting	6, 8, 10, 12, 16, 20, 25	10 ... 200	34 ... 589	■	■	■	■

Product options

E1	Elastic cushioning at both ends, without end-position adjustment	Y12	Self-adjusting shock absorber at both ends, with end-position adjustment
P	Elastic cushioning at both ends, non-adjustable, with end-position adjustment	A	Position sensing

Data sheet



Pneumatic drives

Technical data		Dimensions → Page 366						
Size		6	8	10	12	16	20	25
Pneumatic connection		M3	M5				G1/8	
Stroke	[mm]	10, 20, 30, 40, 50	10, 20, 30, 40, 50, 80	10, 20, 30, 40, 50, 80, 100	10, 20, 30, 40, 50, 80, 100	10, 20, 30, 40, 50, 80, 100, 125, 150	10, 20, 30, 40, 50, 80, 100, 125, 150, 200	
Cushioning								
DGST...-E1		Elastic cushioning at both ends, without end-position adjustment						
DGST...-P		Elastic cushioning at both ends, non-adjustable, with end-position adjustment						
DGST...-Y12		Self-adjusting shock absorber at both ends, with end-position adjustment						
Theoretical force at 6 bar, advancing	[N]	34	60	94	136	241	377	589
Theoretical force at 6 bar, retracting	[N]	25	45	79	102	207	317	495

Operating conditions								
Size		6	8	10	12	16	20	25
Operating pressure	[bar]	1.5 ... 8			1 ... 8			
Ambient temperature ¹⁾	[°C]	-10 ... +60						

1) Note operating range of proximity sensors.

Materials	
Housing	Anodised wrought aluminium alloy
Slide	Anodised wrought aluminium alloy
Guide	High-alloy stainless steel, POM, TPE
Piston rod	High-alloy stainless steel
Seals	HNBR

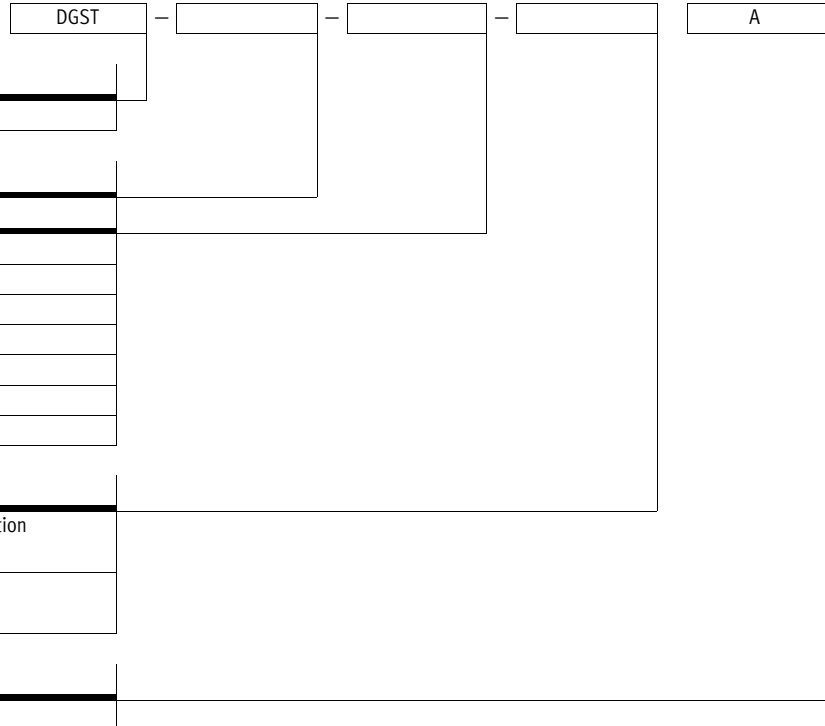
Mini slides DGST

NEW

01

Order code

Pneumatic drives



Order example:

DGST-16-40-PA

Mini slide DGST - size 16 - stroke 40 mm - elastic cushioning at both ends, non-adjustable, with end-position adjustment - position sensing via proximity sensor

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Drives with guides > Drives with slides >

Mini slides DGST

01

Pneumatic drives

Order code

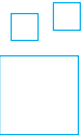
		DGST	-		-		-	Y12		-	A	
Type		DGST	Mini slide									
Size												
	Stroke [mm]											
6	30, 40, 50											
8	30, 40, 50, 80											
10	30, 40, 50, 80, 100											
12	30, 40, 50, 80, 100											
16	30, 40, 50, 80, 100, 125, 150											
20	30, 40, 50, 80, 100, 125, 150, 200											
25	30, 40, 50, 80, 100, 125, 150, 200											
Cushioning		Y12	Self-adjusting shock absorber at both ends, with end-position adjustment									
Position sensing		A	Via proximity sensor									

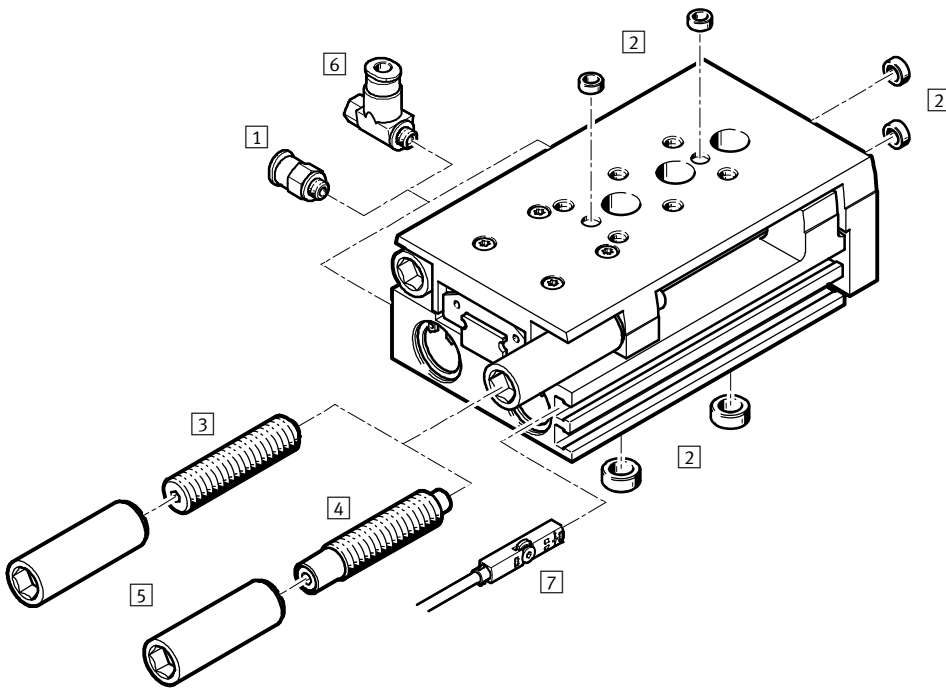
Order example:

DGST-16-40-Y12A

Mini slide DGST - size 16 - stroke 40 mm - self-adjusting shock absorber at both ends, with end-position adjustment - position sensing via proximity sensor

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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		→ Page/online
1	Push-in fitting QS	365
2	Centring sleeve ZBH	365
3	Cushioning P	365
4	Cushioning Y12	365
5	Threaded sleeve (included in the scope of delivery of cushioning P and Y12)	365
6	One-way flow control valve GRLA	365
7	Proximity sensor SMT-10/-8	365

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Drives with guides > Drives with slides >

Mini slides DGST


Accessories – Ordering data

	For size	Part no.	Type
1 Push-in fitting¹⁾ Data sheets online: → qs			
	6	153303	QSM-M3-4
	8, 10, 12, 16	153304	QSM-M5-4
	20, 25	153307	QSM-1/8-6
2 Centring sleeve/centring pin¹⁾ Data sheets online: → zbh			
	6, 8, 10, 12, 16	189652	ZBH-5
	20, 25	189653	ZBH-12
	6	525273	ZBS-2
	8, 10	189652	ZBH-5
	12, 16	186717	ZBH-7
	20, 25	189653	ZBH-12
	6, 8	189652	ZBH-5
	10, 12	186717	ZBH-7
	16	150927	ZBH-9
	20, 25	189653	ZBH-12
2 Connector sleeve¹⁾ Data sheets online: → zbh			
	20	548806	ZBV-12-9



1) Packaging unit 10 pieces



	For size	Part no.	Type
3 Cushioning variant for DGST-...-P²⁾ Data sheets online: → dyef			
	6	8073902	DYEF-G8-M4-Y1
	8	8073903	DYEF-G8-M5-Y1
	10	8073904	DYEF-G8-M6-Y1
	12	8073905	DYEF-G8-M8-Y1
	16	8073906	DYEF-G8-M10-Y1
	20	8073907	DYEF-G8-M12-Y1
25	8073908	DYEF-G8-M14-Y1	
4 Cushioning variant for DGST-...-Y12²⁾ Data sheets online: → dyss			
	6	8073911	DYSS-G8-2-4-Y1F
	8	8073912	DYSS-G8-3-4-Y1F
	10	8073913	DYSS-G8-4-4-Y1F
	12	8073914	DYSS-G8-5-5-Y1F
	16	8073915	DYSS-G8-7-5-Y1F
	20	8073916	DYSS-G8-8-8-Y1F
	25	8073917	DYSS-G8-10-10-Y1F

2) Scope of delivery: 1 cushioning element and 1 threaded sleeve

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
6 One-way flow control valve with slotted head screw, metal³⁾ for exhaust air flow control Data sheets → Page 1033					
	6	M3	3	175041	GRLA-M3-QS-3
	8, 10, 12, 16	M5	6	★ 193139	GRLA-M5-QS-6-D
	20, 25	G1/8	8	★ 193145	GRLA-1/8-QS-8-D

3) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For size	Switching output, connection	Cable length [m]	Part no.	Type
7 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets → Page 1222					
	6 ... 12	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	16 ... 25	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-K-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-K-0,3-M8D
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-K-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-K-0,3-M8D

	For size	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket Data sheets → Page 1543					
	6 ... 25	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	6 ... 25	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

01

Pneumatic drives

Mini slides DGST

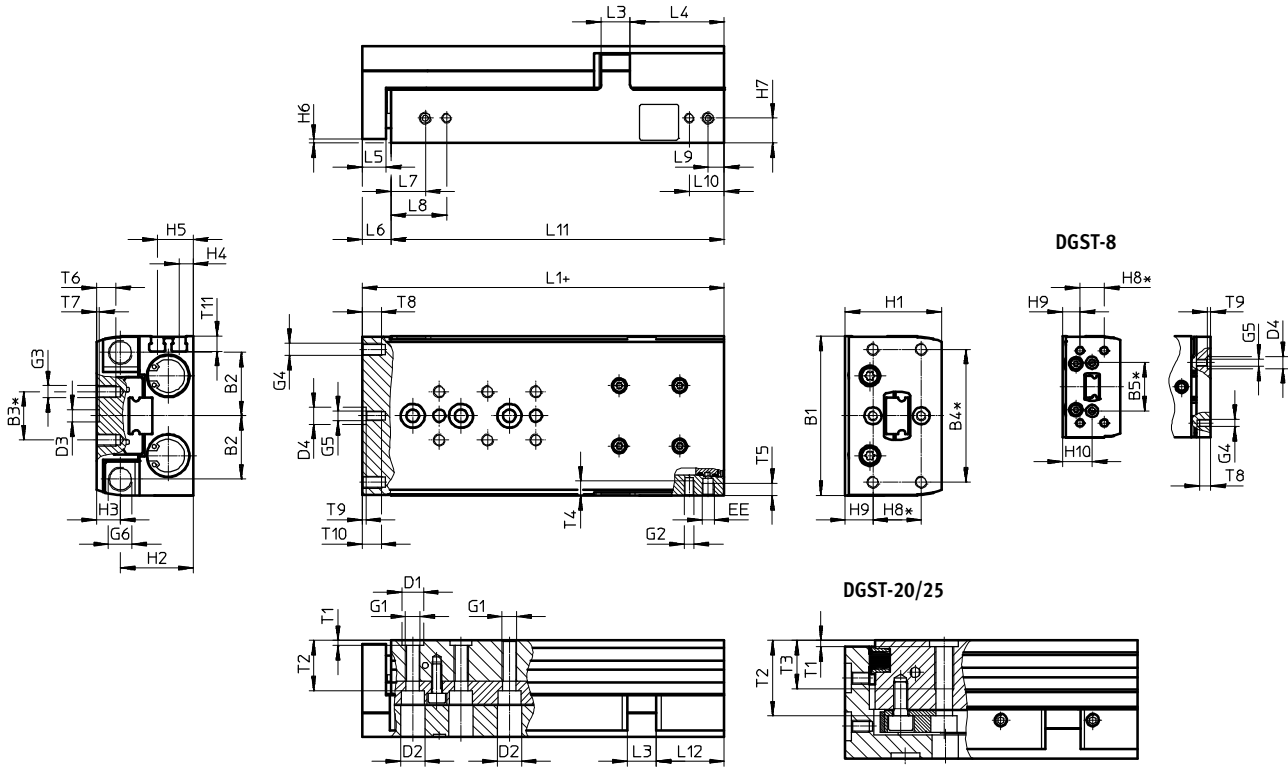
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01

Dimensions

Pneumatic drives



Actual stroke with variant DGST...-E1 = stroke + additional stroke without cushioning + cushioning stroke (values → Page 367)

+ plus stroke length
* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	B1	B2	B3 ±0.1	B4 ±0.1	B5	D1 ∅ H7	D2 ∅	D3 ∅ H7	D4 ∅	EE	G1	G2	G3	G4
6	35	14.4	10	30	-	5	6	5	2 ^{H8}	M3	M4	M3	M3	M3
8	42	17	10	30	20	5	6	5	5 ^{H7}	M5	M4	M3	M3	M3
10	50	20.8	20	40	-	7	8	5	5 ^{H7}	M5	M5	M4	M4	M4
12	60	24.5	20	40	-	7	8	5	7 ^{H7}	M5	M5	M4	M4	M4
16	66	26.3	20	55	-	9	10	5	7 ^{H7}	M5	M6	M4	M5	M5
20	85	34.5	40	70	-	12	11	12	12 ^{H7}	G1/8	M8	M5	M5	M5
25	104	42	40	80	-	12	11	12	12 ^{H7}	G1/8	M8	M6	M6	M6

Size	G5	G6	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	L3	L4
6	-	M4x0.5	20	14.5	5.5	2.5	7	1.5	4.5	10	5	-	5	22
8	M3	M5x0.5	24	17.7	6.3	3.1	8.1	1.5	5.6	10	7.3	12.3	6	30.5
10	M3	M6x0.5	29	21	8	4	10	1.5	7	20	5	-	8	31
12	M4	M8x1	36	26.5	9.5	5.9	11.9	1.5	8.9	20	9.5	-	10	36
16	M4	M10x1	40	30	10	5.8	14.8	1.5	10.3	20	11.6	-	12	39
20	M5	M12x1	49	36.5	12.5	8.7	17.7	2.5	13.2	20	15.5	-	14.5	51
25	M6	M14x1	60	44.5	15.5	11	21	2.5	16	40	10	-	17.5	65

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Drives with guides > Drives with slides >

Mini slides DGST

Dimensions

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Size	L5	L6	L7	L8 ¹⁾	L9	L10 ¹⁾	T1	T2	T3 max.	T4 max.	T5 max.
6	6	8	8.5	15.4	5.8	12.7	1.3 ^{+0.1}	8.9	–	4	4
8	6	8	8.5	16.5	5.5	13.5	1.3 ^{+0.1}	11.5	–	5	4.5
10	8	10	8.9	17.9	6.6	15.6	1.6 ^{+0.1}	14.5	–	6.2	5
12	8	10	10.7	19.5	7	15.8	1.6 ^{+0.1}	19.8	–	7	5.5
16	10	12	14.2	23	6.7	15.5	2.1 ^{+0.1}	20.8	–	6	5
20	10	12.5	16.5	30.5	8	22	2.6 ^{+0.3}	31.2	20	8	8.5
25	12	14.5	16.5	31.5	10.5	25.5	2.6 ^{+0.3}	37.2	20	9.5	8

Size	T7	T8 max.	T9	T10 max.	T11	Additional stroke without cushioning with variant DGST-...-E1		Max. cushioning stroke in the end positions with variant DGST-...-E1	
						min.	max.	Advanced	Retracted
6	1.3 ^{+0.1}	4.5	–	–	4.6	0.65	1.3	0.25	0.9
8	1.3 ^{+0.1}	4.5	1.3 ^{+0.1}	–	5	0	0.7	0.5	1.6
10	1.3 ^{+0.1}	6.5	1.3 ^{+0.1}	6.5	5.9	0	0.7	0.6	1.6
12	1.3 ^{+0.1}	6.5	1.6 ^{+0.1}	8	7	0.4	1.1	0.5	1.1
16	1.3 ^{+0.1}	8	1.6 ^{+0.1}	8	6.3	0.65	1.4	0.6	0.65
20	2.6 ^{+0.3}	8	2.6 ^{+0.3}	10	9.1	0.4	1.1	0.5	1
25	2.6 ^{+0.3}	10	2.6 ^{+0.3}	13	8.8	0.5	1.2	0.5	1.2

1) Not present in sizes 6 and 8 with stroke 10 mm.
The dimension is 14.5 mm in size 16 with stroke 80 ... 150 mm.

Stroke [mm]	10	20	30	40	50	80	100	125	150	200	
Size											
	L1										
6	48	58	68	78	95	–	–	–	–	–	
8	51	61	71	81	95	126	–	–	–	–	
10	66	68	78	88	98	136	156	–	–	–	
12	66	76	86	96	106	136	169.5	–	–	–	
16	73	80	87	97	112	150	170	210	235	–	
20	97	97	97	107	121	166	204.5	244	279	343	
25	102	102	108	118	128	168	207	246	281	345	
	L11										
6	40	50	60	70	87	–	–	–	–	–	
8	43	53	63	73	87	118	–	–	–	–	
10	56	58	68	78	88	126	146	–	–	–	
12	56	66	76	86	96	126	159.5	–	–	–	
16	61	68	75	85	100	138	158	198	223	–	
20	84.5	84.5	84.5	94.5	108.5	153.5	192	231.5	266.5	330.5	
25	87.5	87.5	93.5	103.5	113.5	153.5	192.5	231.5	266.5	330.5	
	L12										
6	16	16	16	16	22	–	–	–	–	–	
8	15.7	15.7	15.7	15.7	19.7	20.7	–	–	–	–	
10	24.6	16.6	16.6	16.6	16.6	24.6	24.6	–	–	–	
12	20.6	20.6	20.6	20.6	20.6	20.6	34.1	–	–	–	
16	21.2	18.2	15.2	15.2	20.2	28.2	28.2	39	39	–	
20	39.5	29.5	19.5	19.5	23.5	38.5	51	51	51	51	
25	36.5	26.5	22.5	22.5	22.5	32.5	51.5	65	65	65	
	T6 (max.)										
6	4	4	4	4	4	–	–	–	–	–	
8	5.5	5.5	5.5	5.5	5.5	5.5	–	–	–	–	
10	4.5	4.5	4.5	4.5	4.5	7.5	7.5	–	–	–	
12	5.2	5.2	5.2	5.2	5.2	8	8	–	–	–	
16	7.2	7.2	7.2	7.2	7.2	8	8	8	8	–	
20	8	8	8	8	8	8	8	8	8	8	
25	11	11	11	11	11	11	11	11	11	11	

Pneumatic drives

Mini slides DGST

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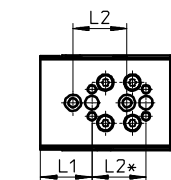
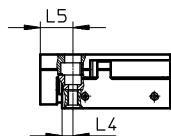
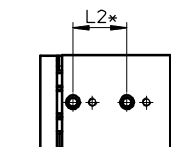
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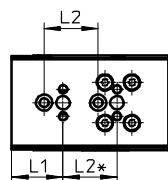
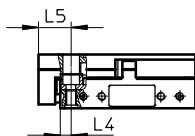
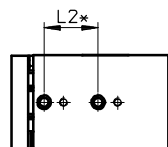
Dimensions

Hole pattern for mounting threads and centring holes

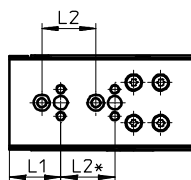
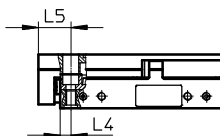
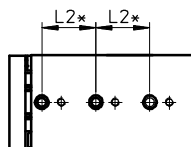
DGST-6-10



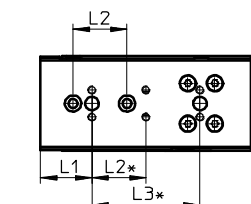
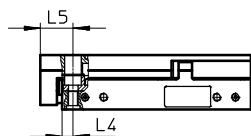
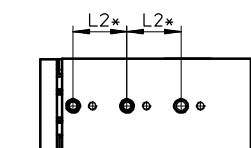
DGST-6-20



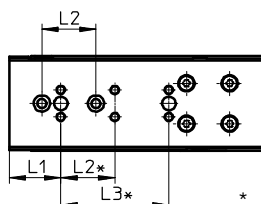
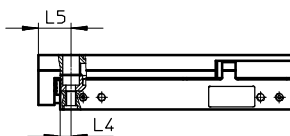
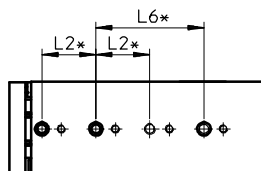
DGST-6-30



DGST-6-40



DGST-6-50



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6
6	10	19	20	-	4	12	-
	20			-			-
	30			-			-
	40			40			-
	50			40			40

Pneumatic drives

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Drives with guides > Drives with slides >

Mini slides DGST

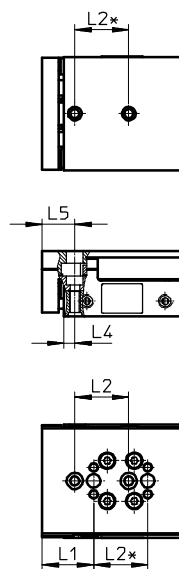
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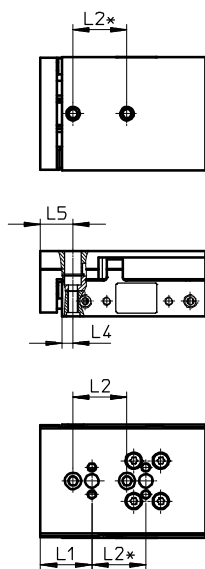
Dimensions

Hole pattern for mounting threads and centring holes

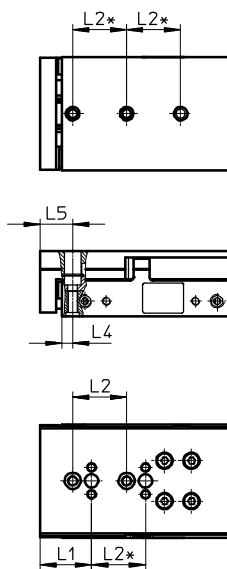
DGST-8-10



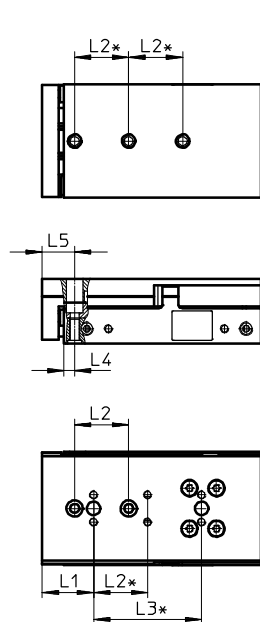
DGST-8-20



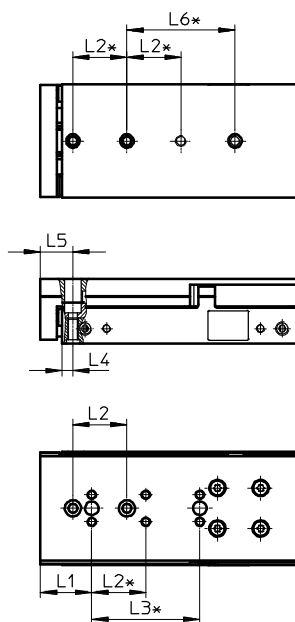
DGST-8-30



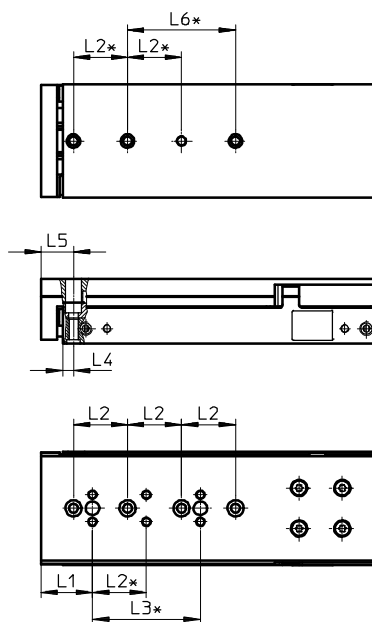
DGST-8-40



DGST-8-50



DGST-8-80



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

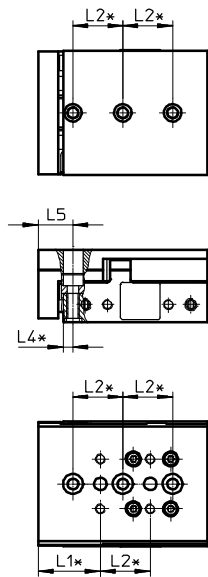
Size	Stroke [mm]	L1	L2	L3	L4	L5	L6
8	10	19	20	-	4	12	-
	20			-			-
	30			-			-
	40			40			-
	50			40			40
	80			40			40

Pneumatic drives

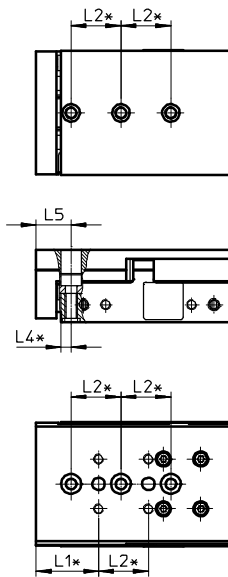
Dimensions

Hole pattern for mounting threads and centring holes

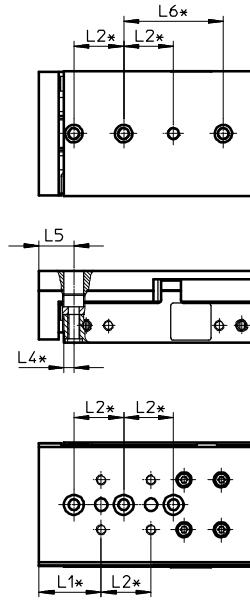
DGST-10-10/20



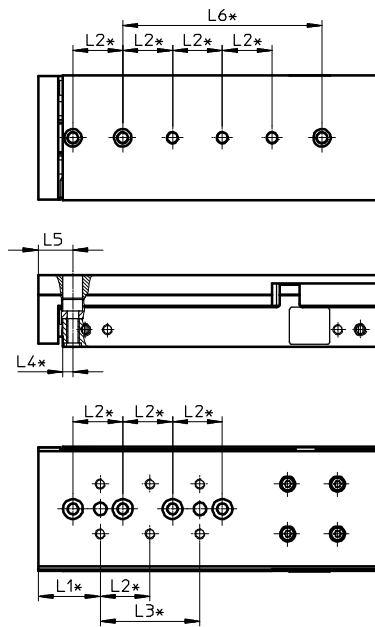
DGST-10-30



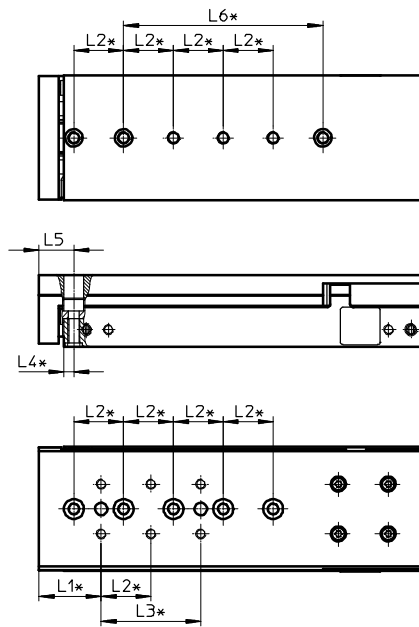
DGST-10-40/50



DGST-10-80



DGST-10-100



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6
10	10, 20	25	20	-	4	14	-
	30			-			-
	40, 50			-			40
	80			40			80
	100			40			80

NEW

Drives with guides > Drives with slides >

Mini slides DGST

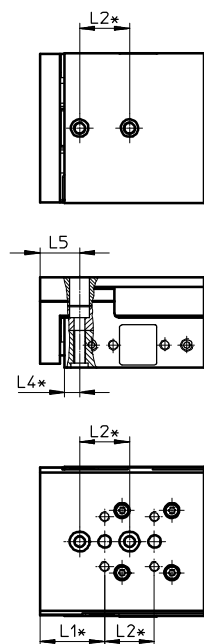
Dimensions

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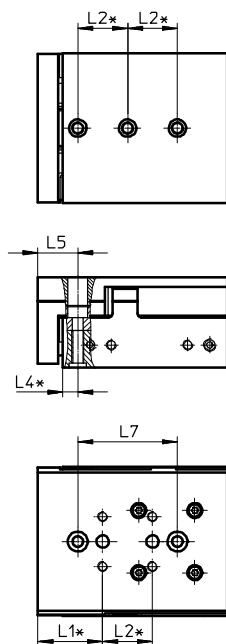
01

Hole pattern for mounting threads and centring holes

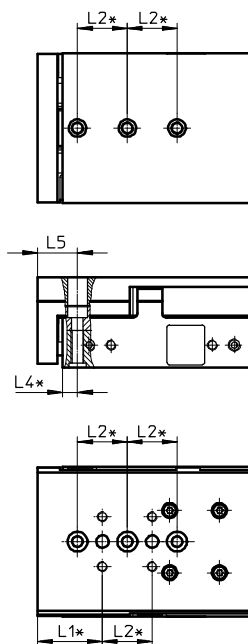
DGST-12-10



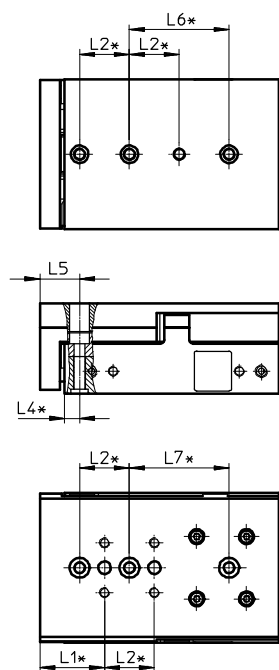
DGST-12-20



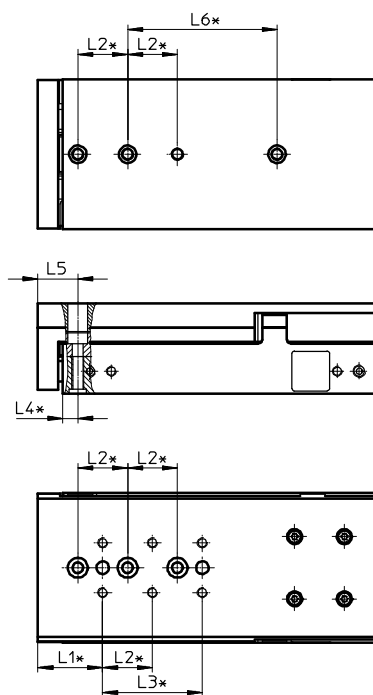
DGST-12-30



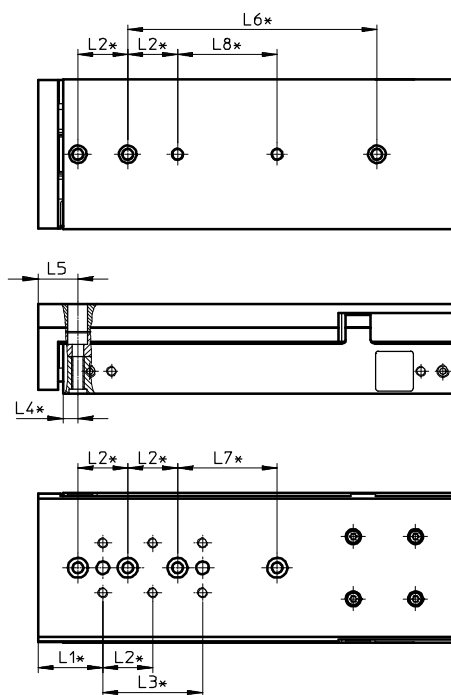
DGST-12-40



DGST-12-50/80



DGST-12-100



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8
12	10	26	20	-	6	16	-	-	-
	20			-			40	-	
	30			-			-	-	
	40			40			40	-	
	50, 80			40			-	-	
	100			40			40	40	

Pneumatic drives

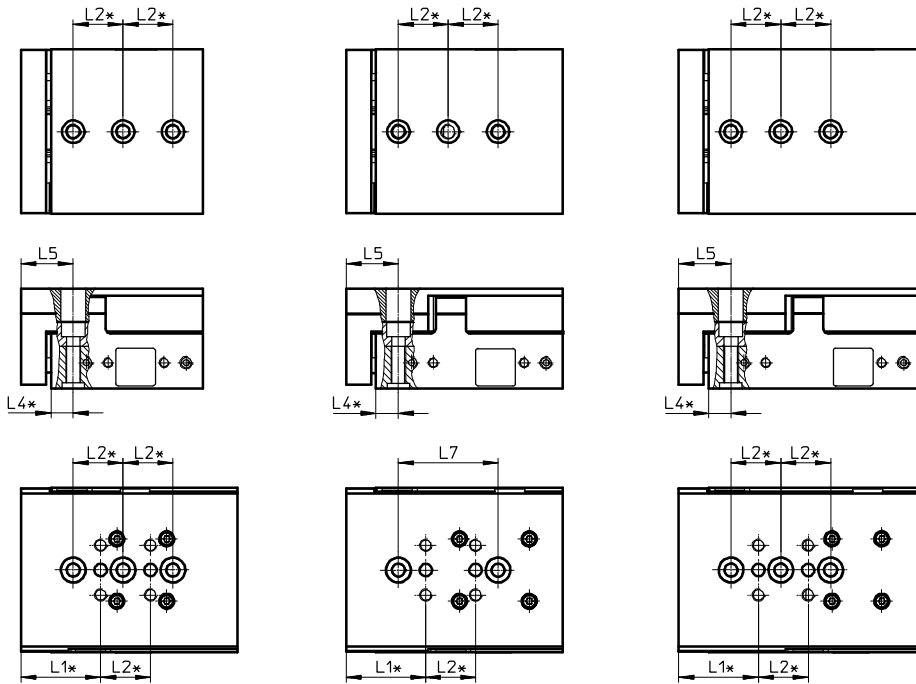
Dimensions

Hole pattern for mounting threads and centring holes

DGST-16-10

DGST-16-20/30

DGST-16-40



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L4	L5	L7
16	10	32	20	9	21	-
	20					40
	30					40
	40					-

NEW

Drives with guides > Drives with slides >

Mini slides DGST

Download CAD data → www.festo.com

01

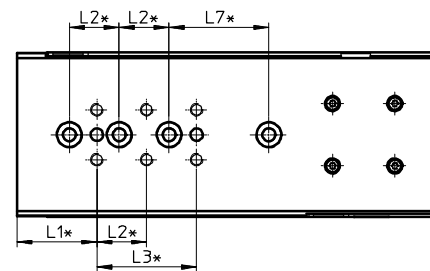
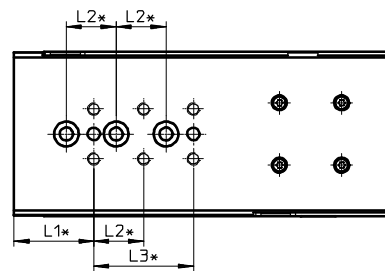
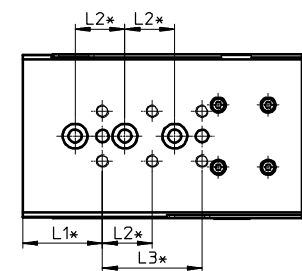
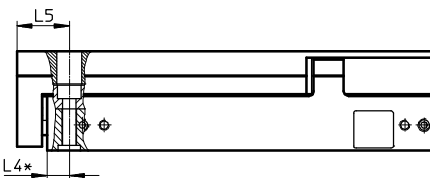
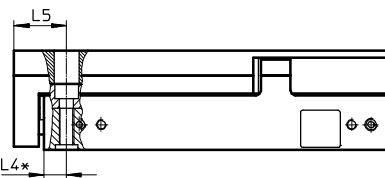
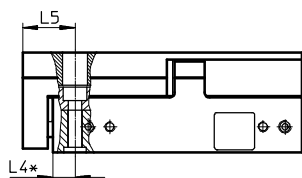
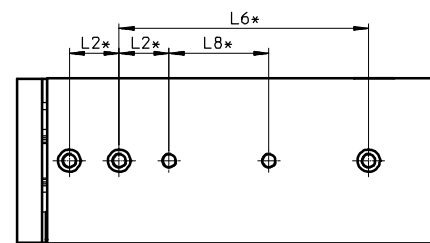
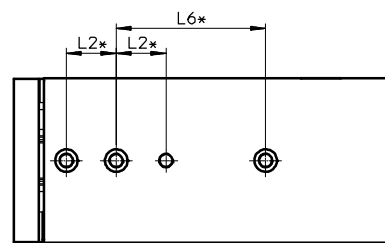
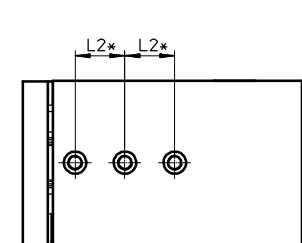
Dimensions

Hole pattern for mounting threads and centring holes

DGST-16-50

DGST-16-80

DGST-16-100



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8
16	50	32	20	40	9	21	-	-	-
	80						60	-	-
	100						100	40	40

Pneumatic drives

Mini slides DGST

NEW

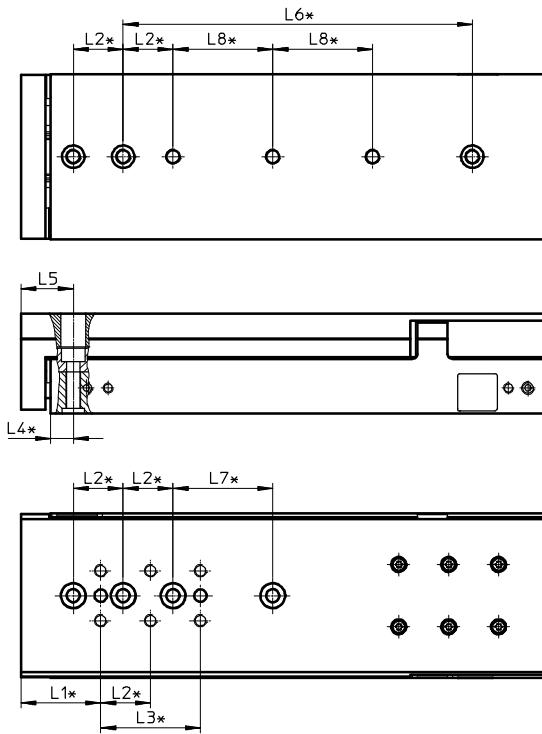
01

Dimensions

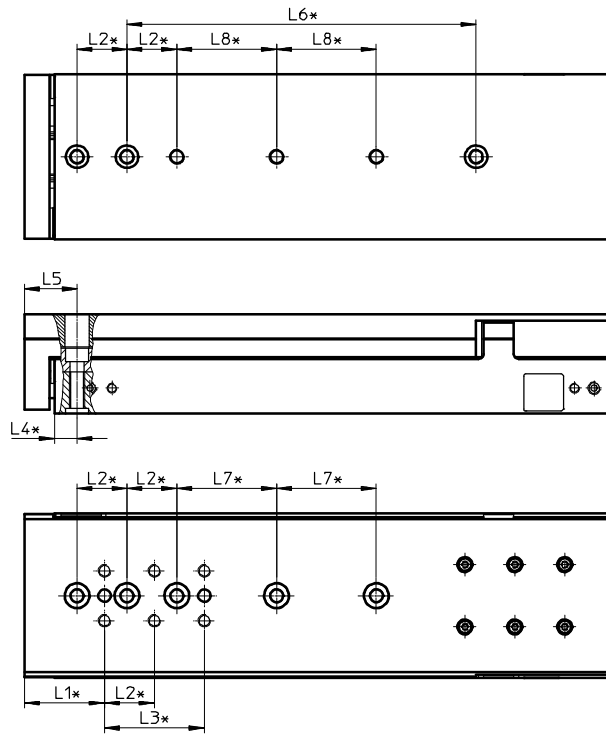
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Hole pattern for mounting threads and centring holes

DGST-16-125



DGST-16-150



Pneumatic drives

* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8
16	125	32	20	40	9	21	140	40	40
	150								

NEW

Drives with guides > Drives with slides >

Mini slides DGST

Dimensions

Download CAD data → www.festo.com

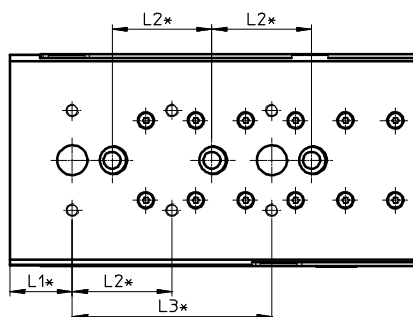
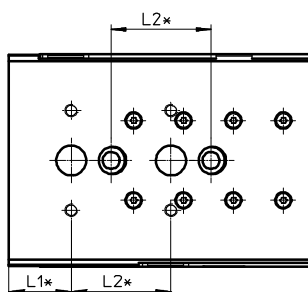
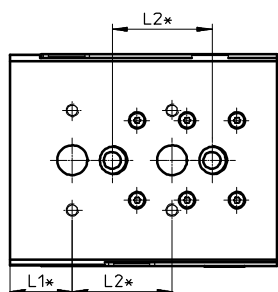
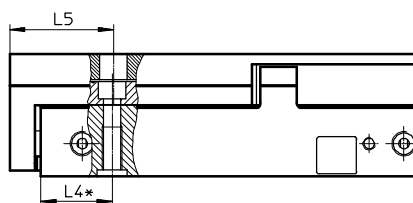
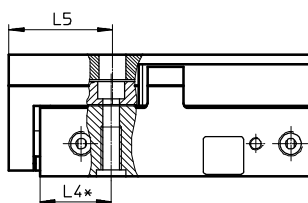
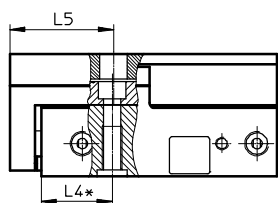
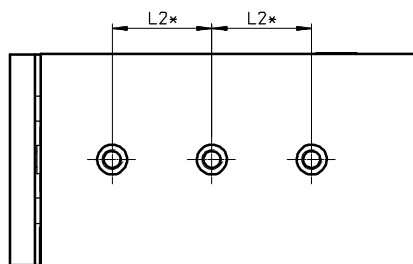
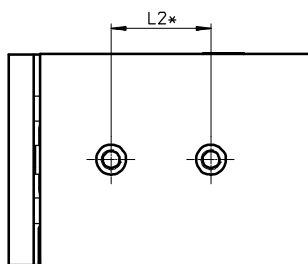
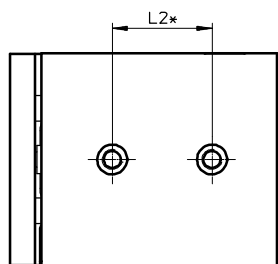
01

Hole pattern for mounting threads and centring holes

DGST-20-10/20/30/40

DGST-20-50

DGST-20-80



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5
20	10	25	40	-	28.5	41.5
	20			-		
	30			-		
	40			-		
	50			-		
	80			80		

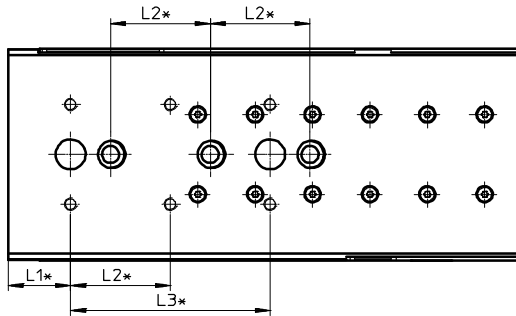
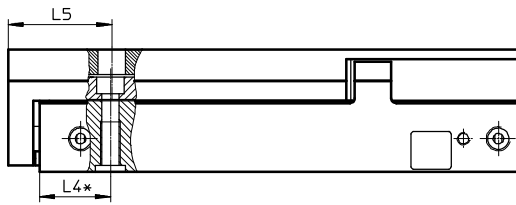
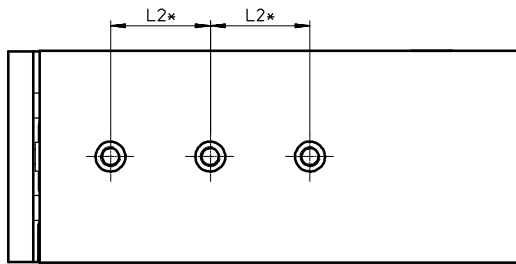
Pneumatic drives

Dimensions

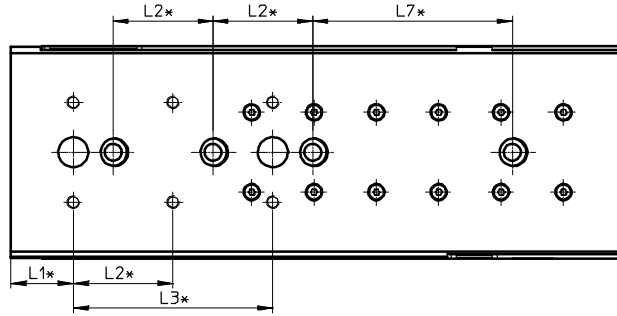
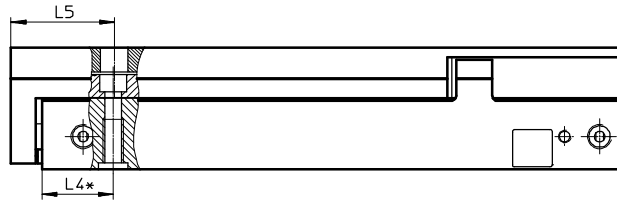
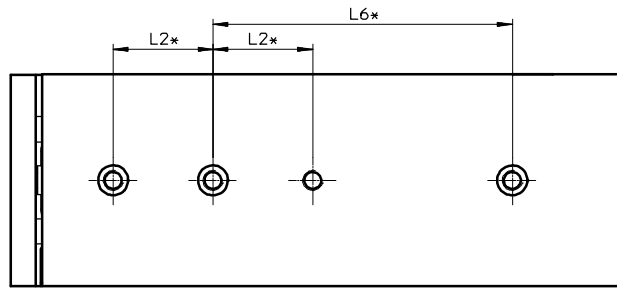
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Hole pattern for mounting threads and centring holes

DGST-20-100



DGST-20-125



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7
20	100	25	40	80	28.5	41.5	-	80
	125						120	

NEW

Drives with guides > Drives with slides >

Mini slides DGST

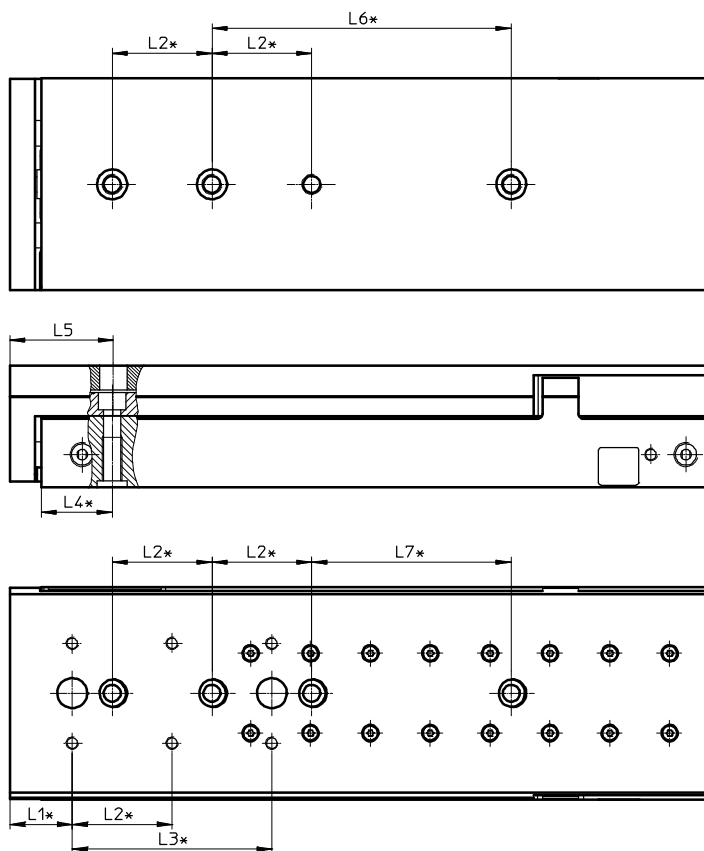
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01

Dimensions

Hole pattern for mounting threads and centring holes

DGST-20-150



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7
20	150	25	40	80	28.5	41.5	120	80

Pneumatic drives

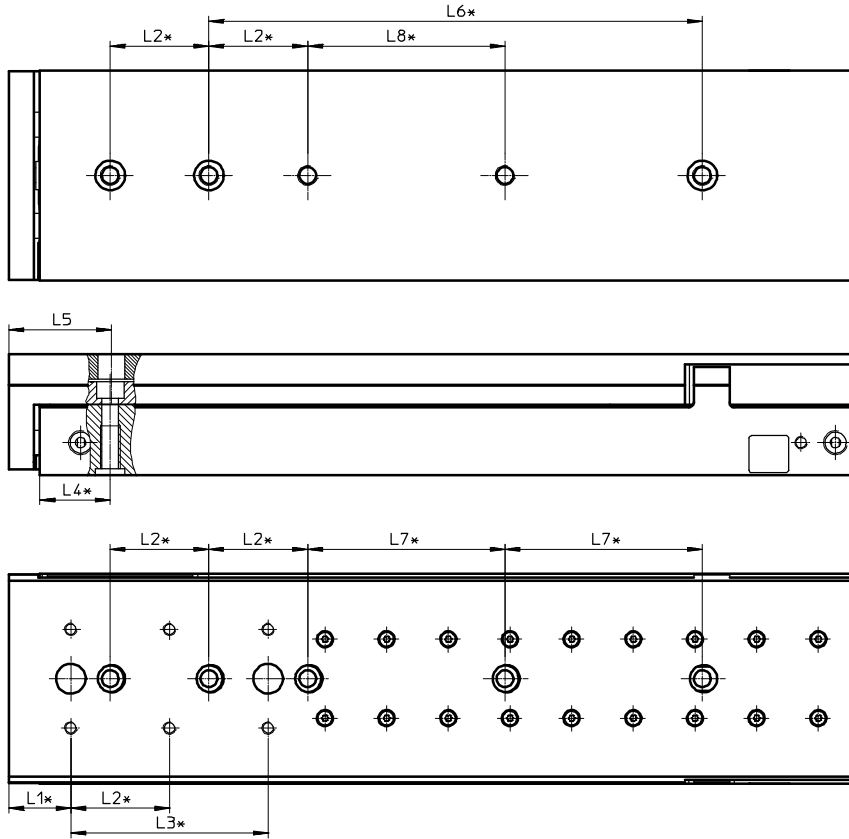
Dimensions

Download CAD data → www.festo.com

Hole pattern for mounting threads and centring holes

DGST-20-200

Pneumatic drives



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8
20	200	25	40	80	28.5	41.5	200	80	80

NEW

Drives with guides > Drives with slides >

Mini slides DGST

Dimensions

Download CAD data → www.festo.com

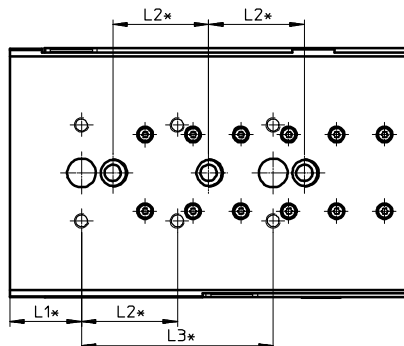
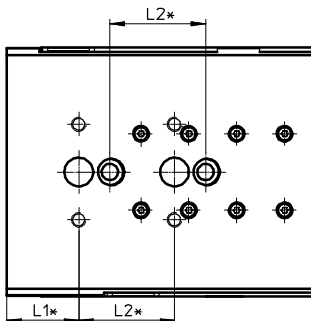
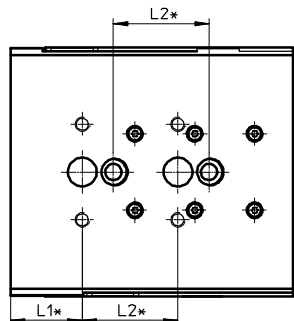
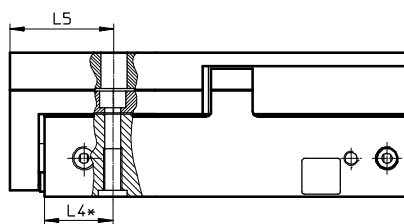
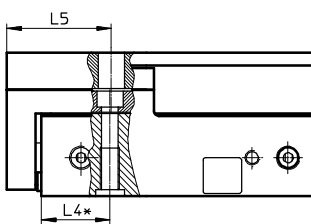
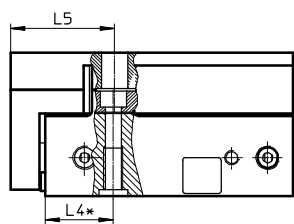
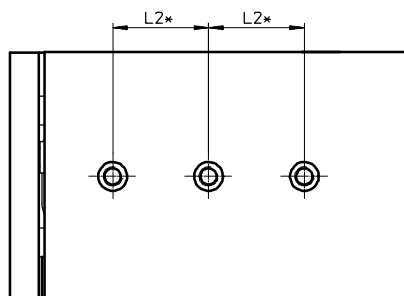
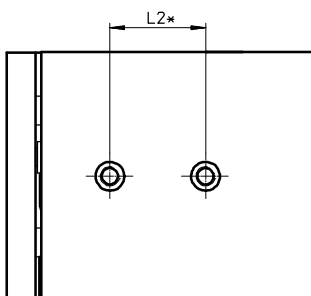
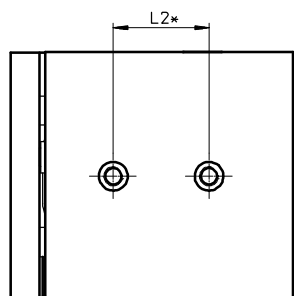
01

Hole pattern for mounting threads and centring holes

DGST-25-10/20/30/40

DGST-25-50

DGST-25-80



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5
25	10	30	40	-	28.5	43.5
	20			-		
	30			-		
	40			-		
	50			-		
	80			80		

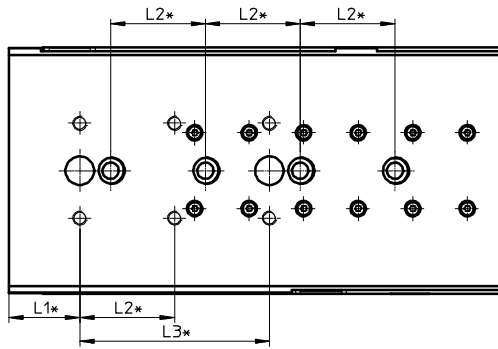
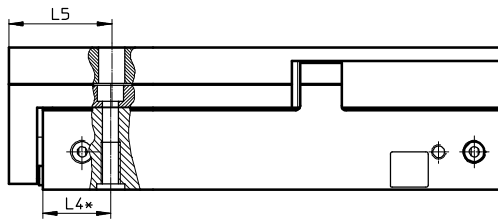
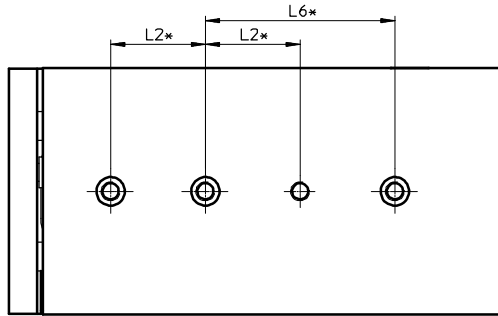
Pneumatic drives

Dimensions

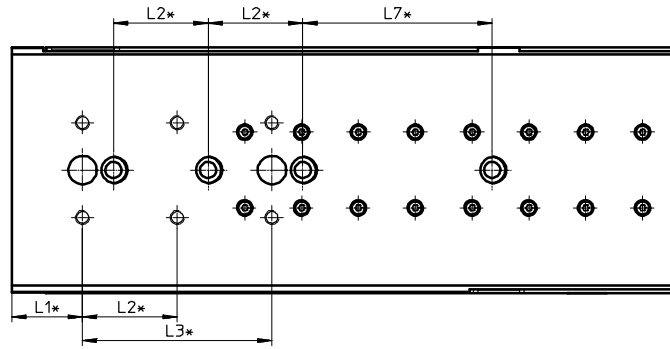
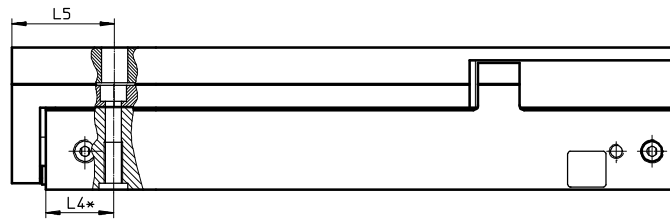
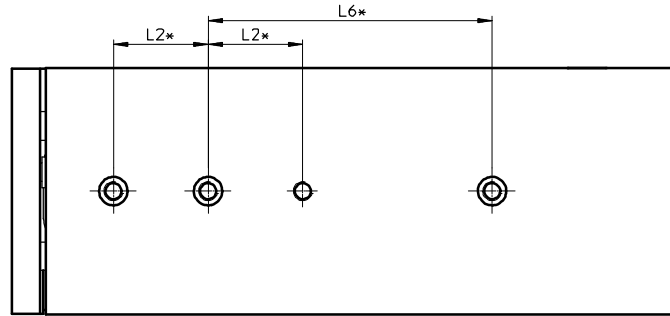
Download CAD data → www.festo.com

Hole pattern for mounting threads and centring holes

DGST-25-100



DGST-25-125



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7
25	100	30	40	80	28.5	43.5	80	80
	125						120	

NEW

Drives with guides > Drives with slides >

Mini slides DGST

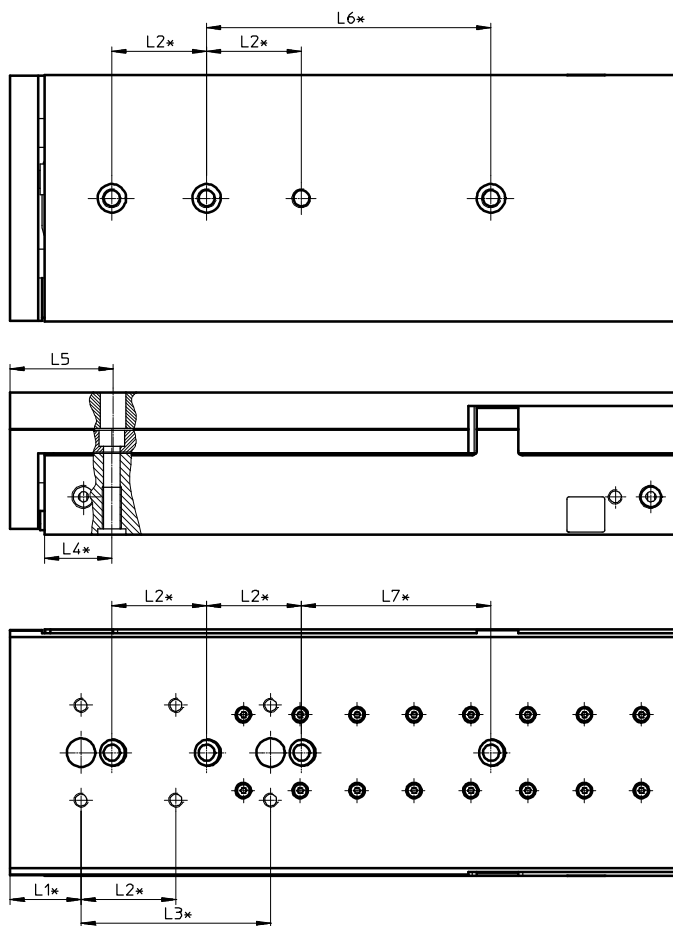
Download CAD data → www.festo.com

01

Dimensions

Hole pattern for mounting threads and centring holes

DGST-25-150



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7
25	150	30	40	80	28.5	43.5	120	80

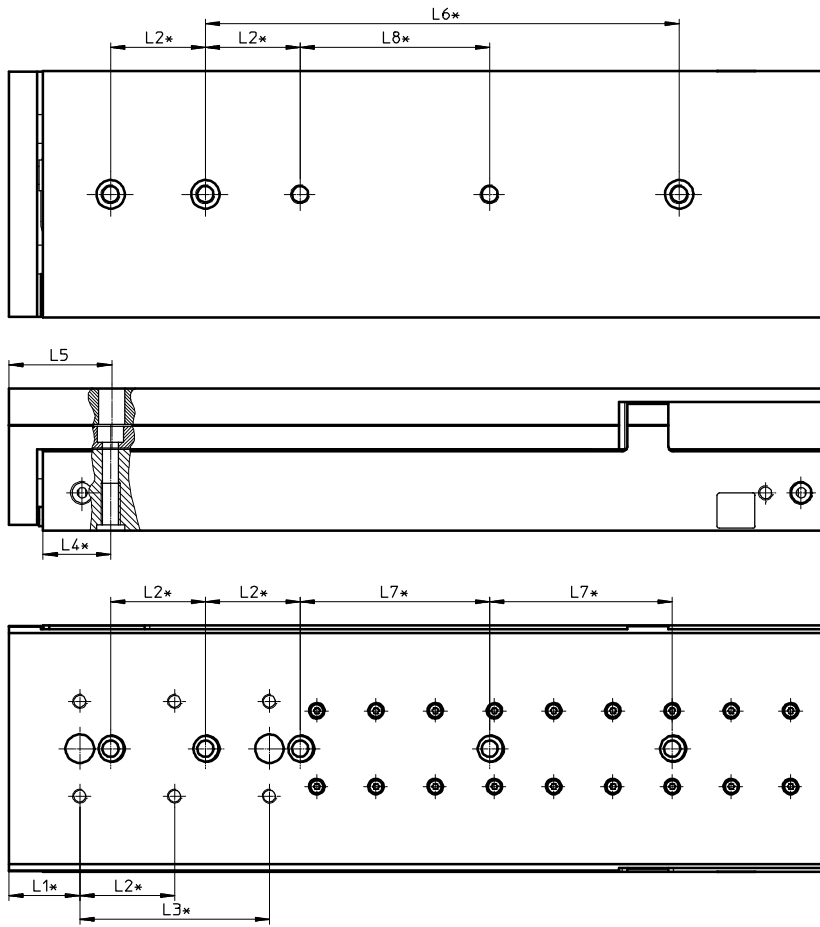
Pneumatic drives

Dimensions

Hole pattern for mounting threads and centring holes

DGST-25-200

Pneumatic drives



* ±0.02 mm applies to the centring
±0.1 mm applies to the thread

Size	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8
25	200	30	40	80	28.5	43.5	200	80	80

NEW

Drives with guides > Drives with slides >

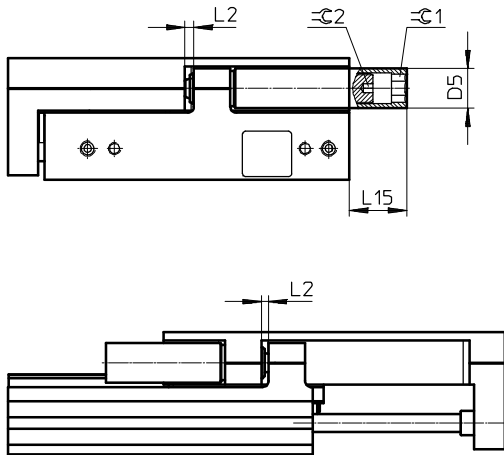
Mini slides DGST

Download CAD data → www.festo.com

01

Dimensions

DGST-...-P: Setting dimension and projection in the end positions



Size	Stroke [mm]	D5 ∅	L2 Retracted		L2 Advanced		L15	⊖ 1	⊖ 3
			min.	max.	min.	max.			
6	10, 20, 30, 40	6	2.5	15	1.5	15	6	3	1.3
	50						0		
8	10, 20, 30, 40	7	3	18.5	2.3	18.5	14.8	4	1.5
	50						10.8		
	80						9.8		
10	10	8	3	19.5	2.4	19.5	6.4	5	2
	20, 30, 40, 50						13.9		
	80, 100						5.9		
12	10, 20, 30, 40, 50, 80	10	3	25	2.4	25	15.4	6	2.5
	100						1.9		
16	10	13	3	26	2.35	26	17.85	8	3
	20						20.85		
	30, 40						23.85		
	50						18.85		
	80, 100						10.85		
	125, 150						0		
20	10	15	3.5	36	2.25	36	11.5	10	4
	20						21.5		
	30, 40						31.5		
	50						27.5		
	80						12.5		
	100, 125, 150, 200						0		
25	10	18	3.5	50	2.5	50	28.5	10	4
	20						38.5		
	30, 40, 50						42.5		
	80						32.5		
	100						13.5		
	125, 150, 200						0		

Pneumatic drives

Mini slides DGST

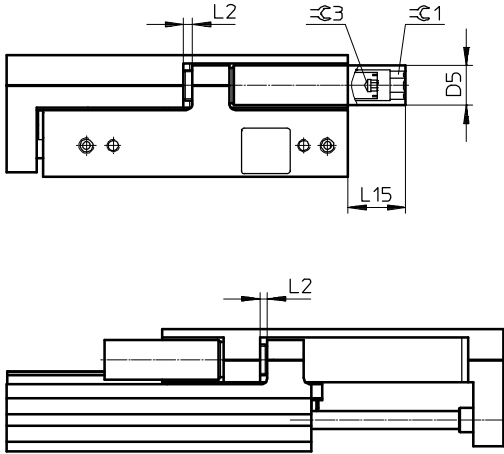
NEW

Download CAD data → www.festo.com

01

Dimensions

DGST...-Y12: Setting dimension and projection in the end positions



Pneumatic drives

Size	Stroke [mm]	D5 ∅	L2 Retracted		L2 Advanced		L15	±1	±3
			min.	max.	min.	max.			
6	30, 40	6	2.5	13	1.5	13	6	3	-1)
	50						0		
8	30, 40	7	3	19.5	2.3	19.5	14.8	4	2
	50						10.8		
	80						9.8		
10	30, 40, 50	8	3	19	2.4	19	13.9	5	2
	80, 100						5.9		
12	30, 40, 50, 80	10	3	19.5	2.4	19.5	15.4	6	2.5
	100						1.9		
16	30, 40	13	3	19.5	2.35	19.5	23.85	8	3
	50						18.85		
	80, 100						10.85		
	125, 150						0		
20	30, 40	15	3.5	30.5	2.25	30.5	31.5	10	4
	50						27.5		
	80						12.5		
	100, 125, 150, 200						0		
25	30, 40, 50	18	3.5	35	2.5	35	42.5	10	4
	80						32.5		
	100						13.5		
	125, 150, 200						0		

1) There is a slot in the shock absorber for screwing it in.



Increase productivity and save space

- + Thanks to short cycle times and high effective power with twin piston
- + Thanks to high precision and a compact design
- + Thanks to versatile mounting options

Drives with guides > Drives with slides >

Mini slides

SLT

Drives with guides > Drives with slides >

Mini slides

SLT



Overview, configuration and ordering

→ www.festo.com/catalogue/slt



Additional information, support and user documentation

→ www.festo.com/sp/slt



Spare parts service



- + Powerful twin-piston drive
- + Precise ball bearing cage guide
- + Versatile mounting options
- + Easy adjustment of end positions

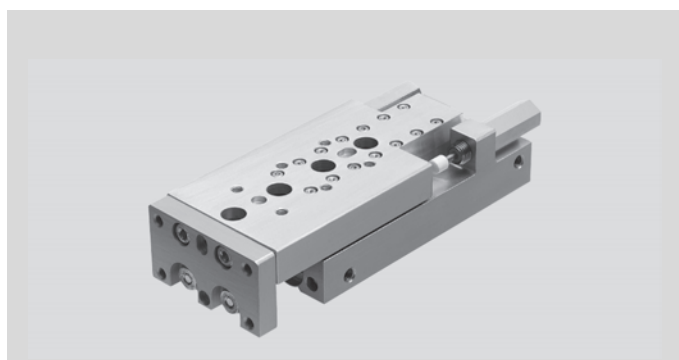
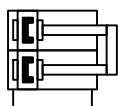
Product range overview

Type/function	Size	Stroke [mm]	Force [N]	Product options			
				A	P	CC	B
SLT							
Double-acting	6	10 ... 200	34 ... 590	■	■	-	-
	10, 16, 20, 25			■	■	■	■

Product options

A	Position sensing	CC	Linear, self-adjusting shock absorber
P	Elastic cushioning, non-adjustable	B	B series

Data sheet



Technical data		Dimensions → Page 392				
Size		6	10	16	20	25
Pneumatic connection		M5			G1/8	
Stroke	[mm]	10, 20, 30, 40, 50	10, 20, 30, 40, 50, 80	10, 20, 30, 40, 50, 80, 100, 125, 150	10, 20, 30, 40, 50, 80, 100, 125, 150, 200	10, 20, 30, 40, 50, 80, 100, 125, 150, 200
Cushioning		Elastic cushioning, non-adjustable				
SLT...-P		Elastic cushioning, non-adjustable				
SLT...-CC		-	Linear, self-adjusting shock absorber			
Theoretical force at 6 bar, advancing	[N]	34	94	242	376	590
Theoretical force at 6 bar, retracting	[N]	25	79	218	317	495

Operating conditions		Dimensions → Page 392				
Size		6	10	16	20	25
Operating pressure	[bar]	1.5 ... 10		1 ... 10		
Ambient temperature ¹⁾	[°C]	-20 ... +60				

1) Note operating range of proximity sensors.

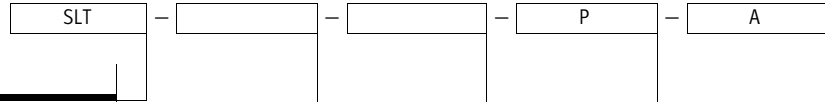
Materials	
Housing	Wrought aluminium alloy
End cap	Wrought aluminium alloy
Guide rail	Tempered steel
Piston rod	High-alloy stainless steel
Seals	HNBR

Drives with guides > Drives with slides >

Mini slides SLT

01 Order code – With cushioning P: elastic cushioning

Pneumatic drives



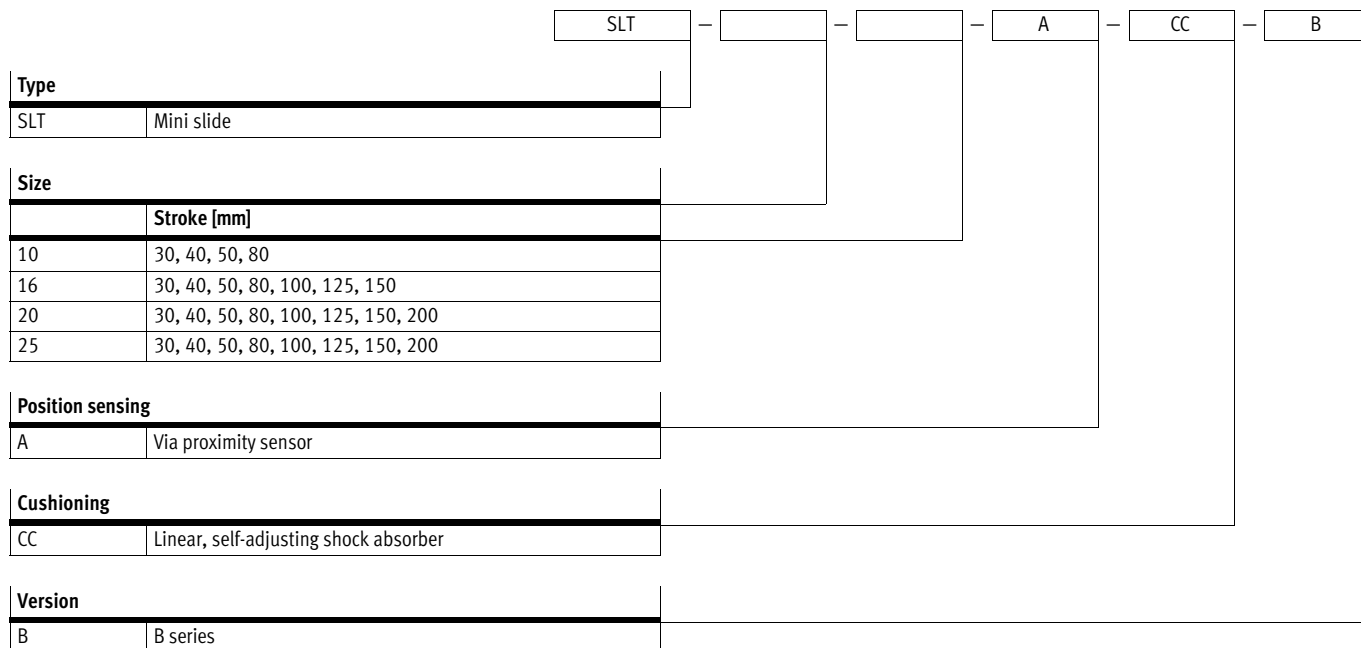
Type	
SLT	Mini slide

Size	
	Stroke [mm]
6	10, 20, 30, 40, 50
10	10, 20, 30, 40, 50, 80
16	10, 20, 30, 40, 50, 80, 100, 125, 150
20	10, 20, 30, 40, 50, 80, 100, 125, 150, 200
25	10, 20, 30, 40, 50, 80, 100, 125, 150, 200

Cushioning	
P	Elastic cushioning, non-adjustable

Position sensing	
A	Via proximity sensor

Order code – With cushioning CC: self-adjusting shock absorber



Order example:

SLT-20-150-A-CC-B

Mini slide SLT - size 20 - stroke 150 mm - position sensing via proximity sensor - linear, self-adjusting shock absorber - B series

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

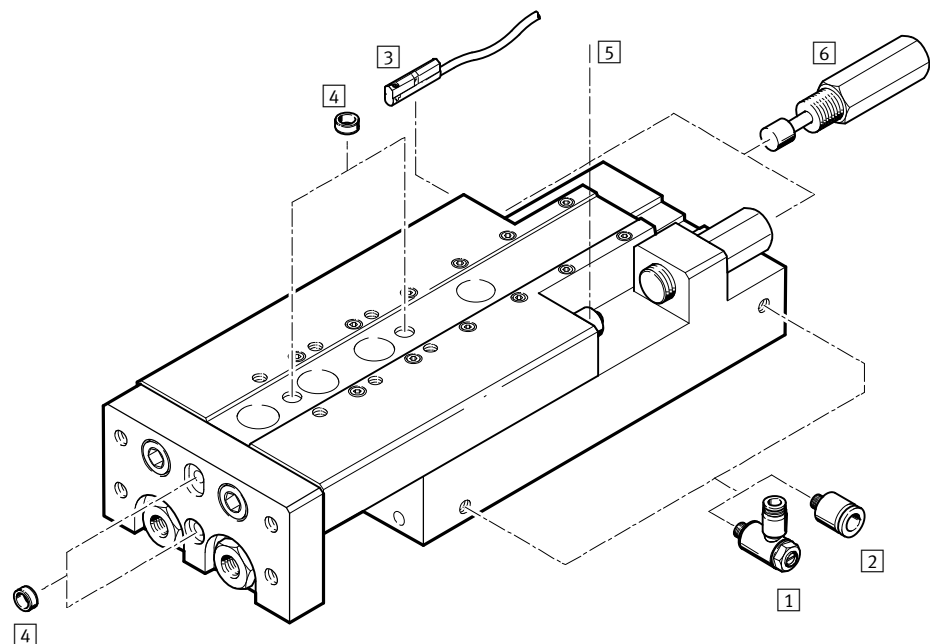
The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Mini slides SLT

01 Accessories

Pneumatic drives



Note
End stops must not be removed.

		→ Page/online
1	One-way flow control valve GRLA	391
2	Push-in fitting QS	1443
3	Proximity sensor SME-/SMT-10	391
4	Centring pin ZBS/centring sleeve ZBH	391
5	Cushioning with stop PF	391

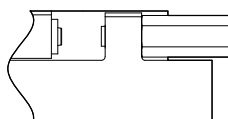
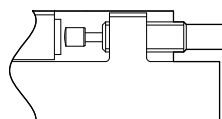
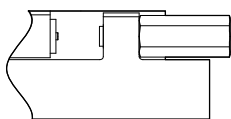
		→ Page/online
6	Cushioning with shock absorber YSRT	388
-	Cushioning P	388
-	Connecting cable NEBU	391
-	Drive/drive connections	slt
-	Drive/gripper connections	slt

Cushioning variants

5 SLT...-P-A
with cushioning PF
Precision metal stop for small loads at low speed. At an operating pressure > 3 bar, the stop ensures precise, metal-to-metal contact. The stop can be retrofitted.


6 SLT...-CC-B
with cushioning YSRT
For large loads and high speed. Ensures precise, metal-to-metal contact after the cushioning.

- SLT...-P-A
with cushioning P
Standard version with elastic cushioning components. Low-cost, no metal-to-metal contact.








Accessories – Ordering data

01

	Connection		Part no.	Type
	Thread	O.D.		
1	One-way flow control valve with slotted head screw, metal¹⁾ for exhaust air flow control			
	M5	3	★ 193137	GRLA-M5-QS-3-D
		4	★ 193138	GRLA-M5-QS-4-D
	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
		6	★ 193144	GRLA-1/8-QS-6-D



1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For size	Connection	Cable length [m]	Part no.	Type
3	Proximity sensor for C-slot, magneto-resistive – N/O contact				
	6 ... 25	PNP, cable	2.5	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		PNP, plug	0.3	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
		PNP, plug	0.3	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
Magnetic reed – N/O contact					
	6 ... 25	Contacting, cable	2.5	★ 551365	SME-10M-DS-24V-E-2,5-L-OE
		Contacting, plug	0.3	★ 551367	SME-10M-DS-24V-E-0,3-L-M8D
		Contacting, cable	2.5	★ 551369	SME-10M-ZS-24V-E-2,5-L-OE
Data sheets → Page 1220					
	6 ... 25	Contacting, cable	2.5	173210	SME-10-KL-LED-24
		Contacting, plug	0.3	173212	SME-10-SL-LED-24

	For size	Housing		Slide		Yoke	
		Part no.	Type	Part no.	Type	Part no.	Type
4	Centring pin/sleeve²⁾						
	6	189652	ZBH-5	189652	ZBH-5	525273	ZBS-2
	10	186717	ZBH-7	189652	ZBH-5	189652	ZBH-5
	16	150927	ZBH-9	189652	ZBH-5	186717	ZBH-7
	20	189653	ZBH-12	150927	ZBH-9	150927	ZBH-9
	25	189653	ZBH-12	189653	ZBH-12	189653	ZBH-12
5	Stop, metallic for SLT-...-P-A³⁾						
	6	539278	PF-6-SLT	–	–	–	–
	10	539279	PF-10-SLT	–	–	–	–
	16	539280	PF-16-SLT	–	–	–	–
	20	539281	PF-20-SLT	–	–	–	–
	25	539282	PF-25-SLT	–	–	–	–

2) Packaging unit 10 pieces.

3) Packaging unit 2 pieces.

	For size	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket					
	6 ... 25	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket					
	6 ... 25	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

Mini slides SLT

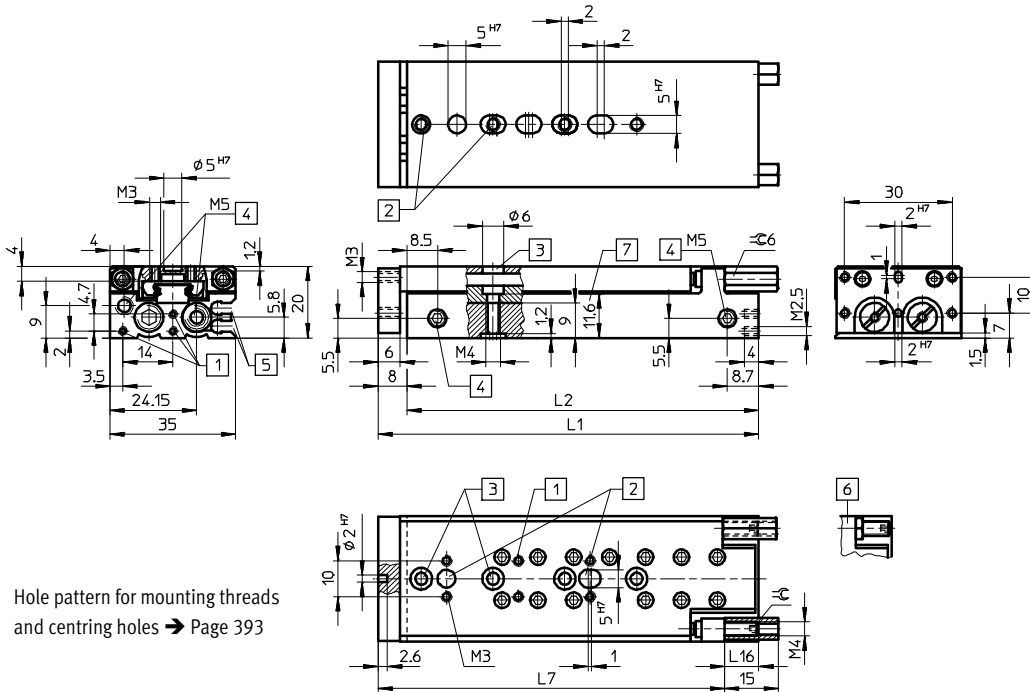
01

Dimensions

Download CAD data → www.festo.com

Size 6

Pneumatic drives



Hole pattern for mounting threads and centring holes → Page 393

- 1) Mounting thread
- 2) Centring holes (centring sleeves included in the scope of delivery)
- 3) Through-holes for mounting the drive
- 4) Supply ports
- 5) Slots for proximity sensor SME/SMT-10
- 6) Flat lock nuts are supplied loose
- 7) Through-hole length for mounting screws

∅	Stroke	L1	L2	L7	L16	⊖
[mm]	[mm]				1)	1)
6	10	48	40	38	14	2
	20	58	50	48		
	30	68	60	58		
	40	85	77	75		
	50	106	98	96		

1) With elastic cushioning.

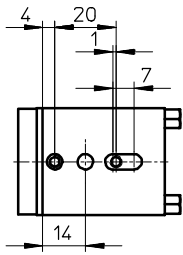
Dimensions

Download CAD data → www.festo.com

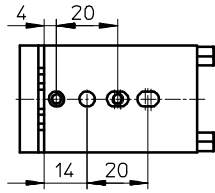
01

Hole pattern for mounting threads and centring holes

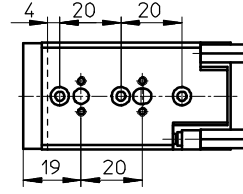
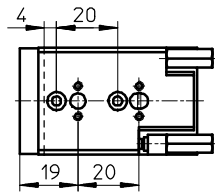
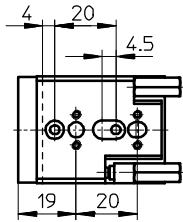
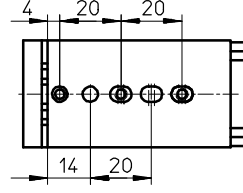
SLT-6-10



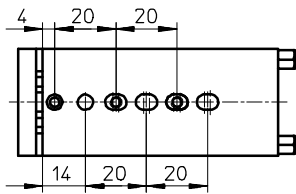
SLT-6-20



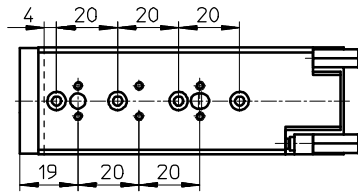
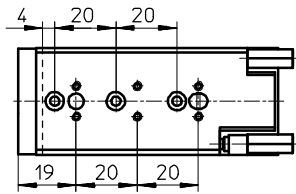
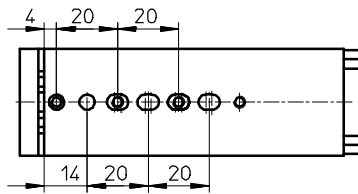
SLT-6-30



SLT-6-40



SLT-6-50



Pneumatic drives

Mini slides SLT

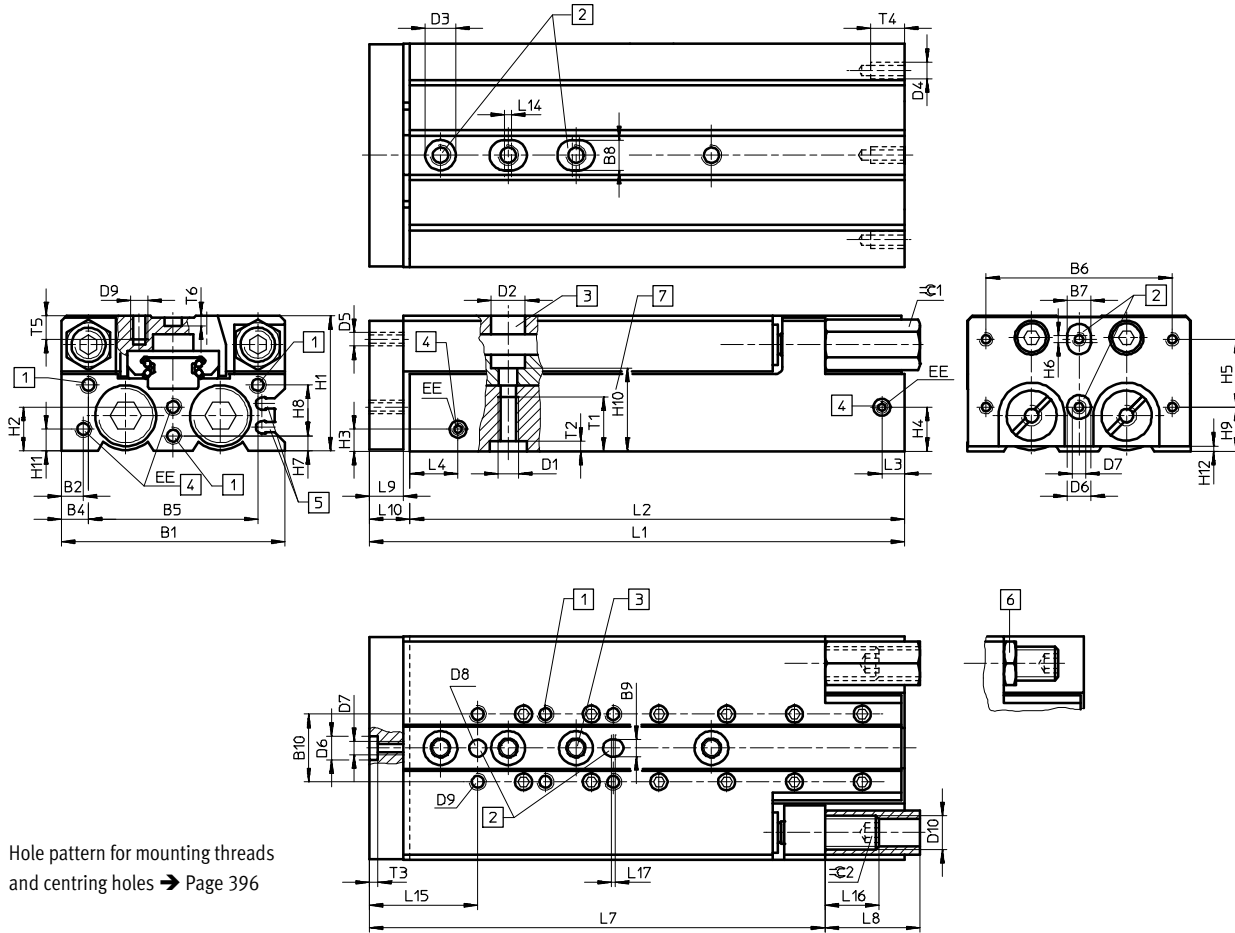
Download CAD data → www.festo.com

01

Dimensions

Size 10 ... 25

Pneumatic drives



Hole pattern for mounting threads and centring holes → Page 396

- 1 Mounting thread
- 2 Centring holes (centring sleeves included in the scope of delivery)
- 3 Through-holes for mounting the drive
- 4 Supply ports
- 5 Slots for proximity sensor SME/SMT-10
- 6 Flat lock nuts are supplied loose
- 7 Through-hole length for mounting screws

∅	B1	B2	B4	B5	B6	B7	B8	B9	B10	D1	D2	D3	D4	D5	D6	D7
[mm]						H7	H7	H7			∅	∅			∅	
10	50	5.5	10	30	40	5	7	5	20	M5	8	7	M3	M4	5	M3
16	66	6.5	8	50	55	7	9			M6	10	9	M5	M5	7	M4
20	85	7	15	55	70	9	12	9	40	M8	11	12			9	M5
25	104	8	12	80	80	12		12					M6	M6	12	M6

∅	D8	D9	D10	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
[mm]	∅															
10	5	M4	M8x1	M5	30	9.4	5.5	11	20	2	4	10	5	15.15	5.5	1.5
16		M5	M10x1		40	13	6.5	13			4.5	15	13	20	6.5	
20	9		M12x1	G1/8	49	19.5	9	19.7			6	19	16	30.5	9	2.5
25	12	M6	M16x1		60	21	10	21	40		5	25	10	34.5	10	1.5

Mini slides SLT

Dimensions

Download CAD data → www.festo.com

01

∅	Stroke	L1	L2	L3	L4	L7	L8	L9	L10	L14	L15	
[mm]	[mm]									min.		
10	10	72	62	7	11.7	62.5	15	8	10	2	25	
	20											
	30	82	72			92.5	25					
	40	92	82									
	50	112	102			140.5						
	80	162	152									
16	10	80	68	6.7	14.2	63.5	22	10	12	2	32	
	20											
	30	87	75			90.5	28					
	40	97	85									
	50	112	100			176.5						
	80	158	146									
	100	199	187			233.5						
	125	257	245									
	150	282	270			8.2	16.6					258.5
	20	10	97			85	10.7					15.2
20												
30		107	95	84	37							
40						122		110				
50		167	155	171	59							
80		203	191									
100		262	250	249								
125		302	290									
150		377	365	10.3	17.5	323						
25		10	108	94	10.7	18.7		88.5	25	12	14	
	20											
	30	118	104	92.5			34					
	40							131	117			
	50	177	163	159.5			57					
	80	210	196									
	100	264	250	252.5								
	125	304	290									
	150	379	365	10			21.5	328.5				

Pneumatic drives

∅	L16		L17	T1	T2	T3	T4	T5	T6	≈C 1	≈C 2	
	1)	2)									1)	2)
[mm]			min.									
10	20.7	8	1	12	1.5	1.3	7	8	1.2	10	2.5	4
16	23.5	16		16	2.1	1.6	10	7		13	3	5
20	34	17.5		20	2.6	2.1		10	10	2.1	15	4
25	49.5	18				2.6	12	11	2.6	19	5	8

- 1) With hydraulic shock absorbers.
- 2) With elastic cushioning.

Mini slides SLT

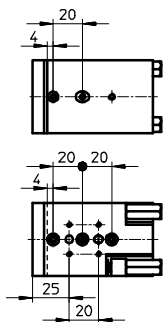
01

Dimensions

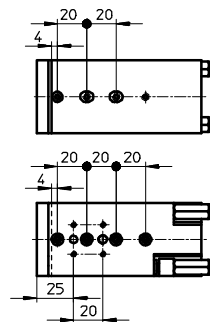
Download CAD data → www.festo.com

Hole pattern for mounting threads and centring holes

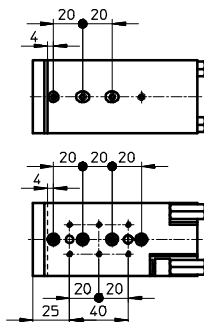
SLT-10-10 ... 30



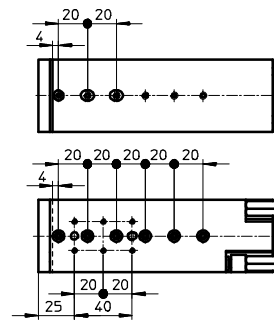
SLT-10-40



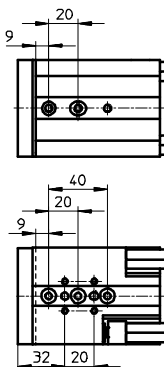
SLT-10-50



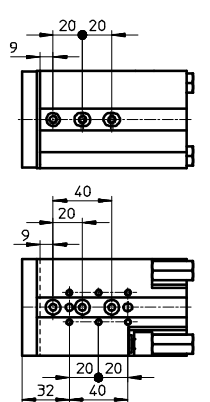
SLT-10-80



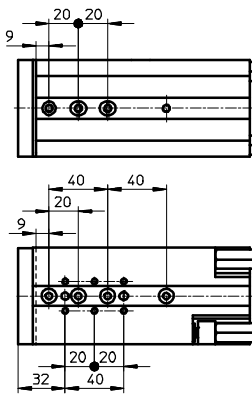
SLT-16-10 ... 40



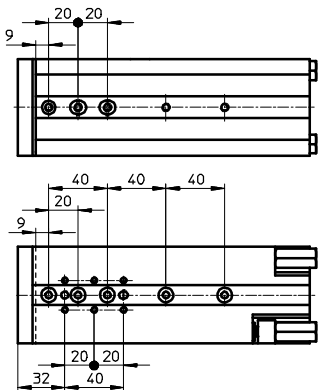
SLT-16-50



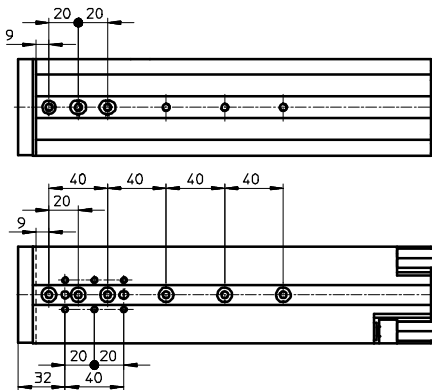
SLT-16-80



SLT-16-100



SLT-16-125/-150



Pneumatic drives

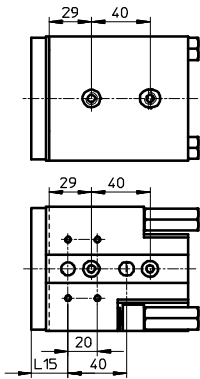
Dimensions

Download CAD data → www.festo.com

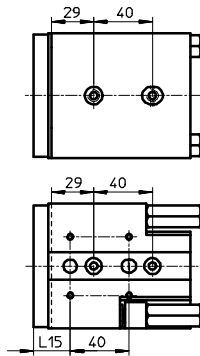
01

Hole pattern for mounting threads and centring holes

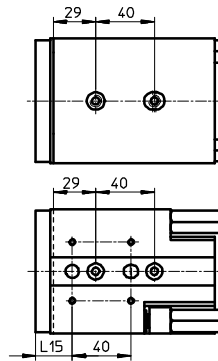
SLT-20-10 ... 40



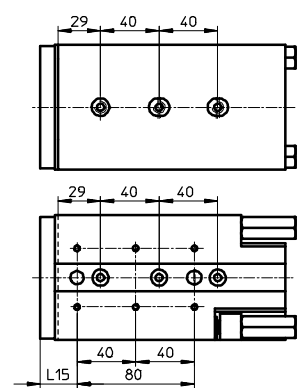
SLT-25-10 ... 40



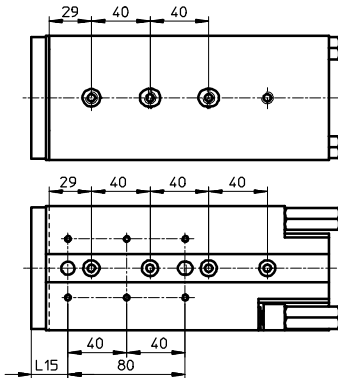
SLT-20/-25-50



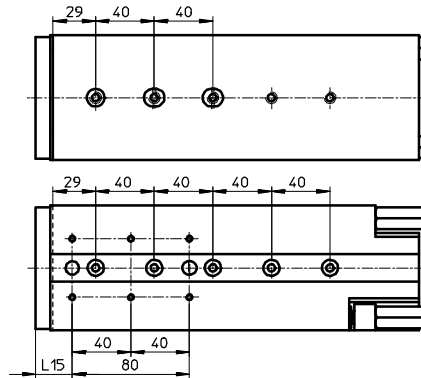
SLT-20/-25-80



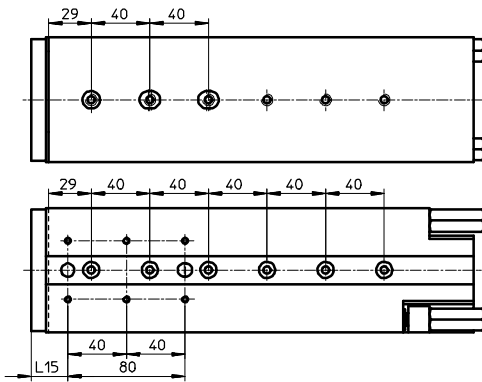
SLT-20/-25-100



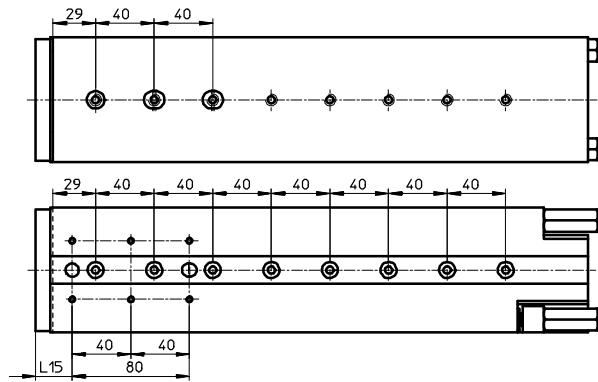
SLT-20/-25-125



SLT-20/-25-150



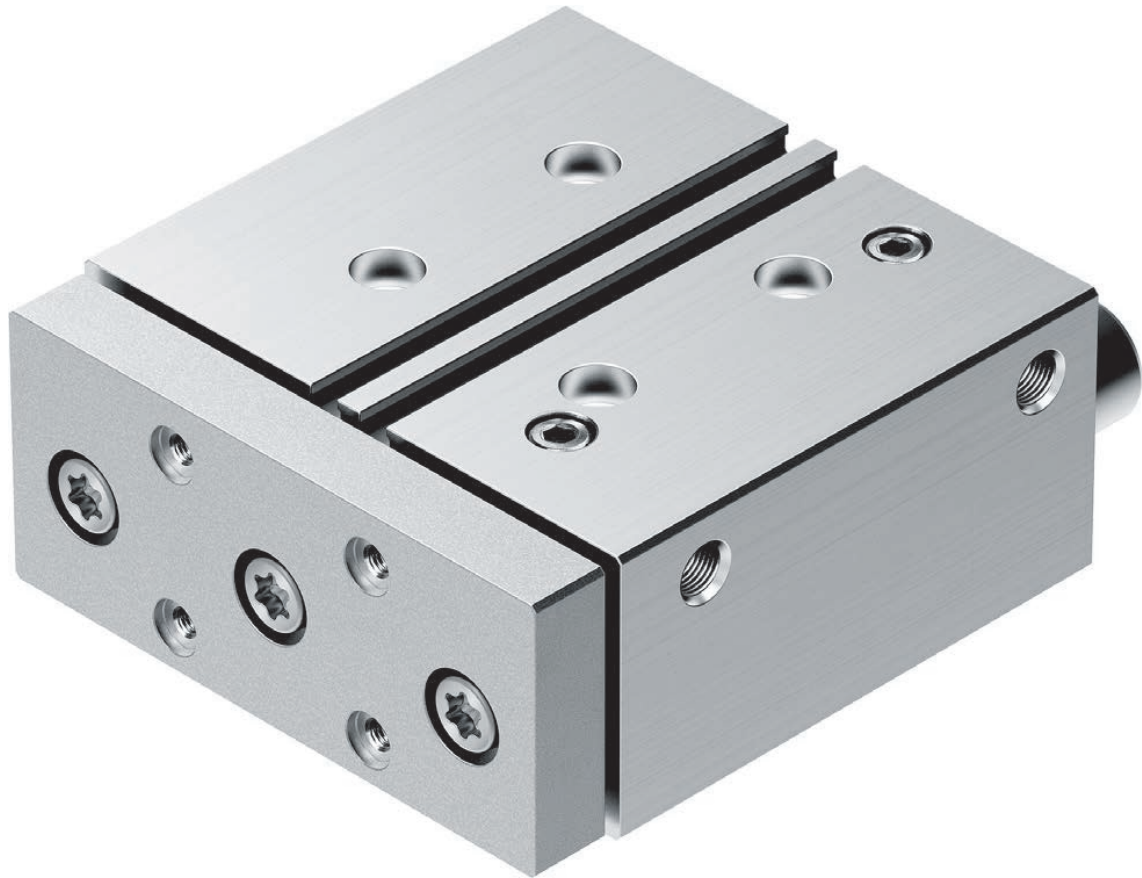
SLT-20/-25-200



Drives with guides > Drives with slides >

01

Pneumatic drives



Increase productivity and save costs

- + With a heavy-duty guided drive with minimum cycle times
- + Thanks to high load capacity with integrated guides
- + Thanks to versatile mounting options

Drives with guides > Drives with guide rods >
Guided drives

DFM 

Drives with guides > Drives with guide rods >

Guided drives


DFM

 Overview, configuration and ordering
→ www.festo.com/catalogue/dfm



 Additional information, support and user documentation
→ www.festo.com/sp/dfm




 Quick ordering of basic designs
→ page 403



 Selected types in accordance with the ATEX Directive for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + Drive and guide unit in a single housing
- + Sturdy and precise
- + Plain or recirculating ball bearing guide
- + High resistance to torques and lateral forces

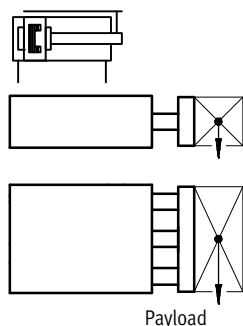
Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Force [N]	Product options	
				P	A
Double-acting	DFM-...-GF – Plain-bearing guide				
	6, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5 ... 200	17 ... 4712	■	■
Double-acting	DFM-...-KF – Recirculating ball bearing guide				
	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	10 ... 200	68 ... 4712	■	■

Product options

P Elastic cushioning rings/plates at both ends A Position sensing

Data sheet



Technical data		Dimensions → Page 407					
Piston Ø		6	10	12	16	20	25
Pneumatic connection		M3	M3	M5	M5	M5	G1/8
Stroke	[mm]	5 ... 20		10 ... 100		20 ... 100	
Cushioning		Elastic cushioning rings/plates at both ends					
Theoretical force at 6 bar, advancing	[N]	17	47	68	121	188	295
Theoretical force at 6 bar, retracting	[N]	13	40	51	90	141	247
Max. payload ¹⁾	[N]	0.6 ... 1.1	2.1 ... 3.7	19 ... 31	37 ... 82	42 ... 110	86 ... 123
Torque load ¹⁾	[Nm]	0.006 ... 0.011	0.034 ... 0.057	0.40 ... 0.88	1.14 ... 2.92	1.70 ... 4.64	2.90 ... 6.14
Protection against rotation		Guide rods with yoke, with plain-bearing or recirculating ball bearing guide					

Piston Ø		32	40	50	63	80	100
Pneumatic connection		G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
Stroke	[mm]	20 ... 200		25 ... 200			
Cushioning		Elastic cushioning rings/plates at both ends					
Theoretical force at 6 bar, advancing	[N]	482	754	1178	1870	3016	4712
Theoretical force at 6 bar, retracting	[N]	415	686	1057	1750	2827	4418
Max. payload ¹⁾	[N]	126 ... 188	127 ... 180	174 ... 257	174 ... 257	220 ... 352	332 ... 568
Torque load ¹⁾	[Nm]	5.00 ... 9.62	5.55 ... 10.25	9.60 ... 19.35	10.70 ... 21.98	17.10 ... 27.20	25.70 ... 53.40
Protection against rotation		Guide rods with yoke, with plain-bearing or recirculating ball bearing guide					

1) Dependent on stroke

Drives with guides > Drives with guide rods >

Guided drives DFM ★

01

Data sheet

Operating conditions		6	10	12	16	20	25	32	40	50	63	80	100
Piston Ø		6	10	12	16	20	25	32	40	50	63	80	100
Operating pressure	[bar]	2 ... 8	1.5 ... 8	2 ... 10			1.5 ... 10			1 ... 10	0.5 ... 10		
Ambient temperature ¹⁾													
DFM-...-GF	[°C]	-10 ... +60		-20 ... +80									
DFM-...-KF	[°C]	-		-5 ... +60									

1) Note operating range of proximity sensors.

Materials		6, 10	12 ... 100
Piston Ø		6, 10	12 ... 100
Piston rod		High-alloy stainless steel	
Housing		Anodised wrought aluminium alloy	
Guide rods			
DFM-...-GF		High-alloy stainless steel	
DFM-...-KF		Hard-chromium plated tempered steel	
Yoke plate		Aluminium	Tempered steel
Seals		NBR, HNBR	

Pneumatic drives

Order code

		DFM	-		-		-	P	-	A	-	
Type												
DFM	Double-acting guided drive											
Piston Ø [mm]												
	Stroke [mm]											
6, 10	5, 10, 15, 20											
12, 16	10, 20, 25, 30, 40, 50, 80, 100											
20, 25	20, 25, 30, 40, 50, 80, 100											
32	20, 25, 30, 40, 50, 80, 100, 125, 160, 200											
40, 50, 63, 80, 100	25, 50, 80, 100, 125, 160, 200											
Cushioning												
P	Elastic cushioning rings/plates at both ends											
Position sensing												
A	For proximity sensor											
Guidance												
GF	Plain-bearing guide											
KF	Recirculating ball bearing guide 1											

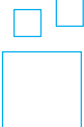
1 Not with piston Ø 6, 10

Order example:

DFM-12-10-P-A-GF

Double-acting guided drive DFM - piston diameter 12 mm - stroke 10 mm - elastic cushioning rings/plates at both ends - position sensing via proximity sensor - plain-bearing guide

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or</p> <p>→ www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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 Quick ordering¹⁾

GF – Plain-bearing guide

Part no.	Type
Piston Ø 12 mm	
170824	DFM-12-10-P-A-GF
170825	DFM-12-20-P-A-GF
170826	DFM-12-25-P-A-GF
170827	DFM-12-30-P-A-GF
170828	DFM-12-40-P-A-GF
170829	DFM-12-50-P-A-GF
170830	DFM-12-80-P-A-GF
170831	DFM-12-100-P-A-GF
Piston Ø 16 mm	
170832	DFM-16-10-P-A-GF
170833	DFM-16-20-P-A-GF
170834	DFM-16-25-P-A-GF
170835	DFM-16-30-P-A-GF
170836	DFM-16-40-P-A-GF
170837	DFM-16-50-P-A-GF
170838	DFM-16-80-P-A-GF
170839	DFM-16-100-P-A-GF
Piston Ø 20 mm	
170840	DFM-20-20-P-A-GF
170841	DFM-20-25-P-A-GF
170842	DFM-20-30-P-A-GF
170843	DFM-20-40-P-A-GF
170844	DFM-20-50-P-A-GF
170845	DFM-20-80-P-A-GF
170846	DFM-20-100-P-A-GF

Part no.	Type
Piston Ø 25 mm	
170847	DFM-25-20-P-A-GF
170848	DFM-25-25-P-A-GF
170849	DFM-25-30-P-A-GF
170850	DFM-25-40-P-A-GF
170851	DFM-25-50-P-A-GF
170852	DFM-25-80-P-A-GF
170853	DFM-25-100-P-A-GF
Piston Ø 32 mm	
170854	DFM-32-20-P-A-GF
170855	DFM-32-25-P-A-GF
170856	DFM-32-30-P-A-GF
170857	DFM-32-40-P-A-GF
170858	DFM-32-50-P-A-GF
170859	DFM-32-80-P-A-GF
170860	DFM-32-100-P-A-GF
170861	DFM-32-125-P-A-GF
170862	DFM-32-160-P-A-GF
170863	DFM-32-200-P-A-GF

Part no.	Type
Piston Ø 40 mm	
170864	DFM-40-25-P-A-GF
170865	DFM-40-50-P-A-GF
170866	DFM-40-80-P-A-GF
170867	DFM-40-100-P-A-GF
170868	DFM-40-125-P-A-GF
170869	DFM-40-160-P-A-GF
170870	DFM-40-200-P-A-GF
Piston Ø 50 mm	
170871	DFM-50-25-P-A-GF
170872	DFM-50-50-P-A-GF
170873	DFM-50-80-P-A-GF
170874	DFM-50-100-P-A-GF
170875	DFM-50-125-P-A-GF
170876	DFM-50-160-P-A-GF
170877	DFM-50-200-P-A-GF
Piston Ø 63 mm	
170878	DFM-63-25-P-A-GF
170879	DFM-63-50-P-A-GF
170880	DFM-63-80-P-A-GF
170881	DFM-63-100-P-A-GF
170882	DFM-63-125-P-A-GF
170883	DFM-63-160-P-A-GF
170884	DFM-63-200-P-A-GF

KF – Recirculating ball bearing guide

Part no.	Type
Piston Ø 12 mm	
170899	DFM-12-10-P-A-KF
170900	DFM-12-20-P-A-KF
170901	DFM-12-25-P-A-KF
170902	DFM-12-30-P-A-KF
170903	DFM-12-40-P-A-KF
170904	DFM-12-50-P-A-KF
170905	DFM-12-80-P-A-KF
170906	DFM-12-100-P-A-KF
Piston Ø 16 mm	
170907	DFM-16-10-P-A-KF
170908	DFM-16-20-P-A-KF
170909	DFM-16-25-P-A-KF
170910	DFM-16-30-P-A-KF
170911	DFM-16-40-P-A-KF
170912	DFM-16-50-P-A-KF
170913	DFM-16-80-P-A-KF
170914	DFM-16-100-P-A-KF
Piston Ø 20 mm	
170915	DFM-20-20-P-A-KF
170916	DFM-20-25-P-A-KF
170917	DFM-20-30-P-A-KF
170918	DFM-20-40-P-A-KF
170919	DFM-20-50-P-A-KF
170920	DFM-20-80-P-A-KF
170921	DFM-20-100-P-A-KF

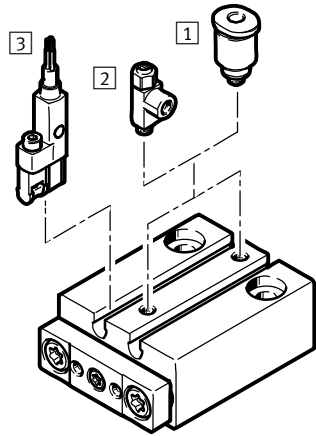
Part no.	Type
Piston Ø 25 mm	
170922	DFM-25-20-P-A-KF
170923	DFM-25-25-P-A-KF
170924	DFM-25-30-P-A-KF
170925	DFM-25-40-P-A-KF
170926	DFM-25-50-P-A-KF
170927	DFM-25-80-P-A-KF
170928	DFM-25-100-P-A-KF
Piston Ø 32 mm	
170929	DFM-32-20-P-A-KF
170930	DFM-32-25-P-A-KF
170931	DFM-32-30-P-A-KF
170932	DFM-32-40-P-A-KF
170933	DFM-32-50-P-A-KF
170934	DFM-32-80-P-A-KF
170935	DFM-32-100-P-A-KF
170936	DFM-32-125-P-A-KF
170937	DFM-32-160-P-A-KF
170938	DFM-32-200-P-A-KF

Part no.	Type
Piston Ø 40 mm	
170939	DFM-40-25-P-A-KF
170940	DFM-40-50-P-A-KF
170941	DFM-40-80-P-A-KF
170942	DFM-40-100-P-A-KF
170943	DFM-40-125-P-A-KF
170944	DFM-40-160-P-A-KF
170945	DFM-40-200-P-A-KF
Piston Ø 50 mm	
170946	DFM-50-25-P-A-KF
170947	DFM-50-50-P-A-KF
170948	DFM-50-80-P-A-KF
170949	DFM-50-100-P-A-KF
170950	DFM-50-125-P-A-KF
170951	DFM-50-160-P-A-KF
170952	DFM-50-200-P-A-KF
Piston Ø 63 mm	
170953	DFM-63-25-P-A-KF
170954	DFM-63-50-P-A-KF
170955	DFM-63-80-P-A-KF
170956	DFM-63-100-P-A-KF
170957	DFM-63-125-P-A-KF
170958	DFM-63-160-P-A-KF
170959	DFM-63-200-P-A-KF

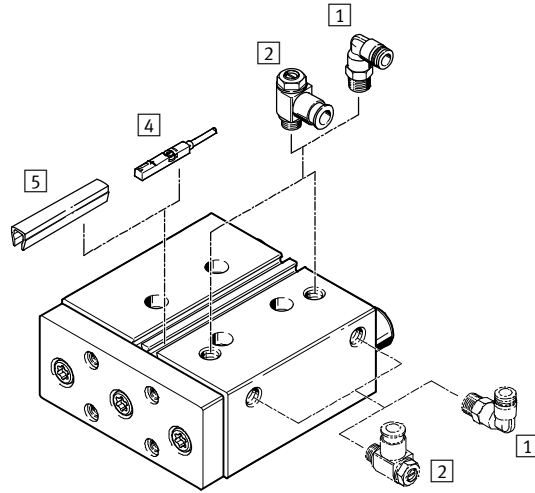
1) All products in this table are easy to select and quick to order.

Accessories

Piston Ø 6, 10










Piston Ø 12 ... 100


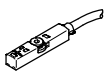





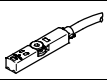

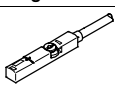









		→ Page/online
1	Push-in fitting QS	1443
2	One-way flow control valve GRLA	405
3	Proximity sensor SMT-10G	405
4	Proximity sensor SME-/SMT-8	405
5	Slot cover ABP-5-S	405
-	Centring sleeve ZBH	406
-	Connecting cable NEBU	406
-	Drive/drive connections	dfm

Accessories – Ordering data

Function	For Ø	Connection		Part no.	Type
		Thread	O.D.		
2 One-way flow control valve with slotted head screw, metal¹⁾ for exhaust air flow control Data sheets → Page 1033					
	12, 16, 20	M5	3		193137 GRLA-M5-QS-3-D
	25	G1/8	3		193142 GRLA-1/8-QS-3-D
	32	G1/8	4		193143 GRLA-1/8-QS-4-D
	40	G1/8	6		193144 GRLA-1/8-QS-6-D
	50, 63	G1/4	6		193146 GRLA-1/4-QS-6-D
	80, 100	G3/8	8		193145 GRLA-3/8-QS-8-D

1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
3 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	6, 10	PNP, cable	2.5	547862	SMT-10G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547863	SMT-10G-PS-24V-E-0,3Q-M8D
		NPN, cable	2.5	8065030	SMT-10G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
4 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	12 ... 100	PNP, cable	2.5		574335 SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3		574334 SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3		574337 SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5		574338 SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3		574339 SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	12 ... 100	PNP, cable	7.5		574340 SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	12 ... 100	Contacting, cable	2.5		543862 SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0		543863 SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5		543872 SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3		543861 SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	12 ... 100	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/C contact Data sheets → Page 1203					
	12 ... 100	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
5 Slot cover²⁾					
	12 ... 100	–	–	151680	ABP-5-S

2) Packaging unit 2x 0.5 m.


Drives with guides > Drives with guide rods >

Guided drives DFM ★



01

Accessories – Ordering data

Pneumatic drives

	For Ø	For housing		For yoke plate	
		Part no.	Type	Part no.	Type
Centring sleeves¹⁾					
Data sheets online: → zbh					
	12	189652	ZBH-5	189652	ZBH-5
		150927	ZBH-9		
	16	189652	ZBH-5	189652	ZBH-5
		150927	ZBH-9		
	20	186717	ZBH-7	150927	ZBH-9
		150927	ZBH-9		
	25	186717	ZBH-7	150927	ZBH-9
		150927	ZBH-9		
	32	150927	ZBH-9	150927	ZBH-9
		189653	ZBH-12		
40	150927	ZBH-9	150927	ZBH-9	
	189653	ZBH-12			
50	189653	ZBH-12	189653	ZBH-12	
63	189653	ZBH-12	189653	ZBH-12	
80	189653	ZBH-12	189653	ZBH-12	
100	191409	ZBH-15	191409	ZBH-15	

1) 2 included in the scope of delivery in each case. Supplied in packs of 10 for repeat orders.

	For size	Connection	Cable length [m]	Part no. Type	
				Part no.	Type
Connecting cable, straight socket					
Data sheets → Page 1543					
	12 ... 100	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket					
Data sheets → Page 1543					
	12 ... 100	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

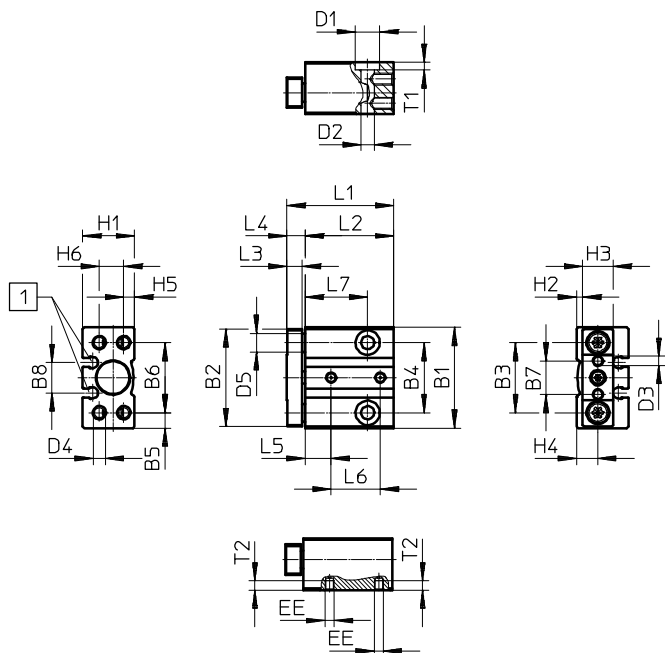
Dimensions

∅ 6, 10

Download CAD data → www.festo.com

01

Pneumatic drives



1 Mounting slot for proximity sensor SMT-10G

∅	B1	B2	B3	B4	B5	B6	B7	B8	D1 ∅	D2 ∅
[mm]										
6	29	28	20.5	20.5	4.3	20.5	9	9.7	6.2	3.3
10	33	32	23	23	5	23	11	10	8	4.3

∅	D3	D4	D5 ∅ h8	EE	H1	H2	H3	H4	H5	H6
[mm]										
6	M2.5	M3	5	M3	14.5	1.8	9	6.3	3	6
10	M3	M4	6	M3	17	2	10	7	3.5	8

∅	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	T1	T2
[mm]										
6	5	28	23.5	3.5	4.5	7	12	14	3	3
	10	33	28.5				17	19		
	15	38	33.5				22	24		
	20	43	38.5				27	29		
10	5	30	24	5	6	8.5	11.1	15.5	2.5	3
	10	35	29				16.1	20.5		
	15	40	34				21.1	25.5		
	20	45	39				26.1	30.5		

Guided drives DFM ★

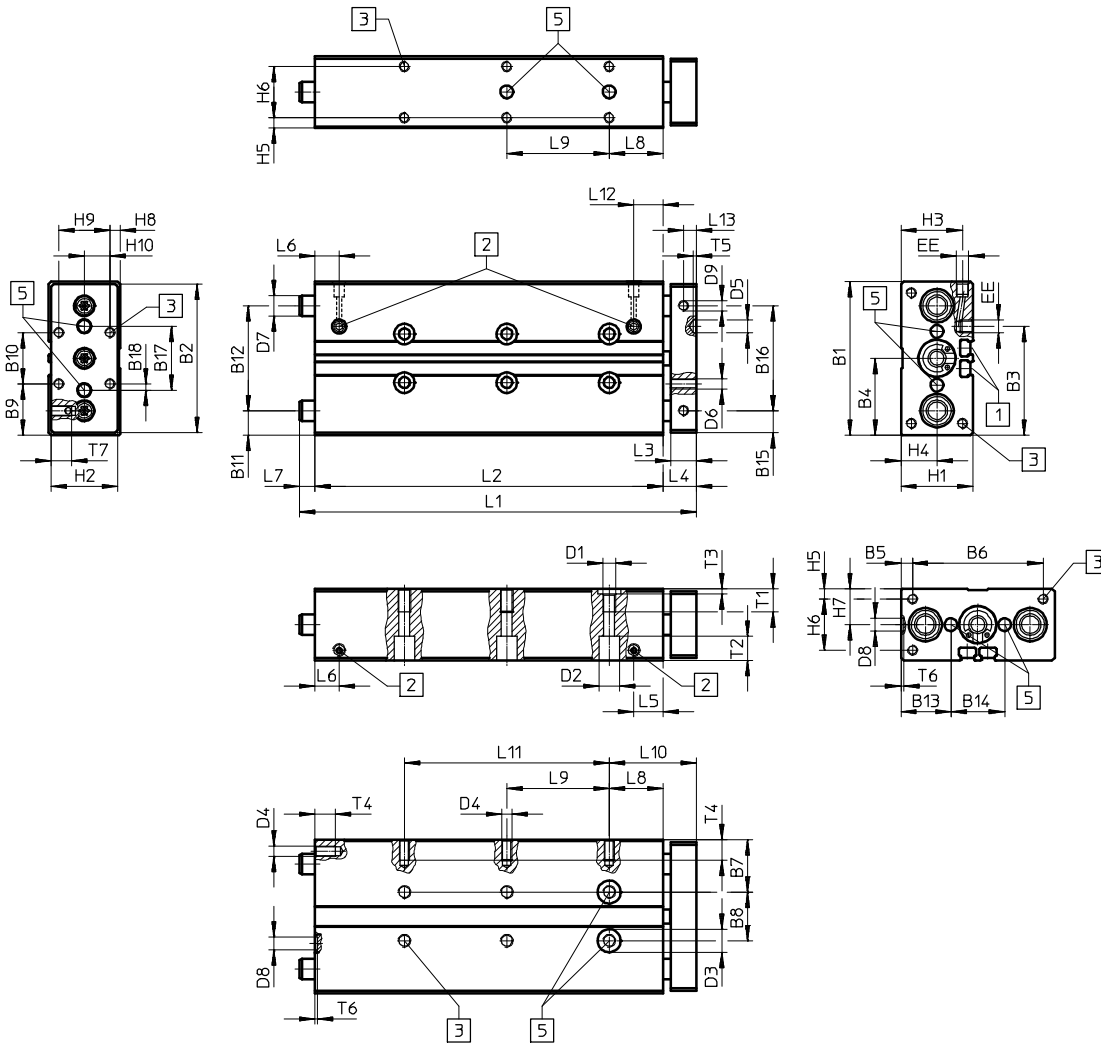
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01

Dimensions

Ø 12, 16

Pneumatic drives



- 1 Mounting slot for proximity sensor SME/SMT-8
- 2 Supply port options on side or top
- 3 Mounting thread
- 5 Tolerance between the centring holes ± 0.02 mm

Note

If the guide rods project beyond the housing when the unit is in its retracted end position (→ dimension L7), a recess must be provided in the mounting surface if the unit is to be mounted on the end face so that the guide rods can move freely.

Dimensions

Download CAD data → www.festo.com

01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	D1	D2
[mm]																				
12	60	58	42.4	30	4.5	51	20.5	19	20	20	9.5	41	19.5	21	8.5	41	25	2.5	M5	8
16	67	65	45.9	33.5	4.5	58	22	23	23.5	20	10.5	46	21.3	24.4	-	-	28	4	M5	7.5

∅	D3 ∅	D4	D5 ∅	D6	D7 ∅		D8 ∅	D9	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
					GF	KF													
[mm]	H7		H7				H7												
12	9	M4	5	M4	10 _{h8}	8 _{h7}	5	M4	M5	28	26	24	14	4	20	14	4	20	10
16	9	M5	5	M5	12 _{h8}	10 _{h7}	5	-	M5	32	30	26.5	16	4	24	16	7.4	20	10

∅	Stroke	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
[mm]	[mm]										
12	10	59	46	10	13	11.4	9.5	-	21	-	34
	20	69	56					-		-	
	25	74	61					-		20	
	30	79	66					-		20	
	40	95	76					6		20	
	50	105	86					6		40	
	80	135	116					6		40	
16	10	60	48	10	12	11.9	10.6	-	22	-	34
	20	70	58					-		-	
	25	75	63					-		20	
	30	80	68					-		20	
	40	107	78					17		20	
	50	117	88					17		40	
	80	147	118					17		40	
100	167	138	17	40							

∅	Stroke	L11	L12	L13	T1	T2	T3	T4	T5	T6	T7
[mm]	[mm]										
12	10	-	11.4	5	9	9.4	2.1	8	1.2	1	8
	20	-									
	25	-									
	30	-									
	40	-									
	50	-									
	80	-									
16	10	-	11.9	-	9	4.6	2.1	10	1.2	1	-
	20	-									
	25	-									
	30	-									
	40	-									
	50	-									
	80	-									
100	80										

Pneumatic drives

Guided drives DFM ★

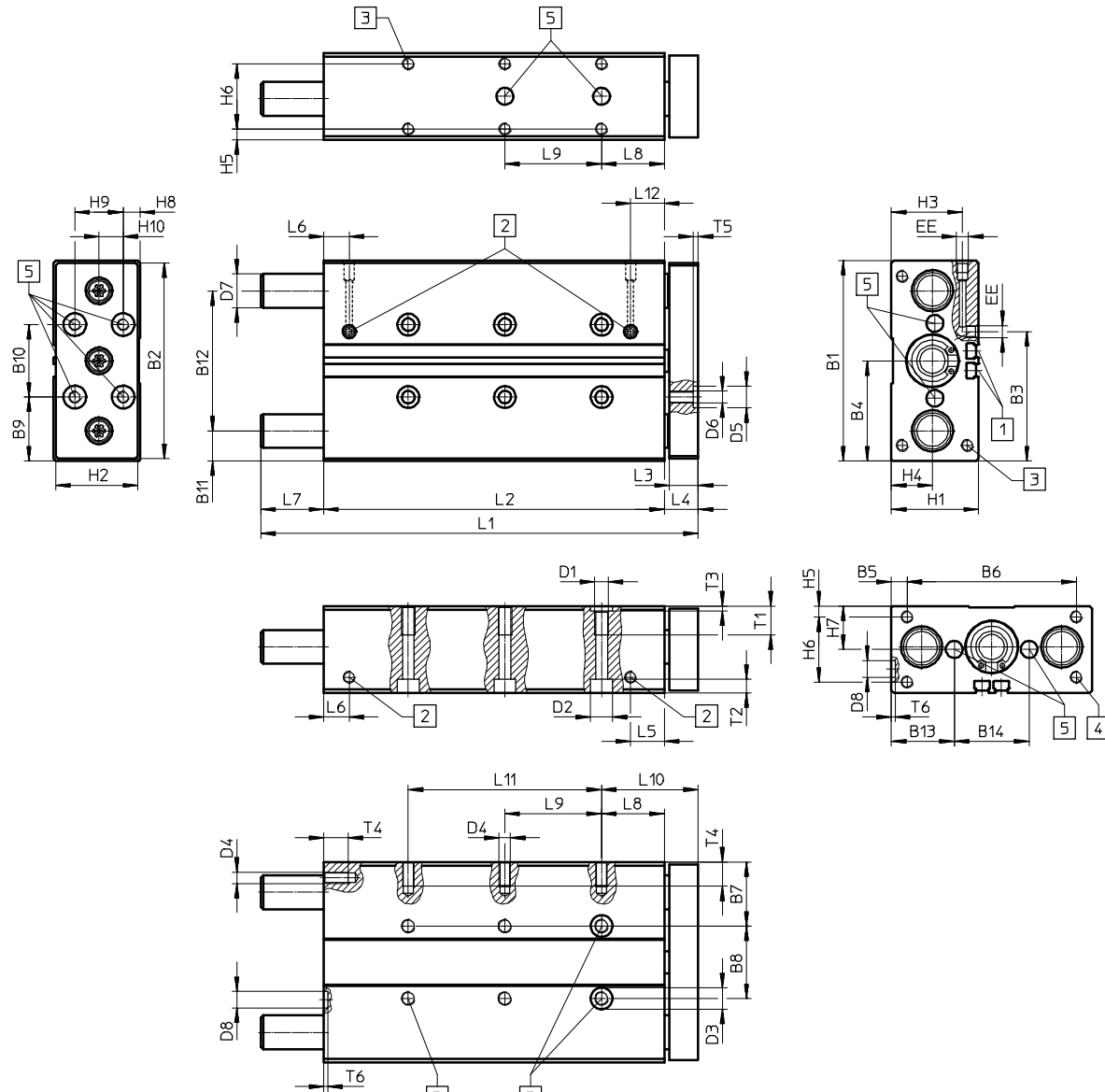
Download CAD data → www.festo.com

01

Dimensions

∅ 20, 25

Pneumatic drives



1 Mounting slot for proximity sensor SME-/SMT-8

2 Supply port options on side or top

3 Mounting thread
4 Mounting thread (not with ∅ 20)

5 Tolerance between the centring holes ± 0.02 mm

Note

If the guide rods project beyond the housing when the unit is in its retracted end position (→ dimension L7), a recess must be provided in the mounting surface if the unit is to be mounted on the end face so that the guide rods can move freely.

Dimensions

Download CAD data → www.festo.com

01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1	D2 ∅	D3 ∅ H7	D4
[mm]																		
20	83	81	53.6	41.5	6.5	70	26.5	30	26.5	30	12.5	58	26	31	M6	9	9	M5
25	95	93	70	47.5	15.5	64	30	35	27.5	40	13.5	68	29	37	M6	9	9	M6

∅	D5 ∅ H7	D6	D7 ∅		D8 ∅ H7	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
			GF	KF												
[mm]																
20	9	M5	14 _{h8}	12 _{h7}	7	M5	36	34	29.5	17	4.5	27	18	7	20	10
25	9	M6	16 _{h8}	14 _{h7}	7	G1/8	44	42	34.8	19	4.5	35	22	12	20	10

∅	Stroke	L1	L2	L3	L4	L5	L6	L7	L8	L9
[mm]	[mm]									
20	20	75	61	12	14	14	10.5	-	26	-
	25	80	66					-		20
	30	85	71					-		20
	40	121	81					26		20
	50	131	91					26		40
	80	161	121					26		40
	100	181	141					26		40
25	20	93	65.6	12	14	17.5	9.5	13.4	26	-
	25	98	70.6					13.4		20
	30	103	75.6					13.4		20
	40	123	85.6					23.4		20
	50	133	95.6					23.4		40
	80	163	125.6					23.4		40
	100	183	145.6					23.4		40

∅	Stroke	L10	L11	L12	T1	T2	T3	T4	T5	T6
[mm]	[mm]									
20	20	40	-	14	12	5.7	2.1	10	2.1	1.6
	25		-							
	30		-							
	40		-							
	50		-							
	80		-							
	100		80							
25	20	40	-	15	14	5.7	2.1	12	2.1	1.6
	25		-							
	30		-							
	40		-							
	50		-							
	80		-							
	100		80							

Pneumatic drives

Guided drives DFM ★

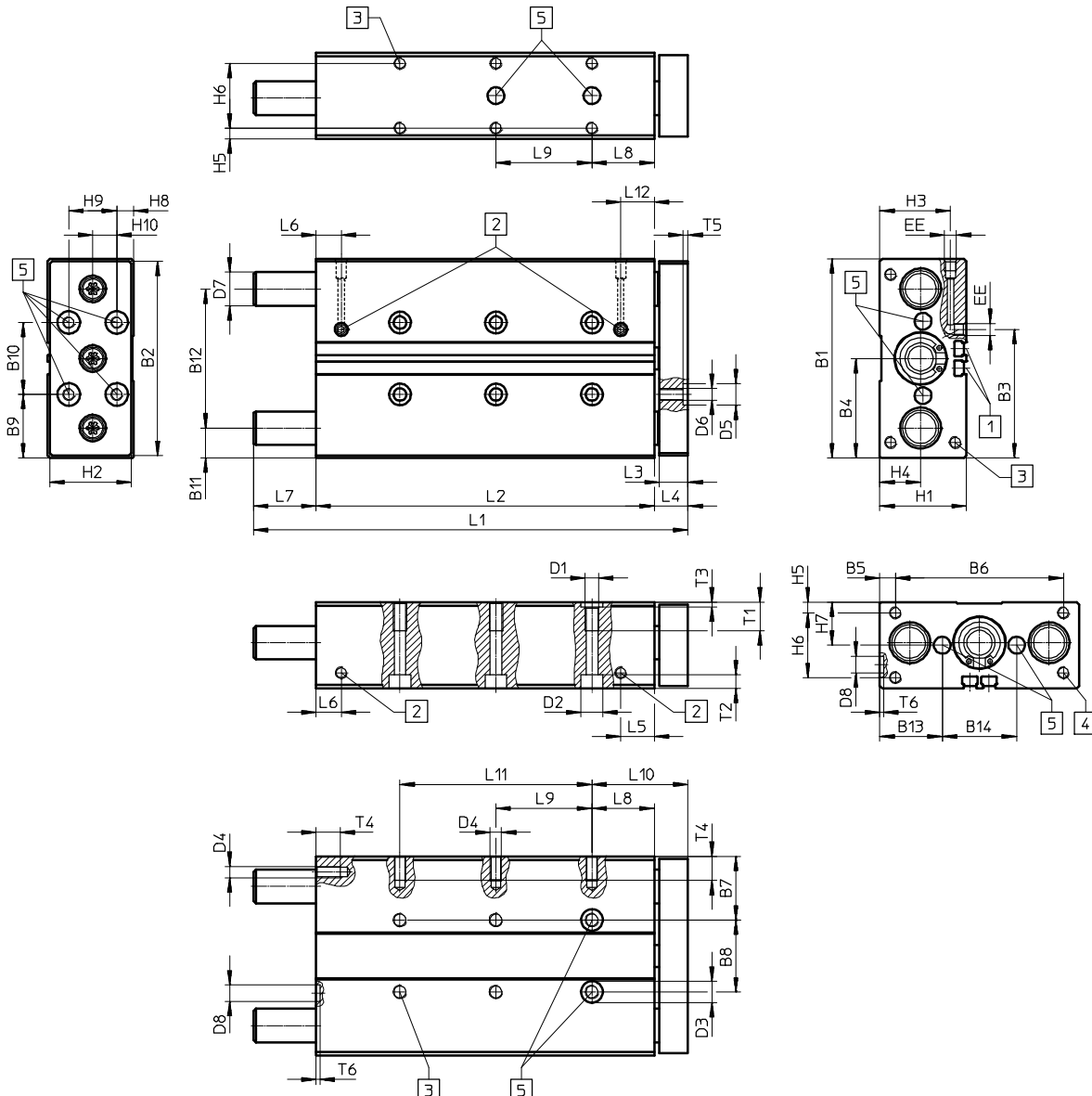
Download CAD data → www.festo.com

01

Dimensions

Ø 32 ... 63

Pneumatic drives



- 1 Mounting slot for proximity sensor SME-/SMT-8
- 2 Supply port options on side or top
- 3 Mounting thread
- 4 Mounting thread
- 5 Tolerance between the centring holes ±0.02 mm

Note
 As the guide rods project beyond the housing when the unit is in its retracted end position (→ dimension L7), a recess must be provided in the mounting surface if the unit is to be mounted on the end face so that the guide rods can move freely.

Dimensions

Download CAD data → www.festo.com

01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1	D2 ∅	D3 ∅ H7
[mm]																	
32	110	108	81	55	20	70	33.5	43	35	40	16	78	32.5	45	M8	11	12
40	120	118	94	60	15	90	34.5	51	35	50	16	88	32.5	55	M8	11	12
50	148	146	116.5	74	19	110	42	64	44	60	19	110	40	68	M8	11	12
63	162	160	139	81	9	144	41	80	41	80	18.5	125	39.5	83	M10	15	12

∅	D4	D5 ∅ H7	D6	D7 ∅		D8 ∅ H7	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
				GF	KF												
[mm]																	
32	M6	9	M6	20 _{h8}	16 _{h7}	9	G1/8	49	47	38.5	22	6	37	24.5	8.5	30	15
40	M8	9	M6	20 _{h8}	16 _{h7}	9	G1/8	54	52	40.5	24	6	42	27	10	30	15
50	M8	12	M8	25 _{h8}	20 _{h7}	12	G1/4	64	62	50.5	29.5	7	50	32	12	40	20
63	M10	12	M8	25 _{h8}	20 _{h7}	12	G1/4	78	76	55	32	9	60	39	19	40	20

∅	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	T1	T2	T3	T4	T5	T6
32	20	101	68	14	16	17	12	17	29	-	45	-	17	15	6.8	2.6	12	2.1	2.1
	25	106	73					17		20		-							
	30	111	78					17		20		-							
	40	121	88					17		20		-							
	50	131	98					17		40		-							
	80	179	128					35		40		-							
	100	199	148					35		40		80							
	125	244	173					55		40		80							
	160	279	208					55		40		120							
	200	319	248					55		40		160							
40	25	106	76					14		16		17.8							
	50	131	101	14	40	-													
	80	179	131	32	40	-													
	100	199	151	32	40	80													
	125	244	176	52	40	80													
	160	279	211	52	40	120													
	200	319	251	52	40	160													
50	25	118	77	16	18	17.8	14.2	23	32	20	50	-	17.8	15	6.8	2.6	16	2.6	2.6
	50	143	102					23		40		-							
	80	194	132					44		40		-							
	100	214	152					44		40		80							
	125	259	177					64		40		80							
	160	294	212					64		40		120							
	200	334	252	64	40	160													
63	25	118	83	16	18	18.5	14.8	17	32	20	50	-	18.5	20	9	2.6	20	2.6	2.6
	50	143	108					17		40		-							
	80	194	138					38		40		80							
	100	214	158					38		40		80							
	125	259	183					58		40		120							
	160	294	218					58		40		160							
	200	334	258					58		40		200							

Pneumatic drives

Guided drives DFM ★

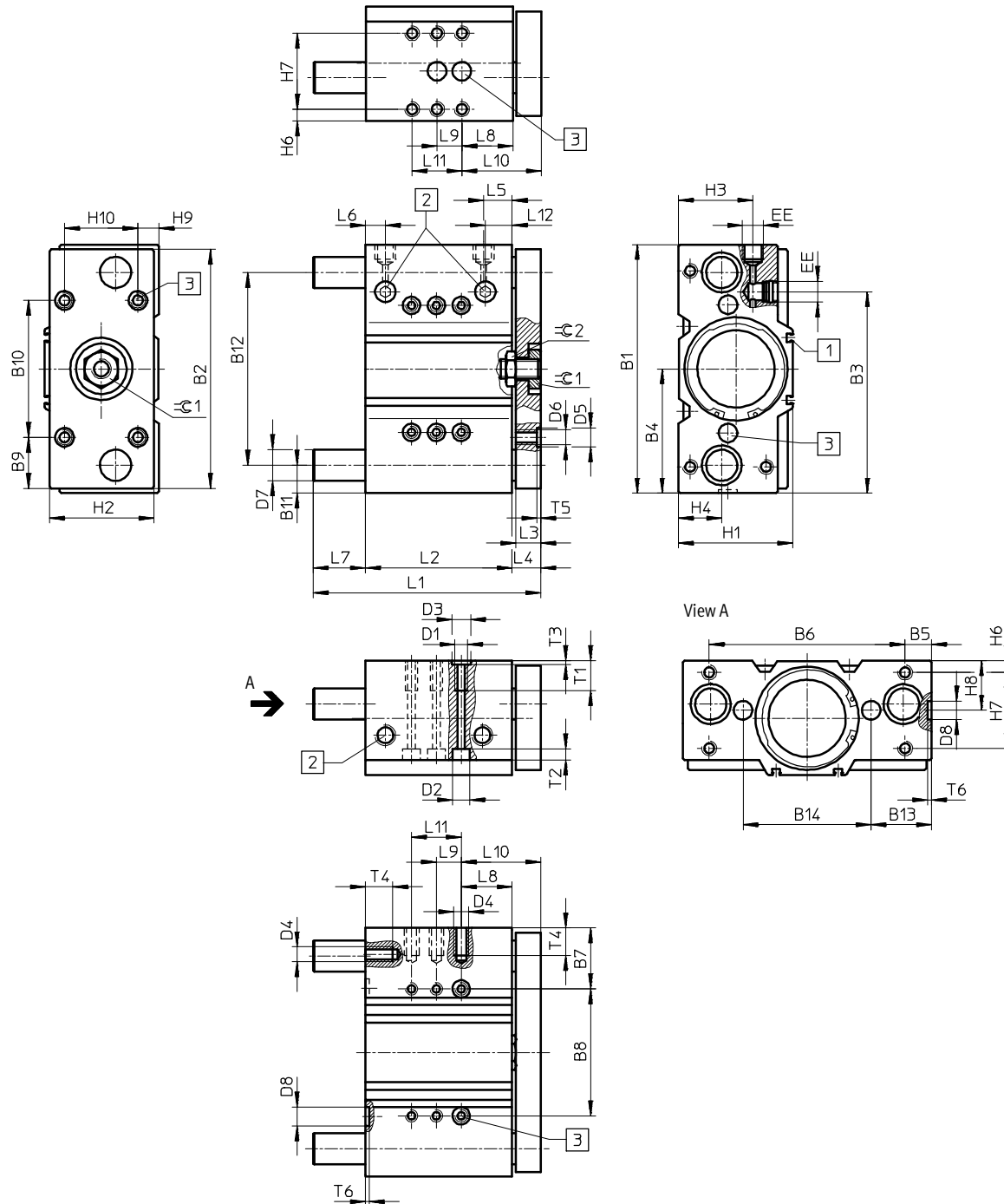
Download CAD data → www.festo.com

01

Dimensions

∅ 80, 100

Pneumatic drives



1 Mounting slot for proximity sensor SME-/SMT-8

2 Supply port options on side or top

3 Tolerance between the centring holes ±0.02 mm

Note

As the guide rods project beyond the housing when the unit is in its retracted end position (→ dimension L7), a recess must be provided in the

mounting surface if the unit is to be mounted on the end face so that the guide rods can move freely.

Dimensions

Download CAD data [→ www.festo.com](http://www.festo.com)

01

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1	D2 ∅	D3 ∅ H7
[mm]																	
80	200	192	162.5	100	21.5	157	48.5	103	41	110	22.5	155	48.5	103	M10	15	12
100	240	232	201	120	21	198	54	132	56	120	26	188	57	126	M12	18	15

∅	D4	D5 ∅ H7	D6	D7 ∅		D8 ∅ H7	EE	H1	H2	H3	H4	H6	H7	H8	H9	H10
				GF	KF											
[mm]																
80	M10	12	M10	30 _{h8}	25 _{h6}	12	G3/8	92	84	61	35	9	62	40	16	60
100	M12	15	M12	35 _{h8}	30 _{h6}	15	G3/8	112	104	66	39.5	10	68	44	16	80

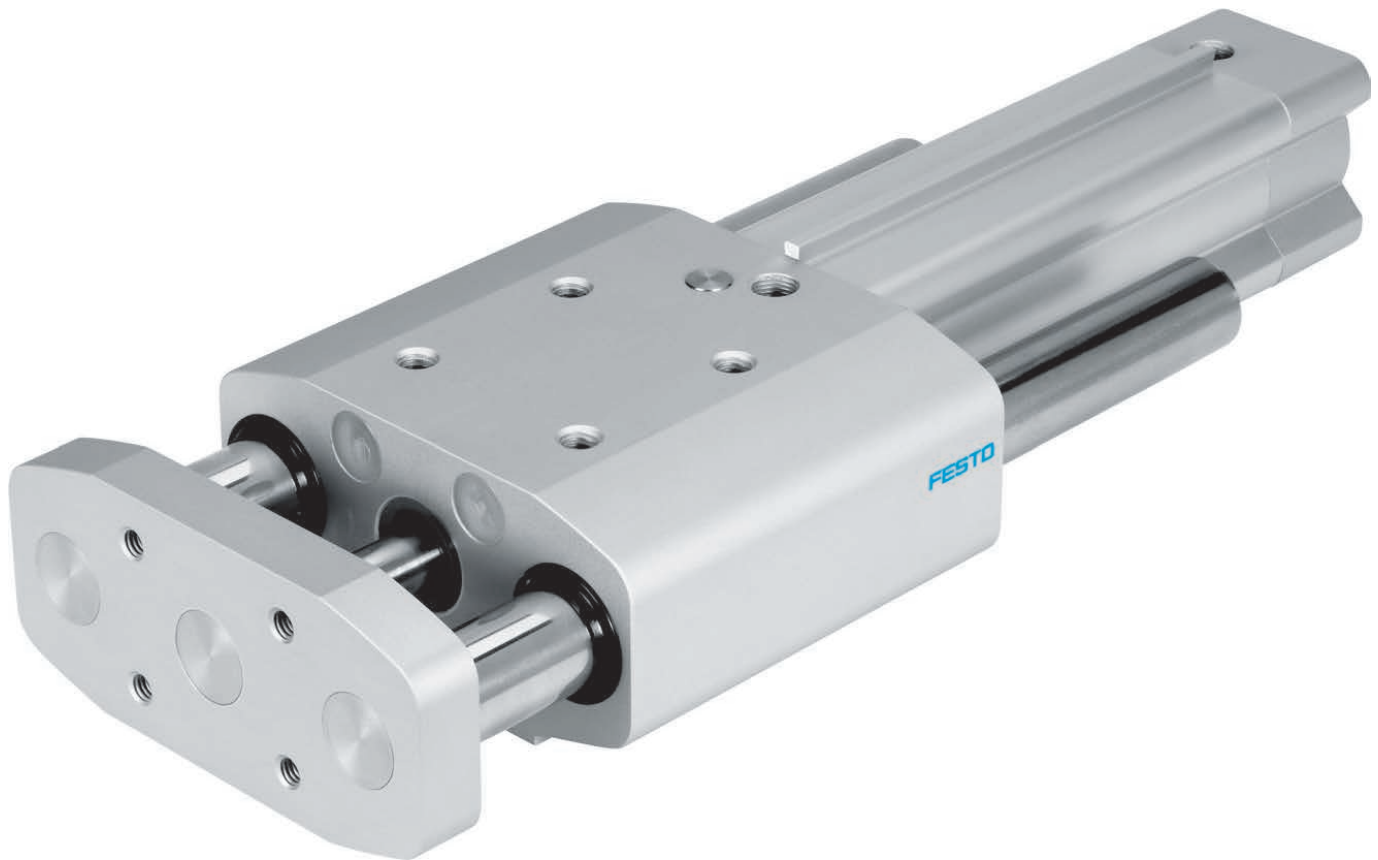
∅	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10 ±0.1	L11	L12	T1	T2	T3	T4	T5	T6	≈C1	≈C2
[mm]																					
80	25	137	93	20	23	23	16	21	41	20	64	-	23	20	9	2.6	20	2.6	2.6	27	30
	50	183	118					42		40		-									
	80	243	148					72		40		-									
	100	263	168					72		40		80									
	125	288	193					72		40		80									
	160	323	228					72		40		120									
	200	363	268					72		40		160									
100	25	150	109	20	23	29	20	18	13	40	36	-	29	25	11	3.1	24	3.1	3.1	32	30
	50	197	134					40		40		80									
	80	257	164					70		40		80									
	100	277	184					70		40		120									
	125	302	209					70		40		160									
	160	337	244					70		40		160									
	200	377	284					70		40		200									

Pneumatic drives

Drives with guides > Drives with guide rods >

01

Pneumatic drives



Save time and money during maintenance and commissioning

- + Thanks to easy-to-clean clean design and corrosion-resistant surfaces
- + Thanks to high load capacity with integrated guides
- + With self-adjusting end-position cushioning PPS

Drives with guides › Drives with guide rods ›
Guided drive, clean design

DGRF-C

Drives with guides > Drives with guide rods >

Guided drive, clean design

DGRF-C



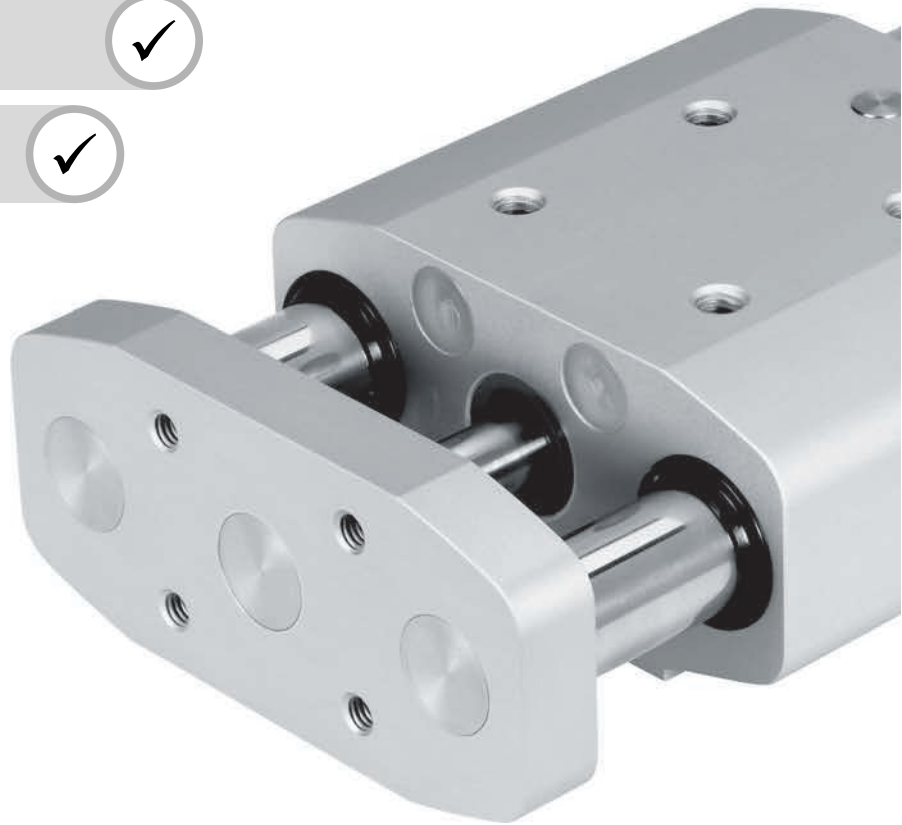
Overview, configuration and ordering

→ www.festo.com/catalogue/dgrf-c



Additional information, support and user documentation

→ www.festo.com/sp/dgrf-c



- + Easy-to-clean design
- + Plain-bearing guide
- + Cushioning at both ends
- + Self-adjusting pneumatic end-position cushioning PPS
- + Optional dry-running seal for long service life, even with frequent cleaning

Guided drives DGRF-C, Clean Design

01

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Product options					
			P	PPV	PPS	A	R	A3
DGRF-C								
Double-acting	20, 25	10 ... 400	■	-	-	-	-	■
	32	10 ... 400	■	■	■	■	■	■
	40, 50, 63	10 ... 400	-	■	■	■	■	■

Product options

P Elastic cushioning rings at both ends

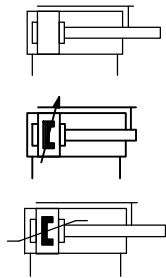
PPV Pneumatic cushioning, adjustable at both ends

PPS Pneumatic cushioning, self-adjusting

A Position sensing
R Mounting rail for proximity sensor

A3 Suitable for unlubricated operation

Data sheet



Pneumatic drives

Technical data							Dimensions → Page 423
Piston Ø	20	25	32	40	50	63	
Pneumatic connection	M5	M5	G1/8	G1/4	G1/4	G3/8	
Stroke [mm]	10 ... 400						
Cushioning							
DGRF- ... P	Elastic cushioning rings at both ends			-			
DGRF- ... PPV	-		Pneumatic cushioning, adjustable at both ends				
DGRF- ... PPS	-		Pneumatic cushioning, self-adjusting				
Cushioning length [mm]	-	-	20	20	22	22	
Position sensing	-		Via proximity sensor				
Theoretical force at 6 bar, advancing [N]	189	295	483	754	1178	1870	
Theoretical force at 6 bar, retracting [N]	141	247	415	633	990	1682	
Torsional backlash ¹⁾ [°]	0.13	0.11	0.10	0.09	0.07	0.06	

1) Retracted state, without load

Operating conditions						
Piston Ø	20	25	32	40	50	63
Operating pressure [bar]	2.5 ... 10		2 ... 12		1.5 ... 12	
Ambient temperature ²⁾ [°C]	-20 ... +80					

2) Note operating range of proximity sensors.

Materials	
Yoke plate	Anodised wrought aluminium alloy
Housing	Anodised wrought aluminium alloy
Piston rod	High-alloy stainless steel
End cap	
DGRF-...-20/-25/-32-P	Anodised wrought aluminium alloy
DGRF-...-32-PPV/-PPS	Coated die-cast aluminium
DGRF-...-40/-50/-63	Coated die-cast aluminium
Seals	
DGRF-...	TPE-U (PUR) media seal (modified for resistance to hydrolysis and cleaning)
DGRF-...-A3	PE

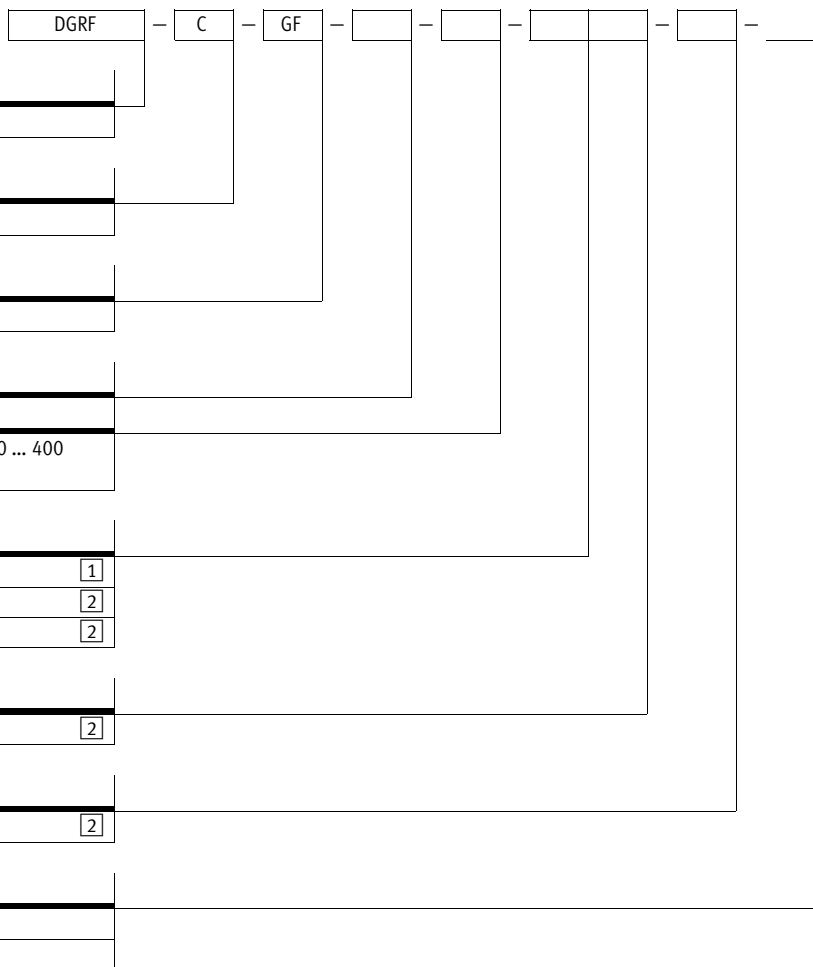
Drives with guides > Drives with guide rods >

Guided drives DGRF-C, Clean Design

01

Order code

Pneumatic drives



Type	
DGRF	Double-acting guided drive

Version	
C	Easy-to-clean design

Guide	
GF	Plain-bearing guide

Piston Ø [mm]	
Stroke [mm]	
20, 25, 32, 40, 50, 63	10 ... 400

Cushioning	
P	Elastic cushioning rings at both ends 1
PPV	Pneumatic cushioning, adjustable at both ends 2
PPS	Pneumatic cushioning, self-adjusting 2

Position sensing	
A	Via proximity sensor 2

Sensor mounting, external	
R	Mounting rail for proximity sensor 2

Wiper seal variant	
-	Standard
A3	Suitable for unlubricated operation

- 1 Not with piston Ø 40, 50, 63
- 2 Always included with piston Ø 32 ... 63

Order example:

DGRF-C-GF-32-100-PA-R

Double-acting guided drive DGRF - easy-to-clean design - plain-bearing guide - piston diameter 32 mm - stroke 100 mm - elastic cushioning rings at both ends - position sensing via proximity sensor - mounting rail for proximity sensor - standard wiper ring variant

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

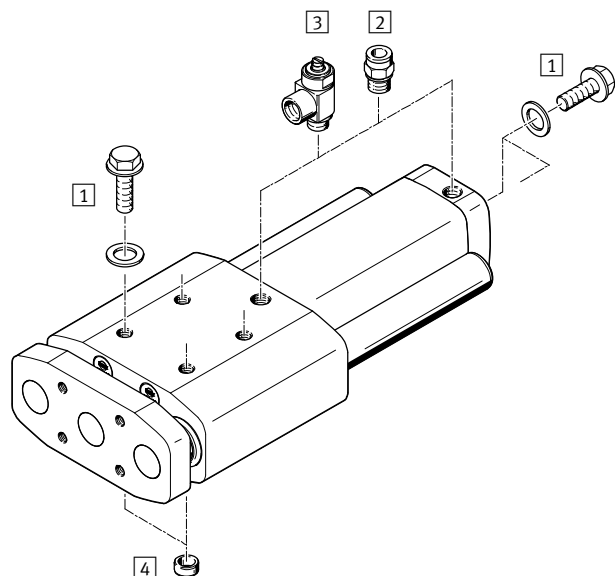
The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

Enter the type code in the search field.

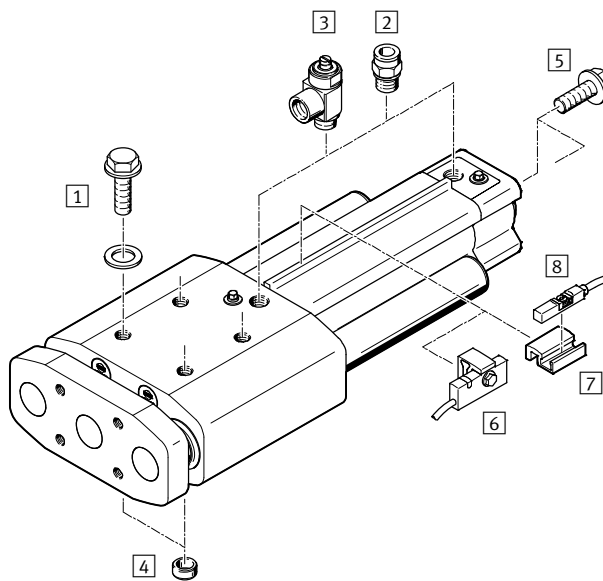
Guided drives DGRF-C, Clean Design

Accessories

Piston Ø 20, 25



Piston Ø 32, 40, 50, 63



		P	PPV	PPS	→ Page/online
1	Blanking screw DAMD for guide	■	■	■	421
2	Push-in fitting NPQH/CRQS/CRQSL/NPQP	■	■	■	npqh
3	One-way flow control valve CRGRLA/VFOH	■	■	■	422
4	Centring sleeve ZBH	■	■	■	422
5	Blanking screw DAMD for end cap	■	■	■	421
6	Proximity sensor SMT-C1	■	■	■	422
7	Mounting kit SMB-8-C	-	■ ¹⁾	■	422
8	Proximity sensor CRSMT-8M	-	■ ¹⁾	■	422

1) Possible when ordering cylinders from 02/2014 (series E2).

Accessories – Ordering data

	For Ø	Description	Part no.	Type
	1) Blanking screw, corrosion resistant, for guide			
	20, 25	With cover plate	543715	DAMD-P-M6-12-R1
	32, 40, 50		543716	DAMD-P-M8-16-R1
63	543717		DAMD-P-M10-16-R1	
	5) Blanking screw, corrosion resistant, for end cap			
	20, 25	With cover plate	543714	DAMD-P-M5-10-R1
	32 ²⁾		543715	DAMD-P-M6-12-R1
	32 ³⁾ , 40	Without cover plate	1355016	DAMD-PS-M6-12-R1
	50, 63		650121	DAMD-PS-M8-16-R1

1) Packaging unit 4 pieces.

2) For cylinder with P cushioning.



3) For cylinder with PPV/PPS cushioning.


Drives with guides > Drives with guide rods >

Guided drives DGRF-C, Clean Design

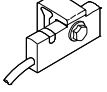
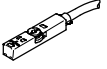


01

Accessories – Ordering data


	Connection		Material	Part no.	Type
	Thread	For push-in fitting			
3 One-way flow control valves Data sheets online: → crgla					
	M5	CRQS/CRQSL/CRQST	Electropolished stainless steel casting	161403	CRGRLA-M5-B
	G1/8			161404	CRGRLA-1/8-B
	G1/4			161405	CRGRLA-1/4-B
	G3/8			161406	CRGRLA-3/8-B
	G1/8	Push-in connector is integrated	Nickel-plated brass	578797	VFOH-LE-A-G18-Q4
				578798	VFOH-LE-A-G18-Q6
				578799	VFOH-LE-A-G18-Q8
	G1/4			578800	VFOH-LE-A-G14-Q8
				578801	VFOH-LE-A-G14-Q10

	For Ø	Part no.	Type
4 Centring sleeves¹⁾ Data sheets online: → zbh			
	20, 25	150927	ZBH-9
	32, 40, 50, 63	189653	ZBH-12

1) Packaging unit 10 pieces

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
Permissible with DGRF-...-P/-PPV/-PPS:					
6 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	32 ... 63	PNP, cable, 3-wire	5.0	571339	SMT-C1-PS-24V-K-5,0-OE
		PNP, M8x1, plug, 3-pin	0.3	571342	SMT-C1-PS-24V-K-0,3-M8D
		PNP, M12x1, plug, 3-pin	0.3	571341	SMT-C1-PS-24V-K-0,3-M12
Permissible with DGRF-...-PPV¹⁾/-PPS:					
8 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	32 ... 63	PNP, cable, 3-wire	5.0	574380	CRSMT-8M-PS-24V-K-5,0-OE
		PNP, cable, 3-wire	10.0	574381	CRSMT-8M-PS-24V-K-10,0-OE
		PNP, M8x1, plug, 3-pin	0.3	574383	CRSMT-8M-PS-24V-K-0,3-M8D
		PNP, M12x1, plug, 3-pin	0.3	574382	CRSMT-8M-PS-24V-K-0,3-M12
Connecting cable for SMT-C1-... Data sheets → Page 1543					
Straight socket					
	32 ... 63	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket					
	32 ... 63	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

1) Possible when ordering cylinders from 02/2014 (series E2).

7 Mounting kit		Part no.	Type
	Description		
	For mounting the proximity sensor CRSMT-8M on the mounting rail	1806790	SMB-8-C

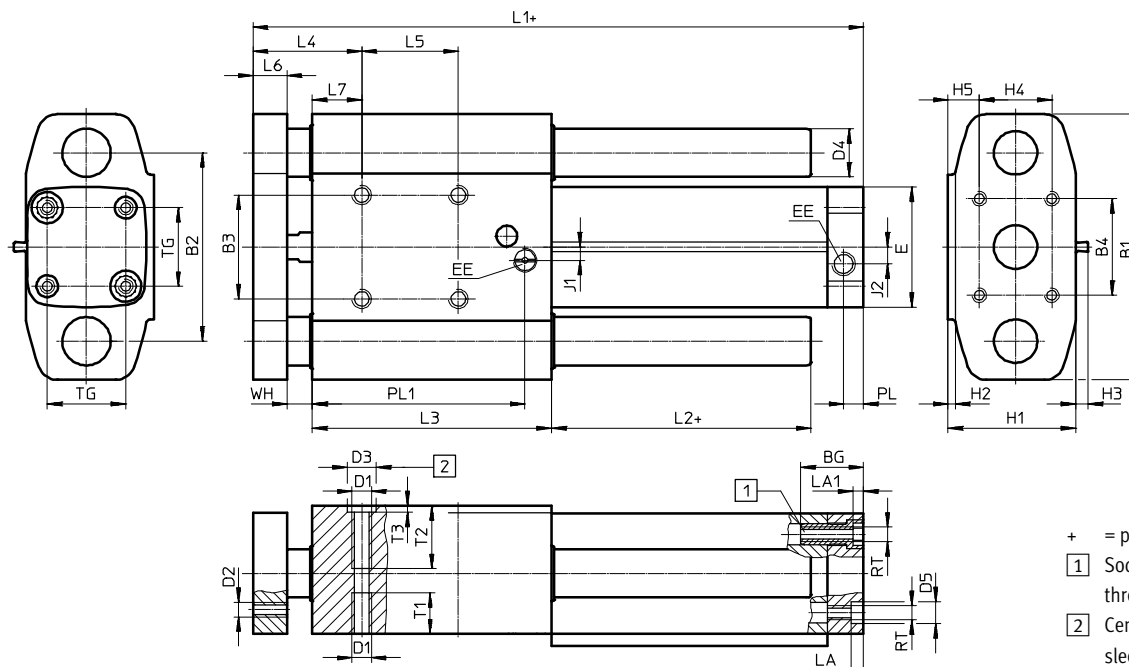
Guided drives DGRF-C, Clean Design

Dimensions

Download CAD data → www.festo.com

01

DGRF...-P – Elastic cushioning rings at both ends



+ = plus stroke length

1 Socket head screw with female thread

2 Centring holes for centring sleeve ZBH

Pneumatic drives

∅	BG	B1	B2	B3 ²⁾	B4	D1	D2	D3 ³⁾	D4	D5	E	EE
[mm]								∅ H7	∅	∅ F9		
20	19.5	83	58	30	30	M6	M5	9	16	9	37	M5
25	19.5	95	68	35	40	M6	M6	9	16	9	42	M5
32	26	110	78	43	40	M8	M6	12	20	9	50	G1/8

∅	H1	H2	H3 ¹⁾	H4	H5	J1	J2	L1	L2	L3	L4	L5
[mm]												
20	39	2	–	20	10.5	0	0	115 +1.4/-0.8	7	68	40 +1/-0.9	30
25	44	2	–	20	13	0	0	126 +1.4/-0.8	7	77	40 +1/-0.9	40
32	53	3	5	30	13	5.5	7	152.8 ±1.1	7.4	99	45 +0.9/-1	40

∅	L6	L7	LA	LA1	PL	PL1	RT	T1	T2	T3	TG	WH
[mm]												
20	12	18	4.9	4.6	6	62	M5	13	20	2.1	22	10 +0.5/-0.7
25	12	18	4.9	4.6	6	71	M5	13	25	2.1	26	10 +0.5/-0.7
32	14	20.4	5.1	4.6	8.2	88	M6	17	26	2.6	32.5	10.7 +0.3/-0.9

1) Only in combination with sensor mounting rail (DGRF-32...-R)
 2) Tolerance between the centring holes ±0.02 mm
 3) Two centring sleeves included in the scope of delivery

Drives with guides > Drives with guide rods >

Guided drives DGRF-C, Clean Design

01

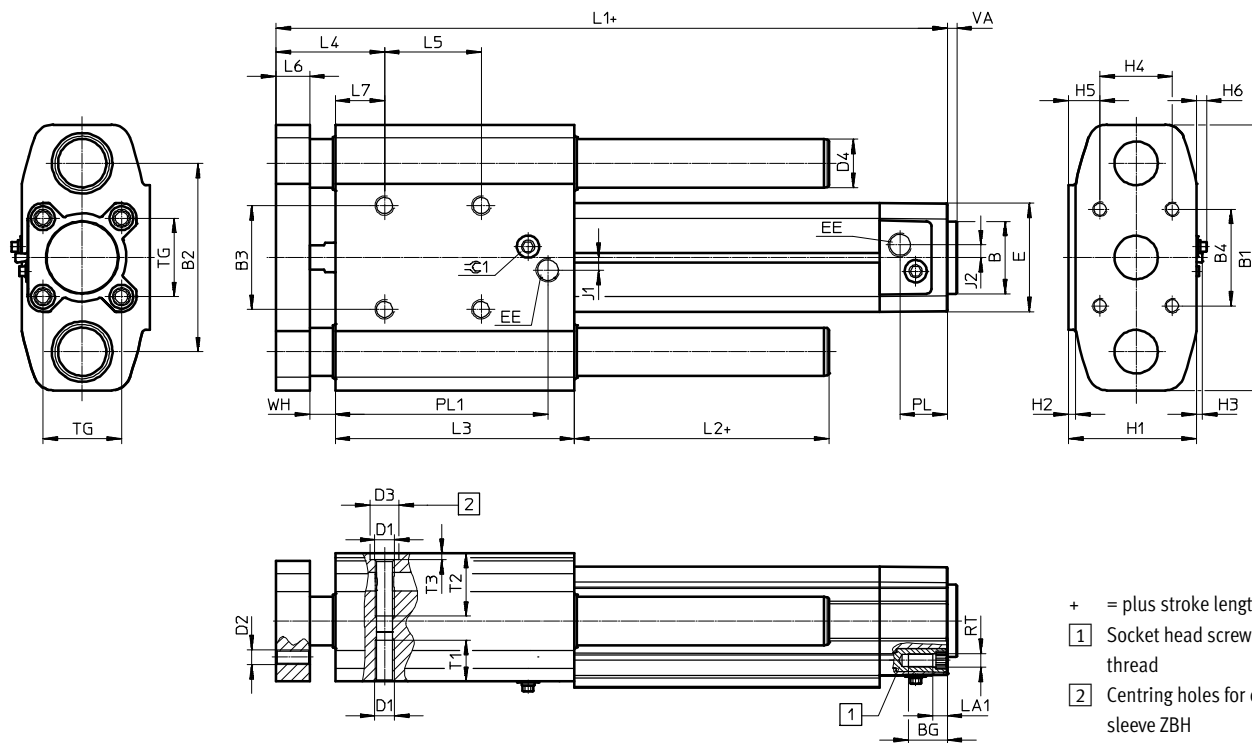
Dimensions

Download CAD data → www.festo.com

DGRF...-PPV – Pneumatic cushioning, adjustable at both ends

DGRF...-PPS – Pneumatic cushioning, self-adjusting at both ends

Pneumatic drives



+ = plus stroke length

- 1 Socket head screw with female thread
- 2 Centring holes for centring sleeve ZBH

∅	B	BG	B1	B2	B3 ²⁾	B4	D1	D2	D3 ³⁾	D4	E	EE	H1	H2
[mm]	∅ d11								∅ H7	∅				
32	30	16	110	78	43	40	M8	M6	12	20	45	G1/8	53	3
40	35	16	120	88	51	50	M8	M6	12	20	54	G1/4	61	3
50	40	17	148	110	64	60	M8	M8	12	25	64	G1/4	73	3
63	45	17	162	125	80	80	M10	M8	12	25	75	G3/8	84	3

∅	H3 ¹⁾	H4	H5	H6	J1	J2	L1	L2	L3	L4	L5
[mm]											
32	2.5	30	13	5.6	5.3	5.3	177.6 +1.9/-1.2	7.4	99	45 +1.5/-1.1	40
40	3	30	17	5.6	4	4	183.5 +1.9/-1.3	7.5	99	45 +1.5/-1.1	40
50	2	40	18	7.5	5.5	5.5	193.5 +1.7/-1.3	7.7	105	50 +1.3/-1.2	40
63	2	40	23.5	9.3	6.3	6.3	207.3 +1.7/-1.3	7.5	105	50 +1.3/-1.2	40

∅	L6	L7	LA1	PL	PL1	RT	T1	T2	T3	TG	VA	WH	≈ 1
[mm]													
32	14	20.4	5.6	19.5	88	M6	17	26	2.6	32.5	4	10.6 +1/-0.9	4
40	14	20.5	5.6	22.5	83	M6	17	26	2.6	38	4	10.5 ±1/-1	4
50	16	22.7	6.1	22.5	89	M8	17	20	2.6	46.5	4	11.3 +0.8/-1	4
63	20	18.5	6.1	27.5	88	M8	17	24	2.6	56.5	4	11.5 +0.8/-1	4

1) Only in combination with sensor mounting rail (DGRF...-R)
 2) Tolerance between the centring holes ±0.02 mm
 3) Two centring sleeves included in the scope of delivery



Robust and compact

- + Trunnion version
- + Workpiece carriers, pallets and packages weighing up to 90 kg can be safely stopped
- + Compact design
- + Sensor slots on 3 sides
- + Long service life thanks to very good cushioning characteristics and sturdy piston rod guide

Stopper cylinders >

Stopper cylinders

DFSP

Stopper cylinders >

Stopper cylinders

DFSP

 Overview, configuration and ordering

→ www.festo.com/catalogue/dfsp



 Additional information, support and user documentation

→ www.festo.com/sp/dfsp



 Spare parts service



- + Increase in productivity through improved performance and increased impact resistance
- + Internal thread in the piston rod permits the simple attachment of stopper attachments
- + Long service life thanks to robust design

Product range overview

Type/function	Piston Ø [mm]	Stroke [mm]	Perm. impact force [N]	Product options							
				Q	D	P	S	F	R	P	A
DFSP											
Single-acting or double-acting	Trunnion										
	16, 20, 32, 40, 50	5 ... 30	880 ... 6280	■	■	■	■	■	■	■	■
	Trunnion with protection against rotation										
	16, 20, 32, 40, 50	5 ... 30	880 ... 6280	■	■	■	■	■	■	■	■
Roller with protection against rotation											
	16, 20, 32, 40, 50	5 ... 30	710 ... 5000	■	■	■	■	■	■	■	■

Product options

Q	With protection against rotation	D	Double-acting without spring	S	Standard (trunnion)	P	Elastic cushioning rings/plates at both ends
		P	Single-acting/pulling	F	Trunnion with female thread		
				R	With roller	A	Position sensing

Stopper cylinders >

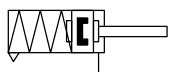
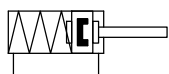
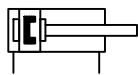
Stopper cylinders DFSP

01

Data sheet

Trunnion

Roller



Pneumatic drives

Technical data		Dimensions → Page 434				
Piston Ø		16	20	32	40	50
Pneumatic connection		M5			G1/8	
Stroke	[mm]	5 ... 15	5 ... 20	5 ... 25	5 ... 30	5 ... 30
Max. cycle rate	[Hz]	5				
Mode of operation		Double-acting without spring Single-acting, pulling				
Cushioning		Elastic cushioning rings/plates at both ends				
Effective force at 6 bar, advancing						
DFSP...	[N]	107	171	438	683	1064
DFSP...-D	[N]	121	188	483	754	1178
Effective force at 6 bar, retracting						
DFSP...	[N]	74	121	294	459	696

Operating conditions		Piston Ø				
		16	20	32	40	50
Min. operating pressure						
Without spring	[bar]	1				
With spring	[bar]	2.8	1.6	1.2	1.2	1.2
At max. lateral force	[bar]	→ Page 430				
Max. operating pressure	[bar]	10				
Ambient temperature ¹⁾	[°C]	-10 ... +80				

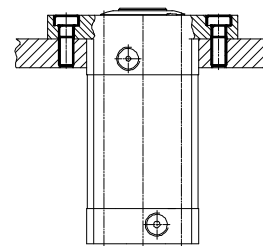
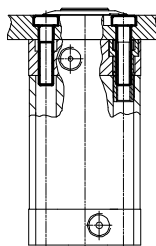
1) Note operating range of proximity sensors.

Materials	
Piston rod	High-alloy stainless steel
Profile barrel	Smooth anodised wrought aluminium alloy
Spring	Spring steel
Cover	Anodised wrought aluminium alloy
Roller	Galvanised steel
Seals	TPE-U (PU)

Note

All technical data refer to the mounting options (→ right). The values may be much lower with the other mounting options.

Note the minimum screw-in depth → Page 434



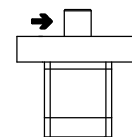
Data sheet

Permissible impact force on the advanced piston rod

The impact force refers to the maximum of a force curve plotted against time with unknown details during impact/braking of the moving mass. It acts perpendicular to the direction of motion of the piston rod.

Treating the elastic components as linear springs, it is possible to use the permissible impact force to calculate a permissible impact energy for use in selecting the right stopper. Switching of the stopper below this force is not permitted.

Depending on the type of mass to be stopped, it is a good idea to provide an elastic buffer to cushion the impact, reduce the noise and optimise the impact energy.



→ = direction of the impact force

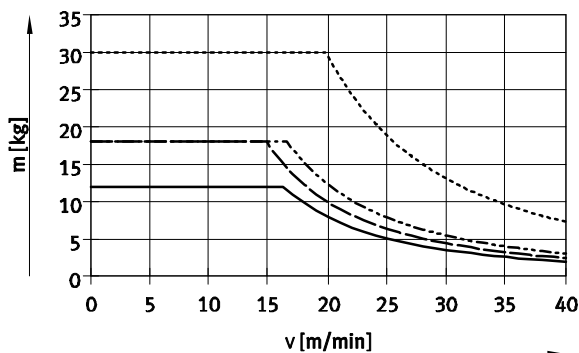
Piston Ø		16	20	32	40	50
DFSP-...	[N]	880	1370	3270	5540	6280
DFSP-Q-...	[N]	880	1100	3270	5540	6280
DFSP-Q-...-R	[N]	710	840	2670	4500	5000

Permissible mass m as a function of conveyor speed v

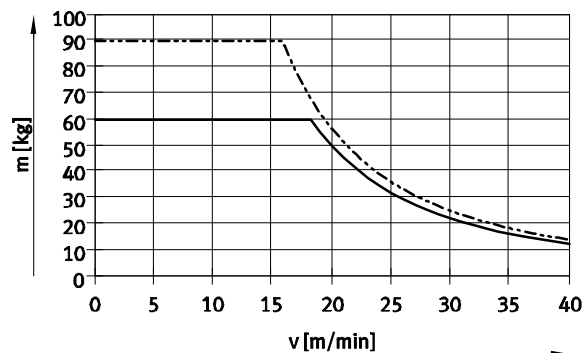
The values in the graphs assume an elastic buffer on the workpiece carrier with a deformation path of 1 mm.

A shorter deformation path reduces the impact force.

DFSP-.../DFSP-Q-... – With trunnion

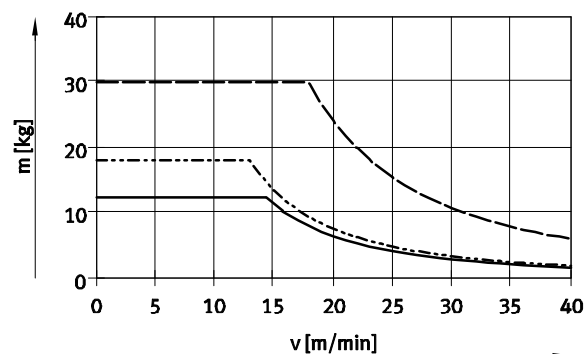


- DFSP-16/DFSP-Q-16
- - - DFSP-20
- DFSP-Q-20
- - - DFSP-32/DFSP-Q-32

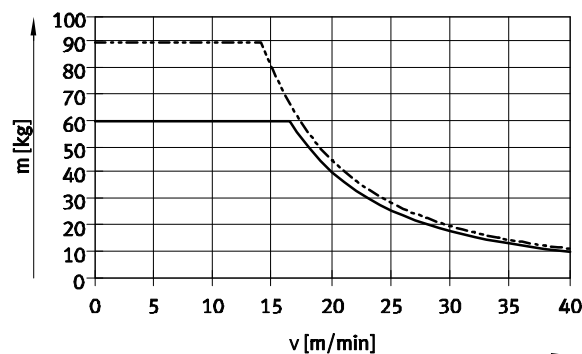


- DFSP-40/DFSP-Q-40
- - - DFSP-50/DFSP-Q-50

DFSP-Q-...-R – With roller



- DFSP-Q-16-R
- - - DFSP-Q-20-R
- DFSP-Q-32-R



- DFSP-Q-40-R
- - - DFSP-Q-50-R

Stopper cylinders >

Stopper cylinders DFSP

01

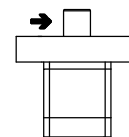
Data sheet

Permissible lateral force F on the advanced piston rod during switching

The permissible lateral force during switching refers to the force still applied perpendicular to the direction of motion of the piston rod after the end of impact/

braking, for example due to the continued operation of conveyors or the downward force of an inclined rolling surface. The force acts statically. Switching of the

stopper below this force is permitted. A minimum pressure must be applied in order to guarantee the cylinder function → Page 428



→ = direction of the impact force

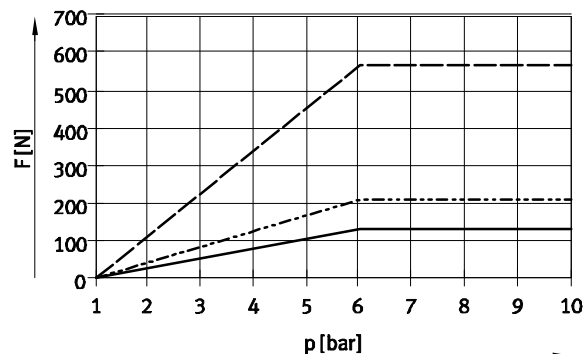
Piston Ø		16	20	32	40	50
DFSP-...	[N]	130	210	570	950	1500
DFSP-Q-...	[N]	130	210	570	950	1500
DFSP-Q-...-R	[N]	100	160	420	750	1200

Permissible lateral force F during switching as a function of pressure p

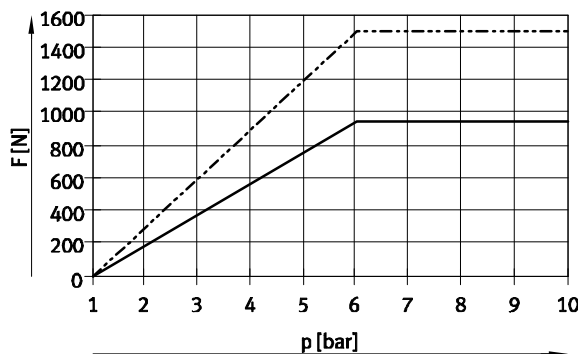
Sufficient compressed air must be applied during pressurised switching to be able to overcome the bearing friction.

The following graphs and the minimum operating pressure must be observed for compressed air below 6 bar.

DFSP-.../DFSP-Q-... – With trunnion

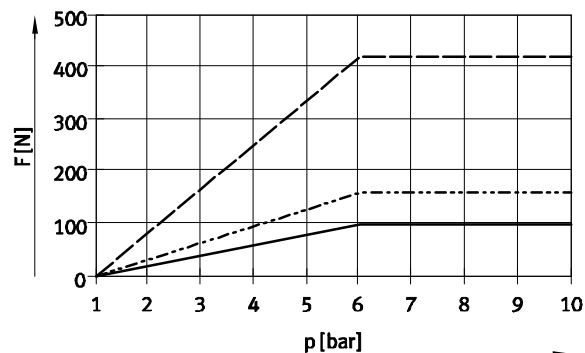


- DFSP-16
- - - DFSP-20
- · - DFSP-32

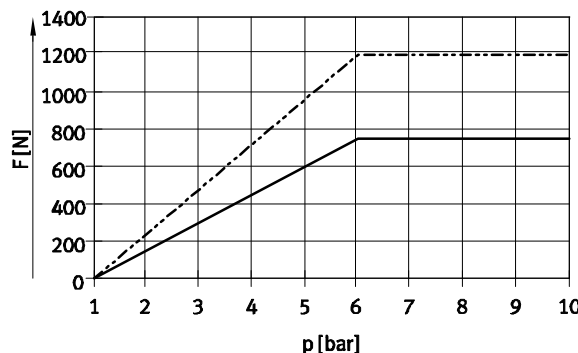


- DFSP-40
- - - DFSP-50

DFSP-Q-...-R – With roller



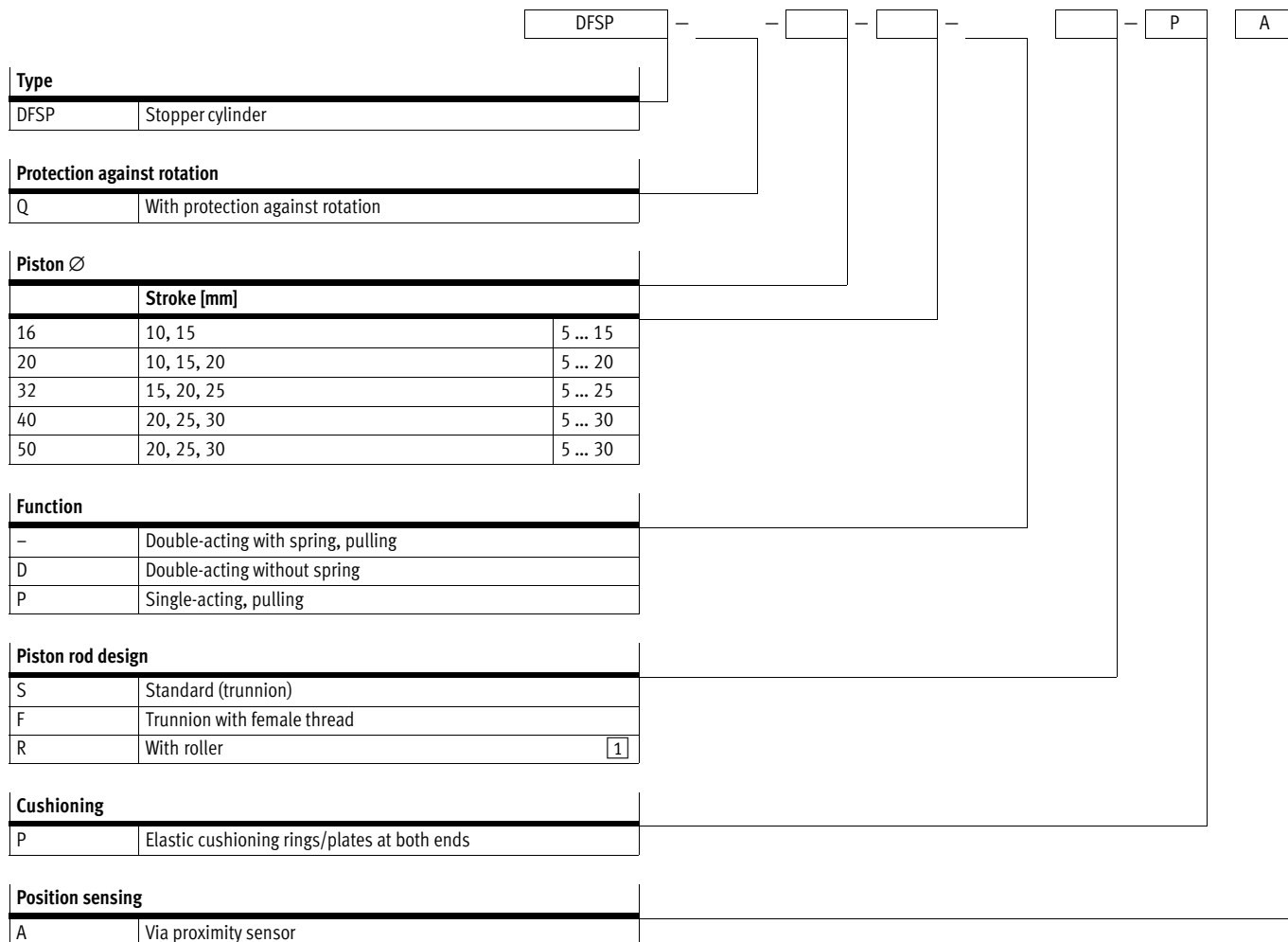
- DFSP-Q-16-R
- - - DFSP-Q-20-R
- · - DFSP-Q-32-R



- DFSP-Q-40-R
- - - DFSP-Q-50-R

Pneumatic drives

Order code



¹ Only with stroke 10, 15, 20, 25, 30
Only with protection against rotation Q

Order example:

DFSP-32-25-DF-PA

Stopper cylinder DFSP - piston diameter 32 - stroke 25 mm - double-acting without spring - trunnion with female thread - elastic cushioning rings/plates at both ends - position sensing via proximity sensor

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

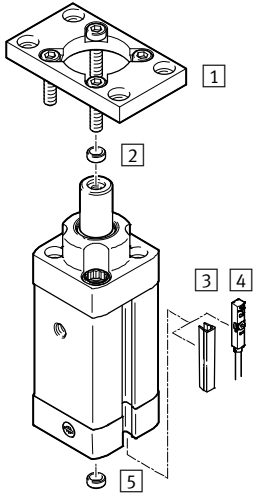
Stopper cylinders >

Stopper cylinders DFSP

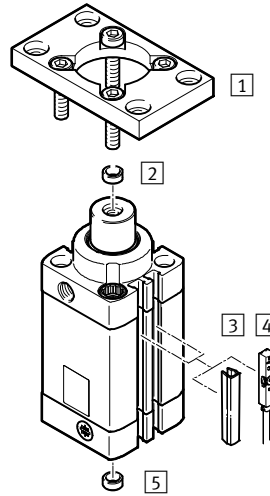
01

Accessories

DFSP-16/20



DFSP-32/40/50

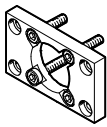




Pneumatic drives

		→ Page/online
1	Flange mounting DAMF-F7	433
2	Centring sleeve ZBH	433
3	Slot cover ABP	433

		→ Page/online
4	Proximity sensor SME/SMT-8	433
5	Centring sleeve ZBH	433



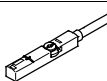




Accessories – Ordering data

	For Ø	Part no.	Type
1 Flange mounting Dimensions online: → dfsp			
	16	1405169	DAMF-F7-16
	20	1405193	DAMF-F7-20
	32	1405211	DAMF-F7-32
	40	1405218	DAMF-F7-40
	50	1405225	DAMF-F7-50

	For Ø	Description	Part no.	Type
2/5 Centring sleeve¹⁾				
	16, 20	For precise mounting on the piston rod with female thread	189652	ZBH-5
	32		150927	ZBH-9
	40, 50		189653	ZBH-12
	16, 20, 32, 40	For precise mounting of the stopper cylinder on the end cap	150927	ZBH-9
	50		189653	ZBH-12
3 Slot cover²⁾				
	16 ... 50		151680	ABP-5-S

1) Packaging unit 10 pieces.

2) Packaging unit 2x 0.5 m.

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
4 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	16 ... 50	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	16 ... 50	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	16 ... 50	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	16 ... 50	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/C contact Data sheets → Page 1203					
	16 ... 50	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 50	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	16 ... 50	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

Stopper cylinders >

Stopper cylinders DFSP

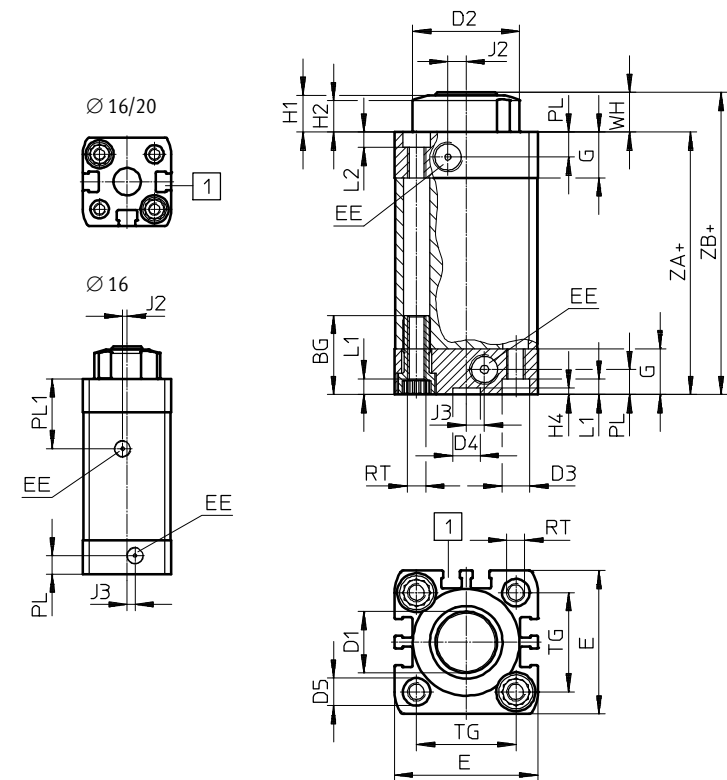
Download CAD data → www.festo.com

01

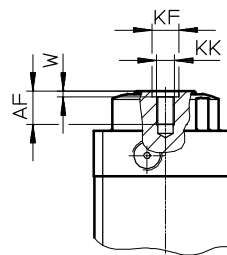
Dimensions

DFSP... – With trunnion

Pneumatic drives



DFSP...-F
With female thread



+ = plus stroke length
Dimension G = Min. screw-in depth
[1] Slot for proximity sensor

∅	AF	BG	D1	D2	D3	D4	D5	E	EE	G	H1	H2	H4	J2
[mm]	min.	min.	∅	∅ f8	∅ F9	∅ H9	∅ F9	+0.3			±0.3	±0.3	+0.1	
16	6	17	10	21.5	6	9	6	29	M5	11	9.5	8.4	2.1	1.5
20	6	19.5	12	25	9	9	7.5	35.5	M5	12	9.5	8.4	2.1	4
32	11	26	20	35	9	9	9	47	G1/8	15	12	10.5	2.1	6
40	14.5	26	25	43	9	9	9	54.5	G1/8	15	12.5	10.5	2.1	8
50	14.5	27	32	51	12	12	10.5	65.5	G1/8	15	14.5	12.5	2.6	10

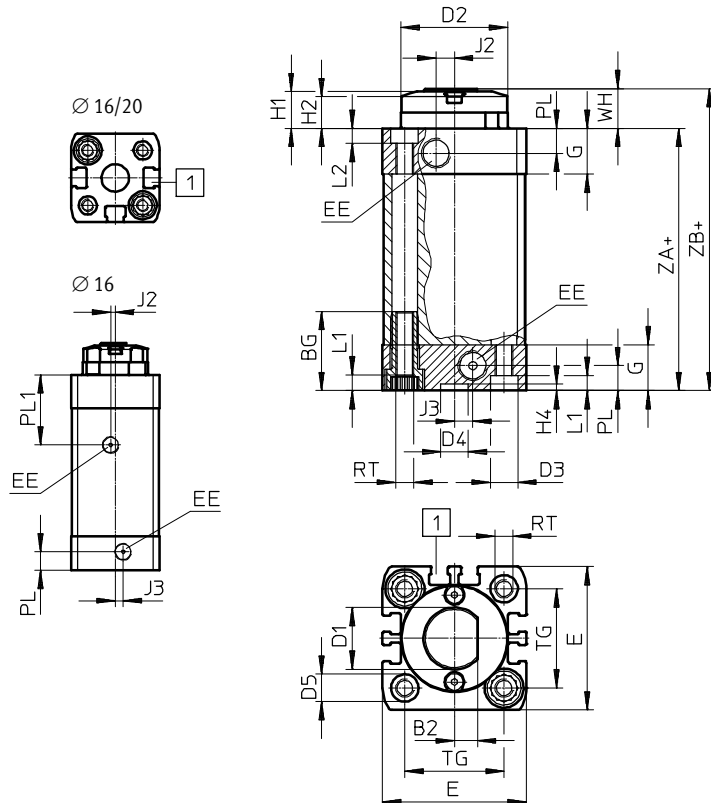
∅	J3	KF	KK	L1	L2	PL	PL1	RT	TG	W	WH	ZA	ZB
[mm]		∅ H7		+0.2	+0.2	+0.2	±0.4		±0.2	+0.1	±0.7	±0.3	±0.7
16	2.6	5	M3	3.5	3	6	23	M4	18	1.2	10.5	49	59.5
20	2.6	5	M3	5	4	6	-	M5	22	1.2	10.5	53.5	64
32	6	9	M6	5	5	8.2	-	M6	32.5	2	13	61	74
40	8	12	M8	5	5	8.2	-	M6	38	2.5	13.5	66.5	80
50	8	12	M8	5	4.2	8.2	-	M8	46.5	2.5	15.5	65.5	81

Dimensions

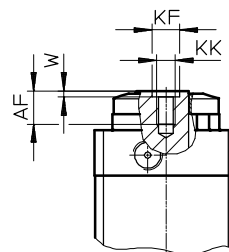
Download CAD data → www.festo.com

01

DFSP-Q... – With trunnion and protection against rotation



DFSP-Q...-F
With female thread



+ = plus stroke length
Dimension G = Min. screw-in depth
1 Slot for proximity sensor

Pneumatic drives

∅	AF	B2	BG	D1	D2	D3	D4	D5	E	EE	G	H1	H2	H4
[mm]	min.	-0.15	min.	∅	∅ f8	∅ F9	∅ H9	∅ F9	+0.3			±0.3	±0.3	+0.1
16	6	3.5	17	10	21.5	6	9	6	29	M5	11	9.5	8.4	2.1
20	6	4	19.5	12	25	9	9	7.5	35.5	M5	12	9.5	8.4	2.1
32	11	7.5	26	20	35	9	9	9	47	G1/8	15	12	10.5	2.1
40	14.5	9.5	26	25	43	9	9	9	54.5	G1/8	15	12.5	10.5	2.1
50	14.5	12	27	32	51	12	12	10.5	65.5	G1/8	15	14.5	12.5	2.6

∅	J2	J3	KF	KK	L1	L2	PL	PL1	RT	TG	W	WH	ZA	ZB
[mm]			∅ H7		+0.2	+0.2	+0.2	±0.4		±0.2	+0.1	±0.7	±0.3	±0.7
16	1.5	2.6	5	M3	3.5	3	6	23	M4	18	1.2	10.5	49	59.5
20	4	2.6	5	M3	5	4	6	-	M5	22	1.2	10.5	53.5	64
32	6	6	9	M6	5	5	8.2	-	M6	32.5	2	13	61	74
40	8	8	12	M8	5	5	8.2	-	M6	38	2.5	13.5	66.5	80
50	10	8	12	M8	5	4.2	8.2	-	M8	46.5	2.5	15.5	65.5	81

Stopper cylinders >

Stopper cylinders DFSP

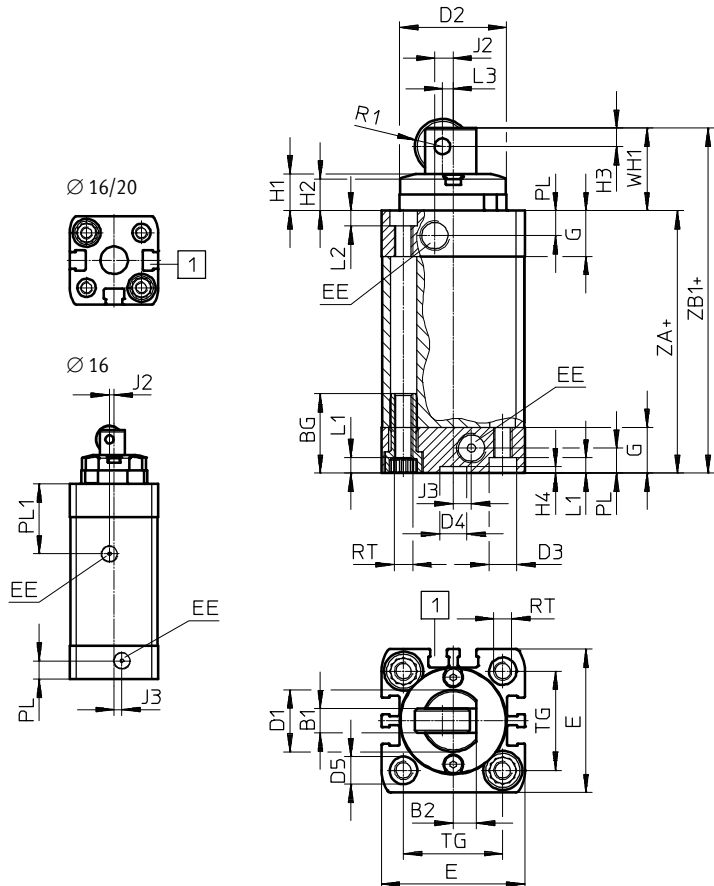
Download CAD data → www.festo.com

01

Dimensions

DFSP-Q...-R – With roller and protection against rotation

Pneumatic drives



+ = plus stroke length
 Dimension G = Min. screw-in depth
 [1] Slot for proximity sensor

∅	B1	B2	BG	D1	D2	D3	D4	D5	E	EE	G	H1	H2	H3
[mm]	-0.2	-0.15	min.	∅	∅ f8	∅ F9	∅ H9	∅ F9	+0.3			±0.3	±0.3	
16	3.5	3.5	17	10	21.5	6	9	6	29	M5	11	9.5	8.4	3
20	4	4	19.5	12	25	9	9	7.5	35.5	M5	12	9.5	8.4	3
32	8	7.5	26	20	35	9	9	9	47	G1/8	15	12	10.5	6
40	8	9.5	26	25	43	9	9	9	54.5	G1/8	15	12.5	10.5	7
50	10	12	27	32	51	12	12	10.5	65.5	G1/8	15	14.5	12.5	7.5

∅	H4	J2	J3	L1	L2	L3	PL	PL1	R1	RT	TG	WH1	ZA	ZB1
[mm]	+0.1			+0.2	+0.2		+0.2	±0.4			±0.2	±0.7	±0.3	±0.7
16	2.1	1.5	2.6	3.5	3	1.5	6	23	4.5	M4	18	17.5	49	66.5
20	2.1	4	2.6	5	4	2	6	-	5	M5	22	17.5	53.5	71
32	2.1	6	6	5	5	3.5	8.2	-	9	M6	32.5	27	61	88
40	2.1	8	8	5	5	5	8.2	-	11	M6	38	30.5	66.5	97
50	2.6	10	8	5	4.2	7	8.2	-	12.5	M8	46.5	34.5	65.5	100



Flexible and robust

- + Toggle lever design
- + Up to 800 kg impact load
- + Integrated, adjustable shock absorber for smooth and adapted stopping
- + For position sensing on the piston

Stopper cylinders >

Stopper cylinders

DFST

Stopper cylinders >

Stopper cylinders


DFST

 Overview, configuration and ordering
 → www.festo.com/catalogue/dfst



 Additional information, support and user documentation
 → www.festo.com/sp/dfst



 Spare parts service



- + Gentle stopping of workpieces without vibration and noise thanks to the cushioned toggle lever mechanism
- + Flexible thanks to adjustable operating direction via the swivelling toggle lever setup (90°, 180°, 270°)
- + Long service life thanks to robust design

Product range overview

Type/function	PistonØ [mm]	Stroke [mm]	Perm. impact force [N]	Product options			
				D	L	Y4	A
DFST							
Single-acting or double-acting	50	30	3000	■	■	■	■
	63	30	5000	■	■	■	■
	80	40	6000	■	■	■	■

Product options

D Double-acting L With lever locking mechanism Y4 Adjustable shock absorber A Position sensing

Data sheet



Technical data		Dimensions → Page 444	
PistonØ	50	63	80
Pneumatic connection	G1/8		
Stroke [mm]	30	40	
Mode of operation	Double-acting		
	Single-acting, pulling		
Cushioning	Adjustable shock absorber		

Operating conditions	
Operating pressure ¹⁾	2 ... 10
Ambient temperature ²⁾ [°C]	+5 ... +60

- 1) Min. operating pressure for piston Ø 50 with lever locking mechanism is 3 bar.
2) Note operating range of proximity sensors.

Materials	
PistonØ	50 63 80
Piston rod	High-alloy stainless steel
End cap	Die-cast aluminium Wrought aluminium alloy
Housing	Wrought aluminium alloy
Seals	NBR
Rollers	Polyacetal
Top elements	Nickel-plated steel casting

Stopper cylinders >

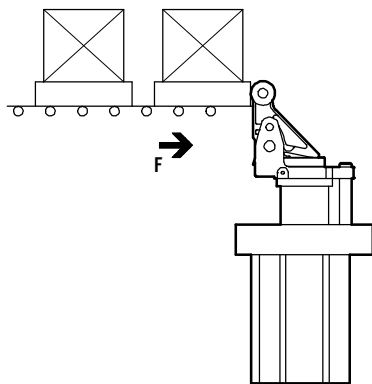
Stopper cylinders DFST

01

Data sheet

Permissible impact force F_{impact} on the rollers of the toggle lever with advanced piston rod and pushed-through toggle lever

The permissible impact force refers to the force that may briefly act on the already pushed-through toggle lever without damaging the piston rod bearing and toggle lever mechanism.

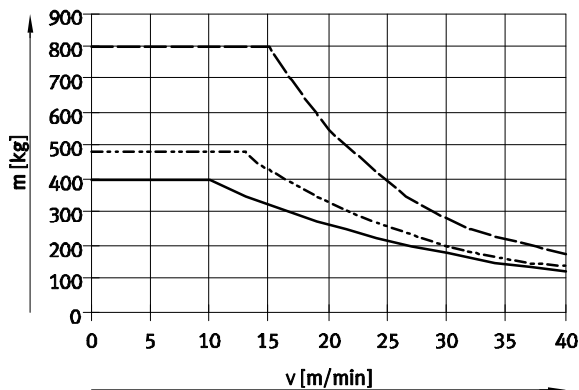


Piston \varnothing		50	63	80
Impact force	[N]	3000	5000	6000

Pneumatic drives

Permissible mass m as a function of conveyor speed v

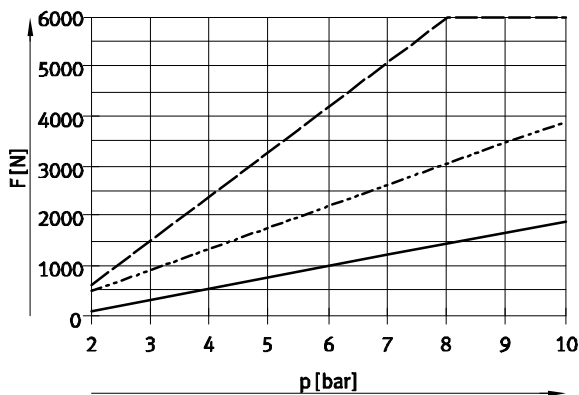
A coefficient of friction of $\mu = 0.1$ has been taken into consideration in the values in the adjacent graph.



- DFST-50
- - - DFST-63
- · - DFST-80

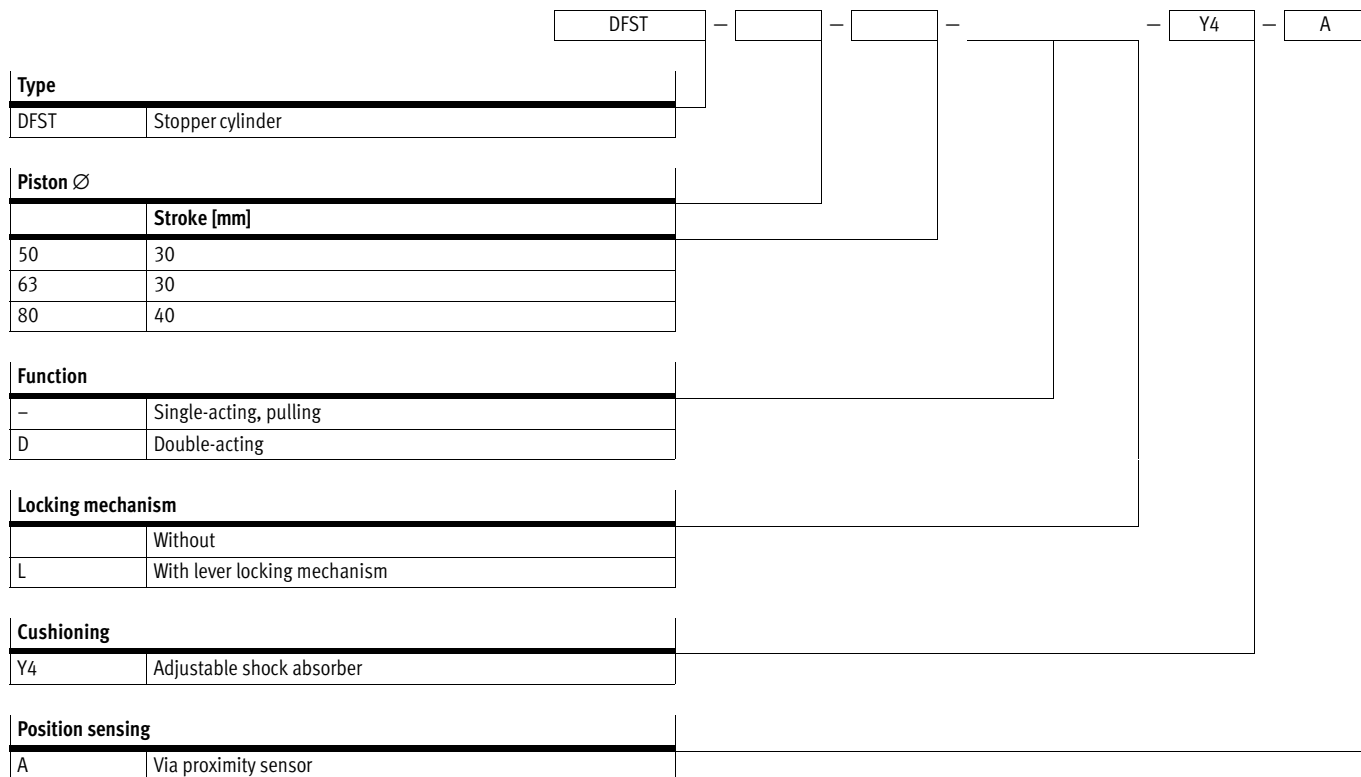
Permissible lateral force F_Q during switching as a function of pressure p

The applied load causes a lateral force on the piston rod. A certain minimum pressure must be applied in order to guarantee the cylinder function.



- DFST-50
- - - DFST-63
- · - DFST-80

Order code

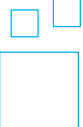


Order example:

DFST-63-30-DL-Y4-A

Stopper cylinder DFST - piston Ø 63 - stroke 30 mm - double-acting - with lever locking mechanism - adjustable shock absorber - position sensing via proximity sensor

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

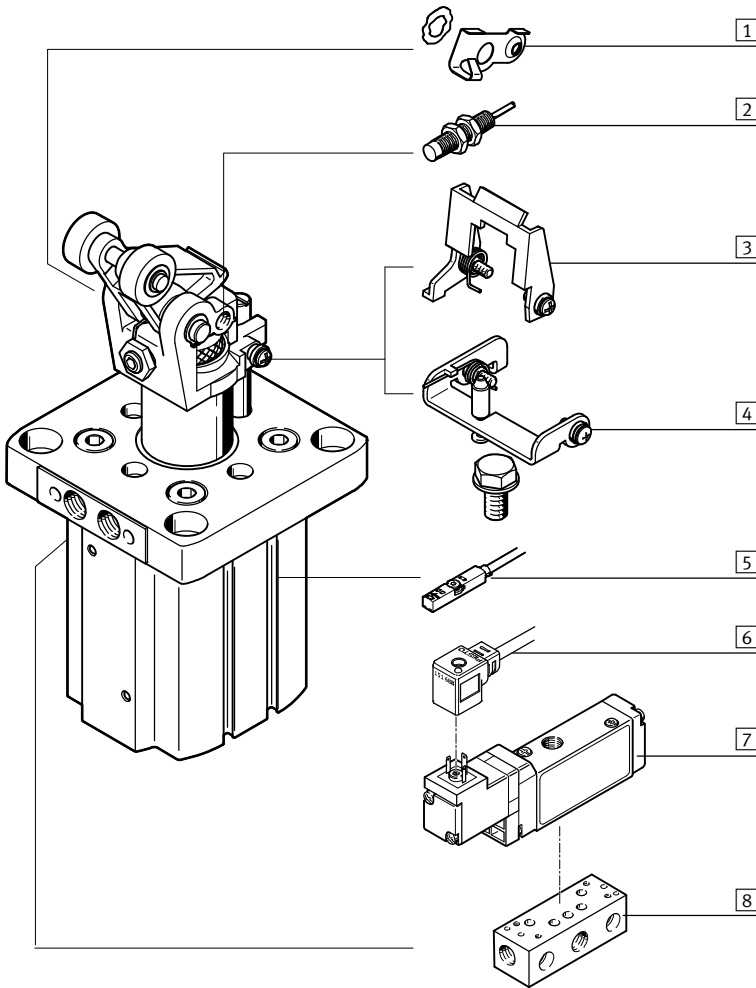
Stopper cylinders >

Stopper cylinders DFST

01

Accessories



Pneumatic drives





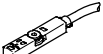
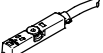
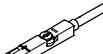

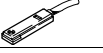


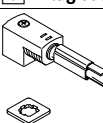
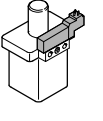
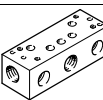
		→ Page/online
1	Toggle lever deactivator DADP-TF	442
2	Proximity sensor, inductive SIEN-M8	443
3	Lever locking mechanism for Ø 50 DADP-TL	442
4	Lever locking mechanism for Ø 63, 80 DADP-TL	442

		→ Page/online
5	Proximity sensor SME/SMT-8	443
6	Plug socket with cable KMEB	443
7	Solenoid valve MEBH	443
8	Intermediate plate ZVA-2	443

Accessories – Ordering data

	For Ø	Part no.	Type	
	1 Toggle lever deactivator			Dimensions online: → dfst
	50	543755	DADP-TF-F3-50	
	63	543756	DADP-TF-F3-63	
	80	543757	DADP-TF-F3-80	
	3/4 Lever locking mechanism			Dimensions online: → dfst
	50	543751	DADP-TL-F3-50	
	63	543752	DADP-TL-F3-63	
	80	543753	DADP-TL-F3-80	

Accessories – Ordering data

	For Ø	Switching output, connection	Cable length [m]	Part no.	Type
2 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230					
	50, 63, 80	Cable	2.5	★ 150386	SIEN-M8B-PS-K-L
		Plug	–	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230					
	50, 63, 80	Cable	2.5	150390	SIEN-M8B-PO-K-L
		Plug	–	150391	SIEN-M8B-PO-S-L
5 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	50, 63, 80	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	50, 63, 80	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Magnetic reed – N/O contact Data sheets → Page 1201					
	50, 63, 80	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	50, 63, 80	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/O contact Data sheets → Page 1203					
	50, 63, 80	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
Connecting cable, straight socket Data sheets → Page 1543					
	50, 63, 80	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	50, 63, 80	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
6 Plug socket with cable					
	50, 63, 80			★ 151688	KMEB-1-24-2,5-LED
				151689	KMEB-1-24-5-LED
				193457	KMEB-1-24-10-LED
7 Solenoid valve					
	50, 63, 80	Single-acting		173125	MEH-3/2-5,0-B
				172999	MEBH-3/2-5,0-B
				173429	MOEH-3/2-5,0-B
	50, 63, 80	Double-acting		173002	MOEBH-3/2-5,0-B
				173128	MEH-5/2-5,0-B
173005	MEBH-5/2-5,0-B				
8 Intermediate plate					
	50, 63, 80			164897	ZVA-2

Stopper cylinders >

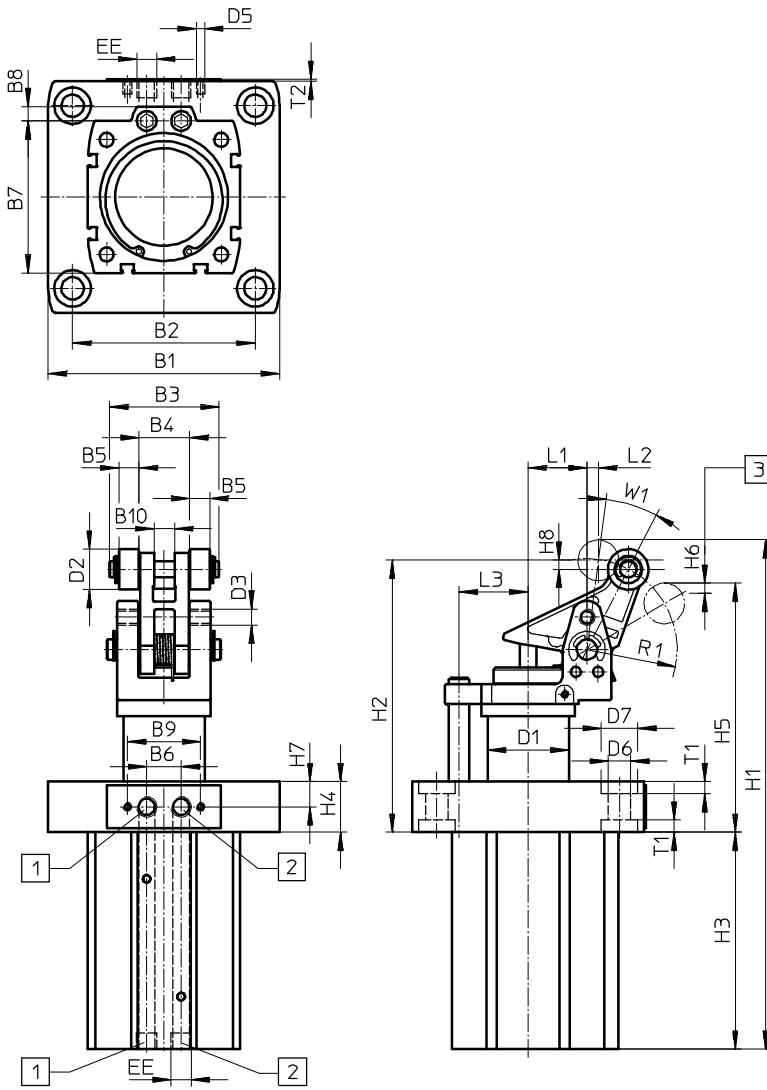
Stopper cylinders DFST

Download CAD data → www.festo.com

01

Dimensions

Pneumatic drives



- 1 Supply port (retracting)
- 2 Supply port (advancing)
- 3 Lowest permissible pallet underside

∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	D1	D2	D3	D5	D6
[mm]	□	□					□				∅	∅			∅
50	93	73	43	20	8		64			8.1	32	20			9
63	114	90	54	25	10	17	75	7	36	10.1	40	20	M8x1	M4	11
80	138	110	63	30	12		95			12.1	50	25			13

∅	D7	EE	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	R1	T1	T2	W1
[mm]	∅																
50	14		219	118	91	17.5	107.5	5	8.75	5.5	14	5	26	36.3	5	1	25
63	18	G1/8	251	134	107	25	123	5	12.5	4.5	29	6	34	44.4	6	-	20
80	20		322.5	159	151	19	144	4.2	9.5	6.8	36	8	42	55.5	6	-	22

2 Grippers

- + Mechanical grippers: parallel grippers, three-point grippers, angle grippers, swivel grippers
- + Feed separators: complete control units for separating workpieces in the supply process
- + Accessories



Contents

Product overview 448

Parallel grippers DHPS 453

Electric parallel grippers EHPS 461

NEW New series

Three-point grippers DHDS 469

Angle grippers DHWS 475

Radial grippers DHRS 483

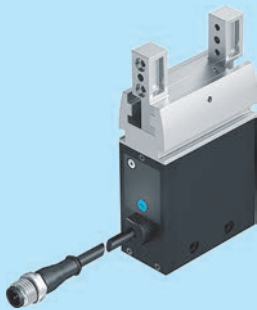


DHPS

Parallel grippers

- + Heavy-duty, precision T-slot guide for gripper jaws
- + High gripping force with compact size

→ page 453



EHPS

Electric parallel grippers

- + Gripping force adjustable at the gripper module
- + Long stroke for different workpieces

→ page 461



DHWS

Angle grippers


- + Improved gripper jaw guide (link guided movement)
- + Internal fixed flow control, does away with the need for external flow control in 90% of applications

→ page 475

Product overview




Software tool

02




<p>Grippers</p>		<p>A secure grip is a question of the right calculation. In this case, calculation of weight, direction of movement, distances, etc. The software tool immediately determines which type of gripper – parallel, three-point, angle or swivel gripper – and which size best matches your requirements.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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Parallel grippers




Grippers

Type	 Parallel grippers DHPS	 Parallel grippers HGPD	 Electric parallel grippers EHPS NEW
Total gripping force at 6 bar, closing	25 ... 910 N	94 ... 3716 N	See product documentation on our website
Stroke per gripper jaw	2 ... 12.5 mm	3 ... 20 mm	10 ... 16 mm
Position sensing	Via Hall sensor, via proximity sensor	Via proximity sensor	Via proximity sensor and position sensor
Gripping force backup	During closing, during opening	During closing, during opening	
NEW			<ul style="list-style-type: none"> • New series
Description	<ul style="list-style-type: none"> • Heavy-duty, precision T-slot guide for gripper jaws • High gripping force with compact size • Max. repetition accuracy • Wide range of options for mounting on drives 	<ul style="list-style-type: none"> • Ideal for very harsh environments • Precise gripping even at high torque load • Max. gripping force with optimum installation space/force ratio • 8 sizes with up to 40 mm total stroke • Repetition accuracy of 0 ... 0.05 mm 	<ul style="list-style-type: none"> • Electric version of the pneumatically actuated parallel gripper DHPS • Ideal for use as a front-end actuator thanks to its low dead weight
→ Page/online	453	hgpd	461

Parallel grippers

Type	 Electric parallel grippers HGPLE	 Parallel grippers HGPT	 Parallel grippers HGPL-B
Total gripping force at 6 bar, closing	See product documentation on our website	106 ... 6300 N	158 ... 2742 N
Stroke per gripper jaw	30 ... 80 mm	1.5 ... 25 mm	20 ... 150 mm
Position sensing	Via integrated angular displacement encoder	Via proximity sensor	Via proximity sensor
Gripping force backup		During closing, during opening	
Description	<ul style="list-style-type: none"> • Electrically actuated gripper with long stroke • Free, speed-controlled selection of gripping positions • Long stroke allows use with workpieces of different sizes • Adjustable gripping force for highly sensitive and large, heavy workpieces • Very high torque resistance, very high accuracy • Short opening and closing times • Minimal installation costs 	<ul style="list-style-type: none"> • Sturdy and powerful • With T-slot guide • Suitable for external and internal gripping • Gripper jaw guide protected by sealing air against dust • High-force variant available 	<ul style="list-style-type: none"> • Space-saving, high forces and torques • Controlled, precise and centred gripping • Long stroke: long guide length for the gripper jaws • Suitable for external and internal gripping • Opening stroke can be adjusted to optimise time
→ Page/online	hgple	hgpt	hgpl




Parallel grippers

Type	 Parallel grippers HGPP	 Parallel grippers HGP	 Parallel grippers HGPM
Total gripping force at 6 bar, closing	80 ... 830 N	160 ... 340 N	16 ... 35 N
Stroke per gripper jaw	2 ... 12.5 mm	5 ... 7.5 mm	2 ... 3 mm
Position sensing	Via Hall sensor, via inductive sensors	Via proximity sensor	None
Gripping force backup	During closing, during opening		
Description	<ul style="list-style-type: none"> • High-precision gripper jaw guide • Suitable for external and internal gripping • Very flexible thanks to versatile attachment, mounting and application options 	<ul style="list-style-type: none"> • Double-acting piston drive • High gripping force with compact size • Self-centring • Suitable for external and internal gripping • With protective dust cap for use in dusty environments (degree of protection IP54) • Max. repetition accuracy • Internal fixed flow control • Versatile thanks to externally adaptable gripper fingers • Wide range of options for mounting on drive units 	<ul style="list-style-type: none"> • Micro gripper: compact, handy design • Versatile thanks to externally adaptable gripper fingers • Mounting options with clamping spigot, with flange mounting, with Z stroke compensation
→ Page/online	hgpp	hgp	hgpm

02

Grippers



Three-point grippers

Type	 Three-point grippers DHDS	 Three-point grippers HGDD	 Three-point grippers HGDT
Total gripping force at 6 bar, closing	87 ... 750 N	336 ... 2745 N	207 ... 2592 N
Stroke per gripper jaw	2.5 ... 6 mm	4 ... 12 mm	1.5 ... 10 mm
Position sensing	Via Hall sensor, via proximity sensor	Via proximity sensor	Via proximity sensor
Gripping force backup	During closing	During closing, during opening	During closing, during opening
Description	<ul style="list-style-type: none"> • Heavy-duty, precision T-slot guide for gripper jaws • High gripping force with compact size • Max. repetition accuracy • Wide range of options for mounting on drives 	<ul style="list-style-type: none"> • Precise gripping with centric movements despite high torque loads • Ideal for very harsh environments • 5 sizes with up to 12 mm stroke/jaw • Repetition accuracy of 0 ... 0.05 mm 	<ul style="list-style-type: none"> • Synchronous movement of the gripper jaws • With T-slot guide • Suitable for external and internal gripping • Gripper jaw guide protected by sealing air against dust • High-force variant (F) available
→ Page/online	469	hgdd	hgdt

Product overview



Angle grippers

02


		
Type	Angle grippers DHWS	Angle grippers HGWM
Total gripping torque at 6 bar, closing	30 ... 1362 Ncm	22 ... 64 Ncm
Max. opening angle	40°	14 ... 18.5°
Position sensing	Via Hall sensor, via proximity sensor	None
Gripping force backup	During closing	
Description	<ul style="list-style-type: none"> Improved gripper jaw guide Link guided movement Internal fixed flow control, does away with the need for external flow control in 90% of applications Max. repetition accuracy Wide range of options for mounting on drives 	<ul style="list-style-type: none"> Micro angle gripper: compact, handy design Mounting options with clamping spigot, with flange mounting, with Z stroke compensation Versatile thanks to externally adaptable gripper fingers
→ Page/online	475	hgwm

Grippers

Radial grippers

		
Type	Radial grippers DHRS	Radial grippers HGRT
Total gripping torque at 6 bar, closing	15 ... 660 Ncm	158 ... 7754 Ncm
Max. opening angle	180°	180°
Position sensing	Via Hall sensor, via proximity sensor	Via proximity sensor, via inductive sensors
Description	<ul style="list-style-type: none"> Lateral gripper jaw support for high torque loads Self-centring Gripper jaw centring options Max. repetition accuracy 	<ul style="list-style-type: none"> Secure gripping thanks to precise, polished plain-bearing guides Gripping force backup via compression springs holds the gripped workpiece securely in the event of pressure failure Compression spring also boosts the gripping force for applications involving heavier loads Optimum cycle times thanks to freely adjustable opening angle of up to max. 90° per gripper finger. This prevents possible collisions due to the gripper jaws opening too wide
→ Page/online	483	hgrt

Swivel/gripper units

	
Type	Swivel/gripper units HGDS
Total gripping force at 6 bar, closing	74 ... 168 N
Stroke per gripper jaw	2.5 ... 7 mm
Swivel angle	210°
Position sensing, gripper	Via proximity sensor
Description	<ul style="list-style-type: none"> Combination of parallel gripper and swivel module Swivel angle infinitely adjustable Precise end stop with elastic cushioning or integrated shock absorber
→ Page/online	hgds

Bellows grippers



Bellows grippers
DHEB

Type	Bellows grippers DHEB
Bellows stroke	3.5 ... 25 mm
Min. diameter to be gripped	8 ... 66 mm
Max. diameter to be gripped	11 ... 85 mm
Max. operating frequency, gripper	≤ 4 Hz
Description	<ul style="list-style-type: none"> • 11 sizes for gripping diameter from 8 to 85 mm • Direction of movement: bellows upwards or downwards • Different bellows materials: EPDM or silicone • Air connection on the side or from above • Optimised process sequence with increased quality: prevents the workpieces from being scratched • Additional reliability: optional sensing via proximity or position sensor • For sensitive internal gripping of fragile workpieces
→ Page/online	dheb

02

Grippers

Software tool

Feed separator		<p>This tool helps you to select the right separator of the type HPV from Festo for your application. Let yourself be guided by the program – enter the general parameters and you will receive at least one suggestion for the product best suited to your application.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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Feed separators

Type	Feed separators HPVS	Feed separators HPV
Mode of operation	Double-acting	Double-acting
Piston diameter	10 mm, 14 mm, 22 mm	10 mm, 14 mm, 22 mm
Stroke	10 ... 60 mm	10 ... 60 mm
Theoretical force at 6 bar, advancing	45 ... 225 N	45 ... 225 N
Description	<ul style="list-style-type: none"> • Version with one plunger • With non-rotating piston rod • Proximity sensor SME/SMT-8 can be integrated in the housing 	<ul style="list-style-type: none"> • Version with two plungers • With twin piston, non-rotating piston rod and locking mechanism • Cost-effective: replaces at least two drives in the feed process • Proximity sensor SME/SMT-8 can be integrated in the housing
→ Page/online	hpvs	hvp

Product overview

Accessories for grippers

02



Adaptive gripper fingers
DHAS

Type

Description

- Self-adapting to different workpiece shapes
- Adaptive gripper fingers for gentle and flexible gripping, using the Fin Ray Effect® modelled on a fish tail fin
- Size 60, 80, 120
- For workpiece diameters from 6 to 120 mm

→ Page/online

[dhas](#)

Grippers



Gain space and increase your productivity

- + With high gripping force and compact size
- + Thanks to the heavy-duty, precision T-slot guide for gripper jaws

Mechanical grippers > Parallel grippers >
Parallel grippers

DHPS

Mechanical grippers > Parallel grippers >

Parallel grippers

DHPS

 Overview, configuration and ordering
→ www.festo.com/catalogue/dhps



 Additional information, support and user documentation
→ www.festo.com/sp/dhps



 Spare parts service



- + Heavy-duty, precision T-slot guide for gripper jaws
- + High gripping force with compact size
- + Maximum repetition accuracy
- + Wide range of options for mounting on drives

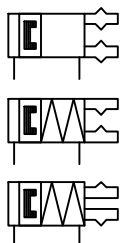
Product range overview

Type/function	Size	Stroke per gripper jaw [mm]	Gripping force per gripper jaw [N]	Product options		
				A	NO	NC
DHPS						
Double-acting	6	2	13.5 ... 15	■	-	-
	10, 16, 20, 25, 35	3 ... 12.5	34.5 ... 483	■	■	■

Product options

A Position sensing NO Opening gripping force backup NC Closing gripping force backup

Data sheet



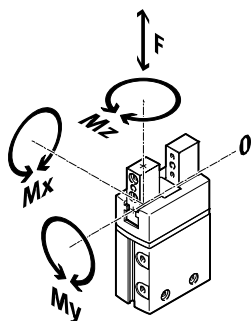
02

Grippers

Technical data			Dimensions → Page 459					
Size			6	10	16	20	25	35
Pneumatic connection			M3			M5	G1/8	
Stroke per gripper jaw		[mm]	2	3	5	6.5	7.5	12.5
Gripping force per gripper jaw at 6 bar	Opening	[N]	15	39	105	162	249	483
	Closing	[N]	13.5	34.5	96	147	228	450
Total gripping force at 6 bar	Opening	[N]	30	80	210	320	500	970
	Closing	[N]	25	70	190	290	450	910
Repetition accuracy ¹⁾		[mm]	≤0.02					
Max. operating frequency		[Hz]	4			3		2

1) End-position drift under constant working conditions with 100 consecutive strokes in the direction of movement of the gripper jaws.

Forces and torques



Size			6	10	16	20	25	35
Max. permissible force F_z		[N]	10	60	150	250	350	450
Max. permissible torque M_x		[Nm]	0.5	3	8	14	30	50
Max. permissible torque M_y		[Nm]	0.5	3	8	14	30	50
Max. permissible torque M_z		[Nm]	0.5	3	8	14	30	50

Parallel grippers DHPS

Data sheet

02

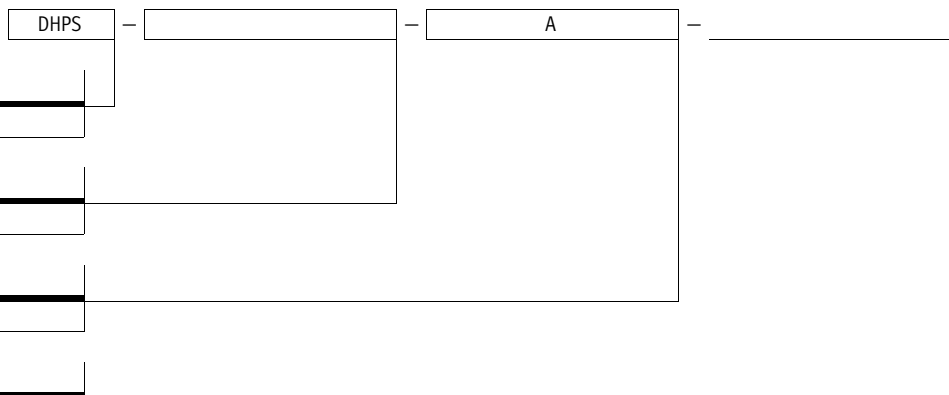
Operating conditions		Without gripping force backup	With gripping force backup
Operating pressure	[bar]	2 ... 8	4 ... 8
Ambient temperature ¹⁾	[°C]	+5 ... +60	

1) Note operating range of proximity sensors.

Materials	
Housing	Hard anodised wrought aluminium alloy
Gripper jaw	High-alloy stainless steel
Cover cap	PA
Piston	POM
Piston rod	Tempered steel
Reversing lever	Hardened sintered steel
Seals	NBR

Order code

Grippers



Type	
DHPS	Parallel grippers

Size	
6, 10, 16, 20, 25, 35	

Position sensing	
A	For proximity sensor

Gripping force backup	
-	None
NO	Opening 1
NC	Closing 1

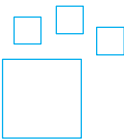
1 Not with size 6 mm

Order example:

DHPS-25-A-NC

Parallel gripper DHPS - size 25 - position sensing via proximity sensor - closing gripping force backup

Ordering – Product options



Configurable product

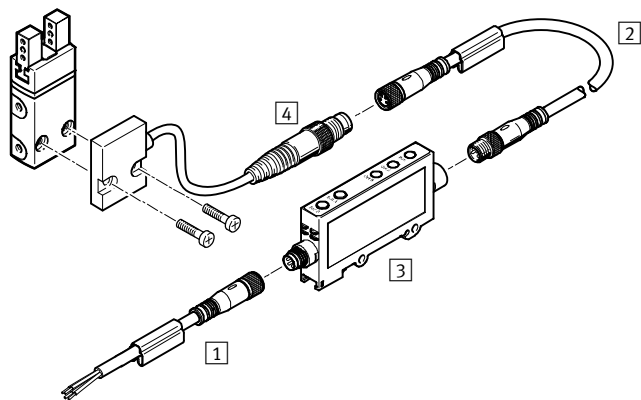
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

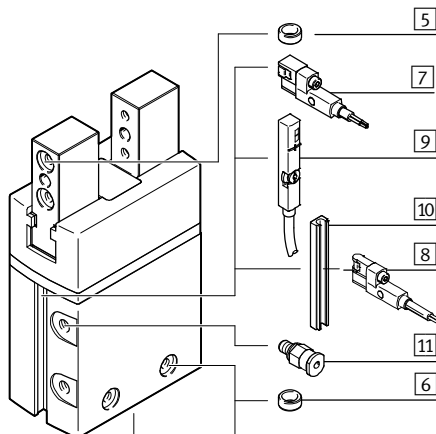
Enter the type code in the search field.

Accessories

DHPS-6



DHPS-10 ... 35



		→ Page/online
1	Connecting cable NEBU	457
2	Connecting cable NEBU	457
3	Signal converter SVE4	457
4	Position sensor SMH-S1	457
5	Centring sleeve ZBH	458
6	Centring sleeve ZBH	458
7	Proximity sensor SMT-8	458

		→ Page/online
8	Proximity sensor SMT-10	458
9	Position transmitter SMAT-8M/SDAT	458
10	Bondable sensor rail HGP-SL	458
11	Push-in fitting QS	1443
-	Connecting cable NEBU	458
-	One-way flow control valve GRLA	458
-	Drive/gripper connections	dhps

Accessories – Ordering data







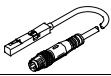
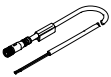
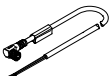
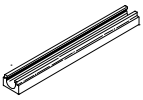
	For size	Switching output, connection	Cable length [m]	Part no.	Type
1 Connecting cable					
	Connection between signal converter and controller				
	6	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
2 Connecting cable					
	Connection between position sensor and signal converter				
	6	M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4
3 Signal converter Data sheets online: → sve4					
	6	PNP	-	544216	SVE4-HS-R-HM8-2P-M8
		NPN	-	544219	SVE4-HS-R-HM8-2N-M8
4 Position sensor Data sheets online: → smh-s1					
	6	-	-	175710	SMH-S1-HGP06

Parallel grippers DHPS


Accessories – Ordering data

02

Grippers

	For size	Switching output, connection	Cable length [m]	Part no.	Type
5 Centring sleeve for centring on the gripper jaws¹⁾²⁾ Data sheets online: → zbh					
	10	–	–	189652	ZBH-5
	16, 20	–	–	186717	ZBH-7
	25, 35	–	–	150927	ZBH-9
6 Centring sleeve for centring the gripper¹⁾³⁾ Data sheets online: → zbh					
	6, 10	–	–	189652	ZBH-5
	16, 20	–	–	186717	ZBH-7
	25	–	–	150927	ZBH-9
	35	–	–	189653	ZBH-12
7 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	10 ... 35	PNP, cable	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D
		NPN, cable	2.5	8065028	SMT-8G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065027	SMT-8G-NS-24V-E-0,3Q-M8D
8 Proximity sensor for C-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	10 ... 35	PNP, cable	2.5	547862	SMT-10G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547863	SMT-10G-PS-24V-E-0,3Q-M8D
		NPN, cable	2.5	8065030	SMT-10G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
Connecting cable, straight socket Data sheets → Page 1543					
	10 ... 35	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	10 ... 35	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
9 Position transmitter for T-slot Data sheets online: → smt					
	10 ... 35	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
	35	4 ... 20 mA, 4-pin	0.3	1531265	SDAT-MHS-M50-1L-SA-E-03-M8
Connecting cable, straight socket Data sheets → Page 1543					
	10 ... 35	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
Angled socket Data sheets → Page 1543					
	10 ... 35	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5.0	541345	NEBU-M8W4-K-5-LE4
10 Bondable sensor rail					
	10	–	–	535582	HGP-SL-10-10
	16	–	–	535583	HGP-SL-10-16
	20	–	–	535584	HGP-SL-10-20
	25	–	–	535585	HGP-SL-10-25
	35	–	–	535586	HGP-SL-10-35

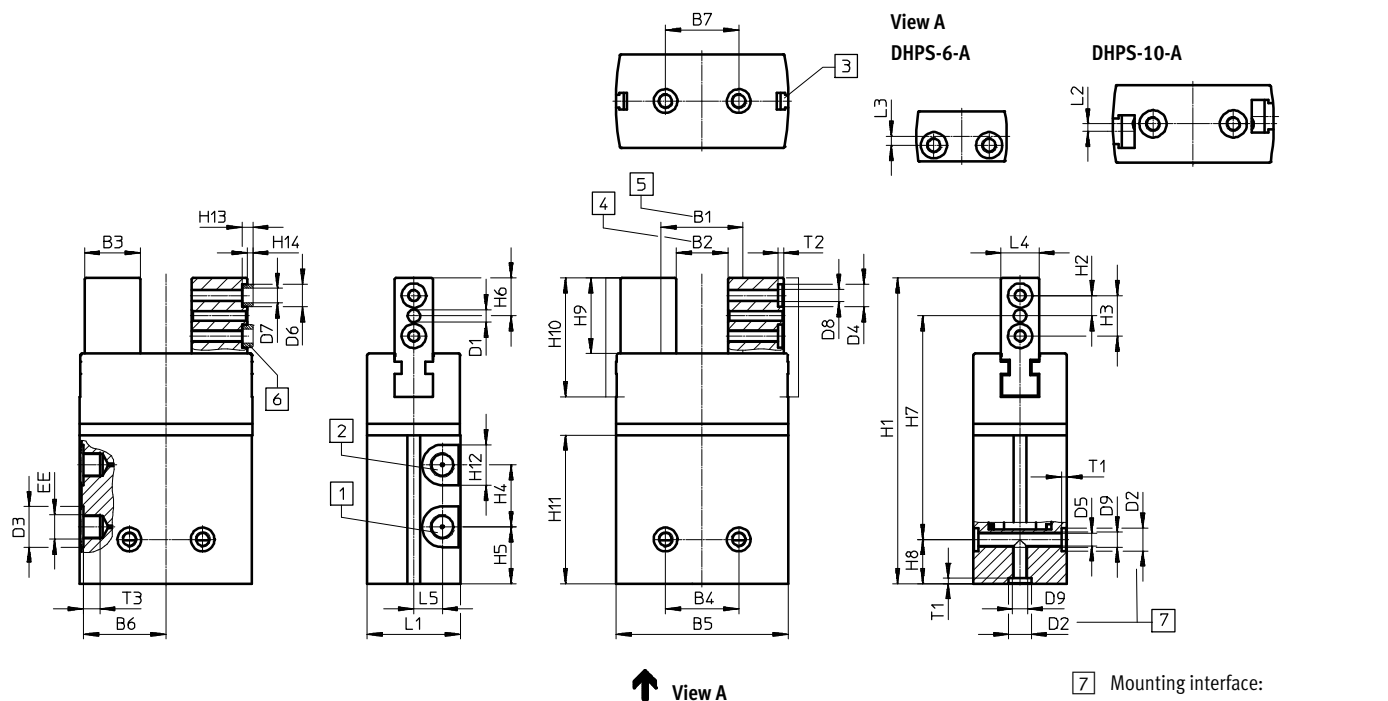
- 1) Packaging unit 10 pieces.
- 2) 4 included in the scope of delivery of the gripper.
- 3) 2 included in the scope of delivery of the gripper.

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
One-way flow control valve for exhaust air flow control⁴⁾ with slotted head screw, metal Data sheets → Page 1031					
	6, 10, 16	M3	3	175041	GRLA-M3-QS-3
	20		4	★ 193138	GRLA-M5-QS-4-D
	25, 35	G1/8	6	★ 193144	GRLA-1/8-QS-6-D

4) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Dimensions

Download CAD data → www.festo.com

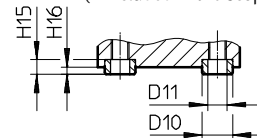


- 1 Supply port, opening
- 2 Supply port, closing
- 3 Slot for proximity sensor

- 4 Initial position for DHPS-...-A and DHPS-...-A-NC
- 5 Initial position for DHPS-...-A-NO

- 6 Centring sleeves ZBH (size 10 and above: 4 included in the scope of delivery)

- 7 Mounting interface: centring sleeves ZBH for mounting the gripper (2 included in the scope of delivery)



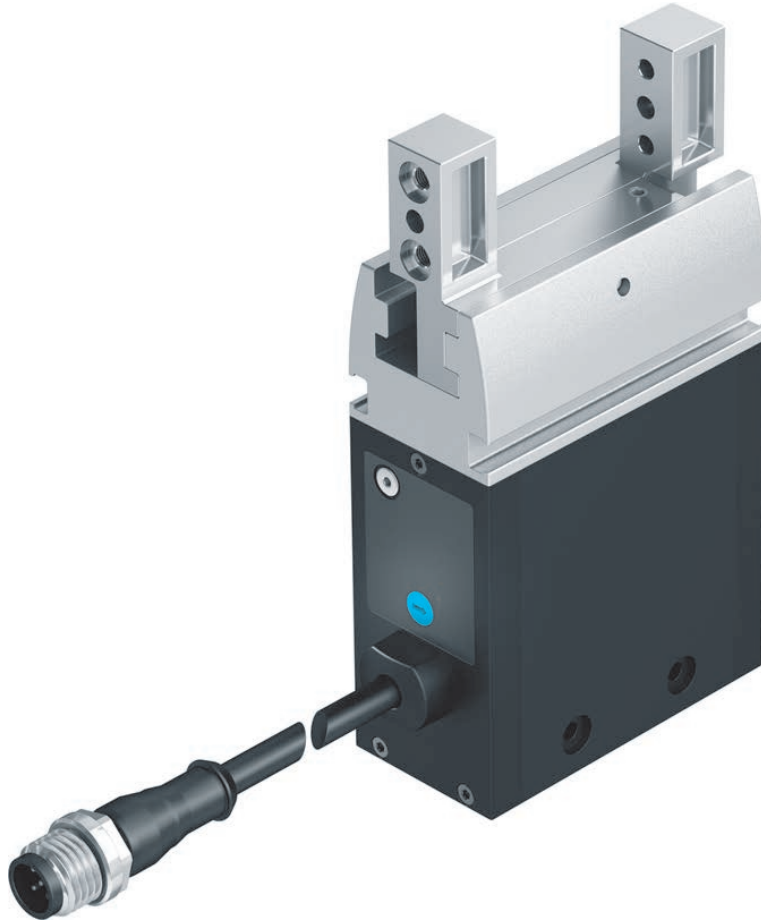
Size	B1 ±0.5	B2 ±0.5	B3 -0.03	B4 ¹⁾	B5 ±0.1	B6	B7 ¹⁾	D1 ∅ H8	D2 ∅ H8	D3 ∅	D4 ∅ H8	D5 ∅ +0.1	D6 ∅ h7	D7 ∅
6	10	6	5.5	11	18	8.65	11	1.5	5	7	-	2.5	-	-
10	21.8	15.8	7	16	32	15.4	16	2	5	7	5	2.5	5	3.2
16	27.8	17.8	13	25	47	22.65	25	3	7	7	7	3.3	7	5.3
20	30	17	17.5	25	55.6	26.65	25	4	7	10	7	3.3	7	5.3
25	35.4	20.4	22	29	68.2	32.65	29	4	9	16	9	5.1	9	6.4
35	56	31	27	33	88	42.25	33	5	12	16	9	6.4	9	6.4

Size	D8	D9	D10 ∅ h7	D11 ∅	EE	H1	H2	H3 ¹⁾	H4	H5	H6	H7 ±0.2	H8 ²⁾	H9
6	M2	M3	-	-	M3	45.5	2.9	5.8	15	4	5	33	7.5	9.55
10	M3	M3	5	3.2	M3	66	4	8	15.5	10.5	7.5	51	7.5	15.2
16	M4	M4	5	3.2	M3	80	5.5	11	18	11	10	62.5	7.5	20
20	M4	M4	7	5.3	M5	101	7	14	23	16	12.5	81	7.5	25
25	M5	M6	9	6.4	G1/8	121	8	16	24.5	22.5	15	88.5	17.5	30
35	M6	M8	12	10.3	G1/8	142	8.5	17	29	24	16	108.5	17.5	32

Size	H10	H11	H12	H13 -0.2	H14 -0.3	H15 -0.2	H16 -0.3	L1	L2	L3 ¹⁾	L4 -0.05	L5	T1 +0.1	T2 +0.1	T3 +0.5
6	15.8	25.3	7	-	-	-	-	10 ^{+0.1}	-	1.8	5	1.5	1.2	-	3.5
10	23	35	7	2.4	1.2	2.4	1.2	15.5 ^{+0.1}	1.5	-	7	5	1.2	1.2	5
16	32.5	38.1	7	3	1.4	3	1.4	22 ^{+0.1}	-	-	10	7	1.6	1.6	6
20	39.5	50	10	3	1.4	3	1.4	30±0.1	-	-	12	9	1.6	1.6	6
25	47	58.8	16	4	1.9	4	1.9	37±0.1	-	-	15	11.3	2.1	2.1	6.5
35	53	65.3	16	4	1.9	4	1.9	45 ^{+0.1}	-	-	20	13.5	2.6	2.1	6.5

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm
 2) Tolerance for centring hole -0.05 mm; tolerance for thread ±0.1 mm

New New series



For standard travel

- + Adjustable gripping force
- + Actuation without controller using digital signals
- + Sturdy T-slot guide for gripper jaws for high torque resistance
- + Compact dimensions without interfering contours and protruding plugs

Mechanical grippers › Parallel grippers ›
Electric parallel grippers

EHPS

Mechanical grippers > Parallel grippers >

Electric parallel grippers

EHPS



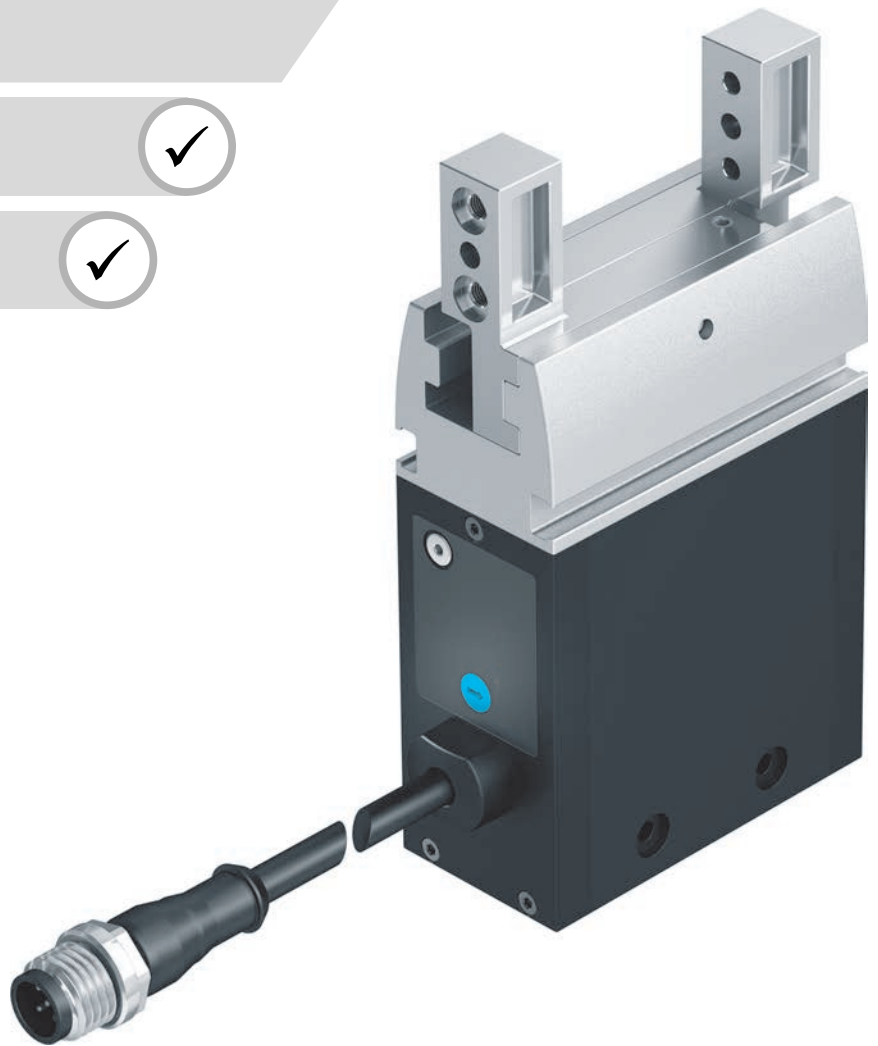
Overview, configuration and ordering

→ www.festo.com/catalogue/ehps



Additional information, support and user documentation

→ www.festo.com/sp/ehps



- + Size 16, 20, 25
- + Stroke per gripper jaw 10 ... 16 mm
- + Force at the gripper jaw 200 ... 450 N
- + For position sensing

NEW**Parallel grippers EHPS, electrical****Product range overview**

Type/version	Size	Stroke per gripper jaw [mm]	Gripping force per gripper jaw [mm]	Product options
EHPS	16, 20, 25	10 ... 16	46 ... 462	A ■

Product options

A Position sensing

At a glance**Electrically driven**

- Minimal installation effort – no valves, tubing or air preparation required
- Low noise pollution
- Electrical safety to DIN EN 61010-1:2010

Activation via digital I/O

- No external controller required
- Connection via terminal strip to terminal CPX or controller CECC

Gripping force adjustment and status indication**Gripping force adjustment:**

The gripping force of the gripper can be adjusted using the rotary switch. The switch has four settings and therefore four force levels, with no intermediate levels.

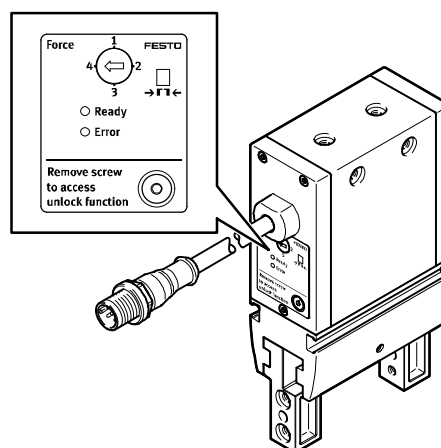
- Setting 1: approx. 50% of the max. force
- Setting 2: approx. 70% of the max. force
- Setting 3: approx. 85% of the max. force
- Setting 4: max. force

Adjustable gripping force (4 settings)

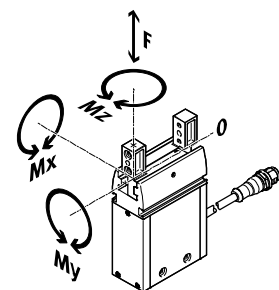
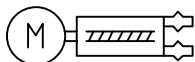
- Adaptation of the gripping force to sensitive workpieces
- Simple adjustment
- Very powerful

T-slot on the gripper head

- Direct position sensing of the gripper jaws possible
- Process reliability is guaranteed



Data sheet



02

Grippers

Technical data		Dimensions → Page 468		
Size		16	20	25
Number of gripper jaws		2		
Stroke per gripper jaw	[mm]	10	13	16
Repetition accuracy	[mm]	≤ 0.03	≤ 0.01	≤ 0.01
Max. mass per gripper finger	[g]	100	150	230
Max. cycle rate ¹⁾	[Hz]	2.2	1.7	1.3
Max. permissible force F_z	[N]	200	325	450
Max. permissible torque M_x	[Nm]	7	13	28
Max. permissible torque M_y	[Nm]	4.4	8	16
Max. permissible torque M_z	[Nm]	7	13	28

1) At a housing temperature of > 60 °C

Electrical data				
Size		16	20	25
Nominal operating voltage	[V DC]	24 ±10%		
Max. current consumption ¹⁾	[A]	1	2	2
Quiescent current	[mA]	30		

1) During the movement.

Operating conditions				
Ambient temperature ¹⁾	[°C]	+5 ... +60		
Degree of protection		IP40		

1) Note operating range of proximity sensors.

Materials				
Housing		Anodised aluminium		
Gripper jaw		High-alloy stainless steel		
O-ring		NBR		

NEW

Data sheet

Total gripping force F_H as a function of lever arm x , mounting position, external/internal gripping and setting 1 ... 4**EHPS-16****External gripping, horizontal**

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
25	98	116	132	154
45	68	84	92	106
65	54	62	70	78

External gripping, vertical

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
15	118	158	178	214
45	82	102	114	138
75	50	62	72	84

Internal gripping, horizontal

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
25	72	96	108	130
45	58	72	84	96
65	46	56	62	74

Internal gripping, vertical

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
15	110	134	152	178
45	90	108	122	138
75	66	74	84	94

EHPS-20**External gripping, horizontal**

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
45	88	122	156	218
65	70	90	114	154
95	56	70	82	110

External gripping, vertical

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
15	132	182	226	306
55	94	120	150	194
95	64	80	98	124

Internal gripping, horizontal

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
45	68	96	120	174
65	56	74	92	128
95	46	58	72	96

Internal gripping, vertical

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
35	94	128	160	220
65	76	100	126	162
95	62	76	92	124

EHPS-25**External gripping, horizontal**

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
50	148	204	260	312
80	98	140	176	204
110	70	96	118	140

External gripping, vertical

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
15	176	298	388	462
65	130	194	250	280
115	90	128	166	190

Internal gripping, horizontal

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
50	138	192	250	312
80	106	146	178	222
110	80	106	128	156

Internal gripping, vertical

Lever arm [mm]	F_H [N] at setting			
	1	2	3	4
45	152	242	326	406
75	132	200	266	314
115	114	162	198	228

Order code

02

EHPS		—		—	A
Type					
EHPS	Parallel grippers				
Size					
16					
20					
25					
Position sensing					
A	For proximity sensor				

Order example:

EHPS-20-A

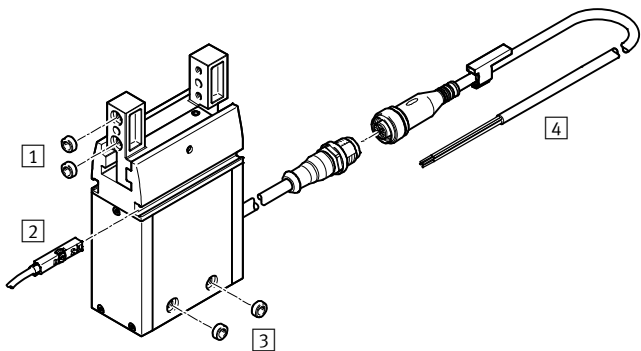
Parallel gripper EHPS - size 20 - positioning sensing via proximity sensor

Grippers

Ordering – Product options

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Accessories




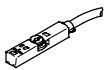
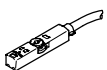



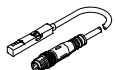
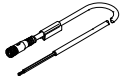
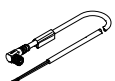
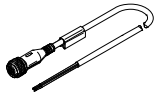
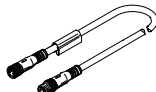
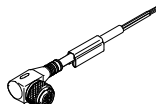
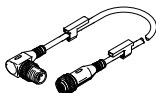
	→ Page/online
1 Centring sleeve ZBH	467
2 Proximity sensor SMT-8M-A, SMT-8G	467
Position transmitter SMAT-8M	467
3 Centring sleeve ZBH	467
4 Connecting cable NEBU	467
Adapter kit DHAA	ehps

NEW

Mechanical grippers > Parallel grippers

Parallel grippers EHPS, electrical

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
1 3 Centring sleeve for centring on the gripper jaws¹⁾²⁾ Data sheets online: → zbh					
	16, 20	–	–	186717	ZBH-7
	25	–	–	150927	ZBH-9
2 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	16 ... 20	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
N/C contact Data sheets → Page 1206					
	16 ... 20	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	16 ... 20	PNP, cable	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D
		NPN, cable	2.5	8065028	SMT-8G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065027	SMT-8G-NS-24V-E-0,3Q-M8D
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 20	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	16 ... 20	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
Position transmitter for T-slot Data sheets online: → smat					
	16 ... 20	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
Connecting cable Data sheets → Page 1543					
	16 ... 20	M8x1, 4-pin	Connection between signal converter and controller		
			2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
Angled socket Data sheets → Page 1543					
	16 ... 20	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5.0	541345	NEBU-M8W4-K-5-LE4
4 Connecting cable for connector plug of the gripper, straight socket Data sheets → Page 1543					
	16 ... 20	M12x1, 5-pin	2.5	★ 550326	NEBU-M12G5-K-2.5-LE4
			5.0	★ 541328	NEBU-M12G5-K-5-LE4
	16 ... 20	M12x1, 5-pin	5.0	574321	NEBU-M12G5-E-5-Q8N-M12G5
			7.5	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
Angled socket Data sheets → Page 1543					
	16 ... 20	M12x1, 5-pin	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5.0	541329	NEBU-M12W5-K-5-LE4
	16 ... 20	M12x1, 5-pin	0.5	8003617	NEBU-M12G5-K-Q.5-M12W5
			2	8003618	NEBU-M12G5-K-2-M12W5

1) Packaging unit 10 pieces

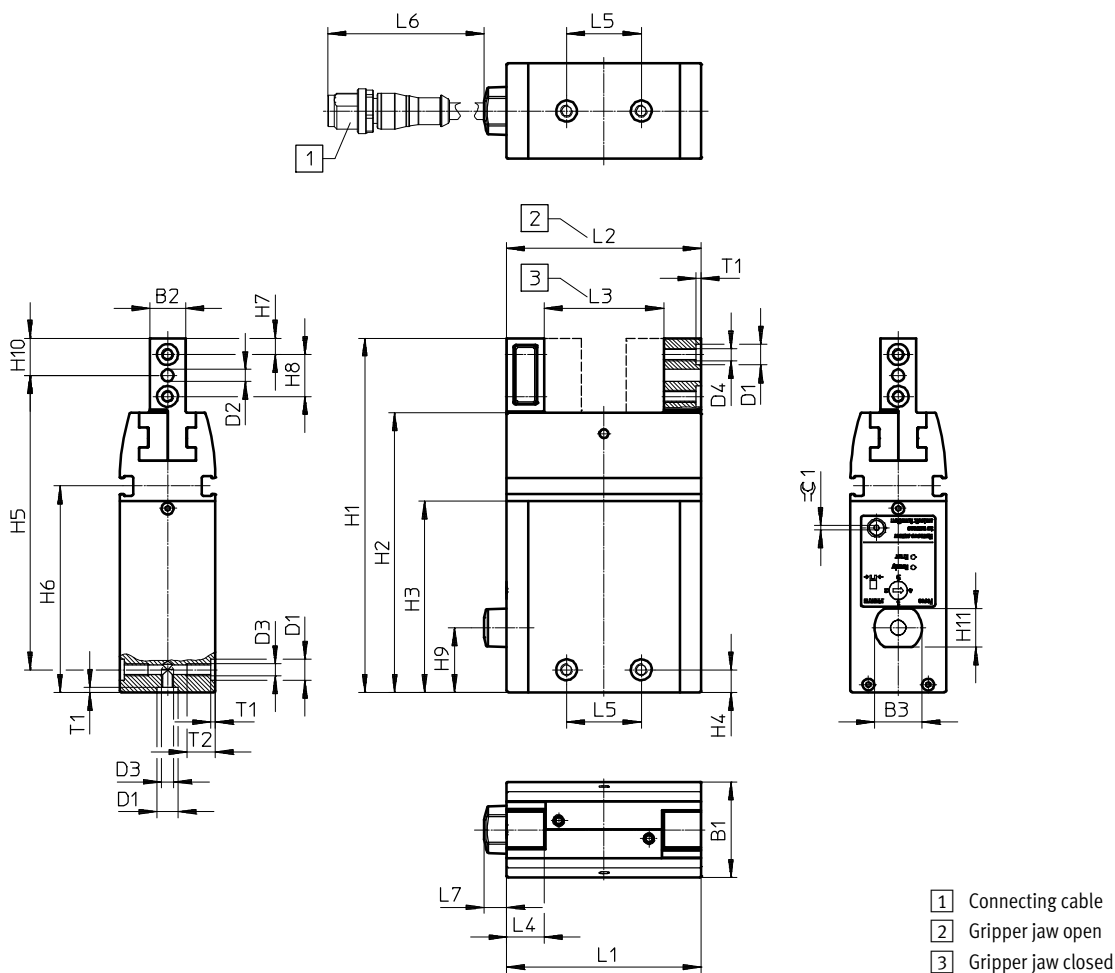
2) Included in the scope of delivery of the gripper: 4 centring sleeves for the gripper jaws and 2 for mounting the gripper

Dimensions

Download CAD data → www.festo.com

02

Grippers



- 1 Connecting cable
- 2 Gripper jaw open
- 3 Gripper jaw closed

Size	B1	B2	B3	D1 Ø	D2 Ø	D3	D4	H1	H2
	±0.03	±0.05		H8	H8			±0.1	
16	26	10	16	7	3	M4	M4	99.5	78
20	32	12	16	7	4	M4	M4	118.5	93.5
25	39	15	16	9	4	M6	M5	139.5	110

Size	H3	H4 ¹⁾	H5	H6	H7 ¹⁾	H8 ¹⁾	H9	H10	H11
			±0.2						
16	55	7.5	82	59.8	4.5	11	14.5	10	13
20	64	7.5	98.5	69	5.5	14	21.6	12.5	32
25	75	12.5	112	80	7	16	28.6	15	39

Size	L1	L2	L3	L4	L5 ¹⁾	L6	L7	T1	T2	≈ 1
	±0.3	+1	±0.5	±0.05				+0.1	min.	
16	53.8	53.8	33.8	10.5	25	300	7.5	1.6	9.5	1.5
20	65	65	39	12.5	25	300	7.5	1.6	9.5	1.5
25	79.4	79.4	47.4	15	29	300	7.5	2.1	12	2

1) Tolerance for centring hole ±0.02 mm
Tolerance for thread ±0.1 mm



Gain space and increase your productivity

- + With high gripping force and compact size
- + Thanks to the heavy-duty, precision T-slot guide

Mechanical grippers > Three-point grippers >
Three-point grippers

DHDS


Mechanical grippers > Three-point grippers >

Three-point grippers

DHDS

 Overview, configuration and ordering
→ www.festo.com/catalogue/dhds



 Additional information, support and user documentation
→ www.festo.com/sp/dhds



 Spare parts service



- + Heavy-duty, precision T-slot guide for gripper jaws
- + High gripping force with compact size
- + Maximum repetition accuracy
- + Wide range of options for mounting on drives

Product range overview

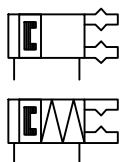
Type/function	Size	Stroke per gripper jaw [mm]	Gripping force per gripper jaw [N]	Product options	
				A	NC
DHDS					
Double-acting	16, 32, 50	2.5 ... 6	29 ... 280	■	■

Product options

A Position sensing

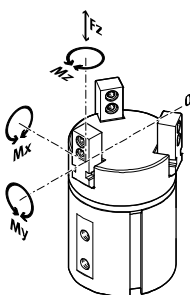
NC Closing gripping force backup

Data sheet



Technical data

Dimensions → Page 474



Size	16	32	50	
Pneumatic connection	M3	M5	G1/8	
Stroke per gripper jaw [mm]	2.5	3.9	6	
Gripping force per gripper jaw at 6 bar	Opening [N]	40	135	280
	Closing [N]	29	115	250
Total gripping force at 6 bar	Opening [N]	120	405	840
	Closing [N]	87	345	750
Repetition accuracy ¹⁾ [mm]	≤0.04			
Max. operating frequency [Hz]	≤4			
Max. permissible force F _z [N]	50	150	250	
Max. permissible torque M _x [Nm]	2	9	24	
Max. permissible torque M _y [Nm]	2	9	24	
Max. permissible torque M _z [Nm]	2	9	24	

1) End-position drift under constant working conditions with 100 consecutive strokes in the direction of movement of the gripper jaws.

Operating conditions

	Without gripping force backup	With gripping force backup
Operating pressure [bar]	2 ... 8	4 ... 8
Ambient temperature ²⁾ [°C]	+5 ... +60	

2) Note operating range of proximity sensors.

Materials

Housing	Hard anodised wrought aluminium alloy
Gripper jaw	High-alloy stainless steel
Cover cap	PA
Piston	POM
Reversing lever	Hardened sintered steel
Seals	NBR

Three-point grippers DHDS

Order code

02

DHDS		A	
Type			
DHDS	Three-point grippers		
Size			
16, 32, 50			
Position sensing			
A	For proximity sensor		
Gripping force backup			
-	None		
NC	Closing		

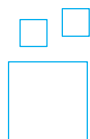
Order example:

DHDS-32-A-NC

Three-point gripper DHDS - size 32 - position sensing via proximity sensor - closing gripping force backup

Grippers

Ordering – Product options



Configurable product

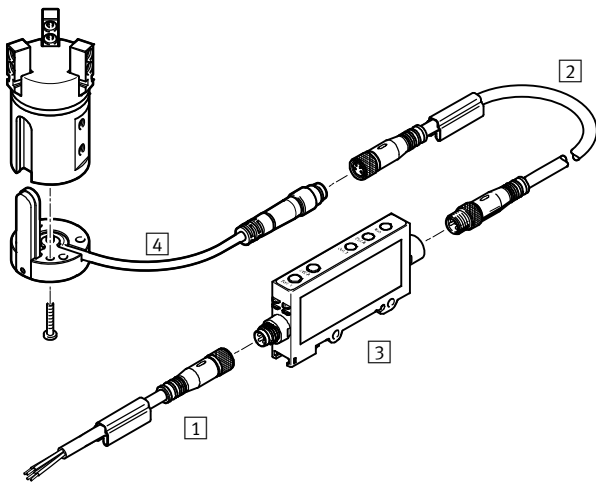
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

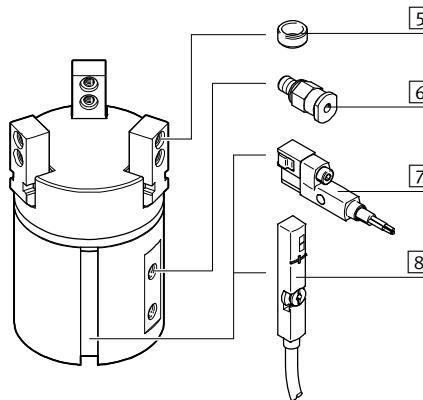
Accessories

DHDS-16




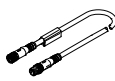






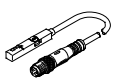
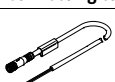
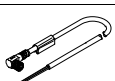
		→ Page/online
1	Connecting cable NEBU	473
2	Connecting cable NEBU	473
3	Signal converter SVE4	473
4	Position sensor SMH-S1	473
5	Centring sleeve ZBH	473
6	Push-in fitting QS	1443

DHDS-32, 50




		→ Page/online
7	Proximity sensor SMT-8	473
8	Position transmitter SMAT-8M	473
-	Connecting cable NEBU	473
-	One-way flow control valve GRLA	473
-	Drive/gripper connections	dhds

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
1 Connecting cable					
Connection between signal converter and controller					
	16	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
2 Connecting cable					
Connection between position sensor and signal converter					
	16	M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4
3 Signal converter Data sheets online: → sve4					
	16	PNP	–	544216	SVE4-HS-R-HM8-2P-M8
		NPN	–	544219	SVE4-HS-R-HM8-2N-M8
4 Position sensor Data sheets online: → smh-s1					
	16	–	–	175713	SMH-S1-HGD16
5 Centring sleeve¹⁾²⁾ Data sheets online: → zbh					
	16, 32	–	–	189652	ZBH-5
	50	–	–	186717	ZBH-7
7 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	32, 50	PNP, cable	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D
		NPN, cable	2.5	8065028	SMT-8G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065027	SMT-8G-NS-24V-E-0,3Q-M8D
Connecting cable, straight socket Data sheets → Page 1543					
	32, 50	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	32, 50	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
8 Position transmitter for T-slot Data sheets online: → smat					
	32, 50	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
Connecting cable, straight socket Data sheets → Page 1543					
	32, 50	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
Angled socket Data sheets → Page 1543					
	32, 50	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5.0	541345	NEBU-M8W4-K-5-LE4

1) Packaging unit 10 pieces.

2) 6 included in the scope of delivery of the gripper.

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
One-way flow control valve for exhaust air flow control³⁾ with slotted head screw, metal Data sheets → Page 1031					
	16	M3	3	175041	GRLA-M3-QS-3
	32	M5	4	★ 193138	GRLA-M5-QS-4-D
	50	G1/8	6	★ 193144	GRLA-1/8-QS-6-D

3) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Three-point grippers DHDS

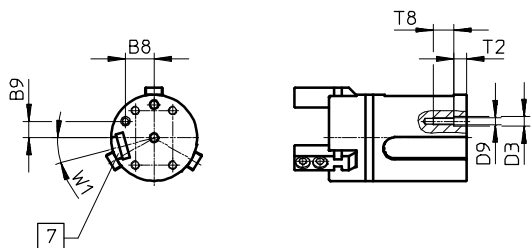
Dimensions

Download CAD data → www.festo.com

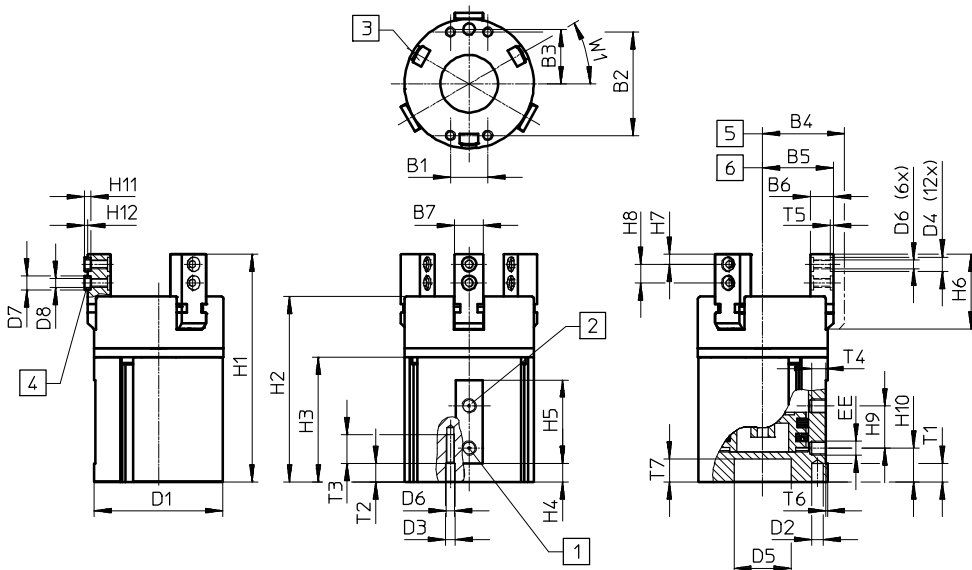
02

Grippers

DHDS-16



DHDS-32, 50



- 1 Supply port, opening
- 2 Supply port, closing
- 3 Slot for proximity sensor
- 4 Centring sleeve ZBH (6 included in the scope of delivery)
- 5 Gripper jaw open
- 6 Gripper jaw closed
- 7 Slot for position sensor

Size	B1	B2	B3	B4	B5	B6	B7	B8	B9
			±0.02	±0.5	±0.5	-0.02/-0.05	-0.02	-0.1	-0.1
16	13	19	11.5	20	17.5	7	6	9.96	5.75
32	13	36	19	28.5	24.6	8	10	-	-
50	25	54	30	43	37	12	14	-	-

Size	D1	D2	D3	D4	D5	D6	D7	D8	D9
	∅	∅ H8	∅ H8	∅ H8	∅ +0.05/+0.02		∅ h7	∅	
16	30	3	3.2	5	-	M3	5	3.2	M2.5
32	45	4	3.5	5	20	M3	5	3.2	-
50	70	5	6	7	30	M5	7	5.3	-

Size	EE	H1	H2	H3	H4	H5	H6	H7	H8 ¹⁾	H9
16	M3	60	47.9	32.6	4.5	24	21.5	3	6	12
32	M5	78	63.2	42.2	5.2	29	26	3.5	6.5	14.7
50	G1/8	107.5	86.5	56	6.7	40	37	5	10	22

Size	H10	T1	T2	T3	T4	T5	T6	T7	T8	W1
		min.	min.	+1	-0.5	+0.1	±0.2		±1	
16	11	4.5	4.5	8	4	1.2	1	-	7	15°
32	10.5	6.5	6.5	10	4	1.1	0.5	8	-	30°
50	16	7	7	18	6	1.6	1	9	-	30°

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm



Gain space and increase your productivity

- + With high gripping force and compact size
- + Thanks to the optimised and sturdy link guided movement of the gripper jaws

Mechanical grippers > Angle grippers >
Angle grippers

DHWS

Mechanical grippers > Angle grippers >

Angle grippers DHWS



Overview, configuration and ordering
→ www.festo.com/catalogue/dhws



Additional information, support and user documentation
→ www.festo.com/sp/dhws



Spare parts service



- + Improved gripper jaw guide
- + Link guided movement
- + Internal fixed flow control
- + Maximum repetition accuracy
- + Wide range of options for mounting on drives

Product range overview

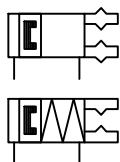
Type/function	Size	Opening angle [°]	Total gripping torque [Ncm]	Product options	
				A	NC
DHWS					
Double-acting	10	40	30 ... 43	■	-
	16, 25, 32, 40	40	114 ... 1497	■	■

02

Product options

A Position sensing NC Closing gripping force backup

Data sheet

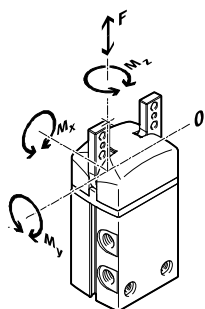


Grippers

Technical data			Dimensions → Page 481				
Size			10	16	25	32	40
Pneumatic connection			M3		M5	G1/8	
Opening angle per gripper jaw	[°]		20				
Total gripping torque at 6 bar	Opening	[Ncm]	43	129	386	810	1497
	Closing	[Ncm]	30	114	356	746	1362
Repetition accuracy ¹⁾		[mm]	≤0.04				
Max. operating frequency		[Hz]	4			3	

1) End-position drift under constant working conditions with 100 consecutive strokes in the direction of movement of the gripper jaws.

Forces and torques



Size		10	16	25	32	40
Max. permissible force F_z	[N]	25	50	90	120	200
Max. permissible torque M_x	[Nm]	0.6	1.6	3.6	6	13
Max. permissible torque M_y	[Nm]	0.6	1.6	3.6	6	13
Max. permissible torque M_z	[Nm]	0.6	1.6	3.6	6	13

Angle grippers DHWS

Data sheet

02

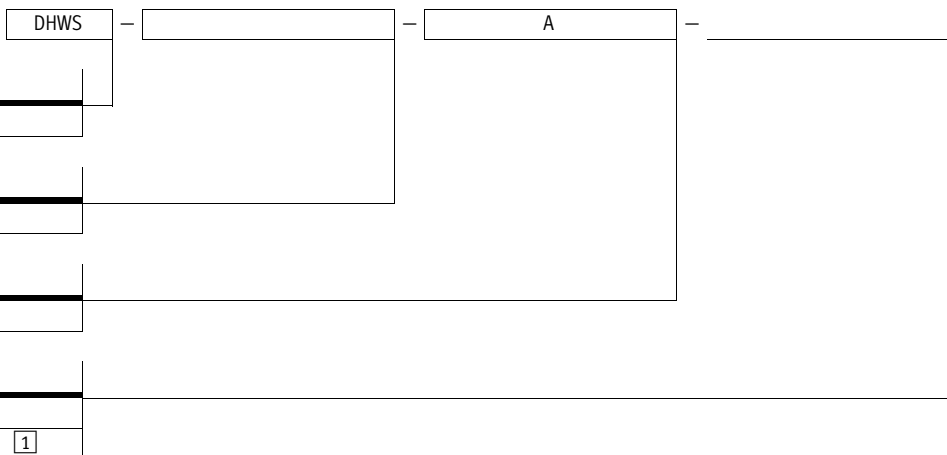
Operating conditions		Without gripping force backup	With gripping force backup
Operating pressure	[bar]	2 ... 8	4 ... 8
Ambient temperature ¹⁾	[°C]	+5 ... +60	

1) Note operating range of proximity sensors.

Materials	
Housing	Hard anodised wrought aluminium alloy
Gripper jaw	High-alloy stainless steel
Cover cap	PA
Piston	POM
Link	Tempered steel
Reversing lever	Hardened sintered steel
Seals	NBR

Order code

Grippers



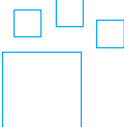
¹ Not with size 10 mm

Order example:

DHWS-25-A-NC

Angle gripper DHWS - size 25 - position sensing via proximity sensor - closing gripping force backup

Ordering – Product options



Configurable product

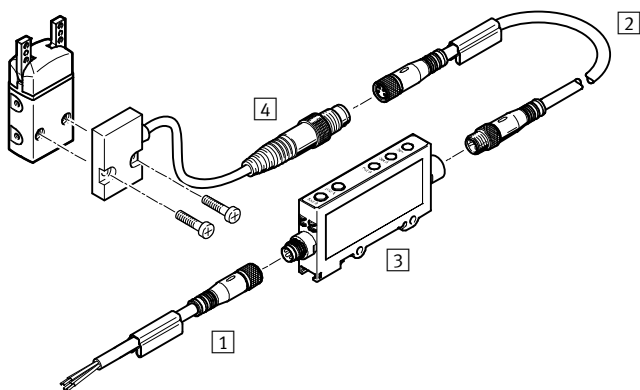
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

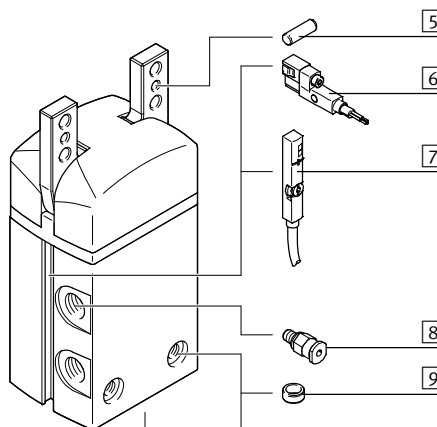
Enter the type code in the search field.

Accessories

DHWS-10



DHWS-16 ... 40



		→ Page/online
1	Connecting cable NEBU	479
2	Connecting cable NEBU	479
3	Signal converter SVE4	479
4	Position sensor SMH-S1	479
5	Centring pin	-
6	Proximity sensor SMT-8	480

		→ Page/online
7	Position transmitter SMAT-8M	480
8	Push-in fitting QS	1443
9	Centring sleeve ZBH	480
-	Connecting cable NEBU	480
-	One-way flow control valve GRLA	480
-	Drive/gripper connections	dhws

Accessories – Ordering data




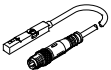



	For size	Switching output, connection	Cable length [m]	Part no.	Type
1 Connecting cable					
	Connection between signal converter and controller				
	10	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
2 Connecting cable					
	Connection between position sensor and signal converter				
	10	M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4
3 Signal converter Data sheets online: → sve4					
	10	PNP	-	544216	SVE4-HS-R-HM8-2P-M8
		NPN	-	544219	SVE4-HS-R-HM8-2N-M8
4 Position sensor Data sheets online: → smh-s1					
	10	-	-	175711	SMH-S1-HGW10

Angle grippers DHWS

Accessories – Ordering data


02

Grippers

	For size	Switching output, connection	Cable length [m]	Part no.	Type
6 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	16 ... 40	PNP, cable	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D
	10 ... 35	NPN, cable	2.5	8065028	SMT-8G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065027	SMT-8G-NS-24V-E-0,3Q-M8D
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 40	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	16 ... 40	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
7 Position transmitter for T-slot Data sheets online: → smat					
	16 ... 40	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
	32, 40	4 ... 20 mA, 4-pin	0.3	1531265	SDAT-MHS-M50-1L-SA-E-03-M8
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 40	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
Angled socket Data sheets → Page 1543					
	16 ... 40	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5.0	541345	NEBU-M8W4-K-5-LE4
9 Centring sleeve¹⁾²⁾ Data sheets online: → zbh					
	10, 16	–	–	189652	ZBH-5
	25	–	–	186717	ZBH-7
	32	–	–	150927	ZBH-9
	40	–	–	189653	ZBH-12

1) Packaging unit 10 pieces.

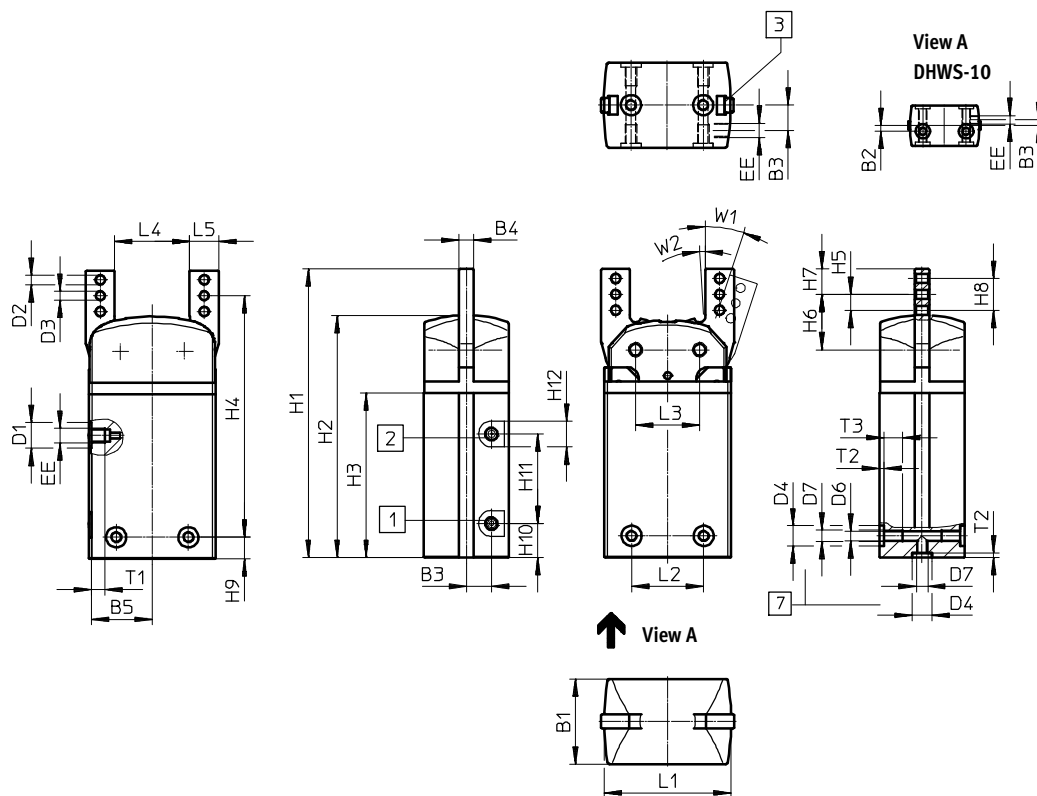
2) 2 included in the scope of delivery of the gripper.

Function	For size	Connection		Part no.	Type
		Thread	O.D.		
One-way flow control valve for exhaust air flow control³⁾ with slotted head screw, metal Data sheets → Page 1031					
	10, 16	M3	3	175041	GRLA-M3-QS-3
	25	M5	4	★ 193138	GRLA-M5-QS-4-D
	32, 40	G1/8	6	★ 193144	GRLA-1/8-QS-6-D

3) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Dimensions

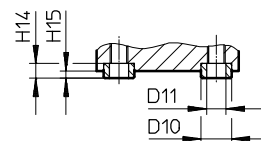
Download CAD data → www.festo.com



- 1 Supply port, opening
- 2 Supply port, closing

- 3 Slot for proximity sensor

- 7 Mounting interface: centring sleeves ZBH for mounting the gripper (2 included in scope of delivery)

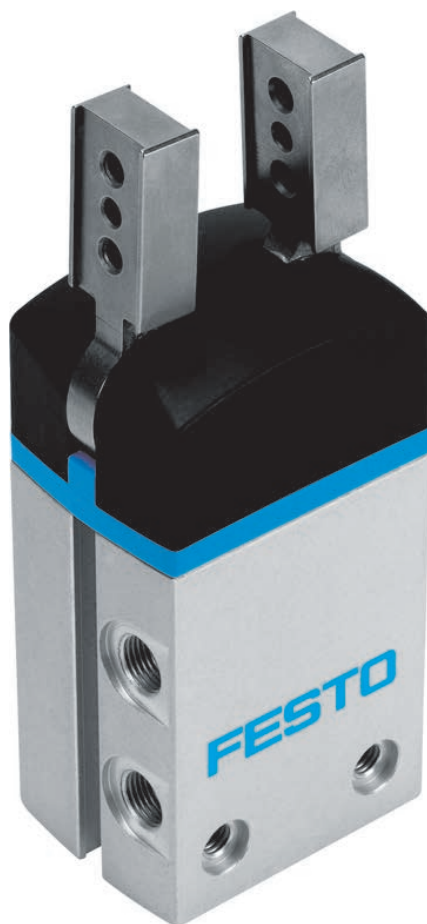


Size	B1 ±0.05	B2 ¹⁾	B3	B4 -0.03/ -0.05	B5	D1 ∅	D2 ∅ ±0.1	D3 ∅ H8	D4 ∅ H8/h7	D6 ∅ +0.1	D7	D10 ∅ h7	D11 ∅
10	14	2	2	3	11.6	7	2.2	2	5	2.4	M3	5	3.2
16	19	-	5.8	4	16	-	3.2	2.5	5	2.5	M3	5	3.2
25	29.5	-	8.75	5	21	9	3.2	3	7	3.3	M4	7	5.3
32	38	-	11	6	24	15	4.3	3	9	5.1	M6	9	6.4
40	49	-	11	8	28.4	15	5.3	4	12	6.4	M8	12	10.3

Size	EE	H1	H2	H3	H4 ±0.2	H5	H6 ±0.05	H7	H8	H9 ²⁾	H10	H11
10	M3	56.3	46	30.8	38.25	3.5	10.95	5.75	7	12.3	8.8	16
16	M3	81	67	45.5	66	4.5	15.5	7.5	9	7.5	12.25	23
25	M5	100	84	57	83.7	5.5	19.2	8.8	11	7.5	11.8	31
32	G1/8	116	96.2	65	100.5	6.5	22.5	11	13	11	20	25
40	G1/8	129	108.4	71.5	99.5	7	24.5	12	14	17.5	9	46

Size	H12	H14	H15	L1 ±0.05	L2 ¹⁾	L3 ±0.02	L4	L5 -0.02/ -0.05	T1 +0.5	T2 +0.1	T3 +1	W1 +3°/-1°	W2 ±1°
10	7	2.4	1.2	24	15	12.4	14	5.5	3.5	1.2	through	18	3
16	7	2.4	1.2	34	16	17	18	8	4.5	1.2	5.8	18	3
25	9	3	1.4	44	25	22.2	26	10	4.5	1.6	6.4	18	3
32	15	4	1.9	53	29	25.8	29	12	7.5	2.1	12.9	18	3
40	15	5	2.4	59	33	30	32	15	6	2.6	13.4	18	3

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm
 2) Tolerance for centring hole -0.05 mm; tolerance for thread ±0.1 mm



Gain space and increase your productivity

- + With high gripping force and compact size
- + Thanks to heavy-duty and self-centring gripper jaws

Mechanical grippers > Radial grippers >
Radial grippers

DHRS


Mechanical grippers > Radial grippers >

Radial grippers

DHRS

 Overview, configuration and ordering
→ www.festo.com/catalogue/dhrs



 Additional information, support and user documentation
→ www.festo.com/sp/dhrs



 Spare parts service



- + Lateral gripper jaw support for high torque loads
- + Self-centring
- + Gripper jaw centring options
- + Maximum repetition accuracy

Product range overview

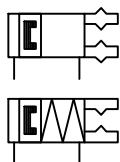
Type/function	Size	Opening angle [°]	Total gripping torque [Ncm]	Product overview	
				A	NC
DHRS					
Double-acting	10	180	15 ... 21	■	-
	16, 25, 32, 40	180	55 ... 725	■	■

Product overview

A Position sensing

NC Closing gripping force backup

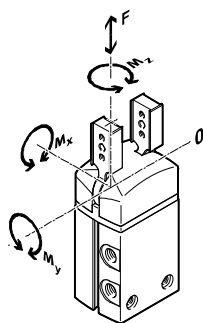
Data sheet



Technical data			Dimensions → Page 489					
Size			10	16	25	32	40	
Pneumatic connection			M3		M5	G1/8		
Max. opening angle	[°]		180					
Total gripping torque at 6 bar	Opening	[Ncm]	21	62	233	423	725	
	Closing	[Ncm]	15	55	215	390	660	
Repetition accuracy ¹⁾		[mm]	≤0.1					
Max. operating frequency		[Hz]	4			3		2

1) End-position drift under constant working conditions with 100 consecutive strokes in the direction of movement of the gripper jaws.

Forces and torques



Size		10	16	25	32	40
Max. permissible force F_z	[N]	30	40	75	120	200
Max. permissible torque M_x	[Nm]	0.8	1.3	3.2	6.2	14
Max. permissible torque M_y	[Nm]	0.8	1.3	3.2	6.2	14
Max. permissible torque M_z	[Nm]	0.8	1.3	3.2	6.2	14

Radial grippers DHRS

Data sheet

02

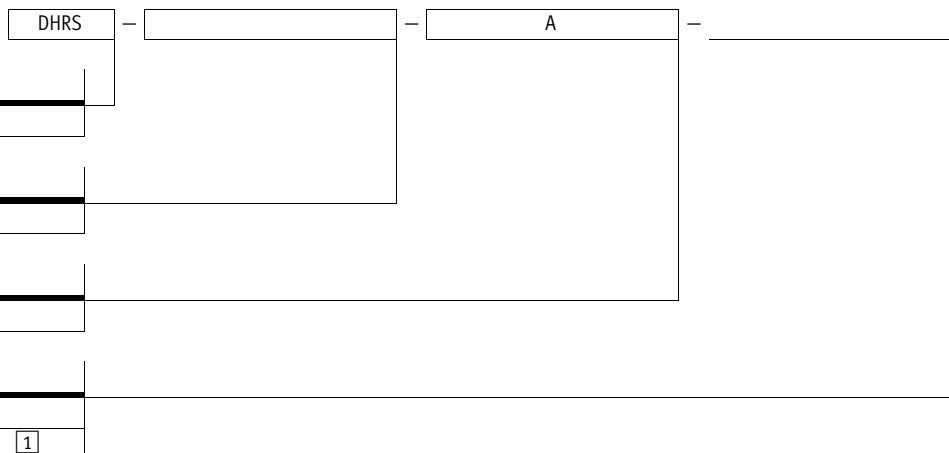
Operating conditions		Without gripping force backup	With gripping force backup
Operating pressure	[bar]	2 ... 8	4 ... 8
Ambient temperature ¹⁾	[°C]	+5 ... +60	

1) Note operating range of proximity sensors.

Materials	
Housing	Hard anodised wrought aluminium alloy
Gripper jaw	High-alloy stainless steel
Cover cap	PA
Piston	POM
Link	Tempered steel
Seals	NBR

Order code

Grippers



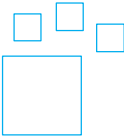
¹ Not with size 10 mm

Order example:

DHRS-25-A-NC

Radial gripper DHRS - size 25 - position sensing via proximity sensor - closing gripping force backup

Ordering – Product options



Configurable product

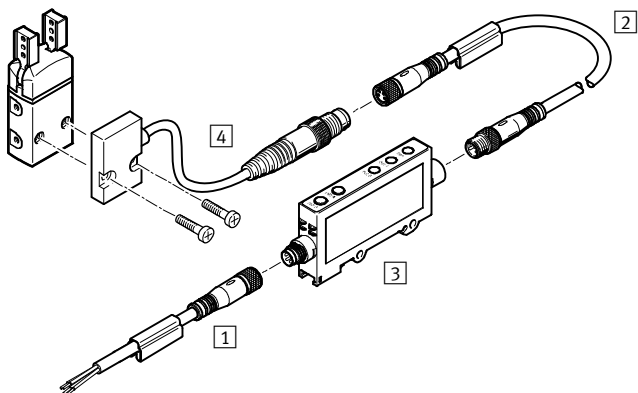
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

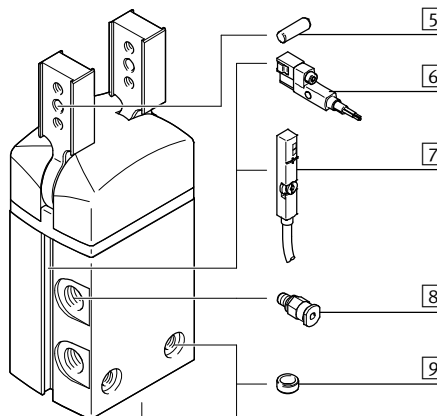
Enter the type code in the search field.

Accessories

DHRS-10



DHRS-16 ... 40



		→ Page/online
1	Connecting cable NEBU	487
2	Connecting cable NEBU	487
3	Signal converter SVE4	487
4	Position sensor SMH-S1	487
5	Centring pin	-
6	Proximity sensor SMT-8	488

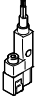


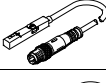

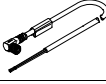

		→ Page/online
7	Position transmitter SMAT-8M/SDAT	488
8	Push-in fitting QS	1443
9	Centring sleeve ZBH	488
-	Connecting cable NEBU	488
-	One-way flow control valve GRLA	488
-	Drive/gripper connections	dhrs

Accessories – Ordering data


	For size	Switching output, connection	Cable length [m]	Part no.	Type
1 Connecting cable					
	Connection between signal converter and controller				
	10	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
2 Connecting cable					
	Connection between position sensor and signal converter				
	10	M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4
3 Signal converter Data sheets online: → sve4					
	10	PNP	-	544216	SVE4-HS-R-HM8-2P-M8
		NPN	-	544219	SVE4-HS-R-HM8-2N-M8
4 Position sensor Data sheets online: → smh-s1					
	10	-	-	175712	SMH-S1-HGR10

Radial grippers DHRS

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
6 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets online: → smt					
	16 ... 40	PNP, cable	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		PNP, plug	0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D
		NPN, cable	2.5	8065028	SMT-8G-NS-24V-E-2,5Q-OE
		NPN, plug	0.3	8065027	SMT-8G-NS-24V-E-0,3Q-M8D
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 40	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	16 ... 40	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
7 Position transmitter for T-slot Data sheets online: → smat					
	16 ... 40	0 ... 10 V, 4-pin	0.3	553744	SMAT-8M-U-E-0,3-M8D
	32, 40	4 ... 20 mA, 4-pin	0.3	1531265	SDAT-MHS-M50-1L-SA-E-03-M8
Connecting cable, straight socket Data sheets → Page 1543					
	16 ... 40	M8x1, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5.0	541343	NEBU-M8G4-K-5-LE4
Angled socket Data sheets → Page 1543					
	16 ... 40	M8x1, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5.0	541345	NEBU-M8W4-K-5-LE4
9 Centring sleeve¹⁾²⁾ Data sheets online: → zbh					
	10, 16	10, 16	–	189652	ZBH-5
	25	25	–	186717	ZBH-7
	32	32	–	150927	ZBH-9
	40	40	–	189653	ZBH-12

- 1) Packaging unit 10 pieces.
2) 2 included in the scope of delivery of the gripper.

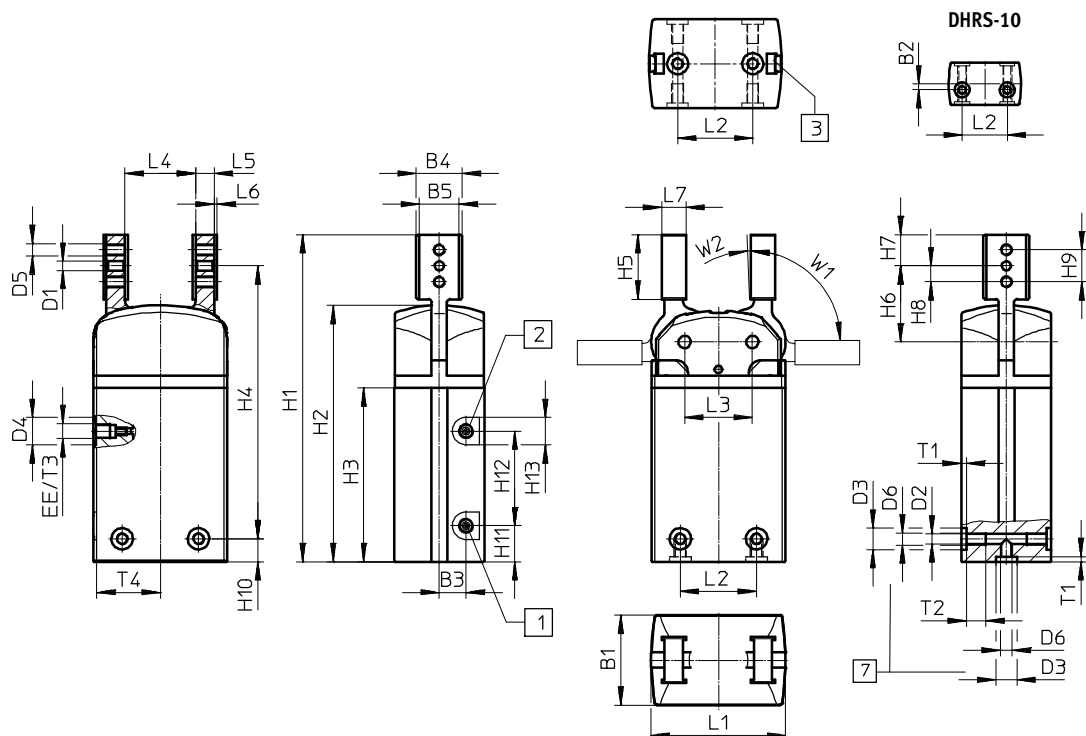
Function	For size	Connection		Part no.	Type
		Thread	O.D.		
One-way flow control valve for exhaust air flow control³⁾ with slotted head screw, metal Data sheets → Page 1031					
	10, 16	M3	3	175041	GRLA-M3-QS-3
	25	M5	4	★ 193138	GRLA-M5-QS-4-D
	32, 40	G1/8	6	★ 193144	GRLA-1/8-QS-6-D

- 3) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Radial grippers DHRS

Dimensions

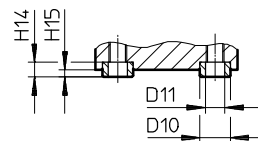
Download CAD data → www.festo.com



1 Supply port, opening
2 Supply port, closing

3 Slot for proximity sensor

7 Mounting interface: centring sleeves ZBH for mounting the gripper (2 included in scope of delivery)



Size	B1 ±0.05	B2 ¹⁾	B3	B4	B5 +0.03/ +0.01	D1 ∅ H8	D2 ∅ +0.1	D3 ∅ H8/h7	D4 ∅	D5	D6	D10 ∅ h7	D11 ∅	EE
10	14	2	2	8.5	6.5	2	2.4	5	7	M2.5	M3	5	3.2	M3
16	19	-	5.8	14	10	2	2.5	5	-	M3	M3	5	3.2	M3
25	29.5	-	8.75	15	13	3	3.3	7	9	M4	M4	7	5.3	M5
32	38	-	11	16	14	4	5.1	9	15	M5	M6	9	6.4	G1/8
40	49	-	11	24	20	5	6.4	12	15	M6	M8	12	10.3	G1/8

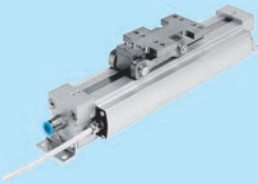
Size	H1	H2	H3	H4 ±0.25	H5 ±0.2	H6 ±0.05	H7 -0.1	H8	H9	H10 ²⁾	H11	H12	H13	H14 -0.2
10	60.8	46	30.8	42.25	13.8	14.95	6.25	4	8	12.3	8.8	16	7	2.4
16	88.2	70.5	49	73.7	16.5	19.7	7	4	8	7.5	12.25	23	7	2.4
25	107.2	84	57	89.45	21.2	24.95	10.25	5.25	10.5	7.5	11.8	31	9	3
32	128.5	96.2	65	103.5	29.5	32	14	7	14	11	20	25	15	4
40	140	108.4	71.5	108.7	29.5	33.7	13.8	8	16	17.5	9	46	15	5

Size	H15 -0.3	L1 ±0.05	L2 ¹⁾	L3 ±0.02	L4	L5 ±0.05	L6	L7	T1 +0.1	T2 +1	T3 +0.5	T4	W1 ±2°	W2 +3°
10	1.2	24	15	12.4	12	4	0.5	5	1.2	through	3.5	11.6	90	2
16	1.2	33.4	16	17	21	4	1	6	1.2	5.8	4.5	16	90	2
25	1.4	44	25	22.2	23.2	6	1	8	1.6	6.4	4.5	21	90	2
32	1.9	51	29	25.8	24.8	8	1	10	2.1	12.9	6.5	24	90	2
40	2.4	59	33	30	29.6	10	1	12	2.6	13.4	6	28.4	90	2

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm
2) Tolerance for centring hole -0.05 mm; tolerance for thread ±0.1 mm

3 Servo-pneumatic positioning systems

- + Linear drives with displacement encoder
- + Semi-rotary drives with displacement encoder
- + Axis controllers
- + Displacement encoders
- + Proportional valves
- + Sensor interfaces



DDLI
Linear drives with displacement encoder

- + Based on linear drive DGC-K
- + With displacement encoder for contactless measurement


→ page 492

Contents

Product overview 492

Product overview




Software tool

<p>Soft Stop</p>		<p>Soft Stop virtually makes the impossible possible. Travel times are reduced by as much as 30% for pneumatic drives and vibration is also greatly reduced. The selection program performs all the necessary calculations.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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03

Linear drives with displacement encoder

Servo-pneumatic positioning systems

Type	 <p>Linear drives with displacement encoder DFPI</p>	 <p>Linear drives with displacement encoder DFPI-NB3P</p>	 <p>Linear drives with displacement encoder DDLI</p>
Piston diameter	100 mm, 125 mm, 160 mm, 200 mm, 250 mm, 320 mm	100 mm, 125 mm, 160 mm, 200 mm, 250 mm, 320 mm	25 mm, 32 mm, 40 mm, 63 mm
Theoretical force at 6 bar, advancing	4712 ... 48255 N	4712 ... 48255 N	295 ... 1870 N
Max. load, horizontal			30 ... 180 kg
Max. load, vertical			10 ... 60 kg
Stroke	40 ... 990 mm	40 ... 990 mm	100 ... 2000 mm
Description	<ul style="list-style-type: none"> • Mounting interfaces for process valves to DIN 3358 • Integrated air supply • Optionally with integrated displacement encoder or completely integrated positioner • IP65, IP67, IP69K, NEMA4 • ATEX certification 	<ul style="list-style-type: none"> • Mounting interfaces to ISO 15552 • Sturdy tie rod design • Optionally with integrated displacement encoder or completely integrated positioner • IP65, IP67, IP69K, NEMA4 • ATEX certification 	<ul style="list-style-type: none"> • Based on linear drive DGC-K • Without guide • With displacement encoder for contactless measurement • Suitable for positioning with axis controller CPX-CMAX • Suitable for end-position control with end-position controller CPX-CMPX, SPC11 • Can be used as a measuring cylinder • Supply ports on end face • IP67 degree of protection • For attachment to the customer's own guide • Supply ports on end face
→ Page/online	dfpi	dfpi	ddli


Linear drives with displacement encoder

Type	 Standards-based cylinder with displacement encoder DDPC	 Standards-based cylinder with displacement encoder DNCI	 Linear drives with displacement encoder DGCI
Piston diameter	100 mm, 80 mm	32 mm, 40 mm, 50 mm, 63 mm	18 mm, 25 mm, 32 mm, 40 mm, 63 mm
Theoretical force at 6 bar, advancing	3016 ... 4712 N	415 ... 1870 N	153 ... 1870 N
Max. load, horizontal	300 ... 450 kg	45 ... 180 kg	1 ... 180 kg
Max. load, vertical	100 ... 150 kg	15 ... 60 kg	1 ... 60 kg
Stroke	10 ... 2000 mm	10 ... 2000 mm	100 ... 2000 mm
Description	<ul style="list-style-type: none"> Standards-based cylinder to ISO 15552 With displacement encoder for contactless measurement Suitable for positioning with axis controller CPX-CMAX Suitable for end-position control with end-position controller CPX-CMPX or SPC11 Can be used as a measuring cylinder Piston rod variants Fixed cushioning Optionally with recirculating ball bearing guide, clamping unit 	<ul style="list-style-type: none"> Standards-based cylinder to ISO 15552 With integrated displacement encoder for relative analogue, contactless measuring Suitable for servo-pneumatic applications with axis controller CPX-CMAX, end-position controller CPX-CMPX or SPC11 and measuring module CPX-CMIX Piston rod with male thread Piston rod variants Optionally with recirculating ball bearing guide, clamping unit 	<ul style="list-style-type: none"> With guide With displacement encoder for absolute and contactless measuring Suitable for servo-pneumatic applications with axis controller CPX-CMAX, end-position controller CPX-CMPX or SPC11 and measuring module CPX-CMIX Supply ports optionally on end face or front
→ Page/online	ddpc	dnci	dgci

03

Servo-pneumatic positioning systems

Swivel modules with displacement encoder

Type	 Swivel modules with angular displacement encoder DSMI-B
Piston diameter	25 mm, 40 mm, 63 mm
Theoretical torque at 6 bar	5 ... 40 Nm
Max. mass moment of inertia, horizontal	0.03 ... 0.6 kgm ²
Max. mass moment of inertia, vertical	0.03 ... 0.6 kgm ²
Swivel angle	0 ... 272°
Description	<ul style="list-style-type: none"> With rotary vane Integrated rotary potentiometer Suitable for servo-pneumatic applications with axis controller CPX-CMAX, end-position controller CPX-CMPX or SPC11 and measuring module CPX-CMIX Compact design
→ Page/online	dsmi

Product overview

Axis controllers



Axis controllers
CPX-CMAX



End-position controller
CPX-CMPX



End-position controller
SPC11

Type	Axis controllers CPX-CMAX	End-position controller CPX-CMPX	End-position controller SPC11
No. of axis strings	1	1	1
Axes per string	1	1	1
Description	<ul style="list-style-type: none"> • Axis controller as CPX module, supports pneumatic drives with piston rod, rodless drives and semi-rotary drives • Force and position control • Use with all fieldbus/EtherNet and controllers CEC available on CPX • Easy commissioning thanks to auto identification function • Rapid commissioning and comprehensive diagnostics with the parameterisation software FCT 	<ul style="list-style-type: none"> • Electronic end-position control for pneumatic drives • Soft Stop for smooth braking and quick acceleration • Use with all fieldbus/EtherNet available on CPX • Easy commissioning with Festo plug and work • Approx. 30% shorter travel times and 30% less air consumption than with comparable standard pneumatics • End positions with 2 additional, freely positionable intermediate positions 	<ul style="list-style-type: none"> • Quickly and smoothly into the end position with two additional intermediate positions • Electronic end-position cushioning • Quick and easy commissioning: configure, teach, done • Supports pneumatic drives with piston rod, rodless drives and semi-rotary drives
→ Page/online	cpx-cmax	cpx-cmpx	spx11

Displacement encoders



Displacement encoders
MLO-POT-TLF



Displacement encoders
MLO-POT-LWG





Displacement encoders
MME-MTS-TLF



Type	Displacement encoders MLO-POT-TLF	Displacement encoders MLO-POT-LWG	Displacement encoders MME-MTS-TLF
Stroke	225 ... 2000 mm	100 ... 750 mm	225 ... 2000 mm
Measuring principle of displacement encoder	Analogue	Analogue	Digital
Output signal	Analogue	Analogue	CAN protocol type SPC-AIF
Path resolution	0.01 mm	0.01 mm	< 0.01 mm
Description	<ul style="list-style-type: none"> • Conductive plastic potentiometer • Absolute measurement with high resolution • High travel speed and long service life • Plug-in connections 	<ul style="list-style-type: none"> • Connecting rod potentiometer • Absolute measurement with high resolution • Long service life • IP65 degree of protection • Plug-in connections 	<ul style="list-style-type: none"> • Measuring principle: magnetostrictive • Contactless with absolute measurement • High travel speed • System product for servo-pneumatic positioning technology and Soft Stop • IP65 degree of protection
→ Page/online	mlo	mlo	mme

Product overview

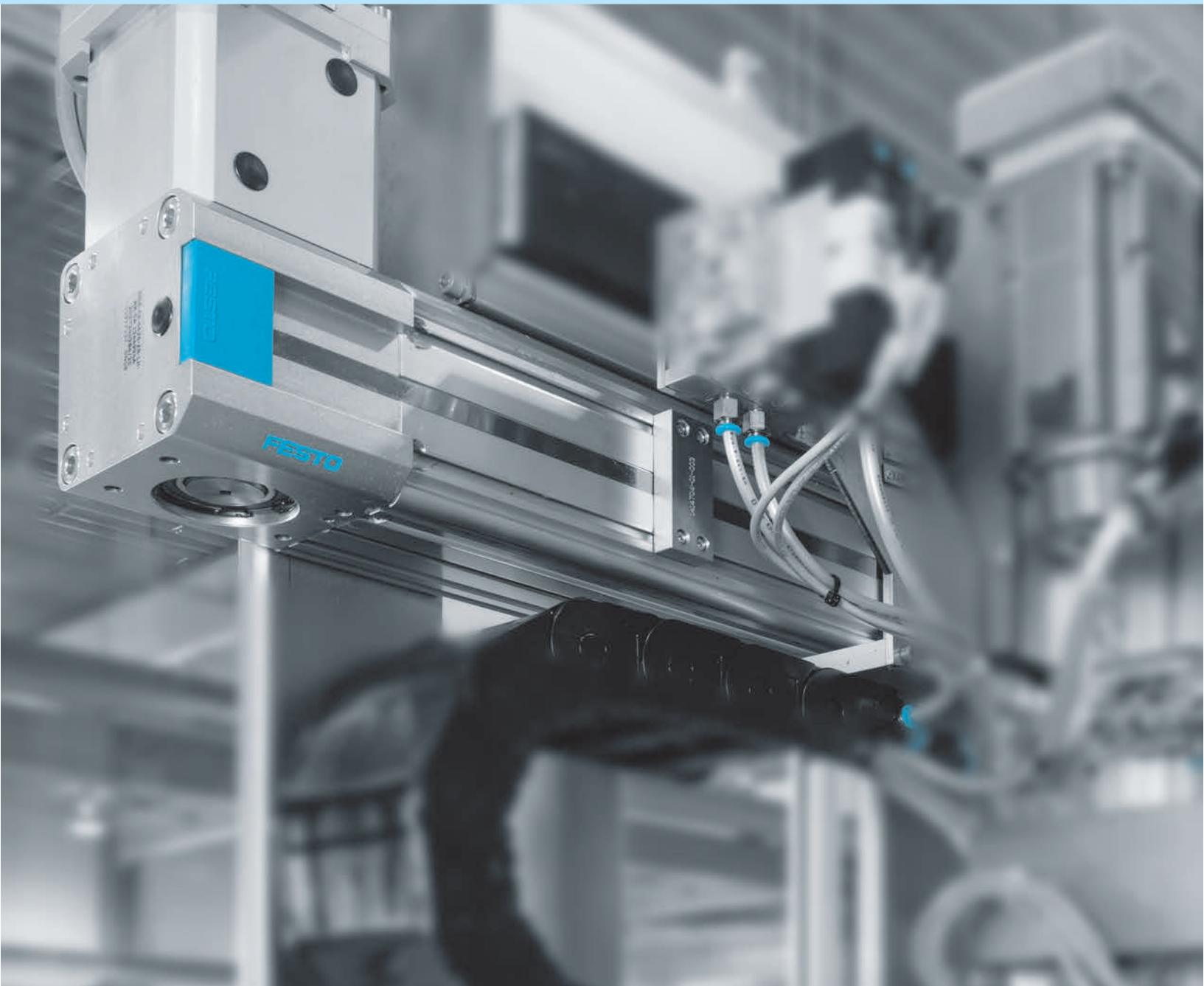
Proportional directional control valves

Type	 Proportional directional control valves VPWP	 Proportional directional control valves MPYE
Valve function	5/3-way proportional directional control valve, closed	5/3-way, closed
Pneumatic connection 1	G1/8, G1/4, G3/8	G1/8, G1/4, G3/8, M5
Operating pressure for positioning/Soft Stop	4 ... 8 bar	
Operating pressure	0 ... 10 bar	0 ... 10 bar
Standard nominal flow rate	350 ... 2000 l/min	100 ... 2000 l/min
Description	<ul style="list-style-type: none"> Controlled piston spool valve Digital actuation Integrated pressure sensors for monitoring function and force control With auto identification Diagnostic function Integrated digital output, e.g. for a clamping/brake unit Suitable for servopneumatic applications with CPX-CMAX and CPX-CMPX 	<ul style="list-style-type: none"> Controlled piston spool valve Analogue actuation Setpoint input as analogue voltage signal (0 ... 10 V) Suitable for servo-pneumatic applications with SPC11
→ Page/online	vpwp	mpye

Sensor interfaces

Type	 Sensor interfaces CASM	 Measured-value transducer DADE
Diagnostic function	Display via LED	Display via LED
Electrical connection	5-pin, 8-pin, socket, M12	8-pin, socket, M12
Displacement encoder		
Electrical connection	5-pin, M9, plug connector	
Control interface		
Control interface	CAN bus with Festo protocol, digital, without terminating resistor	
Description	<ul style="list-style-type: none"> For actuating pneumatic positioning drives with the latest servopneumatic systems such as CPX-CMAX, CPX-CMPX and CPX-CMIX Short cables for analogue signals, secure digitised bus transmission Convenient plug and work concept with auto identification and comprehensive diagnostics High protection class IP67 	<ul style="list-style-type: none"> For standards-based cylinders DNCl, DDPC Converts sensor signals into voltage or current signals Diagnostic display via LED Mounting via through-holes
→ Page/online	casm	dade

4 Electromechanical drives



- + Linear drives and slides
- + Semi-rotary drives
- + Electric handling modules
- + Direct drives
- + Accessories



EPCO

Electric cylinders

- + With permanently attached motor
- + With ball screw

→ page 505



ESBF

Electric cylinders

- + High feed forces with compact size
- + Optionally with high corrosion protection

→ page 517



EGC-BS-KF

Spindle axes

- + Spindle support enables maximum travel speed
- + Optionally with clamping unit

→ page 535

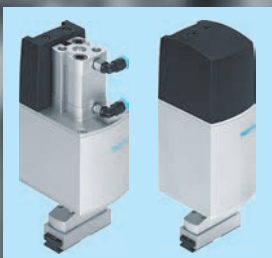


EFSD

Electric stopper cylinders

- + Power supply, communication and logic processing take place directly in the device

→ page 697



EHMD

Rotary gripper module

- + Infinite electric rotation, electric or pneumatic gripping

→ page 705

Contents

Product overview 498

Guide axes ELFC 503

NEW New series

Electric cylinders EPCO, with spindle drive 505

Electric cylinders ESBF, with spindle drive 517

Spindle axes EGC-BS-KF 535

Toothed belt axes EGC-TB-KF 551

Toothed belt axes ELGA-TB-KF 565

Spindle axes ELGC-BS-KF 579

Toothed belt axes ELGC-TB-KF 591

Mini slides EGSC-BS-KF 603

Spindle axes EGC-HD-BS 615

Toothed belt axes EGC-HD-TB 629

Mini slides EGSL 641

Spindle axes ELGA-BS-KF 655

Rotary drives ERMO 671

Rotary modules ERMB 687

Stopper cylinders, electric EFSD 697

NEW New series


Rotary gripper modules EHMD 705

NEW New series

Rotary/lifting modules EHMB 717

Product overview





Software tool

<p>PositioningDrives: selection and sizing of electromechanical linear drives, motors, and gear units</p>		<p>Which electromechanical linear drive, which motor and which gear unit best meets your needs? Enter the data for your application, such as position values, effective loads and mounting position, and the software suggests a number of solutions.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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04

Linear drives and slides

Electromechanical drives

Type	 Electric cylinders EPCO	 Electric cylinders ESBF	 Spindle axes EGC-BS-KF	 Toothed belt axes EGC-TB-KF
Size	16, 25, 40	32, 40, 50, 63, 80, 100	70, 80, 120, 185	50, 70, 80, 120, 185
Max. feed force Fx	50 ... 650 N	1000 ... 17,000 N	300 ... 3000 N	50 ... 2500 N
Repetition accuracy	+/-0.02 mm	+/-0.01 mm, +/-0.015 mm, +/-0.05 mm	+/-0.02 mm	+/-0.08 mm, +/-0.1 mm
Stroke	1 ... 400 mm	30 ... 1500 mm	50 ... 3000 mm	50 ... 8500 mm
Description	<ul style="list-style-type: none"> • Linear drive with permanently attached motor • With ball screw • Optional: encoder, holding brake and female thread on the piston rod • Two different spindle pitches for high force or high speed • Suitable for simple applications in factory automation that in the past were mostly carried out using pneumatic solutions • Cost-optimised: 28 types and modular product system in stock • Optional: precision and backlash-free guide • Also available as an OMS product (Optimised Motion Series) 	<ul style="list-style-type: none"> • Available with ball screw (size 32 ... 100) or lead screw (size 32 ... 50) • Optional: high corrosion protection, degree of protection IP65, suitable for use in the food industry (see www.festo.com/sp/esbf > "Certificates" tab), piston rod extension • Ball screw: three spindle pitches make it possible to select the optimal force-speed ratio • Axial or parallel motor mounting • 68 types in stock with short delivery times and modular product system for custom variants 	<ul style="list-style-type: none"> • Recirculating ball bearing guide for high loads and torques • Optionally with clamping unit, at one or both ends • Profile with optimised rigidity • Various spindle pitches • The spindle support enables maximum travel speed • Axial or parallel motor mounting 	<ul style="list-style-type: none"> • Recirculating ball bearing guide for high loads and torques • Optionally with clamping unit, at one or both ends • Profile with optimised rigidity • 22 types in stock with short delivery times and modular product system for custom variants
→ Page/online	505	517	535	551





Linear drives and slides

Type	 Toothed belt axes ELGA-TB-KF	 Toothed belt axes ELGA-TB-RF	 Spindle axes ELGC-BS-KF	 Toothed belt axes ELGC-TB-KF
Size	70, 80, 120, 150	70, 80, 120	32, 45, 60, 80	45, 60, 80
Max. feed force Fx	260 ... 2000 N	260 ... 1000 N	110 ... 780 N	75 ... 250 N
Repetition accuracy	+/-0.08 mm, +/-0.1 mm	+/-0.08 mm	+/-0.0015 mm, +/-0.01 mm	+/-0.1 mm
Stroke	50 ... 8500 mm	50 ... 7400 mm	100 ... 1000 mm	200 ... 2000 mm
Description	<ul style="list-style-type: none"> Recirculating ball bearing guide for high loads and torques High feed forces Precise and resilient guide Speeds up to 5 m/s with high acceleration up to 50 m/s² Optional: suitable for use in the food industry (see www.festo.com/sp/elga-tb-kf > "Certificates" tab for suitability for use in the food industry) Flexible motor mounting Guide and toothed belt protected by cover band 22 types in stock with short delivery times and modular product system for custom variants 	<ul style="list-style-type: none"> Integrated roller bearing guide High speeds up to 10 m/s with high acceleration up to 50 m/s² Guide backlash = 0 mm Very good operating behaviour under torque load Sturdy alternative to the recirculating ball bearing guide Actuator for external guides, especially with high speeds Motor can be mounted on any one of 4 sides 	<ul style="list-style-type: none"> Internal guide and ball screw Space-saving position sensing Flexible motor mounting The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation 	<ul style="list-style-type: none"> Precise and resilient guide Internal guide and toothed belt Flexible motor mounting The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation
→ Page/online	565	elga	579	591

04

Electromechanical drives

Linear drives and slides

Type	 Mini slides EGSC-BS-KF	 Spindle axes EGC-HD-BS	 Toothed belt axes EGC-HD-TB	 Mini slides EGSL
Size	25, 32, 45, 60	125, 160, 220	125, 160, 220	35, 45, 55, 75
Max. feed force Fx	50 ... 340 N	300 ... 1300 N	450 ... 1800 N	75 ... 450 N
Repetition accuracy	±0.02 mm	+/-0.02 mm	+/-0.08 mm, +/-0.1 mm	+/-0.015 mm
Stroke	25 ... 200 mm	50 ... 2400 mm	50 ... 5000 mm	50 ... 300 mm
Description	<ul style="list-style-type: none"> Precision guide and ball screw Compact dimensions Flexible motor mounting The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation 	<ul style="list-style-type: none"> With heavy-duty guide With integrated ball screw For maximum loads and torques Precision DUO guide rail with high load capacity For maximum transverse load up to 900 Nm Ideal as a basic axis for linear gantries and cantilever systems The spindle support enables maximum travel speed 	<ul style="list-style-type: none"> With heavy-duty guide For maximum loads and torques, high feed forces Precision DUO guide rail with high load capacity Motor can be mounted on any one of 4 sides For maximum transverse load up to 900 Nm 	<ul style="list-style-type: none"> Very high rated slide loads, ideal for vertical applications such as press-fitting or joining Reliable: the completely closed spindle stops dirt or stray small parts getting into the guide area Axial or parallel motor mounting
→ Page/online	603	615	629	641

Product overview


Linear drives and slides

04




Electromechanical drives

				
Type	Electric slides EGSK	Spindle axes ELGA-BS-KF	Toothed belt axes ELGA-TB-G	Toothed belt axes ELGG
Size	15, 20, 26, 33, 46	70, 80, 120, 185	70, 80, 120	35, 45, 55
Max. feed force Fx	19 ... 392 N	300 ... 3000 N	350 ... 1300 N	50 ... 350 N
Repetition accuracy	+/-0.003 mm, +/-0.004 mm, +/-0.003 mm, +/-0.01 mm, +/-0.01 mm	+/-0.02 mm	+/-0.08 mm	+/-0.1 mm
Stroke	25 ... 840 mm	50 ... 3000 mm	50 ... 8500 mm	50 ... 1200 mm
Description	<ul style="list-style-type: none"> • Electromechanical linear axis with ball screw • Recirculating ball bearing guide and ball screw without caged ball bearings • Standardised mounting interfaces • Compact design • High rigidity • 22 types in stock with short delivery times and modular product system for custom variants 	<ul style="list-style-type: none"> • Internal, precision recirculating ball bearing guide with high load capacity for high torque loads • Guide and ball screw protected by cover strip • For the highest requirements in terms of feed force and accuracy • Speeds up to 2 m/s with high acceleration up to 15 m/s² • Space-saving position sensing • Flexible motor mounting • 34 preconfigured types and modular product system for custom variants 	<ul style="list-style-type: none"> • Integrated plain-bearing guide • For small and medium loads • Guide and toothed belt protected by cover band • Low guide backlash • Actuator for external guides • Speeds up to 5 m/s with high acceleration up to 50 m/s² • Flexible motor mounting • Motor can be mounted on any one of 4 sides 	<ul style="list-style-type: none"> • Toothed belt axis with two opposing slides • With low-cost plain bearing and precise ball bearing guide • Optional central support improves the rigidity • Motor can be mounted on any one of 4 sides
→ Page/online	egsk	655	elga	elgg

Linear drives and slides



				
Type	Toothed belt axes ELGR	Cantilever axes ELCC-TB-KF	Cantilever axes DGEA-ZR	Single-axis systems YXCS
Size	35, 45, 55	60, 70, 90, 110	18, 25, 40	
Max. feed force Fx	50 ... 350 N	300 ... 2500 N	230 ... 1000 N	
Repetition accuracy	+/-0.1 mm	+/-0.05 mm	+/-0.05 mm	
Stroke	50 ... 1500 mm	50 ... 2000 mm	1 ... 1000 mm	
Description	<ul style="list-style-type: none"> • Optimum price/performance ratio • Ready-to-install unit for quick and easy design • With plain or recirculating ball bearing guide • Motor can be mounted on any one of 4 sides • Also available as an OMS product (Optimised Motion Series) 	<ul style="list-style-type: none"> • Stationary drive head • Toothed belt drive with recirculating ball bearing guide • High rigidity thanks to the innovative design principle • Very low moving mass • Vertical movement of high loads up to 100 kg possible 	<ul style="list-style-type: none"> • Toothed belt drive with recirculating ball bearing guide • Dynamic cantilever operation • Stationary drive head 	<ul style="list-style-type: none"> • Ready-to-install single-axis solution including energy chain for cables and tubing routing as well as matching motor and motor controller package • For any single-axis movement • Ideal for long gantry strokes and heavy loads • High mechanical rigidity and sturdy design
→ Page/online	elgr	elcc	dgea	yxcs

Linear drives and slides

			
Type	Toothed belt axes DGE-ZR, DGE-ZR-KF	Linear drives DGE-ZR-RF	Spindle axes DGE-SP
Size	8, 12, 18, 25, 40, 63	25, 40, 63	18, 25, 40, 63
Max. feed force Fx	15 ... 1500 N	260 ... 1500 N	140 ... 1600 N
Repetition accuracy	+/-0.08 mm, +/-0.1 mm	+/-0.1 mm	+/-0.02 mm
Stroke	1 ... 4500 mm	1 ... 5000 mm	100 ... 2000 mm
Description	<ul style="list-style-type: none"> Electromechanical axis with toothed belt; DGE-ZR: without guide; DGE-ZR-KF: with recirculating ball bearing guide Optional: protected version 	<ul style="list-style-type: none"> Electromechanical axis with toothed belt and internal roller bearing guide High speeds possible 	<ul style="list-style-type: none"> Without guide or with recirculating ball bearing guide Optional: protected version
→ Page/online	dge-zr	dge-zr	dge-sp

04

Semi-rotary drives

		
Type	Rotary drives, electric ERMO	Rotary modules, electric ERMB
Size	12, 16, 25, 32	20, 25, 32
Max. driving torque	0.15 ... 5 Nm	0.7 ... 8.5 Nm
Max. input speed	50 ... 100 rpm	900 ... 1350 rpm
Rotation angle	Infinite	Infinite
Description	<ul style="list-style-type: none"> Electric rotary drive with stepper motor and integrated gear unit ServoLite – closed-loop operation with encoder Heavy-duty bearing for high forces and torques Backlash-free pre-stressed rotating plate with very good axial eccentricity and concentricity properties Quick and accurate installation For simple rotary indexing table applications and as a rotary axis in multi-axis applications Also available as an OMS product (Optimised Motion Series) 	<ul style="list-style-type: none"> Electromechanical rotary module with toothed belt Compact design Mounting interfaces on all sides Stable output shaft bearings Unlimited and flexible rotation angle
→ Page/online	671	687

Electromechanical drives

Product overview

Stopper cylinders



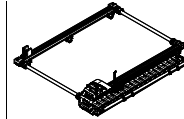
NEW

Type	Stopper cylinders EFSD
Design	Electric stopper cylinders
Size	20, 50, 100
Position sensing	With Hall sensor
Cushioning length	11.5 mm, 17.5 mm, 18.2 mm
NEW	<ul style="list-style-type: none"> New series
Description	<ul style="list-style-type: none"> Quick and simple equipping of transfer systems without compressed air For stopping transported material weighing from 0.25 kg to 100 kg Status and error messages for visual fault diagnostics Activation via digital I/O of a higher-order controller, such as terminal CPX, facilitates commissioning Mounting interface for easy assembly on transfer systems Adjustable cushioning force
→ Page/online	697

Electric handling modules



NEW



Type	Rotary gripper modules EHMD	Rotary/lifting modules, electric EHMB	Handling modules EHMX
Size	40	20, 25, 32	
Working stroke			200 ... 4500 mm
Max. driving torque		0.7 ... 6.7 Nm	
Max. input speed		900 ... 1350 rpm	
Max. acceleration			50 m/s ²
Max. speed			3 m/s, 5 m/s
Rotation angle	Infinite	Infinite	
Repetition accuracy			+/- 0.08 mm, +/- 0.1 mm
NEW	<ul style="list-style-type: none"> New series 		
Description	<ul style="list-style-type: none"> Ideal for small objects in laboratory automation Infinite electric rotation, electric or pneumatic gripping 	<ul style="list-style-type: none"> Complete module with combined and configurable rotary/lifting movement Dynamic, flexible, economical thanks to the modular drive concept for the linear movement Hollow axis with large internal diameter makes laying power supply lines easy, convenient and safe 	<ul style="list-style-type: none"> To create 3D gantries of the series YXCR For movements in the X direction in 3D gantries
→ Page/online	705	717	ehmx

Electromechanical drives

04

Electric handling modules

Type	Handling modules EHMV	Handling modules EHMZ
Size		
Working stroke	50 ... 4500 mm	50 ... 1000 mm
Max. driving torque		
Max. input speed		
Max. acceleration	40 ... 50 m/s ²	15 ... 25 m/s ²
Max. speed	3 m/s, 5 m/s	0.3 m/s, 0.4 m/s, 0.5 m/s, 0.6 m/s, 0.65 m/s, 1 m/s, 1.3 m/s, 1.5 m/s, 3 m/s
Rotation angle		
Repetition accuracy	+/-0.08 mm, +/-0.1 mm	+/-0.015 mm, +/-0.02 mm, +/-0.05 mm
Description	<ul style="list-style-type: none"> To create 3D gantries of the series YXCR For movements in the Y direction in 3D gantries 	<ul style="list-style-type: none"> To create 2D and 3D gantries of the series YXCL and YXCR For movements in the Z direction in 2D and 3D gantries
→ Page/online	ehmy	ehmz

04





Linear guides

Type	Guide axes ELFC	Guide units EAGF	Guide axes ELFA-KF	Guide axes ELFA-RF
Size	32, 45, 60, 80	16, 25, 32, 40, 50, 63, 80, 100	70, 80, 120	70, 80
Stroke	100 ... 2000 mm	1 ... 500 mm	50 ... 8500 mm	50 ... 7000 mm
Guidance	Recirculating ball bearing guide	Recirculating ball bearing guide	Recirculating ball bearing guide	Roller bearing
NEW	<ul style="list-style-type: none"> New series 			
Description	<ul style="list-style-type: none"> Driveless linear guide unit with guide and freely movable slide Increased torsional resistance Reduced vibrations with dynamic loads 	<ul style="list-style-type: none"> For electric cylinder EPCO and ESBF For absorbing high process forces and torques High guide precision 	<ul style="list-style-type: none"> For spindle/toothed belt axes ELGA-BS/ELGA-TB (drive axes) Driveless linear guide unit with guide and freely movable slide For supporting force and torque capacity in multi-axis applications Increased torsional resistance Reduced vibrations with dynamic loads 	<ul style="list-style-type: none"> For toothed belt axes ELGA-TB (drive axes) Driveless linear guide unit with guide and freely movable slide For supporting force and torque capacity in multi-axis applications Increased torsional resistance Reduced vibrations with dynamic loads
→ Page/online	elfc	eagf	elfa	elfa

Electromechanical drives



Product overview

Linear guides

Type	 Guide axes ELFR	 Guide axes EGC-FA	 Guide axes FDG-ZR-RF	 Guide axes FDG-ZR-KF, FDG-SP-KF
Size	35, 45, 55	70, 80, 120, 185	25, 40, 63	18, 25, 40, 63
Stroke	50 ... 1500 mm	50 ... 8500 mm	1 ... 5000 mm	1 ... 4500 mm
Guidance	Plain-bearing guide, recirculating ball bearing guide	Recirculating ball bearing guide	Roller bearing	Recirculating ball bearing guide
Description	<ul style="list-style-type: none"> • Driveless guide unit with guide and freely movable slide • For supporting force and torque capacity in multi-axis applications • Increased torsional resistance 	<ul style="list-style-type: none"> • Driveless guide unit with guide and freely movable slide • For supporting force and torque capacity in multi-axis applications • Increased torsional resistance 	<ul style="list-style-type: none"> • Driveless linear guide unit with guide and freely movable slide • For supporting force and torque capacity in multi-axis applications • Increased torsional resistance • Reduced vibrations with dynamic loads • Integrated roller bearing guide • Can be combined with toothed belt axis DGE-ZR-RF 	<ul style="list-style-type: none"> • Driveless linear guide unit with guide and freely movable slide • For supporting force and torque capacity in multi-axis applications • Increased torsional resistance • Reduced vibrations with dynamic loads • With recirculating ball bearing guide • Can be combined with toothed belt axis DGE-ZR-RF and spindle axis DGE-SP-KF
→ Page/online	elfr	egc	fdg	fdg

Electromechanical drives

Accessories for electromechanical drives

Type	 Bellows and ring gear couplings, mandrel couplings EAMC, EAMD	 Connecting shafts KSK
Description	<ul style="list-style-type: none"> • System products for positioning applications • For force-locked and backlash-free transmission of small and medium torques between electric motors and axes 	<ul style="list-style-type: none"> • For synchronising toothed belt axes DGE and EGC • For torsion-resistant transmission of the necessary torque • For slip-free transmission of the feed speed
→ Page/online	eamc	ksk

Customised components – for your specific requirements



Drives with customised designs

Can't find the electromechanical drive you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Special strokes
- Design for special ambient conditions
- Design optimised for the fitting space
- Design with opposing carriages
- Design with absolute encoder

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help.

→ www.festo.com/contact



Excellent price/ performance ratio

- + Suitable for simple applications in factory automation that in the past were mostly carried out using pneumatic solutions
- + Fast delivery thanks to product types in stock
- + Complete system including controller and cables can be ordered with just one part number

Linear drives and slides ›

Electric cylinder with spindle drive

EPCO

Linear drives and slides >

Electric cylinder with spindle drive

EPCO

 Overview, configuration and ordering
→ www.festo.com/catalogue/epco



 Additional information, support and user documentation
→ www.festo.com/sp/epco



 Spare parts service



- + Linear drive with permanently attached motor
- + With ball screw
- + Optional: encoder, holding brake and female thread on the piston rod
- + Two different spindle pitches for high force or high speed
- + Optional: precise and backlash-free guide

Electric cylinders EPCO, with spindle drive

Product range overview

Type/version	Size	Stroke [mm]	Feed force [N]	Spindle pitch [mm/rev]	Product options										
					A	E	B	D	L	R	KF	C5	DIO	LK	N
EPCO															
Ball screw	16, 25, 40	50 ... 400	50 ... 650	3 ... 12.7	■	■	■	■	■	■	■	■	■	■	■

Product options

F Female piston rod thread
 ...E Piston rod extension

A Position sensing
 ST Stepper motor
 E With encoder
 B With brake

D Cable outlet underneath
 L Cable outlet to the left
 R Cable outlet to the right
 KF Guide unit

C5 Motor controller CMMO
 DIO Digital activation I/O interface
 LK Activation IO-Link®
 N Switching input/output NPN
 P Switching input/output PNP

Also optionally available as an Optimised Motion Series (OMS)

A package that makes positioning easier than ever before.

The Optimised Motion Series is as easy to handle as a pneumatic cylinder, but with the functionality of an electric drive.



Easy selection

- Easy sizing and selection using cycle time charts
- No specialist knowledge of electric drive technology required

Ordering and logistics

- All the required individual components – like controllers and cables – under a single part number
- Motors mounted on electric cylinders

Quick to configure

- Parameterisation and commissioning via web server/browser
- Parameterise up to 7 freely definable positions directly on the PC



For simple positioning tasks

Electric cylinder EPCO



Motor controller CMMO

→ Page 827



Linear drives and slides >

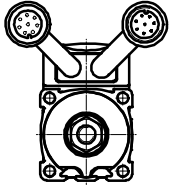
Electric cylinders EPCO, with spindle drive

Product options

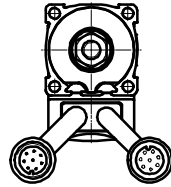
Motor mounting variants

EPCO-16

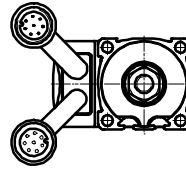
Standard



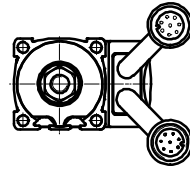
Underneath (feature D)



Left (feature L)

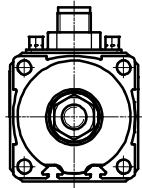


Right (feature R)

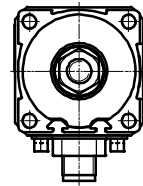


EPCO-25/-40

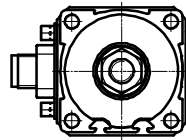
Standard



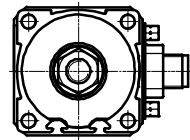
Underneath (feature D)



Left (feature L)



Right (feature R)



Electric cylinder EPCO with guide unit EAGF-P1



The guide unit provides protection from torsion in the case of high torque loads. It offers a high level of guide precision. The guide unit can be ordered via the order code.

Integrated mounting interfaces allow direct mounting for numerous multi-axis combinations, including connection to:

- Toothed belt axis ELGR
- ERMO rotary drive
- Mini slide DGSL

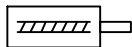
Note

Technical data for the guide unit EAGF-P1

→ www.festo.com/eagf-p1

Electric cylinders EPCO, with spindle drive

Data sheet

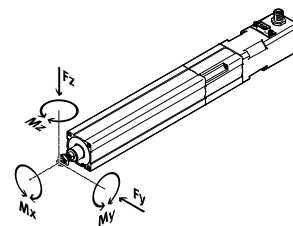


Technical data

Note

Engineering software
PositioningDrives
→ www.festo.com

Dimensions → Page 516



Technical data		16		25		40	
Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
Working stroke	[mm]	50 ... 200		50 ... 300		50 ... 400	
Spindle pitch ¹⁾	[mm/rev]	3	8	3	10	5	12.7
Spindle diameter	[mm]	8	8	10	10	12	12.7
Max. payload ²⁾							
Horizontal ³⁾	[kg]	24	8	60	20	120	40
Vertical	[kg]	12	4	30	10	60	20
Max. feed force F_x	[N]	125	50	350	105	650	250
Max. speed	[mm/s]	125	300	150	500	180	460
Max. acceleration	[m/s ²]	10					
Reversing backlash ⁴⁾	[mm]	≤ 0.1					
Repetition accuracy	[mm]	±0.02					

1) Nominal value varies due to component tolerances.

2) Payload as a function of speed and acceleration.

3) Note max. lateral force.

4) In new condition.

Electrical data		16		25		40	
Size		16		25		40	
Motor							
Nominal voltage	[V DC]	24					
Nominal current	[A]	1.4		3		4.2	
Holding torque	[Nm]	0.09		0.5		1.13	
Brake							
Nominal voltage	[V DC]	24 ±10%					
Nominal power	[W]	8					
Holding torque	[Nm]	0.2		0.4		0.4	
Encoder							
Rotor position encoder		Incremental					
Rotor position encoder measuring principle		Optical					
Pulses/rotation	[1/rev]	500					
Interface		RS422, TTL, AB channel, zero index					
Operating voltage of encoder	[V DC]	5					

Operating conditions

Ambient temperature ⁵⁾	[°C]	0 ... +50	
Degree of protection		IP40	

5) Note operating range of proximity sensors and motors.

Linear drives and slides >

Electric cylinders EPCO, with spindle drive

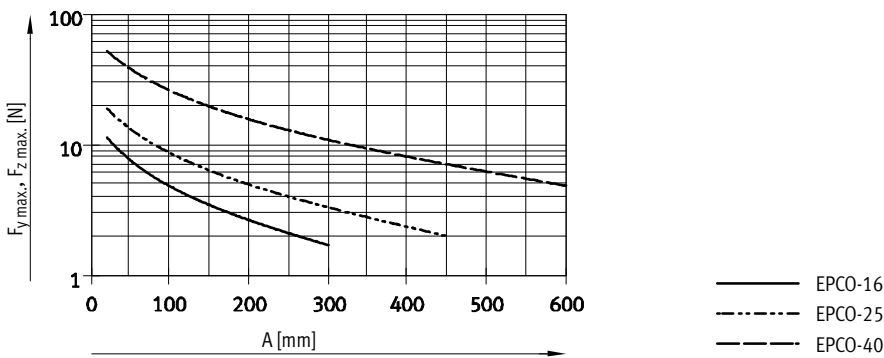
Data sheet

Mass moment of inertia							
Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
J ₀ at 0 mm stroke							
EPCO-...-ST	[kg mm ²]	2.28	2.29	9.33	9.40	33.25	33.75
EPCO-...-ST-B	[kg mm ²]	2.97	2.98	10.63	10.70	34.55	35.05
j _H per metre stroke	[kg mm ² /m]	2.53	2.65	4.87	5.78	11.66	16.70
j _L per kg payload	[kg mm ² /kg]	0.23	1.62	0.23	2.54	0.64	4.09

The mass moment of inertia J_A of the electric cylinder is calculated as follows:

$$J_A = J_0 + j_H \times \text{working stroke [m]} + j_L \times m_{\text{moving payload [kg]}}$$

Maximum permissible lateral forces $F_{y\text{max}}$ and $F_{z\text{max}}$ on the piston rod as a function of projection A



Note
 Technical data for the guide unit EAGF-P1
www.festo.com/eagf-p1

Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
$F_{x\text{max}}$ (static)	[N]	125	50	350	105	650	250
$M_{x\text{max}}$	[Nm]	0		0		0	
$M_{y\text{max}}, M_{z\text{max}}$	[Nm]	0.6		1.0		3.3	

Materials

Bearing cap	Smooth anodised wrought aluminium alloy
Cylinder barrel	Smooth anodised wrought aluminium alloy
Piston rod	High-alloy stainless steel
Spindle	Rolled steel
Spindle nut	Steel
Drive cover	Wrought aluminium alloy

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

Enter the type code in the search field.

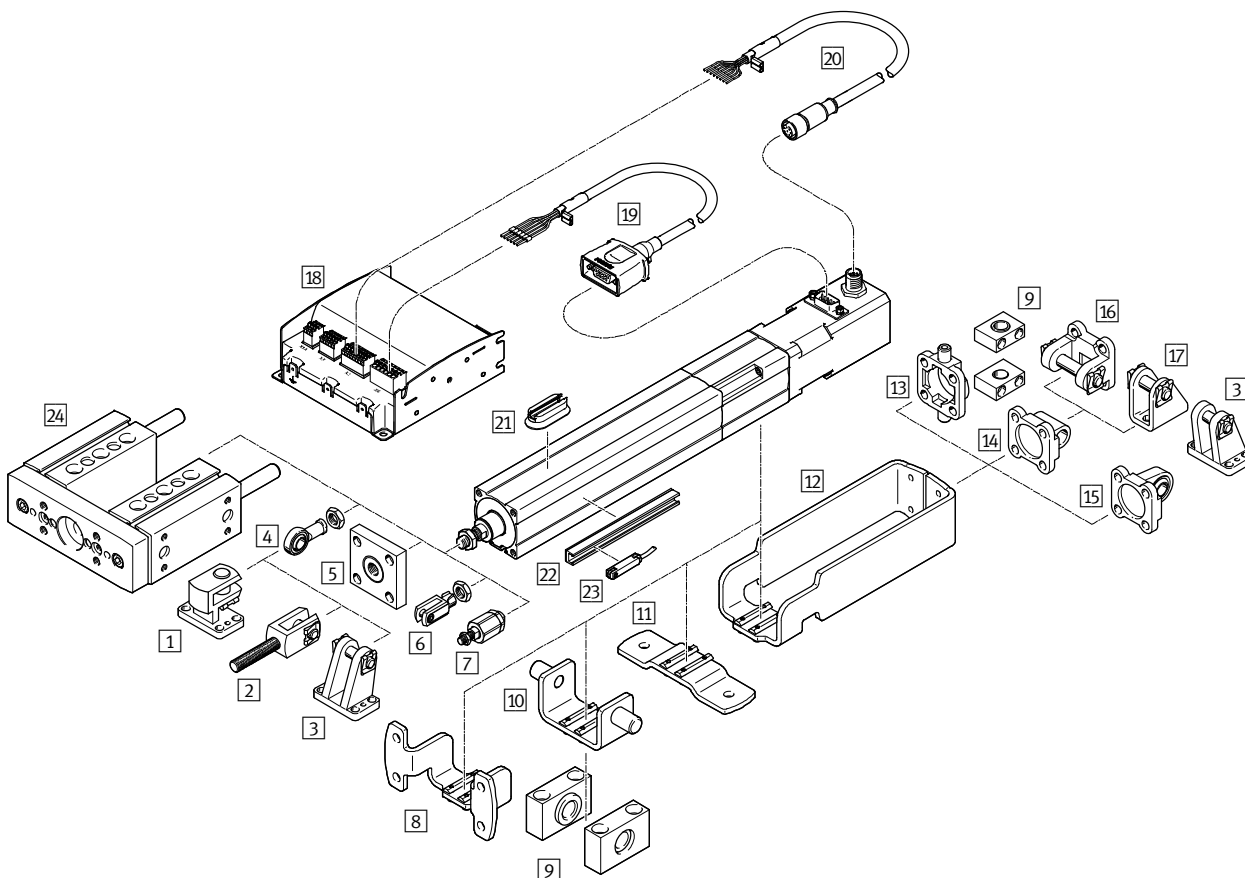
Linear drives and slides >

Electric cylinders EPCO, with spindle drive

Accessories

04

Electromechanical drives



	For size			→ Page/online
	16	25	40	
1 Right-angle clevis foot LQG	-	-	■	513
2 Rod clevis SGA	-	-	■	513
3 Clevis foot LBG	-	-	■	513
4 Rod eye SGS	■	■	■	513
5 Coupling piece KSG	-	-	■	513
6 Rod clevis SG/CRSG	■	■	■	513
7 Self-aligning rod coupler FK	■	■	■	513
8 Flange mounting EAHH	■	■	■	513
9 Trunnion support LNZG	■	■	■	513
10 Swivel mounting EAHS	■	■	■	513
11 Foot mounting EAHF	■	■	■	513
12 Adapter kit EAHA	■	■	■	513
13 Trunnion flange ZNCF	-	-	■	513

	For size			→ Page/online
	16	25	40	
14 Swivel flange SNCL	■	■	■	513
15 Swivel flange SNCS	-	-	■	513
16 Swivel flange SNCB	-	-	■	513
17 Clevis foot LBN	■	■	■	513
18 Motor controller CMMO	■	■	■	827
19 Motor cable NEBM	■	■	■	515
20 Encoder cable NEBM	■	■	■	515
21 Mounting kit CRSMB	■	■	■	513
22 Sensor rail SAMH	■	■	■	513
23 Proximity sensor SME/SMT-8	■	■	■	514
24 Guide unit EAGF-P1	■	■	■	514








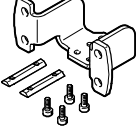
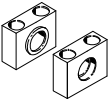
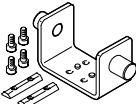
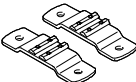
Note

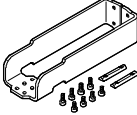

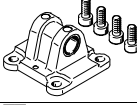
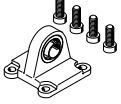
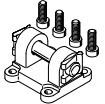
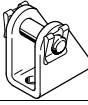
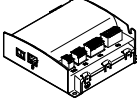


For applications involving high loads, the cylinder must not be mounted exclusively via the mounting thread on the front.

The mass of the motor can be amplified by the lever effect, which can result in the mounting thread being torn out.

Electric cylinders EPCO, with spindle drive

Accessories – Ordering data

	For size	Part no.	Type
1 Right-angle clevis foot			Data sheets online: → lqg
	40	31769	LQG-40
2 Rod clevis			Data sheets online: → sga
	40	32954	SGA-M10X1,25
3 Clevis foot			Data sheets online: → lbg
	40	31762	LBG-40
4 Rod eye			Data sheets online: → sgs
	16	★ 9254	SGS-M6
	25	★ 9255	SGS-M8
	40	★ 9261	SGS-M10X,25
5 Coupling piece			Data sheets online: → ksg
	40	32963	KSG-M10X1,25
6 Rod clevis			Data sheets online: → sg
	16	★ 3110	SG-M6
	25	★ 3111	SG-M8
	40	★ 6144	SG-M10X1,25
7 Self-aligning rod coupler			Data sheets online: → fk
	16	★ 2061	FK-M6
	25	★ 2062	FK-M8
	40	★ 6140	FK-M10X1,25
8 Flange mounting			Dimensions online: → epco
	16	1434906	EAHH-P1-16
	25	1434907	EAHH-P1-25
	40	1434908	EAHH-P1-40
9 Trunnion support			Data sheets online: → lnzg
	16	1434912	LNZG-16
	25	32959	LNZG-32
	40	32960	LNZG-40/50
10 Swivel mounting			Dimensions online: → epco
	16	1434909	EAHS-P1-16
	25	1434910	EAHS-P1-25
	40	1434911	EAHS-P1-40
11 Foot mounting			Dimensions online: → epco
	16	1434903	EAHF-P1-16
	25	1434904	EAHF-P1-25
	40	1434905	EAHF-P1-40

	For size	Part no.	Type
12 Adapter kit			Dimensions online: → epco
	16	1434900	EAHA-P1-16
	25	1434901	EAHA-P1-25
	40	1434902	EAHA-P1-40
13 Trunnion flange			Dimensions online: → epco
	40	174412	ZNCF-40
14 Swivel flange			Dimensions online: → epco
	16	537791	SNCL-16
	25	537793	SNCL-25
	40	★ 174405	SNCL-40
15 Swivel flange			Dimensions online: → epco
	40	★ 174398	SNCS-40
16 Swivel flange			Dimensions online: → epco
	40	★ 174391	SNCB-40
17 Clevis foot			Data sheets online: → lbn
	16	6058	LBN-12/16
	25	6059	LBN-20/25
	40	195861	LBN-40
18 Motor controller			Data sheets → Page 827
	With I/O interface		
	PNP	1512316	CMMO-ST-C5-1-DIOP
	NPN	1512317	CMMO-ST-C5-1-DION
	With IO-Link®		
	PNP	1512320	CMMO-ST-C5-1-LKP
21 Mounting kit for proximity sensor			Data sheets online: → crsmb
	16, 25, 40	525565	CRSMB-8-32/100 ¹⁾
22 Sensor rail ⁴⁾ for proximity sensor			Data sheets online: → samh
	16, 25, 40	1600093	SAMH-N8-SR-50 ²⁾
		1600118	SAMH-N8-SR-100 ³⁾

1) Length: 35 mm.

2) Length: 50 mm.

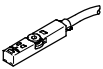
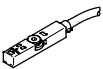
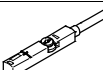
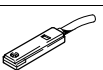
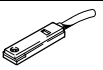
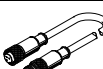
3) Length: 100 mm.

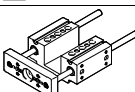
4) Size 25 can only be used with proximity sensor SMT-8 (magneto-resistive).

Linear drives and slides >

Electric cylinders EPCO, with spindle drive

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
23 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	16, 25, 40	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		NPN, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	16, 25, 40	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
23 Proximity sensor for T-slot, magnetic reed – N/O contact Data sheets → Page 1201					
	16, 25, 40	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
		Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
Magnetic reed – N/C contact Data sheets → Page 1203					
	16, 25, 40	Contacting, cable	2.5	150855	SME-8-K-LED-24
		Contacting, plug	0.3	150857	SME-8-S-LED-24
Magnetic reed – N/C contact Data sheets → Page 1203					
	16, 25, 40	Contacting, cable	7.5	160251	SME-8-O-K-LED-24
Connecting cable					
	16, 25, 40	M8x1, 3-pin	0.5	★ 541346	NEBU-M8G3-K-0,5-M8G3
			1.0	★ 541347	NEBU-M8G3-K-1-M8G3
			2.5	★ 541348	NEBU-M8G3-K-2,5-M8G3
			5.0	★ 541349	NEBU-M8G3-K-5-M8G3

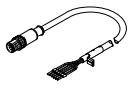
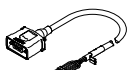
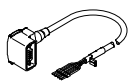
	For size	Stroke [mm]	Part no.	Type
24 Guide unit Data sheets online: → eagf				
	16	50	3192932	EAGF-P1-KF-16-50
		100	3192934	EAGF-P1-KF-16-100
		150	3192936	EAGF-P1-KF-16-150
		200	3192938	EAGF-P1-KF-16-200
		75, 125, 175	3192939	EAGF-P1-KF-16-
	25	50	3192943	EAGF-P1-KF-25-50
		100	3192945	EAGF-P1-KF-25-100
		150	3192947	EAGF-P1-KF-25-150
		200	3192949	EAGF-P1-KF-25-200
		300	3192951	EAGF-P1-KF-25-300
		75, 125, 175, 250	3192952	EAGF-P1-KF-25-
	40	50	3192955	EAGF-P1-KF-40-50
		100	3192957	EAGF-P1-KF-40-100
		150	3192959	EAGF-P1-KF-40-150
		200	3192961	EAGF-P1-KF-40-200
300		3192963	EAGF-P1-KF-40-300	
75, 125, 175, 250, 350, 400		3192966	EAGF-P1-KF-40-	

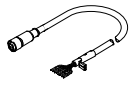
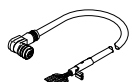
04

Electromechanical drives

Electric cylinders EPCO, with spindle drive

Accessories – Ordering data

	Cable length [m]	Part no.	Type
19 Motor cable¹⁾			
For EPCO-16			
Straight plug			
	1.5	1449600	NEBM-SM12G8-E-1.5-Q5-LE6
	2.5	1449601	NEBM-SM12G8-E-2.5-Q5-LE6
	5.0	1449602	NEBM-SM12G8-E-5-Q5-LE6
	7.0	1449603	NEBM-SM12G8-E-7-Q5-LE6
	10.0	1449604	NEBM-SM12G8-E-10-Q5-LE6
For EPCO-25/-40			
Straight plug			
	1.5	1450368	NEBM-S1G9-E-1.5-Q5-LE6
	2.5	1450369	NEBM-S1G9-E-2.5-Q5-LE6
	5.0	1450370	NEBM-S1G9-E-5-Q5-LE6
	7.0	1450371	NEBM-S1G9-E-7-Q5-LE6
	10.0	1450372	NEBM-S1G9-E-10-Q5-LE6
Angled plug			
	1.5	1450736	NEBM-S1W9-E-1.5-Q5-LE6
	2.5	1450737	NEBM-S1W9-E-2.5-Q5-LE6
	5.0	1450738	NEBM-S1W9-E-5-Q5-LE6
	7.0	1450739	NEBM-S1W9-E-7-Q5-LE6
	10.0	1450740	NEBM-S1W9-E-10-Q5-LE6

	Cable length [m]	Part no.	Type
20 Encoder cable¹⁾			
For EPCO-16/-25/-40			
Straight plug			
	1.5	1451586	NEBM-M12G8-E-1.5-LE8
	2.5	1451587	NEBM-M12G8-E-2.5-LE8
	5.0	1451588	NEBM-M12G8-E-5-LE8
	7.0	1451589	NEBM-M12G8-E-7-LE8
	10.0	1451590	NEBM-M12G8-E-10-LE8
For EPCO-25/-40			
Angled plug			
	1.5	1451674	NEBM-M12W8-E-1.5-LE8
	2.5	1451675	NEBM-M12W8-E-2.5-LE8
	5.0	1451676	NEBM-M12W8-E-5-LE8
	7.0	1451677	NEBM-M12W8-E-7-LE8
	10.0	1451678	NEBM-M12W8-E-10-LE8

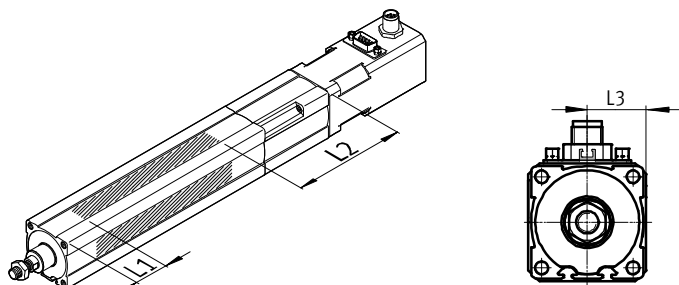
1) Other cable lengths on request.

Sensor mounting

The sensor mountings can only be attached within the highlighted area due to the asymmetry of the internal magnets.

The proximity sensors may not switch reliably if they are mounted outside of this area.

The overall length of the sensor rail SAMH corresponds to the length of the sensing range plus approx. 10 mm adjustment range on either side for the proximity sensors.



Size	L1	L2	L3
16	29	95	15
25	33	121	20
40	40	150	27.5

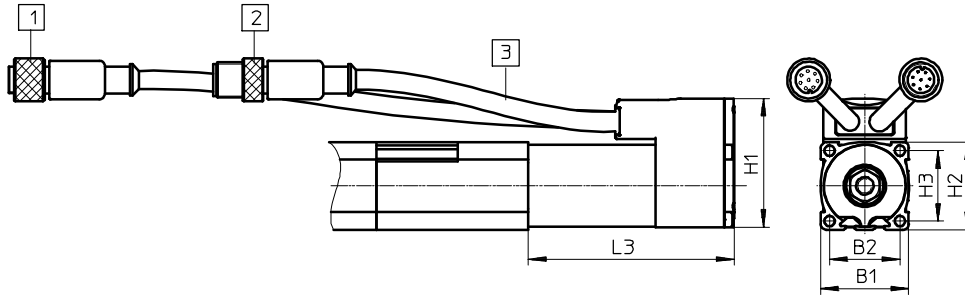
Linear drives and slides >

Electric cylinders EPCO, with spindle drive

Dimensions

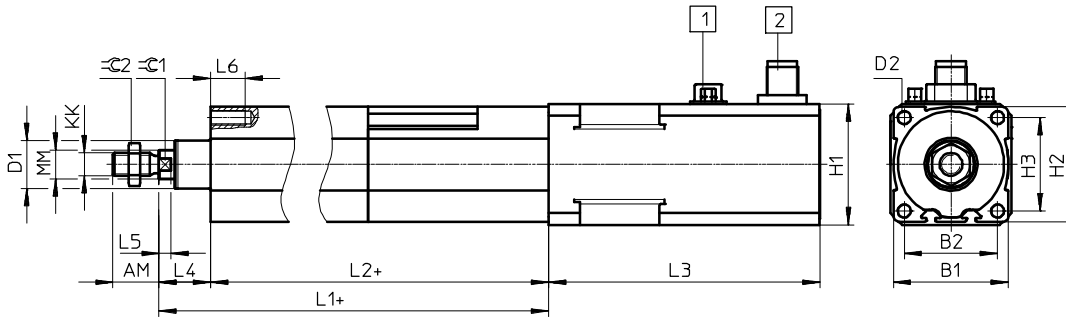
Download CAD data → www.festo.com

EPCO-16



- 1 Motor connection:
Round plug M12, 8-pin, socket
Cable length: 350 mm
- 2 Encoder connection:
Round plug M12, 8-pin, pins
Cable length: 250 mm
- 3 Min. bending radius of the cables: 60 mm

EPCO-25/-40



- 1 Motor connection:
SUB-D-plug, 9-pin, pins
- 2 Encoder connection:
Round plug M12, 8-pin, pins
- + = plus stroke length

Size	AM	B1	B2	D1 ∅	D2 ∅	H1	H2	H3	KK	L1	L2
	-0.5			±0.05							±1
16	12	30	24	13.27	M4	44	30	24	M6	143	127
25	16	40	32.5	17.27	M5	42 ^{+0.3}	40	32.5	M8	174.6	156.6
40	19	55	42	26.52	M6	56.4	55	42	M10x1.25	214.2	192.7

Size	L3				L4	L5	L6	MM	≅C1	≅C2
	EPCO-...	-E	-B	-EB						
16	70±1	70±1	96±1.5	96±1.5	16	3.7	10	8	7	10
25	66±1	94.4±1.2	114.4±1.3	127.4±1.3	18	4.2	12	10	9	13
40	73.5±0.8	102.5±1.1	123.5±1.1	138±1.1	21.5	4.7	14	12	10	17

Electromechanical drives

04



Force meets precision

- + Wide range of sizes and spindle pitches ensures the right electric cylinder for every application
- + Fast delivery thanks to product types in stock
- + High feed forces with compact size
- + Extremely efficient: high performance permits downsizing in many applications

Linear drives and slides ›

Electric cylinder with spindle drive

ESBF

Linear drives and slides >

Electric cylinder with spindle drive


ESBF

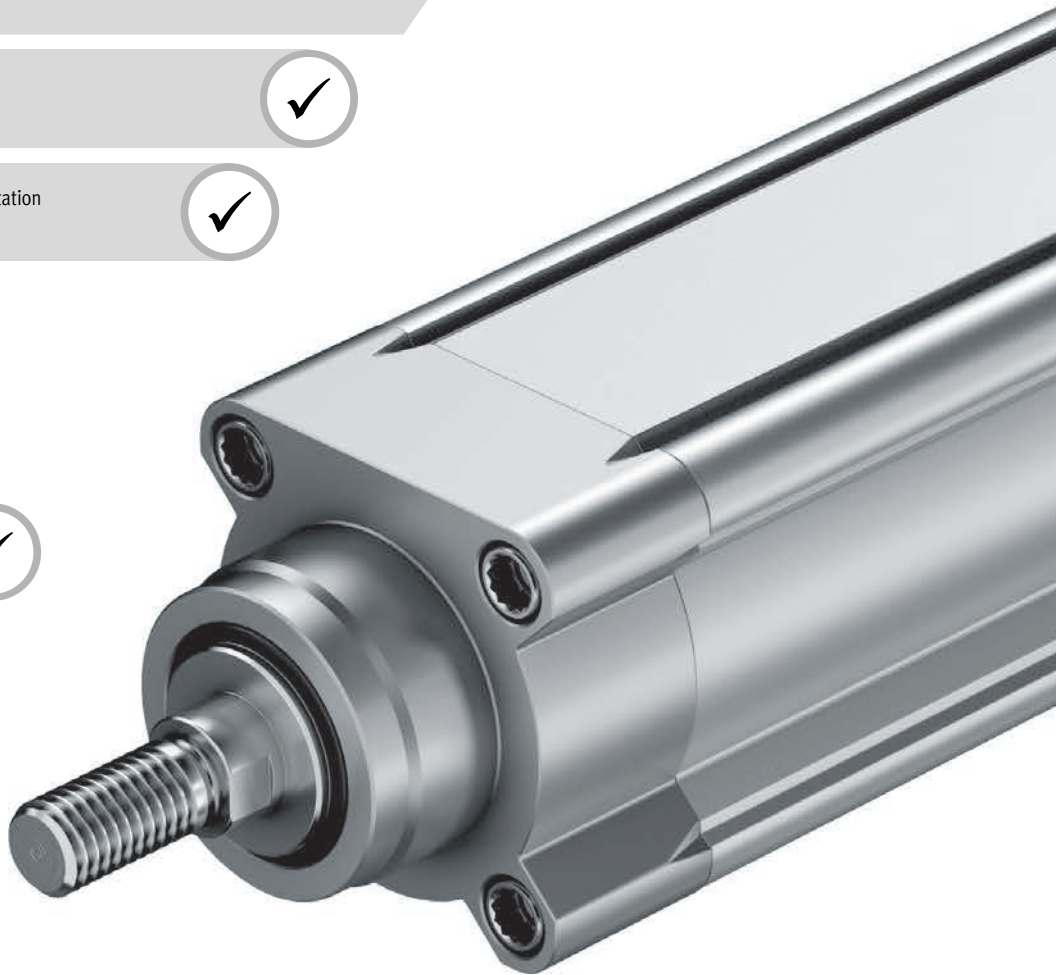
 Overview, configuration and ordering
→ www.festo.com/catalogue/esbf



 Additional information, support and user documentation
→ www.festo.com/sp/esbf



 Spare parts service



- + Based on ISO 15552
- + Available with ball screw (size 32 ... 100) and three spindle pitches each, which make it possible to select the optimal force-speed ratio
- + Lead screw (size 32 ... 50) available
- + Optional: high corrosion protection, protection class IP65, suitable for use in the food industry in certain conditions, piston rod extension
- + High rigidity and precision (ball screw)
- + Axial or parallel motor mounting

Electric cylinders ESBF, with spindle drive

Product range overview

Type/version	Size	Stroke [mm]	Feed force [kN]	Spindle pitch [mm/rev]										
				2.5	3	4	5	10	15	16	20	25	32	40
ESBF														
BS – Ball screw	32	30 ... 800	1	-	-	-	■	■	-	-	-	-	-	-
	40	30 ... 800	3	-	-	-	■	■	-	■	-	-	-	-
	50	30 ... 1000	5	-	-	-	■	■	-	-	■	-	-	-
	63	30 ... 1200	7	-	-	-	■	■	-	-	-	■	-	-
	80	30 ... 1500	12	-	-	-	■	-	■	-	-	-	■	-
	100	30 ... 1500	17	-	-	-	■	-	-	-	■	-	-	■
LS - Lead screw	32	30 ... 800	1	■	-	-	-	-	-	-	-	-	-	-
	40	30 ... 800	3	-	■	-	-	-	-	-	-	-	-	-
	50	30 ... 1000	5	-	-	■	-	-	-	-	-	-	-	-

Product options

F Female piston rod thread

S1 Degree of protection IP65

F1 Food-safe in accordance with supplementary material information

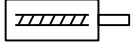
...E Piston rod extension

R3 High corrosion protection

Linear drives and slides >

Electric cylinders ESBF, with spindle drive

Data sheet



04

Electromechanical drives

Technical data – Ball screw

Dimensions → Page 532

Size	32			40			50		
Spindle pitch [mm/rev]	5	10		5	10	16	5	10	20
Working stroke [mm]	30 ... 800			30 ... 800			30 ... 1000		
Spindle diameter [mm]	12			16			20		
Max. cylinder force ¹⁾ [kN]	1	1		3	3	2.6	5	5	4.5
Max. driving torque [Nm]	1.1	2		3	5.6	7.7	4.8	9.2	16.3
Max. radial force ²⁾ [N]	115			130			300		
Max. speed [m/s]	0.55	1.1		0.4	0.8	1.2	0.3	0.6	1.2
Max. rotational speed [rpm]	6600	6600		4800	4800	4500	3600	3600	3600
Max. acceleration [m/s ²]	5	15		5	15	25	5	15	25
Max. angle of rotation at the piston rod [°]	±0.25			±0.2			±0.15		
Reversing backlash ³⁾ [mm]	<0.03	<0.04		<0.03	<0.03	<0.04	<0.03	<0.03	<0.04
Repetition accuracy [mm]	±0.01								
No-load driving torque ⁴⁾ [Nm]	0.1			0.2			0.3		

Size	63			80			100		
Spindle pitch [mm/rev]	5	10	25	5	15	32	5	20	40
Working stroke [mm]	30 ... 1200			30 ... 1500			30 ... 1500		
Spindle diameter [mm]	25			32			40		
Max. cylinder force ¹⁾ [kN]	7	7	6	12	12	10	17	17	14.5
Max. driving torque [Nm]	7	13.1	26.5	11.9	33.7	56.6	16.9	63.7	102.6
Max. radial force ²⁾ [N]	700			1100			1100		
Max. speed [m/s]	0.27	0.53	1.35	0.21	0.62	1.34	0.16	0.67	1.34
Max. rotational speed [rpm]	3250	3220	3260	2530	2515	2515	2010	2010	2010
Max. acceleration [m/s ²]	5	15	25	5	15	25	5	15	25
Max. angle of rotation at the piston rod [°]	±0.4			±0.5			±0.5		
Reversing backlash ³⁾ [mm]	<0.03	<0.03	<0.04	<0.03	<0.03	<0.04	<0.03	<0.03	<0.04
Repetition accuracy [mm]	±0.015		±0.01						
No-load driving torque ⁴⁾ [Nm]	0.4	0.45	0.5	0.5	0.6	0.65	0.7	0.9	1.0

- 1) The pressure force is dependent on the stroke and has an effect on the service life.
- 2) At the drive shaft.
- 3) In new condition.
- 4) At a spindle speed of 200 rpm.

Note
 Engineering software
 PositioningDrives
 → www.festo.com

Electric cylinders ESBF, with spindle drive

Data sheet

Dimensions → Page 532

Technical data – Lead screw		Size		
		32	40	50
Spindle pitch	[mm/rev]	2.5	3	4
Working stroke	[mm]	30 ... 800	30 ... 800	30 ... 1000
Spindle diameter	[mm]	12	16	20
Max. cylinder force ¹⁾	[kN]	0.6	1	1.6
Max. driving torque	[Nm]	1.1	2.4	4.8
Max. radial force ²⁾	[N]	115	130	300
Max. speed	[m/s]	0.05	0.05	0.05
Max. rotational speed	[rpm]	1200	1000	750
Max. acceleration	[m/s ²]	2.5	2.5	2.5
Max. angle of rotation at the piston rod	[°]	±0.25	±0.2	±0.15
Reversing backlash ³⁾	[mm]	<ΣΠ>0.1	<ΣΠ>0.1	<ΣΠ>0.1
Repetition accuracy	[mm]	±0.05		
No-load driving torque ⁴⁾	[Nm]	0.1	0.2	0.3

1) Electric cylinder with lead screw can be operated with maximum force over the entire stroke range.

2) At the drive shaft.

3) In new condition.

4) At a spindle speed of 200 rpm.

Mass moment of inertia – Ball screw		Size									
		32		40			50				
		5		10		5			10		20
J ₀ at 0 mm stroke	[kg cm ²]	0.023	0.036	0.050	0.078	0.125	0.145	0.187	0.329		
j _S per metre stroke	[kg cm ² /m]	0.122	0.139	0.460	0.480	0.523	1.019	1.043	1.139		
j _L per kg payload	[kg cm ² /kg]	0.006	0.025	0.006	0.025	0.065	0.006	0.025	0.101		

Size		63			80			100															
Spindle pitch		5			10			25			5			15		32		5		20		40	
J ₀ at 0 mm stroke	[kg cm ²]	0.491	0.486	0.650	1.529	1.648	2.119	4.696	5.050	6.170													
j _S per metre stroke	[kg cm ² /m]	2.832	2.859	3.053	7.699	7.815	8.277	18.978	19.310	20.372													
j _L per kg payload	[kg cm ² /kg]	0.006	0.025	0.158	0.006	0.057	0.259	0.006	0.101	0.405													

Mass moment of inertia – Lead screw		Size		
		32	40	50
Spindle pitch	[mm/rev]	2.5	3	4
J ₀ at 0 mm stroke	[kg cm ²]	0.016	0.045	0.141
j _S per metre stroke	[kg cm ² /m]	0.161	0.508	1.238
j _L per kg payload	[kg cm ² /kg]	0.002	0.002	0.004

The mass moment of inertia J_A of the electric cylinder is calculated as follows:

$$J_A = J_0 + j_S \times \text{working stroke [m]} + j_L \times m_{\text{moving payload [kg]}}$$

the electric cylinder is calculated as follows:

Operating conditions	
Ambient temperature ⁵⁾	[°C] 0 ... +60
Degree of protection	
ESBF-...	IP40
ESBF-...-S1	IP65
Food-safe with ESBF-...-F1 ⁶⁾	Supplementary material information

5) Note range of application of proximity sensors and motors.

6) Additional information www.festo.com/sp → Certificates. Only in combination with ESBF-BS-... (ball screw)

Materials			
Size			
32 ... 50		63 ... 100	
Bearing cap	Coated wrought aluminium alloy	Coated gravity die-cast aluminium	
Cylinder barrel	Smooth anodised wrought aluminium alloy		
Piston rod	High-alloy stainless steel		
Spindle	Rolled steel		
Spindle nut	Rolled steel		
Drive cover	Coated wrought aluminium alloy	Coated gravity die-cast aluminium	

Linear drives and slides >

Electric cylinders ESBF, with spindle drive

Order code

Type		Stroke [mm]		Spindle pitch [mm/rev]	
ESBF	Electric cylinder				
Drive system		Stroke [mm]		Spindle pitch [mm/rev]	
BS	Ball screw				
LS	Lead screw				
Size		Stroke [mm]		Spindle pitch [mm/rev]	
32	30 ... 800	2.5P, 5P, 10P		1	
40	30 ... 800	3P, 5P, 10P, 16P		2	
50	30 ... 1000	4P, 5P, 10P, 20P		3	
63	30 ... 1200	5P, 10P, 25P			
80	30 ... 1500	5P, 15P, 32P			
100	30 ... 1500	5P, 20P, 40P			
Variant		Stroke [mm]		Spindle pitch [mm/rev]	
F	Female thread				
S1	Degree of protection IP65				
R3	High corrosion protection			4	
F1	Food-safe as per supplementary material information			5	
...E	Piston rod extension				

- 1 Linear drive 2.5P only in combination with lead screw LS
- 2 Linear drive 3P only in combination with lead screw LS
- 3 Linear drive 4P only in combination with lead screw LS
- 4 Only with S1
- 5 Only with R3
Not with LS

Order example:

ESBF-BS-80-400-15P-F-S1

Electric cylinder - ball screw - size 80 - stroke 400 mm - spindle pitch 15 mm/rev - with female thread - with degree of protection IP65 - without high corrosion protection - not food-safe - without piston rod extension

Ordering – Product options

Configurable product

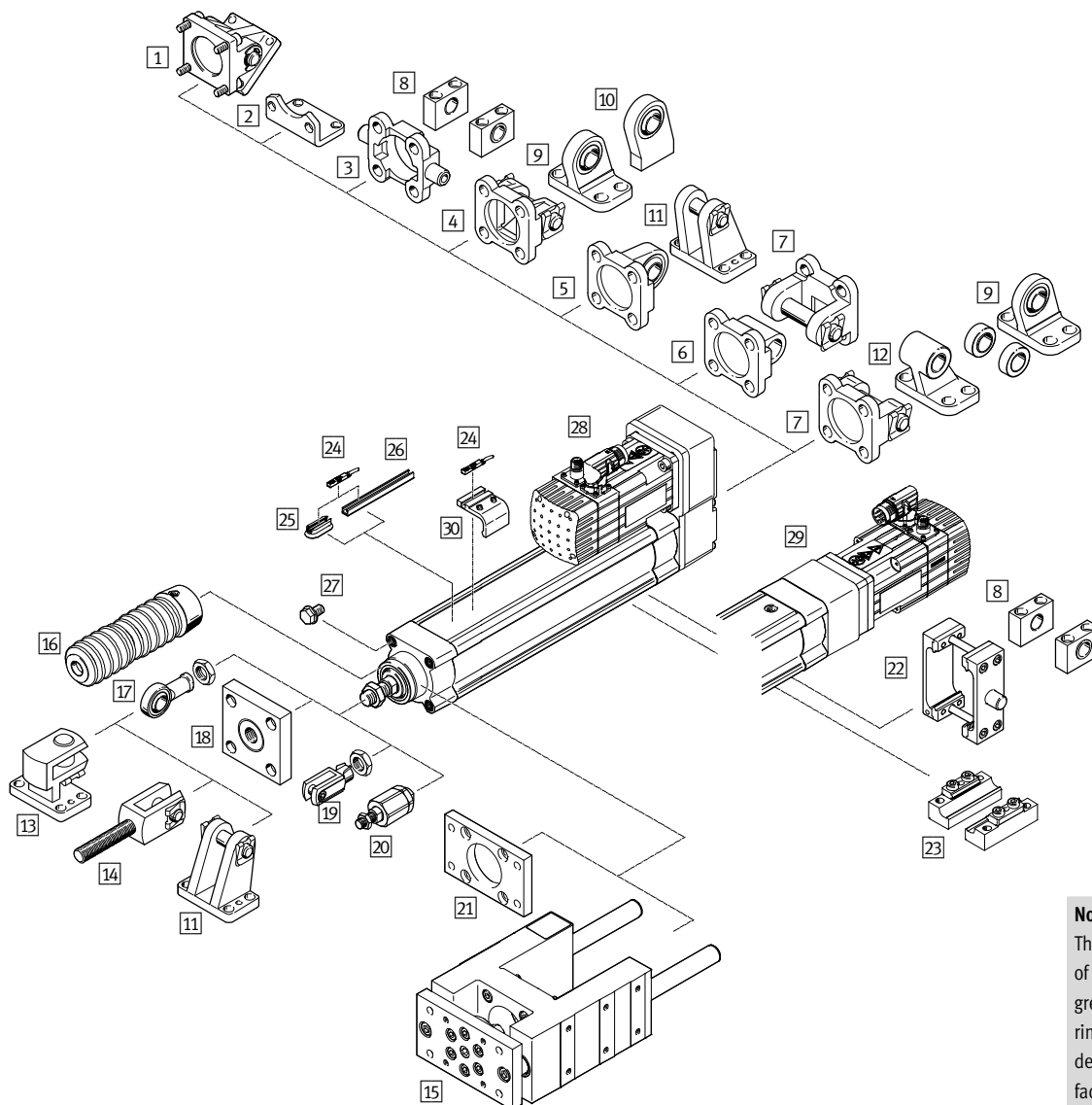
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Electric cylinders ESBF, with spindle drive

Accessories



Note
The maximum load carrying ability of the mounting parts must be greater than the maximum occurring load. The weight of the cylinder including the motor must be factored in.

	Suitable for high forces ¹⁾	→ Page/online
1 Swivel flange DAMS	■	524
2 Foot mounting HNC	-	524
Foot mounting CRHNC	-	esbf
3 Trunnion flange ZNCF	-	524
Trunnion flange CRZNG	-	esbf
4 Swivel flange SNC	-	524
5 Swivel flange SNCS	-	524
6 Swivel flange SNCL	-	524
7 Swivel flange SNCB	-	524
Swivel flange SNCB...-R3	-	esbf
8 Trunnion support LNZG	-	524
Trunnion support CRLNZG	-	esbf
9 Clevis foot LSN/LSNG	-	524
10 Clevis foot LSNSG	-	524
11 Clevis foot LBG	-	524
12 Clevis foot LNG	-	524
Clevis foot CRLNG	-	esbf
13 Right-angle clevis foot LQG	-	524
14 Rod clevis SGA	■	524
15 Guide unit EAGF	■	525
16 Protective bellows kit EADB	■	esbf

	Suitable for high forces ¹⁾	→ Page/online
17 Rod eye SGS	■	525
Rod eye CRSGS	■	esbf
18 Coupling piece KSZ	-	525
19 Rod clevis SG	■	525
Rod clevis CRSG	■	esbf
20 Self-aligning rod coupler FK	-	525
Self-aligning rod coupler CRFK	-	525
21 Flange mounting EAAH	■	525
22 Trunnion mounting kit DAMT	-	525
23 Profile mounting EAHF...-P	■	525
24 Proximity sensor SMT-8M/ CRSMT-8M and connecting cable NEBU	■	526
25 Mounting kit CRSMB	■	525
26 Sensor rail SAMH	■	525
27 Plug screw DAMD-PS	■	525
28 Parallel kit EAMM-U	■	527
29 Axial kit EAMM-A	■	529
30 Mounting kit SMB-8-FENG	■	525

1) Shows which accessories can be used within the entire force range. For restricted force ranges see the relevant accessory part, from page 524.

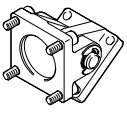
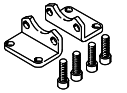
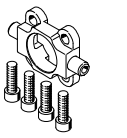
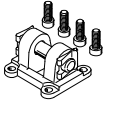
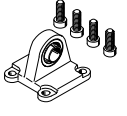
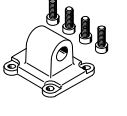
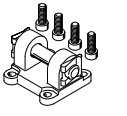
Linear drives and slides >

Electric cylinders ESBF, with spindle drive

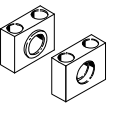
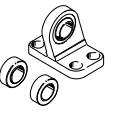
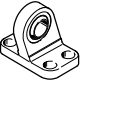



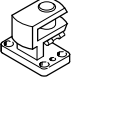
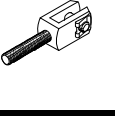
Accessories – Ordering data

04

Electromechanical drives

	For size	1) [kN]	Part no.	Type
1 Swivel flange Dimensions online: → esbf				
	40	3	2787470	DAMS-K-V1-40-V-R3
	50	5	2787651	DAMS-K-V1-50-V-R3
	63	7	1555443	DAMS-K-V1-63-V-R3
	80	12	1556588	DAMS-K-V1-80-V-R3
	100	17	1560237	DAMS-K-V1-100-V-R3
2 Foot mounting Dimensions online: → esbf				
	32	0.9	★ 174369	HNC-32
	40	1.5	★ 174370	HNC-40
	50	2.5	★ 174371	HNC-50
	63	4	★ 174372	HNC-63
	80	6	★ 174373	HNC-80
	100	9	174374	HNC-100
3 Trunnion flange Dimensions online: → esbf				
	32	0.9	174411	ZNCF-32
	40	1.5	174412	ZNCF-40
	50	2.5	174413	ZNCF-50
	63	4	174414	ZNCF-63
	80	6	174415	ZNCF-80
	100	9	174416	ZNCF-100
4 Swivel flange Data sheets online: → snc				
	32	0.9	★ 174383	SNC-32
	40	1.5	★ 174384	SNC-40
	50	2.5	★ 174385	SNC-50
	63	4	★ 174386	SNC-63
	80	6	★ 174387	SNC-80
	100	9	174388	SNC-100
5 Swivel flange Data sheets online: → snCS				
	32	1	★ 174397	SNCS-32
	40	1.5	★ 174398	SNCS-40
	50	2.5	★ 174399	SNCS-50
	63	4	★ 174400	SNCS-63
	80	6	★ 174401	SNCS-80
	100	9	174402	SNCS-100
6 Swivel flange Dimensions online: → sncl				
	32	0.9	★ 174404	SNCL-32
	40	1.5	★ 174405	SNCL-40
	50	2.5	★ 174406	SNCL-50
	63	4	★ 174407	SNCL-63
	80	6	★ 174408	SNCL-80
	100	9	174409	SNCL-100
7 Swivel flange Dimensions online: → snCB				
	32	1	★ 174390	SNCB-32
	40	1.5	★ 174391	SNCB-40
	50	2.5	★ 174392	SNCB-50
	63	4	★ 174393	SNCB-63
	80	6	★ 174394	SNCB-80
	100	9	174395	SNCB-100

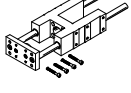
1) Max. load capacity.


	For size	1) [kN]	Part no.	Type
8 Trunnion support Dimensions online: → lnzg				
	32	0.9	32959	LNZG-32
	40, 50	2.5	32960	LNZG-40/50
	63, 80	6	32961	LNZG-63/80
	100	9	32962	LNZG-100/125
	9 Clevis foot Data sheets online: → lsn			
	32	0.9	5561	LSN-32
	40	1.5	5562	LSN-40
	50	2.5	5563	LSN-50
	63	4	5564	LSN-63
	80	6	5565	LSN-80
	100	9	5566	LSN-100
9 Clevis foot Data sheets online: → lsng				
	32	0.9	31740	LSNG-32
	40	1.5	31741	LSNG-40
	50	2.5	31742	LSNG-50
	63	4	31743	LSNG-63
	80	6	31744	LSNG-80
	100	9	31745	LSNG-100
10 Clevis foot Data sheets online: → lsng				
	32	0.9	31747	LSNSG-32
	40	1.5	31748	LSNSG-40
	50	2.5	31749	LSNSG-50
	63	4	31750	LSNSG-63
	80	6	31751	LSNSG-80
	100	9	31752	LSNSG-100
11 Clevis foot Data sheets online: → lbg				
	32	0.9	31761	LBG-32
	40	1.5	31762	LBG-40
	50	2.5	31763	LBG-50
	63	4	31764	LBG-63
	80	6	31765	LBG-80
	100	9	31766	LBG-100
12 Clevis foot Data sheets online: → lng				
	32	0.9	★ 33890	LNG-32
	40	1.5	★ 33891	LNG-40
	50	2.5	★ 33892	LNG-50
	63	4	★ 33893	LNG-63
	80	6	★ 33894	LNG-80
	100	9	33895	LNG-100
13 Right-angle clevis foot Data sheets online: → lqg				
	32	0.9	31768	LQG-32
	40	1.5	31769	LQG-40
	50	2.5	31770	LQG-50
	63	4	31771	LQG-63
	80	6	31772	LQG-80
	100	9	31773	LQG-100
14 Rod clevis Data sheets online: → sga				
	32	0.9	32954	SGA-M10x1,25
	40	1.5	10767	SGA-M12x1,25
	50, 63	4	10768	SGA-M16x1,5
	80, 100	9	10769	SGA-M20x1,5

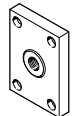
1) Max. load capacity.



Electric cylinders ESBF, with spindle drive

Accessories – Ordering data


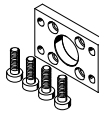
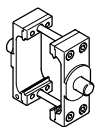
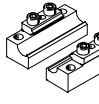

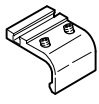


	Stroke [mm]	Part no.	Type
15 Guide unit for fixed strokes, with recirculating ball bearing guide Data sheets online: → eagf			
For size 32			
	100	2782679	EAGF-V2-KF-32-100
	200	2782818	EAGF-V2-KF-32-200
	320	2782885	EAGF-V2-KF-32-320
	400	2782923	EAGF-V2-KF-32-400
For size 40			
	100	2782939	EAGF-V2-KF-40-100
	200	2782976	EAGF-V2-KF-40-200
	320	2783047	EAGF-V2-KF-40-320
	400	2783080	EAGF-V2-KF-40-400
For size 50			
	100	2783639	EAGF-V2-KF-50-100
	200	2784152	EAGF-V2-KF-50-200
	320	2784164	EAGF-V2-KF-50-320
	400	2784184	EAGF-V2-KF-50-400
For size 63			
	100	1725842	EAGF-V2-KF-63-100
	200	1725843	EAGF-V2-KF-63-200
	320	1725844	EAGF-V2-KF-63-320
	400	1725845	EAGF-V2-KF-63-400
For size 80			
	100	1725846	EAGF-V2-KF-80-100
	200	1725847	EAGF-V2-KF-80-200
	320	1725848	EAGF-V2-KF-80-320
	400	1725849	EAGF-V2-KF-80-400
For size 100			
	100	1725850	EAGF-V2-KF-100-100
	200	1725851	EAGF-V2-KF-100-200
	320	1725852	EAGF-V2-KF-100-320
	400	1725853	EAGF-V2-KF-100-400

	For size	1) [kN]	Part no.	Type
17 Rod eye Data sheets online: → sgs				
	32	0.9	★ 9261	SGS-M10x1,25
	40	1.5	★ 9262	SGS-M12x1,25
	50, 63	4	★ 9263	SGS-M16x1,5
	80, 100	9	★ 9264	SGS-M20x1,5

	For size	1) [kN]	Part no.	Type
18 Coupling piece Data sheets online: → ksz				
	32	0.9	36125	KSZ-M10x1,25
	40	1.5	36126	KSZ-M12x1,25
	50, 63	4	36127	KSZ-M16x1,5
	80, 100	9	36128	KSZ-M20x1,5

	For size	1) [kN]	Part no.	Type
19 Rod clevis Data sheets online: → sg				
	32	0.9	★ 6144	SG-M10x1,25
	40	1.5	★ 6145	SG-M12x1,25
	50, 63	4	★ 6146	SG-M16x1,5
	80, 100	9	★ 6147	SG-M20x1,5

1) Max. load capacity.

	For size	1) [kN]	Part no.	Type
20 Self-aligning rod coupler Data sheets online: → fk				
	32	0.9	★ 6140	FK-M10x1,25
	40	1.5	★ 6141	FK-M12x1,25
	50, 63	4	★ 6142	FK-M16x1,5
	80, 100	9	★ 6143	FK-M20x1,5
21 Flange mounting Dimensions online: → esbf				
	32	1	2827587	EAHH-V2-32-R1
	40	3	2827588	EAHH-V2-40-R1
	50	5	2827589	EAHH-V2-50-R1
	63	7	1502305	EAHH-V2-63-R1
	80	12	1502306	EAHH-V2-80-R1
	100	17	1502307	EAHH-V2-100-R1
22 Trunnion mounting kit Dimensions online: → esbf				
	32	0.9	★ 2213233	DAMT-V1-32-A
	40	1.5	★ 2214899	DAMT-V1-40-A
	50	2.5	★ 2214909	DAMT-V1-50-A
	63	4	★ 2214971	DAMT-V1-63-A
	80	6	★ 163529	DAMT-V1-80-A
	100	9	★ 163530	DAMT-V1-100-A
23 Profile mounting Dimensions online: → esbf				
	32, 40	-	2838839	EAHF-V2-32/40-P
	50, 63	-	1547781	EAHF-V2-50/63-P
	80, 100	-	1547780	EAHF-V2-80/100-P
25 Mounting kit Dimensions online: → esbf				
	32 ... 100	-	525565	CRSMB-8-32/100
30 Mounting kit Dimensions online: → esbf				
	32, 40	-	175705	SMB-8-FENG-32/40
	50, 63	-	175706	SMB-8-FENG-50/63
	80, 100	-	175707	SMB-8-FENG-80/100
26 Sensor rail²⁾ Dimensions online: → esbf				
	32 ... 100	-	1600093	SAMH-N8-SR-50 ⁴⁾
	32 ... 100	-	1600118	SAMH-N8-SR-100 ⁵⁾
27 Blanking screw³⁾ Dimensions online: → esbf				
	32, 40	-	1355016	DAMD-PS-M6-12-R1
	50, 63	-	650121	DAMD-PS-M8-16-R1
	80, 100	-	1355026	DAMD-PS-M10-16-R1

1) Max. load capacity.

2) Length = 100 mm.

3) Packaging unit 4 pieces.

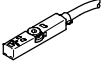
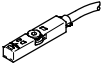
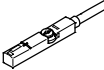


4) Length: 50 mm.

5) Length: 100 mm.

Linear drives and slides >

Electric cylinders ESBF, with spindle drive

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
24 Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	32 ... 100	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact Data sheets → Page 1206					
	32 ... 100	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Proximity sensor for T-slot, magneto-resistive, corrosion-resistant – N/O contact Data sheets → Page 1206					
	32 ... 100	PNP, cable	5	574380	CRSMT-8M-PS-24V-K-5,0-OE
		PNP, plug	0.3	574383	CRSMT-8M-PS-24V-K-0,3-M8D
		PNP, plug	0.3	574382	CRSMT-8M-PS-24V-K-0,3-M12
24 Connecting cable, straight socket Data sheets → Page 1543					
	32 ... 100	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
		M12x1, 5-pin	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
			5.0	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket Data sheets → Page 1543					
	32 ... 100	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
		M12x1, 5-pin	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

04

Electromechanical drives

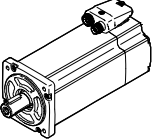
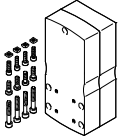
Electric cylinders ESBF, with spindle drive

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the respective kit must be taken into consideration.

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
		
	<ul style="list-style-type: none"> The kit can be mounted in all directions Optionally with degree of protection IP65 Use in combination with third-party motors on request 	
	Part no.	Type
28) Permissible axis/motor combination with parallel kit		
Data sheets online: → eamm-u		
ESBF-32		
With servo motor		
EMME-AS-40-...	2153283	EAMM-U-50-D32-40P-78
	2154009	EAMM-U-50-D32-40P-78-S1 ²⁾
EMMS-AS-40-...	1201591	EAMM-U-50-D32-40A-78
	1202302	EAMM-U-50-D32-40A-78-S1 ²⁾
EMMS-AS-55-...	1210126	EAMM-U-60-D32-55A-91
	1210450	EAMM-U-60-D32-55A-91-S1 ²⁾
EMME-AS-60-...	2619586	EAMM-U-70-D32-60P-96
	2619688	EAMM-U-70-D32-60P-96-S1 ²⁾
EMMS-AS-70-...	2755565	EAMM-U-70-D32-70A-96
	2781711	EAMM-U-70-D32-70A-96-S1 ²⁾
With stepper motor		
EMMS-ST-42-...	1201607	EAMM-U-50-D32-42A-78
	1202312	EAMM-U-50-D32-42A-78-S1 ²⁾
EMMS-ST-57-...	1210419	EAMM-U-60-D32-57A-91
	1210453	EAMM-U-60-D32-57A-91-S1 ²⁾
With gear unit		
EMGA-40-P-..., EMGC-40-P-...	1577358	EAMM-U-60-D32-40G-91
	1577346	EAMM-U-60-D32-40G-91-S1 ²⁾
EMGA-60-P-...- SAS/SST ³⁾	2748181	EAMM-U-70-D32-60G-96
	2778302	EAMM-U-70-D32-60G-96-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2778393	EAMM-U-70-D32-60H-96
	2781450	EAMM-U-70-D32-60H-96-S1 ²⁾

Note

The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110.

The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.

Additional information → [eamm-u](#)

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
ESBF-40		
With servo motor		
EMMS-AS-55-...	1210438	EAMM-U-60-D40-55A-91
	1210458	EAMM-U-60-D40-55A-91-S1 ²⁾
EMME-AS-60-...	2617488	EAMM-U-70-D40-60P-96
	2546123	EAMM-U-70-D40-60P-96-S1 ²⁾
EMMS-AS-70-...	2786204	EAMM-U-70-D40-70A-96
	2786316	EAMM-U-70-D40-70A-96-S1 ²⁾
EMMS-AS-70-...	1212826	EAMM-U-86-D40-70A-102
	1212854	EAMM-U-86-D40-70A-102-S1 ²⁾
EMME-AS-80-...	2802441	EAMM-U-86-D40-80P-102
	2802656	EAMM-U-86-D40-80P-102-S1 ²⁾
With stepper motor		
EMMS-ST-57-...	1210442	EAMM-U-60-D40-57A-91
	1210462	EAMM-U-60-D40-57A-91-S1 ²⁾
EMMS-ST-87-...	1215802	EAMM-U-86-D40-87A-102
	1215814	EAMM-U-86-D40-87A-102-S1 ²⁾
With gear unit		
EMGA-40-P-..., EMGC-40-P-...	1577165	EAMM-U-60-D40-40G-91
	1435968	EAMM-U-60-D40-40G-91-S1 ²⁾
EMGA-60-P-...- SAS/SST ³⁾	2785471	EAMM-U-70-D40-60G-96
	2785542	EAMM-U-70-D40-60G-96-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2786101	EAMM-U-70-D40-60H-96
	2786137	EAMM-U-70-D40-60H-96-S1 ²⁾
EMGA-60-P-...- SAS/SST ³⁾	1586445	EAMM-U-86-D40-60G-102
	1586429	EAMM-U-86-D40-60G-102-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1586496	EAMM-U-86-D40-60H-102
	1586372	EAMM-U-86-D40-60H-102 ²⁾
ESBF-50		
With servo motor		
EMMS-AS-70-...	2786899	EAMM-U-70-D50-70A-96
	2756078	EAMM-U-70-D50-70A-96-S1 ²⁾
EMME-AS-80-...	2803053	EAMM-U-86-D50-80P-102
	2803073	EAMM-U-86-D50-80P-102-S1 ²⁾
EMME-AS-100-...	2799424	EAMM-U-110-D50-100A-120
	2799488	EAMM-U-110-D50-100A-120-S1 ²⁾
EMMS-AS-100-...	2799424	EAMM-U-110-D50-100A-120
	2799488	EAMM-U-110-D50-100A-120-S1 ²⁾
With stepper motor		
EMMS-ST-87-...	2802708	EAMM-U-86-D50-87A-102
	2802742	EAMM-U-86-D50-87A-102-S1 ²⁾
With gear unit		
EMGA-60-P-...- SAS/SST ³⁾	2803125	EAMM-U-86-D50-60G-102
	2803197	EAMM-U-86-D50-60G-102-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2803326	EAMM-U-86-D50-60H-102
	2803325	EAMM-U-86-D50-60H-102-S1 ²⁾
EMGA-60-P-...- SAS/SST ³⁾	2797368	EAMM-U-110-D50-60G-120
	2798665	EAMM-U-110-D50-60G-120-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2798760	EAMM-U-110-D50-60H-120
	2799150	EAMM-U-110-D50-60H-120-S1 ²⁾
EMGA-80-P-...	2799196	EAMM-U-110-D50-80G-120
	2799281	EAMM-U-110-D50-80G-120-S1 ²⁾

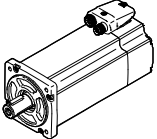
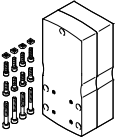
1) The input torque must not exceed the max. perm. transferable torque of the parallel kit.

2) With degree of protection IP65.

3) Gear unit drive shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm;
EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Electric cylinders ESBF, with spindle drive

Accessories – Ordering data

Motor/gear unit ¹⁾	Parallel kit	
		
	<ul style="list-style-type: none"> The kit can be mounted in all directions Optionally with degree of protection IP65 Use in combination with third-party motors on request 	
	Part no.	Type
ESBF-63		
With servo motor		
EMMS-AS-70-...	1212477	EAMM-U-86-D60-70A-102
	1212835	EAMM-U-86-D60-70A-102-S1 ²⁾
EMME-AS-80	2155875	EAMM-U-86-D60-80P-102
	2156527	EAMM-U-86-D60-80P-102-S1 ²⁾
EMME-AS-100-...	1202436	EAMM-U-110-D60-100A-120
	1203112	EAMM-U-110-D60-100A-120-S1 ²⁾
EMMS-AS-100-...	1202436	EAMM-U-110-D60-100A-120
	1203112	EAMM-U-110-D60-100A-120-S1 ²⁾
With stepper motor		
EMMS-ST-87-...	1215784	EAMM-U-86-D60-87A-102
	1215810	EAMM-U-86-D60-87A-102-S1 ²⁾
With gear unit		
EMGA-60-P-...-SAS/SST ³⁾	1586347	EAMM-U-86-D60-60G-102
	1437163	EAMM-U-86-D60-60G-102-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1586276	EAMM-U-86-D60-60H-102
	1530837	EAMM-U-86-D60-60H-102-S1 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	1543240	EAMM-U-110-D60-60G-120
	1436183	EAMM-U-110-D60-60G-120-S1 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1542264	EAMM-U-110-D60-60H-120
	1530621	EAMM-U-110-D60-60H-120-S1 ²⁾
EMGA-80-P-...	1532949	EAMM-U-110-D60-80G-120
	1530875	EAMM-U-110-D60-80G-120-S1 ²⁾

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
ESBF-80		
With servo motor		
EMME-AS-100-...	1465438	EAMM-U-110-D80-100A-120
	1433650	EAMM-U-110-D80-100A-120-S1 ²⁾
EMMS-AS-100-...	1465438	EAMM-U-110-D80-100A-120
	1433650	EAMM-U-110-D80-100A-120-S1 ²⁾
EMMS-AS-140-...	1465530	EAMM-U-145-D80-140A-188
	1433709	EAMM-U-145-D80-140A-188-S1 ²⁾
With gear unit		
EMGA-80-P-...	1589614	EAMM-U-110-D80-80G-120
	1589706	EAMM-U-110-D80-80G-120-S1 ²⁾
ESBF-100		
With servo motor		
EMMS-AS-140-...	1465541	EAMM-U-145-D100-140A-188
	1433852	EAMM-U-145-D100-140A-188-S1 ²⁾
With gear unit		
EMGA-120-P-...	2803620	EAMM-U-145-D100-120G-188
	2803622	EAMM-U-145-D100-120G-188-S1 ²⁾

- 1) The input torque must not exceed the max. perm. transferable torque of the parallel kit.
- 2) With degree of protection IP65.
- 3) Gear unit drive shaft diameter: EMGA-60-P-...-SAS/SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

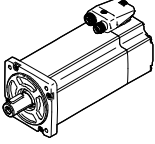
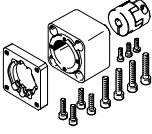
The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.

The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.

Additional information → eamm-u

Electric cylinders ESBF, with spindle drive

Accessories – Ordering data

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
29 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
ESBF-32		
With servo motor		
EMME-AS-40-...	1976465	EAMM-A-D32-40P
	2207372	EAMM-A-D32-40P-S1 ²⁾
EMMS-AS-40-...	543147	EAMM-A-D32-40A
	1322178	EAMM-A-D32-40A-S1 ²⁾
EMMS-AS-55-...	550979	EAMM-A-D32-55A
	1322180	EAMM-A-D32-55A-S1 ²⁾
EMME-AS-60-...	1956054	EAMM-A-D32-60P
	2234020	EAMM-A-D32-60P-S1 ²⁾
With servo motor and gear unit		
EMME-AS-40-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-EAS-40	2256396	EAMM-A-D32-40G-S1 ²⁾
EMMS-AS-40-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-SAS-40	2256396	EAMM-A-D32-40G-S1 ²⁾
EMMS-AS-55-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SAS-55	2946759	EAMM-A-D32-60G-S1 ²⁾
EMME-AS-60-...	2946760	EAMM-A-D32-60H
EMGA-60-P-G...-EAS-60	2946761	EAMM-A-D32-60H-S1 ²⁾
EMMS-AS-70-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SAS-70	2946759	EAMM-A-D32-60G-S1 ²⁾
With stepper motor		
EMMS-ST-42-...	543148	EAMM-A-D32-42A
	1322179	EAMM-A-D32-42A-S1 ²⁾
EMMS-ST-57-...	550980	EAMM-A-D32-57A
	1322181	EAMM-A-D32-57A-S1 ²⁾
With stepper motor and gear unit		
EMMS-ST-42-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-SST-42	2256396	EAMM-A-D32-40G-S1 ²⁾
EMMS-ST-57-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SST-57	2946759	EAMM-A-D40-60G-S1 ²⁾
With integrated drive		
EMCA-EC-67-...-	1454239	EAMM-A-D32-67A
	2256397	EAMM-A-D32-67A-S1 ²⁾
With integrated drive and gear unit		
EMCA-EC-67-...-	1454238	EAMM-A-D32-40G
EMGC-40-...	2256396	EAMM-A-D32-40G-S1 ²⁾
EMCA-EC-67-...-	2946760	EAMM-A-D32-60H
EMGC-60-...	2946761	EAMM-A-D32-60H-S1 ²⁾

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
ESBF-40		
With servo motor		
EMMS-AS-55-...	543153	EAMM-A-D40-55A
	1322182	EAMM-A-D40-55A-S1 ²⁾
EMME-AS-60-...	1977000	EAMM-A-D40-60P
	2151519	EAMM-A-D40-60P-S1 ²⁾
EMMS-AS-70-...	550981	EAMM-A-D40-70A
	1322185	EAMM-A-D40-70A-S1 ²⁾
With servo motor and gear unit		
EMME-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-EAS-40	2256398	EAMM-A-D40-40G-G2
	2256399	EAMM-A-D40-40G-S1 ²⁾
EMMS-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SAS-40	2256398	EAMM-A-D40-40G-G2 ³⁾
	2256399	EAMM-A-D40-40G-S1 ²⁾
EMMS-AS-55-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SAS-55	2256409	EAMM-A-D40-60G-S1 ²⁾
EMME-AS-60-...	1454242	EAMM-A-D40-60H
EMGA-60-P-G...-EAS-60	2256401	EAMM-A-D40-60H-S1 ²⁾
EMMS-AS-70-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SAS-70	2256409	EAMM-A-D40-60G-S1 ²⁾
With stepper motor		
EMMS-ST-57-...	543154	EAMM-A-D40-57A
	1322183	EAMM-A-D40-57A-S1 ²⁾
EMMS-ST-87-...	550982	EAMM-A-D40-87A
	1322186	EAMM-A-D40-87A-S1 ²⁾
With stepper motor and gear unit		
EMMS-ST-42-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SST-42	2256398	EAMM-A-D40-40G-G2
	2256399	EAMM-A-D40-40G-S1 ²⁾
EMMS-ST-57-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SST-57	2256409	EAMM-A-D40-60G-S1 ²⁾
With integrated drive		
EMCA-EC-67-...-	1454243	EAMM-A-D40-67A
	2256695	EAMM-A-D40-67A-S1 ²⁾
With integrated drive and gear unit		
EMCA-EC-67-...-	560282	EAMM-A-D40-40G
EMGC-40-...	2256398	EAMM-A-D40-40G-G2
	2256399	EAMM-A-D40-40G-S1 ²⁾
EMCA-EC-67-...-	1454242	EAMM-A-D40-60H
EMGC-60-...	2256401	EAMM-A-D40-60H-S1 ²⁾

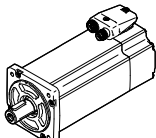
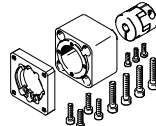
1) The input torque must not exceed the max. perm. transferable torque of the axial kit.

2) With degree of protection IP65.

Linear drives and slides >

Electric cylinders ESBF, with spindle drive

Accessories – Ordering data

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
ESBF-50		
With servo motor		
EMMS-AS-70-...	2733783	EAMM-A-D50-70A
	2734287	EAMM-A-D50-70A-S1 ²⁾
EMME-AS-80-...	2733785	EAMM-A-D50-80P
	2734289	EAMM-A-D50-80P-S1 ²⁾
EMME-AS-100-...	2733784	EAMM-A-D50-100A
	2734288	EAMM-A-D50-100A-S1 ²⁾
EMMS-AS-100-...	2733784	EAMM-A-D50-100A
	2734288	EAMM-A-D50-100A-S1 ²⁾
With servo motor and gear unit		
EMMS-AS-55-...	2733786	EAMM-A-D50-60G
EMGA-60-P-G...-SAS-55	2734290	EAMM-A-D50-60G-S1 ²⁾
EMME-AS-60-...	2733796	EAMM-A-D50-60H
EMGA-60-P-G...-EAS-60	2907418	EAMM-A-D50-60H-S1 ²⁾
EMMS-AS-70-...	2733786	EAMM-A-D50-60G
EMGA-60-P-G...-SAS-70	2734290	EAMM-A-D50-60G-S1 ²⁾
EMMS-AS-70-...	2733787	EAMM-A-D50-80G
EMGA-80-P-G...-SAS-70	2734291	EAMM-A-D50-80G-S1 ²⁾
EMME-AS-80-...	2733787	EAMM-A-D50-80G
EMGA-80-P-G...-EAS-80	2734291	EAMM-A-D50-80G-S1 ²⁾
EMME-AS-100-...	2733787	EAMM-A-D50-80G
EMGA-80-P-G...-SAS-100	2734291	EAMM-A-D50-80G-S1 ²⁾
EMMS-AS-100-...	2733787	EAMM-A-D50-80G
EMGA-80-P-G...-SAS-100	2734291	EAMM-A-D50-80G-S1 ²⁾
With stepper motor		
EMMS-ST-87-...	2733781	EAMM-A-D50-87A
	2734286	EAMM-A-D50-87A-S1 ²⁾
With stepper motor and gear unit		
EMMS-ST-57-...	2733786	EAMM-A-D50-60G
EMGA-60-P-G...-SST-57	2734290	EAMM-A-D50-60G-S1 ²⁾
EMMS-ST-87-...	2733787	EAMM-A-D50-80G
EMGA-80-P-G...-SST-87	2734291	EAMM-A-D50-80G-S1 ²⁾
With integrated drive and gear unit		
EMCA-EC-67-...-	2733796	EAMM-A-D50-60H
EMGC-60-...	2907418	EAMM-A-D50-60H-S1 ²⁾

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
ESBF-63		
With servo motor		
EMMS-AS-70-...	543161	EAMM-A-D60-70A
	2256699	EAMM-A-D60-70A-S1 ²⁾
EMME-AS-80-...	1977073	EAMM-A-D60-80P
	2218564	EAMM-A-D60-80P-S1 ²⁾
EMME-AS-100-...	550983	EAMM-A-D60-100A
	2256700	EAMM-A-D60-100A-S1 ²⁾
EMMS-AS-100-...	550983	EAMM-A-D60-100A
	2256700	EAMM-A-D60-100A-S1 ²⁾
With servo motor and gear unit		
EMMS-AS-55-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-55	2256696	EAMM-A-D60-60G-G2
	2256698	EAMM-A-D60-60G-S1 ²⁾
EMME-AS-60-...	1454245	EAMM-A-D60-60H
EMGA-60-P-G...-EAS-60	2256697	EAMM-A-D60-60H-S1 ²⁾
EMMS-AS-70-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-70	2256696	EAMM-A-D60-60G-G2
	2256698	EAMM-A-D60-60G-S1 ²⁾
EMMS-AS-70-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-70	2946762	EAMM-A-D60-80G-S1 ²⁾
EMME-AS-80-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-EAS-80	2946762	EAMM-A-D60-80G-S1 ²⁾
EMME-AS-100-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-100	2946762	EAMM-A-D60-80G-S1 ²⁾
EMMS-AS-100-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-100	2946762	EAMM-A-D60-80G-S1 ²⁾
With stepper motor		
EMMS-ST-87-...	543162	EAMM-A-D60-87A
	1322188	EAMM-A-D60-87A-S1 ²⁾
With stepper motor and gear unit		
EMMS-ST-57-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SST-57	2256696	EAMM-A-D60-60G-G2
	2256698	EAMM-A-D60-60G-S1 ²⁾
EMMS-ST-87-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SST-87	2946762	EAMM-A-D60-80G-S1 ²⁾
With integrated drive and gear unit		
EMCA-EC-67-...-	1454245	EAMM-A-D60-60H
EMGC-60-...	2256697	EAMM-A-D60-60H-S1 ²⁾

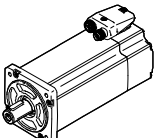
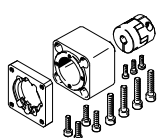
1) The input torque must not exceed the max. perm. transferable torque of the axial kit.
 2) With degree of protection IP65.

04

Electromechanical drives

Electric cylinders ESBF, with spindle drive

Accessories – Ordering data

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
ESBF-80		
With servo motor		
EMME-AS-100	1589665	EAMM-A-D80-100A
	1600673	EAMM-A-D80-100A-S1 ²⁾
EMMS-AS-100-...	1589665	EAMM-A-D80-100A
	1600673	EAMM-A-D80-100A-S1 ²⁾
EMMS-AS-140-...	1588299	EAMM-A-D80-140A
	1600674	EAMM-A-D80-140A-S1 ²⁾
With servo motor and gear unit		
EMMS-AS-70-...	2946763	EAMM-A-D80-80G
EMGA-80-P-G...-SAS-70	2946764	EAMM-A-D80-80G-S1 ²⁾
EMME-AS-80-...	2946763	EAMM-A-D80-80G
EMGA-80-P-G...-EAS-80	2946764	EAMM-A-D80-80G-S1 ²⁾
EMME-AS-100-...	2946763	EAMM-A-D80-80G
EMGA-80-P-G...-SAS-100	2946764	EAMM-A-D80-80G-S1 ²⁾
EMMS-AS-100-...	2946763	EAMM-A-D80-80G
EMGA-80-P-G...-SAS-100	2946764	EAMM-A-D80-80G-S1 ²⁾
With stepper motor and gear unit		
EMMS-ST-87-...	2946763	EAMM-A-D80-80G
EMGA-80-P-G...-SST-87	2946764	EAMM-A-D80-80G-S1 ²⁾

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
ESBF-100		
With servo motor		
EMME-AS-100	3356796	EAMM-A-D100-100A
	3356931	EAMM-A-D100-100A-S1 ²⁾
EMMS-AS-100-...	3356796	EAMM-A-D100-100A
	3356931	EAMM-A-D100-100A-S1 ²⁾
EMMS-AS-140-...	1588349	EAMM-A-D100-140A
	1600675	EAMM-A-D100-140A-S1 ²⁾
With servo motor and gear unit		
EMME-AS-100-...	2449341	EAMM-A-D100-120G
EMGA-120-P-G...-SAS-100	2946765	EAMM-A-D100-120G-S1 ²⁾
EMMS-AS-100-...	2449341	EAMM-A-D100-120G
EMGA-120-P-G...-SAS-100	2946765	EAMM-A-D100-120G-S1 ²⁾
EMMS-AS-140-...	2449341	EAMM-A-D100-120G
EMGA-120-P-G...-SAS-140	2946765	EAMM-A-D100-120G-S1 ²⁾

- 1) The input torque must not exceed the max. perm. transferable torque of the axial kit.
 2) With degree of protection IP65.

Note

The axial kit (without "S1" in the type code) can be retrofitted with a seal set

EADS-F to change the degree of protection from IP40 to IP65.

Additional information → [eamm-a](#)

04

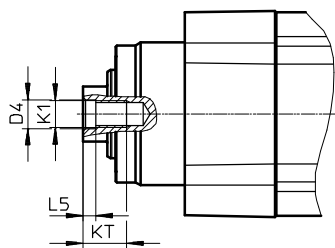
Electric cylinders ESBF, with spindle drive

Download CAD data → www.festo.com

Dimensions

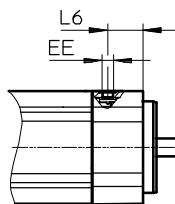
Variants

F – Female thread

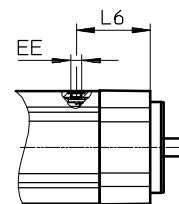


S1 – Degree of protection IP65 / F1 – For food zone

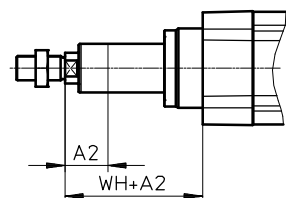
ESBF-32 ... 50



ESBF-63 ... 100



...E – Piston rod extension



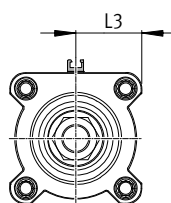
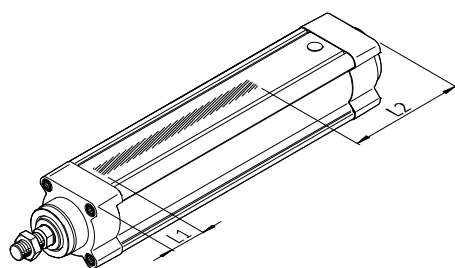
Size	A2 max.	D4 Ø	EE	L5 ±0.2	L6	K1	KT min.	WH
32	200	6.4 ^{+0.2}	M7	2.6	19.5	M6	12	25.5 ^{+1.9/-0.8}
40	200	8.4 ^{+0.2}	M7	3.3	24	M8	12	29.5 ^{+1.9/-0.8}
50	200	10.5 ^{+0.2}	M7	4.7	28	M10	16	36.5 ^{+1.9/-0.8}
63	200	10.5 ^{+0.1}	G1/8	4.7	48.5	M10	16	37 ^{+1.8/-1.7}
80	200	13 ^{+0.1}	G1/8	6.1	57.5	M12	20	46 ^{+1.8/-1.7}
100	200	13 ^{+0.1}	G1/8	6.1	68.5	M12	20	51 ^{+1.8/-1.7}

Sensor mounting

The sensor mountings can only be attached within the highlighted area due to the asymmetry of the internal magnets.

The proximity sensors may not switch reliably if they are mounted outside of this area.

The overall length of the sensor rail SAMH corresponds to the length of the sensing range plus approx. 10 mm adjustment range on either side for the proximity sensors.



Size	L1	L2	L3
32	26	48	22.3
40	30	65	26.5
50	30	84	31.5
63	33	99	37
80	39	132	46
100	39	151	54.5

Linear drives and slides >

04

Electromechanical drives



The all-rounder amongst spindle axes

- + Fast delivery thanks to product types in stock
- + Different spindle pitches, numerous sizes and variants open up a broad range of applications
- + Excellent price/performance ratio

Linear drives and slides >

Spindle axes with recirculating ball bearing guide

EGC-BS-KF


Linear drives and slides >

Spindle axes with recirculating ball bearing guide


EGC-BS-KF

 Overview, configuration and ordering
→ www.festo.com/catalogue/egc-bs



 Additional information, support and user documentation
→ www.festo.com/sp/egc-bs



 Spare parts service



- + Recirculating ball bearing guide for high loads and torques
- + Optionally with clamping unit, at one or both ends
- + Profile with optimised rigidity and load capacity
- + Spindle support enables maximum travel speed
- + Optimum force-speed ratio thanks to different spindle pitches
- + Comprehensive range of mounting accessories for multi-axis combinations

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]	Product options						→ Page/ online
				S	ML	MR	GK	M1	M2	
EGC-BS										
KF – Recirculating ball bearing guide	70, 80, 120, 185	50 ... 3000	400 ... 3000	■	■	■	■	■	■	538
EGC-FA										
Passive guide axis	70, 80, 120, 185	50 ... 8500	–	–	–	–	■	–	–	egc-fa

Product options

S	Spindle support	GQ	Extended slide, protected	M1	Displacement encoder, incremental, resolution 2.5 µm	1HL	Clamping unit, 1-channel, on left
ML	Motor on left	KL	Additional slide on left	M2	Displacement encoder, incremental, resolution 10 µm	1HR	Clamping unit, 1-channel, on right
MR	Motor on right	KR	Additional slide on right			2H	Clamping unit, 2-channel
GK	Standard slide	C	Lubrication adapter			PN	Pneumatically actuated clamping unit
GV	Extended slide					DN	Without operating instructions
GP	Standard slide, protected						

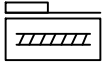
At a glance

- Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity
- High speed, acceleration and torque resistance
- Optional displacement encoder
- Different spindle pitches, numerous sizes and variants such as protected guides open up a broad range of applications
- Due to the EGC's high performance it is often possible to use a smaller size
- Spindle support enables maximum travel speed with all stroke lengths
- Space-saving position sensing possible via proximity sensor in the profile slot
- Wide range of options for mounting on drives
- Comprehensive range of mounting accessories for multi-axis combinations

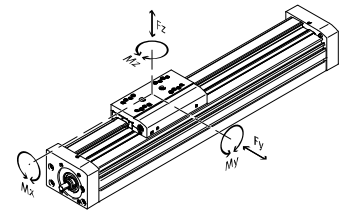
Linear drives and slides >

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Data sheet



Dimensions → Page 546



Technical data

Note

PositioningDrives engineering software
 → www.festo.com

Size		70	80	120	185		
Spindle pitch	[mm/rev]	10	10	20	25	40	
Working stroke	[mm]	50 ... 1000	50 ... 2000	50 ... 2500	50 ... 3000		
Spindle diameter	[mm]	10	10	20	10	25	40
Max. feed force F_x	[N]	400	650	1500	3000		
No-load torque	[Nm]	0.17	0.3	0.35	1.0	1.0	2.2
at min. travel speed	[m/s]	0.05	0.1	0.1	0.2	0.2	0.2
No-load torque	[Nm]	0.45	0.75	0.75	2.25	2.25	6.5
at max. travel speed	[m/s]	0.5	0.5	1	0.6	1.5	2
Max. radial force ¹⁾	[N]	220	250	500	4000		
Max. rotational speed ²⁾	[rpm]	3000	3000	3600	3000		
Max. acceleration	[m/s ²]	15					
Repetition accuracy	[mm]	±0.02					
Max. permissible force F_y	[N]	1850	3050	6890	15,200		
Max. permissible force F_z	[N]	1850	3050	6890	15,200		
Max. permissible torque M_x	[Nm]	16	36	144	529		
Max. permissible torque M_y	[Nm]	51	97	380	1157		
Max. permissible torque M_z	[Nm]	51	97	380	1157		

1) At the drive shaft.

2) Rotational speed and speed are stroke-dependent.

Operating conditions

Ambient temperature ³⁾	[°C]	-10 ... +60
Degree of protection		IP40

3) Note operating range of proximity sensors.

Electromechanical drives

04

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Data sheet

Mass moment of inertia							
Size		70	80			120	185
Spindle pitch	[mm/rev]	10	10	20	10	25	40
J_0	[kg mm ²]	1.99	5.2	5.2	64.46	64.46	594
J_S per metre stroke	[kg mm ² /m]	14.2	34.6	34.6	275.6	275.6	1803.1
J_L per kg payload	[kg mm ² /kg]	2.53	2.53	10.13	2.53	15.83	40.53
J_W slide	[kg mm ²]	1.04	1.86	7.46	6.09	38.06	348.87

The mass moment of inertia J_A of the entire axis is calculated as follows: $J_A = J_0 + J_W + J_S \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$

Materials

Cover	Anodised wrought aluminium alloy
Moment compensator	Anodised wrought aluminium alloy
Profile	Anodised wrought aluminium alloy
Slides	Anodised wrought aluminium alloy
Spindle	Steel
Guide rail	Steel
Cover strip	PU

Technical data – Displacement encoder

Type	EGC-...-M1	EGC-...-M2
Resolution	[µm] 2.5	10
Max. travel speed with displacement encoder system	[m/s] 4	4
Encoder signal	5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse)	
Signal output	Line driver, alternating, resistant to sustained short circuit	
Electrical connection	8-pin plug, round design, M12	
Cable length	[mm] 160	

Operating conditions – Displacement encoder

Ambient temperature	[°C] -10 ... +70
Degree of protection	IP64

Linear drives and slides >

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Order code

04

Electromechanical drives

EGC		-		-		-	BS	-		-		-	KF	-		-		-	GK	-	
Type																					
EGC		Electromechanical linear axis																			
Size																					
		Stroke [mm]																			
70	100, 200, 300, 400, 500, 600, 700, 800, 1000															50 ... 980					
80	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1400, 1500, 1800, 2000															50 ... 1980					
120	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1400, 1500, 2000, 2500															50 ... 2480					
185	300, 500, 600, 1000, 1500, 2000, 2500, 3000															50 ... 2980					
Drive function																					
BS		Ball screw																			
Spindle pitch [mm/rev]																					
10P	10	1																			
20P	20	2																			
25P	25	3																			
40P	40	4																			
Spindle support																					
-		Without																			
S		With spindle support 5																			
Guide																					
KF		Recirculating ball bearing guide																			
Stroke reserve																					
...H		0 ... 999 (0 = no stroke reserve)															6				
Motor attachment position																					
ML		Left																			
MR		Right																			
Slides																					
GK		Standard slide																			
Displacement encoder, incremental																					
-		Without																			
M1		Resolution: 2.5 µm																			
M2		Resolution: 10 µm																			

- 1 Only with size 70, 80, 120
- 2 Only with size 80
- 3 Only with size 120
- 4 Only with size 185.

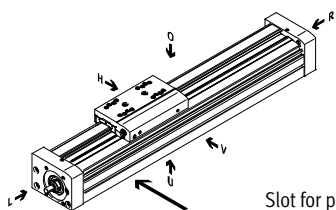
- 5 Only above stroke 705 mm with size 70, only above stroke 780 mm with size 80, only above stroke 883 mm with size 120, only above stroke 1224 mm with size 185.
- 6 The sum of the stroke length and 2x stroke reserve must not exceed the maximum working stroke.

Order example:

EGC-70-500-BS-10P-KF-100H-ML-GK

Electromechanical linear axis EGC - size 70 - stroke 500 mm - ball screw - spindle pitch 10 mm/rev - without spindle support - recirculating ball bearing guide - stroke reserve 100 mm - motor attachment on left - standard slide - without displacement encoder

Ordering aid

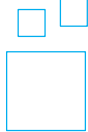


Slot for proximity sensor

- O top
- U underneath
- R right
- L left
- V front
- H rear

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Ordering – Product options



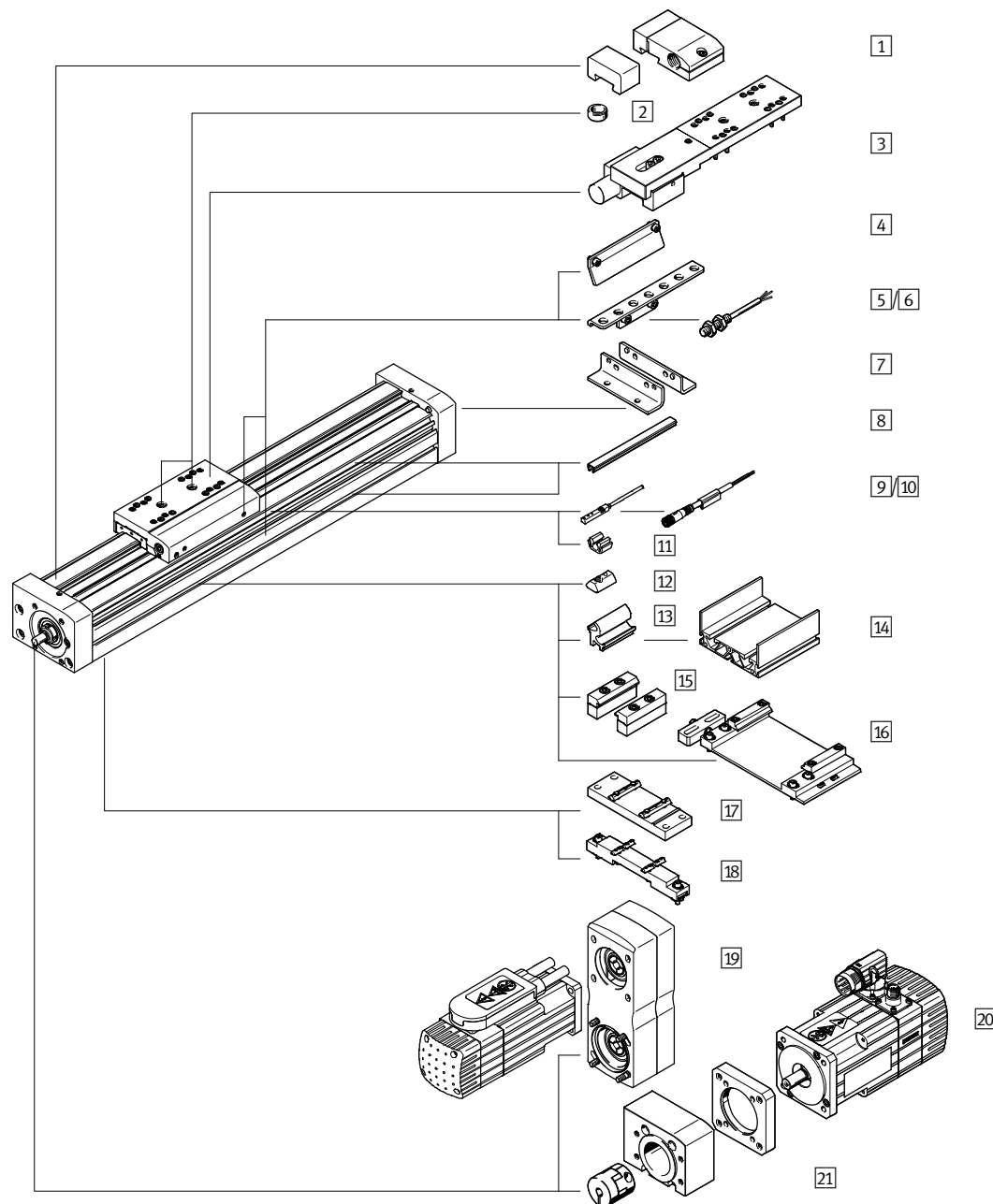
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

Enter the type code in the search field.

Accessories



		→ Page/online
1	Emergency buffer NPE/shock absorber retainer KYE	542
2	Centring pin ZBS/centring sleeve ZBH	542
3	Clamping unit 1H...-PN, 2H-PN	egc-bs
4	Switch lug SF-EGC	542
5	Sensor bracket HWS-EGC	542
6	Inductive proximity sensor SIEN	542
7	Foot mounting HPE	542
8	Slot cover ABP/ABP-S	542
9	Inductive proximity sensor SIES	542
10	Connecting cable NEBU	542
11	Clip SMBK	543

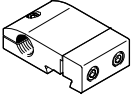
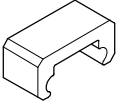


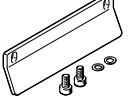
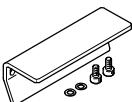
		→ Page/online
12	Slot nut NST	543
13	Adapter kit DHAM	egc-bs
14	Support profile HMIA	egc-bs
15	Profile mounting MUE	543
16	Adjusting kit EADC-E16	543
17	Central support EAHF-L5	543
18	Adjusting kit EADC-E15	543
19	Parallel kit EAMM-U	544
20	Motor EMME/EMMS	545
21	Axial kit EAMM-A	545

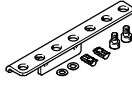


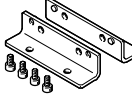

04 Electromechanical drives

Linear drives and slides >

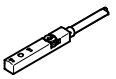
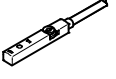


Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
1 Shock absorber retainer Dimensions online: → egc-bs			
	70	557584	KYE-70
	80	557585	KYE-80
	120	557586	KYE-120
	185	557587	KYE-185
1 Emergency buffer			
	70	562581	NPE-70
	80	562582	NPE-80
	120	562583	NPE-120
	185	562584	NPE-185
2 Centring pin¹⁾²⁾ Data sheets online: → zbs			
	70	150928	ZBS-5
2 Centring sleeve¹⁾²⁾ Data sheets online: → zbh			
	80, 120, 185	150927	ZBH-9
4 Switch lug³⁾ Dimensions online: → egc-bs			
	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	185	558051	SF-EGC-1-185
4 Switch lug⁴⁾ Dimensions online: → egc-bs			
	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	185	558056	SF-EGC-2-185

	For size	Part no.	Type
5 Sensor bracket⁵⁾ Dimensions online: → egc-bs			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	185	560517	HWS-EGC-M8-KURZ
6 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
7 Foot mounting Dimensions online: → egc-bs			
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	185	558325	HPE-185
8 Slot cover⁶⁾			
	For mounting slot		
	70, 80	151681	ABP-5
	120, 185	151682	ABP-8
	For sensor slot		
70 ... 185	563360	ABP-5-S1	

- 1) Packaging unit 10 pieces.
- 2) 2 centring pins/sleeves included in the scope of delivery of the axis.
- 3) For sensing via proximity sensor SIES-8M.
- 4) For sensing via proximity sensor SIEN-M8B or SIES-8M.
- 5) For proximity sensor SIEN-M8B.
- 6) Packaging unit 2x 0.5 m.



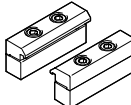
	For size	Switching output, connection	Cable length [m]	Part no.	Type
9 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	70 ... 185	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	70 ... 185	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
10 Connecting cable, straight socket Data sheets → Page 1543					
	70 ... 185	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	70 ... 185	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

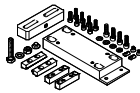
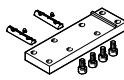
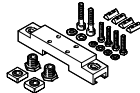
04

Electromechanical drives

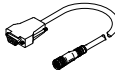
Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
11 Clip			
	70 ... 185	534254	SMBK-8
12 Slot nut			Dimensions online: → nst
	70, 80	150914	NST-5-M5
		8047843	NST-5-M5-10¹⁾
		8047878	NST-5-M5-50²⁾
	120, 185	150915	NST-8-M6
		8047868	NST-8-M6-10¹⁾
		8047869	NST-8-M6-50²⁾
15 Profile mounting			Dimensions online: → egc-bs
	70	558043	MUE-70/80
	80	558043	MUE-70/80
	120	558044	MUE-120/185
	185	558044	MUE-120/185

	For size	Part no.	Type
16 Adjusting kit			Dimensions online: → egc-bs
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
	185	8047579	EADC-E16-185-E7
17 Central support			Dimensions online: → egc-bs
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
18 Adjusting kit			Dimensions online: → egc-bs
	70	8047566	EADC-E15-80-E7
	80	8047566	EADC-E15-80-E7
	120	8047567	EADC-E15-120-E7
	185	8047568	EADC-E15-185-E7

- 1) Packaging unit 10 pieces.
2) Packaging unit 50 pieces.

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
Encoder cables for displacement encoder, EGC-...-M1/-M2					
	Displacement encoder EGC-...-M1/-M2	Motor controller CMMP-AS-...	5	1599105	NEBM-M12G8-E-5-S1G9-V3
			10	1599106	NEBM-M12G8-E-10-S1G9-V3
			15	1599107	NEBM-M12G8-E-15-S1G9-V3
			X ³⁾	1599108	NEBM-M12G8-E-...-S1G9-V3

3) Max. cable length 25 m.

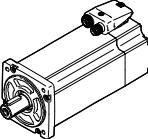
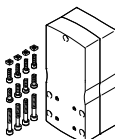
Linear drives and slides >

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

Note
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the respective kit must be taken into consideration.

Motor/gear unit ¹⁾	Parallel kit
	
	<ul style="list-style-type: none"> The kit can be mounted in all directions Use in combination with third-party motors on request
	Part no. Type

^{19/20} Permissible axis/motor combination with parallel kit –
Data sheets online: → [eamm-u](http://eamm-u.com)

Motor/gear unit ¹⁾	Parallel kit
EGC-70-...-BS	
With servo motor	
EMME-AS-40-...	2155239 EAMM-U-50-S38-40P-78
EMMS-AS-40-...	1217708 EAMM-U-50-S38-40A-78
EMMS-AS-55-...	1218538 EAMM-U-60-S38-55A-91
With stepper motor	
EMMS-ST-42-...	1217945 EAMM-U-50-S38-42A-78
EMMS-ST-57-...	1218568 EAMM-U-60-S38-57A-91
With gear unit	
EMGA-40-P-...	2283732 EAMM-U-60-S38-40G-91
EMGC-40-P-...	2283732 EAMM-U-60-S38-40G-91
EGC-80-...-BS	
With servo motor	
EMMS-AS-55-...	1219370 EAMM-U-60-S48-55A-91 ²⁾
EMME-AS-60-...	2629253 EAMM-U-70-S48-60P-96 ²⁾
EMMS-AS-70-...	2787320 EAMM-U-70-S48-70A-96 ²⁾
EMMS-AS-70-...	1217689 EAMM-U-86-S48-70A-102 ²⁾
With stepper motor	
EMMS-ST-57-...	1219379 EAMM-U-60-S48-57A-91 ²⁾
EMMS-ST-87-...	1217604 EAMM-U-86-S48-87A-177 ²⁾
With gear unit	
EMGA-40-P-...	2283760 EAMM-U-60-S48-40G-91 ²⁾
EMGC-40-P-...	2283760 EAMM-U-60-S48-40G-91 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	2801627 EAMM-U-70-S48-60G-96 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2801715 EAMM-U-70-S48-60H-96 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	1587251 EAMM-U-86-S48-60G-102 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1587338 EAMM-U-86-S48-60H-102 ²⁾

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
EGC-120-...-BS		
With servo motor		
EMMS-AS-70-...	1217543	EAMM-U-86-S62-70A-177 ²⁾
EMME-AS-80-...	2157004	EAMM-U-86-S62-80P-177 ²⁾
EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207 ²⁾
EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207 ²⁾
EMMS-AS-140-...	1219440	EAMM-U-145-S62-140A-288 ²⁾
With stepper motor		
EMMS-ST-87-...	1217373	EAMM-U-86-S62-87A-177 ²⁾
With gear unit		
EMGA-60-P-...-SAS/SST ³⁾	1587411	EAMM-U-86-S62-60G-177 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1587453	EAMM-U-86-S62-60H-177 ²⁾
EGC-185-...-BS		
With servo motor		
EMME-AS-100-...	1220656	EAMM-U-110-S95-100A-207 ²⁾
EMMS-AS-100-...	1220656	EAMM-U-110-S95-100A-207 ²⁾
EMMS-AS-140-...	1220582	EAMM-U-145-S95-140A-288 ²⁾
With gear unit		
EMGA-80-P-...	1589544	EAMM-U-110-S95-80G-207 ²⁾

- The input torque must not exceed the maximum permissible transferable torque of the parallel kit.
- To support the axis shaft, a counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit → online: eamm-u
- Gear unit drive shaft diameter: EMGA-60-P-...-SAS/SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

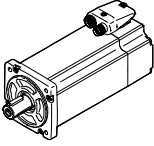
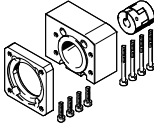
Note
The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.
The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.
More information → [eamm-u](http://eamm-u.com)

04

Electromechanical drives

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

Motor ¹⁾	Axial kit	
		
	Part no.	Type
20/21 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
EGC-70-...-BS		
With servo motor		
EMME-AS-40-...	3637972	EAMM-A-S38-40P-G2
EMMS-AS-40-...	3637971	EAMM-A-S38-40A-G2
EMMS-AS-55-...	3637967	EAMM-A-S38-55A-G2
EMME-AS-60-...	3637958	EAMM-A-S38-60P-G2
With servo motor and gear unit		
EMME-AS-40-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-SAS-40		
With stepper motor		
EMMS-ST-42-...	3637965	EAMM-A-S38-42A-G2
EMMS-ST-57-...	3637956	EAMM-A-S38-57A-G2
With stepper motor and gear unit		
EMMS-ST-42-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-SST-42		
With integrated drive		
EMCA-EC-67-...	1456638	EAMM-A-S38-67A-G2
With integrated drive and gear unit		
EMCA-EC-67-...-	1456647	EAMM-A-S38-40G-G2
EMGC-40-...		
EGC-80-...-BS		
With servo motor		
EMMS-AS-55-...	3637961	EAMM-A-S48-55A-G2
EMME-AS-60-...	3637964	EAMM-A-S48-60P-G2
EMMS-AS-70-...	3637957	EAMM-A-S48-70A-G2
With servo motor and gear unit		
EMME-AS-40-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-SAS-40		
EMMS-AS-55-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456652	EAMM-A-S48-60H-G2
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-57-...	3637963	EAMM-A-S48-57A-G2
EMMS-ST-87-...	3637962	EAMM-A-S48-87A-G2

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
EGC-80-...-BS		
With stepper motor and gear unit		
EMMS-ST-42-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-SST-42		
EMMS-ST-57-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SST-57		
With integrated drive and gear unit		
EMCA-EC-67-...-	1456650	EAMM-A-S48-40G-G2
EMGC-40-...		
EMCA-EC-67-...-	1456652	EAMM-A-S48-60H-G2
EMGC-60-...		
EGC-120-...-BS		
With servo motor		
EMMS-AS-70-...	3637959	EAMM-A-S62-70A-G2
EMME-AS-80-...	3637970	EAMM-A-S62-80P-G2
EMME-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-140-...	3637969	EAMM-A-S62-140A-G2
With servo motor and gear unit		
EMMS-AS-55-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456654	EAMM-A-S62-60H-G2
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SAS-70		
EMMS-AS-70-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-100		
With stepper motor		
EMMS-ST-87-...	3637966	EAMM-A-S62-87A-G2
With stepper motor and gear unit		
EMMS-ST-57-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SST-57		
EMMS-ST-87-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SST-87		
With integrated drive and gear unit		
EMCA-EC-67-...-	1456654	EAMM-A-S62-60H-G2
EMGC-60-...		
EGC-185-...-BS		
With servo motor		
EMME-AS-100-...	3637955	EAMM-A-S95-100A-G2
EMMS-AS-100-...	3637955	EAMM-A-S95-100A-G2
EMMS-AS-140-...	3637954	EAMM-A-S95-140A-G2

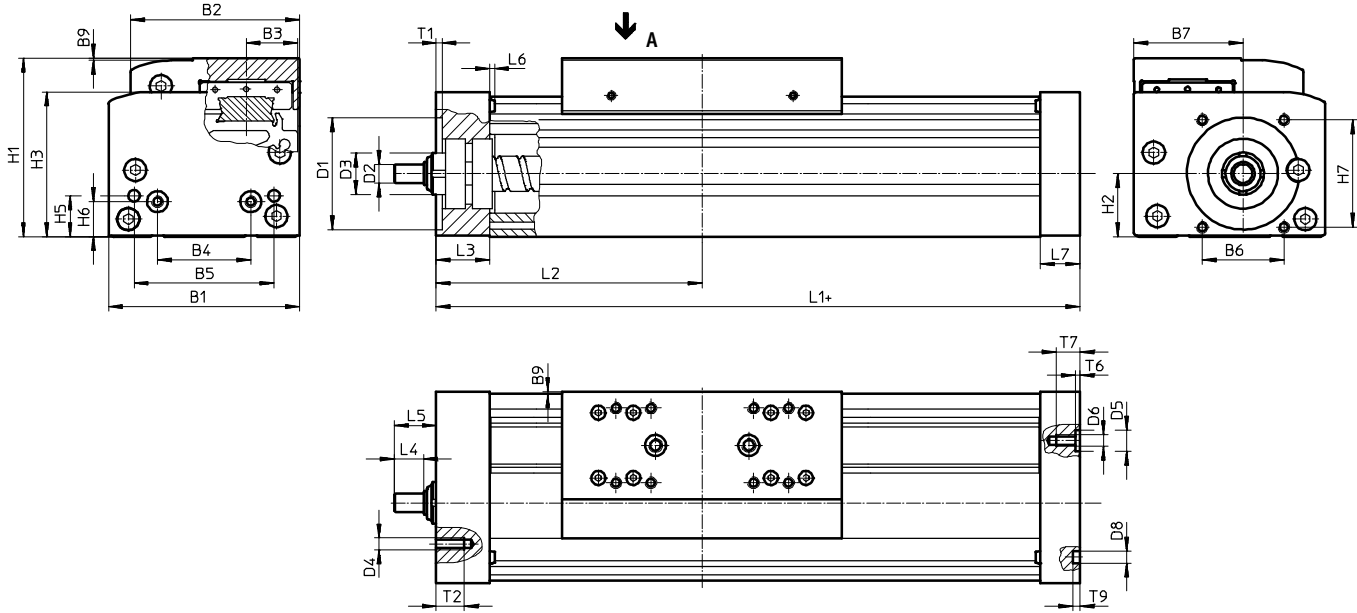
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Linear drives and slides >

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2 x stroke reserve

Note
To avoid distortion in the slide, the bearing surfaces of the attachments must maintain a minimum flatness of 0.01 mm.

Size	Stroke	B1	B2	B3	B4	B5	B6	B7	B9	D1 ∅	D2 ∅	D3
70	50 ... 1000	69	58.6	16.5	30	45	29	39	1	38	6	≅13
80	< 1477	82	72.6	22	40	60	35	46.75	1	48	8	∅18
	> 1477											
120	< 1704	120	107	33	80	40	64	78	1	62	12	∅28
	> 1704											
185	< 2361	186	169	53	120	80	80	114	1	95	25	∅44
	> 2361											

Size	Stroke	D4	D5 ∅	D6	D8 ∅	H1	H2	H3	H5	H6	H7	L1
70	50 ... 1000	M5	-	M5	5	64	22.5	50.5	13	13	36	168
80	< 1477	M5	9	M5	5	76.5	27	62	17.5	15	46	196
	> 1477											236
120	< 1704	M6	-	M8	9	111.5	42.5	89.5	22	22	54	309
	> 1704											369
185	< 2361	M8	-	M10	9	172.5	65.2	141.5	25	25	80	412
	> 2361											512

Size	Stroke	L2	L3	L4	L5	L6	L7	T1	T2	T6	T7	T9
70	50 ... 1000	86.5	21	8	14	1.8	16	2.5	12	-	10	3.1
80	< 1477	101	23	12.5	18	2	17	2.5	12	2.1	10	3.1
	> 1477	121										
120	< 1704	156	33	17.5	25.5	2	30	3	15	-	16	2.1
	> 1704	186										
185	< 2361	209	43	23	30.5	2	37	3	20	-	20	2.1
	> 2361	259										

Electromechanical drives

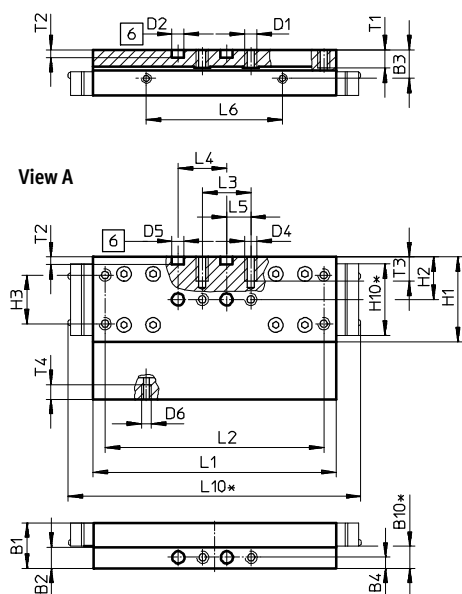
Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Dimensions

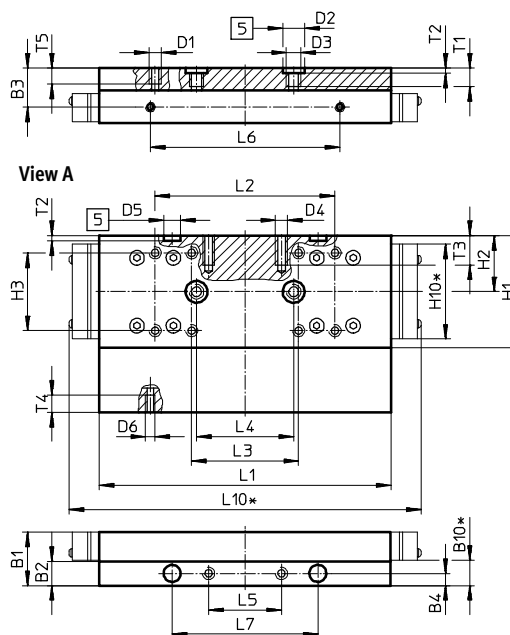
Download CAD data → www.festo.com

GK – Standard slide

Size 70



Size 80



5 Drill hole for centring sleeve

6 Drill hole for centring pin

* Protected version

Size	B1	B2	B3	B4	B10*	D1	D2 ∅ H7	D3	D4	D5 ∅ H7
70	18.7	8.7	11.7	4.5	9	M5	5	–	M5	5
80	22	10	16	5	10.4	M5	9	M6	M5	7

Size	D6	H1	H2	H3	H10*	L1 ±0.1	L2	L3	L4 ±0.03
70	M4	35	17.5	20 ±0.1	29.4	100	90 ±0.1	20 ±0.1	20
80	M4	46	23	32 ±0.2	39	120	74 ±0.2	44 ±0.2	40

Size	L5	L6 ±0.1	L7 ±0.05	L10*	T1	T2 ±0.01	T3	T4	T5
70	10 ±0.1	56	–	121	7.5	3.1	10	6	–
80	30 ±0.1	78	60	145	8.6	2.1	12	7	7.5

* Protected version

Linear drives and slides >

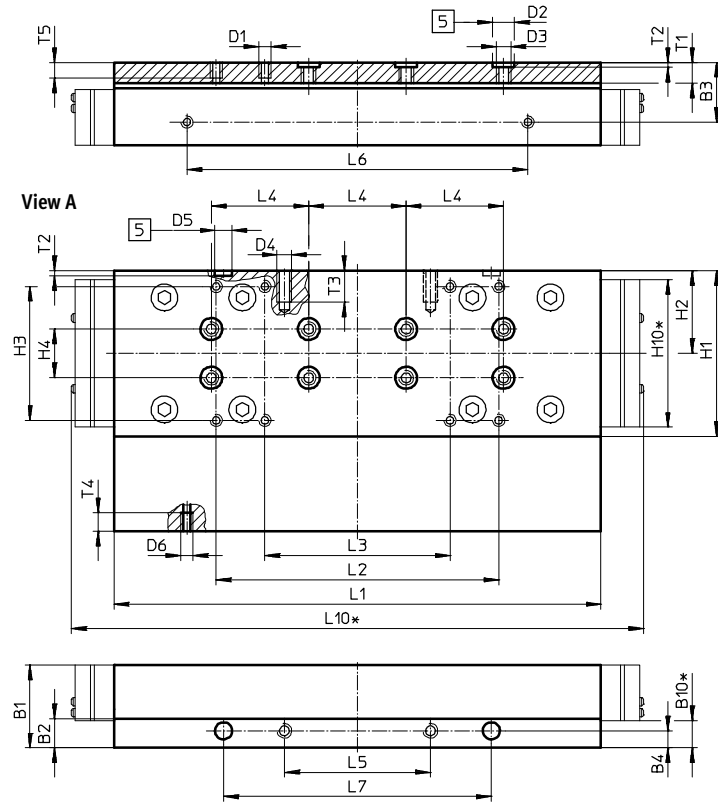
Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com

GK – Standard slide

Size 120



5 Drill hole for centring sleeve
* Protected version

Size	B1	B2	B3	B4	B10*	D1	D2 ∅ H7	D3	D4	D5 ∅ H7
120	34	12	24.5	7	11.2	M5	9	M6	M6	7

Size	D6	H1	H2	H3	H4	H10*	L1	L2	L3	L4
120	M5	68	34	55 ±0.2	±0.03 20	60.6	±0.1 203.3	116 ±0.2	76 ±0.2	±0.03 40

Size	L5	L6	L7	L10*	T1	T2	T3	T4	T5
120	60 ±0.1	±0.1 140	±0.05 110	235	8.6	±0.01 2.1	13	7.5	7.5

* Protected version

Electromechanical drives

04

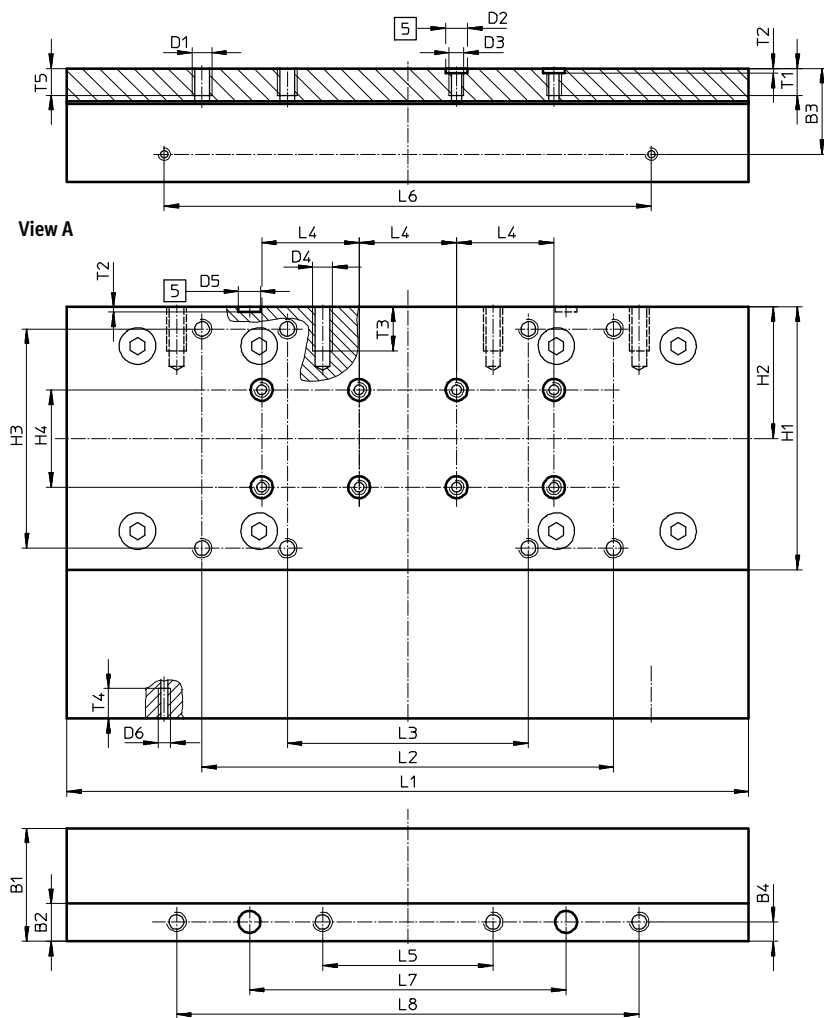
Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Dimensions

GK – Standard slide

Size 185

Download CAD data → www.festo.com



5 Drill hole for centring sleeve

Size	B1	B2	B3	B4	D1	D2 ∅	D3	D4	D5 ∅
185	46.5	15.5	35.2	8	M8	9	M6	M8	9

Size	D6	H1	H2	H3	H4	L1	L2	L3	L4
					±0.03	±0.1			±0.03
185	M5	108	54	90 ±0.2	40	282.8	169 ±0.2	99 ±0.2	40

Size	L5	L6	L7	L8	T1	T2	T3	T4	T5
		±0.1	±0.05	±0.2		±0.01			
185	70 ±0.2	200	130	190	11	2.1	18	12.3	12

04
Electromechanical drives

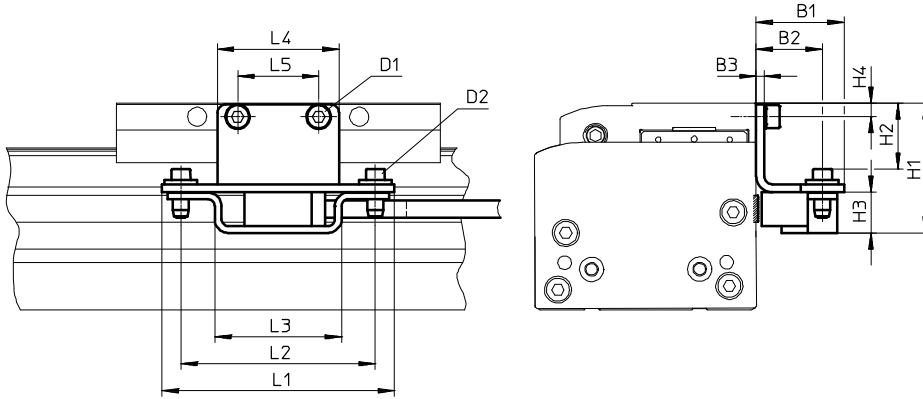
Linear drives and slides >

Spindle axes EGC-BS-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com

M1/M2 – With incremental displacement encoder



Encoder cable (connection to the motor controller/safety system)

→ Page 543

Size	B1	B2	B3	H1	H2	H3	H4	D1	D2	L1	L2	L3	L4	L5
70	32.5	24.5	3	39	18.4	15	4.5	M5x8	M4x14	86	72	47	35	20
80				48	24.4		5	M5x8					45	30
120				60	36.4		7	M6x10					86	60
185				78.5	54.9		8	M8x12					86	70

04

Electromechanical drives



Excellent price/ performance ratio

- + Fast delivery thanks to product types in stock
- + Different sizes and numerous variants open up a broad range of applications

Linear drives and slides >

Toothed belt axes with recirculating ball bearing guide

EGC-TB-KF


Linear drives and slides >

Toothed belt axes with recirculating ball bearing guide


EGC-TB-KF

 Overview, configuration and ordering
→ www.festo.com/catalogue/egc-tb



 Additional information, support and user documentation
→ www.festo.com/sp/egc-tb



 Spare parts service



- + Recirculating ball bearing guide for high loads and torques
- + Optionally with clamping unit, at one or both ends
- + Profile with optimised rigidity and load capacity
- + Comprehensive range of mounting accessories for multi-axis combinations
- + Precision: the slide position can be sensed directly using the optional displacement encoder

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]	Product options			→ Page/online
				GK	M1	M2	
EGC-TB							
KF – Recirculating ball bearing guide	50, 70, 80, 120, 185	50 ... 8500	50 ... 2500	■	■	■	554
EGC-FA							
Guide axis	70, 80, 120, 185	50 ... 8500	–	■	–	–	egc-fa

Product options

GK	Standard slide	KL	Additional slide on left	M1	Displacement encoder, incremental, resolution 2.5 μm	1HL	Clamping unit, 1-channel, on left
GV	Extended slide	KR	Additional slide on right	M2	Displacement encoder, incremental, resolution 10 μm	1HR	Clamping unit, 1-channel, on right
GP	Standard slide, protected	C	Lubrication adapter			2H	Clamping unit, 2-channel
GQ	Extended slide, protected					PN	Pneumatically actuated clamping unit
						DN	Without operating instructions

At a glance

- Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity
- High speed, acceleration and torque resistance
- Optional displacement encoder
- Numerous sizes and variants such as protected guides open up a broad range of applications
- Due to the EGC's high performance it is often possible to use a smaller size
- Space-saving position sensing with proximity sensor in the profile slot is possible
- Wide range of options for mounting on drives
- Comprehensive range of mounting accessories for multi-axis combinations

Flexible motor mounting

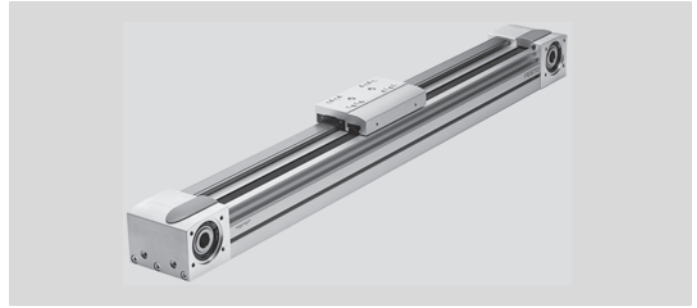
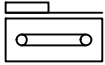
The motor position can be freely selected on 4 sides and can be changed at any time.



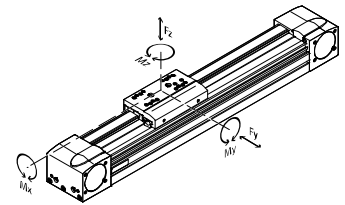
Linear drives and slides >

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Data sheet



Dimensions → Page 561



Technical data

Note

Engineering software
PositioningDrives
→ www.festo.com

Size		50	70	80	120	185
Working stroke ¹⁾	[mm]	50 ... 1900	50 ... 5000	50 ... 8500	50 ... 8500	50 ... 8500
Max. feed force F_x	[N]	50	100	350	800	2500
Max. no-load torque ²⁾	[Nm]	0.072	0.18	0.4	1.4	4.05
Max. no-load resistance to shifting ¹⁾	[N]	8	14.5	28	70	110
Max. driving torque	[Nm]	0.46	1.24	5	16	93
Max. speed	[m/s]	3	5			
Max. acceleration	[m/s ²]	50				
Repetition accuracy	[mm]	±0.08				±0.1
Max. permissible force F_y	[N]	650	1850	3050	6890	15200
Max. permissible force F_z	[N]	650	1850	3050	6890	15200
Max. permissible torque M_x	[Nm]	3.5	16	36	144	529
Max. permissible torque M_y	[Nm]	10	51	97	380	1157
Max. permissible torque M_z	[Nm]	10	51	97	380	1157

1) Total stroke = working stroke + 2x stroke reserve.
2) At 0.2 m/s, with variant GK.

Operating conditions

Ambient temperature ³⁾	[°C]	-10 ... +60
Degree of protection		IP40

3) Note operating range of proximity sensors.

Toothed belt

Size		50	70	80	120	185
Pitch	[mm]	2	3	3	5	8
Tensile strength ⁴⁾	[%]	0.13	0.08	0.21	0.17	0.29
Width	[mm]	10	15	19.3	30.3	50.5
Effective diameter	[mm]	18.46	24.83	28.65	39.79	73.85
Feed constant	[mm/U]	58	78	90	125	232

4) At max. feed force.

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Data sheet

Mass moment of inertia						
Size		50	70	80	120	185
J_0	[kg mm ²]	16.94	83.34	205.9	1241	17976
J_S per metre stroke	[kg mm ² /m]	2.6	10.6	18.8	93	760
J_L per kg payload	[kg mm ² /Kg]	85	154	205	396	1363.5

The mass moment of inertia J_A of the entire axis is calculated as follows:

$$J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

Materials

Cover	Anodised wrought aluminium alloy
Profile	Anodised wrought aluminium alloy
Guide rail	Steel
Pulleys	High-alloy stainless steel
Slides	Anodised wrought aluminium alloy
Toothed belt seals	Polychloroprene with glass cord and nylon coating

Technical data – Displacement encoder

Type	EGC...-M1	EGC...-M2
Resolution	[µm] 2.5	10
Max. travel speed with displacement encoder system	[m/s] 4	4
Encoder signal	5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse)	
Signal output	Line driver, alternating, resistant to sustained short circuit	
Electrical connection	8-pin plug, round design, M12	
Cable length	[mm] 160	

Operating conditions – Displacement encoder

Ambient temperature	[°C] -10 ... +70
Degree of protection	IP64

Linear drives and slides >

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Order code

		EGC	-		-		-	TB	-	KF	-		-	GK	-	
Type																
EGC	Electromechanical linear axis															
Size																
	Stroke [mm]															
50	50 ... 1900															
70	50 ... 5000															
80	50 ... 8500															
120	50 ... 8500															
185	50 ... 8500															
Drive function																
TB	Toothed belt															
Guide																
KF	Recirculating ball bearing guide															
Stroke reserve																
...H	0 ... 999 (0 = no stroke reserve)	1														
Slide																
GK	Standard slide															
Displacement encoder, incremental																
-	None															
M1	Resolution: 2.5 ìm															
M2	Resolution: 10 ìm															

Electromechanical drives

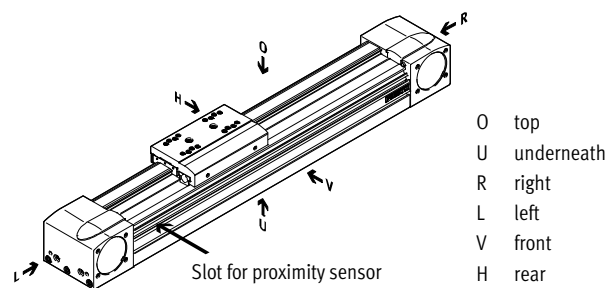
1 The sum of the stroke length and 2x stroke reserve must not exceed the maximum working stroke.

Order example:

EGC-70-500-TB-KF-100H-GK

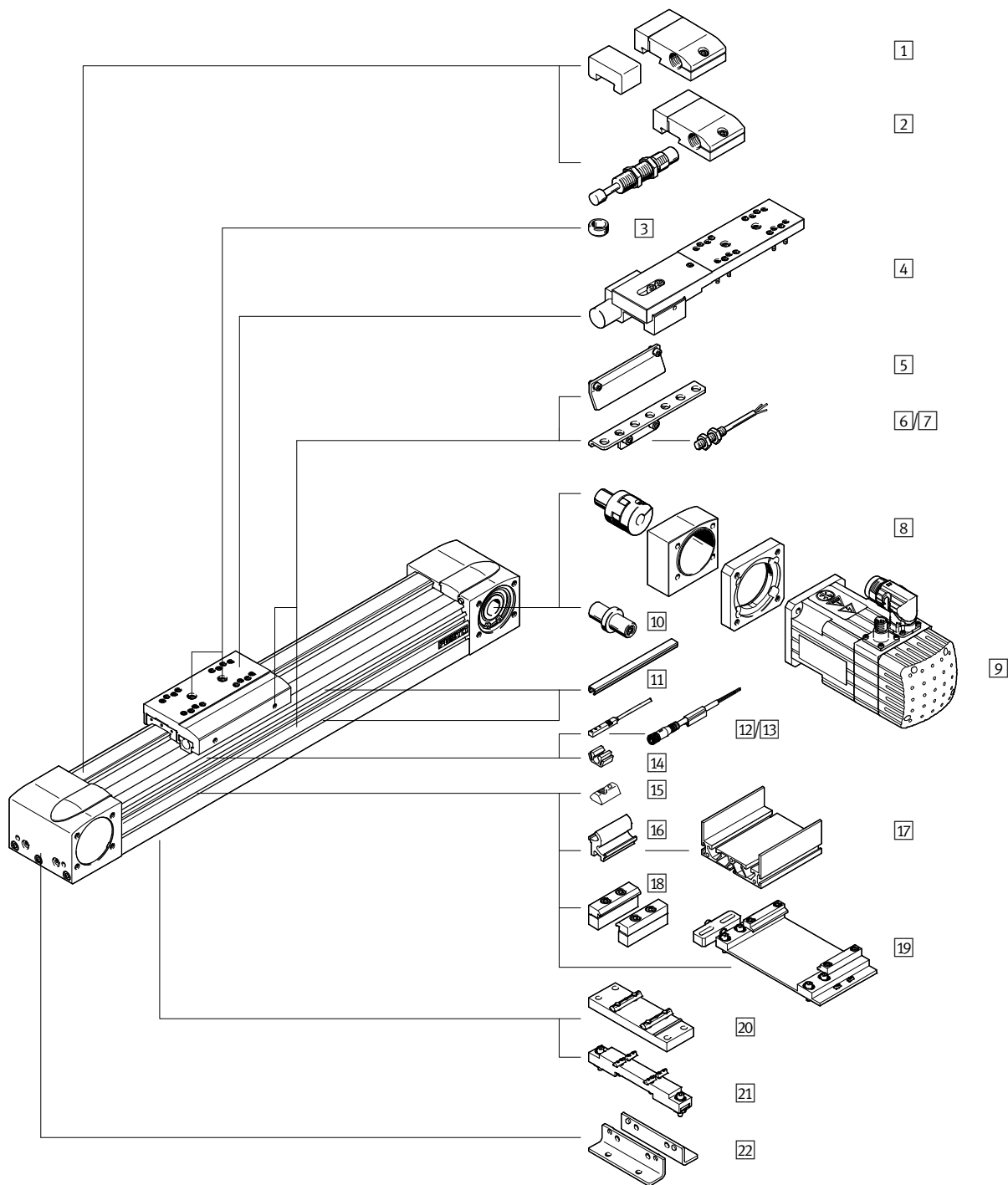
Electromechanical linear axis EGC - size 70 - stroke 500 mm - toothed belt drive - recirculating ball bearing guide - stroke reserve 100 mm - standard slide - without displacement encoder

Ordering aid



Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Accessories



04 Electromechanical drives

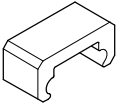
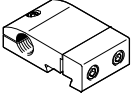
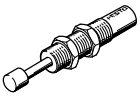


		→ Page/online
1	Emergency buffer NPE/shock absorber retainer KYE	558
2	Shock absorber YSRW/shock absorber retainer KYE	558
3	Centring pin ZBS/centring sleeve ZBH	558
4	Clamping unit 1H-P...N, 2H-PN	egc-tb
5	Switch lug SF-EGC	558
6	Sensor bracket HWS-EGC	558
7	Inductive proximity sensor SIEN	558
8	Axial kit EAMM-A	559
9	Motor EMME/EMMS	559
10	Drive shaft EAMB	560
11	Slot cover ABP/ABP-S	560

		→ Page/online
12	Inductive proximity sensor SIES	560
13	Connecting cable NEBU	560
14	Clip SMBK	560
15	Slot nut NST	560
16	Adapter kit DHAM	egc-tb
17	Support profile HMIA	egc-tb
18	Profile mounting MUE	560
19	Adjusting kit EADC-E16	560
20	Central support EAHF-L5	560
21	Adjusting kit EADC-E15	560
22	Foot mounting HPE	560

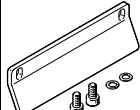
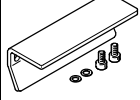
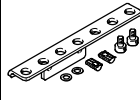


Linear drives and slides >

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
1 Emergency buffer			
	50	564897	NPE-50
	70	562581	NPE-70
	80	562582	NPE-80
	120	562583	NPE-120
	185	562584	NPE-185
1 Shock absorber retainer Dimensions online: → egc-tb			
	50	557583	KYE-50
	70	557584	KYE-70
	80	557585	KYE-80
	120	557586	KYE-120
	185	557587	KYE-185
2 Shock absorber Data sheets online: → ysrw			
	50	191192	YSRW-5-8
	70	191194	YSRW-8-14
	80	191196	YSRW-12-20
	120	191197	YSRW-16-26
	185	191198	YSRW-20-34
3 Centring pin¹⁾²⁾ Data sheets online: → zbs			
	50, 70	150928	ZBS-5
3 Centring sleeve¹⁾²⁾ Data sheets online: → zbh			
	80, 120, 185	150927	ZBH-9

- 1) Packaging unit 10 pieces.
- 2) 2 centring pins/sleeves included in the scope of delivery of the axis.
- 3) For sensing via proximity sensor SIES-8M.
- 4) For sensing via proximity sensor SIEN-M8B or SIES-8M.
- 5) For proximity sensor SIEN-M8B.

	For size	Part no.	Type
5 Switch lug³⁾ Dimensions online: → egc-tb			
	50	558046	SF-EGC-1-50
	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	185	558051	SF-EGC-1-185
5 Switch lug⁴⁾ Dimensions online: → egc-tb			
	70	558052	SF-EGC-2-70
	80	558353	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	185	558056	SF-EGC-2-185
6 Sensor bracket⁵⁾ Dimensions online: → egc-tb			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	185	560517	HWS-EGC-M8-KURZ
7 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L

04

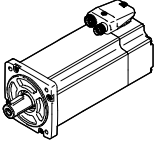
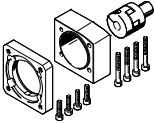
Electromechanical drives

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
8/9 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
EGC-50		
With servo motor		
EMMS-AS-55-...	557975	EAMM-A-L27-55A
With servo motor and gear unit		
EMME-AS-40-...	557974	EAMM-A-L27-40G
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	557974	EAMM-A-L27-40G
EMGA-40-P-G...-SAS-40		
With stepper motor		
EMMS-ST-57-...	560678	EAMM-A-L27-57A
With stepper motor and gear unit		
EMMS-ST-42-...	557974	EAMM-A-L27-40G
EMGA-40-P-G...-SST-42		
With integrated drive		
EMCA-EC-67-...	1454261	EAMM-A-L27-67A
With integrated drive and gear unit		
EMCA-EC-67-...-	557974	EAMM-A-L27-40G
EMGC-40-...		
EGC-70		
With servo motor		
EMMS-AS-55-...	3683331	EAMM-A-L38-55A
EMME-AS-60-...	2037246	EAMM-A-L38-60P
EMMS-AS-70-...	557979	EAMM-A-L38-70A
With servo motor and gear unit		
EMMS-AS-55-...	557978	EAMM-A-L38-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456610	EAMM-A-L38-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	557978	EAMM-A-L38-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-57-...	560679	EAMM-A-L38-57A
EMMS-ST-87-...	560680	EAMM-A-L38-87A
With stepper motor and gear unit		
EMMS-ST-57-...	557978	EAMM-A-L38-60G
EMGA-60-P-G...-SST-57		
With integrated drive and gear unit		
EMCA-EC-67-...-	1456610	EAMM-A-L38-60H
EMGC-60-...		


Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
EGC-80		
With servo motor		
EMMS-AS-70-...	557982	EAMM-A-L48-70A
EMME-AS-80-...	2042616	EAMM-A-L48-80P
EMME-AS-100-...	557984	EAMM-A-L48-100A
EMMS-AS-100-...	557984	EAMM-A-L48-100A
With servo motor and gear unit		
EMMS-AS-55-...	557983	EAMM-A-L48-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456611	EAMM-A-L48-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	557983	EAMM-A-L48-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-87-...	560683	EAMM-A-L48-87A
With stepper motor and gear unit		
EMMS-ST-57-...	557983	EAMM-A-L48-60G
EMGA-60-P-G...-SST-57		
EGC-120		
With servo motor		
EMME-AS-100-...	557988	EAMM-A-L62-100A
EMMS-AS-100-...	557988	EAMM-A-L62-100A
EMMS-AS-140-...	557990	EAMM-A-L62-140A
With servo motor and gear unit		
EMMS-AS-70-...	557989	EAMM-A-L62-80G
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	557989	EAMM-A-L62-80G
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	557989	EAMM-A-L62-80G
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	557989	EAMM-A-L62-80G
EMGA-80-P-G...-SAS-100		
With stepper motor and gear unit		
EMMS-ST-87-...	557989	EAMM-A-L62-80G
EMGA-80-P-G...-SST-87		
EGC-185		
With servo motor		
EMMS-AS-140-...	3657226	EAMM-A-L95-140A-G2
EMMS-AS-190-...	3659562	EAMM-A-L95-190A-G2
With servo motor and gear unit		
EMMS-AS-70-...	3660191	EAMM-A-L95-80G-G2
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	3660191	EAMM-A-L95-80G-G2
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	3660191	EAMM-A-L95-80G-G2
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	3660191	EAMM-A-L95-80G-G2
EMGA-80-P-G...-SAS-100		
EMME-AS-100-...	3659941	EAMM-A-L95-120G-G2
EMGA-120-P-G...-SAS-100		
EMMS-AS-100-...	3659941	EAMM-A-L95-120G-G2
EMGA-120-P-G...-SAS-100		
EMMS-AS-140-...	3659941	EAMM-A-L95-120G-G2
EMGA-120-P-G...-SAS-140		

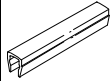
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

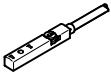
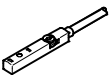


Linear drives and slides >

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide




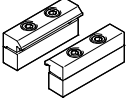
Accessories – Ordering data

	For size	Part no.	Type
10 Drive shaft			
	50	558034	EAMB-16-7-8X15-8X10
	70	558035	EAMB-18-9-8X16-10X12
	80	558036	EAMB-24-6-15X21-16X20
	120	558037	EAMB-34-6-25X26-23X27
	185	558038	EAMB-44-7-35X30-32X32

	For size	Part no.	Type
11 Slot cover¹⁾			
			For mounting slot
	70, 80	151681	ABP-5
	120, 185	151682	ABP-8
			For sensor slot
	50 ... 185	563360	ABP-5-S1

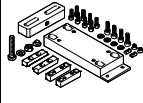
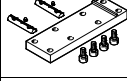
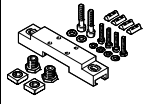
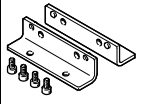
	For size	Switching output, connection	Cable length [m]	Part no.	Type
12 Proximity sensor for T-slot, inductive – N/O contact					Data sheets → Page 1235
	50 ... 185	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact					Data sheets → Page 1235
	50 ... 185	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
13 Connecting cable, straight socket					Data sheets → Page 1543
	50 ... 185	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 551334	NEBU-M8G3-K-5-LE3
Angled socket					Data sheets → Page 1543
	50 ... 185	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 511341	NEBU-M8W3-K-5-LE3

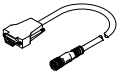
1) Packaging unit 2x 0.5 m.

	For size	Part no.	Type
14 Clip			
	50 ... 185	534254	SMBK-8
15 Slot nut			Data sheets online: → nst
	50	558045	NST-3-M3
	70, 80	150914	NST-5-M5
		8047843	NST-5-M5-10 ²⁾
		8047878	NST-5-M5-50 ³⁾
	120, 185	150915	NST-8-M6
		8047868	NST-8-M6-10 ²⁾
		8047869	NST-8-M6-50 ³⁾
18 Profile mounting			Dimensions online: → egc-tb
	50	558042	MUE-50
	70	558043	MUE-70/80
	80	558043	MUE-70/80
	120	558044	MUE-120/185
	185	558044	MUE-120/185

2) Packaging unit 10 pieces.

3) Packaging unit 50 pieces.

	For size	Part no.	Type
19 Adjusting kit			Dimensions online: → egc-tb
	50	8047576	EADC-E16-50-E7
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
	185	8047579	EADC-E16-185-E7
20 Central support			Dimensions online: → egc-tb
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
21 Adjusting kit			Dimensions online: → egc-tb
	50	8047565	EADC-E15-50-E7
	70	8047566	EADC-E15-80-E7
	80	8047566	EADC-E15-80-E7
	120	8047567	EADC-E15-120-E7
	185	8047568	EADC-E15-185-E7
22 Foot mounting			Dimensions online: → egc-tb
	50	558320	HPE-50
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	185	558325	HPE-185

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
Encoder cables for displacement encoder, EGC...-M1/-M2					
	Displacement encoder EGC...-M1/-M2	Motor controller CMMP-AS...	5	1599105	NEBM-M12G8-E-5-S1G9-V3
			10	1599106	NEBM-M12G8-E-10-S1G9-V3
			15	1599107	NEBM-M12G8-E-15-S1G9-V3
			X ⁴⁾	1599108	NEBM-M12G8-E...-S1G9-V3

4) Max. cable length 25 m.

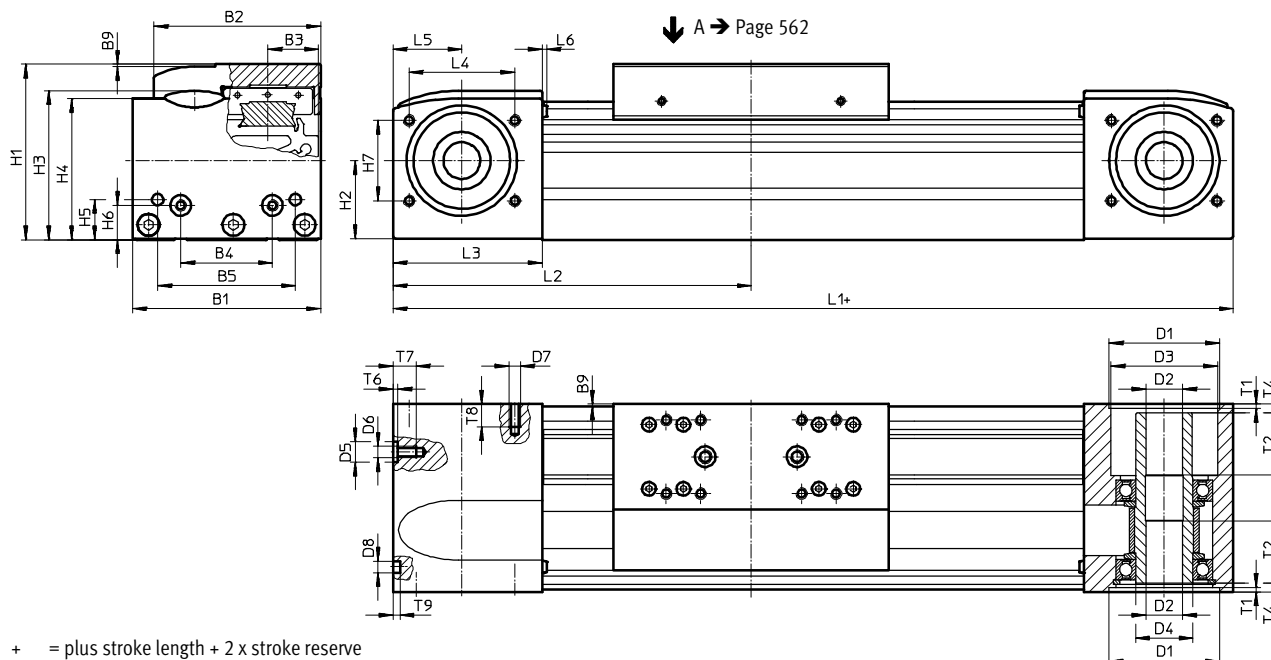
04

Electromechanical drives

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com



Note
To avoid distortion in the slide, the bearing surfaces of the attachments must maintain a minimum flatness of 0.01 mm.

Size	B1	B2	B3	B4	B5	B9	D1	D2	D3	D4	D5	D6
							H7	∅ H7	∅	∅	∅	∅ H7
50	48	39	11.5	20	35	1	27	8	20	15	-	M4
70	69	58.6	16.5	30	45	1	38	10	28	20	-	M5
80	82	72.6	22	40	60	1	48	16	46.5	25	9	M5
120	120	107	33	80	40	1	62	23	59	35	-	M8
185	186	169	53	120	80	1	95	32	90	60	-	M10

Size	D7	D8	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3
		∅ H7										
50	M3	5	42.5	16.5	37.6	35.5	10.5	10.5	18	155	77.5	40
70	M5	5	64	28	53.7	50.8	13	13	29	246	123	57.5
80	M5	5	76.5	34.5	65	61.5	17.5	15	35	286	143	65
120	M6	9	111.5	51.6	95.9	91.1	22	22	54	446	223	100
185	M8	9	172.5	80.5	152.6	143	25	25	80	612	306	140

Size	L4	L5	L6	L8	L9	T1	T2	T4	T6	T7	T8	T9
50	26	20	1.8	3	-	1.5	-	5.9	-	7	8	3.1
70	36	27.5	1.8	3	10.5	2.1	18	7.15	-	10	12	3.1
80	46	30	2	3	13	2.1	27	4	2.1	10	10	3.1
120	64	50	2	3	18	3.1	29.5	4	-	16	14	2.1
185	80	70	2	3	21	2.8	34.5	4	-	20	17	2.1

04 Electromechanical drives

Linear drives and slides >

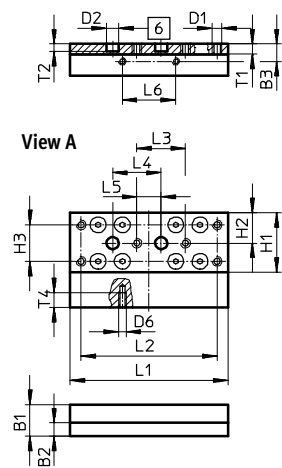
Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Dimensions

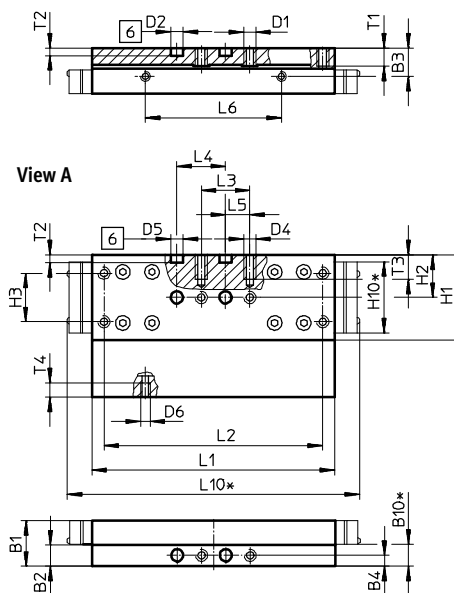
Download CAD data → www.festo.com

GK – Standard slide

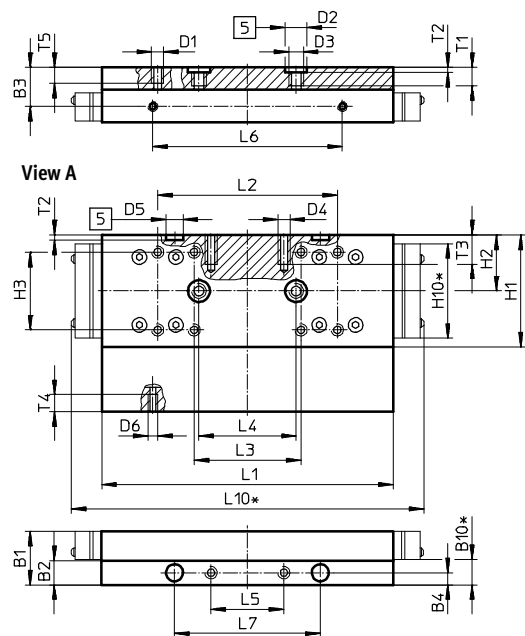
Size 50



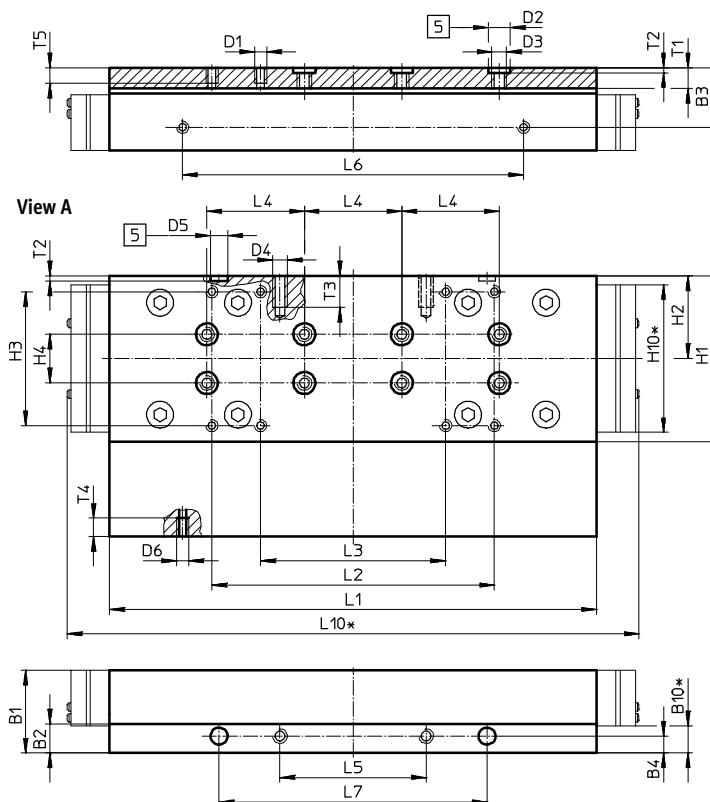
Size 70



Size 80



Size 120



5 Drill hole for centring sleeve

6 Drill hole for centring pin

* Protected version

04

Electromechanical drives

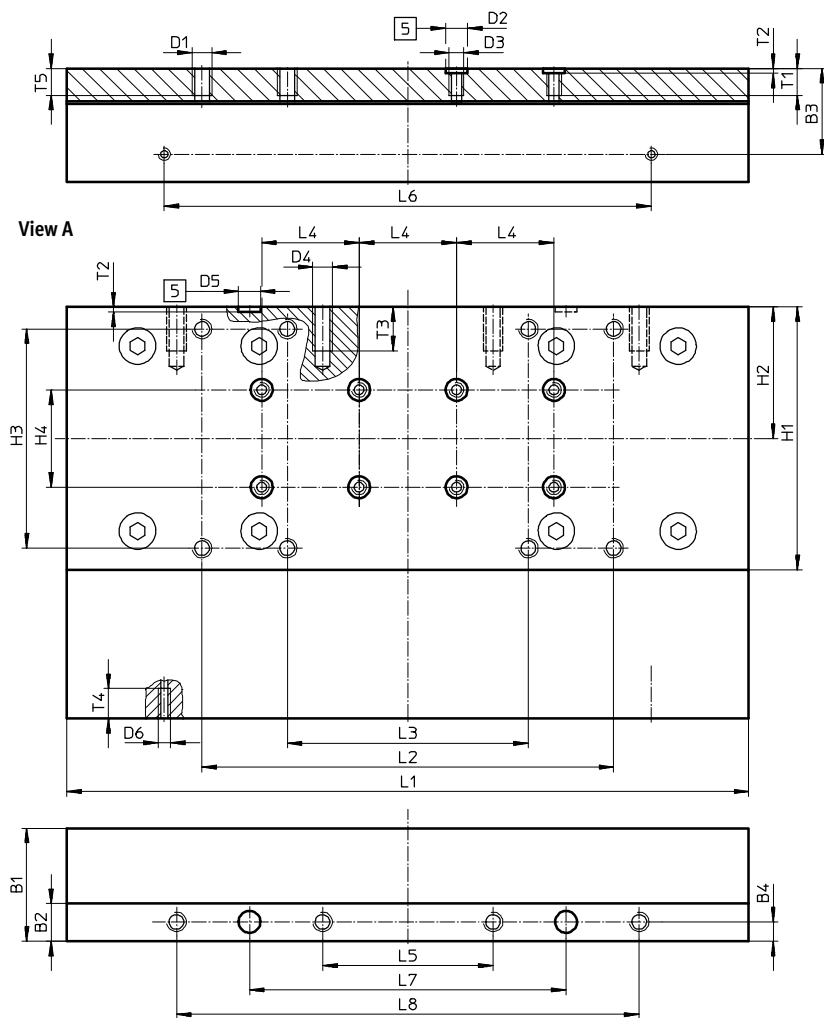
Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Dimensions

GK – Standard slide

Size 185

Download CAD data → www.festo.com



5 Drill hole for centring sleeve

Size	B1	B2	B3	B4	B10*	D1	D2 ∅ H7	D3	D4	D5 ∅ H7	D6	H1	H2	H3	H4 ±0.03
50	13	5.5	7.2	–	–	M4	5	–	–	–	M3	24.5	12.5	15 ±0.1	–
70	18.7	8.7	11.7	4.5	9	M5	5	–	M5	5	M4	35	17.5	20 ±0.1	–
80	22	10	16	5	10.4	M5	9	M6	M5	7	M4	46	23	32 ±0.2	–
120	34	12	24.5	7	11.2	M5	9	M6	M6	7	M5	68	34	55 ±0.2	20
185	46.5	15.5	35.2	8	–	M8	9	M6	M8	9	M5	108	54	90 ±0.2	40

Size	H10*	L1	L2	L3	L4	L5	L6	L7	L8	L10*	T1	T2	T3	T4	T5
		±0.1			±0.03		±0.1	±0.05	±0.2			±0.01			
50	–	65	56 ±0.1	20 ±0.1	20	10 ±0.1	22	–	–	–	4.2	3.1	–	6	–
70	29.4	100	90 ±0.1	20 ±0.1	20	10 ±0.1	56	–	–	121	7.5	3.1	10	6	–
80	39	120	74 ±0.2	44 ±0.2	40	30 ±0.1	78	60	–	145	8.6	2.1	12	7	7.5
120	60.6	203.3	116 ±0.2	76 ±0.2	40	60 ±0.1	140	110	–	235	8.6	2.1	13	7.5	7.5
185	–	282.8	169 ±0.2	99 ±0.2	40	70 ±0.2	200	130	190	–	11	2.1	18	12.3	12

* Protected version

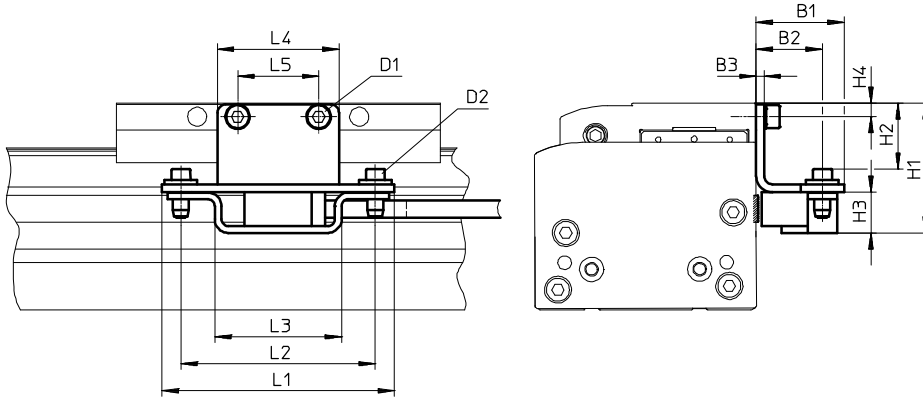
Linear drives and slides >

Toothed belt axes EGC-TB-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com

M1/M2 – With incremental displacement encoder



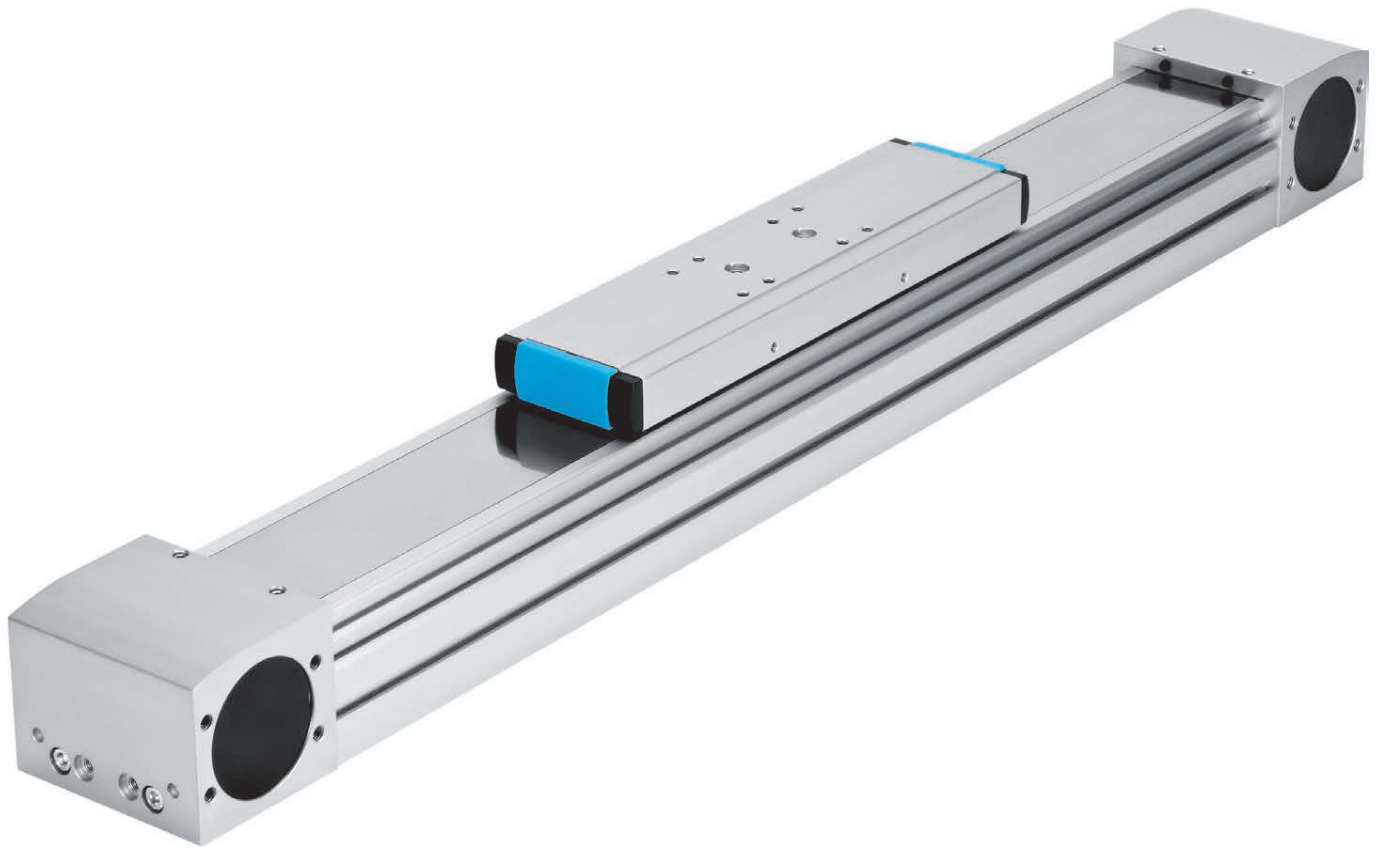
Encoder cable (connection to the motor controller/safety system)

→ Page 560

Size	B1	B2	B3	H1	H2	H3	H4	D1	D2	L1	L2	L3	L4	L5
70	32.5	24.5	3	39	18.4	15	4.5	M5x8	M4x14	86	72	47	35	20
80				48	24.4		5	M5x8					45	30
120				60	36.4		7	M6x10					86	60
185				78.5	54.9		8	M8x12					86	70

04

Electromechanical drives



Guide variants

- + Recirculating ball bearing guide:
precise and reliable,
for high torque absorption
- + Roller bearing guide:
for high speeds
- + Plain-bearing guide:
for small loads or external guides

Linear drives and slides >

Toothed belt axes

ELGA-TB

ELGA-TB-KF

Linear drives and slides >

Toothed belt axes


ELGA-TB

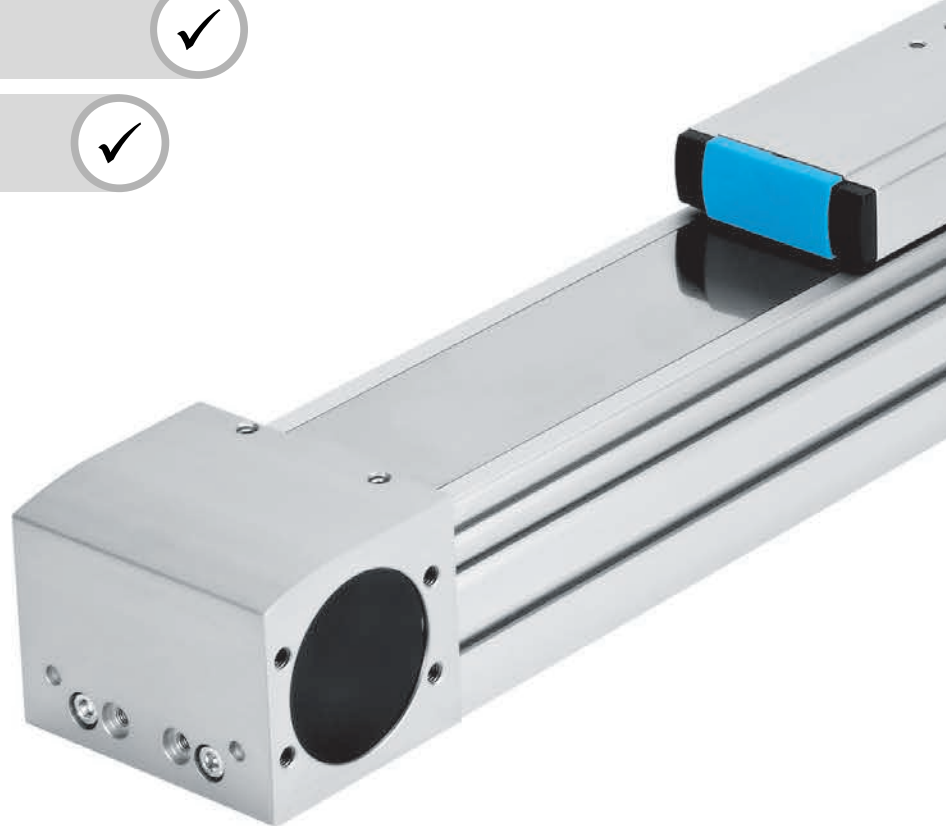
 Overview, configuration and ordering
→ www.festo.com/catalogue/elga-tb



 Additional information, support and user documentation
→ www.festo.com/sp/elga-tb



 Spare parts service



- + Internal guide is protected by the magnetically sealed cover band
- + Sealing air connections prevent dirt getting into the axis
- + ELGA-TB-KF: precise and reliable recirculating ball bearing guide for high torque absorption
- + ELGA-TB-RF: integrated roller bearing guide for high speeds and torque loads
- + ELGA-TB-G: integrated plain-bearing guide for small and medium loads or external guides

Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]	Product options										→ Page/ online
				S	L	P0	ZL	ZR	M1	M2	B	F		
ELGA-TB														
KF – Recirculating ball bearing guide	70, 80, 120, 150	50 ... 8500	350 ... 2000	–	–	–	■	■	■	■	■	■	■	568
KF-F1 – Recirculating ball bearing guide, food-safe	70, 80, 120	50 ... 8500	260 ... 1000	–	–	–	■	■	–	–	–	–	–	elga
RF – Roller bearing guide	70, 80, 120	50 ... 7400	350 ... 1300	■	■	■	–	–	–	–	–	–	–	elga
RF-F1 – Roller bearing guide, food-safe	70, 80, 120	50 ... 7400	260 ... 1000	■	■	■	–	–	–	–	–	–	–	elga
G – Plain-bearing guide	70, 80, 120	50 ... 8500	350 ... 1300	–	–	■	–	–	–	–	–	–	–	elga
ELFA														
KF – Recirculating ball bearing guide	70, 80, 120	50 ... 8500	–	–	–	–	■	■	–	–	–	–	–	elfa
RF – Recirculating roller bearing guide	70, 80	50 ... 7000	–	■	■	■	–	–	–	–	–	–	–	elfa

Product options

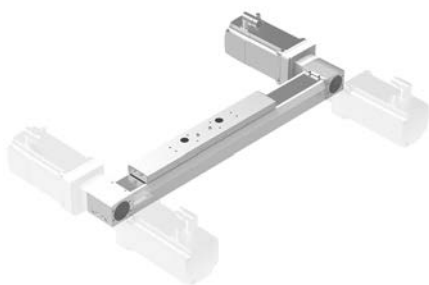
– Standard slide	ZL 1 additional slide on left	M1 Displacement encoder, incremental, resolution 2.5 µm	B Displacement encoder at rear
S Short slide	ZR 1 additional slide on right	M2 Displacement encoder, incremental, resolution 10 µm	F Displacement encoder at front
L Long slide			DN Without operating instructions
– With strip cover			
P0 Without strip cover			

At a glance

- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- High feed forces
- Guide and toothed belt protected by cover band
- Easy maintenance thanks to easily accessible lubrication connections
- Optional displacement encoder
- Wide range of options for mounting on drives
- Comprehensive range of mounting accessories for multi-axis combinations
- Space-saving position sensing

Flexible motor mounting

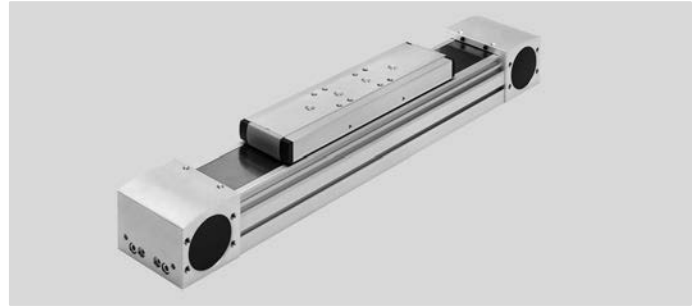
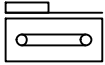
The motor position can be freely selected on 4 sides and can be changed at any time.



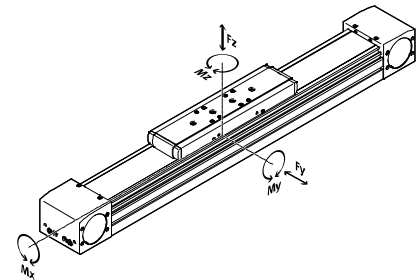
Linear drives and slides >

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

Data sheet



Dimensions → Page 575



Technical data

Note

Engineering software
PositioningDrives
→ www.festo.com

Size		70	80	120	150
Working stroke	[mm]	50 ... 5000	50 ... 8500	50 ... 8500	50 ... 7000
Max. feed force F_x	[N]	350	800	1300	2000
Max. no-load torque ¹⁾	[Nm]	0.6	1	2.8	4
Max. driving torque	[Nm]	5.02	15.92	34.1	73.85
Max. no-load resistance to shifting ¹⁾	[N]	41.9	50.3	76.2	108.3
Max. speed	[m/s]	5			
Max. acceleration	[m/s ²]	50			
Repetition accuracy	[mm]	±0.08			
Max. permissible force F_y	[N]	1500	2500	5500	11000
Max. permissible force F_z	[N]	1850	3050	6890	11000
Max. permissible torque M_x	[Nm]	16	36	104	167
Max. permissible torque M_y	[Nm]	132	228	680	1150
Max. permissible torque M_z	[Nm]	132	228	680	1150

1) At 0.2 m/s

Operating conditions

Ambient temperature	[°C]	-10 ... +60
Degree of protection		IP40

Toothed belt

Size		70	80	120	150
Pitch	[mm]	3	5	5	8
Tensile stress ²⁾	[%]	0.21	0.17	0.21	0.27
Effective diameter	[mm]	28.65	39.79	52.52	73.85
Feed constant	[mm/rev]	90	125	165	232

2) At max. feed force

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

Data sheet

Mass moment of inertia					
Size		70	80	120	150
J_0	[kg mm ²]	243	982	4099	15426
J_S per metre stroke	[kg mm ² /m]	19	93	215	586
J_L per kg payload	[kg mm ² /Kg]	205	396	690	1363

The mass moment of inertia J_A of the entire axis is calculated as follows:

$$J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

Materials		
Size	70, 80	120, 150
Drive cover	Anodised wrought aluminium alloy	
Cover strip	Stainless steel strip, non-corroding	
Toothed belt	Polychloroprene with glass cord and nylon coating	
Guide rail	Stainless steel	Tempered steel
Slide	Anodised wrought aluminium alloy	
Pulleys	High-alloy stainless steel	

Technical data – Displacement encoder			
Type		ELGA-...-M1	ELGA-...-M2
Resolution	[µm]	2.5	10
Max. travel speed with displacement encoder	[m/s]	4	4
Encoder signal		5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse)	
Signal output		Line driver, alternating, resistant to sustained short circuit	
Electrical connection		8-pin plug connector, round design, M12	
Cable length	[mm]	160	

Operating conditions – Displacement encoder		
Ambient temperature	[°C]	-10 ... +70
Degree of protection		IP64

Linear drives and slides >

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

Order code

04

Electromechanical drives

Type		ELGA	Linear axis
Drive function		TB	Toothed belt
Guide		KF	Recirculating ball bearing guide
Size			
	Stroke [mm]		
70	1 ... 5000		
80	1 ... 8500		
120	1 ... 8500		
150	1 ... 7000		
Stroke reserve		...H	0 ... 999 (0 = no stroke reserve) 1
Displacement encoder, incremental			
-	None		
M1	Resolution 2.5 µm		
M2	Resolution 10 µm		
Displacement encoder attachment position			
-	None		
B	At rear		2
F	At front		2

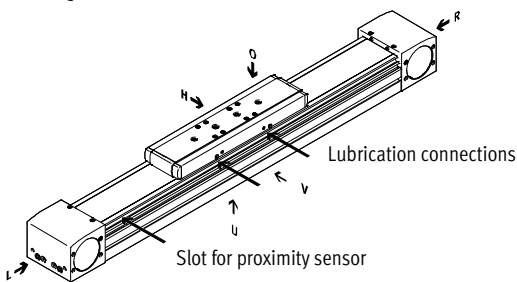
- 1 The sum of the stroke length and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length.
- 2 Only with displacement encoder M1, M2.

Order example:

ELGA-TB-KF-80-1300-80H-M1-F

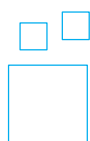
Linear axis ELGA - toothed belt - recirculating ball bearing guide - size 80 - stroke 1300 mm - stroke reserve 80 mm - displacement encoder resolution 2.5 µm - attachment position at front

Ordering aid



- O top
- U underneath
- R right
- L left
- V front
- H rear

Ordering – Product options



Configurable product

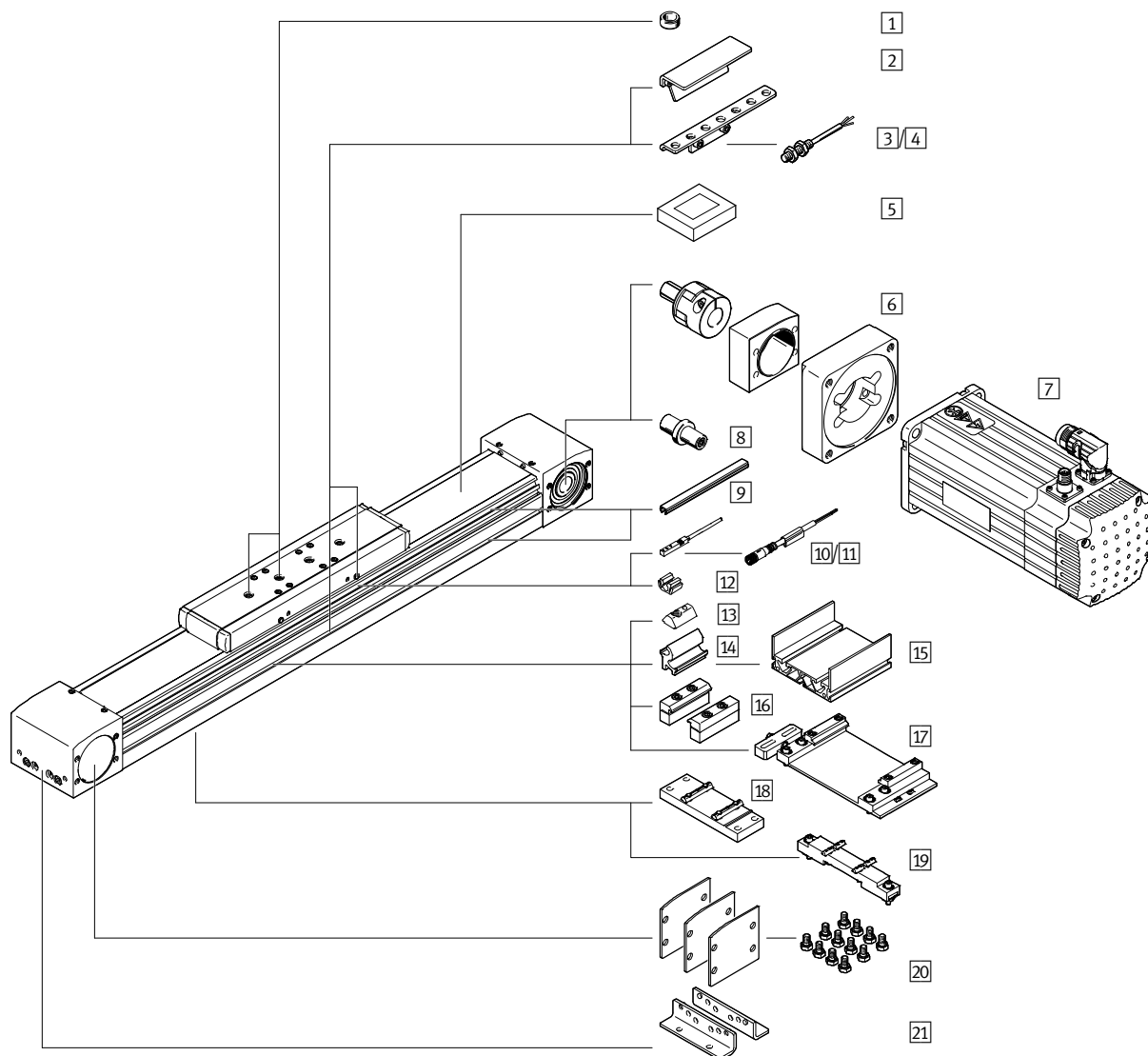
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

Accessories





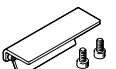
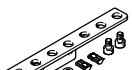



		→ Page/online
1	Centring pin ZBS/Centring sleeve ZBH	572
2	Switch lug SF	572
3	Sensor bracket HWS	572
4	Inductive proximity sensor M8 SIEN	572
5	Clamping component EADT	572
6	Axial kit EAMM	573
7	Motor EMME/EMMS	573
8	Drive shaft EAMB	572
9	Slot cover ABP/ABP-S	572
10	Inductive proximity sensor SIES for T-slot	574
11	Connecting cable NEBU	574

		→ Page/online
12	Clip SMBK	572
13	Slot nut NST	572
14	Adapter kit DHAM	elga-tb
15	Support profile HMIA	elga-tb
16	Adjusting kit EADC-E16	572
17	Profile mounting MUE	572
18	Adjusting kit EADC-E15	572
19	Central support EAHF	572
20	Cover kit EASC	572
21	Foot mounting HPE	572





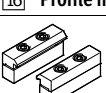
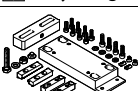

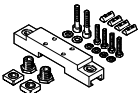
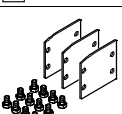
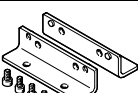
Linear drives and slides >

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
1 Centring pin/sleeve¹⁾²⁾ Data sheets online: → zbh			
	For ELGA-TB-KF		
	70	150928	ZBS-5
	70, 80, 120, 150	150927	ZBH-9
	For ELGA-TB-RF		
	70, 80, 120	150927	ZBH-9
	For ELGA-TB-G		
70	150928	ZBS-5	
80, 120	150927	ZBH-9	
2 Switch lug for sensing with proximity sensor SIES Dimensions online: → elga			
	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	150	558051	SF-EGC-1-185
2 Switch lug for sensing with proximity sensor SIEN Dimensions online: → elga			
	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	150	558056	SF-EGC-2-185
3 Sensor bracket Dimensions online: → elga			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	150	560517	HWS-EGC-M8-KURZ
4 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
5 Clamping component Dimensions online: → elga			
	70, 80	8058451	EADT-S-L5-70
	120, 150	8058451	EADT-S-L5-120

1) Packaging unit 10 pieces.
2) 2 centring sleeves included in the scope of delivery of the axis.

	For size	Part no.	Type
8 Drive shaft			
	70	1344642	EAMB-24-9-15X21-16 X20
	80	558036	EAMB-24-6-15X21-16 X20
	120	558037	EAMB-34-6-25X26-23 X27
	150	558038	EAMB-44-7-35X30-3 2X32
9 Slot cover³⁾			
For mounting slot			
	70, 80	151681	ABP-5
	120, 150	151682	ABP-8
For sensor slot			
70 ... 150	563360	ABP-5-S1	
12 Clip			
	70 ... 150	534254	SMBK-8
13 Slot nut			
	70, 80	150914	NST-5-M5
	120, 150	150915	NST-8-M6
16 Profile mounting Dimensions online: → elga			
	70	558043	MUE-70/80
	80	558043	MUE-70/80
	120	558044	MUE-120/185
	150	558044	MUE-120/185
17 Adjusting kit Dimensions online: → elga			
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
18 Central support Dimensions online: → elga			
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
	150	3535189	EAHF-L5-150-P
19 Adjusting kit Dimensions online: → elga			
	70	8047566	EADC-E15-80-E7
	80	8047566	EADC-E15-80-E7
	120	8047568	EADC-E15-185-E7
	185	8047568	EADC-E15-185-E7
20 Cover kit Dimensions online: → elga			
	70	8049255	EASC-L5-70
	80	8049254	EASC-L5-80
	120	8049253	EASC-L5-120
	150	8049244	EASC-L5-150
21 Foot mounting Dimensions online: → elga			
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	150	3002636	HPE-150

3) Packaging unit 2x 0.5 m.

04

Electromechanical drives

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

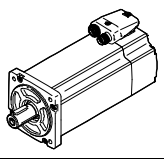
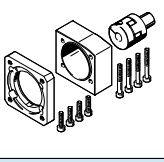
Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.


 Permissible axis/motor combination with axial kit

 Data sheets online: → [eamm-a](#)

Motor/gear unit ²⁾	Axial kit	
		
	Part no.	Type
ELGA-TB-...-70		
With servo motor		
EMMS-AS-70-...	1202331	EAMM-A-N38-70A
With servo motor and gear unit		
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	1202253	EAMM-A-N38-60G
EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456616	EAMM-A-N38-60H
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	1202253	EAMM-A-N38-60G
With stepper motor		
EMMS-ST-87-...	3324111	EAMM-A-N38-87A
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	1202253	EAMM-A-N38-60G
With integrated drive and gear unit		
EMCA-EC-67-...- EMGC-60-...	1456616	EAMM-A-N38-60H
ELGA-TB-...-80		
With servo motor		
EMME-AS-100-... EMMS-AS-100-...	1201894	EAMM-A-N48-100A
With servo motor and gear unit		
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	1972527	EAMM-A-N48-60G
EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456618	EAMM-A-N48-60H
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	1972527	EAMM-A-N48-60G
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	1258793	EAMM-A-N48-80G
EMME-AS-80-... EMGA-80-P-G...-EAS-80	1258793	EAMM-A-N48-80G
EMME-AS-100-... EMGA-80-P-G...-SAS-100	1258793	EAMM-A-N48-80G
EMMS-AS-100-... EMGA-80-P-G...-SAS-100	1258793	EAMM-A-N48-80G
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	1972527	EAMM-A-N48-60G
EMMS-ST-87-... EMGA-80-P-G...-SST-87	1258793	EAMM-A-N48-80G
With integrated drive and gear unit		
EMCA-EC-67-...- EMGC-60-...	1456618	EAMM-A-N48-60H

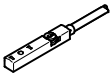
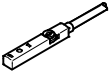


Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
ELGA-TB-...-120		
With servo motor		
EMMS-AS-140-...	1201691	EAMM-A-N80-140A
With servo motor and gear unit		
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	2372096	EAMM-A-N80-80G
EMME-AS-80-... EMGA-80-P-G...-EAS-80	2372096	EAMM-A-N80-80G
EMME-AS-100-... EMGA-80-P-G...-SAS-100	2372096	EAMM-A-N80-80G
EMMS-AS-100-... EMGA-80-P-G...-SAS-100	2372096	EAMM-A-N80-80G
EMME-AS-100-... EMGA-120-P-G...-SAS-100	1201695	EAMM-A-N80-120G
EMMS-AS-100-... EMGA-120-P-G...-SAS-100	1201695	EAMM-A-N80-120G
EMMS-AS-140-... EMGA-120-P-G...-SAS-140	1201695	EAMM-A-N80-120G
With stepper motor and gear unit		
EMMS-ST-87-... EMGA-80-P-G...-SST-87	2372096	EAMM-A-N80-80G
ELGA-TB-...-150		
With servo motor		
EMMS-AS-140-... EMMS-AS-190-...	3657226 3659562	EAMM-A-L95-140A-G2 EAMM-A-L95-190A-G2
With servo motor and gear unit		
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	3660191	EAMM-A-L95-80G-G2
EMME-AS-80-... EMGA-80-P-G...-EAS-80	3660191	EAMM-A-L95-80G-G2
EMME-AS-100-... EMGA-80-P-G...-SAS-100	3660191	EAMM-A-L95-80G-G2
EMMS-AS-100-... EMGA-80-P-G...-SAS-100	3660191	EAMM-A-L95-80G-G2
EMME-AS-100-... EMGA-120-P-G...-SAS-100	3659941	EAMM-A-L95-120G-G2
EMMS-AS-100-... EMGA-120-P-G...-SAS-100	3659941	EAMM-A-L95-120G-G2
EMMS-AS-140-... EMGA-120-P-G...-SAS-140	3659941	EAMM-A-L95-120G-G2
With stepper motor and gear unit		
EMMS-ST-87-... EMGA-80-P-G...-SST-87	3660191	EAMM-A-L95-80G-G2

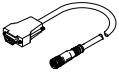
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Linear drives and slides >

Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
10 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	70 ... 150	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	70 ... 150	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
11 Connecting cable, straight socket Data sheets → Page 1543					
	70 ... 150	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	70 ... 150	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
Encoder cables for displacement encoder, ELGA-...-M1/-M2					
	Displacement encoder ELGA-...-M1/-M2	Motor controller CMMP-AS-...	5	1599105	NEBM-M12G8-E-5-S1G9-V3
			10	1599106	NEBM-M12G8-E-10-S1G9-V3
			15	1599107	NEBM-M12G8-E-15-S1G9-V3
			X ¹⁾	1599108	NEBM-M12G8-E-...-S1G9-V3

1) Max. cable length 25 m.

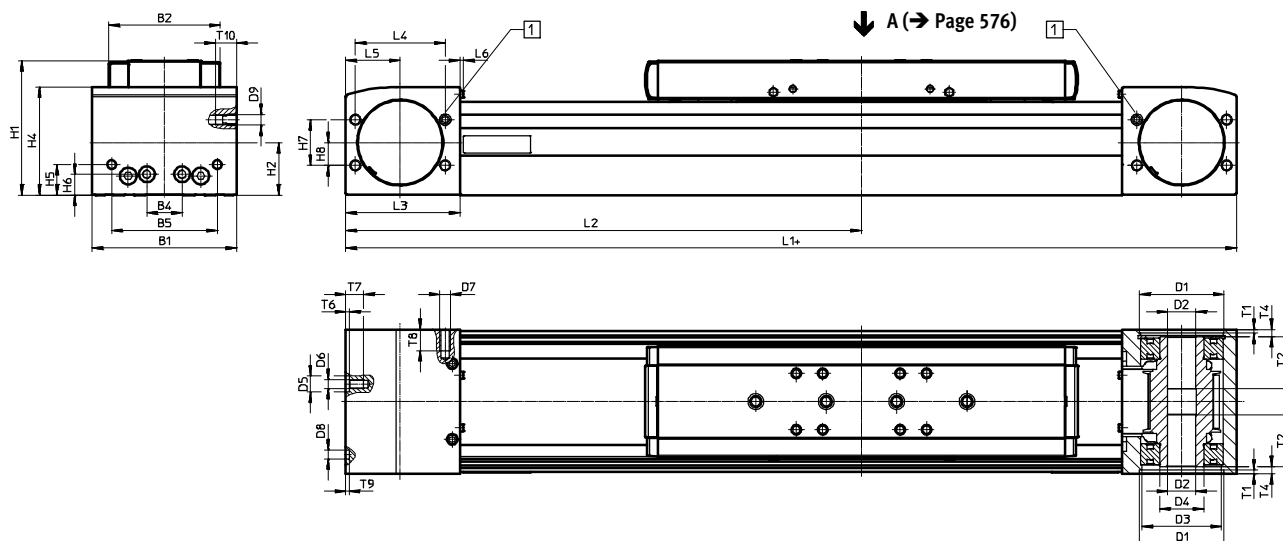
04

Electromechanical drives

Toothed belt axes ELGA-TB-KF, recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2 x stroke reserve

1 Sealing air connections

Size	B1	B2	B4	B5	D1 ∅ H7	D2 ∅ H7	D3 ∅	D4 ∅	D5 ∅ H7	D6	D7
70	69	48.2	30	45	38	16	34	25	-	M5	M6
80	82	63.2	20	60	48	16	45	25	9	M5	M6
120	120	95	80	40	80	23	72	45	-	M8	M8
150	154	125	115	80	95	32	90	60	-	M8	M8

Size	D8 ∅ H7	D9	H1	H2	H4	H5	H6	H7	H8	L1	L2 min.
70	5	M6	64	26.5	50.8	13	13	24	12	346	173
80	5	M6	76.5	30	61.5	17.5	12	26	13	386	193
120	9	M8	111.5	45	91	22	22	59	32	546	273
150	9	M8	141.5	58.6	121	26.5	26.5	80	40	712	356

Size	L3	L4	L5	L6	T1	T2	T4	T6	T7	T8	T9	T10
70	57.5	42	27.5	2.3	2.1	18	7.2	-	10	12	3.1	12
80	65	51	31	2.3	2.1	29.5	4	2.1	10.1	12	2	12
120	100	76	50	2.5	3.1	29.5	4	-	16	16	2.1	16
150	140	80	70	2.5	2.8	32	4	-	18	17	2.1	17

Linear drives and slides >

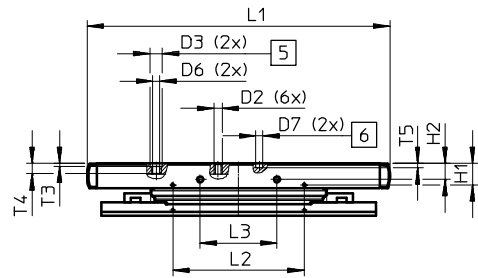
Toothed belt axes ELGA-TB-KF, recirculating ball bearing guide

Dimensions

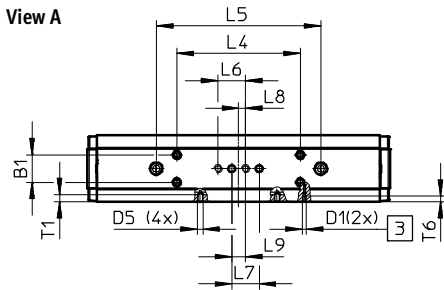
Download CAD data → www.festo.com

Slide

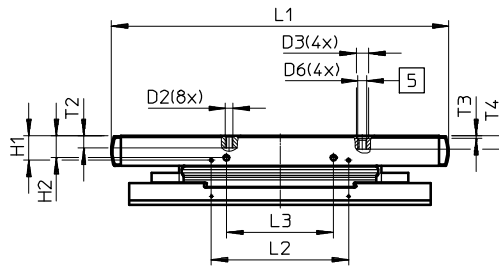
Size 70



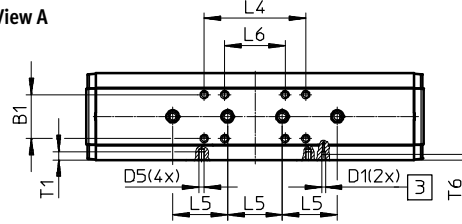
View A



Size 80



View A



- 3 Lubrication connections
- 5 Drill hole for centring sleeve ZBH
- 6 Drill hole for centring pin ZBS

Size	B1	D1	D2	D3 ∅	D5	D6	D7 ∅	H1	H2	L1	L2	L3
	±0.1			H7			H7	±0.1	±0.1		±0.1	±0.1
70	20	M6	M5	9	M4	M6	5	14.2	11.7	221	96	56
80	32	M6	M5	9	M4	M6	-	16.6	16	246	101.4	78

Size	L4	L5	L6	L7	L8	L9	T1	T2	T3	T4	T5	T6	
	±0.1	±0.03	±0.1	±0.03		±0.1			+0.1		±0.1	min.	max.
70	90	120	20	20	5	10	5.1	-	2.1	7.5	3.1	4.2	4.6 _{-0.1}
80	74	40	44	-	-	-	6	9	2.1	9.7 _{-0.2}	-	5.6	5.9 _{-0.1}

Electromechanical drives

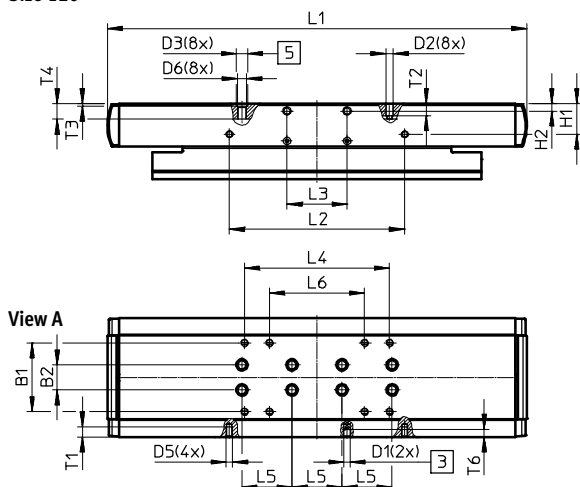
Toothed belt axes ELGA-TB-KF, recirculating ball bearing guide

Download CAD data → www.festo.com

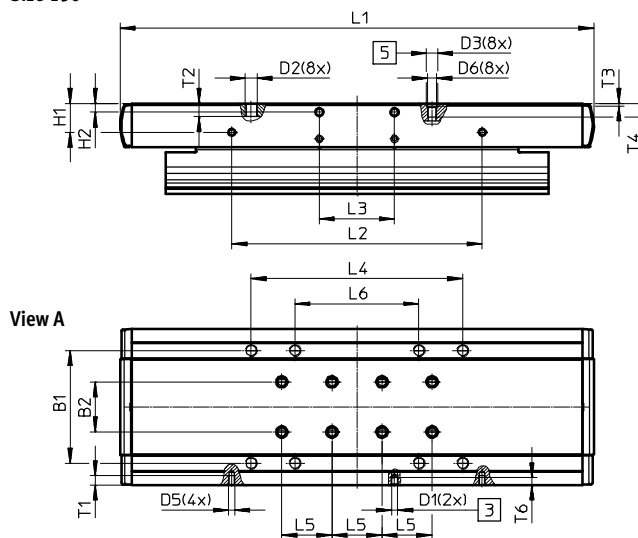
Dimensions

Slide

Size 120



Size 150



- 3 Lubrication connections
- 5 Drill hole for centring sleeve ZBH

Size	B1	B2	D1	D2	D3	D5	D6	H1	H2	L1
	±0.1	±0.03			∅ H7			±0.1		
120	55	20	M6	M5	9	M5	M6	24.5	6	335
150	90	40	M6	M8	9	M5	M6	23	7±0.1	378.4

Size	L2	L3	L4	L5	L6	T1	T2	T3	T4	T6
	±0.1	±0.1	±0.1	±0.03	±0.1			+0.1		
120	140	48	116	40	76	8	9.7	2.1	12.6 _{-0.3}	6
150	200	60	169	40	99	7.5	10.7	2.1	11	7

Linear drives and slides >

Toothed belt axes ELGA-TB-KF, recirculating ball bearing guide

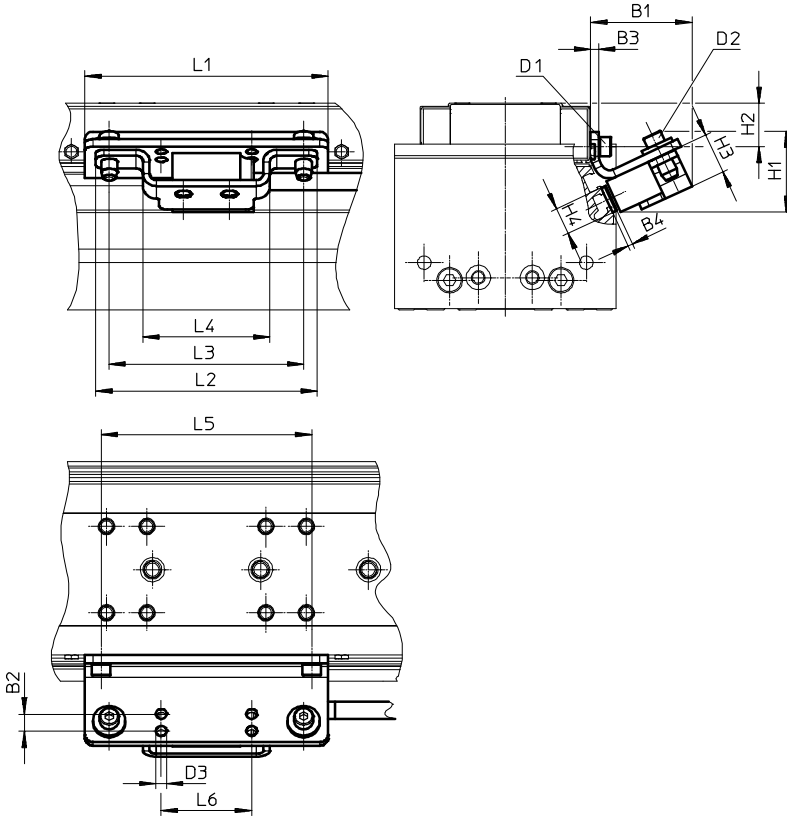
Dimensions

Download CAD data → www.festo.com

M1/M2 – With incremental displacement encoder

04

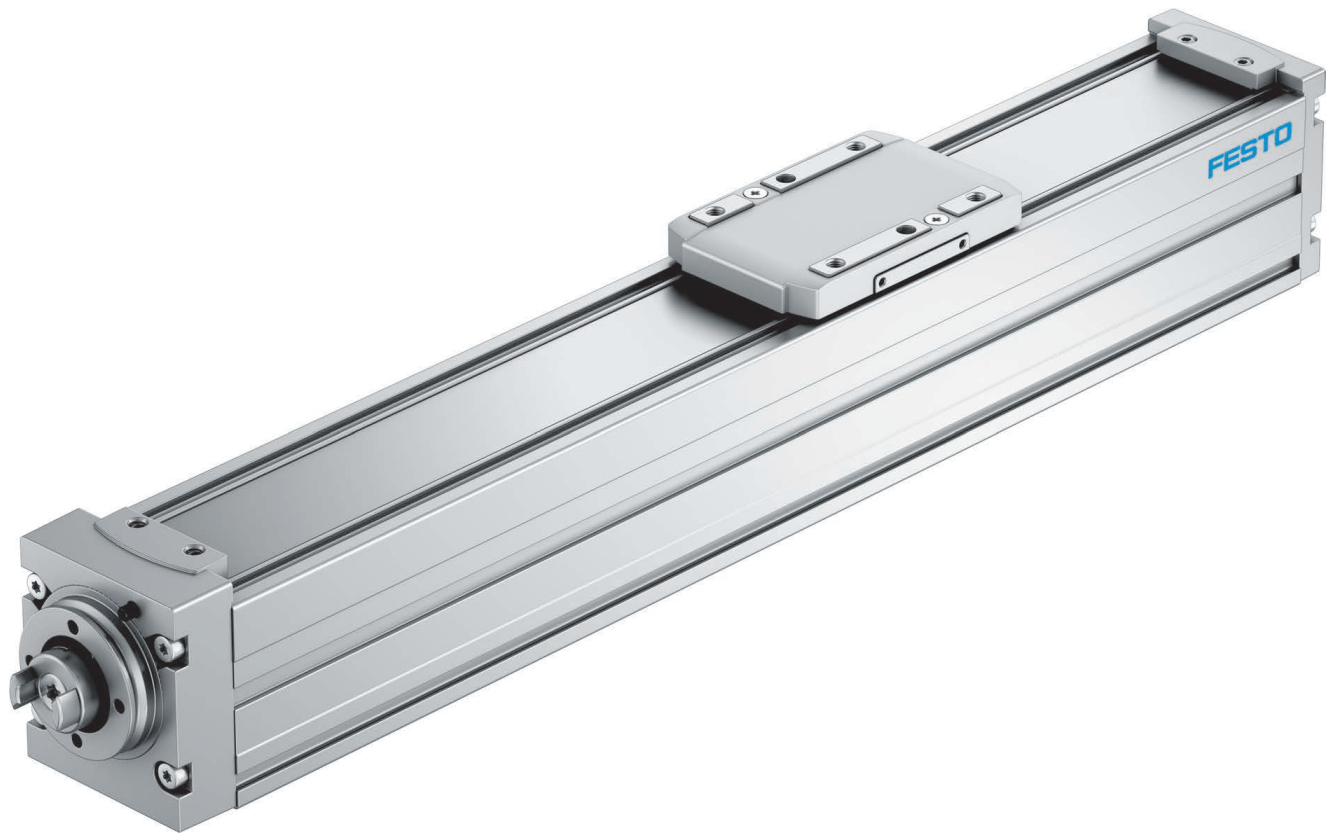
Electromechanical drives



Encoder cable (connection to the motor controller/safety system)
→ Page 574

Size	B1	B2	B3	B4	D1	D2	D3 Ø	H1	H2
70	40	7	3	1.8	M4x8	M4x14	4	35	11.7
80					M4x14				16
120					M4x14				24.5
150					M5x10				23

Size	H3	H4	L1	L2	L3	L4	L5	L6
70	15	10	86	82	72	47	56	33.5
80			90				78	
120			170				140	
150			220				200	



Compact and flexible

- + Internal guide and ball screw
- + Space-saving position sensing
- + Flexible motor connection
- + The toothed belt and spindle axes ELGC together with the mini slides EGSC form a scalable modular system for compact automation

Linear drives and slides ›

Spindle axes with recirculating ball bearing guide

ELGC-BS-KF

Linear drives and slides >

Spindle axes with recirculating ball bearing guide


ELGC-BS-KF

 Overview, configuration and ordering
→ www.festo.com/catalogue/elgc-bs-kf



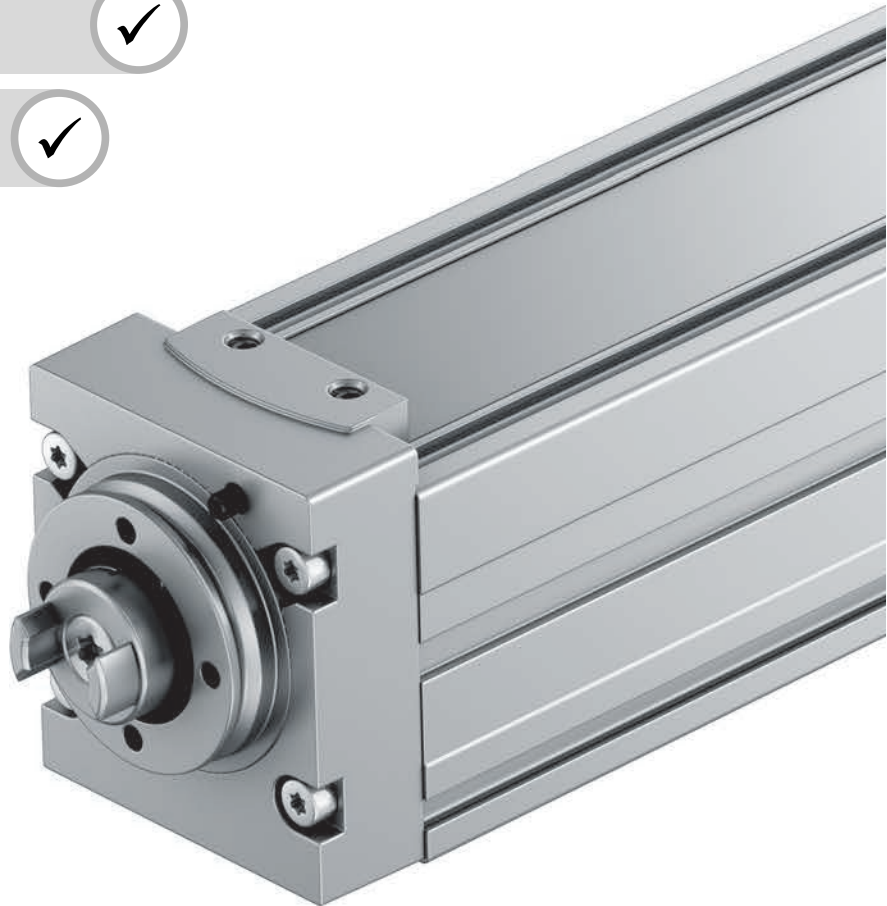
 Additional information, support and user documentation
→ www.festo.com/sp/elgc-bs-kf



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



 Spare parts service



- + The toothed belt and spindle axes ELGC together with the mini slides EGSC form a scalable modular system for compact automation
- + Internal guide and ball screw
- + Space-saving position sensing
- + Flexible motor connection

Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

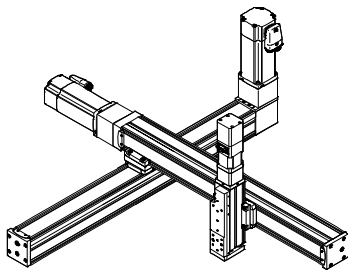
Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]
ELGC-BS			
KF – Recirculating ball bearing guide	32, 45, 60, 80	100 ... 1000	110 ... 780

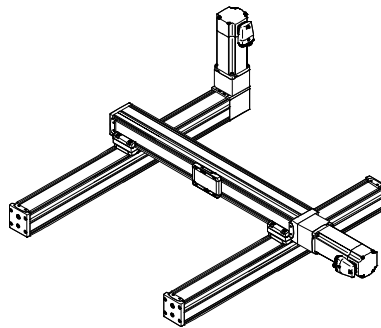
At a glance

- The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation
- The shared platform architecture creates a consistent range with harmonised interfaces. A wealth of systems can be realised entirely without adapter plates
- Powerful drive and guide components ensure a long service life, as well as excellent load capacity and reliability
- The uniform and universal range of accessories reduces warehousing and design costs

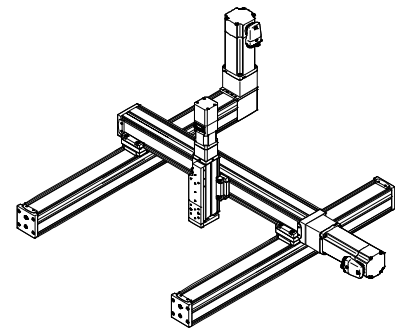
Cantilever system



Planar surface gantry



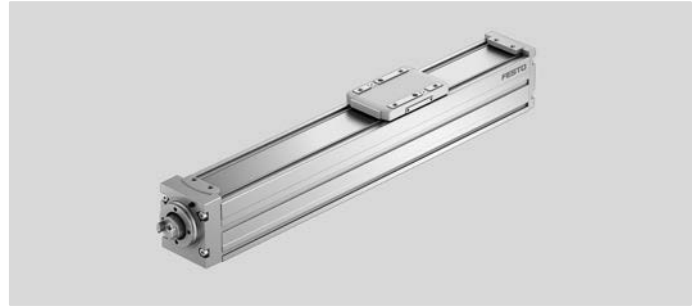
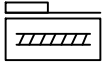
Three-dimensional gantry



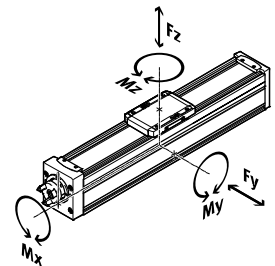
Linear drives and slides >

Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Data sheet



Dimensions → Page 588



Technical data

Note
 Engineering software
 PositioningDrives
www.festo.com

Size		32	45	60	80
Spindle pitch	[mm/rev]	8	10	12	16
Working stroke	[mm]	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800, 1000
Max. feed force F_x	[N]	40	100	200	350
No-load torque at min. travel speed	[Nm]	0.02	0.032	0.042	0.095
	[m/s]	0.05	0.05	0.05	0.05
No-load torque at max. travel speed	[Nm]	0.04	0.12	0.25	0.40
	[m/s]	0.6	0.6	0.8	1
Max. radial force ¹⁾	[N]	75	180	230	400
Max. rotational speed ²⁾	[rpm]	4500	3600	4000	3750
Max. acceleration	[m/s ²]	15			
Repetition accuracy	[mm]	±0.015	±0.015	±0.01	±0.01
Max. permissible force F_y	[N]	356	880	3641	5543
Max. permissible force F_z	[N]	356	880	3641	5543
Max. permissible torque M_x	[Nm]	1.3	5.5	29.1	59.8
Max. permissible torque M_y	[Nm]	1.1	4.7	31.8	56.2
Max. permissible torque M_z	[Nm]	1.1	4.7	31.8	56.2
Position sensing		Magneto-resistive, inductive			

1) At the drive shaft.
 2) Rotational speed and speed are stroke-dependent.

Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Data sheet

Operating conditions		
Ambient temperature ¹⁾	[°C]	0 ... +50
Degree of protection		IP40

1) Note operating range of proximity sensors.

Mass moment of inertia					
Size		32	45	60	80
J_0	[kg mm ²]	0.274	0.820	2.235	7.856
J_S per metre stroke	[kg mm ² /m]	2.218	5.056	10.779	35.257
J_L per kg payload	[kg mm ² /kg]	1.621	2.533	3.648	6.485

The mass moment of inertia J_{rot} of the entire axis is calculated as follows:

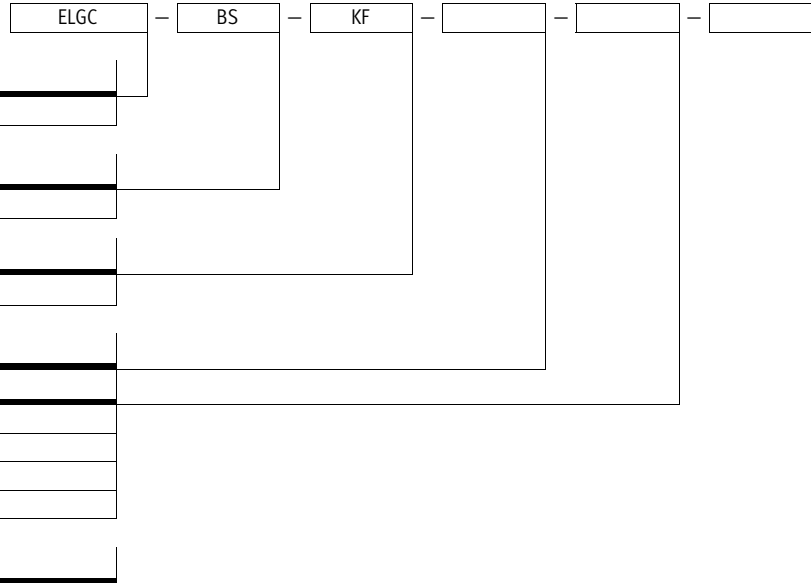
$$J_{rot} = J_0 + J_S \times \text{working stroke [m]}$$

Materials	
Drive cover	Painted die cast aluminium
Spindle nut	Steel
Slide	Die-cast aluminium
Guide	Steel
Spindle	Steel
Cover strip	High-alloy stainless steel
Profile	Anodised wrought aluminium alloy
End cap	Painted die cast aluminium

Linear drives and slides >

Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Order code



Type	
ELGC	Spindle axis

Drive system	
BS	Ball screw

Guide	
KF	Recirculating ball bearing guide

Size	
	Stroke [mm]
32	100, 200, 300, 400, 500, 600, 800
45	100, 200, 300, 400, 500, 600, 800
60	100, 200, 300, 400, 500, 600, 800
80	100, 200, 300, 400, 500, 600, 800, 1000

Spindle pitch [mm/rev]		
8P	8	<input type="checkbox"/>
10P	10	<input type="checkbox"/>
12P	12	<input type="checkbox"/>
16P	16	<input type="checkbox"/>

- 1 Only with size 32
- 2 Only with size 45

- 3 Only with size 60
- 4 Only with size 80

Order example:

ELGC-BS-KF-45-500-10P

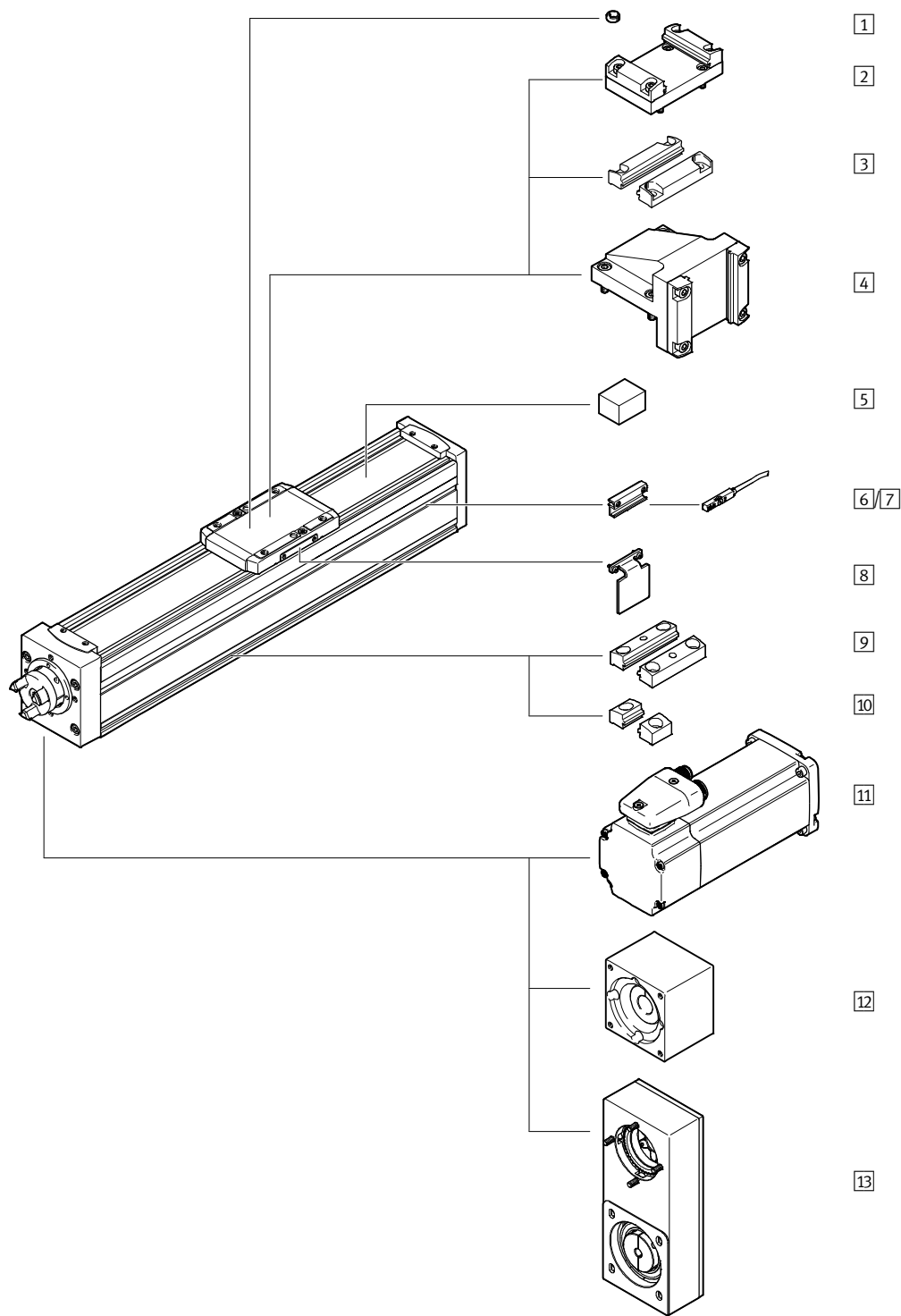
Spindle axis ELGC- ball screw - recirculating ball bearing guide - size 45 - stroke 500 mm - spindle pitch 10 mm/rev

Electromechanical drives

04

Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Accessories



04 Electromechanical drives


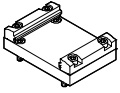
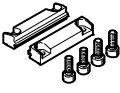
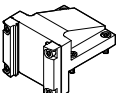

		→ Page/online
1	Centring pin ZBS/centring sleeve ZBH	586
2	Adapter kit EHAA-D-L2	586
3	Profile mounting EAHF-L2-...-P-D...	586
4	Angle kit EHAA-D-L2-...-AP	586
5	Clamping component EADT-S-L5-32	586
6	Sensor bracket EAPM-L2-SH	586
7	Proximity sensor SIES-8M Proximity sensor SMT-8M	586


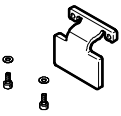
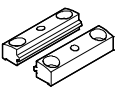

		→ Page/online
8	Switch lug EAPM-L2-...-SLS	586
9	Profile mounting EAHF-L2-...-P	586
10	Profile mounting EAHF-L2-...-P-S	587
11	Motor EMME-AS/EMMS-ST	587
12	Axial kit EAMM-A	587
13	Parallel kit EAMM-U	587

Linear drives and slides >

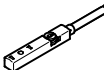
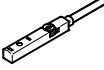
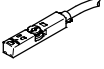
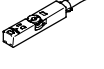


Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
1 Centring pin ZBS/centring sleeve ZBH¹⁾ Data sheets online: → zbh			
	32	525273	ZBS-2
	45	562959	ZBS-4
	60	189652	ZBH-5
	80	186717	ZBH-7
2 Adapter kit Data sheets online: → elgc-bs			
	32	8066713	EHAA-D-L2-32-L2-32
	45	8066714	EHAA-D-L2-45-L2-45
	60	8066715	EHAA-D-L2-60-L2-60
	80	8066716	EHAA-D-L2-80-L2-80
3 Profile mounting Data sheets online: → elgc-bs			
	32	4759753	EAHF-L2-25-P-D1
	45	4759748	EAHF-L2-25-P-D2
	60	4759739	EAHF-L2-45-P-D3
	80	4759726	EAHF-L2-45-P-D4
4 Angle kit Dimensions online: → elgc-bs			
	32	8066717	EHAA-D-L2-32-L2-25-AP
	45	8066718	EHAA-D-L2-45-L2-32-AP
	60	8066719	EHAA-D-L2-60-L2-45-AP
	80	8066720	EHAA-D-L2-80-L2-60-AP
5 Clamping component Dimensions online: → elgc-bs			
	32, 45	8065818	EADT-S-L5-32
	60, 80	8058451	EADT-S-L5-70

	For size	Part no.	Type
6 Sensor bracket Dimensions online: → elgc-bs			
	32 ... 80	4759852	EAPM-L2-SH
8 Switch lug Data sheets online: → elgc-bs			
	32	8067259	EAPM-L2-32-SLS
	45	8067260	EAPM-L2-45-SLS
	60	8067261	EAPM-L2-60-SLS
	80	8067262	EAPM-L2-80-SLS
9 Profile mounting Data sheets online: → elgc-bs			
	32	4835684	EAHF-L2-25-P
	45	4835728	EAHF-L2-45-P
	60	4835728	EAHF-L2-45-P
	80	4835728	EAHF-L2-45-P
10 Profile mounting Data sheets online: → elgc-bs			
	32	5183153	EAHF-L2-25-P-S
	45	5183133	EAHF-L2-45-P-S
	60	5183133	EAHF-L2-45-P-S
	80	5183133	EAHF-L2-45-P-S

1) Packaging unit 10 pieces.

	For size	Switching output, connection	Cable length [m]	Part no.	Type
7 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	32 ... 80	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	32 ... 80	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	32 ... 80	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
N/C contact Data sheets → Page 1206					
	32 ... 80	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
7 Connecting cable, straight socket Data sheets → Page 1544					
	32 ... 80	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1544					
	32 ... 80	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

04

Electromechanical drives

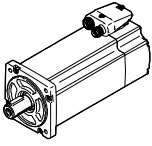
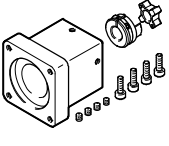
Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

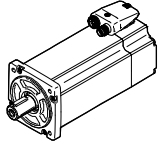
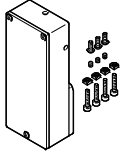
Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the kit must be taken into consideration.

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
11/ 12 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
ELGC-BS-KF-32		
With servo motor		
EMME-AS-40-...	4491059	EAMM-A-V25-40P
With stepper motor		
EMMS-ST-42-...	4582608	EAMM-A-V25-42A
ELGC-BS-KF-45		
With servo motor		
EMME-AS-40-...	4595742	EAMM-A-V32-40P
EMME-AS-60-...	4608750	EAMM-A-V32-60P
With stepper motor		
EMMS-ST-42-...	4281142	EAMM-A-V32-42A
EMMS-ST-57-...	4597016	EAMM-A-V32-57A
ELGC-BS-KF-60		
With servo motor		
EMME-AS-60-...	4133487	EAMM-A-T42-60P
EMME-AS-80-...	4623788	EAMM-A-T42-80P
With stepper motor		
EMMS-ST-57-...	4327034	EAMM-A-T42-57A
EMMS-ST-87-...	4610008	EAMM-A-T42-87A
ELGC-BS-KF-80		
With servo motor		
EMME-AS-60-...	4824833	EAMM-A-T46-60P
EMME-AS-80-...	4624170	EAMM-A-T46-80P
EMME-AS-100-...	4624227	EAMM-A-T46-100A
EMMS-AS-100-...	4624227	EAMM-A-T46-100A
With stepper motor		
EMMS-ST-87-...	4048771	EAMM-A-T46-87A

1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Motor/gear unit ¹⁾	Parallel kit	
		
	Part no.	Type
11/ 13 Permissible axis/motor combination with parallel kit – Data sheets online: → eamm-u		
ELGC-BS-KF-32		
With servo motor		
EMME-AS-40-...	4782056	EAMM-U-45-V25-40P-63
With stepper motor		
EMMS-ST-42-...	4825645	EAMM-U-45-V25-42A-63
ELGC-BS-KF-45		
With servo motor		
EMME-AS-40-...	4718297	EAMM-U-45-V32-40P-63
With stepper motor		
EMMS-ST-42-...	4280674	EAMM-U-45-V32-42A-63
ELGC-BS-KF-60		
With servo motor		
EMME-AS-60-...	4784301	EAMM-U-65-T42-60P-87
With stepper motor		
EMMS-ST-57-...	4331535	EAMM-U-65-T42-57A-87
ELGC-BS-KF-80		
With servo motor		
EMME-AS-60-...	4824069	EAMM-U-87-T46-60P-114
EMME-AS-80-...	4822696	EAMM-U-87-T46-80P-114
With stepper motor		
EMMS-ST-87-...	4819278	EAMM-U-87-T46-87A-114

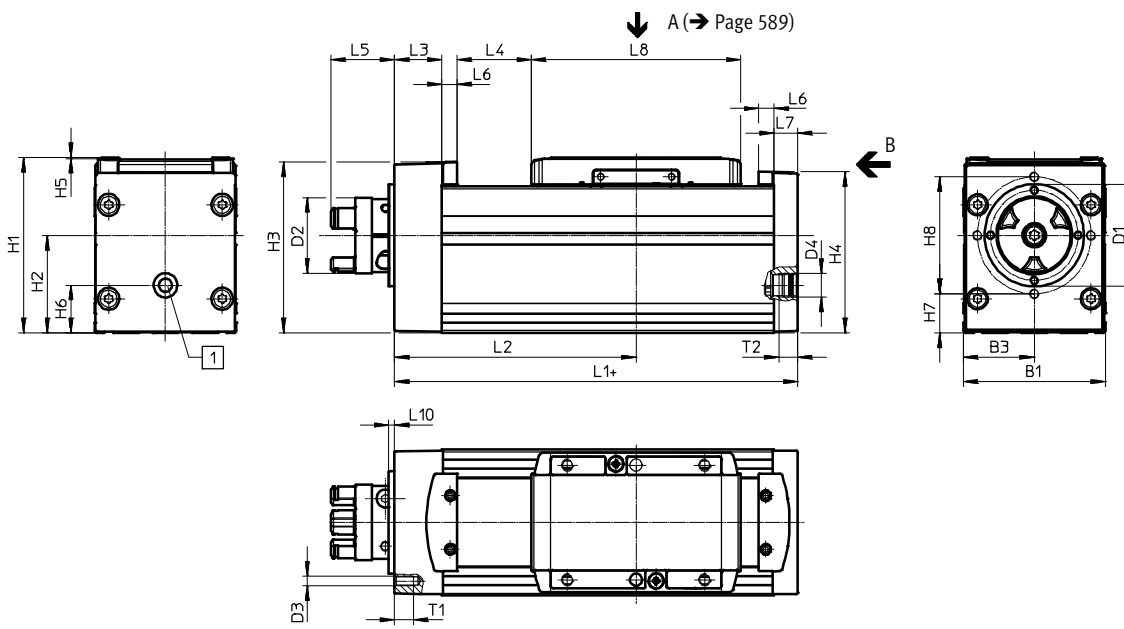
1) The input torque must not exceed the maximum permissible transferable torque of the parallel kit.

Linear drives and slides >

Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com



View B

Size 32/45

- + = plus stroke length
- 1 Sealing air connection (D4)
- L4 = End position zero stroke

Size	B1	B2	B3	B4	D1 ∅	D2 ∅	D3	D4	D5 ∅	H1	H2
32	32	29.6	16	4.9	25	16.5	-	M5	23	38.5	20
45	45	42.6	22.5	6.1	32	16.5	-	G1/8	29.6	54	27.9
60	60	57.1	30	6.1	42	31	M4	G1/8	-	72	40
80	80	77.1	40	6.1	46	31	M6	G1/8	-	96	50

Size	H3	H4	H5	H6	H7	H8	H11	H12	H13	L1	L2 min.
32	36.3	35.6	0.3	8	-	-	31.4	32	13.7	104.5	57.9
45	50.8	49.6	0.5	12.5	-	-	42.8	45	18.5	134.3	79.7
60	70.1	66.1	0.5	19.5	16	48	54.6	60	32.5	170.5	102.1
80	90.6	88.1	0.5	20	17.5	65	72.5	80	41.5	198.5	119.6

Size	L3	L4	L5	L6	L7	L8	L10	L11	T1	T2	W1
32	10.5	13.4	19.9	4.5	5	59	6	2.6	-	5.5	120°
45	14.8	24.6	19.9	6.5	7	67.5	6	2.9	-	8	90°
60	20	31.4	26.9	6.5	10	88.5	2.5	-	8	8	-
80	21	39.1	25.9	6.5	12	106	2.5	-	15	8	-

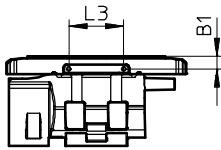
Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Download CAD data → www.festo.com

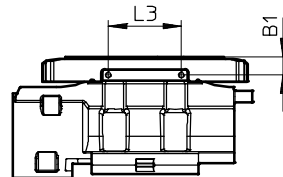
Dimensions

Slides

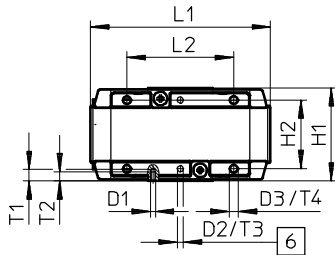
Size 32



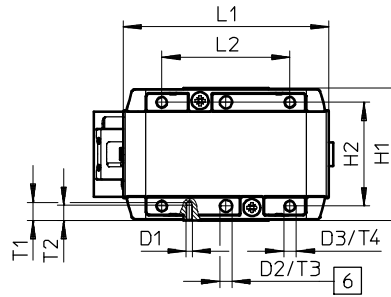
Size 45



View A



View A



6 Hole for centring pin ZBS

Size	B1 ±0.1	D1	D2 ∅ H8	D3	H1 ±0.1	H2 ±0.1 For D2 ±0.03
32	4	M1.6	2	M3	30.5	22.5
45	6	M2	4	M4	43.5	34

Size	L1	L2 ±0.1	L3 ±0.1	T1	T2	T3 +0.1	T4 ¹⁾
32	59	35	18	3.8	3	3.1	4 ... 5
45	67.5	42	24	6	5	3.1	6 ... 7.5

1) Recommended screw-in depth.

Linear drives and slides >

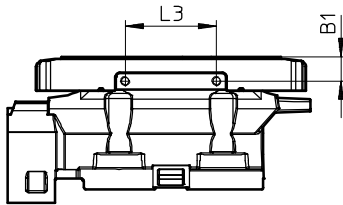
Spindle axes ELGC-BS-KF, with recirculating ball bearing guide

Dimensions

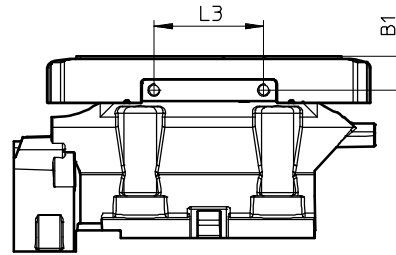
Download CAD data → www.festo.com

Slides

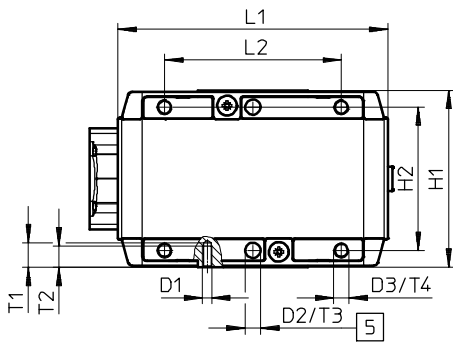
Size 60



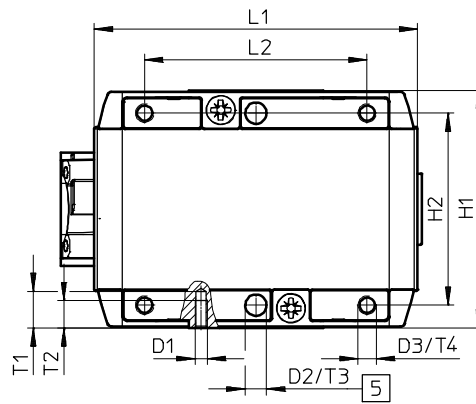
Size 80



View A



View A



5 Hole for centring sleeve ZBH

Size	B1 ±0.1	D1	D2 ∅ H8	D3	H1 ±0.1	H2 ±0.1 For D2 ±0.03
60	8	M3	5	M5	58	47
80	11	M4	7	M6	78	63

Size	L1	L2 ±0.1	L3 ±0.1	T1	T2	T3 +0.1	T4 ¹⁾
60	88.5	58	30	9	7	1.3	8.5 ... 10
80	106	73	36	12	9	1.6	11 ... 14

1) Recommended screw-in depth.



Compact and flexible

- + Internal guide and toothed belt
- + Precise and resilient guide
- + Flexible motor connection
- + The toothed belt and spindle axes ELGC together with the mini slides EGSC form a scalable modular system for compact automation

Linear drives and slides >

Toothed belt axes

ELGC-TB-KF

Linear drives and slides >

Toothed belt axes

ELGC-TB-KF



Overview, configuration and ordering
→ www.festo.com/catalogue/elgc-tb-kf



Additional information, support and user documentation
→ www.festo.com/sp/elgc-tb-kf



Selected types in accordance with the ATEX Directive for explosive atmospheres
→ www.festo.com/catalogue/ex



Spare parts service



- + The toothed belt and spindle axes ELGC together with the mini slides EGSC form a scalable modular system for compact automation
- + Internal guide and toothed belt
- + Precise and resilient guide
- + Flexible motor connection

Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

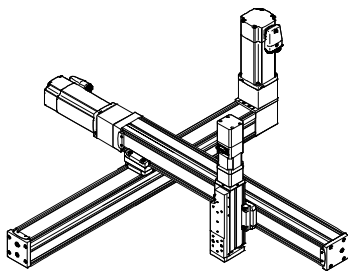
Product range overview

Type/Version	Size	Stroke [mm]	Feed force F_x [N]
ELGC-TB			
KF – Recirculating ball bearing guide	45, 60, 80	200 ... 2000	75 ... 250

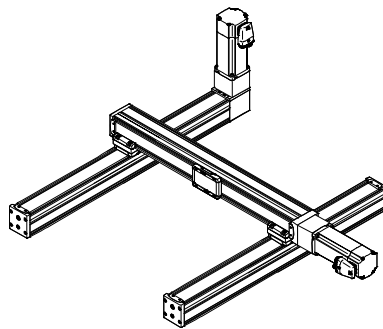
At a glance

- The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation
- The shared platform architecture creates a consistent range with harmonised interfaces. A wealth of systems can be realised entirely without adapter plates
- Powerful drive and guide components ensure a long service life, as well as excellent load capacity and reliability
- The uniform and universal range of accessories reduces warehousing and design costs

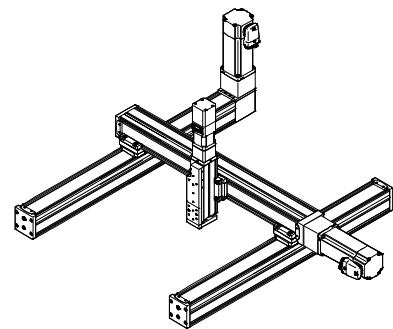
Cantilever system



Planar surface gantry



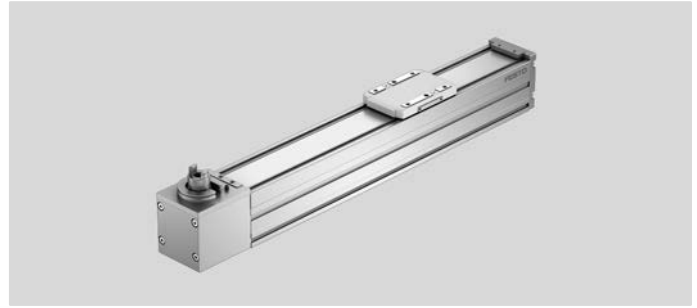
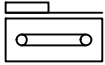
Three-dimensional gantry



Linear drives and slides >

Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

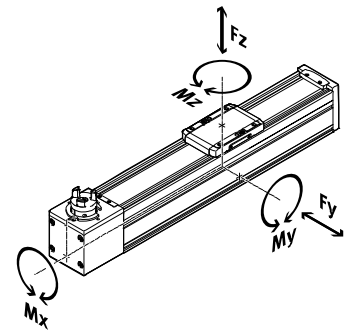
Data sheet



Dimensions → Page 600

Technical data

Note
Engineering software
PositioningDrives
→ www.festo.com



Size		45	60	80
Working stroke	[mm]	200, 300, 500, 600, 800, 1000, 1200, 1500	200, 300, 500, 600, 800, 1000, 1200, 1500, 1800, 2000	200, 300, 500, 600, 800, 1000, 1200, 1500, 1800, 2000
Max. feed force F_x	[N]	75	120	250
Max. no-load torque ¹⁾	[Nm]	0.075	0.194	0.413
Max. no-load resistance to shifting ¹⁾	[N]	7.8	15.6	24.7
Max. driving torque	[Nm]	0.716	1.49	4.178
Max. speed	[m/s]	1.2	1.5	1.5
Max. acceleration	[m/s ²]	15		
Repetition accuracy	[mm]	±0.1		
Max. permissible force F_y	[N]	880	3641	5543
Max. permissible force F_z	[N]	880	3641	5543
Max. permissible torque M_x	[Nm]	5.5	29.1	59.8
Max. permissible torque M_y	[Nm]	4.7	31.8	56.2
Max. permissible torque M_z	[Nm]	4.7	31.8	56.2
Position sensing		Magneto-resistive, inductive		

1) At 0.2 m/s

Operating conditions

Ambient temperature	[°C]	0 ... +50
Degree of protection		IP40

Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Data sheet

Toothed belt		45	60	80
Size				
Pitch	[mm]	2	3	3
Tensile strength ¹⁾	[%]	0.187	0.124	0.2
Effective diameter	[mm]	19.1	24.83	33.42
Feed constant	[mm/U]	60	78	105

1) At max. feed force

Mass moment of inertia		45	60	80
Size				
J_0	[kg mm ²]	18.62	88.04	291.2
J_S per metre stroke	[kg mm ² /m]	2.81	8.51	19.27
J_L per kg payload	[kg mm ² /kg]	91.19	154.11	279.3

The mass moment of inertia J_A of the entire axis is calculated as follows:

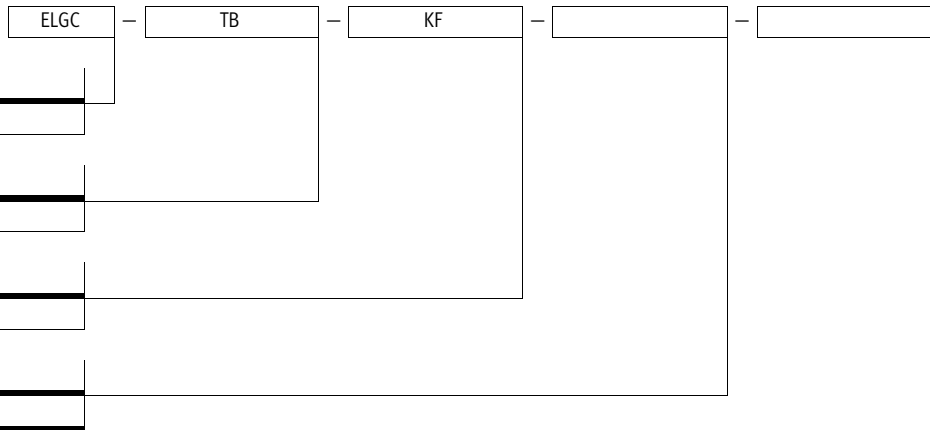
$$J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{Payload [kg]}}$$

Materials	
Drive cover	Painted die cast aluminium
Slides	Die-cast aluminium
Cover band	High-alloy stainless steel
Toothed belt	Polychloroprene with glass cord and nylon coating
Guide	Steel
Profile	Anodised wrought aluminium alloy
Guide pulley	Aluminium

Linear drives and slides >

Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Order code



Type	
ELGC	Linear axis

Drive function	
TB	Toothed belt

Guide	
KF	Recirculating ball bearing guide

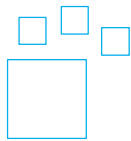
Size	
	Stroke [mm]
45	200, 300, 500, 600, 800, 1000, 1200, 1500
60	200, 300, 500, 600, 800, 1000, 1200, 1500, 1800, 2000
80	200, 300, 500, 600, 800, 1000, 1200, 1500, 1800, 2000

Order example:

ELGC-TB-KF-80-1200

Linear axis ELGC - toothed belt - recirculating ball bearing guide - size 80 - stroke 1200 mm

Ordering – Product options



Configurable product

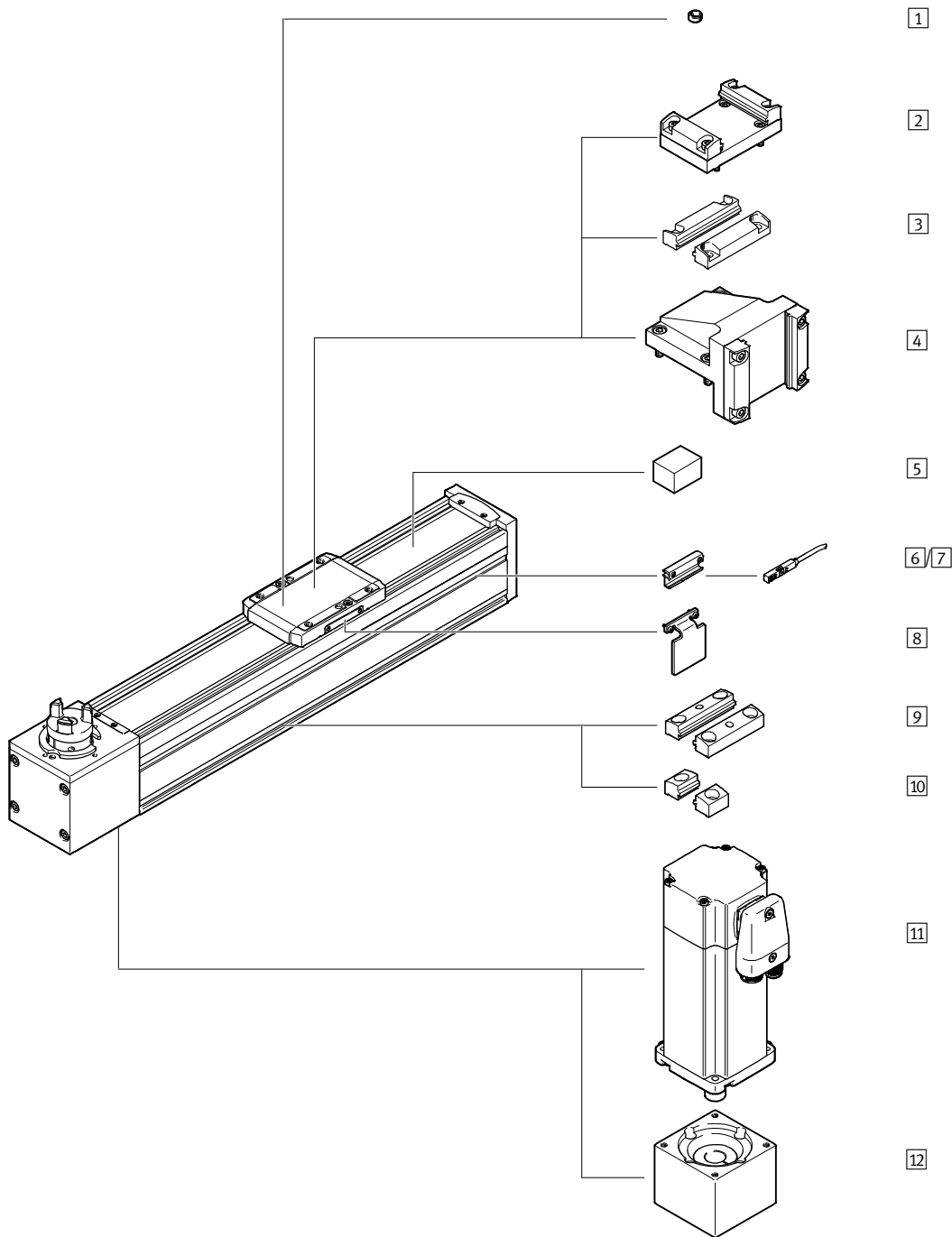
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Accessories




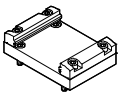
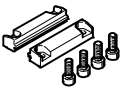
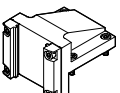

		→ Page/online
1	Centring pin ZBS/centring sleeve ZBH	598
2	Adapter kit EHAA-D-L2	598
3	Profile mounting EAHF-L2-...-P-D	598
4	Angle kit EHAA-D-L2-...-AP	598
5	Clamping component EADT-S-L5-32	598
6	Sensor bracket EAPM-L2-SH	598


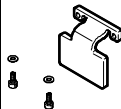
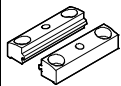

		→ Page/online
7	Proximity sensor SMT-8M	598
8	Switch lug EAPM-L2-...-SHS	598
9	Profile mounting EAHF-L2-...-P	598
10	Profile mounting EAHF-L2-...-P-S	599
11	Motor EMME-AS, EMMS-ST	599
12	Axial kit EAMM-A	599

Linear drives and slides >

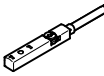
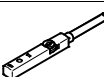
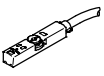
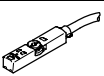


Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
1 Centring pin ZBS/centring sleeve ZBH¹⁾ Data sheets online: → zbh			
	45	562959	ZBS-4
	60	189652	ZBH-5
	80	186717	ZBH-7
2 Adapter kit Data sheets online: → elgc-tb			
	45	8066714	EHAA-D-L2-45-L2-45
	60	8066715	EHAA-D-L2-60-L2-60
	80	8066716	EHAA-D-L2-80-L2-80
3 Profile mounting Data sheets online: → elgc-tb			
	45	4759748	EAHF-L2-25-P-D2
	60	4759739	EAHF-L2-45-P-D3
	80	4759726	EAHF-L2-45-P-D4
4 Angle kit Dimensions online: → elgc-tb			
	45	8066718	EHAA-D-L2-45-L2-32-AP
	60	8066719	EHAA-D-L2-60-L2-45-AP
	80	8066720	EHAA-D-L2-80-L2-60-AP
5 Clamping component Dimensions online: → elgc-tb			
	45	8065818	EADT-S-L5-32
	60, 80	8058451	EADT-S-L5-70

	For size	Part no.	Type
6 Sensor bracket Dimensions online: → elgc-tb			
	45 ... 80	4759852	EAPM-L2-SH
8 Switch lug Data sheets online: → elgc-bs			
	45	8067260	EAPM-L2-45-SLS
	60	8067261	EAPM-L2-60-SLS
	80	8067262	EAPM-L2-80-SLS
9 Profile mounting Data sheets online: → elgc-tb			
	45	4835728	EAHF-L2-45-P
	60	4835728	EAHF-L2-45-P
	80	4835728	EAHF-L2-45-P
10 Profile mounting Data sheets online: → elgc-tb			
	45	5183133	EAHF-L2-45-P-S
	60	5183133	EAHF-L2-45-P-S
	80	5183133	EAHF-L2-45-P-S

1) Packaging unit 10 pieces.

	For size	Switching output, connection	Cable length [m]	Part no.	Type
7 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	45 ... 80	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	45 ... 80	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
	45 ... 80	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
N/C contact Data sheets → Page 1206					
	45 ... 80	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
7 Connecting cable, straight socket Data sheets → Page 1544					
	45 ... 80	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1544					
	45 ... 80	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

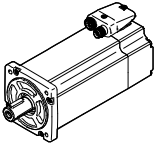
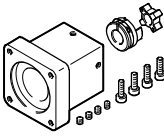
Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

11/12 Permissible axis/motor combination with axial kitData sheets online: → [eamm-a](#)

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
ELGC-TB-KF-45		
With servo motor		
EMME-AS-40-...	4595742	EAMM-A-V32-40P
EMME-AS-60-...	4608750	EAMM-A-V32-60P
With stepper motor		
EMMS-ST-42-...	4281142	EAMM-A-V32-42A
EMMS-ST-57-...	4597016	EAMM-A-V32-57A
ELGC-TB-KF-60		
With servo motor		
EMME-AS-60-...	4133487	EAMM-A-T42-60P
EMME-AS-80-...	4623788	EAMM-A-T42-80P
With stepper motor		
EMMS-ST-57-...	4327034	EAMM-A-T42-57A
EMMS-ST-87-...	4610008	EAMM-A-T42-87A
ELGC-TB-KF-80		
With servo motor		
EMME-AS-60-...	4824833	EAMM-A-T46-60P
EMME-AS-80-...	4624170	EAMM-A-T46-80P
EMME-AS-100-...	4624227	EAMM-A-T46-100A
EMMS-AS-100-...	4623227	EAMM-A-T46-100A
With stepper motor		
EMMS-ST-87-...	4048771	EAMM-A-T46-87A

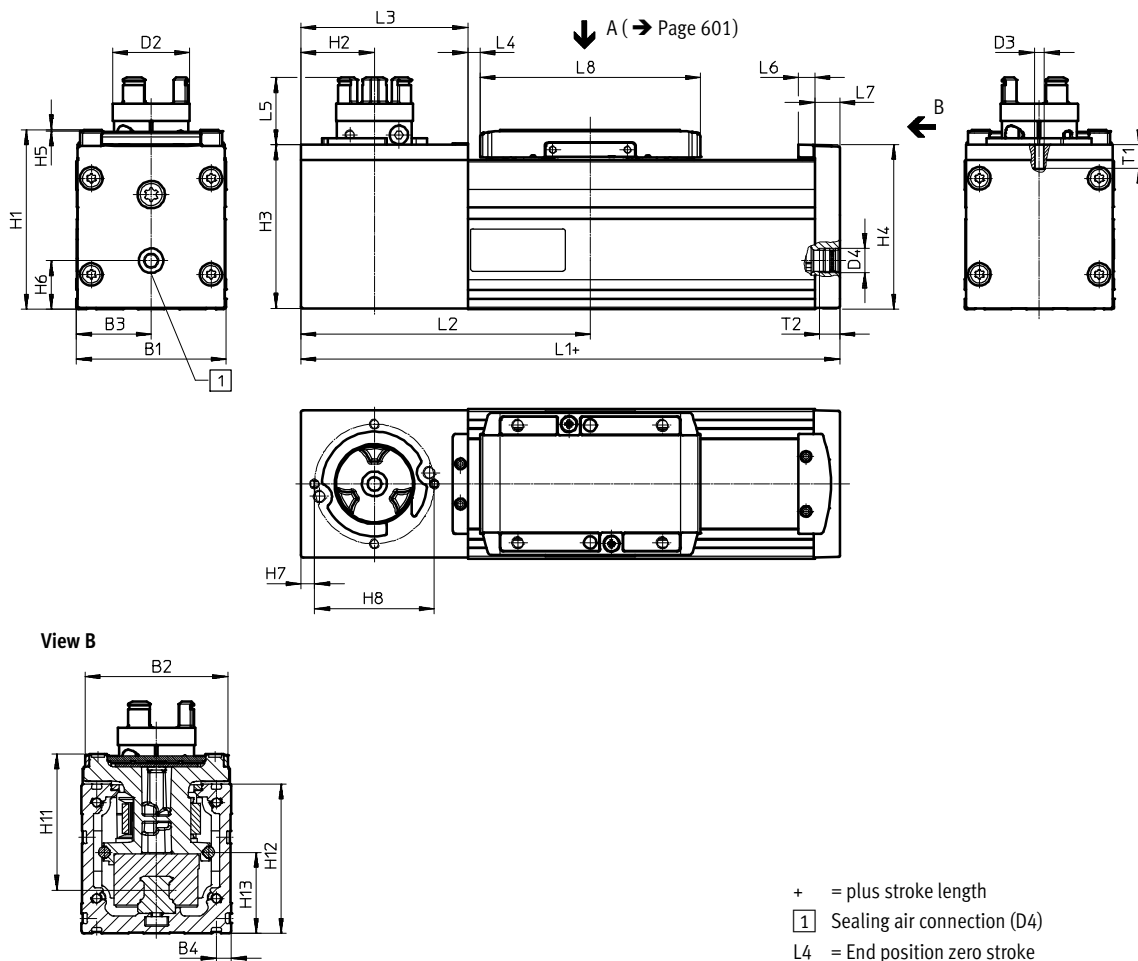
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Linear drives and slides >

Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length
 1 Sealing air connection (D4)
 L4 = End position zero stroke

Size	B1	B2	B3	B4	D2 ∅	D3	D4	H1	H2
45	45	42.6	22.5	6.1	16.5	–	G1/8	54	22
60	60	57.1	30	6.1	31	M4	G1/8	72	29.5
80	80	77.1	40	6.1	31	M6	G1/8	96	39.5

Size	H3	H4	H5	H6	H7	H8	H11	H12	H13
45	49	49.6	0.5	12.5	–	–	42.8	45	18.5
60	65.5	66.1	0.5	19.5	5.5	48	54.6	60	32.5
80	85.5	88.1	0.5	20	7	65	72.5	80	41.5

Size	L1	L2	L3	L4 ¹⁾	L5	L6	L7	L8	T1	T2
		Min.		Min.						
45	165	90	52	4.25	19.9	6.5	7	67.5	–	8
60	216	116	67	4.75	26.9	6.5	10	88.5	9.5	8
80	260	145	87	5	25.9	6.5	12	106	12.5	8

1) Includes a stroke reserve of approx. 3 mm

Electromechanical drives

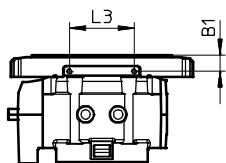
Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Dimensions

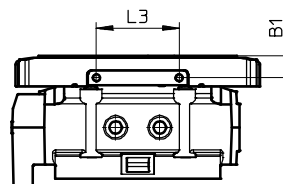
Download CAD data → www.festo.com

Slide

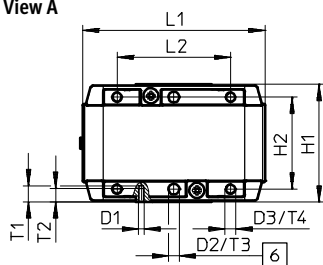
Size 45



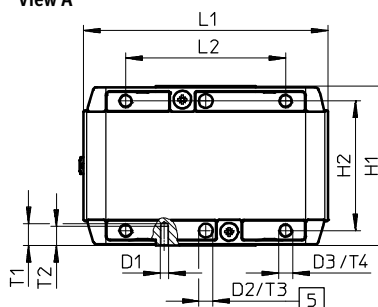
Size 60



View A



View A



- 5 Drill hole for centring sleeve ZBH
- 6 Drill hole for centring pin ZBS

Size	B1	D1	D2 ∅ H8	D3	H1	H2 ±0.1 For D2 ±0.03
45	6 ±0.1	M2	4	M4	43.5	34
60	8	M3	5	M5	58	47

Size	L1	L2	L3	T1	T2	T3	T4 ¹⁾
		±0.1	±0.1			+0.1	
45	67.5	42	24	6	5	3.1	6 ... 7.5
60	88.5	58	30	9	7	1.3	8.5 ... 10

1) Recommended screw-in depth.

Linear drives and slides >

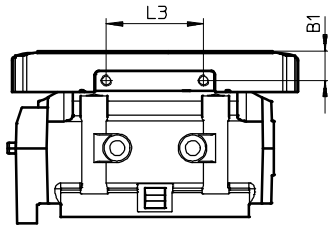
Toothed belt axes ELGC-TB-KF, with recirculating ball bearing guide

Dimensions

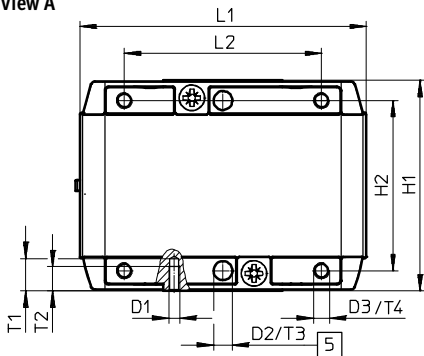
Download CAD data → www.festo.com

Slide

Size 80



View A



5 Drill hole for centring sleeve ZBH

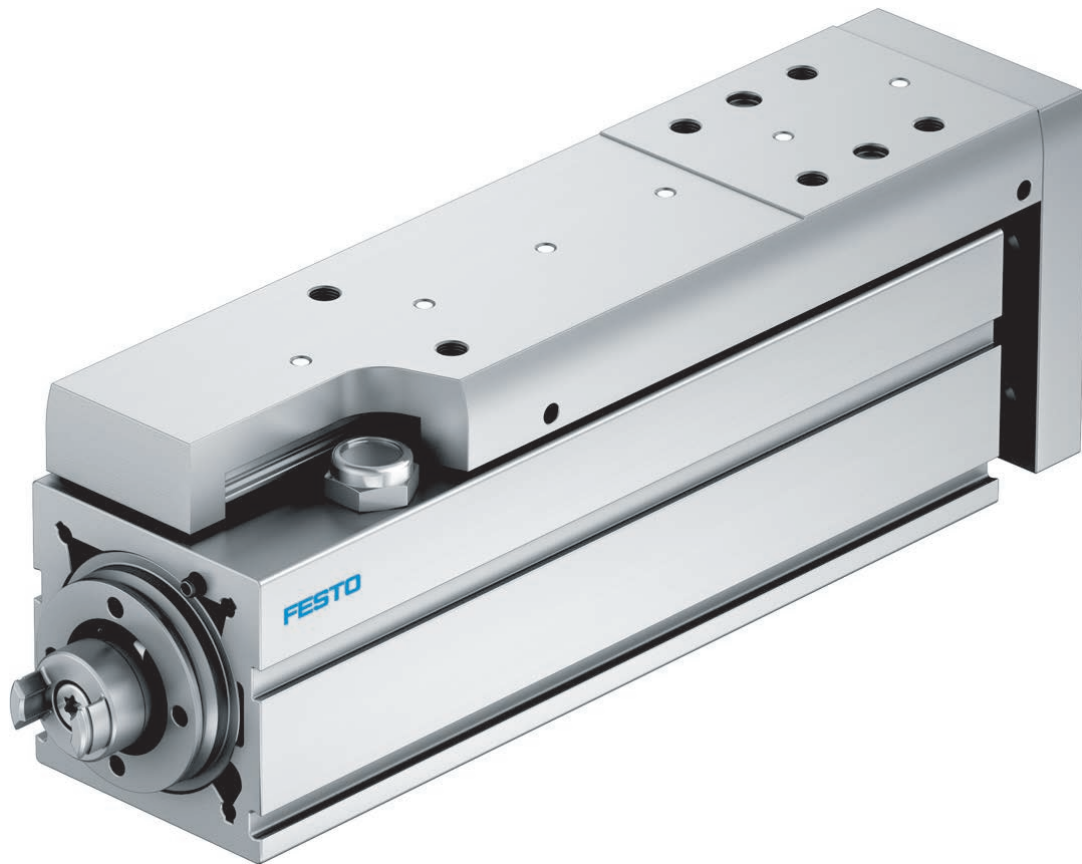
Size	B1	D1	D2 Ø	D3	H1	H2 ±0.1 For D2 ±0.03
80	±0.1 11	M4	H8 7	M6	±0.1 78	63

Size	L1	L2 ±0.1	L3 ±0.1	T1	T2	T3 +0.1	T4 ¹⁾
80	106	73	36	12	9	1.6	11 ... 14

1) Recommended screw-in depth.

04

Electromechanical drives



Small and precise

- + Precise guide and ball screw
- + Compact dimensions
- + Flexible motor connection
- + The toothed belt and spindle axes ELGC together with the mini slides EGSC form a scalable modular system for compact automation

Linear drives and slides ›

Mini slides, electric

EGSC-BS

Linear drives and slides >

Mini slides, electric


EGSC-BS

 Overview, configuration and ordering
→ www.festo.com/catalogue/egsc



 Additional information, support and user documentation
→ www.festo.com/sp/egsc



 Spare parts service



- + The toothed belt and spindle axes ELGC together with the mini slides EGSC form a scalable modular system for compact automation
- + Precise guide and ball screw
- + Compact dimensions
- + Flexible motor connection

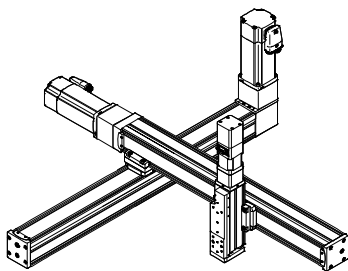
Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]	Max. speed [m/s]
EGSC	25, 32, 45, 60	25 ... 200	20 ... 250	0.6

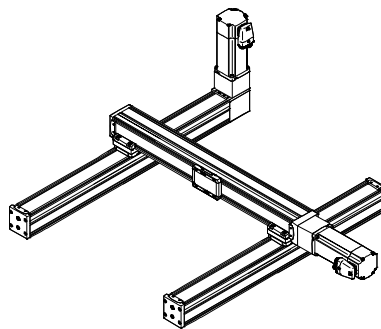
At a glance

- The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation
- The shared platform architecture creates a consistent range with harmonised interfaces. A wealth of systems can be realised entirely without adapter plates
- Powerful drive and guide components ensure a long service life, as well as excellent load capacity and reliability
- The uniform and universal range of accessories reduces warehousing and design costs

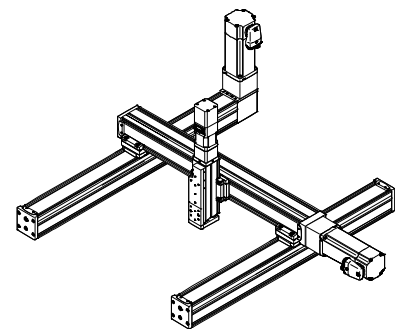
Cantilever system



Planar surface gantry



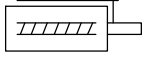
Three-dimensional gantry



Linear drives and slides >

Mini slides EGSC-BS

Data sheet



04

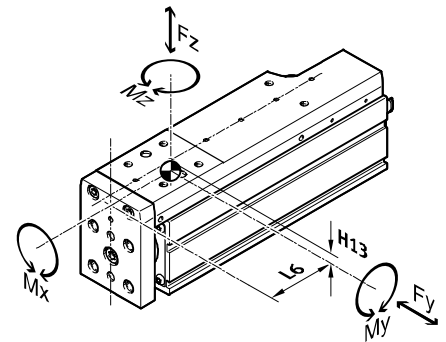
Electromechanical drives

Technical data		Dimensions → Page 612			
Size		25	32	45	60
Spindle pitch	[mm/U]	6	8	10	12
Working stroke	[mm]	25, 50, 75	25, 50, 75, 100	25, 50, 75, 100, 125, 150	50, 75, 100, 125, 150, 200
Max. permissible payload	[kg]	1	2	6	10
Max. feed force F_x	[N]	20	60	120	250
No-load driving torque at min. travel speed	[Nm]	0.008	0.014	0.026	0.069
	[m/s]	0.05	0.05	0.05	0.05
No-load driving torque at max. travel speed	[Nm]	0.029	0.042	0.1	0.306
	[m/s]	0.4	0.5	0.6	0.6
Max. radial force ¹⁾	[N]	30	75	180	230
Max. rotational speed	[rpm]	4000	3750	3600	3000
Max. acceleration	[m/s ²]	15			
Repetition accuracy	[mm]	±0.015			
Max. reversing backlash	[μm]	≤ 0.15			
Position sensing ²⁾		Magneto-resistive, inductive			

- 1) At the drive shaft.
- 2) For sizes 45 and 60, only inductive sensing is possible as of a stroke of 100 mm.

Permissible forces and torques/geometric characteristics

Note
 Engineering software
 PositioningDrives
[→ www.festo.com](http://www.festo.com)



Size		25	32	45	60
Dimension H13	[mm]	7.3	7.9	10.2	15.9
Dimension L6	[mm]	25.1	31.8	37.3	53.4
Max. permissible force F_y	[N]	669	991	1314	4937
Max. permissible force F_z	[N]	669	991	1314	4937
Max. permissible torque M_x	[Nm]	2.0	3.4	8.1	20
Max. permissible torque M_y	[Nm]	2.1	3.2	7	30
Max. permissible torque M_z	[Nm]	2.1	3.2	7	30

1) The dimension relates to the retracted position of the slide. In the advanced position, the dimension must be extended accordingly.

Data sheet

Operating conditions

Ambient temperature	[°C]	0 ... +50
Degree of protection		IP40

Mass moment of inertia

Size		25	32	45	60
J_0	[kg cm ²]	0.0014	0.0062	0.0136	0.0839
J_S per metre stroke	[kg cm ² /m]	0.0150	0.0493	0.1361	0.2708
J_L per kg payload	[kg cm ² /kg]	0.0091	0.0162	0.0253	0.0365

The mass moment of inertia J_{act} of the mini slide is calculated as follows:

$$J_{act} = J_0 + J_S/1000 \text{ mm} \times \text{working stroke}$$

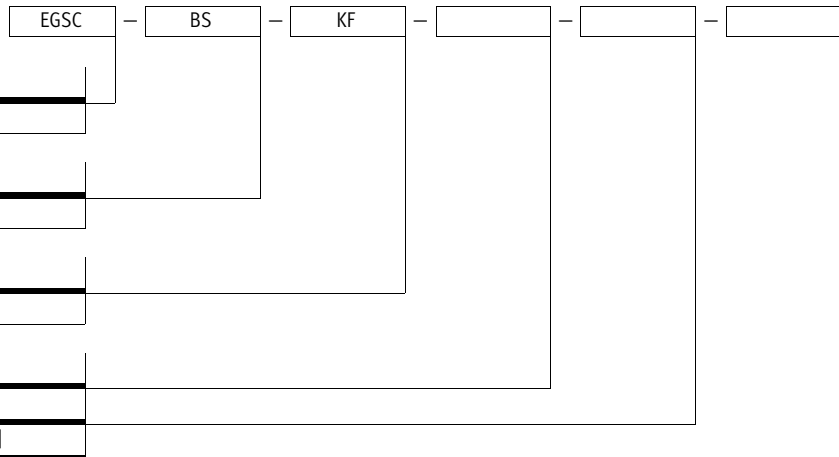
Materials

Yoke plate	Anodised wrought aluminium alloy
Slides	Anodised wrought aluminium alloy
Guide rail	Steel
Housing	Anodised wrought aluminium alloy
Spindle	Steel
Spindle nut	Steel

Linear drives and slides >

Mini slides EGSC-BS

Order code



Type	
EGSC	Mini slide

Drive function	
BS	Ball screw

Guide	
KF	Recirculating ball bearing guide

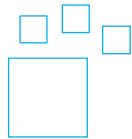
Size		
	Stroke [mm]	Spindle pitch [mm/rev]
25	25, 50, 75	6P
32	25, 50, 75, 100	8P
45	25, 50, 75, 100, 125, 150	10P
60	50, 75, 100, 125, 150, 200	12P

Order example:

EGSC-BS-KF-45-100-10P

Mini slide EGSC - ball screw - recirculating ball bearing guide - size 45 - stroke 100 mm - spindle pitch 10 mm/rev

Ordering – Product options



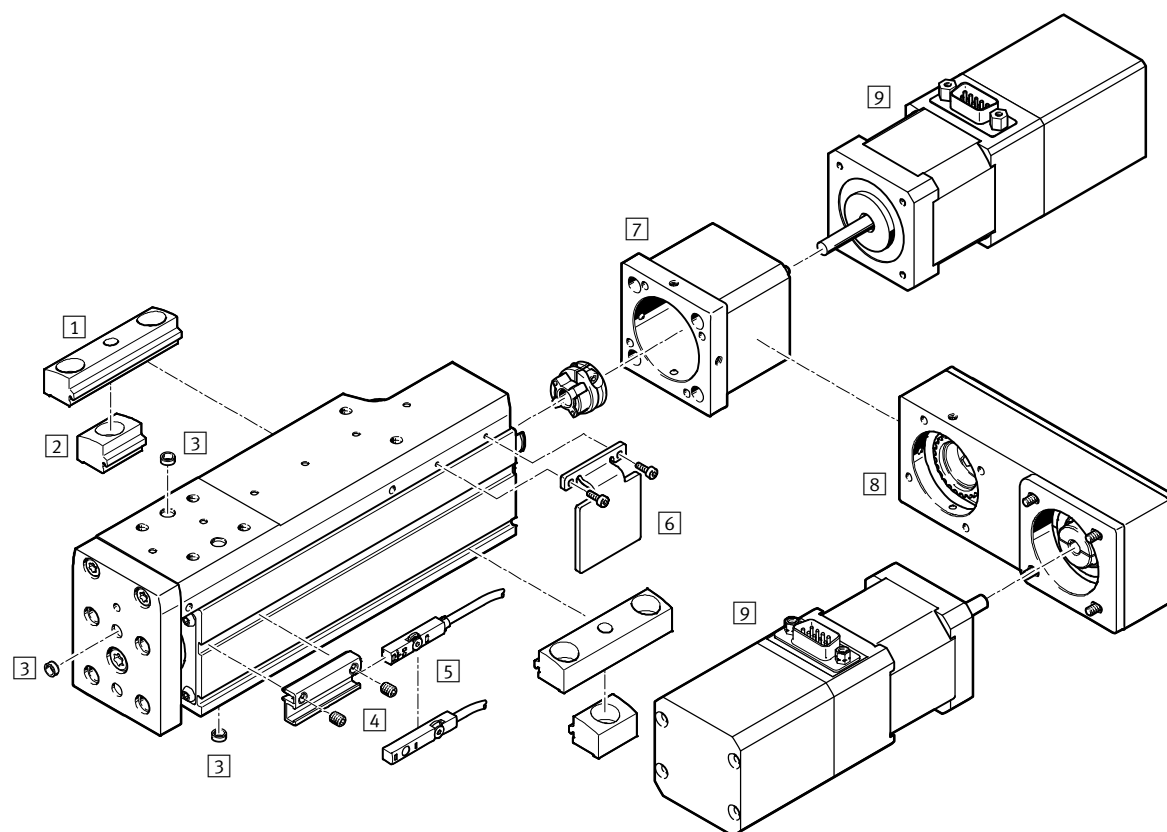
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Accessories



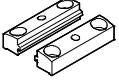


		→ Page/online
1	Profile mounting EAHF-L2-...-P	610
2	Profile mounting EAHF-L2-...-P-S	610
3	Centring pin ZBS/centring sleeve ZBH	610
4	Sensor bracket EAPM-L2	610
5	Proximity sensor SIES-8M	610
	Proximity sensor SMT-8M	610

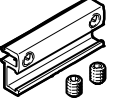
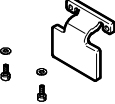
		→ Page/online
6	Switch lug EAPM-...-SLS	610
7	Axial kit EAMM-A	611
8	Parallel kit EAMM-U	611
9	Motors EMME-AS, EMMS-ST	611

Linear drives and slides >

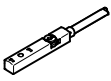
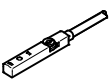
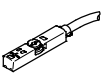
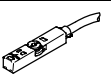


Mini slides EGSC-BS

Accessories – Ordering data

	For size	Part no.	Type
1 Profile mounting Data sheets online: → egsc-bs			
	25	4835684	EAHF-L2-25-P
	32	4835684	EAHF-L2-25-P
	45	4835728	EAHF-L2-45-P
	60	4835728	EAHF-L2-45-P
2 Profile mounting Data sheets online: → egsc-bs			
	25	5183153	EAHF-L2-25-P-S
	32	5183153	EAHF-L2-25-P-S
	45	5183133	EAHF-L2-45-P-S
	60	5183133	EAHF-L2-45-P-S
3 Centring pin ZBS/centring sleeve ZBH1 Data sheets online: → zbh			
	25	150928	ZBS-5
	32, 45, 60	186717	ZBH-7

	For size	Part no.	Type
4 Sensor bracket Dimensions online: → egsc-bs			
	25 ... 60	4759852	EAPM-L2-SH
6 Switch lug Data sheets online: → egsc-bs			
	25	8067258	EAPM-E19-25-SLS
	32	8067259	EAPM-L2-32-SLS
	45	8067260	EAPM-L2-45-SLS
	60	8067261	EAPM-L2-60-SLS

1) Packaging unit 10 pieces.

	For size	Switching output, connection	Cable length [m]	Part no.	Type
5 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	25 ... 60	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	25 ... 60	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
Proximity sensor for T-slot, magneto-resistive – N/O contact Data sheets → Page 1206					
		PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
N/C contact Data sheets → Page 1206					
	25 ... 60	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
5 Connecting cable, straight socket Data sheets → Page 1544					
	25 ... 60	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1544					
	25 ... 60	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

Note

For sizes 45 and 60, inductive proximity sensor SIES-8M must be used for strokes greater than 100 mm.

04

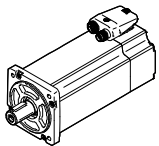
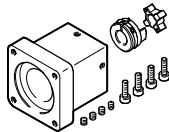
Electromechanical drives

Accessories – Ordering data

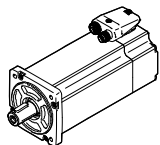
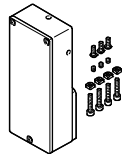
Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the respective kit must be taken into consideration.

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
7/9 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
EGSC-BS-KF-25		
With stepper motor		
EMMS-ST-28-...	4505258	EAMM-A-V20-28A
EGSC-BS-KF-32		
With servo motor		
EMME-AS-40-...	4491059	EAMM-A-V25-40P
With stepper motor		
EMMS-ST-42-...	4582608	EAMM-A-V25-42A
EGSC-BS-KF-45		
With servo motor		
EMME-AS-40-...	4595742	EAMM-A-V32-40P
EMME-AS-60-...	4608750	EAMM-A-V32-60P
With stepper motor		
EMMS-ST-42-...	4281142	EAMM-A-V32-42A
EMMS-ST-57-...	4597016	EAMM-A-V32-57A
EGSC-BS-KF-60		
With servo motor		
EMME-AS-60-...	4133487	EAMM-A-T42-60P
EMME-AS-80-...	4623788	EAMM-A-T42-80P
With stepper motor		
EMMS-ST-57-...	4327034	EAMM-A-T42-57A
EMMS-ST-87-...	4610008	EAMM-A-T42-87A

1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Motor/gear unit ¹⁾	Parallel kit	
		
	<ul style="list-style-type: none"> The kit can be mounted in all directions Use in combination with third-party motors on request 	
	Part no.	Type
8/9 Permissible axis/motor combination with parallel kit – Data sheets online: → eamm-u		
EGSC-BS-KF-25		
With stepper motor		
EMMS-ST-28-...	4767125	EAMM-U-30-V20-28A-44
EGSC-BS-KF-32		
With servo motor		
EMME-AS-40-...	4782056	EAMM-U-45-V25-40P-63
With stepper motor		
EMMS-ST-42-...	4825645	EAMM-U-45-V25-42A-63
EGSC-BS-KF-45		
With servo motor		
EMME-AS-40-...	4718297	EAMM-U-45-V32-40P-63
With stepper motor		
EMMS-ST-42-...	4280674	EAMM-U-45-V32-42A-63
EGSC-BS-KF-60		
With servo motor		
EMME-AS-60-...	4784301	EAMM-U-65-T42-60P-87
With stepper motor		
EMMS-ST-57-...	4331535	EAMM-U-65-T42-57A-87

1) The input torque must not exceed the maximum permissible transferable torque of the parallel kit.

Linear drives and slides >

Mini slides EGSC-BS

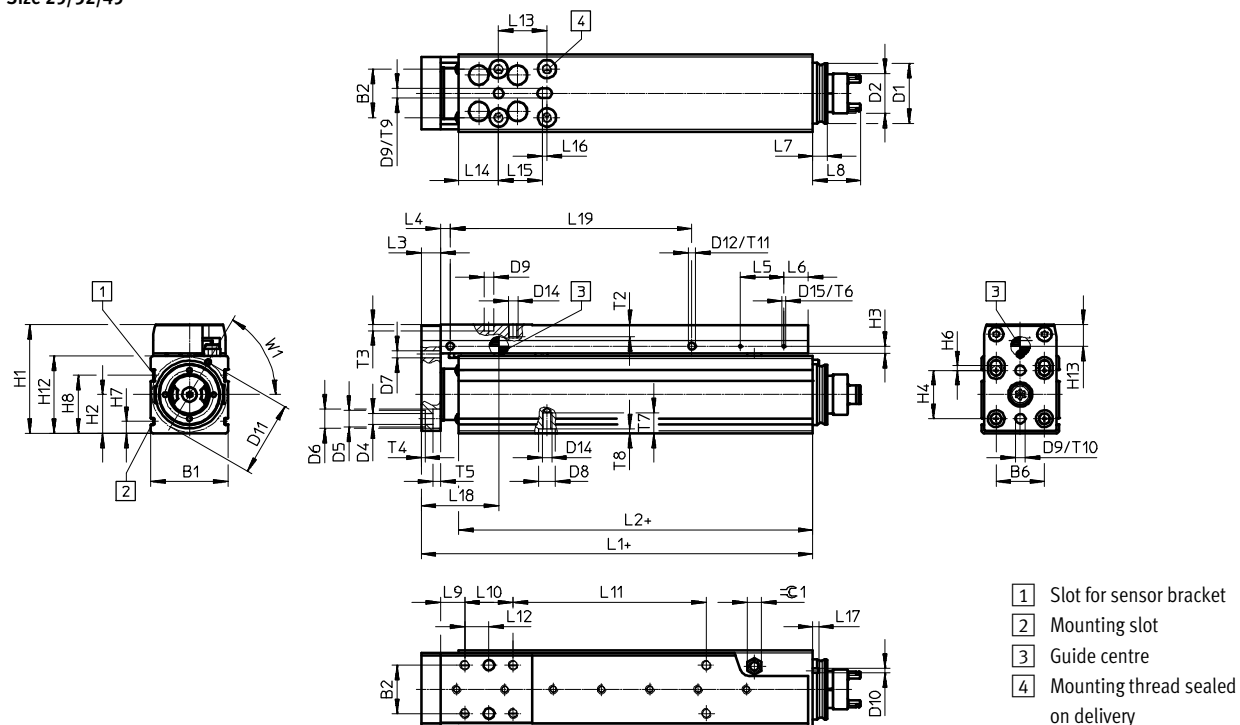
Dimensions

Size 25/32/45

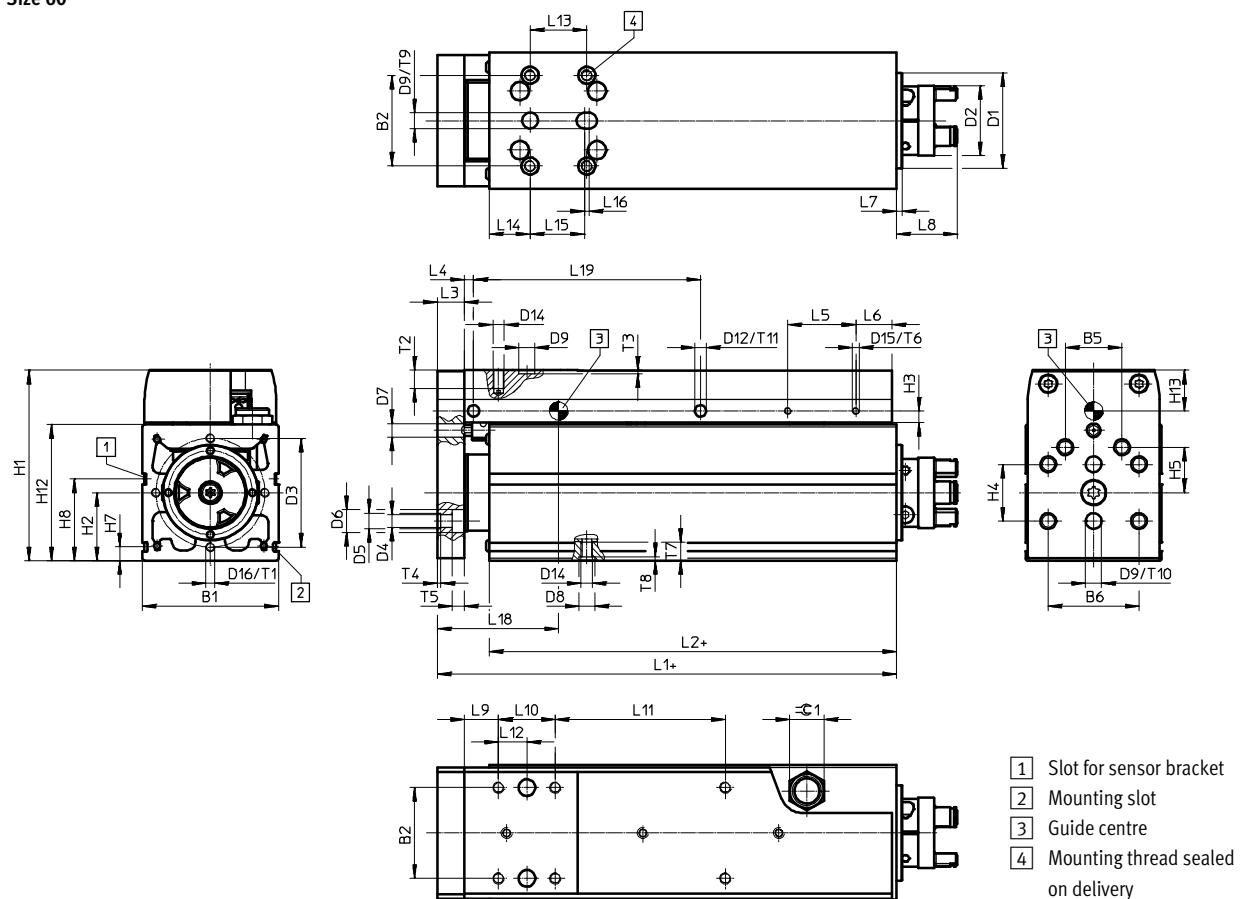
Download CAD data → www.festo.com

04

Electromechanical drives



Size 60



Dimensions

Download CAD data → www.festo.com

Size	B1 ±0.15	B2	B5	B6	D1 ∅	D2 ∅	D3 ∅	D4 ∅ H13	D5 ∅ H7	D6 ∅ H13	D7 ∅	D8 ∅ H7	D9 ∅ H8	D10 ∅	D11 ∅
25	25	17	–	17	20.5	11	–	3.4	5	6	2.5	5	2	2	25
32	32	20	–	20	25	16.5	–	4.5	7	8	3	7	4	2	31
45	45	25	–	25	32	16.5	–	5.5	7	10	3	7	5	3	41
60	60	40	25	40	42	31	48	5.5	7	10	6	7	7	–	–

Size	D12 ∅	D13	D14	D15	D16	H1	H2	H3	H4	H5	H6	H7	H8	H12 ±0.15	H13
25	3	–	M3	M1.6	–	36.5	12.5	2.5	17	–	–	4.9	20.5	25	7.6
32	3	–	M4	M1.6	–	45	16	3	20	–	2	4.9	24	32	8.4
45	3	–	M5	M2	–	60.5	22.5	3	25	–	–	6.1	28.5	45	10.7
60	5	M4	M5	M3	M4	84	30	5	25	20	–	6.1	36	60	16.4

Size	L1	L2	L3 +0.2	L4	L5 ±0.1	L6	L7	L8	L9	L10	L12	L13	L14	L15	L16
25	53.6	42	6	4	18	6	5	15	10	17	8.5	17	13.5	16.5	1
32	62	46.5	8	4	18	10	6	19.9	10	20	10	20	16.5	18	2
45	73.8	54.5	10	4	24	12	6	19.9	15	25	12.5	25	17.5	24	2
60	102.4	79.5	12	4	30	16	2.5	26.9	15	25	12.5	25	30	24	2

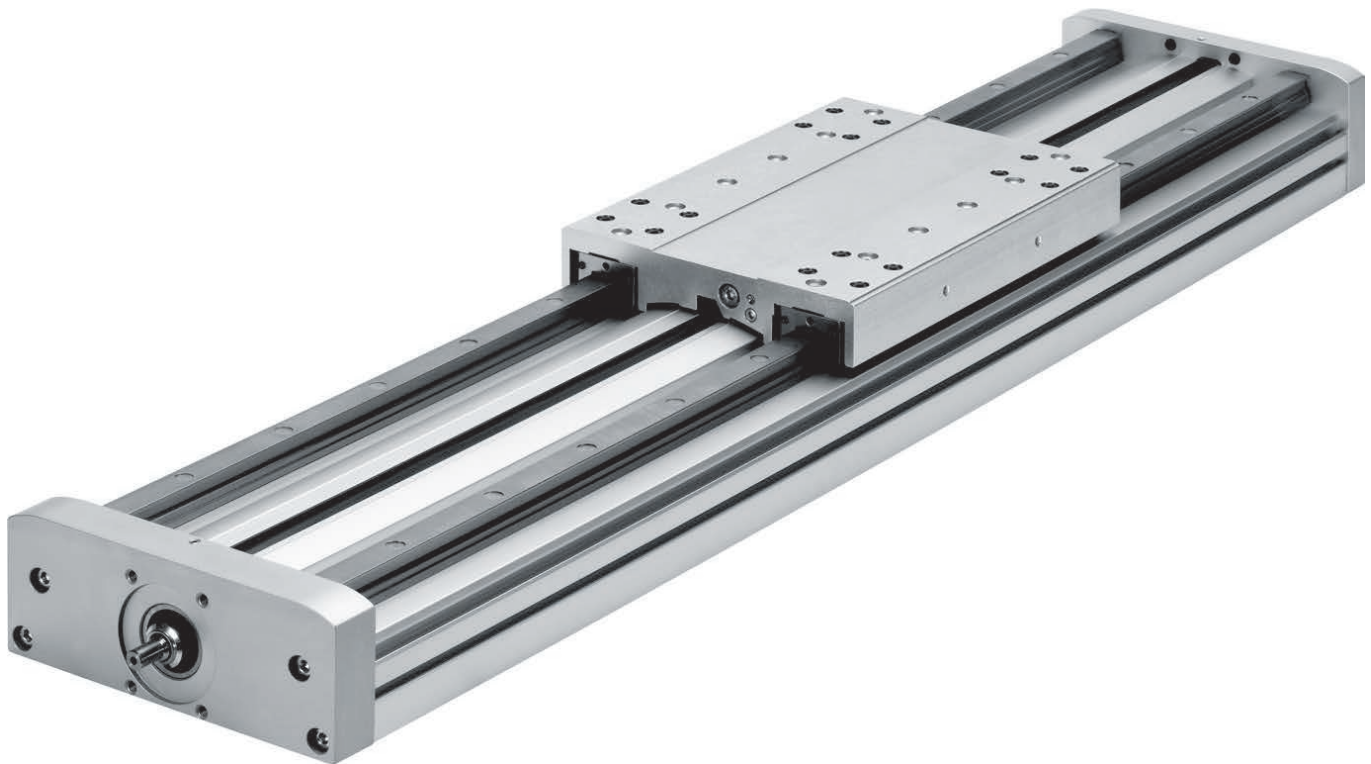
Size	L17	L18	T1	T2	T3 +0.1	T4 +0.1	T5	T6	T7	T8	T9 +0.1	T10 +0.1	T11 +0.1	W1 –0.2	≈ 1
25	2.5	25.1	–	4.5	2.6	1.3	3.2	2	6	1.3	2.1	3.1	2	60°	6
32	2.5	31.8	–	5	2.6	1.6	3.2	1.5	8.5	1.8	2.6	2.6	1.5	60°	6
45	2	37.3	–	6	1.3	1.6	5.4	4	7	1.8	1.3	1.3	5	60°	12
60	–	53.4	10	8	1.6	1.6	5.4	6	8	1.8	1.6	1.6	5	–	15

Size	Stroke [mm]	L19	L11
25	25	25	0
	50	50	33
	75	75	58
32	25	25	0
	50	50	30
	75	75	55
	100	100	80
45	25	25	0
	50	50	25
	75	75	50
	100	100	75
	125	125	100
	150	150	125
60	50	50	25
	75	75	50
	100	100	75
	125	125	100
	150	150	125
	200	200	175

Linear drives and slides >

04

Electromechanical drives



Performance and precision

- + Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity
- + Spindle support enables maximum travel speed with all stroke lengths
- + Ideal as a basic axis for linear gantries and cantilever axes

Linear drives and slides >

Spindle axes with heavy-duty guide

EGC-HD-BS


Linear drives and slides >

Spindle axes with heavy-duty guide


EGC-HD-BS

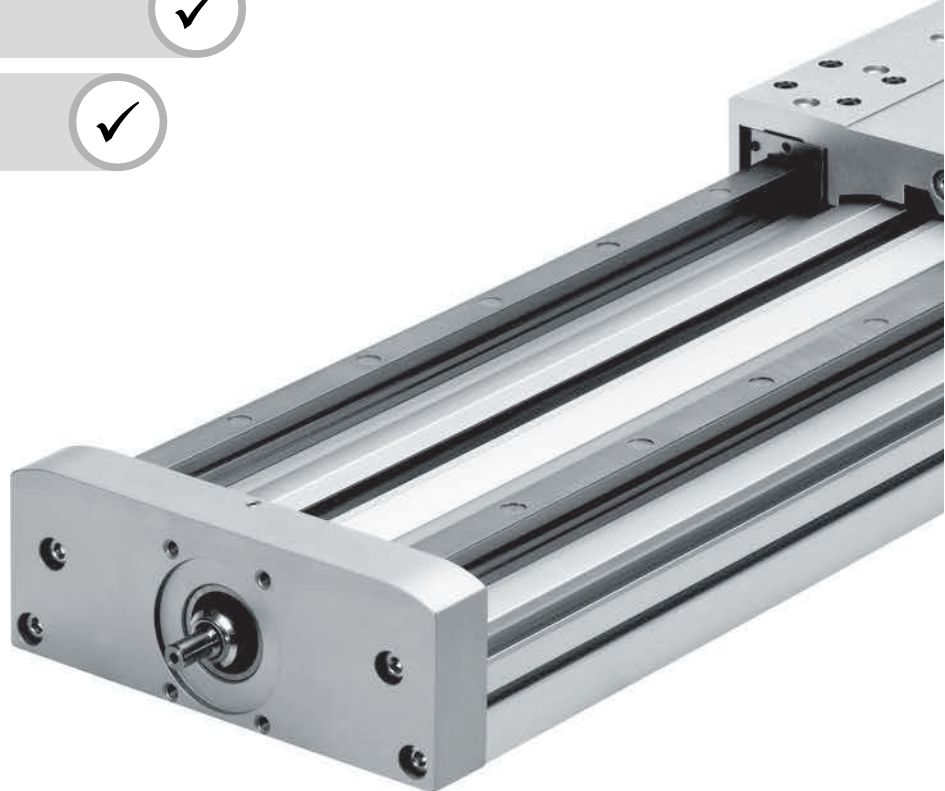
 Overview, configuration and ordering
→ www.festo.com/catalogue/egc-hd-bs



 Additional information, support and user documentation
→ www.festo.com/sp/egc-hd-bs



 Spare parts service



- + DUO recirculating ball bearing guide for high loads and torques
- + Profile with maximum rigidity and load capacity
- + With a precision ball screw
- + Spindle support enables maximum travel speed
- + Optimum force-speed ratio thanks to different spindle pitches
- + For maximum loads and torques

Spindle axes EGC-HD-BS, with heavy-duty guide

Product range overview

Type/Version	Size	Stroke [mm]	Feed force F_x [N]	Product options S
EGC-HD-BS				
HD – Heavy-duty guide	125, 160, 220	50 ... 2400	300 ... 1300	■

Product options

S	Spindle support	KL	Additional slide on left	DN	Without operating instructions
GK	Standard slide	KR	Additional slide on right		
GP	Standard slide, protected				

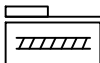
At a glance

- Heavy-duty design for:
 - Maximum loads and torques
 - High feed forces and speeds
 - Long service life
- Precision DUO guide rail with high load capacity
- Ideal as a basic axis for linear gantries and cantilever axes
- The spindle axis with integrated ball screw combines high precision and flexible spindle pitches
- Spindle support enables maximum travel speed with all stroke lengths
- Space-saving position sensing possible via proximity sensor in the profile slot
- Wide range of options for mounting on drives

Linear drives and slides >

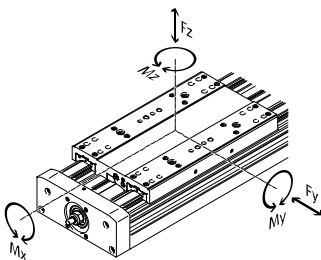
Spindle axes EGC-HD-BS, with heavy-duty guide

Data sheet



04

Technical data



Note
Engineering software
PositioningDrives
www.festo.com

Dimensions → Page 624

Size		125	160	220		
Spindle pitch	[mm/U]	10	10	20	10	25
Working stroke ¹⁾	[mm]	50 ... 900	50 ... 1900	50 ... 2400		
Spindle diameter	[mm]	12	15	25		
Max. feed force F_x	[N]	300	600	1300		
No-load torque	[Nm]	0.3	0.5	0.5	1.5	1.5
at min. travel speed	[m/s]	0.05	0.1	0.1	0.2	0.2
No-load torque	[Nm]	0.45	0.75	0.75	2.25	2.25
at max. travel speed	[m/s]	0.5	0.5	1	0.6	1.5
Max. radial force ²⁾	[N]	220	250	500		
Max. rotational speed ³⁾	[rpm]	3000	3000	3600		
Max. acceleration	[m/s ²]	15				
Repetition accuracy	[mm]	±0.02				
Max. permissible force F_y	[N]	3650	5600	13000		
Max. permissible force F_z	[N]	3650	5600	13000		
Max. permissible torque M_x	[Nm]	140	300	900		
Max. permissible torque M_y	[Nm]	275	500	1450		
Max. permissible torque M_z	[Nm]	275	500	1450		

- 1) Total stroke = working stroke + 2x stroke reserve.
- 2) At the drive shaft.
- 3) Rotational speed and speed are stroke-dependent.

Operating conditions

Ambient temperature ⁴⁾	[°C]	-10 ... +60
Degree of protection		IP40

4) Note operating range of proximity sensors.

Mass moment of inertia

Size		125	160	220		
Spindle pitch		10	10	20	10	25
J_0	[kg mm ²]	6.06	13.94	29.74	106.78	184.26
J_S per metre stroke	[kg mm ² /m]	14.2	34.6	34.6	275.6	275.6
J_L per kg payload	[kg mm ² /Kg]	2.53	2.53	10.13	2.53	15.83

The mass moment of inertia J_A of the entire axis is calculated as follows: $J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$

Materials

Cover	Anodised wrought aluminium alloy
Slides	Anodised wrought aluminium alloy
Guide rail	Coated and corrosion-resistant steel
Spindle	Steel
Cover strip	PU

Spindle axes EGC-HD-BS, with heavy-duty guide

Order code

		EGC	-	HD	-		-		-	BS	-		-		-		-	GK	
Type																			
EGC	Electromechanical linear axis																		
Guide																			
HD	Heavy-duty guide																		
Size																			
	Stroke [mm]																		
125	100, 200, 300, 400, 500, 600, 700, 900	50 ... 880																	
160	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1700, 1900	50 ... 1880																	
220	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1900, 2400	50 ... 2380																	
Drive function																			
BS	Ball screw																		
Spindle pitch [mm/rev]																			
10P	10																		
20P	20 1																		
25P	25 2																		
Spindle support																			
-	None																		
S	With spindle support 3																		
Stroke reserve																			
...H	0 ... 999 (0 = no stroke reserve) 4																		
Slides																			
GK	Standard slide																		

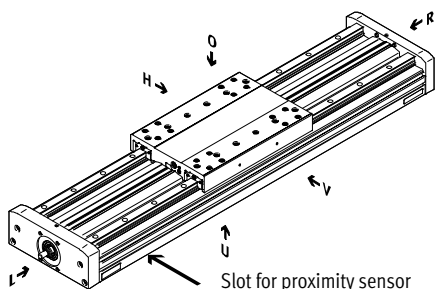
- 1 Only with size 160.
- 2 Only with size 220.
- 3 Only above stroke 605 mm with size 125, only above stroke 680 mm with size 160, only above stroke 783 mm with size 220.
- 4 The sum of the stroke length and 2x stroke reserve must not exceed the maximum working stroke.

Order example:

EGC-HD-160-500-BS-10P-20H-GK

Electromechanical linear axis EGC - heavy-duty guide - size 160 - stroke 500 mm - ball screw - spindle pitch 10 mm/rev - without spindle support - stroke reserve 20 mm - standard slide

Ordering aid

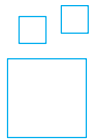


- O top
- U underneath
- R right
- L left
- V front
- H rear

Linear drives and slides >

Spindle axes EGC-HD-BS, with heavy-duty guide

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

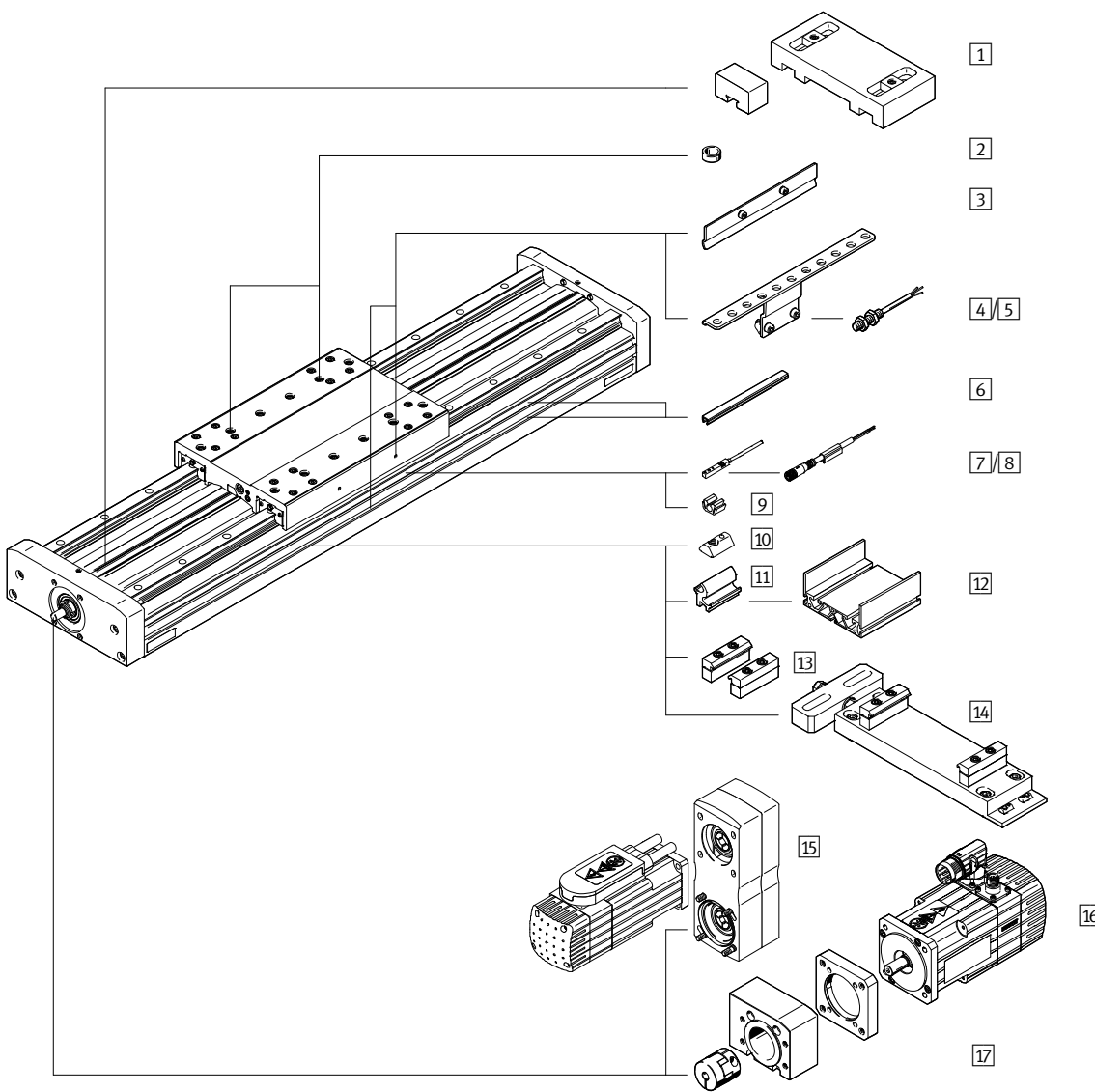
The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

04

Accessories

Electromechanical drives

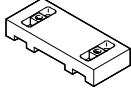







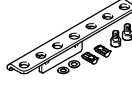
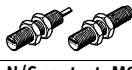

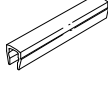
		→ Page/online
1	Emergency buffer NPE/retainer EAYH	621
2	Centring pin ZBS/centring sleeve ZBH	621
3	Switch lug SF-EGC	621
4	Sensor bracket HWS-EGC	621
5	Inductive proximity sensor SIEN	621
6	Slot cover ABP/ABP-S	621
7	Inductive proximity sensor SIES	621
8	Connecting cable NEBU	621
9	Clip SMBK	621

		→ Page/online
10	Slot nut NST	621
11	Adapter kit DAHM	egc-bs
12	Support profile HMA	egc-bs
13	Profile mounting MUE	621
14	Adjusting kit EADC-E16	621
15	Parallel kit EAMM-U	622
16	Motor EMME/EMMS	622
17	Axial kit EAMM-A	623

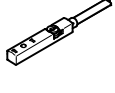
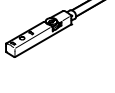
Spindle axes EGC-HD-BS, with heavy-duty guide




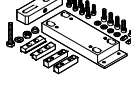
Accessories – Ordering data


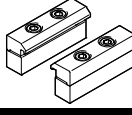
	For size	Part no.	Type
1 Retainer EAYH Dimensions online: → egc-hd-bs			
	125	1662803	EAYH-L2-125-N
	160	1669259	EAYH-L2-160-N
	220	1669260	EAYH-L2-220-N
1 Emergency buffer			
	125	1662475	NPE-125
	160	1672593	NPE-160
	220	1672598	NPE-220
2 Centring pin¹⁾²⁾ Data sheets online: → zbs			
	125	150928	ZBS-5
2 Centring sleeve¹⁾²⁾ Data sheets online: → zbh			
	125 ... 220	150927	ZBH-9
3 Switch lug³⁾ Dimensions online: → egc-hd-bs			
	125	570027	SF-EGC-HD-1-125
	160	1645872	SF-EGC-HD-1-160
	220	1645866	SF-EGC-HD-1-220
3 Switch lug⁴⁾ Dimensions online: → egc-hd-bs			
	125	570030	SF-EGC-HD-2-125
	160	1645865	SF-EGC-HD-2-160
	220	1645868	SF-EGC-HD-2-220

	For size	Part no.	Type
4 Sensor bracket⁵⁾ Dimensions online: → egc-hd-bs			
	125	558057	HWS-EGC-M5
	160	558057	HWS-EGC-M5
	220	570365	HWS-EGC-M8-B
5 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
6 Slot cover⁶⁾			
	For mounting slot		
	125, 160 ⁷⁾	151681	ABP-5
	160 ⁸⁾ , 220	151682	ABP-8
	For sensor slot		
125 ... 220	563360	ABP-5-S1	

- Packaging unit 10 pieces.
- 2 centring pins/sleeves included in the scope of delivery of the axis.
- For sensing via proximity sensor SIES-8M.
- For sensing via proximity sensor SIEN-M8B or SIES-8M.
- For proximity sensor SIEN-M8B.
- Packaging unit 2x 0.5 m.
- For mounting slot at side.
- For mounting slot underneath.

	For size	Switching output, connection	Cable length [m]	Part no.	Type
7 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	125 ... 220	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	125 ... 220	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D

	For size	Part no.	Type
8 Connecting cable, straight socket Data sheets → Page 1543			
	2.5 m	★ 541333	NEBU-M8G3-K-2.5-LE3
	5.0 m	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543			
	2.5 m	★ 541338	NEBU-M8W3-K-2.5-LE3
	5.0 m	★ 541341	NEBU-M8W3-K-5-LE3
9 Clip			
	125 ... 220	534254	SMBK-8
14 Adjusting kit Dimensions online: → egc-hd-bs			
	125	8047580	EADC-E16-125-E14-8
	160	8047580	EADC-E16-160-E14-8
	220	8047580	EADC-E16-220-E14-8

	For size	Part no.	Type
10 Slot nut Data sheets online: → nst			
	125, 160 ⁹⁾	150914	NST-5-M5
		8047843	NST-5-M5-10 ¹¹⁾
		8047878	NST-5-M5-50 ¹²⁾
160 ¹⁰⁾ , 220	150915	NST-8-M6	
	8047868	NST-8-M6-10 ¹¹⁾	
	8047869	NST-8-M6-50 ¹²⁾	
13 Profile mounting Dimensions online: → egc-hd-bs			
	125	558043	MUE-70/80
	160	558043	MUE-70/80
	220	558044	MUE-120/185

- For mounting slot at the side.
- For mounting slot underneath.
- Packaging unit 10 pieces.
- Packaging unit 50 pieces.

Linear drives and slides >

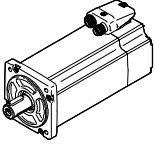

Spindle axes EGC-HD-BS, with heavy-duty guide

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the respective kit must be taken into consideration.

Motor/gear unit ¹⁾	Parallel kit
	
	<ul style="list-style-type: none"> The kit can be mounted in all directions Use in combination with third-party motors on request
	Part no. Type

15/16 Permissible axis/motor combination with parallel kit –
Data sheets online: → [eammm-u](#)

EGC-HD-125		
With servo motor		
EMME-AS-40-...	2155239	EAMM-U-50-S38-40P-78
EMMS-AS-40-...	1217708	EAMM-U-50-S38-40A-78
EMMS-AS-55-...	1218538	EAMM-U-60-S38-55A-91
With stepper motor		
EMMS-ST-42-...	1217945	EAMM-U-50-S38-42A-78
EMMS-ST-57-...	1218568	EAMM-U-60-S38-57A-91
With gear unit		
EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
EMGC-40-P-...	2283732	EAMM-U-60-S38-40G-91
EGC-HD-160		
With servo motor		
EMMS-AS-55-...	1219370	EAMM-U-60-S48-55A-91 ²⁾
EMME-AS-60-...	2629253	EAMM-U-70-S48-60P-96 ²⁾
EMMS-AS-70-...	2787320	EAMM-U-70-S48-70A-96 ²⁾
EMMS-AS-70-...	1217689	EAMM-U-86-S48-70A-102 ²⁾
With stepper motor		
EMMS-ST-57-...	1219379	EAMM-U-60-S48-57A-91 ²⁾
EMMS-ST-87-...	1217604	EAMM-U-86-S48-87A-177 ²⁾
With gear unit		
EMGA-40-P-...	2283760	EAMM-U-60-S48-40G-91 ²⁾
EMGC-40-P-...	2283760	EAMM-U-60-S48-40G-91 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	2801627	EAMM-U-70-S48-60G-96 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2801715	EAMM-U-70-S48-60H-96 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	1587251	EAMM-U-86-S48-60G-102 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1587338	EAMM-U-86-S48-60H-102 ²⁾

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
EGC-HD-220		
With servo motor		
EMMS-AS-70-...	1217543	EAMM-U-86-S62-70A-177 ²⁾
EMME-AS-80-...	2157004	EAMM-U-86-S62-80P-177 ²⁾
EMME-AS-100-...	1217381	EAMM-U-110-S62-100A-207 ²⁾
EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207 ²⁾
EMMS-AS-140-...	1219440	EAMM-U-145-S62-140A-288 ²⁾
With stepper motor		
EMMS-ST-87-...	1217373	EAMM-U-86-S62-87A-177 ²⁾
With gear unit		
EMGA-60-P-...-SAS/SST ³⁾	1587411	EAMM-U-86-S62-60G-177 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1587453	EAMM-U-86-S62-60H-177 ²⁾

- The input torque must not exceed the maximum permissible transferable torque of the parallel kit.
- To support the axis shaft, a counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit → online: eamm-u
- Gear unit drive shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.

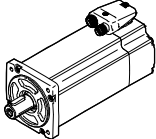
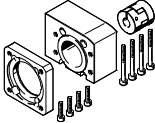
The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.
More information → [eammm-u](#)

04

Electromechanical drives

Spindle axes EGC-HD-BS, with heavy-duty guide

Accessories – Ordering data

Motor ¹⁾	Axial kit	
		
	Part no.	Type
16/17 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
EGC-HD-125		
With servo motor		
EMME-AS-40-...	3637972	EAMM-A-S38-40P-G2
EMMS-AS-40-...	3637971	EAMM-A-S38-40A-G2
EMMS-AS-55-...	3637967	EAMM-A-S38-55A-G2
EMME-AS-60-...	3637958	EAMM-A-S38-60P-G2
With servo motor and gear unit		
EMME-AS-40-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-SAS-40		
With stepper motor		
EMMS-ST-42-...	3637965	EAMM-A-S38-42A-G2
EMMS-ST-57-...	3637956	EAMM-A-S38-57A-G2
With stepper motor and gear unit		
EMMS-ST-42-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-SST-42		
With integrated drive		
EMCA-EC-67-...	1456638	EAMM-A-S38-67A-G2
With integrated drive and gear unit		
EMCA-EC-67-...-	1456647	EAMM-A-S38-40G-G2
EMGC-40-...		
EGC-HD-160		
With servo motor		
EMMS-AS-55-...	3637961	EAMM-A-S48-55A-G2
EMME-AS-60-...	3637964	EAMM-A-S48-60P-G2
EMMS-AS-70-...	3637957	EAMM-A-S48-70A-G2
With servo motor and gear unit		
EMME-AS-40-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-SAS-40		
EMMS-AS-55-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456652	EAMM-A-S48-60H-G2
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SAS-70		

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
EGC-HD-160		
With stepper motor		
EMMS-ST-57-...	3637963	EAMM-A-S48-57A-G2
EMMS-ST-87-...	3637962	EAMM-A-S48-87A-G2
With stepper motor and gear unit		
EMMS-ST-42-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-SST-42		
EMMS-ST-57-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SST-57		
With integrated drive and gear unit		
EMCA-EC-67-...-	1456650	EAMM-A-S48-40G-G2
EMGC-40-...		
EMCA-EC-67-...-	1456652	EAMM-A-S48-60H-G2
EMGC-60-...		
EGC-HD-220		
With servo motor		
EMMS-AS-70-...	3637959	EAMM-A-S62-70A-G2
EMME-AS-80-...	3637970	EAMM-A-S62-80P-G2
EMME-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-140-...	3637969	EAMM-A-S62-140A-G2
With servo motor and gear unit		
EMMS-AS-55-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456654	EAMM-A-S62-60H-G2
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SAS-70		
EMMS-AS-70-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-100		
With stepper motor		
EMMS-ST-87-...	3637966	EAMM-A-S62-87A-G2
With stepper motor and gear unit		
EMMS-ST-57-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SST-57		
EMMS-ST-87-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SST-87		
With integrated drive and gear unit		
EMCA-EC-67-...-	1456654	EAMM-A-S62-60H-G2
EMGC-60-...		

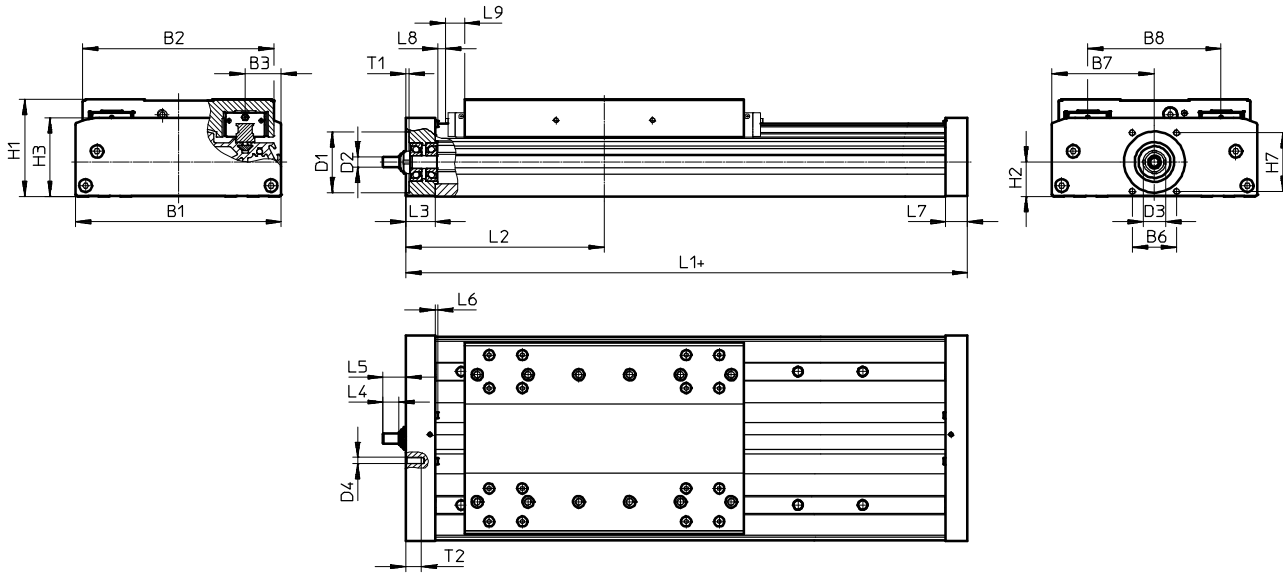
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Linear drives and slides >

Spindle axes EGC-HD-BS, with heavy-duty guide

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2 x stroke reserve

Size	B1	B2	B3	B6	B7	B8	D1 Ø H7	D2 Ø h6
125	124	120	21	29	62	80	38	6
160	162	150.7	27.5	35	81	105	48	8
220	224	204.2	40	64	112	140	62	12

size	D3	D4	H1	H2	H3	H7	L3	L4
125	15	M5	64	22.5	50.4	36	21	8
160	18	M5	76.5	27	62	46	23	12.5
220	28	M6	111.5	42.5	91	54	33	17.5

Size	L5	L6	L7	L8	L9	T1	T2
125	14	1.8	16	2	-	2.5	12
160	18	2	17	0.55	14.9	2.5	12
220	25.5	2	30	2	18	3	15

Size	Stroke	L1	L2 Min.
125	≤900	268	136.5
160	<1377	296	151.3
	≥1377	336	171
220	<1604	409	206
	≥1604	469	236

04

Electromechanical drives

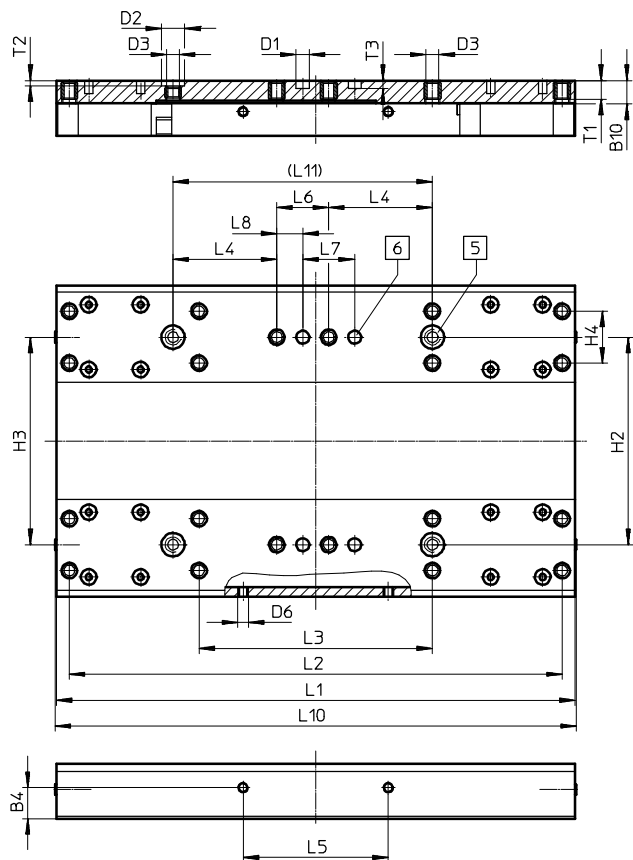
Spindle axes EGC-HD-BS, with heavy-duty guide

Download CAD data → www.festo.com

Dimensions

GK – Standard slide

Size 125



- 5 Drill hole for centring sleeve ZBH
- 6 Drill hole for centring pin ZBS

Size	B4	B10	D1 ∅ H7	D2 ∅ H7	D3	D6	H2	H3	H4	L1	L2	L3
125	±0.1 12	9	5	9	M5	M4	±0.03 80	±0.05 80	±0.1 20	±0.1 200	±0.2 190	±0.1 90

Size	L4	L5	L6	L7	L8	L10	L11	T1	T2	T3
125	±0.1 40	±0.2 56	±0.1 20	±0.03 20	±0.1 10	202	±0.03 100	7.8	+0.1 2.1	+0.1 3.1

04
Electromechanical drives

Linear drives and slides >

Spindle axes EGC-HD-BS, with heavy-duty guide

Dimensions

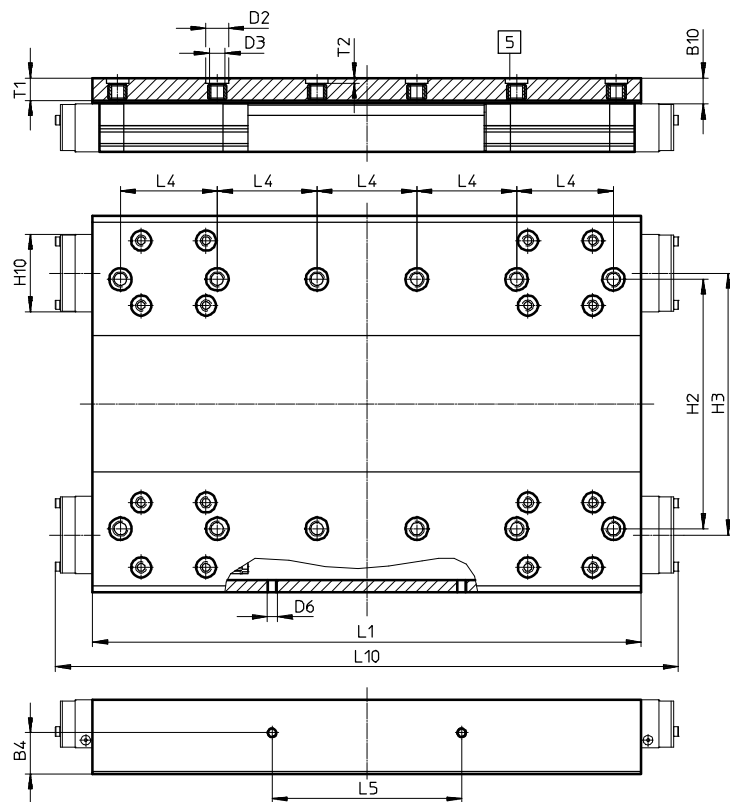
GK – Standard slide

Size 160

Download CAD data → www.festo.com

04

Electromechanical drives



[5] Drill hole for centring sleeve ZBH

Size	B4	B10*	D2 ∅ H7	D3	D6	H2	H3
	±0.1					±0.03	±0.05
160	16.5	10.5	9	M6	M4	100	105

Size	H10*	L1	L4	L5	L10*	T1	T2
		±0.1	±0.03	±0.1			+0.1
160	31	220	40	76	250	9	2.1

* Protected version

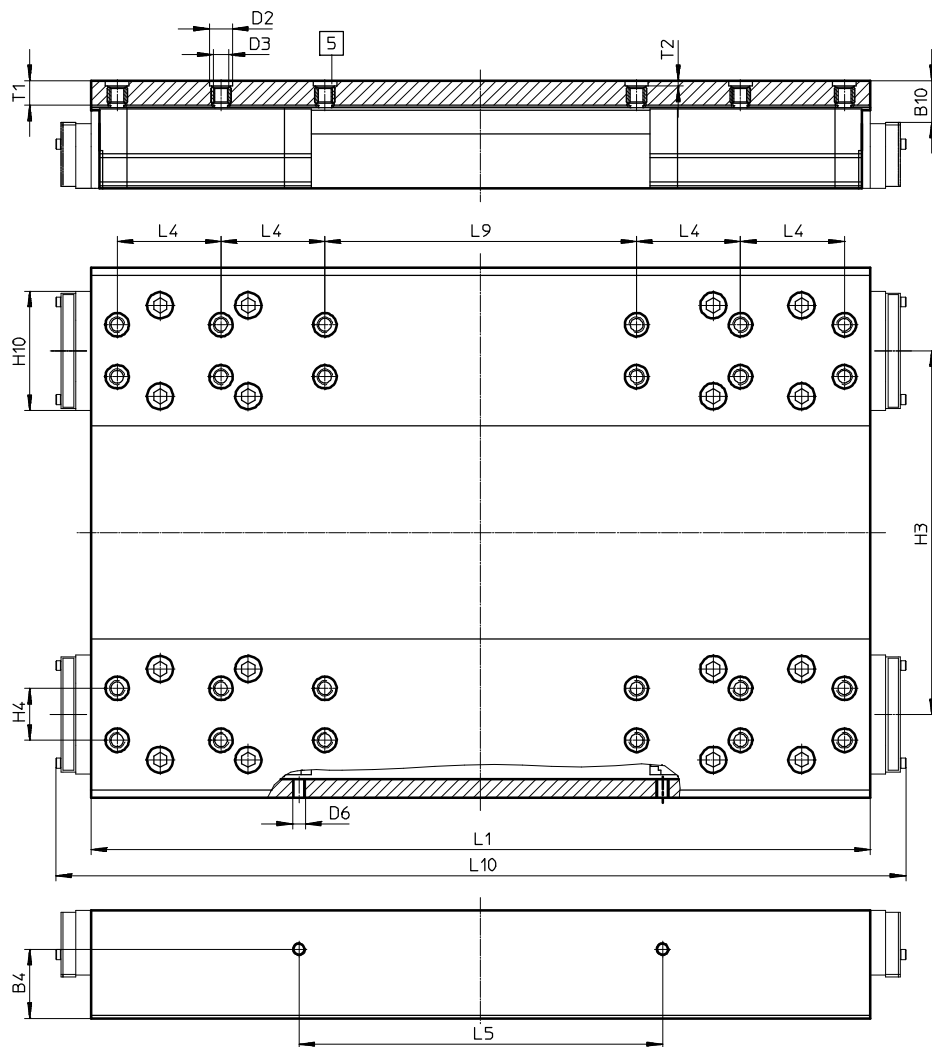
Spindle axes EGC-HD-BS, with heavy-duty guide

Download CAD data → www.festo.com

Dimensions

GK – Standard slide

Size 220



[5] Drill hole for centring sleeve ZBH

Size	B4	B10*	D2 ∅ H7	D3	D6	H3	H4	H10*
220	±0.1 26.6	16	9	M6	M5	±0.05 140	±0.03 20	45.95

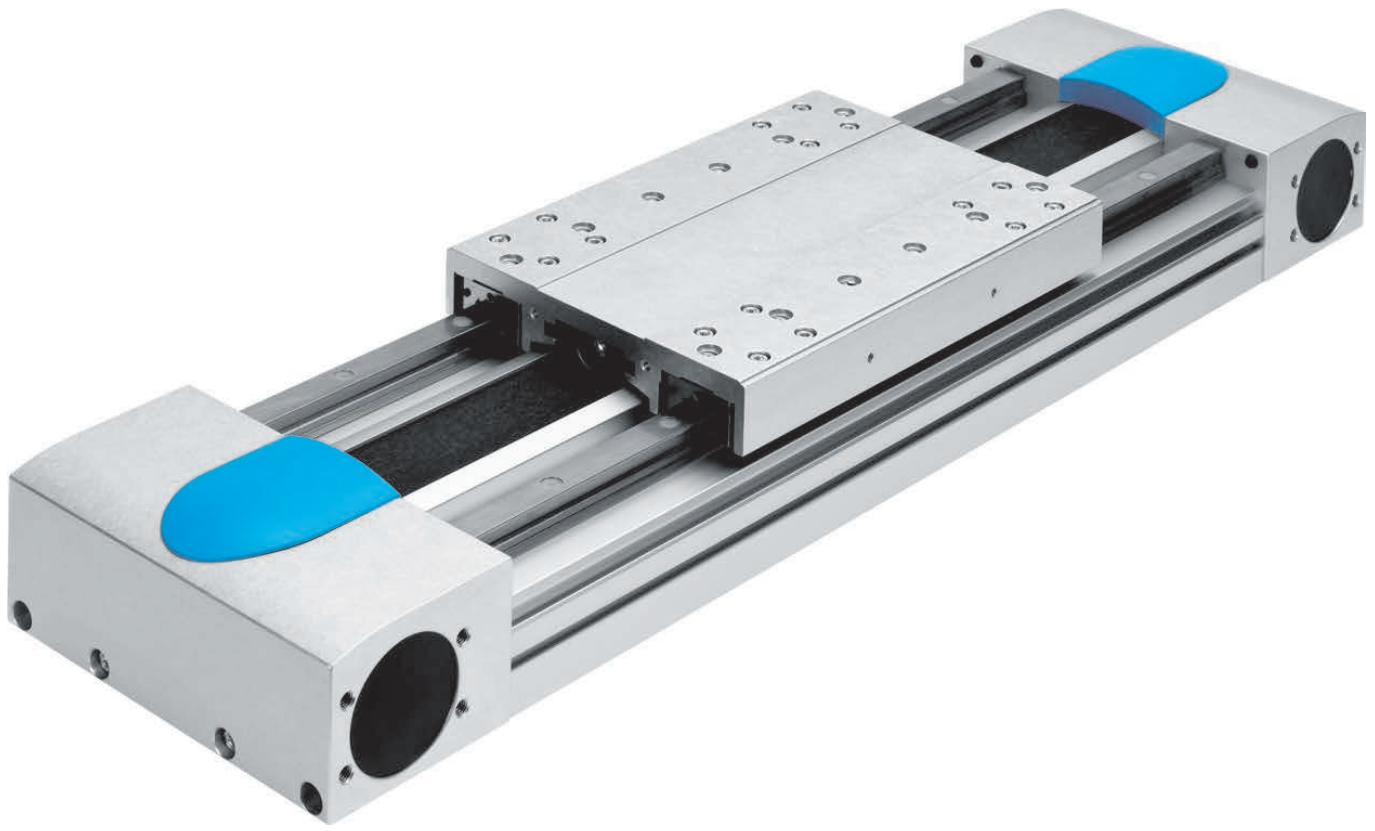
Size	L1	L4	L5	L9	L10*	T1	T2
220	±0.1 302	±0.03 40	±0.1 140	±0.03 120	328	9.5	+0.1 2.1

* Protected version

Linear drives and slides >

04

Electromechanical drives



Powerful and dynamic

- + Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity
- + Ideal as a basic axis for linear gantries and cantilever axes

Linear drives and slides >

Toothed belt axes with heavy-duty guide

EGC-HD-TB


Linear drives and slides >

Toothed belt axes with heavy-duty guide


EGC-HD-TB

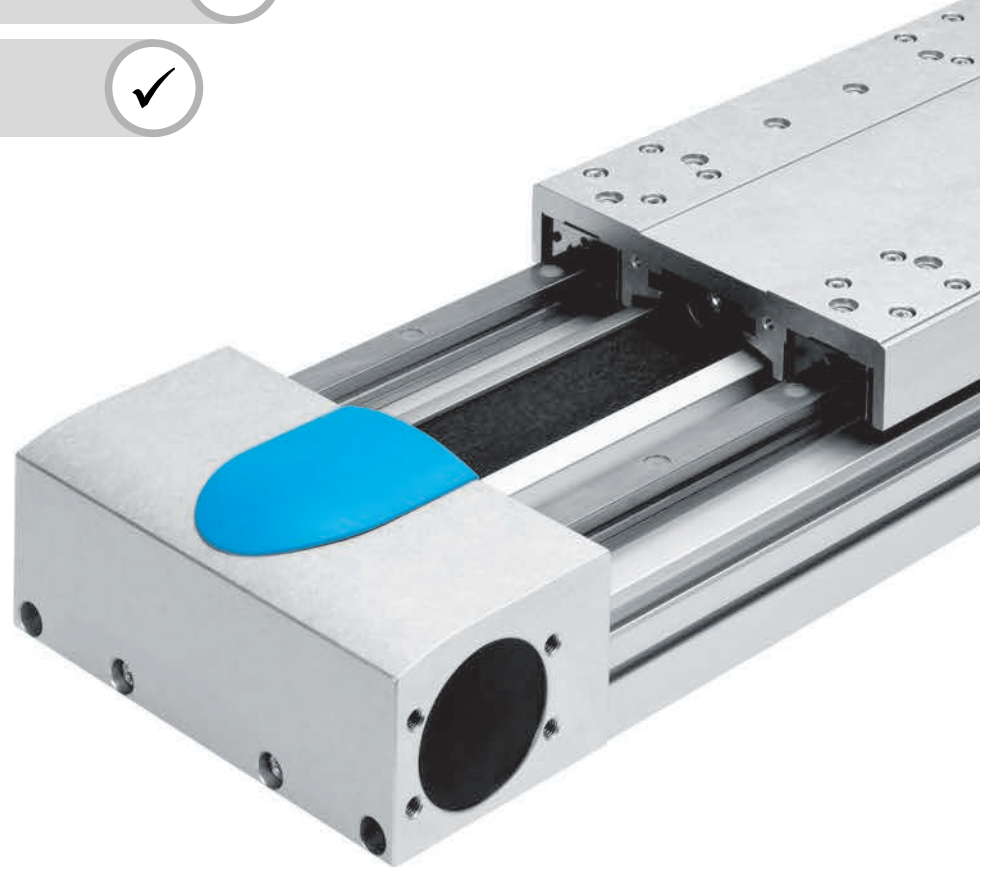
 Overview, configuration and ordering
→ www.festo.com/catalogue/egc-hd-tb



 Additional information, support and user documentation
→ www.festo.com/sp/egc-hd-tb



 Spare parts service



- + Precision DUO recirculating ball bearing guide with high load capacity
- + For maximum loads and torques
- + For high feed forces and speeds
- + Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]
EGC-HD-TB			
HD – Heavy-duty guide	125, 160, 220	50 ... 5000	450 ... 1800

Product options

GK Standard slide

GP Standard slide, protected

KL Additional slide on left

KR Additional slide on right

DN Without operating instructions

At a glance

- Heavy-duty design for:
 - Maximum loads and torques
 - High feed forces and speeds
 - Long service life
- Precision DUO guide rail with high load capacity
- Ideal as a basic axis for linear gantries and cantilever axes
- Space-saving position sensing with proximity sensor in the profile slot is possible
- Wide range of options for mounting on drives

Flexible motor mounting

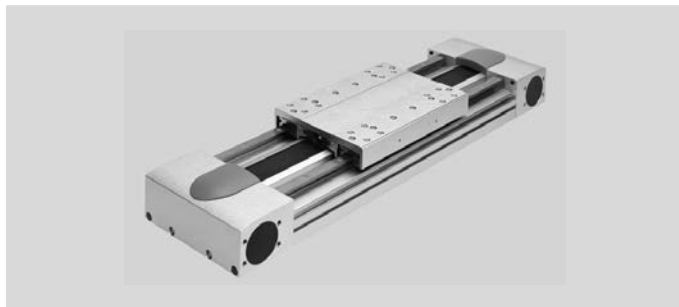
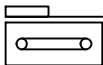
The motor position can be freely selected on 4 sides and can be changed at any time.



Linear drives and slides >

Toothed belt axes EGC-HD-TB, with heavy-duty guide

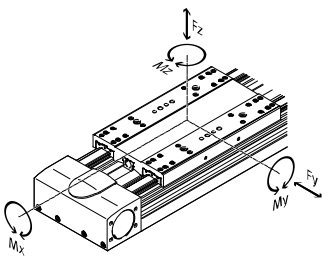
Data sheet



04

Electromechanical drives

Technical data



Note
Engineering software
PositioningDrives
→ www.festo.com

Dimensions → Page 637

Size		125	160	220
Working stroke ¹⁾	[mm]	50 ... 3000	50 ... 5000	50 ... 4750
Max. feed force F_x	[N]	450	1000	1800
No-load torque ²⁾	[Nm]	1.1	2.1	4.1
Max. no-load resistance to shifting ²⁾	[N]	67.75	105.5	123.8
Max. driving torque	[Nm]	7.2	20	59.58
Max. speed	[m/s]	3	5	
Max. acceleration	[m/s ²]	40	50	
Repetition accuracy	[mm]	±0.08		±0.1
Max. permissible force F_y	[N]	3650	5600	13000
Max. permissible force F_z	[N]	3650	5600	13000
Max. permissible torque M_x	[Nm]	140	300	900
Max. permissible torque M_y	[Nm]	275	500	1450
Max. permissible torque M_z	[Nm]	275	500	1450

1) Total stroke = working stroke + 2x stroke reserve.
2) At 0.2 m/s.

Operating conditions

Ambient temperature ³⁾	[°C]	-10 ... +60
Degree of protection		IP40

3) Note operating range of proximity sensors.

Toothed belt

Size		125	160	220
Pitch	[mm]	3	5	8
Width	[mm]	30.3	40.0	50.5
Tensile strength ⁴⁾	[%]	0.31	0.23	0.29
Effective diameter	[mm]	32.47	39.79	66.21
Feed constant	[mm/U]	102	125	208

4) At max. feed force.

Mass moment of inertia

Size		125	160	220
J_0	[kg cm ²]	4.639	14.49	108.99
J_S per metre stroke	[kg cm ² /m]	0.38	1.267	6.269
J_L per kg payload	[kg cm ² /Kg]	2.635	3.96	10.96

The mass moment of inertia J_A of the entire axis is calculated as follows:

$$J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

Materials

Cover	Anodised wrought aluminium alloy
Slides	Anodised wrought aluminium alloy
Guide rail	Coated and corrosion-resistant steel
Pulleys	High-alloy stainless steel
Toothed belt	Polychloroprene with glass cord and nylon coating

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Order code

		EGC	-	HD	-		-		-	TB	-		-	GK
Type														
EGC	Electromechanical linear axis													
Guide														
HD	Heavy-duty guide													
Size														
	Stroke [mm]													
125	50 ... 3000													
160	50 ... 5000													
220	50 ... 4750													
Drive function														
TB	Toothed belt													
Stroke reserve														
...H	0 ... 999 (0 = no stroke reserve)												1	
Slides														
GK	Standard slide													

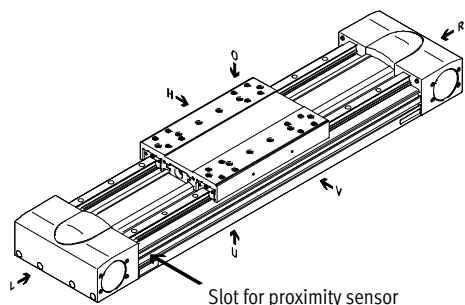
1 The sum of the stroke length and 2x stroke reserve must not exceed the maximum working stroke.

Order example:

EGC-HD-160-500-TB-20H-GK

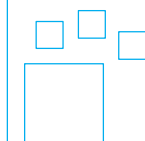
Electromechanical linear axis EGC - heavy-duty guide - size 160 - stroke 500 mm - toothed belt - stroke reserve 20 mm - standard slide

Ordering aid



O top
 U underneath
 R right
 L left
 V front
 H rear

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

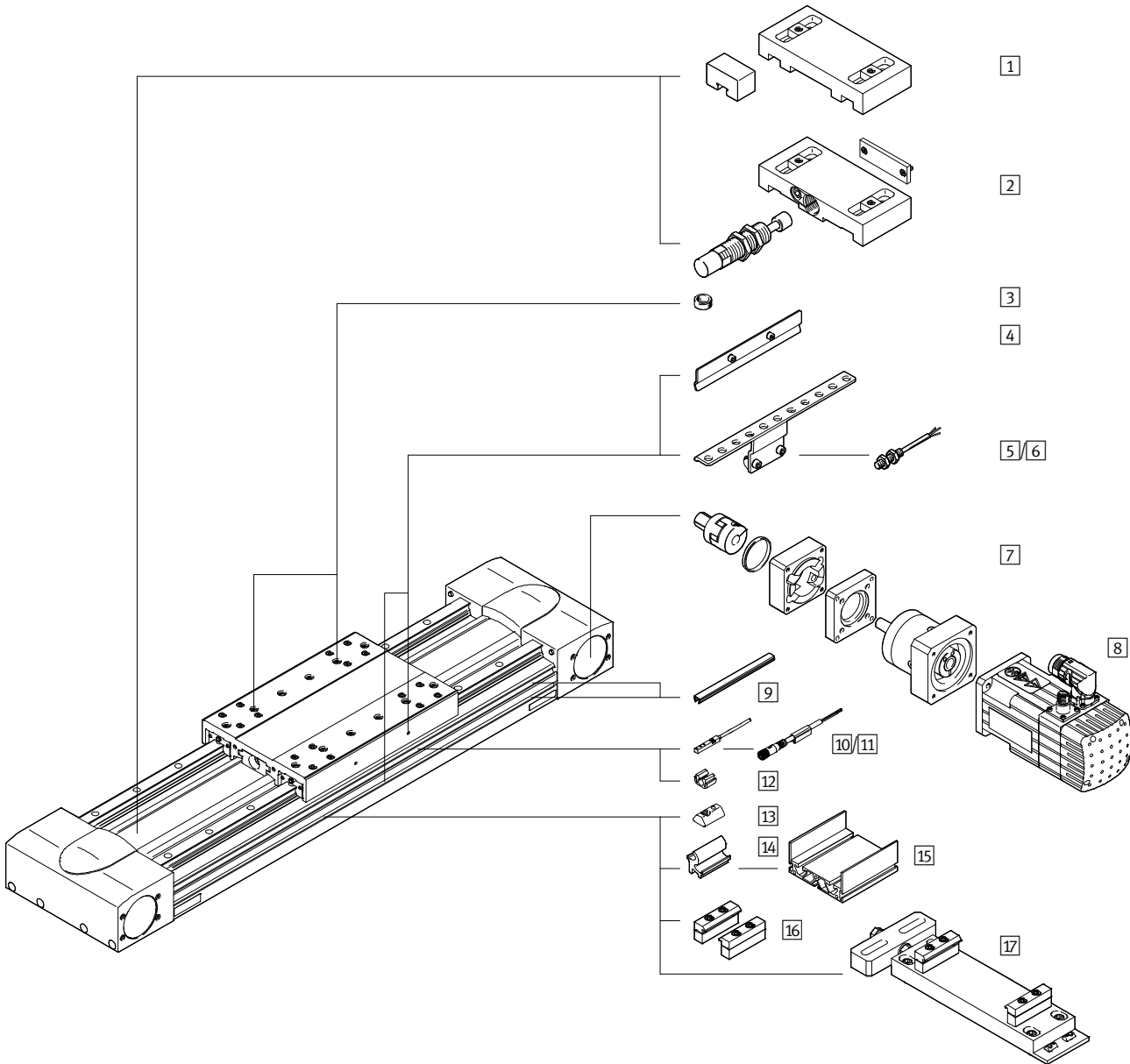
Linear drives and slides >

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Accessories

04

Electromechanical drives

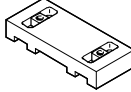

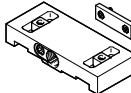
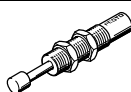


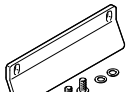
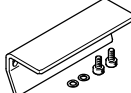
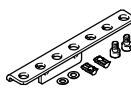
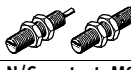



		→ Page/online
1	Emergency buffer NPE/retainer EAYH	635
2	Shock absorber YSRW/shock absorber retainer EAYH	635
3	Centring pin ZBS/centring sleeve ZBH	635
4	Switch lug SF-EGC	635
5	Sensor bracket HWS-EGC	635
6	Inductive proximity sensor SIEN	635
7	Axial kit EAMM-A	635
8	Motor EMME/EMMS	635
9	Slot cover ABP/ABP-S	636

		→ Page/online
9	Slot cover ABP/ABP-S	636
10	Inductive proximity sensor SIES	636
11	Connecting cable NEBU	636
12	Clip SMBK	636
13	Slot nut NST	636
14	Adapter kit DHAM	egc-hd-tb
15	Support profile HMA	egc-hd-tb
16	Profile mounting MUE	636
17	Adjusting kit EADC-E16	636

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Accessories – Ordering data

	For size	Part no.	Type
1 Retainer Dimensions online: → egc-hd-tb			
	125	1662803	EAYH-L2-125-N
	160	1669259	EAYH-L2-160-N
	220	1669260	EAYH-L2-220-N
1 Emergency buffer			
	125	1662475	NPE-125
	160	1672593	NPE-160
	220	1672598	NPE-220
2 Shock absorber retainer Dimensions online: → egc-hd-tb			
	125	1653251	EAYH-L2-125
	160	1653250	EAYH-L2-160
	220	1653253	EAYH-L2-220
2 Shock absorber Data sheets online: → egc-hd-tb			
	125	191196	YSRW-12-20
	160	191197	YSRW-16-26
	220	191198	YSRW-20-34
3 Centring pin¹⁾²⁾ Data sheets online: → zbs			
	125	150928	ZBS-5
3 Centring sleeve¹⁾²⁾ Data sheets online: → zbh			
	125 ... 220	150927	ZBH-9
4 Switch lug³⁾ Dimensions online: → egc-hd-tb			
	125	570027	SF-EGC-HD-1-125
	160	1645872	SF-EGC-HD-1-160
	220	1645866	SF-EGC-HD-1-220
4 Switch lug⁴⁾ Dimensions online: → egc-hd-tb			
	125	570030	SF-EGC-HD-2-125
	160	1645865	SF-EGC-HD-2-160
	220	1645868	SF-EGC-HD-2-220
5 Sensor bracket⁵⁾ Dimensions online: → egc-hd-tb			
	125	558057	HWS-EGC-M5
	160	558057	HWS-EGC-M5
	220	570365	HWS-EGC-M8-B
6 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L

1) Packaging unit 10 pieces.

2) 2 centring pins/sleeves included in the scope of delivery of the axis.

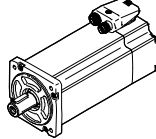
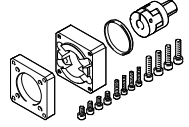
3) For sensing via proximity sensor SIES-8M.

4) For sensing via proximity sensor SIEN-M8B or SIES-8M.

5) For proximity sensor SIEN-M8B.

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

Motor/gear unit ⁶⁾	Axial kit
	
	Part no. Type

7/8 Permissible axis/motor combination with axial kit –Data sheets online: → [eamm-a](#)

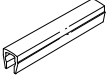
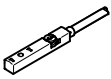
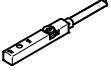




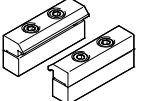
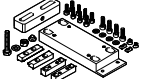
EGC-HD-125		
With servo motor and gear unit		
EMMS-AS-55-...	1190076	EAMM-A-M43-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456612	EAMM-A-M43-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	1190076	EAMM-A-M43-60G
EMGA-60-P-G...-SAS-70		
With stepper motor and gear unit		
EMMS-ST-57-...	1190076	EAMM-A-M43-60G
EMGA-60-P-G...-SST-57		
With integrated drive and gear unit		
EMCA-EC-67-...	1456612	EAMM-A-M43-60H
EMGC-60-...		
EGC-HD-160		
With servo motor and gear unit		
EMME-AS-60-...	1456614	EAMM-A-M48-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	1190421	EAMM-A-M48-80G
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	1190421	EAMM-A-M48-80G
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	1190421	EAMM-A-M48-80G
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	1190421	EAMM-A-M48-80G
EMGA-80-P-G...-SAS-100		
With stepper motor and gear unit		
EMMS-ST-87-...	1190421	EAMM-A-M80-120G
EMGA-80-P-G...-SST-87		
With integrated drive and gear unit		
EMCA-EC-67-...	1456614	EAMM-A-M48-60H
EMGC-60-...		
EGC-HD-220		
With servo motor and gear unit		
EMME-AS-100-...	1190774	EAMM-A-M80-120G
EMGA-120-P-G...-SAS-100		
EMMS-AS-100-...	1190774	EAMM-A-M80-120G
EMGA-120-P-G...-SAS-100		
EMMS-AS-140-...	1190774	EAMM-A-M80-120G
EMGA-120-P-G...-SAS-140		

6) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Linear drives and slides >

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Accessories – Ordering data

	For size	Switching output, connection	Cable length [m]	Part no.	Type
9 Slot cover¹⁾					
	For mounting slot				
	125, 160 ²⁾	–	–	151681	ABP-5
	160 ³⁾ , 220	–	–	151682	ABP-8
	For sensor slot				
	125 ... 220	–	–	563360	ABP-5-S1
10 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	125 ... 220	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	125 ... 220	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
11 Connecting cable, straight socket Data sheets → Page 1543					
	125 ... 220	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	125 ... 220	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3
12 Clip					
	125 ... 220			534254	SMBK-8
13 Slot nut Data sheets online: → nst					
	125, 160 ²⁾			150914	NST-5-M5
				8047843	NST-5-M5-10 ⁴⁾
				8047878	NST-5-M5-50 ⁵⁾
	160 ³⁾ , 220			150915	NST-8-M6
				8047868	NST-8-M6-10 ⁴⁾
				8047869	NST-8-M6-50 ⁵⁾
16 Profile mounting Dimensions online: → egc-hd-tb					
	125			558043	MUE-70/80
	160			558043	MUE-70/80
	220			558044	MUE-120/185
17 Adjusting kit Dimensions online: → egc-hd-tb					
	125			8047580	EADC-E16-125-E14
	160			8047581	EADC-E16-160-E14
	220			8047582	EADC-E16-220-E14

- 1) Packaging unit 2x 0.5 m.
- 2) For mounting slot at side.
- 3) For mounting slot underneath.
- 4) Packaging unit 10 pieces.
- 5) Packaging unit 50 pieces.

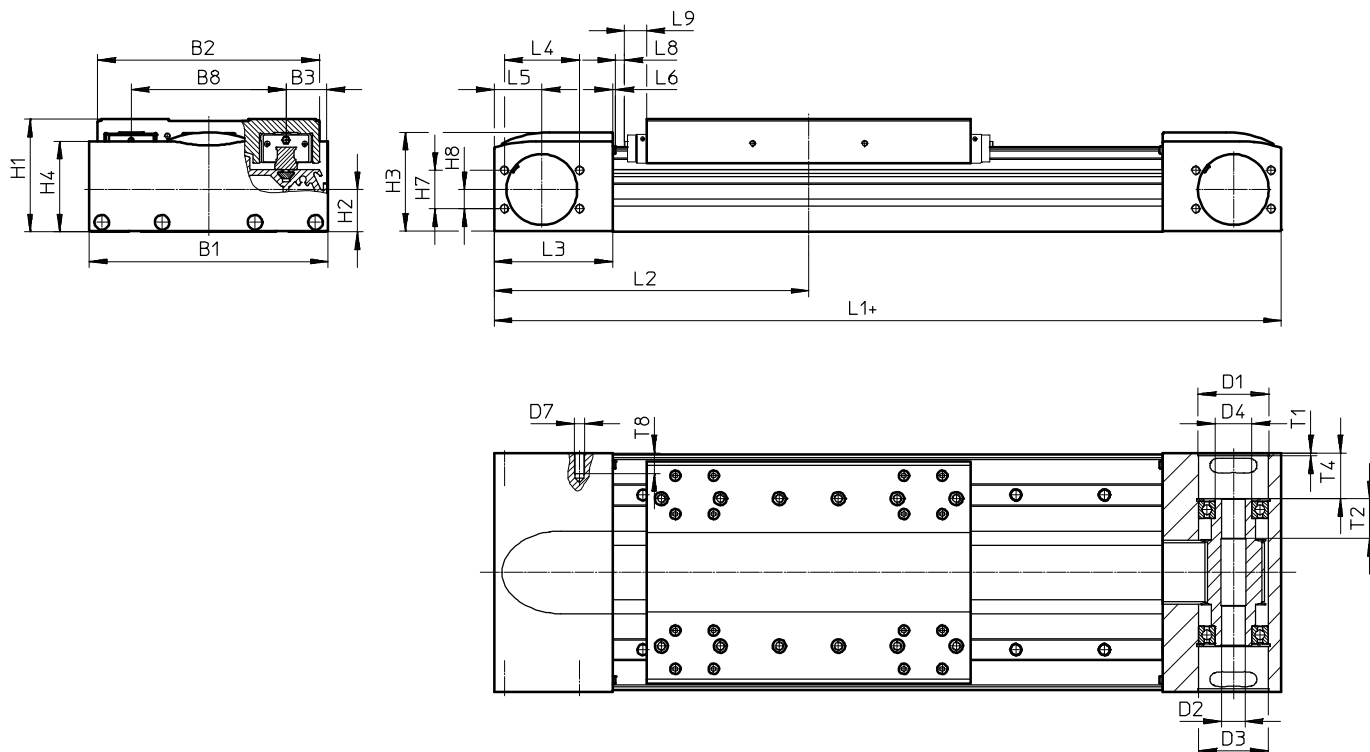
04

Electromechanical drives

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2 x stroke reserve

Size	B1	B2	B3	B8	D1 Ø H7	D2 Ø H7	D3 Ø	D4 Ø	D7
125	124	120	21	80	43	16	42	25	M6
160	162	156	27.5	105	48	16	47	25	M6
220	224	216	40	140	80	23	75	45	M8

Size	H1	H2	H3	H4	H7	H8	L1	L2 Min.	L3	L4
125	64	26.1	55.8	50.8	24	12	346	173	57.5	46
160	76.5	28.7	67.5	61.5	26	13	417	208.5	80.5	51
220	111.5	45.2	98	91.1	59	27	576	288	115	76

Size	L5	L6	L8	L9	T1	T2	T4	T8
125	27.5	1.8	2	-	2.1	27	23.65	13
160	32.5	2	0.55	14.9	3.1	27	31.1	14
220	50	2	2	18	3.1	29.5	47.5	16

04 Electromechanical drives

Linear drives and slides >

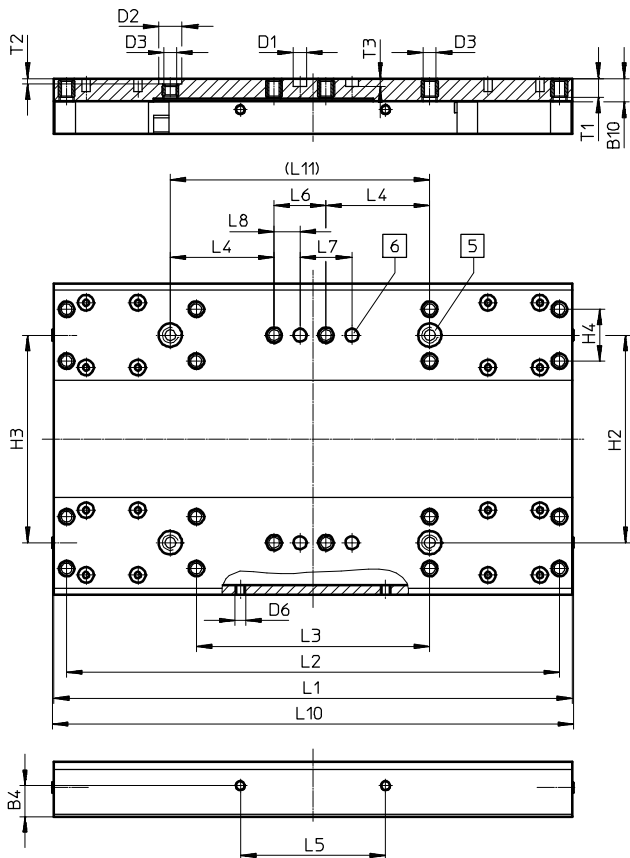
Toothed belt axes EGC-HD-TB, with heavy-duty guide

Dimensions

Download CAD data → www.festo.com

GK – Standard slide

Size 125



- 5 Drill hole for centring sleeve ZBH
- 6 Drill hole for centring pin ZBS

Size	B4	B10	D1	D2	D3	D6	H2	H3	H4	L1	L2	L3
	±0.1		∅ H7	∅ H7			±0.03	±0.05	±0.1	±0.1	±0.2	±0.1
125	12	9	5	9	M5	M4	80	80	20	200	190	90

Size	L4	L5	L6	L7	L8	L10	L11	T1	T2	T3
	±0.1	±0.2	±0.1	±0.03	±0.1		±0.03		+0.1	+0.1
125	40	56	20	20	10	202	100	7.8	2.1	3.1

Electromechanical drives

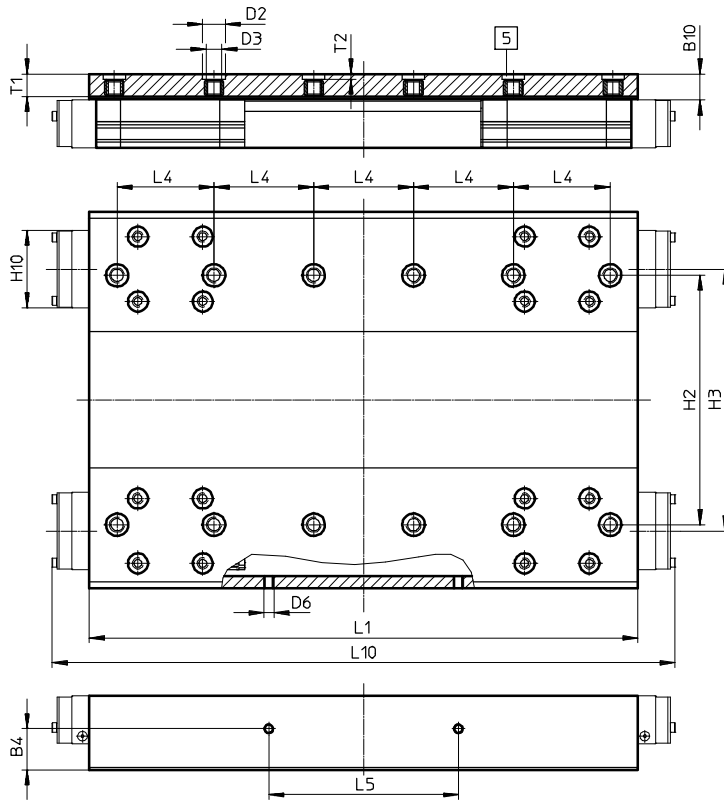
Toothed belt axes EGC-HD-TB, with heavy-duty guide

Download CAD data → www.festo.com

Dimensions

GK – Standard slide

Size 160



[5] Drill hole for centring sleeve ZBH

Size	B4	B10*	D2 ∅ H7	D3	D6	H2	H3
160	±0.1 16.5	10.5	9	M6	M4	±0.03 100	±0.05 105

Size	H10*	L1	L4	L5	L10*	T1	T2
160	31	±0.1 220	±0.03 40	±0.1 76	250	9	+0.1 2.1

* Protected version

Linear drives and slides >

Toothed belt axes EGC-HD-TB, with heavy-duty guide

Dimensions

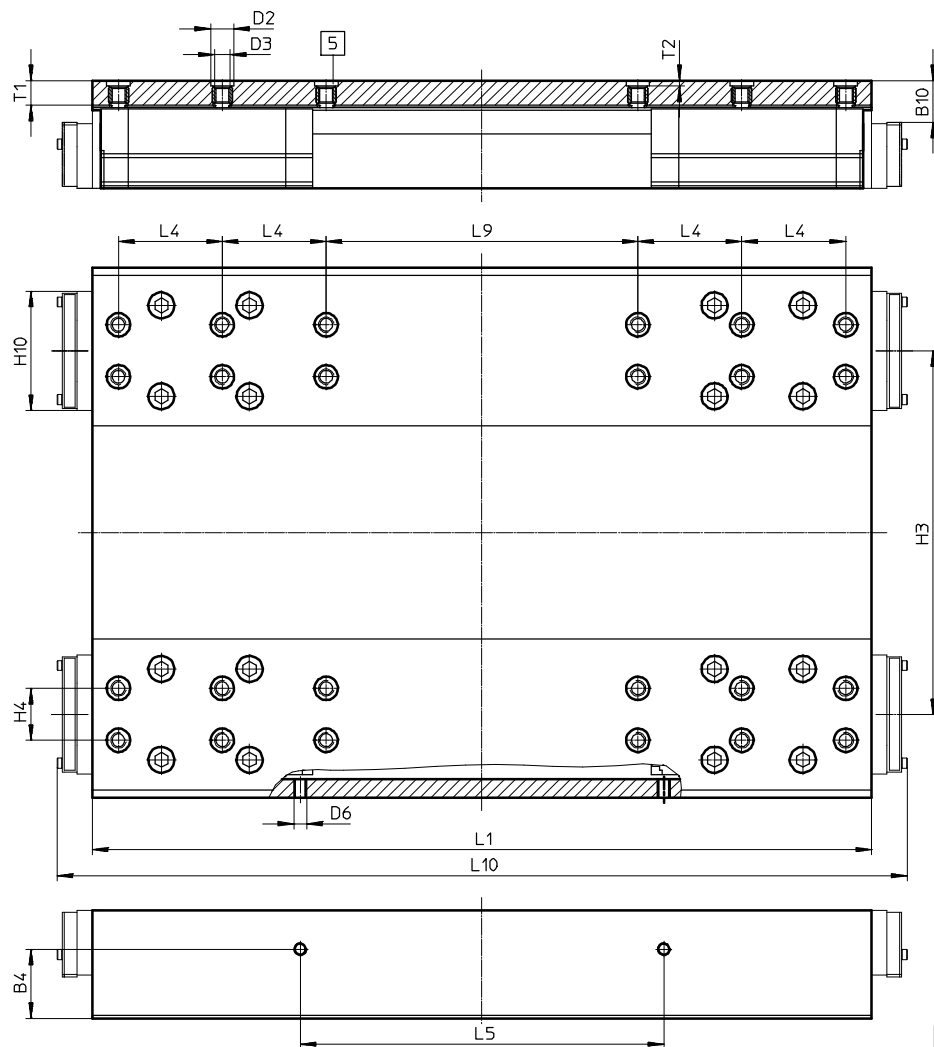
GK – Standard slide

Size 220

Download CAD data → www.festo.com

04

Electromechanical drives

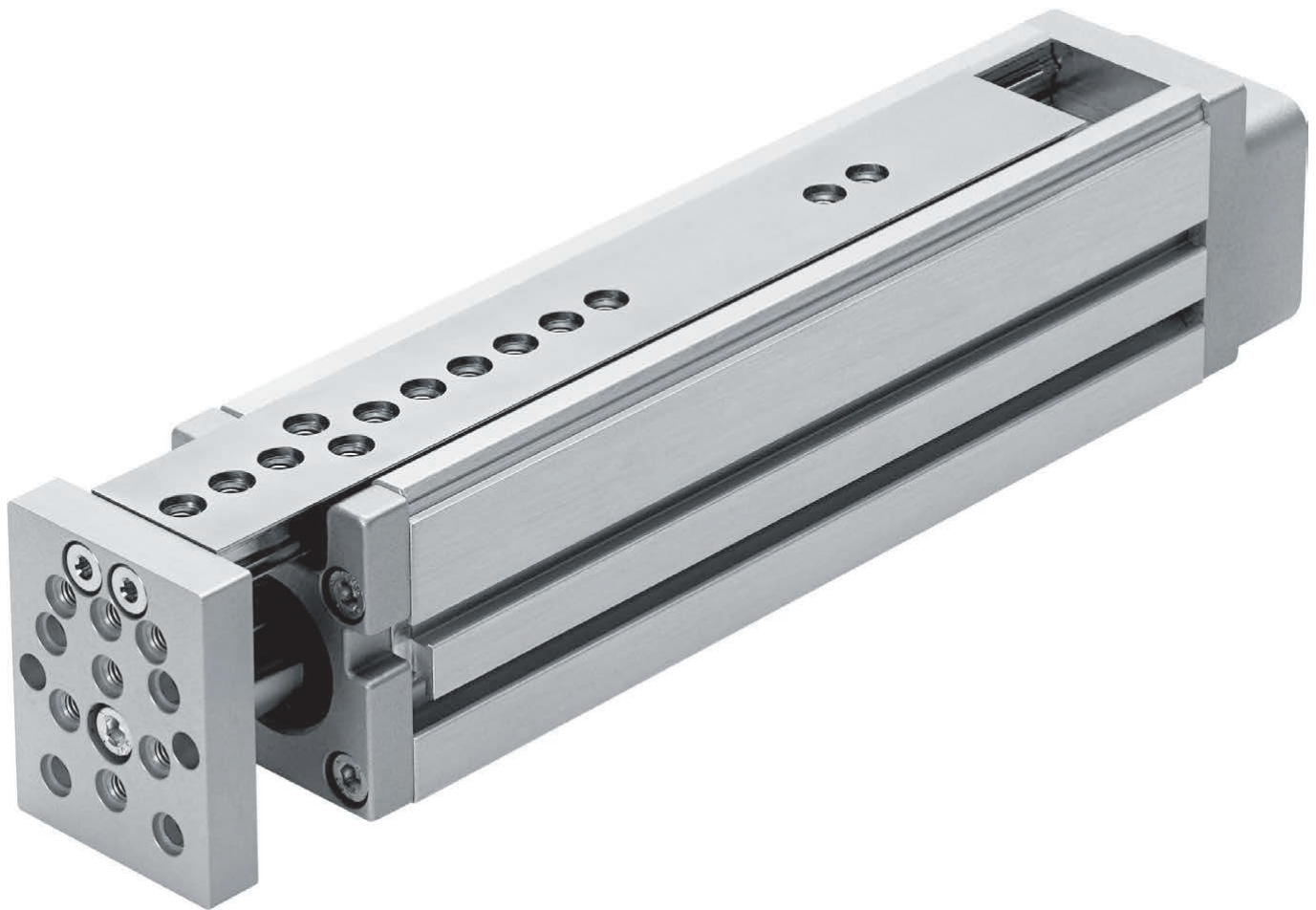


[5] Drill hole for centring sleeve ZBH

Size	B4	B10*	D2 ∅ H7	D3	D6	H3	H4	H10*
220	26.6 ±0.1	16	9	M6	M5	140 ±0.05	20 ±0.03	45.95

Size	L1	L4	L5	L9	L10*	T1	T2
220	302 ±0.1	40 ±0.03	140 ±0.1	120 ±0.03	328	9.5	2.1 +0.1

* Protected version



Linearity and parallelism

- + Precise, dynamic and reliable positioning – the integrated guide ensures maximum precision
- + Pneumatic mini slides DGSL can be mounted without adapter plates, making them particularly simple and economical to use.

Linear drives and slides ›

Mini slides, electric

EGSL

Linear drives and slides >

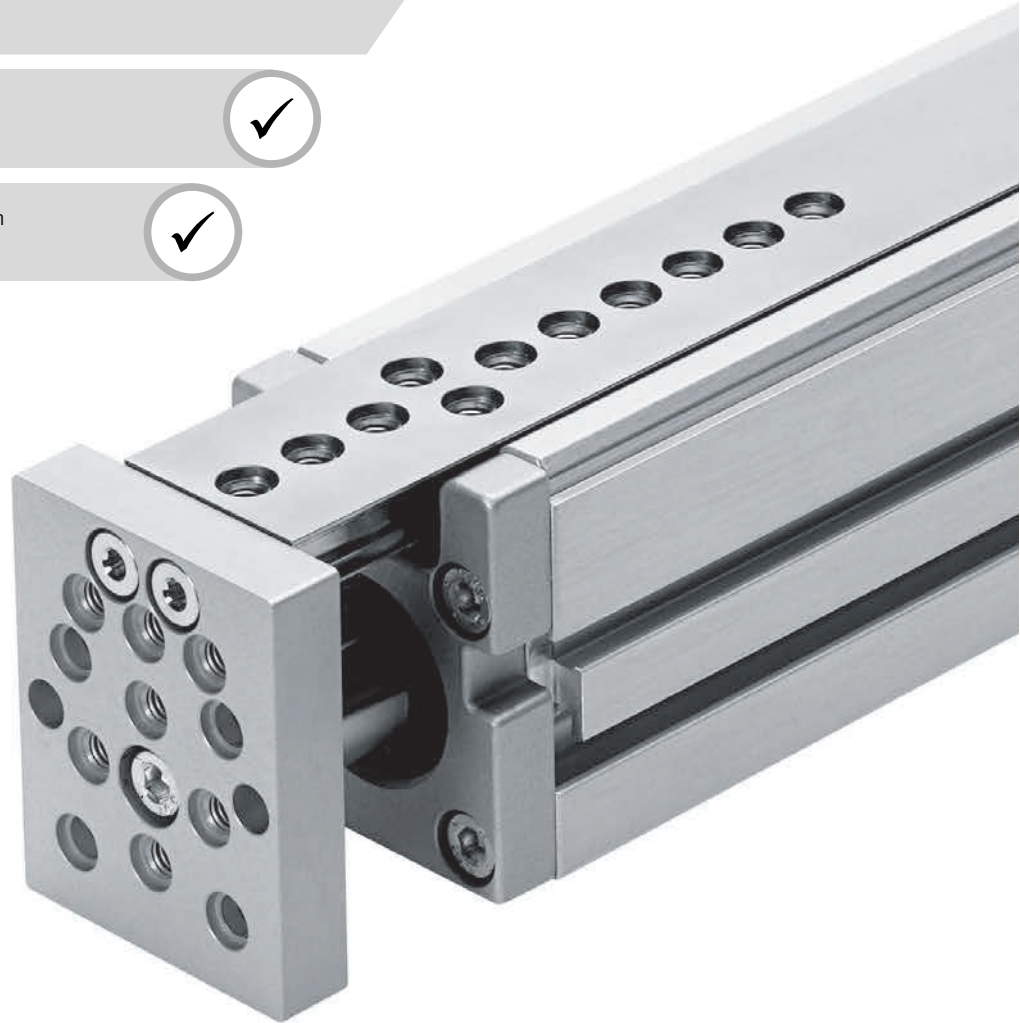
Mini slides, electric

EGSL

 Overview, configuration and ordering
→ www.festo.com/catalogue/egsl



 Additional information, support and user documentation
→ www.festo.com/sp/egsl

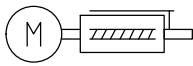


- + Very high rated slide loads, ideal for vertical applications such as press-fitting or joining
- + Reliable: the completely closed spindle stops dirt or stray small parts getting into the guide area
- + Optional guide cover protects against dirt

Product range overview

Type/version	Size	Stroke [mm]	Feed force F_x [N]	Speed [m/s]
EGSL				
Electric	35, 45, 55, 75	50 ... 300	75 ... 450	0.5 ... 1.3

Data sheet



Technical data		Dimensions → Page 650							
Size		35	45		55		75		
Spindle pitch	[mm/rev]	8	3	10	5	12.7	10	20	
Working stroke	[mm]	50	100, 200		100, 200, 250		100, 200, 300		
Guide value for payload									
Horizontal	[kg]	2	6		10		14		
Vertical	[kg]	2	6		10		14		
Continuous feed force F_x	[N]	50	100		200		300		
Max. feed force F_x	[N]	75	150		300		450		
Max. no-load driving torque	[Nm]	0.015	0.090	0.080	0.100	0.135	0.265	0.165	
Max. driving torque ¹⁾	[Nm]	0.2	0.45	0.51	0.9	1.25	3.25	3.25	
Max. radial force ²⁾	[N]	20	120		260		300		
Max. speed	[m/s]	0.5	0.3	1.0	0.4	1.0	0.65	1.3	
Nominal acceleration	[m/s ²]	15							
Max. acceleration ³⁾	[m/s ²]	25							
Repetition accuracy	[mm]	±0.015							
Max. reversing backlash ⁴⁾	[μm]	≤50							

1) Friction and torque due to acceleration of the rotating load taken into consideration.

2) At the drive shaft.

3) The max. acceleration is dependent on the moving mass, the driving torque and the max. feed force.

4) In new condition.

Note

All values are based on a room temperature of 20 °C.

Linear drives and slides >

Mini slides EGSL, electric

Data sheet

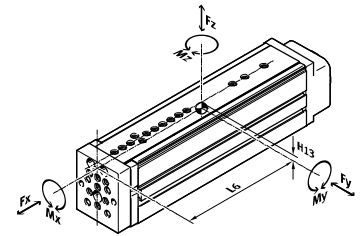
Permissible forces and torques/geometric characteristics

Note

Engineering software

PositioningDrives

→ www.festo.com



04

Electromechanical drives

Size		35			45			55			75		
Stroke		50	100	200	100	200	250	100	200	300			
Max. permissible force Fy	[N]	512	631	291	1047	490	563	1539	714	555			
Max. permissible force Fz	[N]	512	631	291	1047	490	563	1539	714	555			
Max. permissible torque Mx	[Nm]	6.2	18.6	14.3	33.1	24.2	27.0	67.4	48.5	46.4			
Max. permissible torque My	[Nm]	6.0	16.3	12.3	31	22.6	33.3	47.1	33.8	36.5			
Max. permissible torque Mz	[Nm]	6.0	16.3	12.3	31	22.6	33.3	47.1	33.8	36.5			
Dimension H13	[mm]	4.2	6.4	6.4	6.4	6.4	6.4	7.6	7.6	7.6			
Dimension L6													
Retracted	[mm]	83	114	164	132	182	221	139	189	241			
Advanced	[mm]	106	162	262	180	280	344	187	287	389			

Operating conditions

Ambient temperature	[°C]	0 ... +60
Degree of protection		IP40

Materials

Yoke plate	Anodised wrought aluminium alloy
Guide rail	Rolled steel
Housing	Anodised wrought aluminium alloy
Spindle	Rolled steel
Spindle nut	Rolled steel
End cap	Painted cast aluminium

Order code

Type		EGSL	BS			
EGSL		Mini slide				
Drive function		BS				
BS		Ball screw				
Size						
	Stroke [mm]					
	Spindle pitch [mm/rev]					
35	50	8P				
45	100, 200	3P, 10P				
55	100, 200, 250	5P, 12.7P				
75	100, 200, 300	10P, 20P				

Order example:

EGSL-BS-45-200-10P

Mini slide EGSL - ball screw - size 45 - stroke 200 mm - spindle pitch 10 mm/rev

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

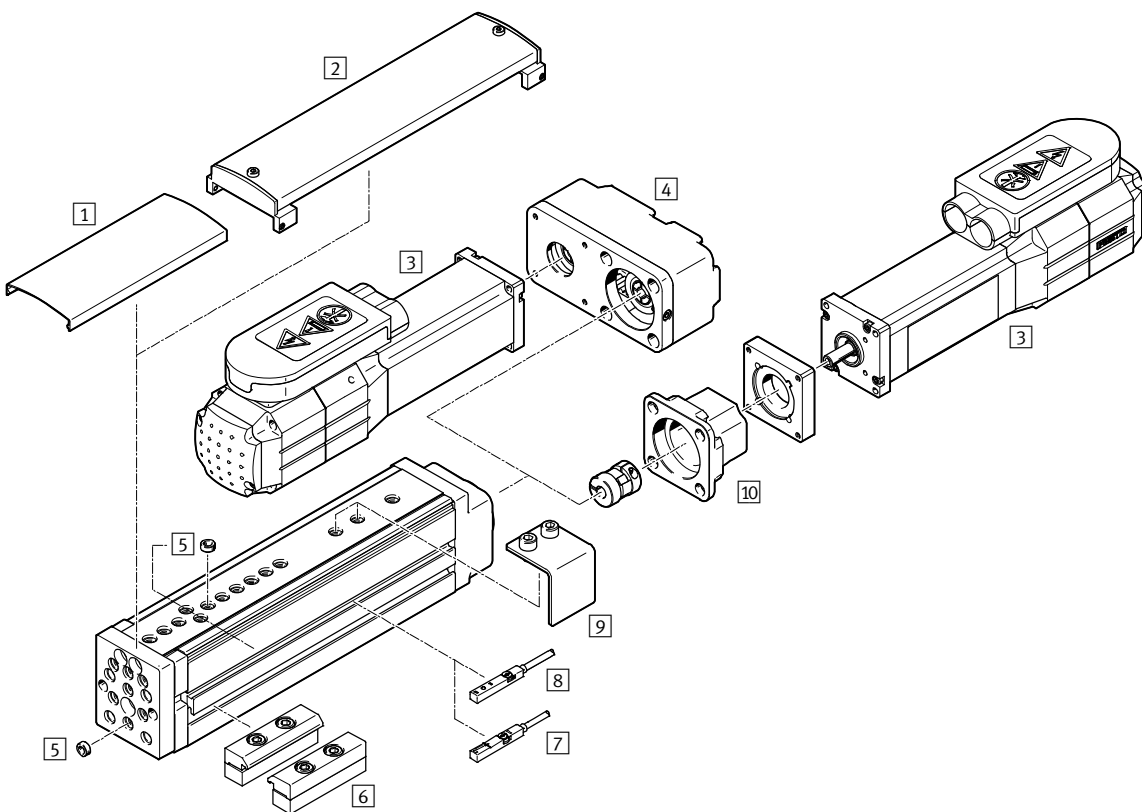
Linear drives and slides >

Mini slides EGSL, electric

Accessories

04

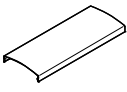
Electromechanical drives

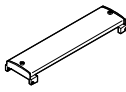


		→ Page/online
1	Cover EASC	646
2	Cover EASC-...-F	646
3	Motor EMME/EMMS	647
4	Parallel kit EAMM-U	647
5	Centring sleeve ZBH	649
6	Profile mounting EAHF, MUE	649

		→ Page/online
7	Proximity sensor SIES	649
8	Proximity sensor SMT-8-...-B	649
9	Switch lug EAPM	649
10	Axial kit EAMM-A	648
-	Connecting cable NEBU	649
-	Connector sleeve ZBV	649

Accessories – Ordering data

	For size	Length [mm]	Part no.	Type
1 Cover for use without switch lug				
Dimensions online: → egsl				
	35	50	570819	EASC-G1-35-50
		500 ¹⁾	570874	EASC-G1-35-500
	45	100	570822	EASC-G1-45-100
		200	570823	EASC-G1-45-200
		500 ¹⁾	570875	EASC-G1-45-500
	55	100	570824	EASC-G1-55-100
		200	570825	EASC-G1-55-200
		250	570826	EASC-G1-55-250
		500 ¹⁾	570876	EASC-G1-55-500
	75	100	570827	EASC-G1-75-100
		200	570828	EASC-G1-75-200
		300	570829	EASC-G1-75-300
500 ¹⁾		570877	EASC-G1-75-500	

	For size	Length [mm]	Part no.	Type
2 Cover for use with switch lug				
Dimensions online: → egsl				
	35	50	570830	EASC-G1-35-50-F
		100	570833	EASC-G1-45-100-F
	45	200	570834	EASC-G1-45-200-F
		100	570835	EASC-G1-55-100-F
	55	200	570836	EASC-G1-55-200-F
		250	570837	EASC-G1-55-250-F
	75	100	570838	EASC-G1-75-100-F
		200	570839	EASC-G1-75-200-F
		300	570840	EASC-G1-75-300-F

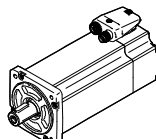
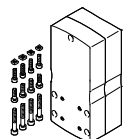
1) The cover can be shortened by the customer as required.

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the respective kit must be taken into consideration.

Motor/gear unit ¹⁾	Parallel kit	
		
	<ul style="list-style-type: none"> The kit can be mounted in all directions Use in combination with third-party motors on request 	
	Part no.	Type
3/4 Permissible axis/motor combination with parallel kit –		
Data sheets online: → eamm-u		
EGSL-45		
With servo motor		
EMME-AS-40-...	2153283	EAMM-U-50-D32-40P-78
EMMS-AS-40-...	1201591	EAMM-U-50-D32-40A-78
EMMS-AS-55-...	1210126	EAMM-U-60-D32-55A-91
EMME-AS-60-...	2619586	EAMM-U-70-D32-60P-96
With stepper motor		
EMMS-ST-42-...	1201607	EAMM-U-50-D32-42A-78
EMMS-ST-57-...	1210419	EAMM-U-60-D32-57A-91
With integrated drive		
EMCA-EC-67-...	1577063	EAMM-U-60-D32-67A-91
With gear unit		
EMGA-40-P-...	1577358	EAMM-U-60-D32-40G-91
EMGC-40-P-...		
EMGA-60-P-...-SAS/SST ²⁾	2748181	EAMM-U-70-D32-60G-96
EMGA-60-P-...-EAS, EMGC-60-P-... ²⁾	2778393	EAMM-U-70-D32-60H-96

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
EGSL-55		
With servo motor		
EMMS-AS-55-...	1210438	EAMM-U-60-D40-55A-91
EMME-AS-60-...	2617488	EAMM-U-70-D40-60P-96
EMMS-AS-70-...	2786204	EAMM-U-70-D40-70A-96
EMMS-AS-70-...	1212826	EAMM-U-86-D40-70A-102
With stepper motor		
EMMS-ST-57-...	1210442	EAMM-U-60-D40-57A-91
EMMS-ST-87-...	1215802	EAMM-U-86-D40-87A-102
With integrated drive		
EMCA-EC-67-...	1577083	EAMM-U-60-D40-67A-91
With gear unit		
EMGA-40-P-...	1577165	EAMM-U-60-D40-40G-91
EMGC-40-P-...		
EMGA-60-P-...-SAS/SST ²⁾	2785471	EAMM-U-70-D40-60G-96
EMGA-60-P-...-EAS, EMGC-60-P-... ²⁾	2786101	EAMM-U-70-D40-60H-96
EMGA-60-P-...-SAS/SST ²⁾	1586445	EAMM-U-86-D40-60G-102
EMGA-60-P-...-EAS, EMGC-60-P-... ²⁾	1586496	EAMM-U-86-D40-60H-102
EGSL-75		
With servo motor		
EMMS-AS-70-...	1212477	EAMM-U-86-D60-70A-102
EMME-AS-80-...	2155875	EAMM-U-86-D60-80P-102
With stepper motor		
EMMS-ST-87-...	1215784	EAMM-U-86-D60-87A-102
With gear unit		
EMGA-60-P-...-SAS/SST ²⁾	1586347	EAMM-U-86-D60-60G-102
EMGA-60-P-...-EAS, EMGC-60-P-... ²⁾	1586276	EAMM-U-86-D60-60H-102
EMGA-60-P-...-SAS/SST ²⁾	1543240	EAMM-U-110-D60-60G-120
EMGA-60-P-...-EAS, EMGC-60-P-... ²⁾	1542264	EAMM-U-110-D60-60H-120
EMGA-80-P-...	1532949	EAMM-U-110-D60-80G-120

1) The input torque must not exceed the maximum permissible transferable torque of the parallel kit.

2) Gear unit drive shaft \varnothing : EMGA-60-P-...-SAS/SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

The clamping component EADT is required to adjust the toothed belt pre-tensioning for EAMM-U-110.

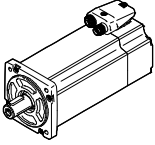
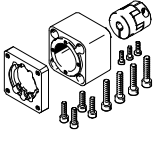
The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.

More information → [eamm-u](http://eamm-u.com)

Linear drives and slides >

Mini slides EGSL, electric

Accessories – Ordering data

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
3/10 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
EGSL-35		
With servo motor		
EMME-AS-40-...	1981953	EAMM-A-D19-40P
EMMS-AS-40-...	1199152	EAMM-A-D19-40A
With stepper motor		
EMMS-ST-28-...	1081659	EAMM-A-D19-28A
EMMS-ST-42-...	1087642	EAMM-A-D19-42A
EGSL-45		
With servo motor		
EMME-AS-40-...	1976465	EAMM-A-D32-40P
EMMS-AS-40-...	543147	EAMM-A-D32-40A
EMMS-AS-55-...	550979	EAMM-A-D32-55A
EMME-AS-60-...	1956054	EAMM-A-D32-60P
With servo motor and gear unit		
EMME-AS-40-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-SAS-40		
EMMS-AS-55-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	2946760	EAMM-A-D32-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-42-...	543148	EAMM-A-D32-42A
EMMS-ST-57-...	550980	EAMM-A-D32-57A
With stepper motor and gear unit		
EMMS-ST-42-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-SST-42		
EMMS-ST-57-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SST-57		
With integrated drive		
EMCA-EC-67-...	1454239	EAMM-A-D32-67A
With integrated drive and gear unit		
EMCA-EC-67-...-	1454238	EAMM-A-D32-40G
EMGC-40-...		
EMCA-EC-67-...-	2946760	EAMM-A-D32-60H
EMGC-60-...		
EGSL-55		
With servo motor		
EMMS-AS-55-...	543153	EAMM-A-D40-55A
EMME-AS-60-...	1977000	EAMM-A-D40-60P
EMMS-AS-70-...	550981	EAMM-A-D40-70A


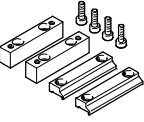
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
EGSL-55		
With servo motor and gear unit		
EMME-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-EAS-40	2256398	EAMM-A-D40-40G-G2
EMMS-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SAS-40	2256398	EAMM-A-D40-40G-G2
EMMS-AS-55-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1454242	EAMM-A-D40-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-57-...	543154	EAMM-A-D40-57A
EMMS-ST-87-...	550982	EAMM-A-D40-87A
With stepper motor and gear unit		
EMMS-ST-42-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SST-42	2256398	EAMM-A-D40-40G-G2
EMMS-ST-57-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SST-57		
With integrated drive		
EMCA-EC-67-...	1454243	EAMM-A-D40-67A
With integrated drive and gear unit		
EMCA-EC-67-...-	560282	EAMM-A-D40-40G
EMGC-40-...	2256398	EAMM-A-D40-40G-G2
EMCA-EC-67-...-	1454242	EAMM-A-D40-60H
EMGC-60-...		
EGSL-75		
With servo motor		
EMMS-AS-70-...	543161	EAMM-A-D60-70A
EMME-AS-80-...	1977073	EAMM-A-D60-80P
EMME-AS-100-...	550983	EAMM-A-D60-100A
EMMS-AS-100-...	550983	EAMM-A-D60-100A
With servo motor and gear unit		
EMMS-AS-55-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-55	2256696	EAMM-A-D60-60G-G2
EMME-AS-60-...	1454245	EAMM-A-D60-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-70	2256696	EAMM-A-D60-60G-G2
EMMS-AS-70-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-100		
With stepper motor		
EMMS-ST-87-...	543162	EAMM-A-D60-87A
With stepper motor and gear unit		
EMMS-ST-57-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SST-57	2256696	EAMM-A-D60-60G-G2
EMMS-ST-87-...	1499402	EAMM-A-D60-80G-G2
EMGA-80-P-G...-SST-87		
With integrated drive and gear unit		
EMCA-EC-67-...-	1454245	EAMM-A-D60-60H
EMGC-60-...		

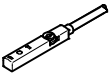
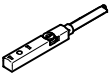
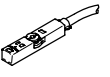


04



Electromechanical drives

Accessories – Ordering data

	For size	Part no.	Type
5 Centring sleeve¹⁾			
	35, 45, 55	186717	ZBH-7
	75	150927	ZBH-9
6 Profile mounting			
	35	1170211	EAHF-G1-35-P
	45	1168859	EAHF-G1-45-P
	55	558043	MUE-70/80
	75	558043	MUE-70/80

Dimensions online: → [egsl](#)

	For size	Switching output, connection	Cable length [m]	Part no.	Type
7 Proximity sensor for T-slot, inductive – N/O contact					
	35 ... 75	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact					
	35 ... 75	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
8 Proximity sensor for T-slot, magneto-resistive – N/O contact					
	35 ... 75	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
Connecting cable, straight socket					
	35 ... 75	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket					
	35 ... 75	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

	For size	Part no.	Type
9 Switch lug			
	35	1235029	EAPM-G1-35-SLS
	45	1235033	EAPM-G1-45-SLS
	55	1235035	EAPM-G1-55-SLS
	75	1235036	EAPM-G1-75-SLS
Connector sleeve²⁾			
	45, 55	548803	ZBV-M5-7
	75	548804	ZBV-M6-9

1) Packaging unit 10 pieces.

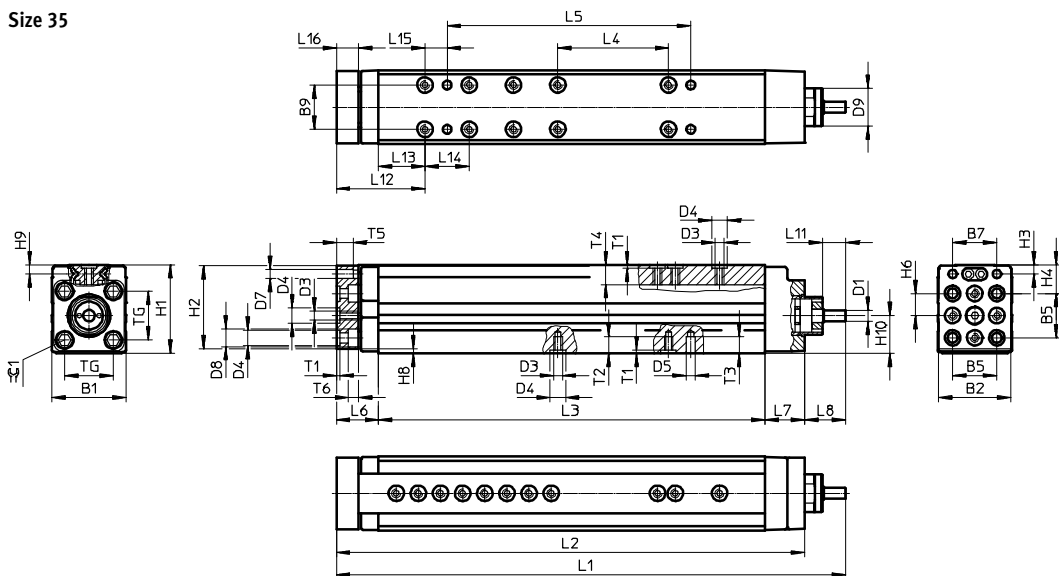
2) Packaging unit 3 pieces.

Mini slides EGSL, electric

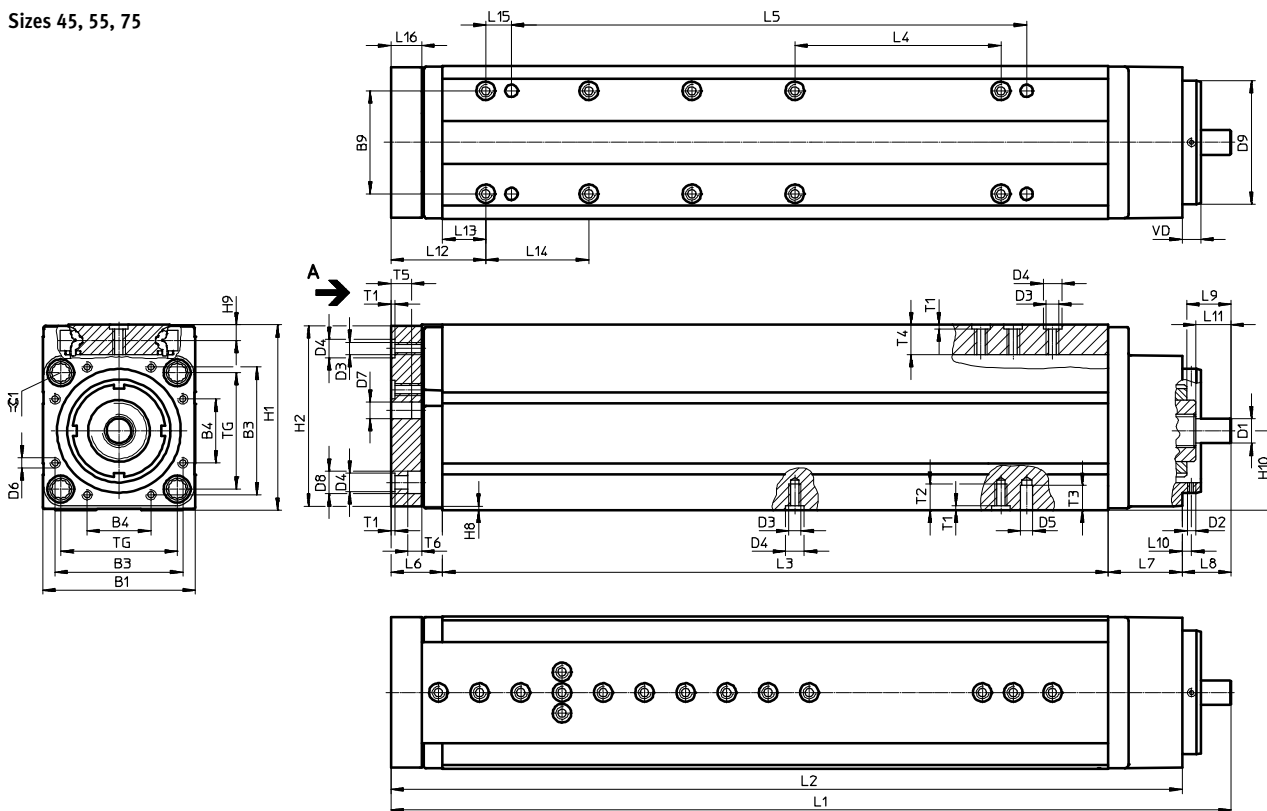
Dimensions

Download CAD data → www.festo.com

Size 35

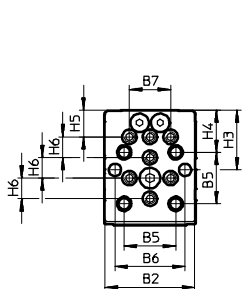


Sizes 45, 55, 75

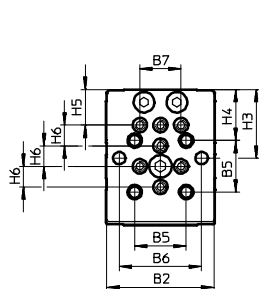


View A

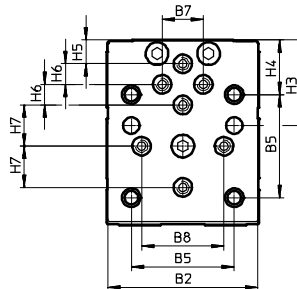
Size 45



Size 55



Size 75



1 Rubber buffer integrated in the slide. Can be removed when homing to fixed stop.

Dimensions

Download CAD data → www.festo.com

Size	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1 ∅
									±0.5	
35	33.5	33	–	–	20	–	20	–	20	5
45	44.5	43.5	32	19	25	34	20	–	25	6
55	53	52	42	20	25	40	20	–	25	8
75	74	73	62	31	50	–	20	40	50	12

Size	D2	D3	D4 ∅ H7	D5 ∅ H7	D6	D7 ∅	D8 ∅	D9 ∅ g7	H1	H2
35	–	M4	7	4	–	4	8	19	40	37.5
45	M3	M5	7	6	M3	6	10	32	56	53.5
55	M3	M5	7	6	M4	6	10	40	66	63.5
75	M4	M6	9	6	M5	8	11	60	90	87.5

Size	H3	H4	H5	H6	H7	H8	H9	H10	L6	
									2) ±1	3) ±1
35	4.2	13	–	10	–	2	4.2	17+0.09/-0.07	21	19
45	29	20.5	13	10	–	2	6.4	23±0.08	22	20
55	33.3	24.8	17.3	10	–	2	6.4	28.7±0.08	27	25
75	41.5	26.5	11.5	10	20	2	7.6	38.5±0.08	27	25

Size	L7	L8 ±1	L9	L10	L11 ±0.2	L12		L13 ¹⁾	L14 ¹⁾	L15 ±0.1
						2)	3)			
35	18	18.5	–	–	10.5	42	40	21	20	10
45	26	16	16.9	3.5	8	43	41	21	25	12.5
55	30	18.5	14.9	3.5	14	48	46	21	25	12.5
75	36	23.6	21.5	4.5	17	48	46	21	50	12.5

Size	L16	T1 ±0.1	T2	T3	T4	T5	T6	TG	VD	≈ 1
35	10	1.6	7.6	7.5	9	7.5	4.6	22	–	5
45	10	1.6	8.1	7.5	12.4	7.5	5.7	32.5	7	6
55	15	1.6	8.6	8.5	12.4	10	8.7	38	7	6
75	15	2.1	12.6	12	14.5	10	6.8	56.5	9	8

Size	Stroke [mm]	L1		L2		L3 –0.2	L4 ¹⁾	L5 ¹⁾ ±0.05
		2) ±1.5	3) ±1.5	2) ±1	3) ±1			
35	50	182	180	163.5	161.5	124.5	–	60
45	100	248	246	232	230	184	75	125
	200	348	346	332	330	284	100	175
55	100	284.5	282.5	266	264	209	100	150
	200	384.5	382.5	366	364	309	100	175
	250	463.5	461.5	445	443	388	100	175
75	100	309.6	307.6	286	284	223	–	150
	200	409.6	407.6	386	384	323	100	250
	300	514.6	512.6	491	489	428	150	350

1) Tolerance for centring hole ±0.02 mm
Tolerance for thread ±0.1 mm

2) With rubber buffer.

3) Without rubber buffer: when homing to fixed stop.

Linear drives and slides >

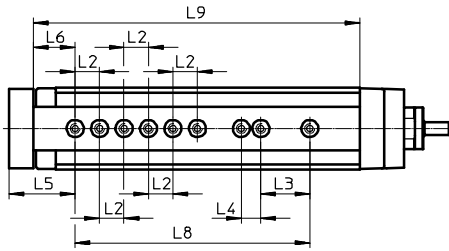
Mini slides EGSL, electric

Dimensions

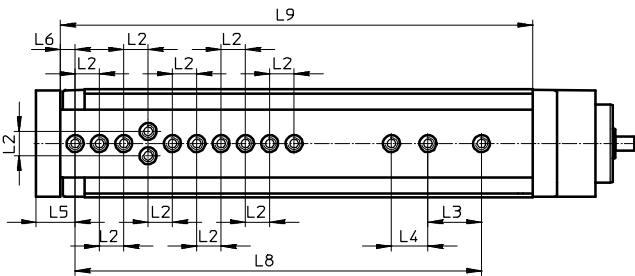
Download CAD data → www.festo.com

Hole pattern for mounting threads and centring holes

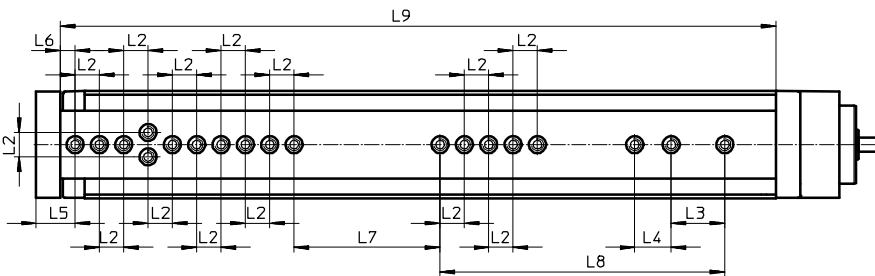
EGSL-35-50



EGSL-45-100



EGSL-45-200



Size	Stroke [mm]	L2 ¹⁾	L3 ¹⁾	L4 ¹⁾	L5	L6	L7 ¹⁾	L8 ¹⁾	L9
35	50	10	20	8	27	17	–	96	133.5
45	100	10	22	15	16	6	–	167	194
	200						60	117	294

1) Tolerance for centring hole ±0.02 mm
Tolerance for thread ±0.1 mm

04

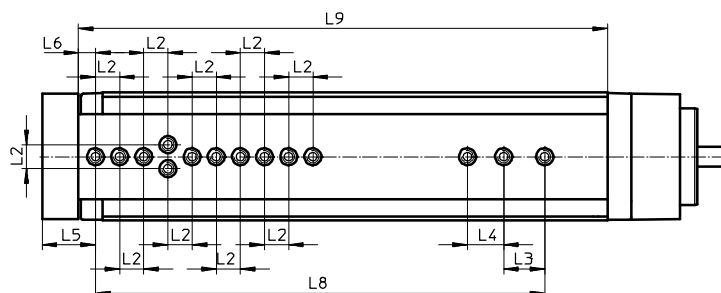
Electromechanical drives

Dimensions

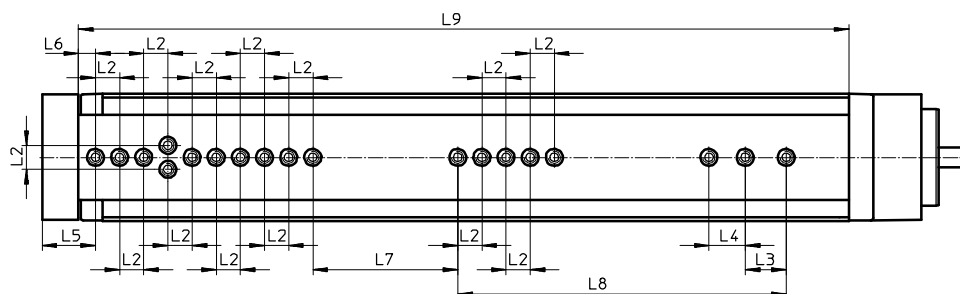
Download CAD data → www.festo.com

Hole pattern for mounting threads and centring holes

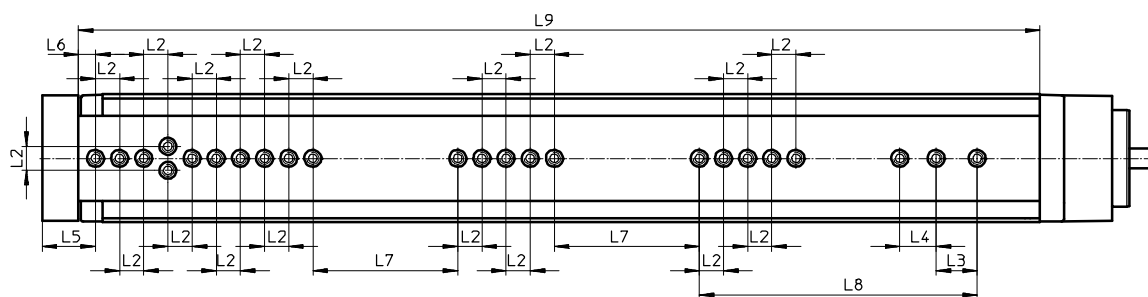
EGSL-55-100



EGSL-55-200



EGSL-55-250



Size	Stroke [mm]	L2 ¹⁾	L3 ¹⁾	L4 ¹⁾	L5	L6	L7 ¹⁾	L8 ¹⁾	L9
55	100	10	17	15	22	7	-	186	219
	200						60	136	319
	250						60	115	398

1) Tolerance for centring hole ±0.02 mm
Tolerance for thread ±0.1 mm

04
Electromechanical drives

Linear drives and slides >

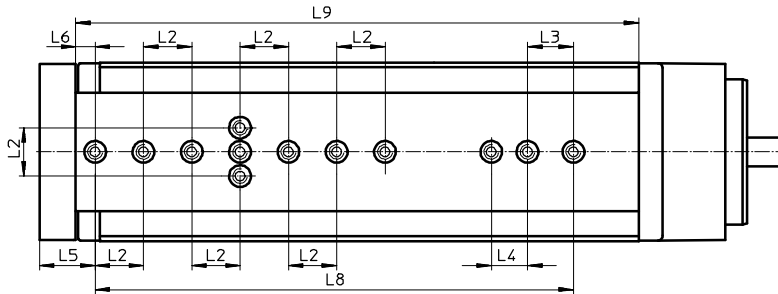
Mini slides EGSL, electric

Dimensions

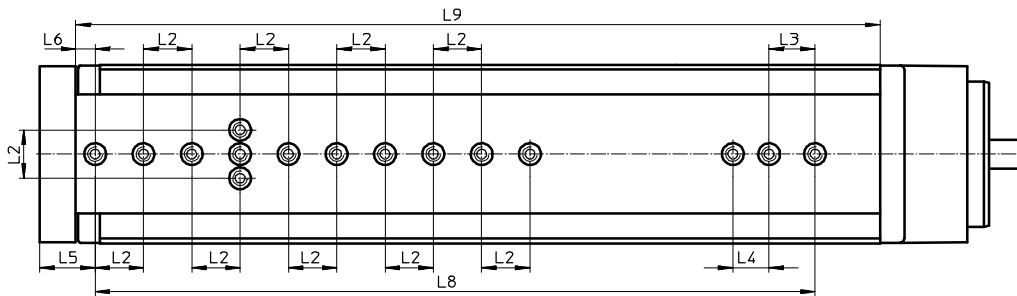
Download CAD data → www.festo.com

Hole pattern for mounting threads and centring holes

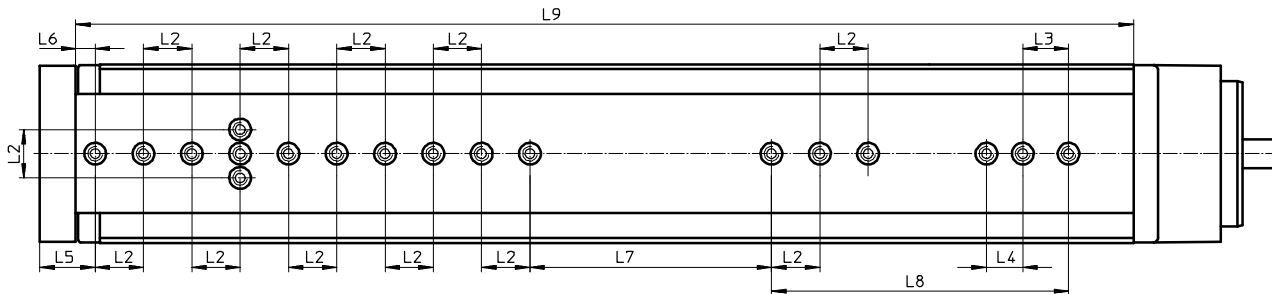
EGSL-75-100



EGSL-75-200



EGSL-75-300

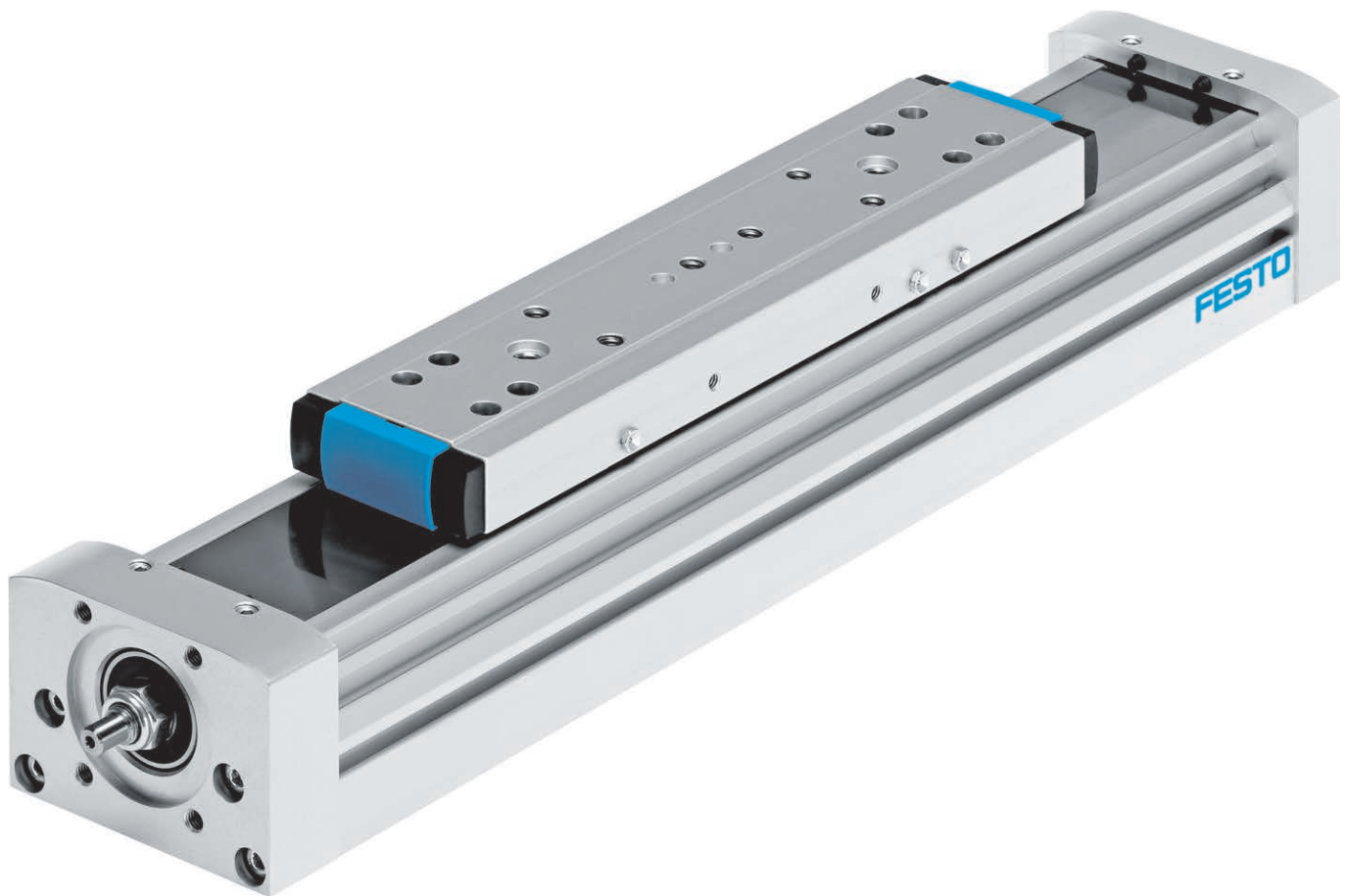


Size	Stroke	L2 ¹⁾	L3 ¹⁾	L4 ¹⁾	L5	L6	L7 ¹⁾	L8 ¹⁾	L9
	[mm]								
75	100	20	19	15	23	8	-	198	233
	200						-	298	333
	300						100	123	438

1) Tolerance for centring hole ± 0.02 mm
Tolerance for thread ± 0.01 mm

04

Electromechanical drives



Sturdy and precise

- + Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- + Protected ball screw ensures high feed force and precision

Linear drives and slides >

Spindle axes with recirculating ball bearing guide

ELGA-BS-KF

Linear drives and slides >

Spindle axes with recirculating ball bearing guide

ELGA-BS-KF



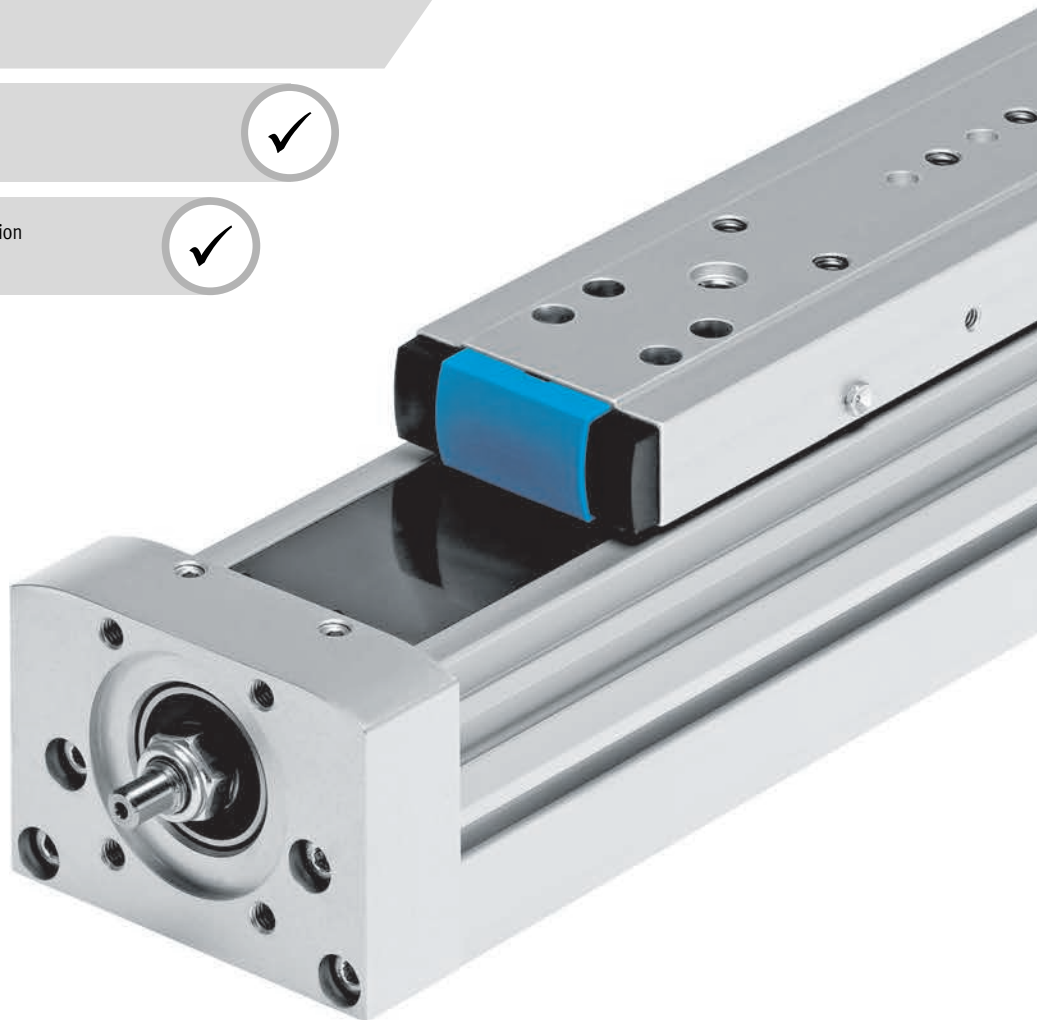
Overview, configuration and ordering

→ www.festo.com/catalogue/elga-bs-kf



Additional information, support and user documentation

→ www.festo.com/sp/elga-bs-kf



- + Internal guide and ball screw protected by the magnetically sealed cover band
- + Sealing air connections prevent dirt getting into the axis
- + For the highest requirements for feed force and accuracy, including in challenging environments
- + Easy maintenance thanks to easily accessible lubrication connections
- + Precision: the slide position can be sensed directly using the optional displacement encoder

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Product range overview

Type/Version	Size	Stroke [mm]	Feed force F_x [N]	Product options						→ Page/ online
				ML	MR	M1	M2	B	F	
ELGA-BS										
KF – Recirculating ball bearing guide	70, 80, 120, 150	50 ... 3000	650 ... 6400	■	■	■	■	■	■	658

Product options

ML Motor on left
MR Motor on right

M1 Displacement encoder, incremental, resolution: 2.5 μm
M2 Displacement encoder, incremental, resolution: 10 μm

B Displacement encoder at rear
F Displacement encoder at front

DN Without operating instructions

At a glance

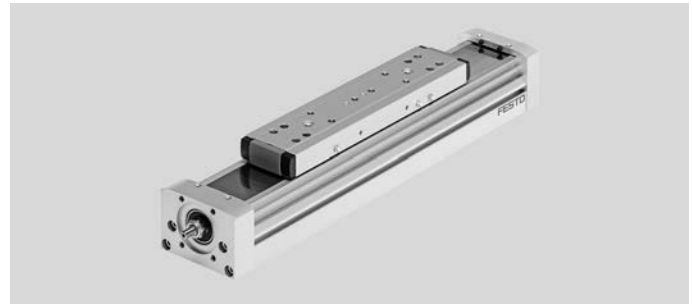
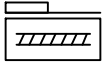
- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- For the highest requirements in terms of feed force and accuracy
- Different spindle pitches and numerous sizes open up a broad range of applications
- Guide and ball screw protected by cover strip
- Easy maintenance thanks to easily accessible lubrication connections
- Optional displacement encoder
- Wide range of options for mounting on drives
- Comprehensive range of mounting accessories for multi-axis combinations
- Space-saving position sensing

04

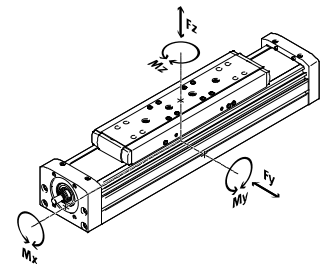
Linear drives and slides >

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Data sheet



Dimensions → Page 666



Technical data

Note
Engineering software
PositioningDrives
→ www.festo.com

Size		70	80	120	150
Spindle pitch	[mm/rev]	10	10	10	10
Working stroke	[mm]	50 ... 900	50 ... 1940	50 ... 2460	50 ... 3000
Max. feed force F_x	[N]	650	1600	3400	6400
No-load torque	[Nm]	0.17	0.3	1.0	2.2
at min. travel speed	[m/s]	0.05	0.1	0.2	0.2
No-load torque	[Nm]	0.45	0.75	2.25	6.5
at max. travel speed	[m/s]	0.5	0.5	0.6	2
Max. radial force ¹⁾	[N]	220	250	500	4000
Max. rotational speed ²⁾	[rpm]	3000	3000	3600	3000
Max. speed	[m/s]	0.5	0.5	0.6	2
Max. acceleration	[m/s ²]	15			
Repetition accuracy	[mm]	±0.02			
Max. permissible force F_y	[N]	1500	2500	5500	5500
Max. permissible force F_z	[N]	1850	3050	6890	11000
Max. permissible torque M_x	[Nm]	16	36	104	167
Max. permissible torque M_y	[Nm]	132	228	680	1150
Max. permissible torque M_z	[Nm]	132	228	680	1150

- 1) At the drive shaft.
- 2) Rotational speed and speed are stroke-dependent.

Operating conditions

Ambient temperature ³⁾	[°C]	-10 ... +60
Degree of protection		IP40

- 3) Note operating range of proximity sensors.

Mass moment of inertia

Size		70	80	120	150
Spindle pitch	[mm/rev]	10	10	10	10
J_0	[kg mm ²]	3.8	9.7	103.8	863
J_H per metre stroke	[kg mm ² /m]	14.2	34.6	275.6	1803.1
J_L per kg payload	[kg mm ² /kg]	2.53	2.53	2.53	40.53

The mass moment of inertia J_{rot} of the entire axis is calculated as follows:

$$J_{rot} = J_0 + J_H \times \text{working stroke [m]}$$

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Data sheet

Materials	
Cover	Anodised wrought aluminium alloy
Profile	Anodised wrought aluminium alloy
Slides	Anodised wrought aluminium alloy
Spindle	Steel
Cover strip	Stainless steel strip, non-corroding

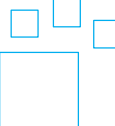
Technical data – Displacement encoder

Type	ELGA-...-M1	ELGA-...-M2
Resolution [µm]	2.5	10
Max. travel speed [m/s] with displacement encoder system	4	4
Encoder signal	5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse)	
Signal output	Line driver, alternating, resistant to sustained short circuit	
Electrical connection	8-pin plug, round design, M12	
Cable length [mm]	160	

Operating conditions – Displacement encoder

Ambient temperature [°C]	-10 ... +70
Degree of protection	IP64

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

Enter the type code in the search field.

Linear drives and slides >

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Order code

Electromechanical drives

Type		ELGA	Spindle axis
Drive function		BS	Ball screw
Guide		KF	Recirculating ball bearing guide
Size			
	Stroke [mm]		
70	100, 200, 300, 400, 500, 600, 700, 900	50 ... 880	
80	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1440, 1740, 1940	50 ... 1920	
120	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1960, 2460	50 ... 2440	
150	200, 400, 500, 900, 1400, 1900, 2500, 3000	50 ... 2980	
Stroke reserve			
...H	0 ... 999 (0 = no stroke reserve)	1	
Spindle pitch [mm/rev]			
10P	10	2	
20P	20	3	
25P	25	4	
40P	40	5	
Motor attachment position			
ML	Left		
MR	Right		
Displacement encoder, incremental			
-	None		
M1	Resolution: 2.5 µm		
M2	Resolution: 10 µm		
Displacement encoder attachment position			
-	None		
B	Retracted		
F	Advanced		

- 1 The sum of the stroke length and 2x stroke reserve must not exceed the maximum working stroke.
- 2 Only with size 70, 80, 120.

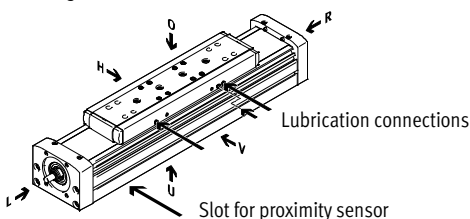
- 3 Only with size 80.
- 4 Only with size 120.
- 5 Only with size 150.

Order example:

ELGA-BS-KF-70-500-100H-10P-ML

Spindle axis ELGA - ball screw - recirculating ball bearing guide - size 70 - stroke 500 mm - stroke reserve 100 mm - spindle pitch 10 mm/rev - motor attachment on left - without displacement encoder - without displacement encoder attachment position

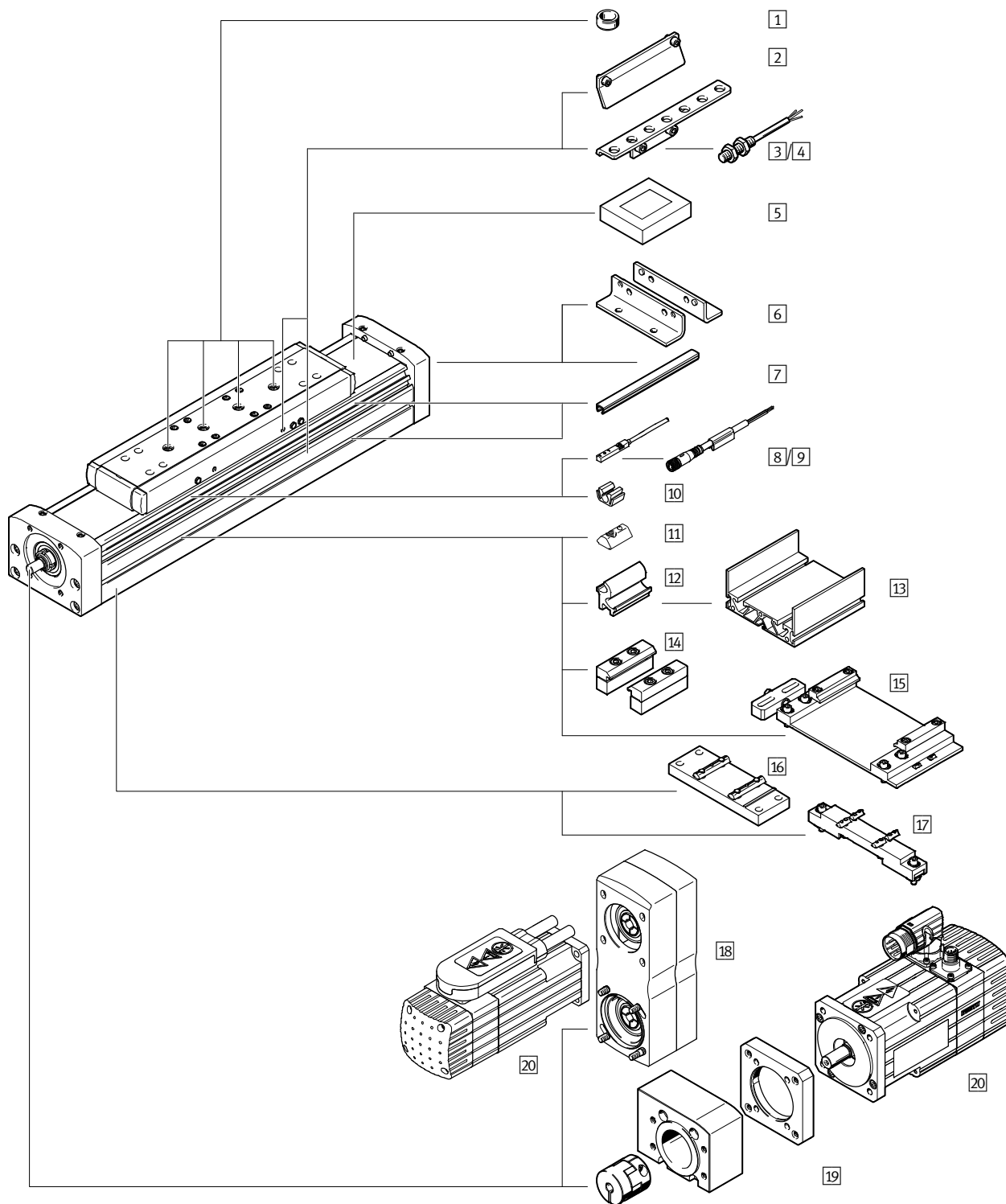
Ordering aid



- O top
- U underneath
- R right
- L left
- V front
- H rear

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Accessories



04 Electromechanical drives



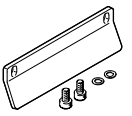
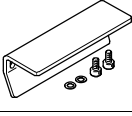
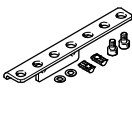
		→ Page/online
1	Centring pin ZBS/centring sleeve ZBH	662
2	Switch lug SF-EGC	662
3	Sensor bracket HWS-EGC	662
4	Inductive proximity sensor SIEN	662
5	Clamping component EADT	662
6	Foot mounting HPE	662
7	Slot cover ABP	662
8	Inductive proximity sensor SIES	662
9	Connecting cable NEBU	662
10	Clip SMBK	663




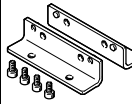
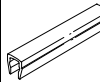
		→ Page/online
11	Slot nut NST	663
12	Adapter kit DHAM	elga-bs
13	Support profile HMA	elga-bs
14	Profile mounting MUE	663
15	Adjusting kit EADC-E16	663
16	Central support EAHF-L5	663
17	Adjusting kit EADC-E15	663
18	Parallel kit EAMM-U	664
19	Axial kit EAMM-A	665
20	Motor EMME/EMMS	664

Linear drives and slides >

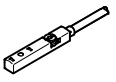
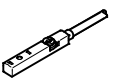


Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
1 Centring pin¹⁾²⁾ Data sheets online: → zbs			
	70	150928	ZBS-5
1 Centring sleeve¹⁾²⁾ Data sheets online: → zbh			
	70, 80, 120, 150	150927	ZBH-9
2 Switch lug³⁾ Dimensions online: → elga-bs			
	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	150	558051	SF-EGC-1-185
2 Switch lug⁴⁾ Dimensions online: → elga-bs			
	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	150	558056	SF-EGC-2-185
3 Sensor bracket⁵⁾ Dimensions online: → elga-bs			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	150	560517	HWS-EGC-M8:KURZ

	For size	Part no.	Type
4 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
5 Clamping component Dimensions online: → elga-bs			
	70, 80	8058451	EADT-S-L5-70
	120, 150	8058450	EADT-S-L5-120
6 Foot mounting Dimensions online: → elga-bs			
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	150	3002636	HPE-150
7 Slot cover⁶⁾			
	For mounting slot		
	70, 80	151681	ABP-5
	120, 150	151682	ABP-8
	For sensor slot		
	70 ... 150	563360	ABP-5-S1

- 1) Packaging unit 10 pieces.
- 2) 2 centring pins/sleeves included in the scope of delivery of the axis.
- 3) For sensing via proximity sensor SIES-8M.
- 4) For sensing via proximity sensor SIEN-M8B or SIES-8M.
- 5) For proximity sensor SIEN-M8B.
- 6) Packaging unit 2x 0.5 m.



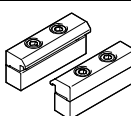
	For size	Switching output, connection	Cable length [m]	Part no.	Type
8 Proximity sensor for T-slot, inductive – N/O contact Data sheets → Page 1235					
	70 ... 150	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
		PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
		NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact Data sheets → Page 1235					
	70 ... 150	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
		PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
		NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
9 Connecting cable, straight socket Data sheets → Page 1543					
	70 ... 150	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket Data sheets → Page 1543					
	70 ... 150	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

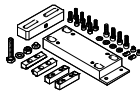
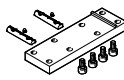
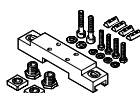
04

Electromechanical drives

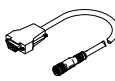
Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

	For size	Part no.	Type
10  Clip			
	70 ... 150	534254	SMBK-8
11  Slot nut			
		Dimensions online: → nst	
	70, 80	150914	NST-5-M5
		8047843	NST-5-M5-10¹⁾
		8047878	NST-5-M5-50²⁾
	120, 150	150915	NST-8-M6
		8047868	NST-8-M6-10¹⁾
		8047869	NST-8-M6-50²⁾
14  Profile mounting			
		Dimensions online: → elga-bs	
	70	558043	MUE-70/80
	80	558043	MUE-70/80
	120	558044	MUE-120/185
	150	558044	MUE-120/185

	For size	Part no.	Type
15  Adjusting kit			
		Dimensions online: → egc-bs	
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
16  Central support			
		Dimensions online: → elga-bs	
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
	150	3535189	EAHF-L5-150-P
17  Adjusting kit			
		Dimensions online: → egc-bs	
	70	8047566	EADC-E15-80-E7
	80	8047566	EADC-E15-80-E7
	120	8047568	EADC-E15-185-E7
	185	8047568	EADC-E15-185-E7

- 1) Packaging unit 10 pieces.
2) Packaging unit 50 pieces.

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
Encoder cables for displacement encoder, ELGA-...-M1/-M2					
	Displacement encoder ELGA-...-M1/-M2	Motor controller CMMP-AS-...	5	1599105	NEBM-M12G8-E-5-S1G9-V3
			10	1599106	NEBM-M12G8-E-10-S1G9-V3
			15	1599107	NEBM-M12G8-E-15-S1G9-V3
			χ ³⁾	1599108	NEBM-M12G8-E-...-S1G9-V3

3) Max. cable length 25 m.

Linear drives and slides >

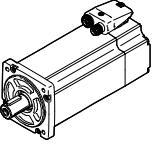
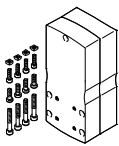
Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

When using parallel kits, the no-load driving torque of the respective kit must be taken into consideration.

Motor/gear unit ¹⁾	Parallel kit
	
	<ul style="list-style-type: none"> The kit can be mounted in all directions Use in combination with third-party motors on request
	Part no. Type

18/20 Permissible axis/motor combination with parallel kit –
Data sheets online: → eamm-u

Motor/gear unit ¹⁾	Parallel kit
ELGA-BS-KF-70	
With servo motor	
EMME-AS-40-...	2155239 EAMM-U-50-S38-40P-78
EMMS-AS-40-...	1217708 EAMM-U-50-S38-40A-78
EMMS-AS-55-...	1218538 EAMM-U-60-S38-55A-91
With stepper motor	
EMMS-ST-42-...	1217945 EAMM-U-50-S38-42A-78
EMMS-ST-57-...	1218568 EAMM-U-60-S38-57A-91
With gear unit	
EMGA-40-P-...	2283732 EAMM-U-60-S38-40G-91
EMGC-40-P-...	2283732 EAMM-U-60-S38-40G-91
ELGA-BS-KF-80	
With servo motor	
EMMS-AS-55-...	1219370 EAMM-U-60-S48-55A-91 ²⁾
EMME-AS-60-...	2629253 EAMM-U-70-S48-60P-96 ²⁾
EMMS-AS-70-...	2787320 EAMM-U-70-S48-70A-96 ²⁾
EMMS-AS-70-...	1217689 EAMM-U-86-S48-70A-102 ²⁾
With stepper motor	
EMMS-ST-57-...	1219379 EAMM-U-60-S48-57A-91 ²⁾
EMMS-ST-87-...	1217604 EAMM-U-86-S48-87A-177 ²⁾
With gear unit	
EMGA-40-P-...	2283760 EAMM-U-60-S48-40G-91 ²⁾
EMGC-40-P-...	2283760 EAMM-U-60-S48-40G-91 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	2801627 EAMM-U-70-S48-60G-96 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	2801715 EAMM-U-70-S48-60H-96 ²⁾
EMGA-60-P-...-SAS/SST ³⁾	1587251 EAMM-U-86-S48-60G-102 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1587338 EAMM-U-86-S48-60H-102 ²⁾

Motor/gear unit ¹⁾	Parallel kit	
	Part no.	Type
ELGA-BS-KF-120		
With servo motor		
EMMS-AS-70-...	1217543	EAMM-U-86-S62-70A-177 ²⁾
EMME-AS-80-...	2157004	EAMM-U-86-S62-80P-177 ²⁾
EMME-AS-100-...	1217381	EAMM-U-110-S62-100A-207 ²⁾
EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207 ²⁾
EMMS-AS-140-...	1219440	EAMM-U-145-S62-140A-288 ²⁾
With stepper motor		
EMMS-ST-87-...	1217373	EAMM-U-86-S62-87A-177 ²⁾
With gear unit		
EMGA-60-P-...-SAS/SST ³⁾	1587411	EAMM-U-86-S62-60G-177 ²⁾
EMGA-60-P-...-EAS, EMGC-60-P-... ³⁾	1587453	EAMM-U-86-S62-60H-177 ²⁾
ELGA-BS-KF-150		
With servo motor		
EMME-AS-100-...	1220656	EAMM-U-110-S95-100A-207 ²⁾
EMMS-AS-100-...	1220656	EAMM-U-110-S95-100A-207 ²⁾
EMMS-AS-140-...	1220582	EAMM-U-145-S95-140A-288 ²⁾
With gear unit		
EMGA-80-P-...	1589544	EAMM-U-110-S95-80G-207 ²⁾

- 1) The input torque must not exceed the maximum permissible transferable torque of the parallel kit.
- 2) To support the axis shaft, a counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit. → online: eamm-u
- 3) Gear unit drive shaft diameter: EMGA-60-P-...-SAS/SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

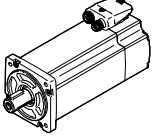
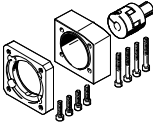
The clamping component EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.

04

Electromechanical drives

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Accessories – Ordering data

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
19/20 Permissible axis/motor combination with axial kit – Data sheets online: → eamm-a		
ELGA-BS-KF-70		
With servo motor		
EMME-AS-40-...	3637972	EAMM-A-S38-40P-G2
EMMS-AS-40-...	3637971	EAMM-A-S38-40A-G2
EMMS-AS-55-...	3637967	EAMM-A-S38-55A-G2
EMME-AS-60-...	3637958	EAMM-A-S38-60P-G2
With servo motor and gear unit		
EMME-AS-40-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-SAS-40		
With stepper motor		
EMMS-ST-42-...	3637965	EAMM-A-S38-42A-G2
EMMS-ST-57-...	3637956	EAMM-A-S38-57A-G2
With stepper motor and gear unit		
EMMS-ST-42-...	1456647	EAMM-A-S38-40G-G2
EMGA-40-P-G...-SST-42		
With integrated drive		
EMCA-EC-67-...	1456638	EAMM-A-S38-67A-G2
With integrated drive and gear unit		
EMCA-EC-67-...- EMGC-40-...	1456647	EAMM-A-S38-40G-G2
ELGA-BS-KF-80		
With servo motor		
EMMS-AS-55-...	3637961	EAMM-A-S48-55A-G2
EMME-AS-60-...	3637964	EAMM-A-S48-60P-G2
EMMS-AS-70-...	3637957	EAMM-A-S48-70A-G2
With servo motor and gear unit		
EMME-AS-40-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-SAS-40		
EMMS-AS-55-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456652	EAMM-A-S48-60H-G2
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-57-...	3637963	EAMM-A-S48-57A-G2
EMMS-ST-87-...	3637962	EAMM-A-S48-87A-G2

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
ELGA-BS-KF-80		
With stepper motor and gear unit		
EMMS-ST-42-...	1456650	EAMM-A-S48-40G-G2
EMGA-40-P-G...-SST-42		
EMMS-ST-57-...	2256701	EAMM-A-S48-60G-G2
EMGA-60-P-G...-SST-57		
With integrated drive and gear unit		
EMCA-EC-67-...- EMGC-40-...	1456650	EAMM-A-S48-40G-G2
EMCA-EC-67-...- EMGC-60-...	1456652	EAMM-A-S48-60H-G2
ELGA-BS-KF-120		
With servo motor		
EMMS-AS-70-...	3637959	EAMM-A-S62-70A-G2
EMME-AS-80-...	3637970	EAMM-A-S62-80P-G2
EMME-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-140-...	3637969	EAMM-A-S62-140A-G2
With servo motor and gear unit		
EMMS-AS-55-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1456654	EAMM-A-S62-60H-G2
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SAS-70		
EMMS-AS-70-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-70		
EMME-AS-80-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SAS-100		
With stepper motor		
EMMS-ST-87	3637966	EAMM-A-S62-87A-G2
With stepper motor and gear unit		
EMMS-ST-57-...	2297649	EAMM-A-S62-60G-G2
EMGA-60-P-G...-SST-57		
EMMS-ST-87-...	1972530	EAMM-A-S62-80G-G2
EMGA-80-P-G...-SST-87		
With integrated drive and gear unit		
EMCA-EC-67-...- EMGC-60-...	1456654	EAMM-A-S62-60H-G2
ELGA-BS-KF-150		
With servo motor		
EMME-AS-100-...	3637955	EAMM-A-S95-100A-G2
EMMS-AS-100-...	3637955	EAMM-A-S95-100A-G2
EMMS-AS-140-...	3637954	EAMM-A-S95-140A-G2

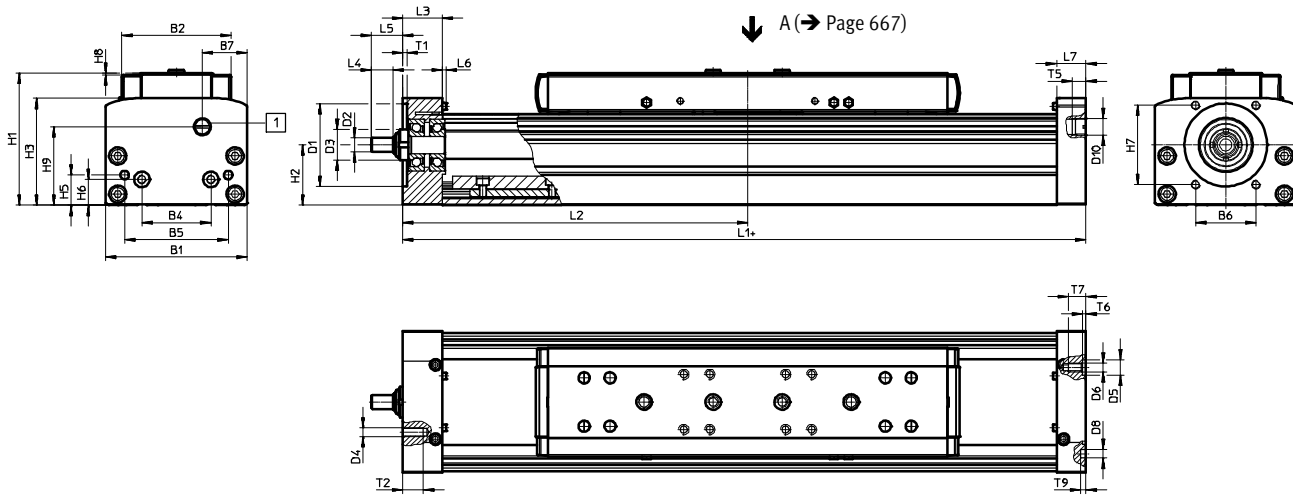
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Linear drives and slides >

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2 x stroke reserve

1 Sealing air connection

Size	B1	B2	B4	B5	B6	B7	D1 ∅	D2 ∅	D3 ∅	D4	D5 ∅ H7
70	69	48.2	30	45	29	21.5	38	6	SW13	M5	-
80	82	63.2	40	60	35	26	48	8	18	M5	9
120	120	95	80	40	64	35	62	12	28	M6	-
150	154	125	40	80	80	42	95	25	44	M8	-

Size	D6	D8 ∅ H7	D10	H1	H2	H3	H5	H6	H7	H8	H9	L1
70	M5	5	G1/8	64	28.5	50.5	13	13	36	1	37.5	268
80	M5	5	G1/8	76.5	35	62	17.5	15	46	1	45.5	296
120	M8	9	G1/8	111.5	54	89	22	22	54	1	65.5	409
150	M8	9	G1/8	141.5	72.5	122	26.5	26.5	80	1	91	512

Size	L2	L3	L4	L5	L6	L7	T1	T2	T5	T6	T7	T9
	min.											
70	133.5	21	8	14	2.3	16	2.5	12	8	-	10	3.1
80	148.2	23	12.5	18	2.3	17	2.5	12	8	2.1	10.1	3.1
120	202.3	33	17.5	25.5	1.8	30	3	15	8	-	16	2.1
150	235.7	43	23	30.5	3.5	37	3	20	8	-	16	2.1

Electromechanical drives

04

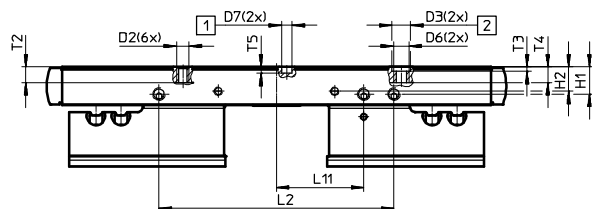
Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Download CAD data → www.festo.com

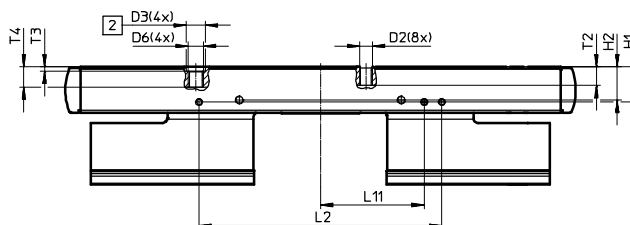
Dimensions

Slide

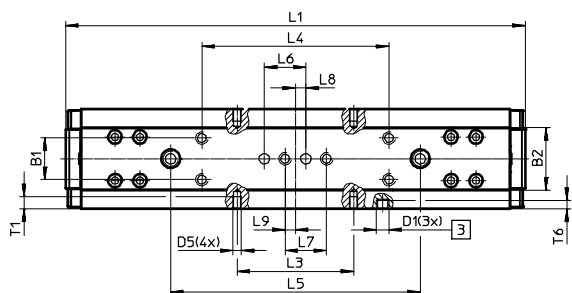
Size 70



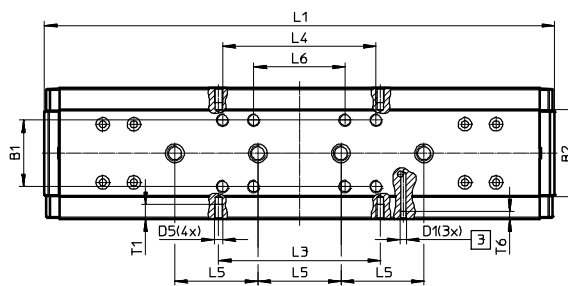
Size 80



View A



View A



- 1 Drill hole for centring pin ZBS
- 2 Drill hole for centring sleeve ZBH
- 3 Lubrication connections

Size	B1	B2	D1	D2	D3	D5	D6	D7	H1	H2	L1	L2	L3	L4
	±0.1	±0.2			∅ H7			∅ H7	±0.1			±0.1	±0.1	±0.1
70	20	30	M6	M5	9	M4	M6	5	13.1	11.7	221	113	56	90
80	32	42	M6	M5	9	M4	M6	-	16.5	16	246	120	78	74

Size	L5	L6	L7	L8	L9	L11	T1	T2	T3	T4	T5	T6	
												min.	max.
	±0.03	±0.1	±0.03						+0.1		+0.1		
70	120	20	20	5	5	42	6	7.5	2.1	7.5	3.1	4.2	4.6 _{-0.1}
80	40	44	-	-	-	50.5	8	9	2.1	9.7	-	5.6	5.9 _{-0.1}

Linear drives and slides >

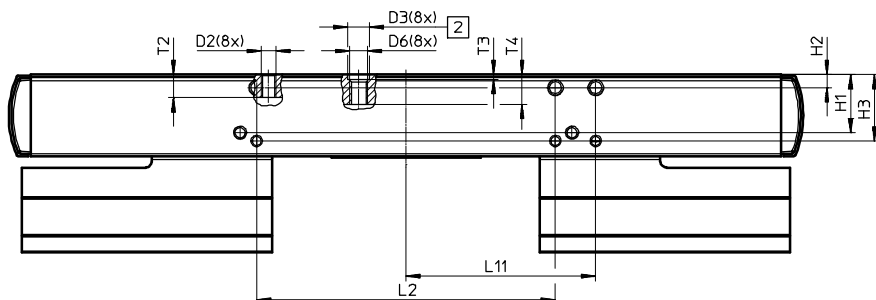
Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Dimensions

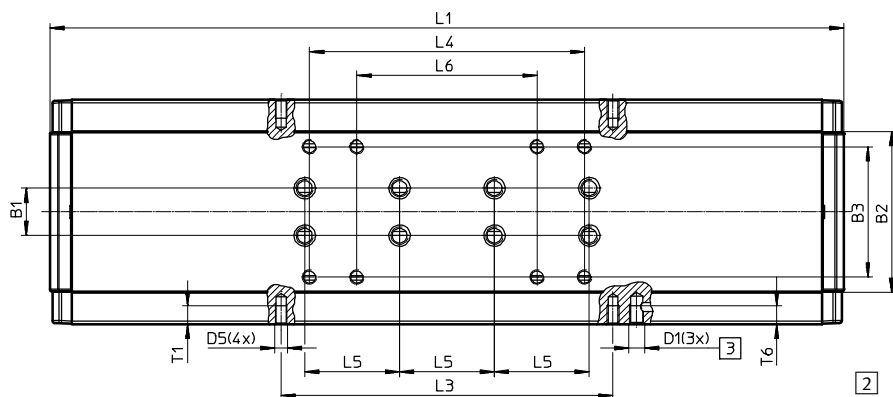
Download CAD data → www.festo.com

Slide

Size 120



View A



- 2 Drill hole for centring sleeve ZBH
- 3 Lubrication connections

Size	B1	B2	B3	D1	D2	D3 ∅ H7	D5	D6	H1	H2	H3	L1
120	±0.03 20	±0.2 68	±0.1 55	M6	M5	9	M5	M6	24.5	5.5	28	335

Size	L2	L3	L4	L5	L6	L11	T1	T2	T3	T4	T6
	±0.1	±0.1	±0.2	±0.03	±0.2				+0.1		
120	126	140	116	40	76	80	8	9.7	2.1	12.55	8

Electromechanical drives

04

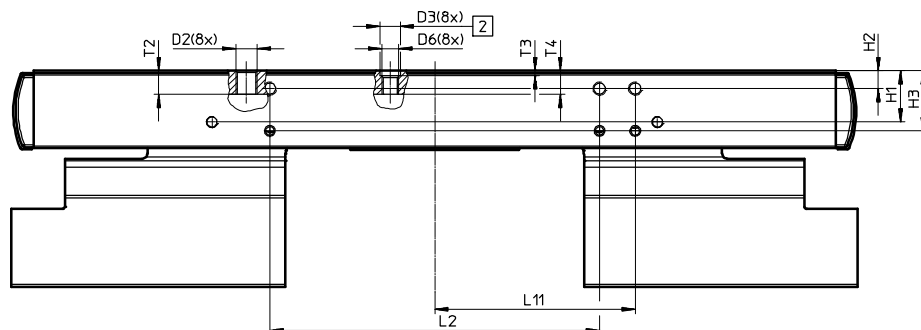
Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

Dimensions

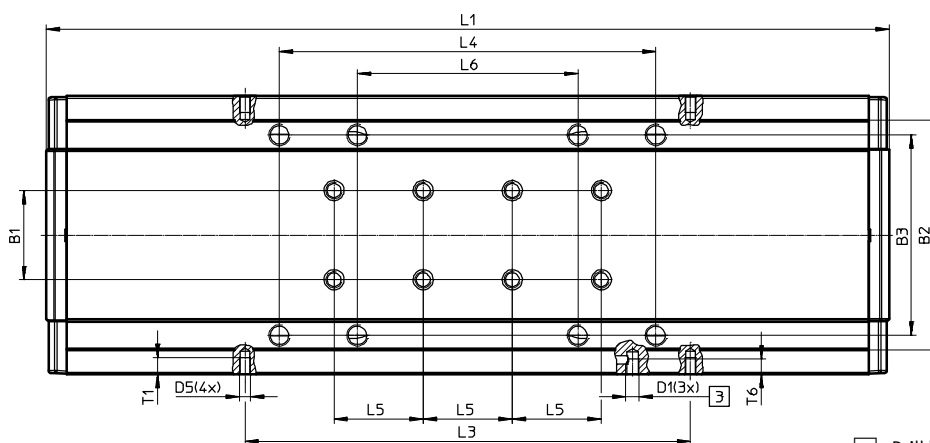
Download CAD data → www.festo.com

Slide

Size 150



View A



- 2 Drill hole for centring sleeve ZBH
- 3 Lubrication connections

Size	B1	B2	B3	D1	D2	D3	D5	D6	H1	H2	H3	L1
	±0.03	±0.2	±0.1			∅ H7						
150	40	103	90	M6	M8	9	M5	M6	23	8	27	378.4

Size	L2	L3	L4	L5	L6	L11	T1	T2	T3	T4	T6
	±0.1	±0.1	±0.2	±0.03	±0.2				+0.1		
150	148	200	169	40	99	90	7.5	10.7	2.1	14	7

04
Electromechanical drives

Linear drives and slides >

Spindle axes ELGA-BS-KF, with recirculating ball bearing guide

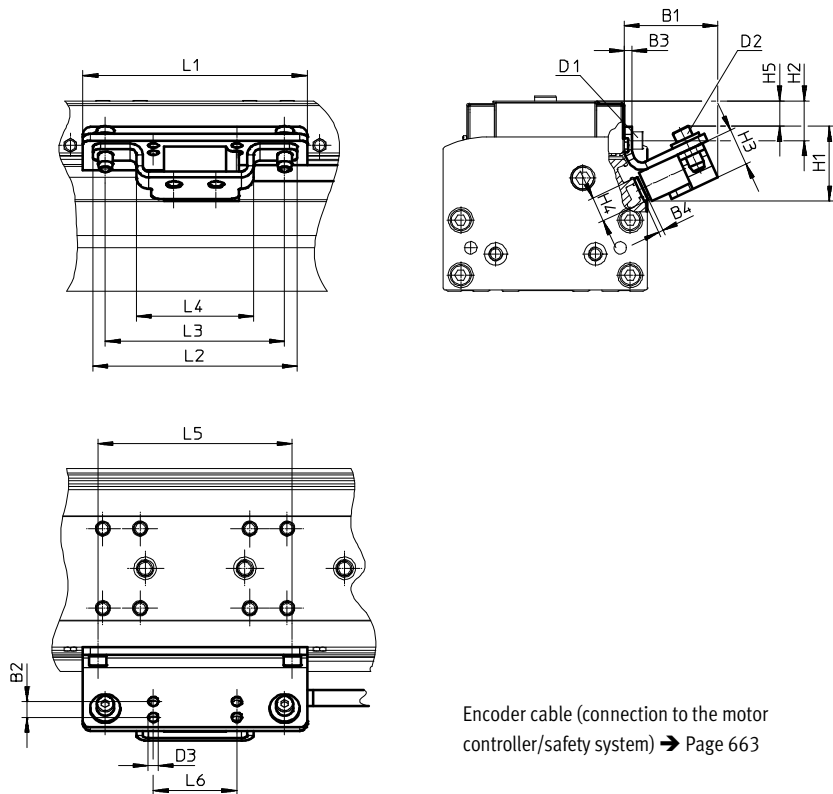
Dimensions

Download CAD data → www.festo.com

M1/M2 – With incremental displacement encoder

04

Electromechanical drives



Size	B1	B2	B3	B4	D1	D2	D3 ∅	H1	H2
70	40	7	3	1.8	M4x8	M4x14	4	35	11.7
80	40	7	3	1.8	M4x14	M4x14	4	35	16
120	41	7	3	1.8	M4x14	M4x14	4	35	24.5
150	42	7	3	1.8	M5x10	M4x14	4	35	23

Size	H3	H4	H5	L1	L2	L3	L4	L5	L6
70	15	10	3.5	86	82	72	47	56	33.5
80	15	10	9	90	82	72	47	78	33.5
120	15	10	21	170	82	72	47	140	33.5
150	15	10	22.4	220	82	72	47	200	33.5



High-performance rotation

- + Heavy-duty bearing for high forces and torques
- + Backlash-free pre-stressed rotating plate with very good axial eccentricity and concentricity properties
- + Easy: also as an Optimised Motion Series (OMS) with motor controller and cable in one drive package

Semi-rotary drives >

Rotary drives, electric

ERMO

Semi-rotary drives >

Rotary drives, electric

ERMO

 Overview, configuration and ordering
→ www.festo.com/catalogue/ermo



 Additional information, support and user documentation
→ www.festo.com/sp/ermo



- + With stepper motor and integrated gear unit
- + ServoLite – closed-loop operation with encoder
- + Simple and direct mounting on EGSL and EPCO with EAGF
- + Optional holding brake
- + Hollow shaft for energy throughfeed for attachments

Product range overview

Type/version	Size	Product options									
		ST	E	B	L	R	C5	DIO	LK	N	P
ERMO											
Rotary drive	12	■	■	-	■	■	■	■	■	■	■
	16, 20, 32	■	■	■	■	■	■	■	■	■	■

Product options

- | | | | |
|-----------------------------|---------------------------------|--|------------------------------|
| ST Stepper motor | P2 Pneumatic energy throughfeed | C5 Motor controller CMMO | N Switching input/output NPN |
| E With encoder | E8 Electric energy throughfeed | DIO Activation via digital I/O interface | P Switching input/output PNP |
| B With brake | | LK Activation IO-Link | |
| L Cable outlet to the left | | | |
| R Cable outlet to the right | | | |

Optionally available as Optimised Motion Series (OMS)

A package that makes positioning easier than ever before.

The Optimised Motion Series is as easy to handle as a pneumatic cylinder, but with the functionality of an electric drive.



Easy selection

- Easy sizing and selection using cycle time charts
- No specialist knowledge of electric drive technology required

Ordering and logistics

- All the necessary individual components under a single part number
- Motors mounted on rotary drive

Quick to configure

- Parameterisation and commissioning via web server/browser
- Parameterise up to 7 freely definable positions directly on the PC



For simple positioning tasks

Rotary drive ERMO



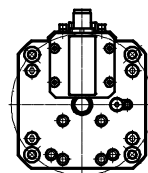
Motor controller CMMO

→ Page 827

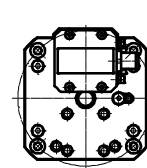


Motor attachment variants

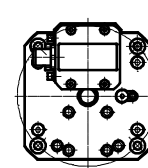
Top (standard)



Left (feature L)



Right (feature R)



Semi-rotary drives >

Rotary drives ERMO, electric

Data sheet



04

Electromechanical drives

Technical data

Size	12	16	25	32
Rotation angle	Infinite			
Repetition accuracy ¹⁾ [°]	±0.05	±0.05	±0.05	±0.1
Torsional backlash ¹⁾ [°]	0.2			
Gear ratio	9:1	9:1	9:1	7:1
Nominal torque [Nm]	0.15	0.8	2.5	5
Nominal rotational speed [rpm]	100	100	66	50
Max. speed [rpm]	200	200	150	100
Permissible mass moment of inertia [kgm ² x10 ⁻⁴]	3	13	65	164
Mass moment of inertia Jo [kgm ² x10 ⁻⁴]	0.0079	0.0383	0.114	0.390

1) Without payload in new condition.

Electrical data

Size	12	16	25	40
Motor				
Nominal operating voltage [V DC]	24			
Nominal current [A]	0.8	1.4	3	4.2
Step angle with full step [°]	1.8 ±5%			
Duty cycle [%]	100			
Brake				
Nominal voltage [V DC]	-	24	24	24
Nominal power [W]	-	8	8	8
Holding torque [Nm]	-	1	2.5	2.5
Mass moment of inertia [kgm ² x10 ⁻⁴]	-	0.69	1.3	1.3
Encoder				
Rotor position encoder	Incremental			
Rotary position encoder measuring principle	Optical			
Pulses/rotation [1/rev]	500			
Interface	RS422, TTL, AB channel + zero index			
Operating voltage [V DC]	5			

Operating conditions

Ambient temperature ²⁾ [°C]	0 ... +50
Degree of protection	IP40

2) Note range of application of proximity sensors and motors.

Data sheet

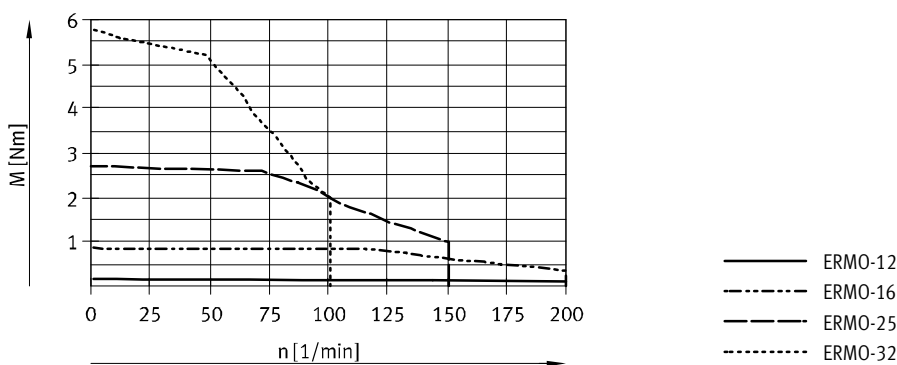
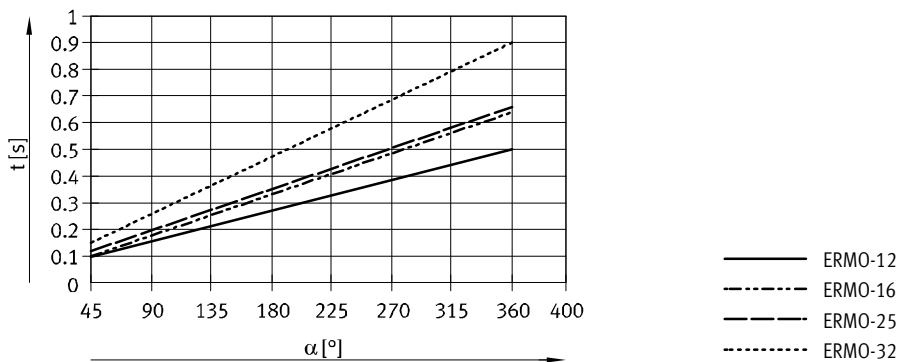
Max. permissible axial and radial force F_x/F_z ¹⁾

Static forces

Size	12	16	25	32
Static				
Axial force F_x [N]	500	600	700	800
Radial force F_z [N]	500	750	1200	2000
Dynamic				
Axial force F_x [N]	180	290	350	450
Radial force F_z [N]	200	300	450	550

1) The forces depend on the lever arm.

Torque M as a function of rotational speed n

Positioning time t as a function of rotation angle α 

Materials

Housing	Anodised wrought aluminium alloy
Clamping ring	Anodised wrought aluminium alloy
Rotating plate	Anodised wrought aluminium alloy
Ball bearing	Rolled steel
Sealing ring	NBR

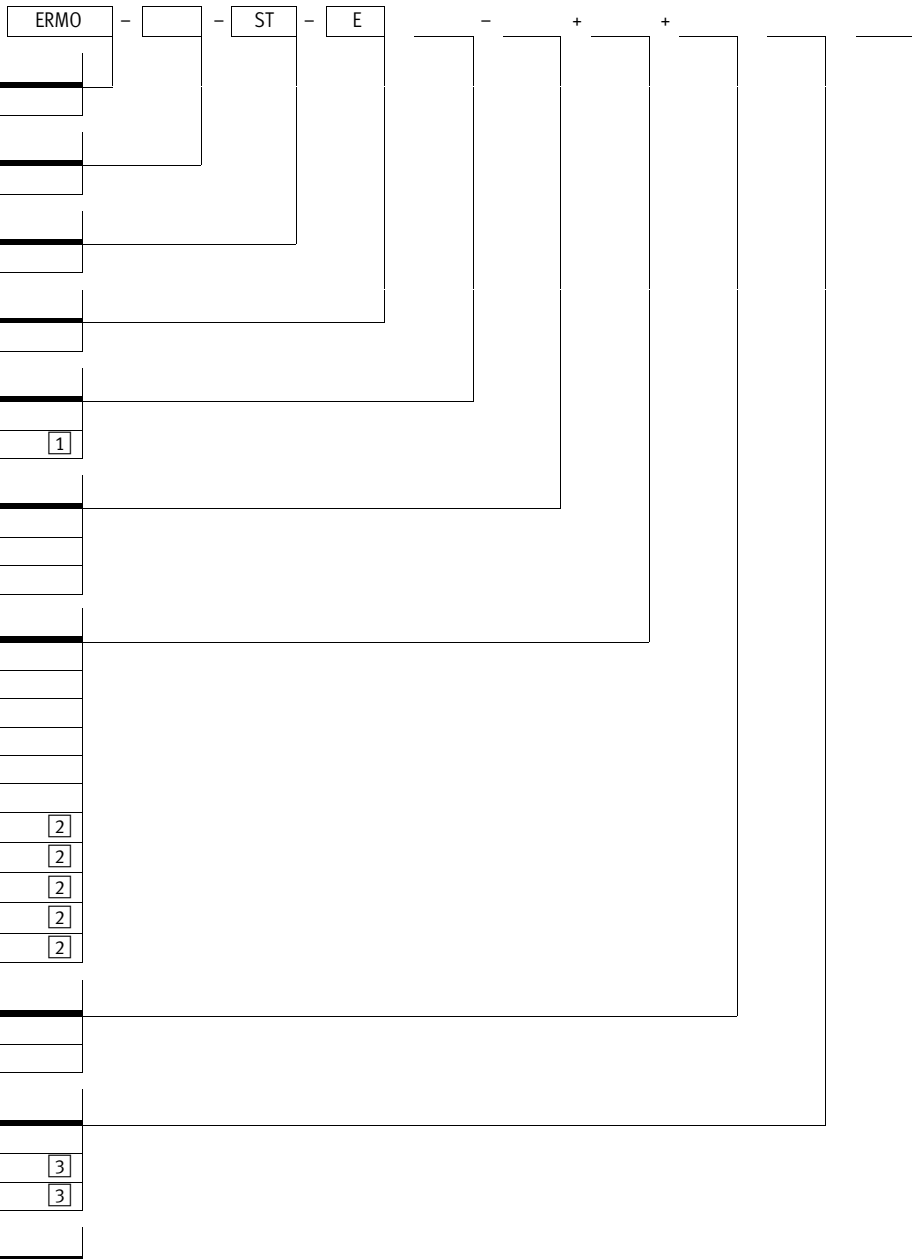
Semi-rotary drives >

Rotary drives ERMO, electric

Order code

04

Electromechanical drives



[1] Not with size 12.

[2] Not with size 12 and 16.

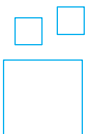
[3] Only in combination with motor controller C5.

[4] Not with IO-Link LK.

Order example: ERMO-25-ST-EB-L+5EA+C5DION

Rotary drive - size 25 - stepper motor - with encoder - with brake - with cable outlet to the left - connecting cable 5 m , angled plug - with motor controller CMMO - with activation via digital I/O interface - with switching input/output NPN

Ordering – Product options



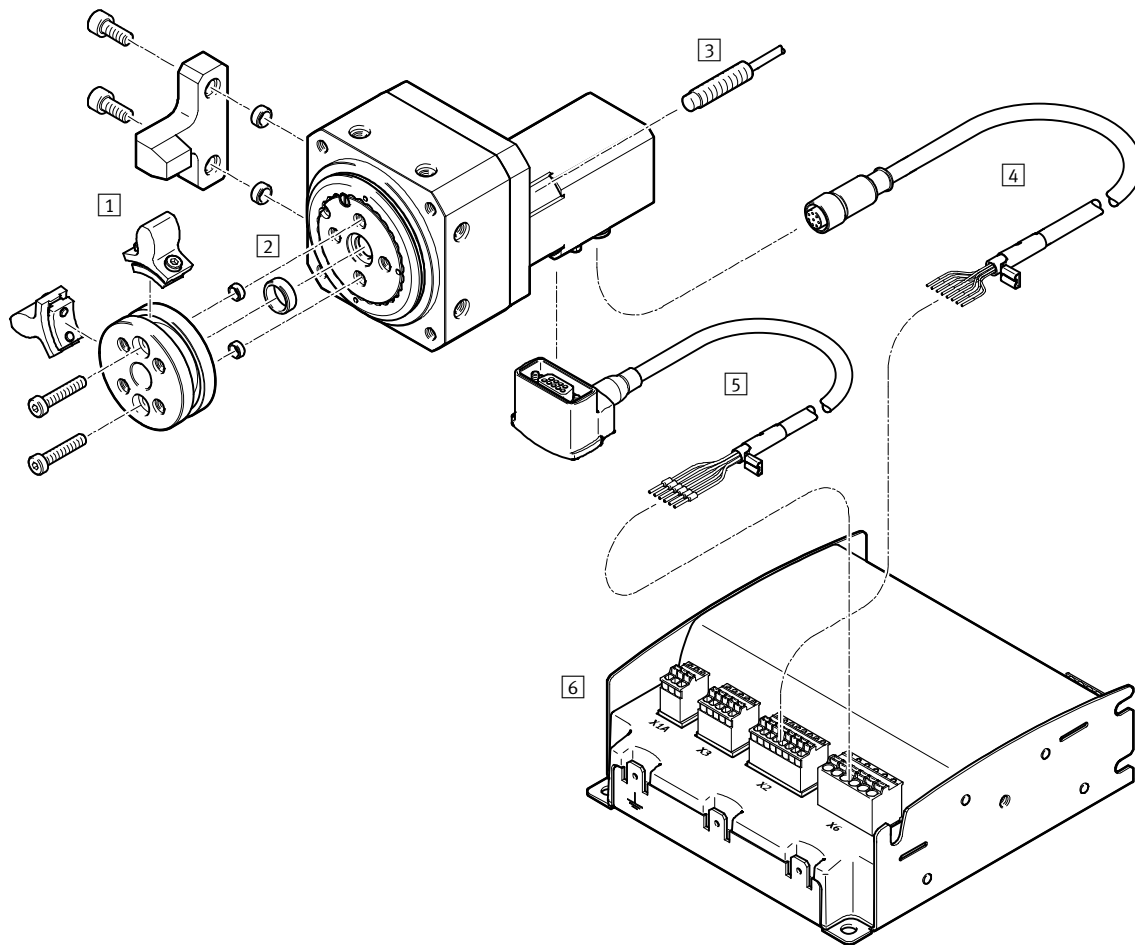
Configurable product

This product and all its options can be ordered using the configurator.

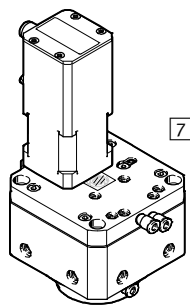
The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

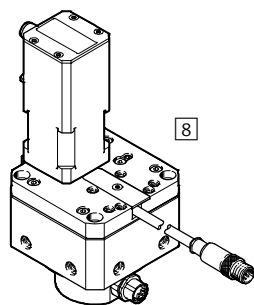
Accessories



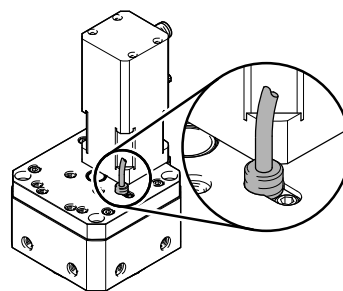
Pneumatic energy throughfeed



Electric energy throughfeed



Proximity sensor SIEN



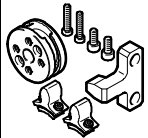
		→ Page/online
1	Stop kit EADP	678
2	Centring sleeve ZBH	678
3	Proximity sensor SIEN	678
4	Encoder cable NEBM	679




		→ Page/online
5	Motor cable NEBM	679
6	Motor controller CMMO	679
7	Pneumatic energy throughfeed	ermo
8	Electric energy throughfeed	ermo

Semi-rotary drives >


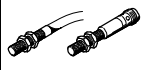
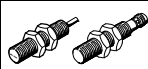
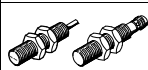
Rotary drives ERMO, electric



Accessories – Ordering data

	For size	Part no.	Type
1 Stop kit			Data sheets online: → eadp
	12	3044562	EADP-ES-R3-12
	16	2715501	EADP-ES-R3-16
	25	2721599	EADP-ES-R3-25
	32	2735411	EADP-ES-R3-32

	For size	Part no.	Type
2 Centring sleeve			Data sheets online: → zbh
	12, 16	186717	ZBH-7 ¹⁾⁴⁾
	25	150927	ZBH-9 ¹⁾⁴⁾
	32	189653	ZBH-12 ¹⁾⁴⁾
	12 ... 32	186717	ZBH-7 ²⁾⁴⁾
	12, 16	189653	ZBH-12 ³⁾⁴⁾
	25	191409	ZBH-15 ³⁾⁴⁾
	32	150901	SLZZ-25/16 ³⁾⁵⁾

- 1) For centring the drive for lateral mounting.
- 2) For centring attachments on the rotating plate.
- 3) For centring attachments in the middle of the rotating plate.
- 4) Packaging unit 10 pieces.
- 5) Packaging unit 1 piece.

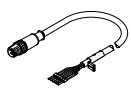
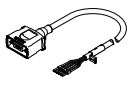
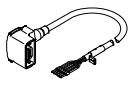
	For size	Switching output, connection	Cable length [m]	Part no.	Type
3 Inductive proximity sensor – N/O contact, M5					Data sheets → Page 1230
	12	PNP, cable	2.5	★ 150370	SIEN-M5B-PS-K-L
		PNP, plug	–	★ 150371	SIEN-M5B-PS-S-L
N/C contact, M5					Data sheets → Page 1230
	12	PNP, cable	2.5	150374	SIEN-M5B-PO-K-L
		PNP, plug	–	150375	SIEN-M5B-PO-S-L
N/O contact, M8					Data sheets → Page 1230
	16 ... 32	PNP, cable	2.5	★ 150386	SIEN-M8B-PS-K-L
		PNP, plug	–	★ 150387	SIEN-M8B-PS-K-L
N/C contact, M8					Data sheets → Page 1230
	16 ... 32	PNP, cable	2.5	150390	SIEN-M8B-PO-K-L
		PNP, plug	–	150391	SIEN-M8B-PO-K-L

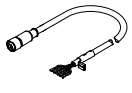
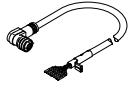
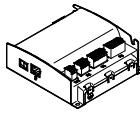
	For size	Connection	Cable length [m]	Part no.	Type
Connecting cable, straight socket					Data sheets → Page 1543
	16 ... 32	M8x1, 3-pin	2.5	159420	SIM-M8-3GD-2,5-PU
			2.5	★ 541333	NEBU-M8G3-K-2,5-LE3
			5.0	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket					Data sheets → Page 1543
	16 ... 32	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2,5-LE3
			5.0	★ 541341	NEBU-M8W3-K-5-LE3

04

Electromechanical drives

Accessories – Ordering data

	Cable length [m]	Part no.	Type
4 Motor cable¹⁾			
For ERMO-12, 16			
Straight plug			
	1.5	1449600	NEBM-SM12G8-E-1.5-Q5-LE6
	2.5	1449601	NEBM-SM12G8-E-2.5-Q5-LE6
	5.0	1449602	NEBM-SM12G8-E-5-Q5-LE6
	7.0	1449603	NEBM-SM12G8-E-7-Q5-LE6
	10.0	1449604	NEBM-SM12G8-E-10-Q5-LE6
For ERMO-25, 32			
Straight plug			
	1.5	1450368	NEBM-S1G9-E-1.5-Q5-LE6
	2.5	1450369	NEBM-S1G9-E-2.5-Q5-LE6
	5.0	1450370	NEBM-S1G9-E-5-Q5-LE6
	7.0	1450371	NEBM-S1G9-E-7-Q5-LE6
	10.0	1450372	NEBM-S1G9-E-10-Q5-LE6
Angled plug			
	1.5	1450736	NEBM-S1W9-E-1.5-Q5-LE6
	2.5	1450737	NEBM-S1W9-E-2.5-Q5-LE6
	5.0	1450738	NEBM-S1W9-E-5-Q5-LE6
	7.0	1450739	NEBM-S1W9-E-7-Q5-LE6
	10.0	1450740	NEBM-S1W9-E-10-Q5-LE6

	Cable length [m]	Part no.	Type
5 Encoder cable¹⁾			
For ERMO-12, 16, 25, 32			
Straight plug			
	1.5	1451586	NEBM-M12G8-E-1.5-LE8
	2.5	1451587	NEBM-M12G8-E-2.5-LE8
	5.0	1451588	NEBM-M12G8-E-5-LE8
	7.0	1451589	NEBM-M12G8-E-7-LE8
	10.0	1451590	NEBM-M12G8-E-10-LE8
For ERMO-25, 32			
Angled plug			
	1.5	1451674	NEBM-M12W8-E-1.5-LE8
	2.5	1451675	NEBM-M12W8-E-2.5-LE8
	5.0	1451676	NEBM-M12W8-E-5-LE8
	7.0	1451677	NEBM-M12W8-E-7-LE8
	10.0	1451678	NEBM-M12W8-E-10-LE8
	Function	Part no.	Type
6 Motor controller Data sheets → Page 827			
	With I/O interface		
	PNP	1512316	CMMO-ST-C5-1-DIOP
	NPN	1512317	CMMO-ST-C5-1-DION
	With IO-Link		
	PNP	1512320	CMMO-ST-C5-1-LKP

1) Other cable lengths on request.

04 Electromechanical drives

Semi-rotary drives >

Rotary drives ERMO, electric

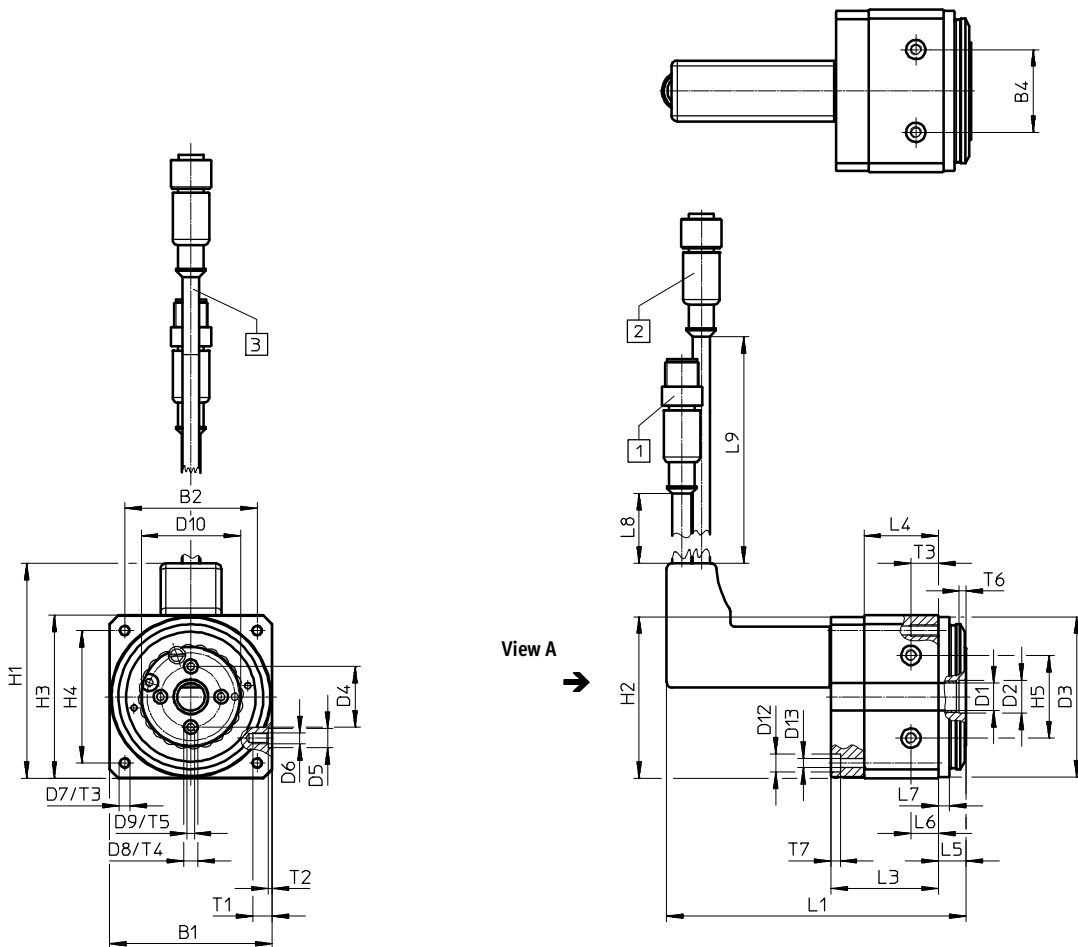
Dimensions

Download CAD data → www.festo.com

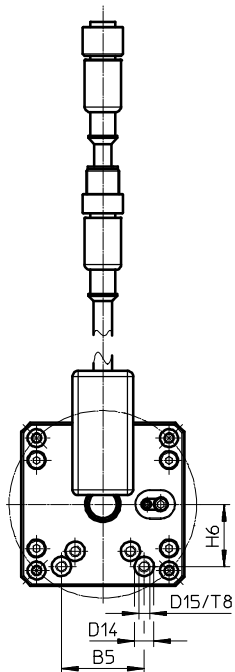
ERMO-12

04

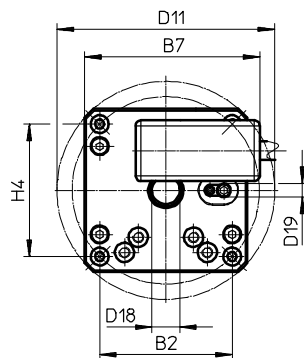
Electromechanical drives



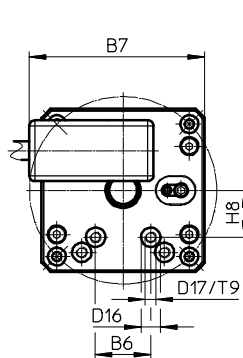
View A



ERMO...-L



ERMO...-R



- 1 Encoder cable
- 2 Motor cable
- 3 Min. bending radius of cables: 60 mm

Dimensions

Download CAD data → www.festo.com

Size	B1	B2	B4	B5	B6	B7	D1	D2	D3	D4
	±0.3		±0.03	±0.02	±0.02		∅	∅ H8	∅ f8	∅ ±0.02
12	59	48	30	30	20	46	10/7 ¹⁾	12	58	22

Size	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14
	∅ H7			∅ H7		∅	∅ ±0.5	∅	∅	∅
12	7	M4	M4	5	M3	36	79	6.5	3.4	7

Size	D15	D16	D17	D18	D19	H1	H2	H3	H4	H5
		∅ H7		max.				±0.3		±0.03
12	M4	7	M4	7	M5x0.5	80	58.5	59	48	30

Size	H6	H8	L1	L3	L4	L5	L6	L7	L8	L9
			±1.5	±0.6		±0.2	±0.1	±0.1		
12	22.5	17	100	39	27	10	10	4	300	300

Size	T1	T2	T3	T4	T5	T6	T7	T8	T9
		+0.1		+0.1		+0.1			
12	7	1.5	10	1.2	7	2.5	3.4	1.5	1.5

1) With attached motor.

Semi-rotary drives >

Rotary drives ERMO, electric

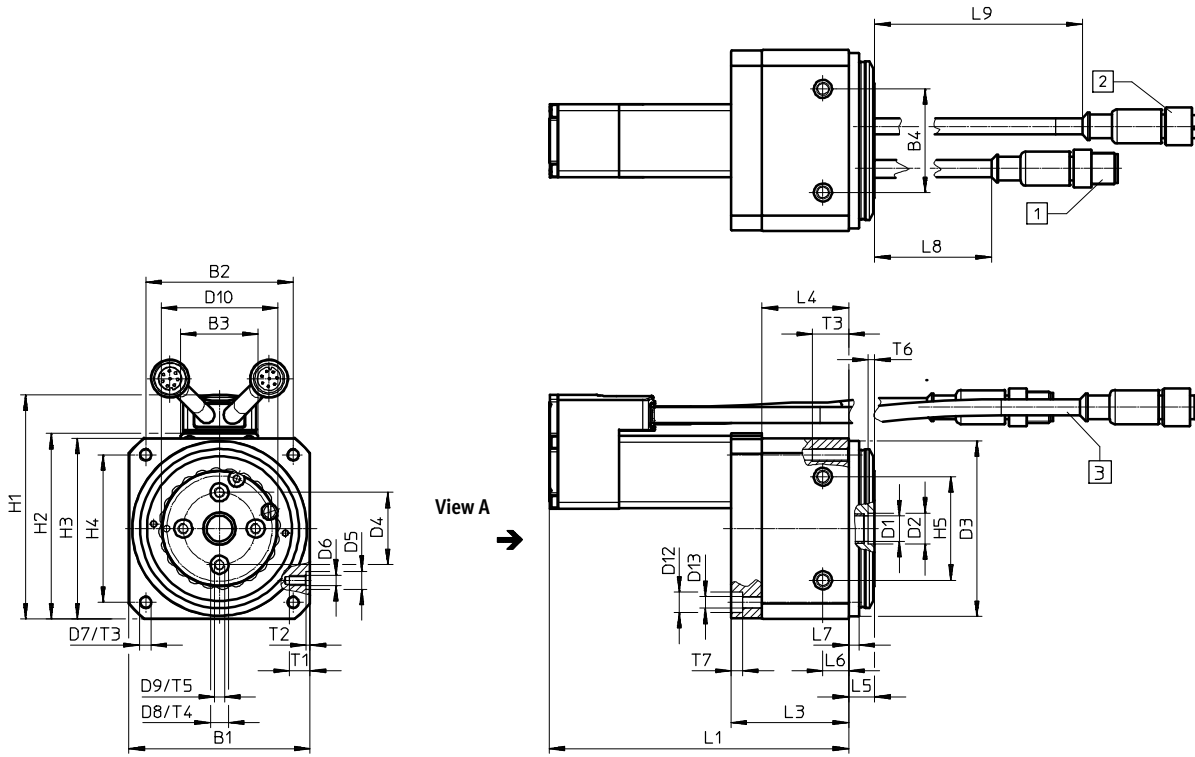
Dimensions

ERMO-16

Download CAD data → www.festo.com

Electromechanical drives

04

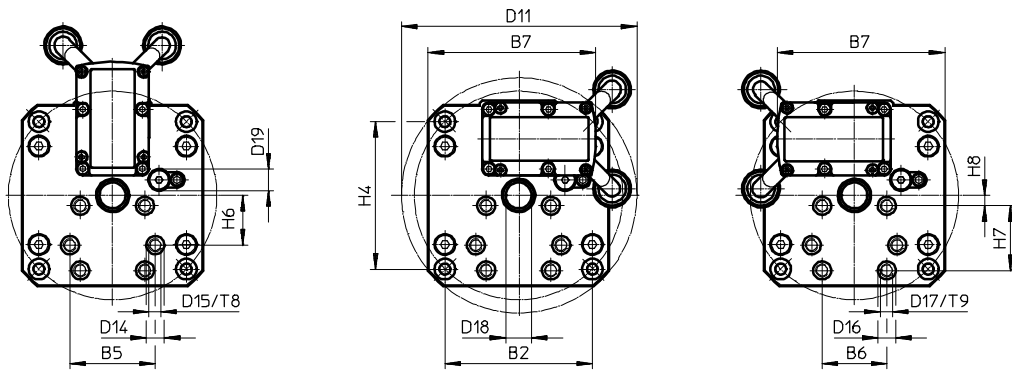


View A →

View A

ERMO-...-L

ERMO-...-R



- 1 Encoder cable
- 2 Motor cable
- 3 Min. bending radius of cables: 60 mm

Dimensions

Download CAD data → www.festo.com

Size	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3
	±0.3			±0.03	±0.02	±0.02		∅	∅ H8	∅ f8
16	70	57	30	40	33	25	65	10	12	68

Size	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
	∅ ±0.02	∅ H7			∅ H7		∅	∅ ±0.5	∅	∅
16	28	7	M5	M5	7	M4	45	91	8	4.6

Size	D14	D15	D16	D17	D18	D19	H1	H2	H3	H4
	∅ H7		∅ H7		max.				±0.3	
16	7	M5	7	M5	–	M8x1	87	71.8	70	57

Size	H5	H6	H7	H8	L1	L3	L4	L5	L6	L7
	±0.03		±0.02		±1.5	±0.6		±0.2	±0.1	±0.1
16	40	19.3	25	4	116/142 ¹⁾	45.5	33.5	10	10	4

Size	L8	L9	T1	T2	T3	T4	T5	T6	T7	T8	T9
				+0.1		+0.1		+0.1			
16	250	350	8	1.5	14	1.5	8	2.5	4.5	1.5	1.5

1) Motor with brake.

Semi-rotary drives >

Rotary drives ERMO, electric

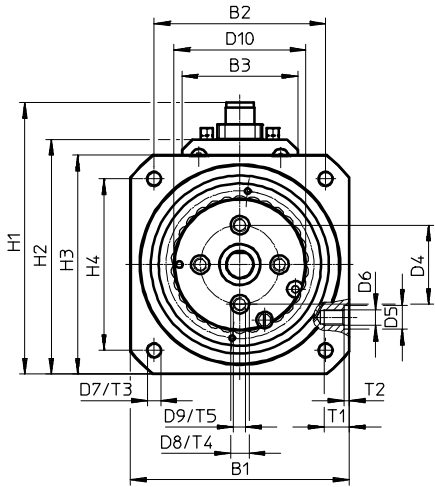
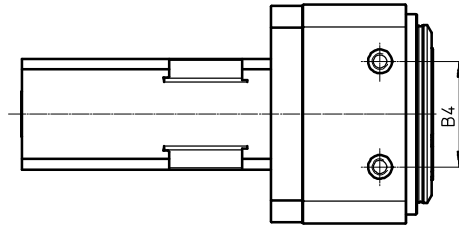
Dimensions

Download CAD data → www.festo.com

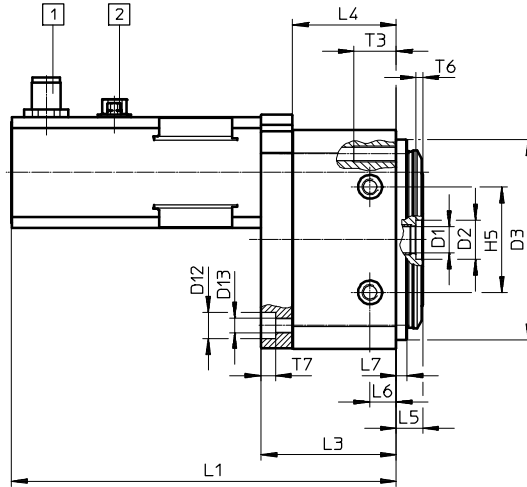
ERMO-25/32

04

Electromechanical drives



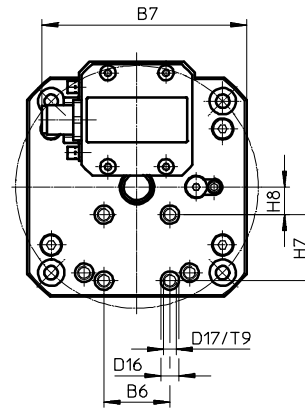
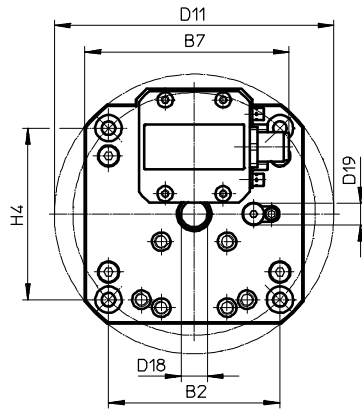
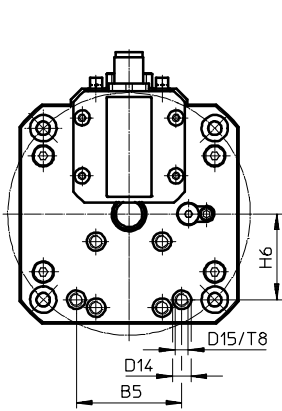
View A →



View A

ERMO-...-L

ERMO-...-R



- 1 Encoder connection
- 2 Motor connection

Rotary drives ERMO, electric

Dimensions

Download CAD data → www.festo.com

Size	B1	B2	B3	B4	B5	B6	B7	D1 ∅	D2 ∅ H8	D3 ∅ f8
	±0.3			±0.03	±0.02	±0.02				
25	83	65	44	40	40	25	78	10	15	76
32	105	85	58	60	–	25	96	16/9 ¹⁾	20	96

Size	D4 ∅ ±0.02	D5 ∅ H7	D6	D7	D8 ∅ H7	D9	D10 ∅	D11 ∅ ±0.5	D12 ∅	D13 ∅
25	30	9	M6	M6	7	M5	50	106	10	5.5
32	42	12	M8	M8	7	M5	65	135	11	6.6

Size	D14 ∅ H7	D15	D16 ∅ H7	D17	D18 max.	D19	H1	H2	H3 ±0.3	H4
25	7	M5	7	M5	10	M8x1	103	89	83	65
32	–	–	7	M5	9	M8x1	125	110.5	105	85

Size	H5 ±0.03	H6	H7 ±0.02	H8	L1 ±1.5	L3 ±0.6	L4	L5 ±0.2	L6 ±0.1	L7 ±0.1
25	40	32.5	25	10.5	146/179 ²⁾	51.3	39.3	10	10	4
32	60	–	25	15	148/189 ²⁾	46.5	34.5	12	10	6

Size	T1	T2 +0.1	T3	T4 +0.1	T5	T6 +0.1	T7	T8	T9
25	9.5	2	16	1.5	8.5	2.5	5.5	1.5	1.5
32	15	2.5	20	1.5	10	2.8	6.8	–	1.5

- 1) With attached motor.
2) Motor with brake.

Semi-rotary drives >

04

Electromechanical drives



Flexible rotation angles

- + High force and torque absorption thanks to stable output interface bearings
- + Simple mounting: the rotary module can be attached to 6 sides, fixed or as a front unit
- + Output interface with large internal diameter makes laying power supply lines easy, convenient and safe

Semi-rotary drives >
Rotary modules

ERMB

Semi-rotary drives >

Rotary modules

ERMB

 Overview, configuration and ordering
→ www.festo.com/catalogue/ermb



 Additional information, support and user documentation
→ www.festo.com/sp/ermb



 Spare parts service

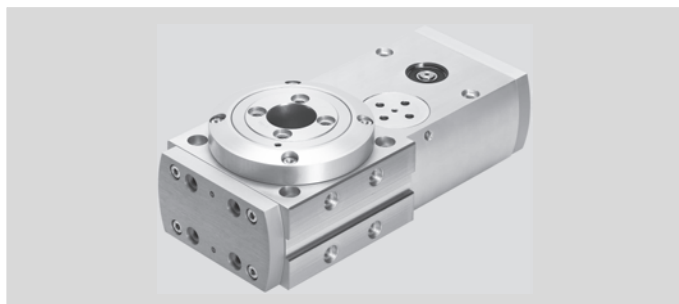


- + Unlimited and flexible rotation angles thanks to recirculating toothed belt
- + Large energy throughfeed for attachments
- + Mounting interfaces on all sides for fixed installation or as a front unit
- + Stable output shaft bearings for absorbing high forces and torques

Product range overview

Type/version	Size	Rotation angle [°]	Driving torque [Nm]	Output torque [Nm]
ERMB				
Rotary module	20, 25, 32	Infinite	0.7 ... 8.5	3.15 ... 25.5

Data sheet



Technical data			Dimensions → Page 694		
Size	20	25	32		
Drive pinion Ø	[mm]	6	8	12	
Rotation angle		Infinite			
Repetition accuracy ¹⁾					
With servo motor EMMS-AS	[°]	±0.03			
With stepper motor EMMS-ST ²⁾	[°]	±0.08			
With integrated drive EMCA	[°]	±0.05			
Transmission ratio		4.5:1	4:1	3:1	
Max. driving torque	[Nm]	0.7	2.2	8.5	
Max. output torque ³⁾	[Nm]	3.15	8.8	25.5	
Average no-load driving torque ⁴⁾	[Nm]	< 0.07	< 0.18	≤ 0.5	
Max. input speed	[rpm]	1350	1200	900	
Max. output speed	[rpm]	300	300	300	

- 1) As per FN 942 027. The specifications apply only when the motor is directly mounted. If a gear unit is also installed, the repetition accuracy will be different.
- 2) Dependent on the encoder resolution.
- 3) Output torque minus friction dependent on speed.
- 4) At maximum rotational speed.

Note

Note the maximum permissible driving torque of the rotary module ERMB. The motor current may need to be limited.

Mass moment of inertia				
Size	20	25	32	
Max. mass moment of inertia ⁵⁾	[kgcm ²]	1000	5000	10000
Max. inertia factor ⁶⁾				
For servo motor EMMS-AS/EMME-AS		45		
For stepper motor EMMS-ST		30		

- 5) These values indicate the upper limit regardless of the value determined using the inertia factor.
- 6) The inertia factor is the max. adjustable ratio between the inertia of the load and the intrinsic inertia of the motor with brake.

Example:

Rotary/lifting module ERMB-20 → gear ratio $i = 4.5$

Motor EMME-AS-40-S with brake → intrinsic inertia 0.055 kgcm^2

Gear unit EMGA-40-P-G3-40 → gear ratio $i = 3$

Limit for inertia of load (+ intrinsic inertia) on output side:

$$0.055 \text{ kgcm}^2 \times 45 \times 3^2 \times 4.5^2 = 451 \text{ kgcm}^2$$

Semi-rotary drives >

Rotary modules ERMB, electric

Data sheet

Operating conditions		
Ambient temperature ¹⁾	[°C]	-10 ... +60
Degree of protection		IP20

1) Note operating range of proximity sensors.

Materials	
Cover	Anodised wrought aluminium alloy
Output shaft	Anodised wrought aluminium alloy
Housing	Anodised wrought aluminium alloy
Drive shaft	High-alloy stainless steel
Toothed belt	Polychloroprene with glass fibre

Order code

ERMB

Type	
ERMB	Rotary module

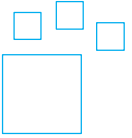
Size	
20	
25	
32	

Order example:

ERMB-25

Rotary module ERMB - size 25

Ordering – Product options



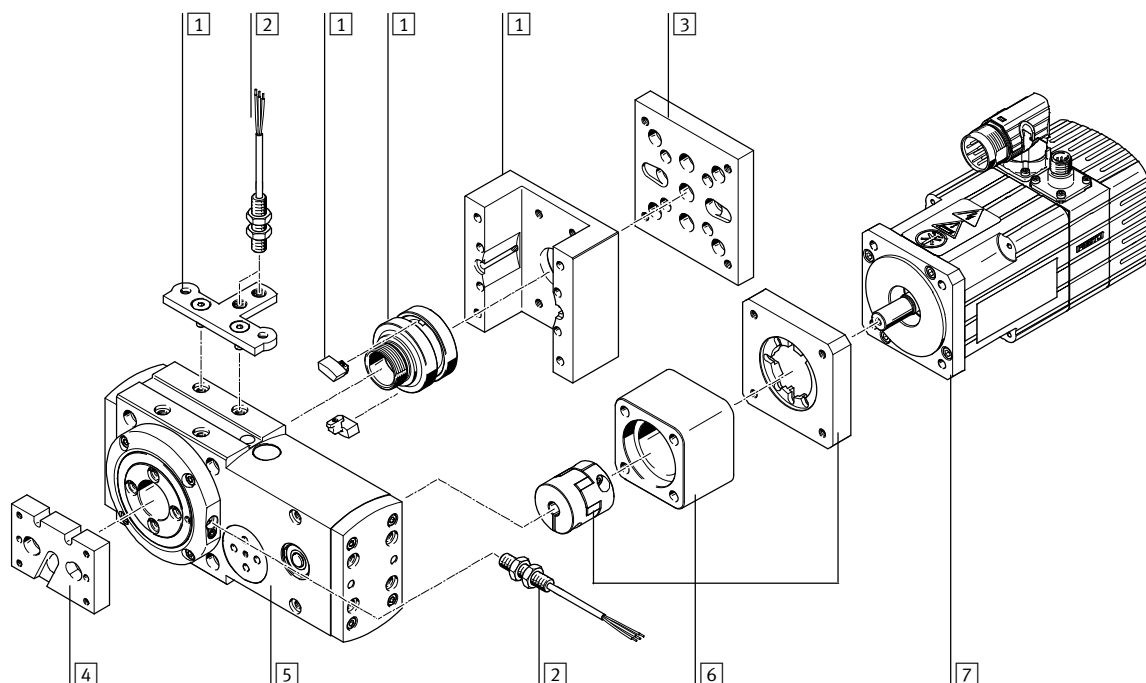
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Accessories



		→ Page/online
1	Sensing kit EAPS	691
2	Inductive proximity sensor SIEN	691
3	Drive/drive connections	ermb
4	Drive/gripper connections	ermb

		→ Page/online
5	Rotary module ERMB	689
6	Axial kit EAMM-A	692
7	Motor EMME, EMMS, EMCA	692

Accessories – Ordering data

	For size	Part no.	Type
1 Sensing kit 		Data sheets online: → eamm-a	
	20	558392	EAPS-R1-20-S
	25	558393	EAPS-R1-25-S
	32	558394	EAPS-R1-32-S
Sensing kit without housing			
	20	558395	EAPS-R1-20-S-WH
	25	558396	EAPS-R1-25-S-WH
	32	558397	EAPS-R1-32-S-WH
Cam			
	20, 25, 32	558398	EAPS-R1-CK

1) Packaging unit 10 pieces.

	For size	Part no.	Type
Sensor bracket			
	20, 25	558399	EAPS-R1-20-SH
	32	558400	EAPS-R1-32-SH
Housing			
	20	560673	EAPS-R1-20-H
	25	560674	EAPS-R1-25-H
	32	560675	EAPS-R1-32-H
Centring sleeve¹⁾ Data sheets online: → zbh			
	20	186717	ZBH-7
	25.32	150927	ZBH-9
2 Connecting cable, straight socket Data sheets → Page 1543			
	2.5 m	★ 541333	NEBU-M8G3-K-2.5-LE3
	5 m	★ 541334	NEBU-M8G3-K-5-LE3

	For size	Connection	Cable length [m]	Part no.	Type
2 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230					
	20, 25, 32	PNP, cable	2.5	★ 150386	SIEN-M8B-PS-K-L
		PNP, plug	–	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230					
	20, 25, 32	PNP, cable	2.5	150390	SIEN-M8B-PO-K-L
		PNP, plug	–	150391	SIEN-M8B-PO-S-L

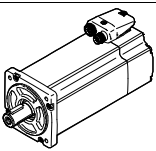
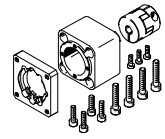
Semi-rotary drives >

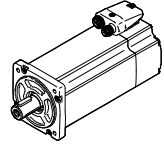
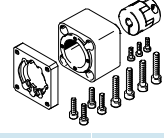
Rotary modules ERMB, electric

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

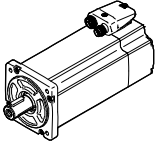
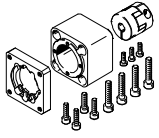
Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
6/7 Permissible axis/motor combination with axial kit		
Data sheets online: → eamm-a		
ERMB-20		
With servo motor		
EMME-AS-40-...	2207441	EAMM-A-D32-35A-40P
EMMS-AS-40-...	560281	EAMM-A-D32-35A-40A
EMMS-AS-55-...	550979	EAMM-A-D32-55A
EMME-AS-60-...	1956054	EAMM-A-D32-60P
With servo motor and gear unit		
EMME-AS-40-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-SAS-40		
EMMS-AS-55-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	2946760	EAMM-A-D32-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-42-...	543148	EAMM-A-D32-42A
EMMS-ST-57-...	550980	EAMM-A-D32-57A
With stepper motor and gear unit		
EMMS-ST-42-...	1454238	EAMM-A-D32-40G
EMGA-40-P-G...-SST-42		
EMMS-ST-57-...	2946758	EAMM-A-D32-60G
EMGA-60-P-G...-SST-57		
With integrated drive		
EMCA-EC-67-...-	1454239	EAMM-A-D32-67A
With integrated drive and gear unit		
EMCA-EC-67-...-	1454238	EAMM-A-D32-40G
EMGC-40-...		
EMCA-EC-67-...-	2946760	EAMM-A-D32-60H
EMGC-60-...		

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
6/7 Permissible axis/motor combination with axial kit		
Data sheets online: → eamm-a		
ERMB-25		
With servo motor		
EMMS-AS-55-...	543153	EAMM-A-D40-55A
EMME-AS-60-...	1977000	EAMM-A-D40-60P
EMMS-AS-70-...	550981	EAMM-A-D40-70A
With servo motor and gear unit		
EMME-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-EAS-40	2256398	EAMM-A-D40-40G-G2
EMMS-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SAS-40	2256398	EAMM-A-D40-40G-G2
EMMS-AS-55-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1454242	EAMM-A-D40-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-57-...	543154	EAMM-A-D40-57A
EMMS-ST-87-...	550982	EAMM-A-D40-87A
With stepper motor and gear unit		
EMMS-ST-42-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SST-42		
EMMS-ST-57-...	2256400	EAMM-A-D40-60G
EMGA-60-P-G...-SST-57		
With integrated drive		
EMCA-EC-67-...-	1454243	EAMM-A-D40-67A
With integrated drive and gear unit		
EMCA-EC-67-...-	2256398	EAMM-A-D40-40G-G2
EMGC-40-...		
EMCA-EC-67-...-	1454242	EAMM-A-D40-60H
EMGC-60-...		

04

Electromechanical drives

Accessories – Ordering data

Motor/gear unit ¹⁾	Axial kit	
		
	Part no.	Type
<div style="border: 1px solid black; padding: 2px;"> 6/7 Permissible axis/motor combination with axial kit Data sheets online: → eamm-a </div>		
ERMB-32		
With servo motor		
EMMS-AS-70-...	543161	EAMM-A-D60-70A
EMME-AS-80-...	1977073	EAMM-A-D60-80P
EMME-AS-100-...	550983	EAMM-A-D60-100A
EMMS-AS-100-...	550983	EAMM-A-D60-100A
With servo motor and gear unit		
EMMS-AS-55-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-55		
EMME-AS-60-...	1454245	EAMM-A-D60-60H
EMGA-60-P-G...-EAS-60		
EMMS-AS-70-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-70		
EMMS-AS-70-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-70		
EMMS-AS-80-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-EAS-80		
EMME-AS-100-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-100		
EMMS-AS-100-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SAS-100		
With stepper motor		
EMMS-ST-87-...	543162	EAMM-A-D60-87A
With stepper motor and gear unit		
EMMS-ST-57-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SST-57		
	2256696	EAMM-A-D60-60G-G2
EMMS-ST-87-...	1499402	EAMM-A-D60-80G
EMGA-80-P-G...-SST-87		
With integrated drive and gear unit		
EMCA-EC-67-...-	1454245	EAMM-A-D60-60H
EMGC-60-...		

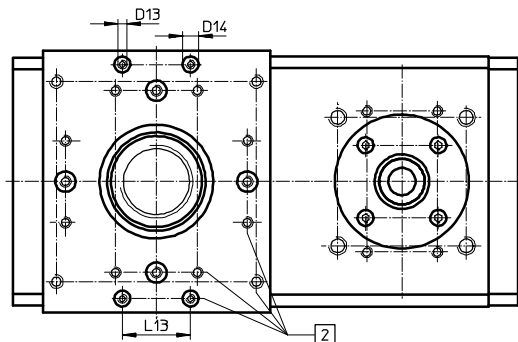
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Dimensions

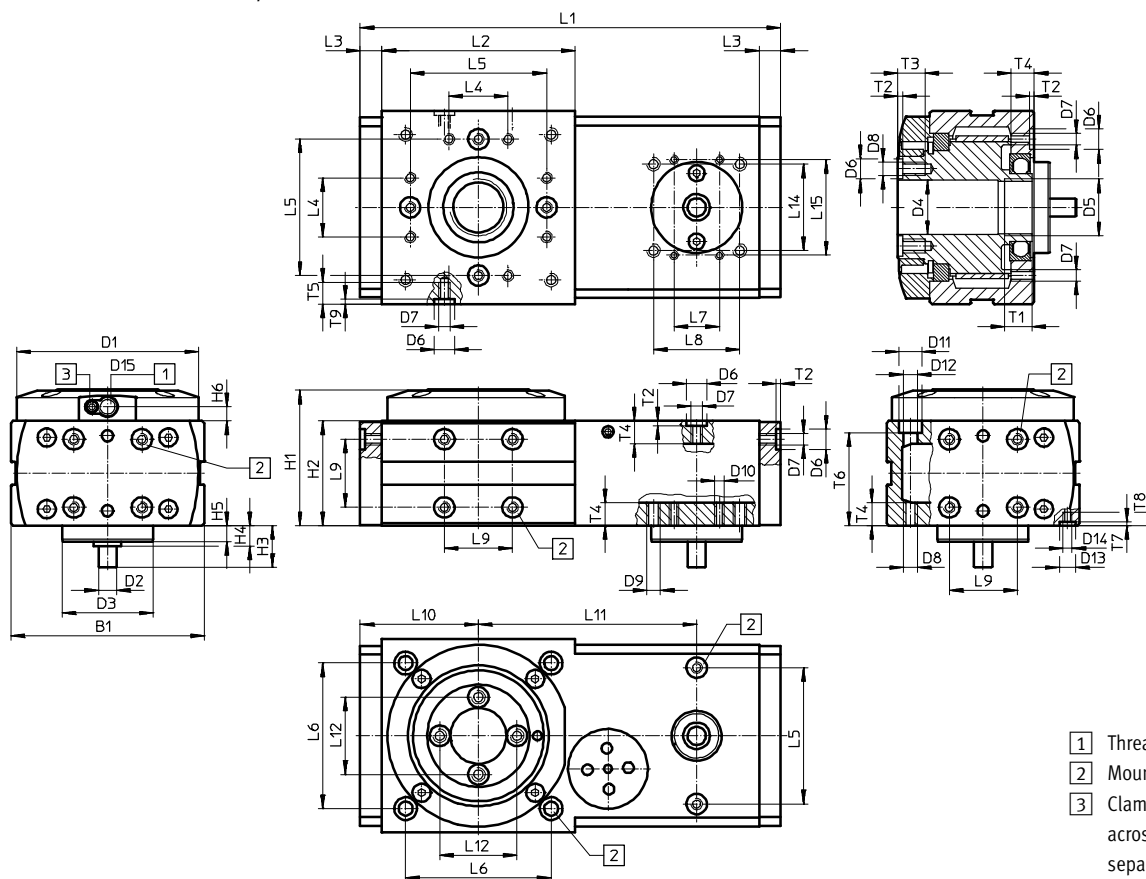
Size 25/32

Download CAD data → www.festo.com

Size 32



Size 25/32



- 1 Thread for reference switch
- 2 Mounting options
- 3 Clamping component, width across flats 2.5 (enclosed separately)

Size	B1	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14
	±0.2	∅ f9	∅ h6	∅ g7	∅ H7		∅ H7					∅	∅	∅	
25	85	80	8	40	24	M25x1	9	M5	M6	M6	M4	10	6.2	-	-
32	115	112	12	60	28	M32x1.5	9	M5	M6	M8	M5	10	6.2	7	M4

Size	D15	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5 ¹⁾	L6	L7	L8
		±0.5	±0.1					±0.5	±0.2	±0.1	±0.1			±0.15	±0.15
25	M8x1	60	46	18.45	-	7	6.45	185	85	9.5	26	60	64 ±0.15	20	38
32	M8x1	76.05	60	23.5	6.5	6	9.4	222	100	13	36	80	88 ±0.1	31	56.5

Size	L9 ¹⁾	L10	L11	L12 ¹⁾	L13 ¹⁾	L14	L15	T1	T2	T3	T4	T5	T6	T7	T8	T9
			±0.05			±0.15	±0.15		+0.1	min		min		+0.1	min	+0.2
25	30	52	96	34	-	38	42	12	2.1	12	10	9.6	40.8 ±0.2	-	-	2.1
32	40	63	108	45	30	56.5	62	12	2.1	12	10	10	54.3	1.6	7.6	2.1

1) Tolerance for centring hole ±0.02 mm.
Tolerance for thread ±0.1 mm.

Semi-rotary drives >

04

Electromechanical drives

New New series



Electric stopper that is child's play to install!

- + Easy to install
- + Connects directly
- + Adjustable cushioning
- + Integrated sensor for position feedback

Stopper cylinders >

Stopper cylinders, electric

EFSD


Stopper cylinders >

Stopper cylinders, electric


EFSD

 Overview, configuration and ordering
→ www.festo.com/catalogue/efsd



 Additional information, support and user documentation
→ www.festo.com/sp/efsd



 Spare parts service



- + Three sizes to stop transported materials weighing between 0.25 kg and 100 kg
- + Activation via digital I/O
- + Integrated sensors to sense retraction or extension

NEW

Stopper cylinders >

Stopper cylinders EFSD

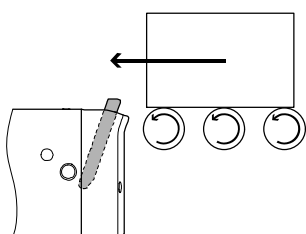
Product range overview

Type/version	Size	Max. stoppable load [kg]	Max. lateral force [N]
EFSD	20, 50, 100	0.25 ... 100	20 ... 100

At a glance

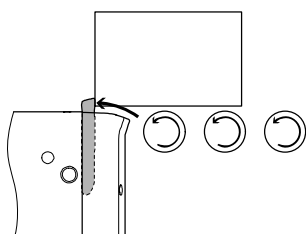
- Quick and easy to set up on transfer systems without compressed air
- Three sizes for stopping conveyed goods weighing between 0.25 kg and 100 kg
- Control via digital I/O
- Integrated sensors for sensing retracted or extended position
- LED indicator for status and error messages
- Cushioning module with adjustable cushioning
- Mounting interface for ease of mounting on transfer systems

Functional sequence



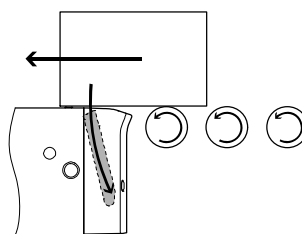
Position 1
Stopper cylinder is in the initial position

The stop is extended and ready to stop a conveyed item
 (LED status message: closed)



Position 2
Stopper cylinder is in the holding position

The conveyed item is stopped by internal cushioning and then held in position
 (LED status message: closed)



Position 3
Stopper cylinder is in the release position

The stop is retracted and the conveyed item is released
 (LED status message: open)

04

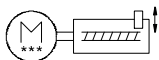
Electromechanical drives

Stopper cylinders >

Stopper cylinders EFSD

NEW

Data sheet



04

Electromechanical drives

Technical data		Dimensions → Page 703		
Size		20	50	100
Retracting/extending time				
Max. time for retracting ¹⁾	[s]	0.1	0.15	0.3
Max. time for extending	[s]	0.1	0.15	0.2
Maximum lateral force during switching operation	[N]	20	50	100
Cushioning length	[mm]	11.5	17.5	18.2
Position sensing	[Nm]	Via integrated Hall sensor		

1) At the drive shaft

Maximum stoppable load at conveying speed v_f		Size		
Conveying speed v_f		20	50	100
6 m/min	[kg]	0.25 ... 20	1 ... 50	3 ... 100
9 m/min	[kg]	0.25 ... 10	1 ... 35	3 ... 70
12 m/min	[kg]	0.25 ... 7	1 ... 30	3 ... 60
18 m/min	[kg]	0.25 ... 3.5	1 ... 18	3 ... 50
24 m/min	[kg]	0.25 ... 2.5	1 ... 12	3 ... 45
30 m/min	[kg]	0.25 ... 2	1 ... 8	3 ... 30
36 m/min	[kg]	0.25 ... 1	1 ... 5	3 ... 20
For friction coefficient $\mu^1)$		0.1	0.1	0.07

1) For size 20/50: between conveyed goods and belt system
For size 100: between conveyed goods and roller system

Electrical data		Size		
Motor type		20	50	100
Motor type		Stepper motor		
Power supply	[V DC]	24 ±15%		
Max current consumption ¹⁾				
Actuator	[A]	1.9	1.2	1.4
Sensor	[A]	0.3		
Max. cycle rate	[Hz]	0.33		
Max. cable length	[m]	30		

1) During the switch-on process, there is a brief increase in the starting current.

Operating conditions		Ambient temperature	
Ambient temperature	[°C]	-10 ... +60	
Degree of protection		IP40	

Materials		Cover	
Cover		PA reinforced	
Housing		Anodised wrought aluminium alloy	
Piston rod		High-alloy stainless steel	
Screws		Coated steel	
Seals		NBR	

NEW

Stopper cylinders >

Stopper cylinders EFSD

Order code

EFSD			PV	M12
Type				
EFSD	Stopper cylinder			
Size				
20				
50				
100				
Cushioning				
PV	Adjustable			
Electrical connection				
M12				

Order example:

EFSD-50-PV-M12

Stopper cylinder EFSD - size 50 - adjustable cushioning - electrical connection M12

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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04

Electromechanical drives

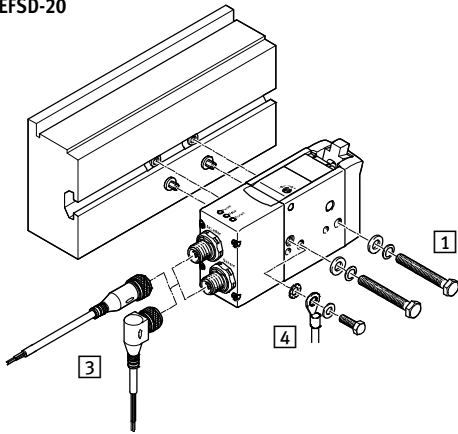
Stopper cylinders >

Stopper cylinders EFSD

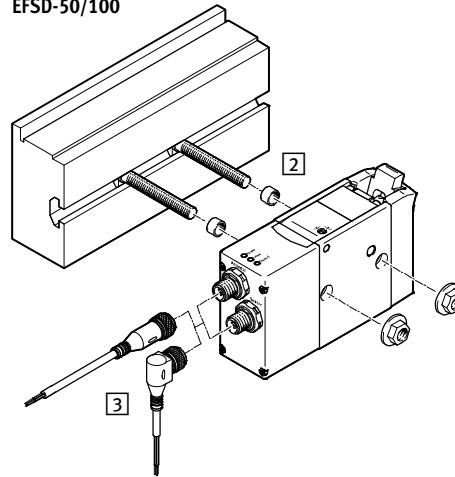
NEW

Accessories

EFSD-20



EFSD-50/100



		→ Page/online
1	Mounting kit EAHM-E18-K-20	702
2	Mounting kit EAHM-E18-K-50	702
	Mounting kit EAHM-E18-K-50-Z65	662
3	Connecting cable NEBU	662
4	Earthing kit	-

Accessories – Ordering data

	For size	Part no.	Type
1 Mounting kit			
	20	8058454	EAHM-E18-K-20
2 Mounting kit			
	50/100 ¹⁾	8058455	EAHM-E18-K-50-Z65
	50/100 ²⁾	8058456	EAHM-E18-K-50

1) For a profile with web width of approx. 3.7 mm
 2) For a profile with web width of approx. 6 mm

	Outlet direction	Cable length [m]	Part no.	Type
3 Connecting cable, M12, 5-pin				
Straight socket Data sheets → Page 1543				
	M12x1, 5-pin	0.5	8003617	NEBU-M12G5-K-0.5-M12W5
		2.0	8003618	NEBU-M12G5-K-2-M12W5
		5.0	574321	NEBU-M12G5-E-5-Q8N-M12G5
		7.5	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
		10	574323	NEBU-M12G5-E-10-Q8N-M12G5
Angled socket Data sheets → Page 1543				
	M12x1, 5-pin	0.5	570733	NEBU-M12W5-K-0.5-M12W5
		2.0	570734	NEBU-M12W5-K-2-M12W5
3 Connecting cable, M12, 5-pin – open cable end, 5-wire				
Straight socket Data sheets → Page 1543				
	M12x1, 5-pin	2.5	541330	NEBU-M12G5-K-2.5-LE5
		5.0	541331	NEBU-M12G5-K-5-LE5
		10	554038	NEBU-M12G5-K-10-LE5
Angled socket Data sheets → Page 1543				
	M12x1, 5-pin	2.5	567843	NEBU-M12W5-K-2.5-LE5
	M12x1, 5-pin	5.0	567844	NEBU-M12W5-K-5-LE5

Electromechanical drives

NEW

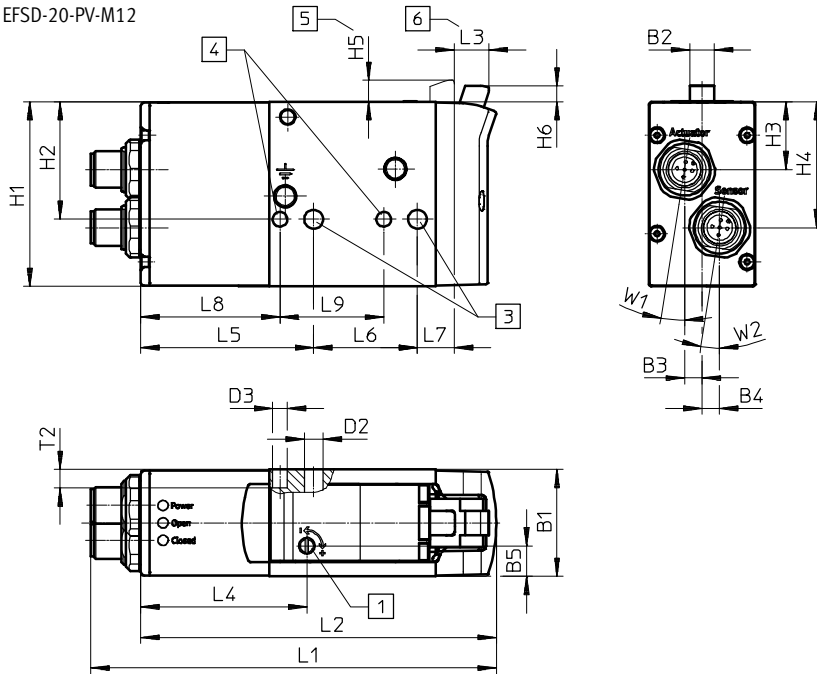
Stopper cylinders >

Stopper cylinders EFSD

Download CAD data → www.festo.com

Dimensions

EFSD-20-PV-M12



- 1 Cushioning adjustment
- 3 Hole for mounting screw
- 4 Hole for centring pins
- 5 Return stroke min. dimension H5
- 6 Cushioning stroke

Size	B1	B2	B3	B4	B5	D2	D3	H1	H2	H3	H4	H5
	±0.05		±0.4	±0.4	±0.25	+0.1/-0.05	±0.05		±0.15	±0.5	±0.5	±0.55
20	35	8	5.75	5.75	7.5	6.2	4.8	60.5	38.5	22.25	41.25	7

Size	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	T2	W1	W2
	±0.55	±1	±0.5	+0.5/-1	±0.5		±0.1	±0.5		±0.1	±0.2		
20	5.1	132.8	116.4	11.5	54.4	56.6	34	12	45.6	34	6	9°	9°

04

Electromechanical drives

Stopper cylinders >

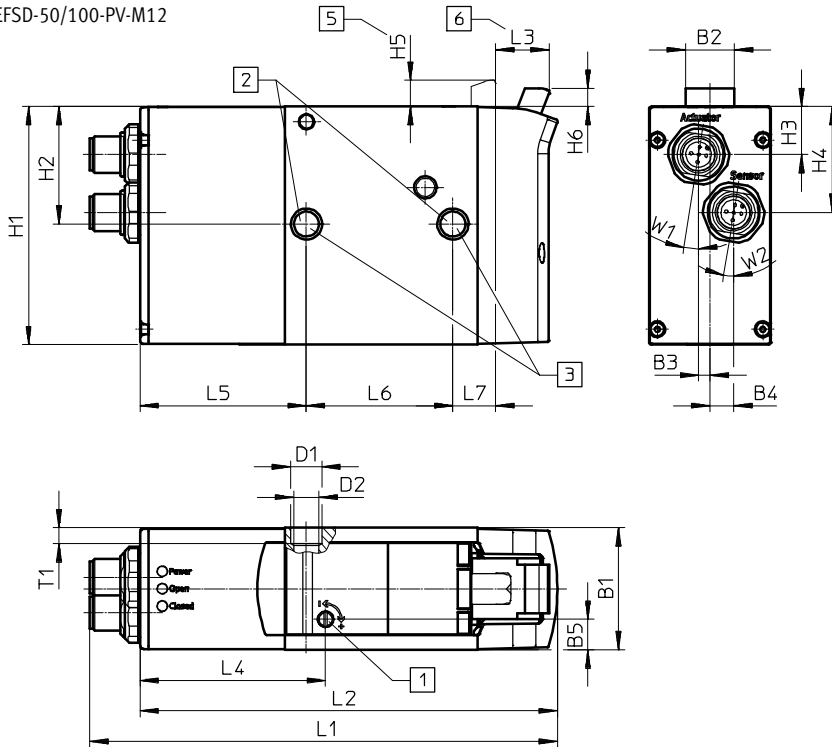
Stopper cylinders EFSD

NEW

Dimensions

Download CAD data → www.festo.com

EFSD-50/100-PV-M12



- 1 Cushioning adjustment
- 2 Hole for centring sleeve
- 3 Hole for mounting screw
- 5 Return stroke min. dimension H5
- 6 Cushioning stroke

Size	B1	B2	B3	B4	B5	D2 ∅	D3 ∅	H1	H2	H3	H4	H5
	±0.05		±0.4	±0.4	±0.25	+0.1/-0.05			±0.15	±0.5	±0.5	±0.55
50	40	16	3.75	7.75	10	10.2	8.2	78	38.5	15.75	34.75	8.6
100	44	16	5.4	8.7	11.5	10.2	8.2	78	38.5	14	29.4	8.6

Size	H6	L1	L2	L3	L4	L5	L6	L7	T1	W1	W2
	±0.55	±1	±0.5	+0.2	±0.5		±0.1	±0.5	+0.1/-0.05		
50	6	153.2	136.7	17.5	60.8	54.5	48	14 ±0.5	5.2	9°	9°
100	6.3	163.7	147.2	18.2	67.3	58	52	13.8 ±0.6	5.2	9°	9°

Electromechanical drives

New New series



Electrical or hybrid rotating and gripping? The choice is yours!

- + Pick & place small parts from trays and tablets
- + To fit or remove caps on bottles

Electric handling modules >
Rotary gripper modules

EHMD

Electric handling modules >

Rotary gripper modules

EHMD



Overview, configuration and ordering

→ www.festo.com/catalogue/ehmd



Additional information, support and user documentation

→ www.festo.com/sp/ehmd



- + For payloads up to 250 g
- + Compact: 48 x 63 x 172/145 mm

NEW

Electric handling modules >

Rotary gripper modules EHMD**Product range overview**

Type/version	Size	Stroke per gripper jaw [mm]	Gripping force per gripper jaw [mm]	Rotation angle	Output torque [Nm]	Rated load [g]
EHMD						
GE – electric	40	0 ... 5	7 ... 35	Infinite	0.3	250
GP – pneumatic		5	5 ... 35			

At a glance

- The rotary gripper module is a compact module for handling small objects
- The rotary movement is realised via a stepper motor
- The gripping motion is implemented either electrically with a stepper motor or pneumatically using a cylinder
- The gripper can grip in force mode when combined with the motor controller CMMO-ST. This enables flexible gripping

Applications:

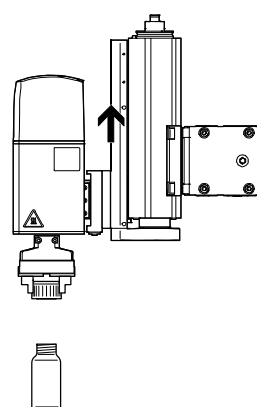
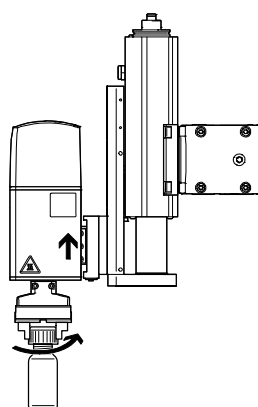
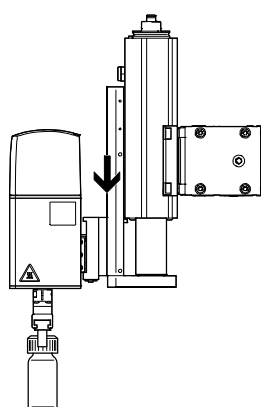
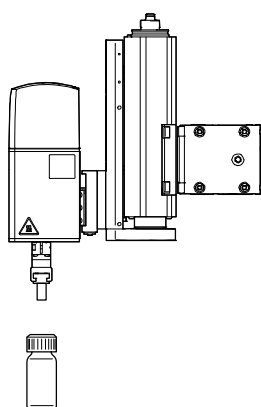
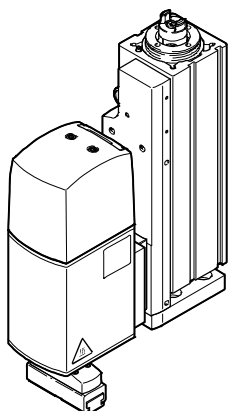
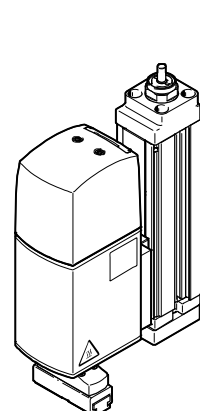
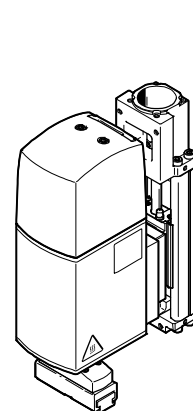
- Picking & placing small objects from trays and tablets
- For fitting and removing bottle caps

Mode of operation**Screwing caps onto bottles and removing them**

- Mini slide EGSC-BS retracted
- Mini slide EGSC-BS extends
- Mounting EHAM-E20
- Rotary gripper module EHMD grips the cap

- Rotary gripper module EHMD twists the cap from the bottle
- The mounting EHAM-E20 takes on the Z compensation without the need to move the mini slide (Z-axis)

- Once the cap has been twisted off, the mini slide EGSC-BS retracts
- The Z compensation moves back into the lower end position due to the weight

**Combination options****With mini slide EGSC-BS-25/32****With mini slide EGSL-BS-35/45****With electric slide EGSK-20/26**

Data sheet

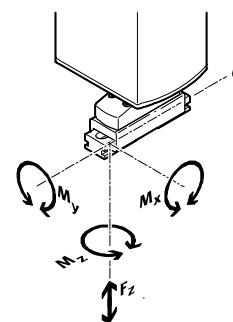


EHMD-...-GE

EHMD-...-GP

Technical data

Dimensions → Page 714



Type	EHMD-...	
	-GE	-GP
Design	Electric rotary drive Electric gripper	Electric rotary drive Pneumatic gripper
Gripper function	Parallel	
Number of gripper jaws	2	
Stroke per gripper jaw	[mm] 0 ... 5	5
Rated load ¹⁾	[g] 250	
Rotation angle	Infinite	
Pneumatic connection	–	QS-4
Nominal voltage	[V DC] 24	
Nominal current		
Rotation	[A] 0.9	
Gripping	[A] 0.5	–
Technical data – Gripping		
Gripping force per gripper jaw	[N] 7 ... 35	5 ... 35
Gripping force per gripper jaw at 6 bar closing	[N] –	25
Max. gripping force		
Closed loop operation	[N] 35	–
Open loop operation	[N] 20 ... 25	–
Minimum gripping force	[N] 7	5
Technical data – Rotation		
Max. output torque	[Nm] 0.3	
Max. output speed	[rpm] 240	
Moment of inertia	[kgm ²] 1.25x 10 ⁻⁵	
Max. permissible force F_x	[N] 30	
Max. permissible force F_z	[N] 30	
Max. permissible torque M_x	[Nm] 0.7	
Max. permissible torque M_y	[Nm] 1.5	
Max. permissible torque M_z	[Nm] 0.7	

1) Rated load = gripper finger + payload

NEW

Electric handling modules >

Rotary gripper module EHMD

Data sheet

Operating conditions		Electric	Pneumatic
Grippers			
Operating pressure	[bar]	–	1.5 ... 8
Ambient temperature ¹⁾	[°C]	0 ... +40	
Degree of protection		IP20	

1) Note operating range of proximity sensors.

Materials		Electric	Pneumatic
Grippers			
Cover		PA-reinforced	PA
Housing		Anodised wrought aluminium alloy	
Tie rod		Stainless steel	
Gripper kinematics		Tempered steel	

Order code

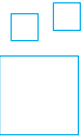
		EHMD	–	40	–	RE	–	
Type								
EHMD	Rotary gripper module, electric							
Size								
40								
Rotary module drive system								
RE	Electric							
Gripper drive system								
GE	Electric							
GP	Pneumatic							

Order example:

EHMD-40-RE-GP

Rotary gripper module EHMD - size 40 - electric drive system - pneumatic gripper

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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04

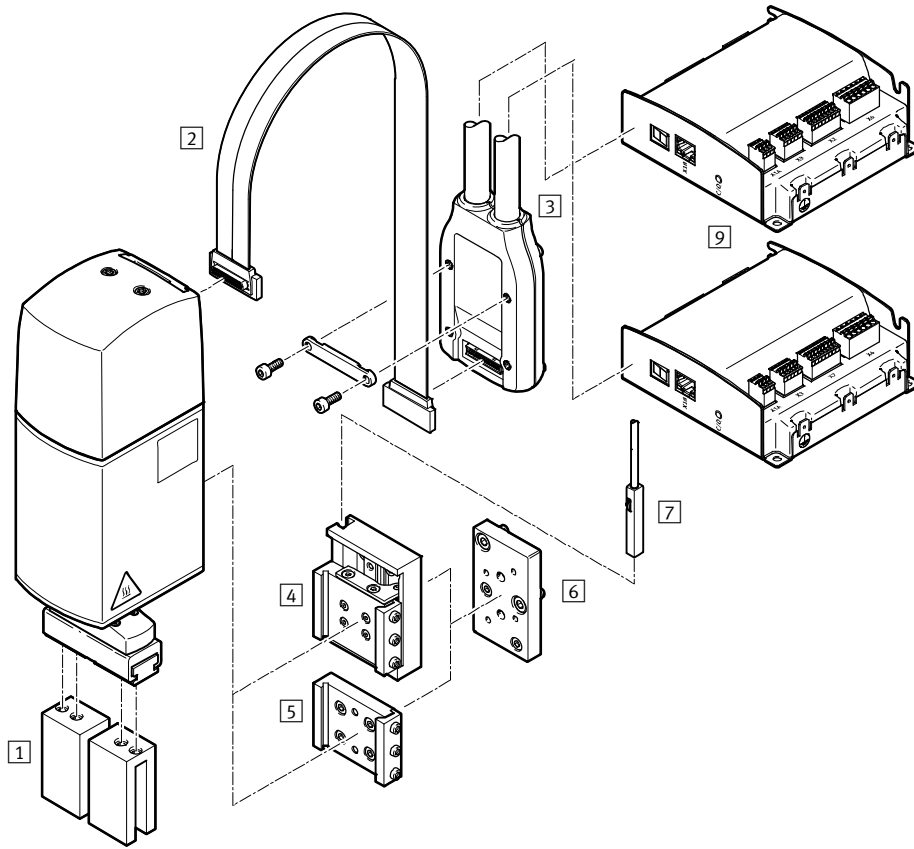
Electromechanical drives

Accessories

EHMD-40-RE-GE – electric gripping

04

Electromechanical drives



Note
The gripper is only intended as an external gripper (in the closing direction).

		→ Page/online
1	Gripper jaw blank BUB-HGPT-16-B	712
2	Motor cable NEBM-F1W31	712
3	Motor cable NEBM-SF1	712
4	Mounting (with Z compensation) EHAM-E20-40-Z	712
5	Mounting (rigid) EHAM-E20-40	712
6	Adapter kit EHAM-E20-40-E...	712
7	Proximity sensors, T-slot SIES-M8	713
9	Motor controller CMMO-ST	712
-	Connecting cable NEBU	713
-	Centring sleeve ZBS/ZBH	712

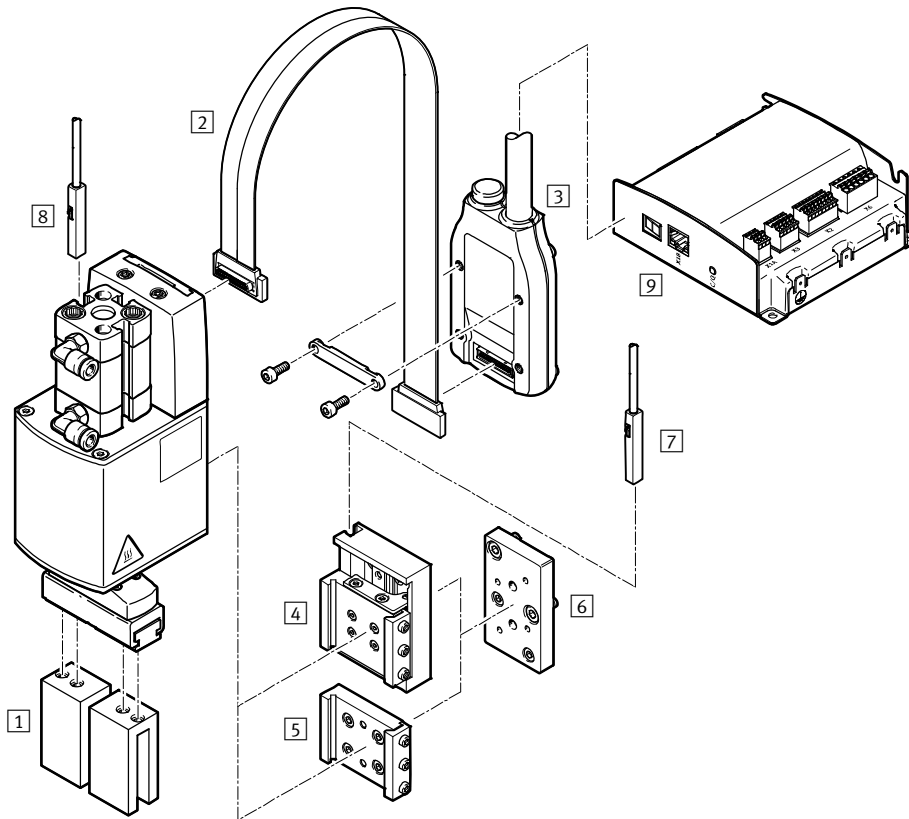
NEW

Electric handling modules >

Rotary gripper modules EHMD

Accessories

EHMD-40-RE-GP – pneumatic gripping

**Note**

The gripper is only intended as an external gripper (in the closing direction).

		→ Page/online
1	Gripper jaw blank BUB-HGPT-16-B	712
2	Motor cable NEBM-F1W31	712
3	Motor cable NEBM-SF1	712
4	Mounting (with Z compensation) EHAM-E20-40-Z	712
5	Mounting (rigid) EHAM-E20-40	712
6	Adapter kit EHAM-E20-40-E...	712
7	Proximity sensors, T-slot SIES-M8	713
8	Proximity sensor, T-slot SME/SMT-M8	713
9	Motor controller CMMO-ST	712
-	Connecting cable NEBU	713
-	Centring sleeve ZBS/ZBH	712

04

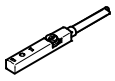
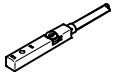
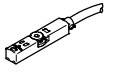
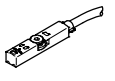
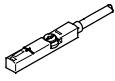


Electromechanical drives

NEW

Electric handling modules >

Rotary gripper modules EHMD

Accessories – Ordering data

	Switching output, connection	Cable length [m]	Part no.	Type
7	Inductive proximity sensor – N/O contact, M8			Data sheets → Page 1230
	PNP, cable	7.5	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
	N/C contact, M8			Data sheets → Page 1230
	PNP, cable	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
8	Proximity sensor for T-slot, magneto-resistive – N/O contact			Data sheets → Page 1206
	PNP, cable	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
	PNP, plug	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
	PNP, plug	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
	NPN, cable	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
	NPN, plug	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
	Magneto-resistive – N/C contact			Data sheets → Page 1206
	PNP, cable	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
	Magnetic reed – N/O contact			Data sheets → Page 1201
	Contacting, cable	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
	Contacting, cable	5.0	★ 543863	SME-8M-DS-24V-K-5,0-OE
	Contacting, cable	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
	Contacting, plug	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
	Connecting cable, straight socket			Data sheets → Page 1543
	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
		5.0	★ 541334	NEBU-M8G3-K-5-LE3
	Angled socket			Data sheets → Page 1543
	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
		5.0	★ 541341	NEBU-M8W3-K-5-LE3

04

Electromechanical drives

Rotary gripper module EHMD

NEW

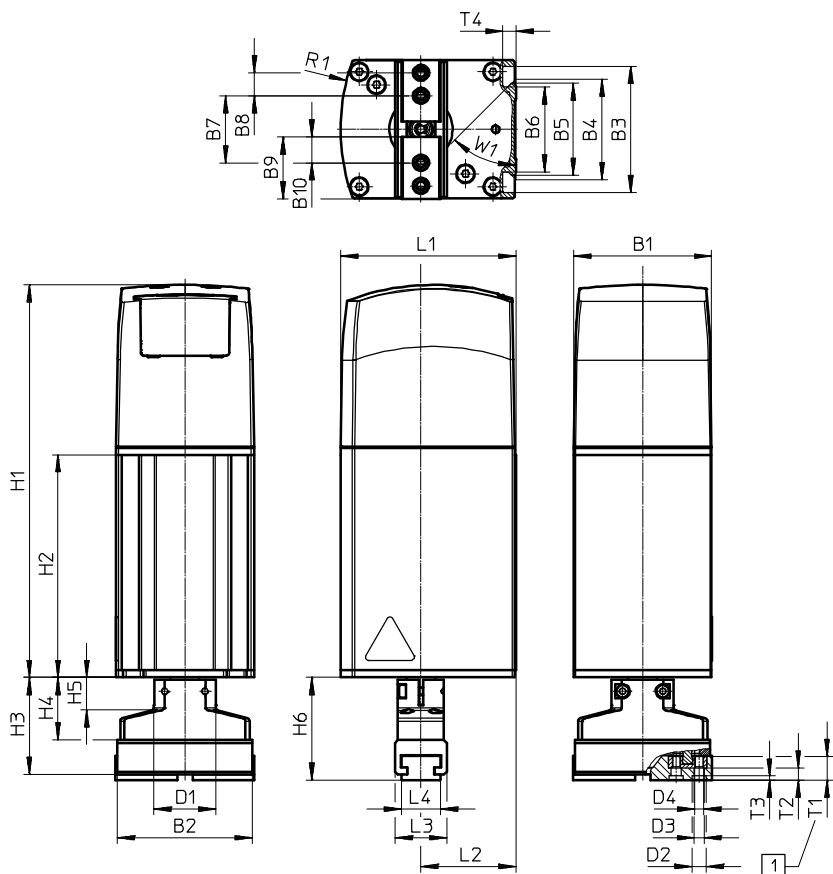
Dimensions

EHMD-GE, electric

Download CAD data → www.festo.com

04

Electromechanical drives



- 1 Max. screw-in depth
Included in the scope of delivery:
- 4x screws M3x12
 - 4x centring sleeves ZBH-5 (for gripper fingers)

Type	B1	B2	B3	B4	B5	B6	B7		B8	B9
							min.	max.		
EHMD-...-GE	48	47	44	±0.15 35	32	29.6	18	28	±0.08 8	21.5

Type	B10	D1	D2	D3	D4	H1	H2	H3	H4	H5	H6
EHMD-...-GE	9	∅ 21.5	∅ H9 5	∅ 3.4	M3	136.6	77.5	33.8	21.8	11.3	35.8

Type	L1	L2	L3	L4	R1	T1	T2	T3	T4	W1
EHMD-...-GE	61	33	18	13.5	70	8.3	4.3	1.5	4.5	45°

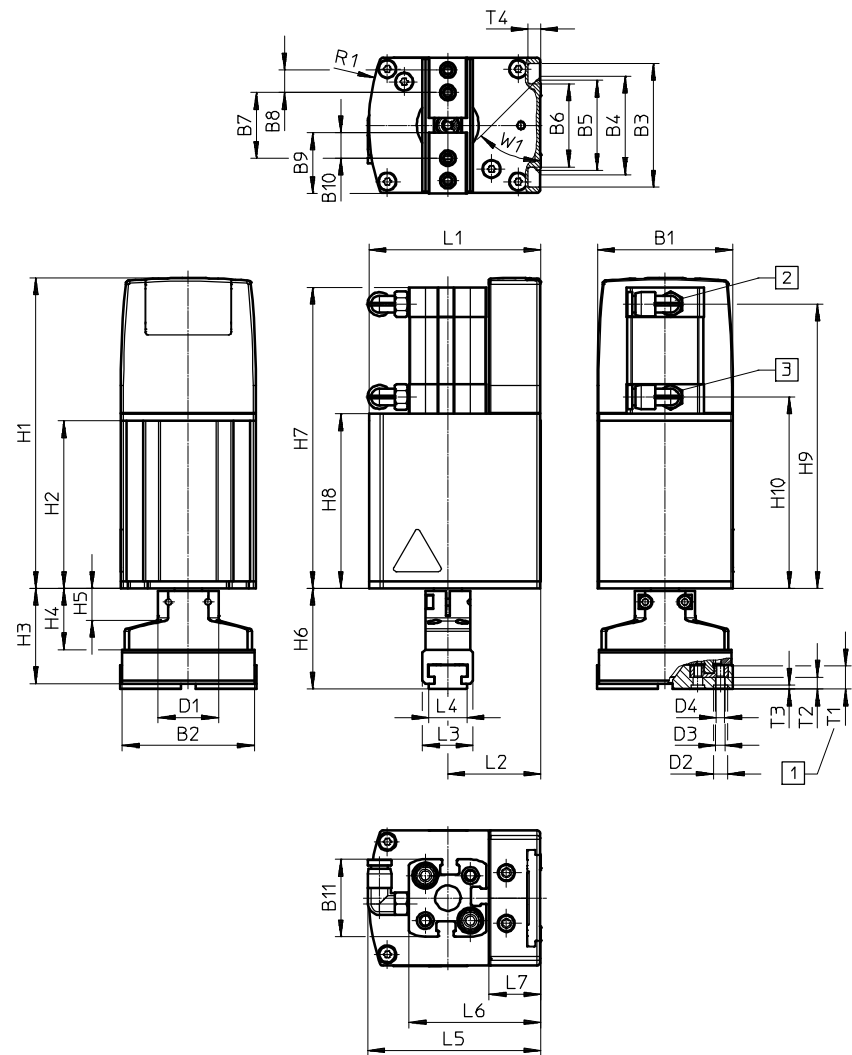
NEW

Rotary gripper modules EHMD

Download CAD data → www.festo.com

Dimensions

EHMD-GP, pneumatic



- 1 Max. screw-in depth
Included in the scope of delivery:
 - 4x screws M3x12
 - 4x centring sleeves ZBH-5 (for gripper fingers)
 Push-in fitting for
- 2 Opening the gripper
- 3 Closing the gripper

Type	B1	B2	B3	B4	B5	B6	B7		B8	B9	B10	B11	D1
							min.	max.					
				±0.15					±0.08				∅
EHMD...-GP	48	47	44	35	32	29.6	18	28	8	21.5	9	27.5	21.5

Type	D2	D3	D4	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
	∅ H9	∅											
EHMD...-GP	5	3.4	M3	110.3	59.5	33.8	21.8	11.3	35.8	107	62	101	68

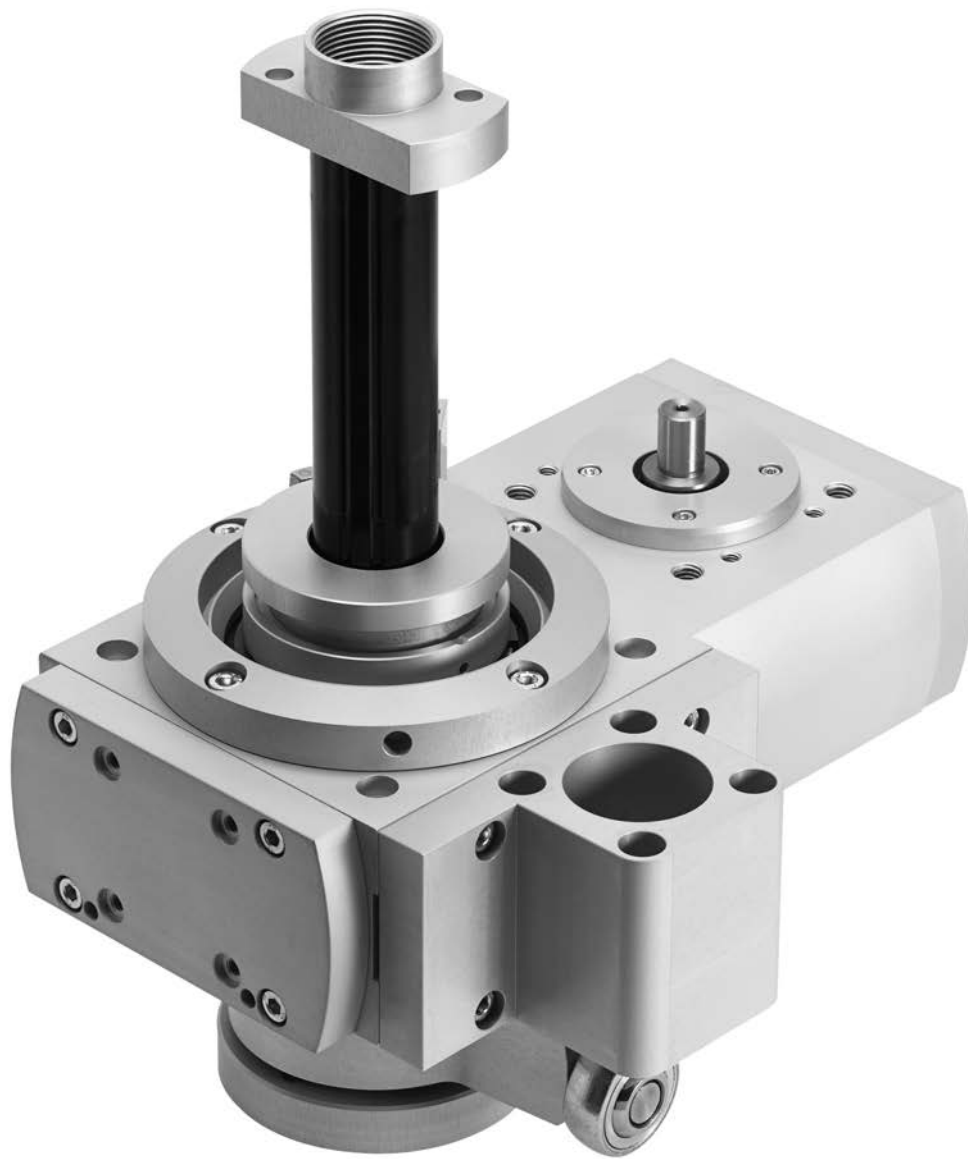
Type	L1	L2	L3	L4	L5	L6	L7	R1	T1	T2	T3	T4	W1
EHMD...-GP	61	33	18	13.5	61.5	46.8	18.3	70	8.3	4.3	1.5	4.5	45°

04 Electromechanical drives

NEW

04

Electromechanical drives



More than just rotation

- + Cables and tubing can be easily and conveniently routed to the front end of the rotary/lifting module through the large hollow shaft.
- + Economic: the clever design offers a movement pattern very similar to a SCARA robot
- + Minimal installation/working space required with under-table mounting

Electric handling modules >

Rotary/lifting modules, electric

EHMB

Electric handling modules >

Rotary/lifting modules, electric

EHMB

 Overview, configuration and ordering
→ www.festo.com/catalogue/ehmb



 Additional information, support and user documentation
→ www.festo.com/sp/ehmb



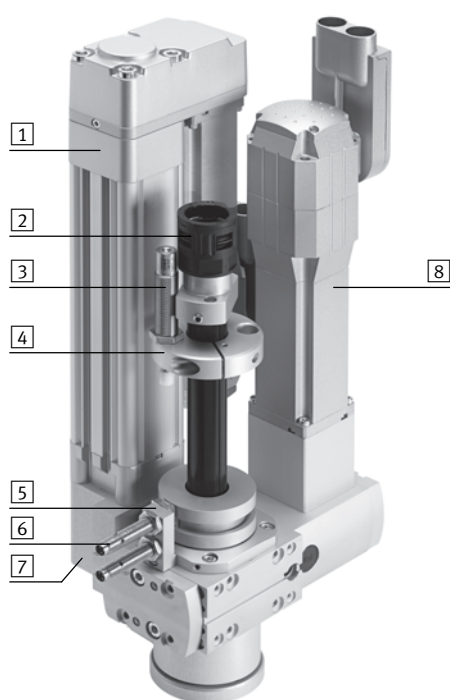
- + Complete module with combined and configurable rotary/lifting movement
- + Dynamic, flexible, economical thanks to the electric or pneumatic drive concept for the linear movement
- + Simple and convenient laying of energy cables through the large internal diameter of the hollow shaft

Product range overview

Type/Version	Size	Drive pinion \varnothing	Stroke [mm]	Rotation angle	Output torque [Nm]	Payload [kg]
EHMB						
Rotary/lifting module	20, 25, 32	6, 8, 12	100, 200	Infinite	3.15 ... 20	3 ... 15

Complete system consisting of rotary/lifting module, motor and axial kit

Rotary/lifting module

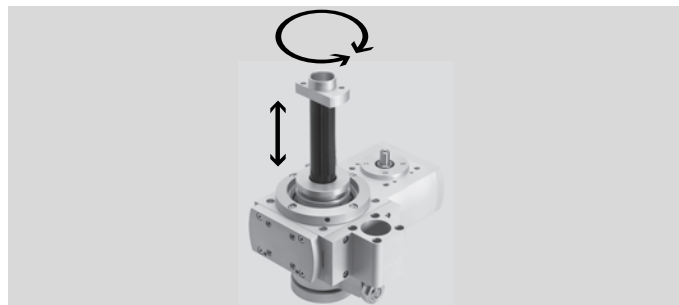


- 1) Electric cylinder ESBF, alternatively standards-based cylinder DSBC¹⁾
- 2) Protective conduit fitting¹⁾
- 3) Shock absorber¹⁾
- 4) Shock absorber retainer¹⁾
- 5) Sensor bracket
- 6) Proximity sensor SIEN¹⁾
- 7) Cylinder retainer
- 8) Motor for rotary motion¹⁾

1) These parts must be ordered separately as accessories.

Data sheet

Note
All values are based on a room temperature of 23 °C.



04

Electromechanical drives

Technical data		Dimensions → Page 726		
Size		20	25	32
Drive pinion Ø	[mm]	6	8	12
Rotation angle		Infinite		
Stroke, linear	[mm]	100, 200		
Repetition accuracy, rotary ¹⁾				
With servo motor EMMS-AS	[°]	±0.03		
With stepper motor EMMS-ST ²⁾	[°]	±0.08		
Max. speed, linear				
With standards-based cylinder DSBC	[m/s]	1	1.1	1.5
With electric cylinder ESBF	[m/s]	1.1		1.2
Gear ratio		4.5:1	4:1	3:1
Max. driving torque	[Nm]	0.7	2.2	6.7
Max. output torque ³⁾	[Nm]	3.15	8.8	20
Average no-load driving torque ⁴⁾	[Nm]	< 0.07	< 0.18	< 0.5
Max. input speed	[rpm]	1350	1200	900
Max. output speed	[rpm]	300	300	300
Max. payload, horizontal	[kg]	3	5	8
Max. payload, vertical	[kg]	3	5	15 ⁵⁾
Toothed belt pitch		2	3	5

- 1) As per FN 942 027, with electric cylinder DNCE. The specifications apply only when the motor is directly mounted. If a gear unit is also installed, the repetition accuracy will be different.
- 2) Dependent on the encoder resolution.
- 3) Output torque minus friction is dependent on speed.
- 4) At maximum rotational speed.
- 5) With symmetrical and non-eccentric arrangement.

Mass moment of inertia				
Size		20	25	32
Max. mass moment of inertia ⁶⁾	[kgcm ²]	1000	5000	10,000
Max. inertia factor ⁷⁾				
For servo motor EMMS-AS/EMME-AS		45		
For stepper motor EMMS-ST		30		

- 6) These values indicate the upper limit regardless of the value determined using the inertia factor.
- 7) The inertia factor is the max. adjustable ratio between the inertia of the load and the intrinsic inertia of the motor with brake.

Example:

Rotary/lifting module EHMB-20 → gear ratio i = 4.5

Motor EMME-AS-40-S with brake → intrinsic inertia 0.055 kgcm²

Gear unit EMGA-40-P-G3-40 → gear ratio i = 3

Limit for inertia of load (+ intrinsic inertia) on output side:

$$0.055 \text{ kgcm}^2 \times 45 \times 3^2 \times 4.5^2 = 451 \text{ kgcm}^2$$

Data sheet

Operating conditions				
Size		20	25	32
Ambient temperature ¹⁾	[°C]	-10 ... +60		

1) Note operating range of proximity sensors.

Materials	
Flange	Anodised aluminium
Retainer	Anodised aluminium
Holder	Anodised wrought aluminium alloy
Cover	Anodised wrought aluminium alloy
Output shaft	Steel
Housing	Anodised wrought aluminium alloy
Drive shaft	High-alloy stainless steel
Toothed belt	Polychloroprene with glass fibre

Note

- The connection between the drive for the linear movement and the EHMB is not backlash-free.
- When laying electrical cables or compressed air tubing through the hollow shaft of the grooved shaft guide, the rotation angle of the EHMB must be limited to a rotation angle appropriate to the cables or compressed air tubing. Infinite rotation damages cables and tubing.

Order code

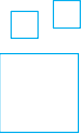
Type	EHMB	Rotary/lifting module, electric
Size	20, 25, 32	
Stroke [mm]	100, 200	

Order example:

EHMB-25-200

Rotary/lifting module EHMB - size 25 - stroke 200 mm

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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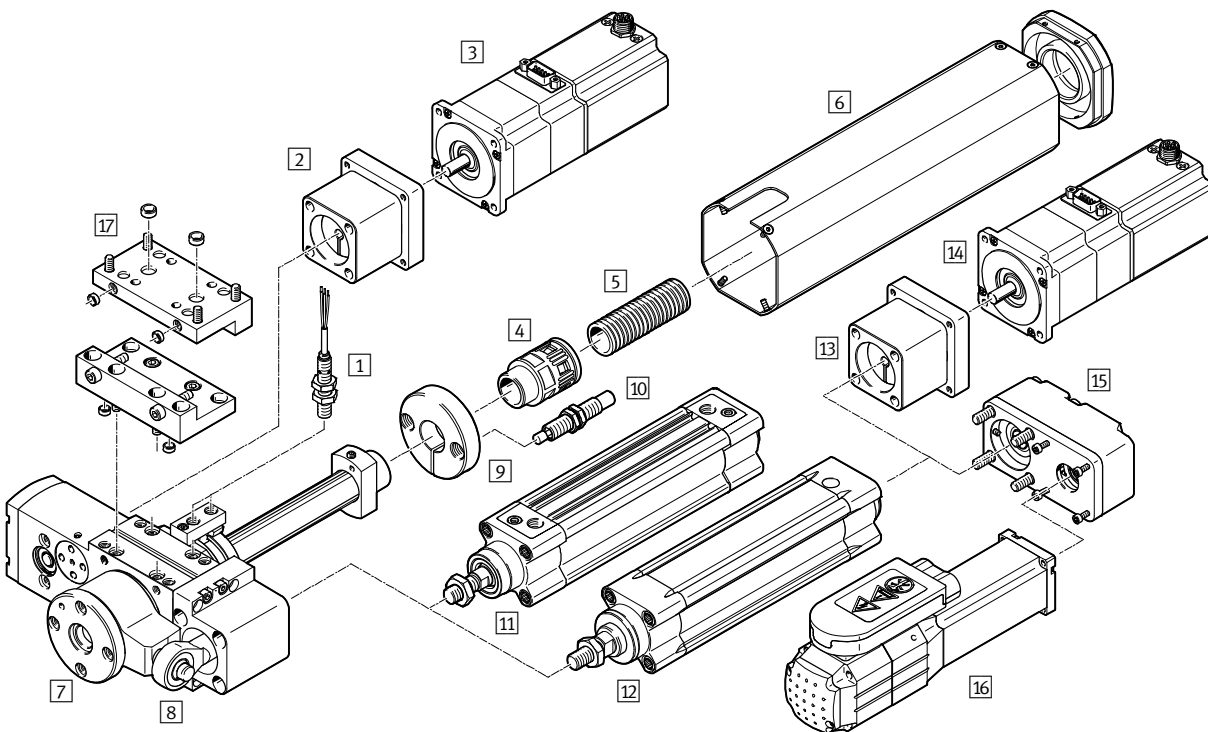
Electric handling modules >

Rotary/lifting modules EHMB, electric

Accessories

04

Electromechanical drives



		→ Page/online
1	Proximity sensor SIEN	724
2	Axial kit EAMM-A for the rotary motion of the rotary/lifting module	723
3	Motor EMMS, EMME, EMCA for the rotary movement of the rotary/lifting module	723
4	Protective conduit fitting EASA	724
5	Protective conduit MKR	724
6	Cover EASC	724
7	Rotary/lifting module EHMB	719
8	Rod eye SGS	724
9	Shock absorber retainer EAYH	724
10	Shock absorber DYSW	724
11	Standards-based cylinder DSBC, pneumatic drive for the linear motion of the rotary/lifting module	724

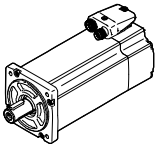
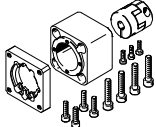
		→ Page/online
12	Electric cylinder ESBF, electric drive for the linear motion of the rotary/lifting module	724
13	Axial kit EAMM-A, for the linear motion of the rotary/lifting module	527
14	Motor EMMS, EMME, EMCA for the linear motion of the rotary/lifting module	527
15	Parallel kit EAMM-U for the linear motion of the rotary/lifting module	527
16	Motor EMMS, EMME, EMCA for the linear motion of the rotary/lifting module	527
17	Adapter plate kit EHAM	724
-	Connecting cable NEBU	724
-	Centring sleeve ZBH	724
-	Cam EAPS	724

Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

Motor mounting for rotary movement

Motor/gear unit ¹⁾	Axial kit
	
	Part no. Type

2/3 Permissible axis/motor combination with axial kit

Data sheets online: → [eamm-a](#)

EHMB-20**With servo motor**

EMME-AS-40-...	2207441	EAMM-A-D32-35A-40P
EMMS-AS-40-...	560281	EAMM-A-D32-35A-40A

With stepper motor

EMMS-ST-42-...	543148	EAMM-A-D32-42A
EMMS-ST-57-...	550980	EAMM-A-D32-57A

With integrated drive

EMCA-EC-67-...	1454239	EAMM-A-D32-67A
----------------	---------	----------------

With integrated drive and gear unit

EMCA-EC-67-...-	1454238	EAMM-A-D32-40G
EMGC-40-...		
EMCA-EC-67-...-	2946760	EAMM-A-D32-60H
EMGC-60-...		

EHMB-25**With servo motor**

EMMS-AS-55-...	543153	EAMM-A-D40-55A
EMME-AS-60-...	1977000	EAMM-A-D40-60P
EMMS-AS-70-...	550981	EAMM-A-D40-70A

With servo motor and gear unit

EMME-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-EAS-40		
EMMS-AS-40-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SAS-40		

With stepper motor

EMMS-ST-57-...	543154	EAMM-A-D40-57A
----------------	--------	----------------

With stepper motor and gear unit

EMMS-ST-42-...	560282	EAMM-A-D40-40G
EMGA-40-P-G...-SST-42		

With integrated drive

EMCA-EC-67-...-	1454243	EAMM-A-D40-67A
-----------------	---------	----------------

With integrated drive and gear unit

EMCA-EC-67-...-	2256398	EAMM-A-D40-40G-G2
EMGC-40-...		
EMCA-EC-67-...-	1454242	EAMM-A-D40-60H
EMGC-60-...		

Motor/gear unit ¹⁾	Axial kit	
	Part no.	Type
EHMB-32		
With servo motor		
EMMS-AS-70-...	543161	EAMM-A-D60-70A
EMME-AS-80-...	1977073	EAMM-A-D60-80P
EMMS-AS-100-...	550983	EAMM-A-D60-100A
EMMS-AS-100-...	550983	EAMM-A-D60-100A
With servo motor and gear unit		
EMMS-AS-55-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-55		
EMMS-AS-70-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SAS-70		
With stepper motor		
EMMS-ST-87-...	543162	EAMM-A-D60-87A
With stepper motor and gear unit		
EMMS-ST-57-...	560283	EAMM-A-D60-60G
EMGA-60-P-G...-SST-57		
With integrated drive and gear unit		
EMCA-EC-67-...-	1454245	EAMM-A-D60-60H
EMGC-60-...		

1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Note





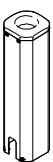

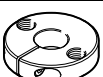
Note the maximum permissible driving torque of the EHMB. The motor current may need to be limited.


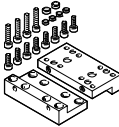



The following tool is available for sizing: engineering software PositioningDrives → [www.festo.com](#)

Electric handling modules >

Rotary/lifting modules EHMB, electric

Accessories – Ordering data

	For size	Part no.	Type
1 Inductive proximity sensor – N/O contact, M8 Data sheets → Page 1230			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
N/C contact, M8 Data sheets → Page 1230			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
4 Protective conduit fitting¹⁾			
	20	1157774	EASA-H1-20-PG16
	25, 32	1096549	EASA-H1-22-PG21
5 Protective conduit			
	20	177566	MKR-16,5-PG-16
	25, 32	177567	MKR-23-PG-21
6 Cover¹⁾			
	20	1099901	EASC-H1-20-100
		1099902	EASC-H1-20-200
	25	1096387	EASC-H1-25-100
		1096388	EASC-H1-25-200
	32	1107235	EASC-H1-32-100
		1107236	EASC-H1-32-200
8 Rod eye Data sheets online: → sgs			
	20,25	★ 9261	SGS-M10x1,25
	32	★ 9262	SGS-M12x1,25
9 Shock absorber retainer¹⁾			
	20	1153896	EAYH-H1-20
	25, 32	1153905	EAYH-H1-25

	For size	Part no.	Type
10 Shock absorber¹⁾ Data sheets online: → dysw			
	20	548073	DYSW-8-14-Y1F
	25, 32	548074	DYSW-10-17-Y1F
17 Adapter plate kit¹⁾			
	20	1132369	EHAM-H1-20-L2-80
	25	1132402	EHAM-H1-25-L2-80
	32	1132529	EHAM-H1-32-L2-120
Connecting cable, straight socket Data sheets → Page 1543			
	2.5 m	★ 541333	NEBU-M8G3-K-2.5-LE3
	5 m	★ 541334	NEBU-M8G3-K-5-LE3
Centring sleeve²⁾ Data sheets online: → zbh			
	– ³⁾	186717	ZBH-7
		150927	ZBH-9
		189653	ZBH-12
Cam⁴⁾			
	20	1234887	EAPS-H1-20-CK
	25, 32	1234888	EAPS-H1-25-CK

- 1) Packaging unit 1 piece.
- 2) Packaging unit 10 pieces.
- 3) → Dimensional drawing page 726.
- 4) 2 included in the scope of delivery of the rotary/lifting module EHMB.

Note

The bracket for the proximity sensor SIEN is included in the scope of delivery of the rotary/lifting module.

04

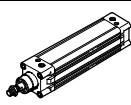
Electromechanical drives

Accessories – Ordering data

Cylinder connection for linear motion

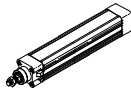
11 In combination with pneumatic standards-based cylinder DSBC

Data sheets online: → [dsbc](#)

	For rotary/lifting module	Standards-based cylinder DSBC	
		Part no.	Type
	EHMB-20-100	1376426	DSBC-32-100-PPVA-N3
	EHMB-20-200	1376429	DSBC-32-200-PPVA-N3
	EHMB-25-100	1376426	DSBC-32-100-PPVA-N3
	EHMB-25-200	1376429	DSBC-32-200-PPVA-N3
	EHMB-32-100	1376660	DSBC-40-100-PPVA-N3
	EHMB-32-200	1376663	DSBC-40-200-PPVA-N3

12 In combination with electric cylinder ESBF

Data sheets online: → [esbf](#)

	For rotary/lifting module	Electric cylinder ESBF	
		Part no.	Type
	EHMB-20-100	1)	ESBF-...-32-100-...
	EHMB-20-200	1)	ESBF-...-32-100-...
	EHMB-25-100	1)	ESBF-...-32-100-...
	EHMB-25-200	1)	ESBF-...-32-100-...
	EHMB-32-100	1)	ESBF-...-32-100-...
	EHMB-32-200	1)	ESBF-...-32-100-...

1) Ordering data: → internet: [esbf](#)

Electric handling modules >

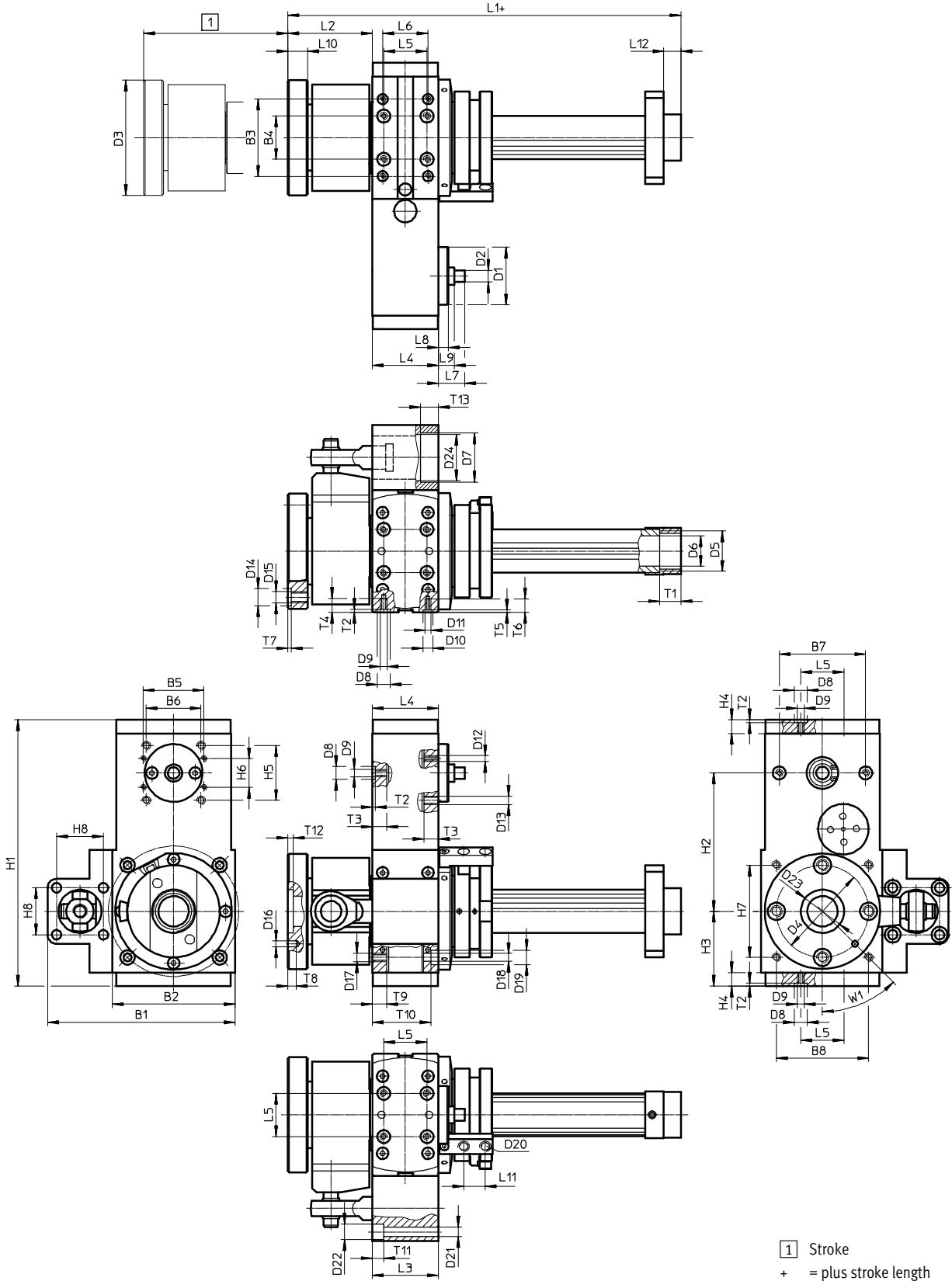
Rotary/lifting modules EHMB, electric

Dimensions

Download CAD data → www.festo.com

04

Electromechanical drives



Dimensions

Download CAD data → www.festo.com

Size	B1 ±0.5	B2 ±0.2	B3 ¹⁾	B4 ¹⁾	B5 ±0.15	B6 ±0.15	B7 ¹⁾	B8 ±0.15	D1 ∅ g7	D2 ∅ h6	D3 ∅	D4 ∅ ±0.05
20	110	65	54	34	32	32.5	30	52	32	6	58	45
25	130	85	53.5	30	42	38	60	64	40	8	80	64
32	169.5	115	70	40	62	56.5	80	88	60	12	80	64

Size	D5	D6 ∅	D7 ∅ H8	D8 ∅ H7	D9	D10 ∅ H7	D11	D12	D13	D14 ∅ H7	D15	D16 ∅ H7	D17
20	Pg16	14	34/30 ²⁾	9	M5	7	M4	M3	M6	9	M6	4	M5
25	Pg21	21	34/30 ²⁾	9	M5	7	M4	M4	M6	12	M8	4	M6
32	Pg21	21	39/35 ²⁾	9	M5	–	M5	M5	M8	12	M8	4	M6

Size	D18 ∅	D19 ∅	D20	D21 ∅	D22 ∅	D23 ∅	D24 ∅	H1 ±0.5	H2 ±0.05	H3	H4	H5 ±0.15	H6 ±0.15
20	–	–	M8x1	6.6	11	19 ^{H8}	32	149	72	45	9.5	32.5	19
25	5.5	10	M8x1	6.6	11	30 ^{H7}	32	185	96	52	9.5	38	20
32	6.2	10	M8x1	6.6	11	30 ^{H7}	37	229.5	108	70.5	13	56.5	31

Size	H7 ±0.15	H8	L1	L2 min.	L3 ±0.1	L4 ±0.1	L5 ¹⁾	L6 ¹⁾	L7	L8	L9	L10	L11 ±0.1	L12
20	44	32.5	147.5	40.5	52	40	30	30	15.8	5	7.8	9	15	12
25	64	32.5	173	58.6	46	46	30	31.5	18.35	7	–	14	15	12
32	88	38	183	61.4	60	60	40	47	23.3	6	–	14	15	12

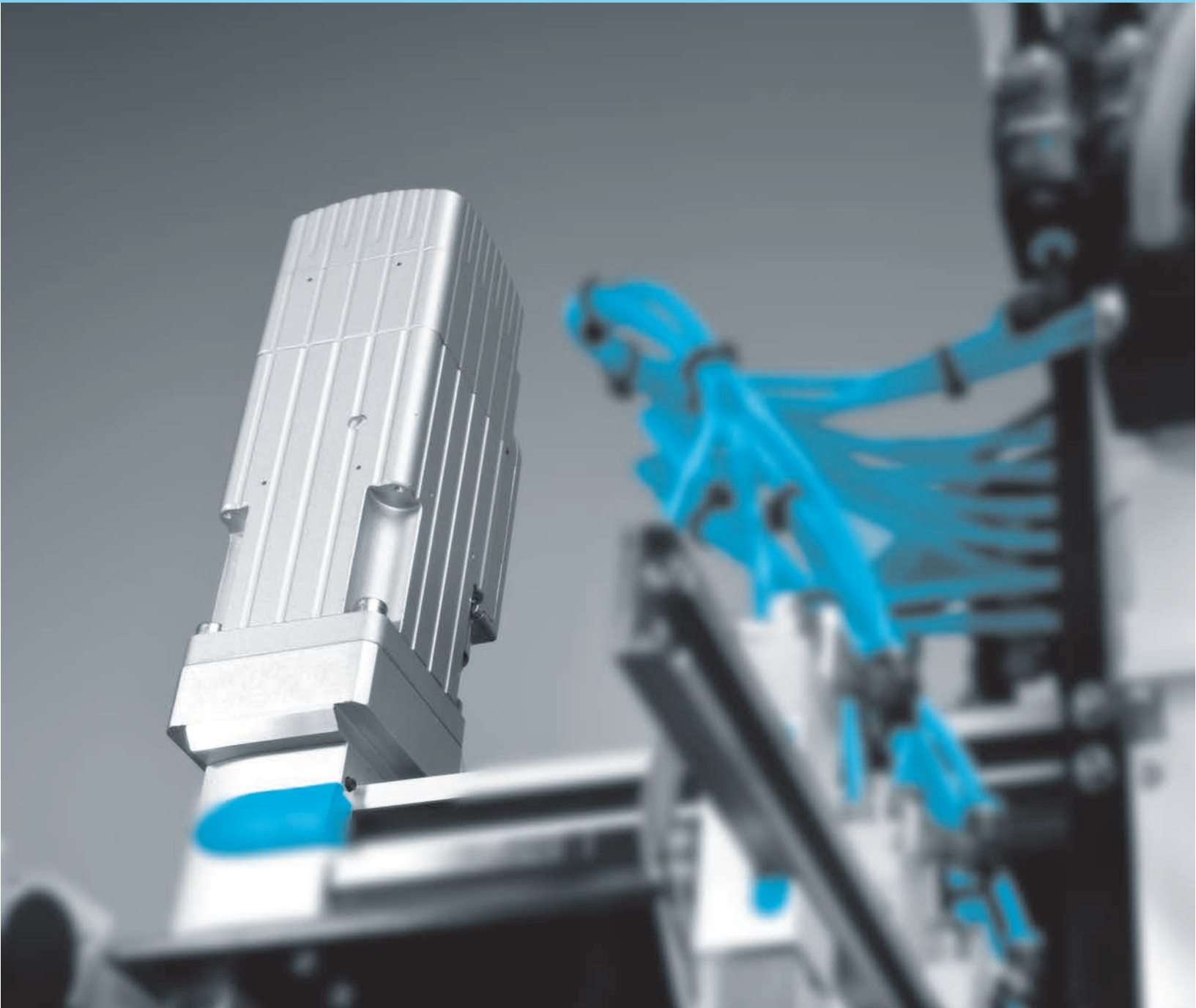
Size	T1	T2 +0.1	T3	T4	T5 +0.2	T6	T7 +0.1	T8	T9	T10 ±0.2	T11	T12 ±0.5	T13 +0.4	W1
20	14	2.1	10	9	1.6	9.5	2.1	6	8.5	–	11	3	12.5	45°
25	15	2.1	10	9.6	1.6	9.5	2.7	6	10	40.8	8	4	12.5	45°
32	15	2.1	10	9	–	9.5	2.7	6	10	54.3	15	4	14.5	45°

- 1) Tolerance for centring hole ±0.02 mm.
Tolerance for thread ±0.1 mm.

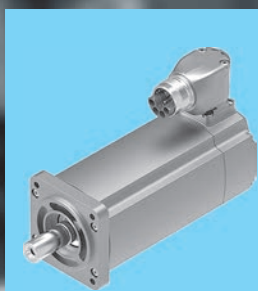
Note

- 2) The diameter can be reduced using a centring ring (included in the scope of delivery of the EHMB).

5 Motors and controllers



- + Servo motors
- + Stepper motors
- + Controllers and control systems
- + Gear units for electromechanical drives
- + Accessories for positioning controllers and regulators



EMMT-AS

Servo motors

- + Brushless, permanently excited synchronous servo motor
- + Digital absolute displacement encoder in single-turn or multi-turn version

→ page 769



EMCA

Integrated drives

- + Integrated power, controller and control electronics
- + For decentralised positioning tasks

→ page 791



CMMT-AS

Servo drives

- + Can be used universally
- + Precise force, speed and position control


→ page 811

Contents




Product overview	730
Servo motors EMME-AS	737
Servo motors EMMS-AS	749
Servo motors EMMT-AS	769
NEW New series	
Stepper motors EMMS-ST	777
Integrated drives EMCA	791
Gear units EMGA-SST	801
Gear units EMGA-EAS, EMGA-SAS	805
Gear units EMGC	785
Servo drives CMMT-AS	811
NEW New series	
Motor controllers CMMP-AS	817
Motor controllers CMMO-ST	825

Product overview


Software tool

<p>PositioningDrives: selection and sizing of electromechanical linear drives, motors, and gear units</p>		<p>Which electromechanical linear drive, which motor and which gear unit best meets your needs? Enter the data for your application, such as position values, effective loads and mounting position, and the software suggests a number of solutions.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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Servo motors

<p>Type</p>	 <p>Servo motors EMME-AS</p>	 <p>Servo motors EMMS-AS</p>	 <p>Servo motors EMMT-AS</p> <p style="text-align: right; background-color: #0070C0; color: white; padding: 2px;">NEW</p>
<p>Nominal torque</p>	<p>0.12 ... 6.4 Nm</p>	<p>0.14 ... 22.63 Nm</p>	<p>0.6 ... 1.4 Nm</p>
<p>Nominal rotational speed</p>	<p>3000 ... 9000 rpm</p>	<p>2000 ... 10,300 rpm</p>	<p>3000 rpm</p>
<p>Peak torque</p>	<p>0.7 ... 30 Nm</p>	<p>0.5 ... 120 Nm</p>	<p>1.6 ... 5.6 Nm</p>
<p>Max. rotational speed</p>	<p>3910 ... 10,000 rpm</p>	<p>2210 ... 23,040 rpm</p>	<p>6800 ... 12,500 rpm</p>
<p>NEW</p>			<ul style="list-style-type: none"> • New series
<p>Description</p>	<ul style="list-style-type: none"> • Brushless, permanently excited synchronous servo motor • Digital absolute displacement encoder in single-turn or multi-turn version • Reliable, dynamic, precise • Optimised connection technology • Over 40 types in stock • Optionally with holding brake • Optional multi-turn encoder with SIL2 	<ul style="list-style-type: none"> • Brushless, permanently excited synchronous servo motor • Digital absolute displacement encoder in single-turn or multi-turn version • 66 types in stock • 490 built-to-order variants • Optionally with holding brake, IP65, resolver • Various winding variants 	<ul style="list-style-type: none"> • Brushless, permanently excited synchronous servo motor • Digital absolute displacement encoder in single-turn or multi-turn version • Extremely low resting torque – supports high synchronisation even at low rotational speeds • Simple connection technology (OCP: one cable plug) – one connecting cable for supply and encoder • Optionally with holding brake
<p>→ Page/online</p>	<p>737</p>	<p>749</p>	<p>769</p>


Stepper motors

<p>Type</p>	 <p>Stepper motors EMMS-ST</p>
<p>Max. rotational speed</p>	<p>430 ... 6000 rpm</p>
<p>Motor holding torque</p>	<p>0.09 ... 9.3 Nm</p>
<p>Description</p>	<ul style="list-style-type: none"> • Small increment and high driving torques • 28 types in stock • With incremental encoder for closed-loop operation • Optionally with holding brake
<p>→ Page/online</p>	<p>777</p>

Motors with integrated controller

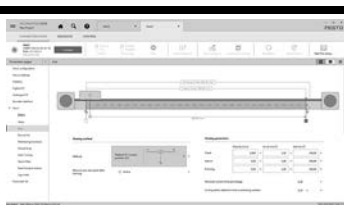
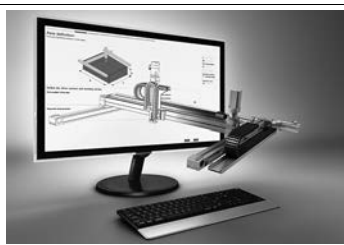
	
Type	Integrated drives EMCA
Nominal torque	0.37 ... 0.45 Nm
Nominal rotational speed	3100 ... 3150 rpm
Peak torque	0.85 ... 0.91 Nm
Max. rotational speed	3300 ... 3500 1/min
Description	<ul style="list-style-type: none"> • 64 freely programmable position sets • Convenient web diagnostics • Digital absolute displacement encoder, single-turn and multi-turn with buffering • Degree of protection IP54 as standard, optionally IP65 • Actuation via CANopen, EtherNet/IP, I/O-Interface, PROFINET, EtherCAT®, Modbus/TCP • Interpolating movement via CANopen and EtherCat®
→ Page/online	791

Gear units

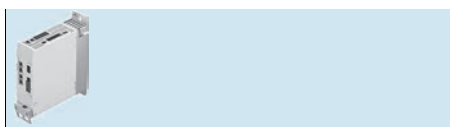

				
Type	Gear units EMGC	Gear units EMGA-SST	Gear units EMGA-EAS	Gear units EMGA-SAS
Continuous output torque	2 ... 44 Nm	11 ... 110 Nm	11 ... 110 Nm	11 ... 450 Nm
Max. drive speed	4500 ... 6000 1/min	7000 ... 18,000 rpm	7000 ... 18,000 rpm	6500 ... 18,000 rpm
Torsional rigidity	0.105 ... 2.4 Nm/arcmin	1 ... 6 Nm/arcmin	1 ... 6 Nm/arcmin	1 ... 38 Nm/arcmin
Torsional backlash	0.5 ... 0.67°	0.12 ... 0.25°	0.12 ... 0.25°	0.1 ... 0.25°
Mass moment of inertia gear units	0.04 ... 0.4 kgcm ²	0.019 ... 0.77 kgcm ²	0.019 ... 0.77 kgcm ²	0.019 ... 12.14 kgcm ²
Max. efficiency	90 ... 94%	98%	98%	98%
Description	<ul style="list-style-type: none"> • Planetary gear units, one-stage or two-stage, for integrated drives EMCA • Gear ratio i = 5 and i = 20, available ex-stock • Life-time lubrication 	<ul style="list-style-type: none"> • Planetary gear units for stepper motors EMMS-ST • Gear ratio i = 3 and i = 5, available from stock • Life-time lubrication 	<ul style="list-style-type: none"> • Planetary gear units for servo motors EMMS-AS • Gear ratio i = 3 and i = 5, available from stock • Life-time lubrication 	<ul style="list-style-type: none"> • Planetary gear units for servo motors EMMS-AS • Gear ratio i = 3 and i = 5, available from stock • Life-time lubrication
→ Page/online	785	801	805	805

Product overview


Software tool

<p>Festo Automation Suite</p> 	<p>Parameterisation, programming and maintenance of electronic devices from Festo in one software program</p> <p>The modular design and the ability to install device-specific plug-ins allow optimum customisation to your requirements. Interactive assistants help you to commission electric drive systems efficiently.</p>	<p>The Festo Automation Suite can be found on the Support Portal at www.festo.com/sp > enter search term "Festo Automation Suite" > click "Find" > select "Software" tab.</p>
<p>Festo Configuration Tool (FCT)</p> 	<p>FCT is a proven configuration and parameterisation software program that supports existing device families, in particular motor controllers.</p> <p>It is extremely flexible, provides full support for the device properties and is simple and intuitive to operate. The user is guided step-by-step through the commissioning process while each individual step is checked.</p>	<p>The parameterisation software can be found at www.festo.com/fct</p>



Controllers for AC servo motors

Type	 <p>Servo drives CMMT-AS</p>	 <p>Motor controllers CMMP-AS-M0, CMMP-AS-M3</p>
Nominal current		2.5 ... 15 A
Nominal operating voltage AC	230 V	230 ... 400 V
Nominal operating voltage phases	1-phase	1-phase, 3-phase
Rated output controller	350 ... 700 VA	500 ... 12000 VA
Fieldbus coupling		PROFIBUS DP, CANopen, DeviceNet®, EtherCAT®, EtherNet/IP, Modbus/TCP, PROFINET
NEW	<ul style="list-style-type: none"> • New series 	
Description	<ul style="list-style-type: none"> • Single-phase servo drive • Can be used universally • Parameterisation, programming and maintenance with the Festo Automation Suite, see www.festo.com/sp 	<ul style="list-style-type: none"> • Numerous interfaces and functions for decentralised motion functions (flying saw, flying measurement, modulo function, etc.) • Optional: integrated cam disk controllers and highly dynamic movements • Interpolating movement via CANopen and EtherCat • Standardised interfaces allow seamless integration in mechatronic multi-axis modular systems • Reliable and easy commissioning and parameterisation with the Festo Configuration Tool (FCT) • Optionally with 3 slots, safety module or extension module • 255 position sets
→ Page/online	811	817

Controllers for DC servo motors




	
Type	Motor controllers SFC-DC
Nominal current load supply	3 A
Nominal voltage, load supply DC	24V
Rated output controller	75 VA
Fieldbus coupling	CANopen, DeviceNet®, PROFIBUS DP
Description	<ul style="list-style-type: none"> • For actuating parallel gripper HGPLE • Easy actuation via I/O interface, PROFIBUS, CANopen, DeviceNet® • Parameterisation via RS 232 interface • Field controller with protection to IP54 • Reliable and easy commissioning and parameterisation with the Festo Configuration Tool (FCT)
→ Page/online	sfc-dc

Controllers for stepper motors


		
Type	Motor controllers CMMO-ST	Motor controllers CMMS-ST
Nominal current load supply	6 A	8 A
Nominal voltage, load supply DC	24 V	48 V
Fieldbus coupling	Ethernet	CANopen, PROFIBUS DP
Description	<ul style="list-style-type: none"> • Motor controllers from the Optimised Motion Series (for drives EPCO, ELGR, ERMO) • With convenient FCT commissioning for stepper motor EMMS-ST • Quick and easy parameterisation via web browser and parameter cloud • Reliable and easy commissioning and parameterisation with the Festo Configuration Tool (FCT) • Simple actuation via digital I/Os, IO-Link®, I-Port, Modbus TCP • Safe torque off (STO) safety function, PLc • Sinusoidal current injection for especially silent motor operation • Compact design 	<ul style="list-style-type: none"> • For controlling stepper motors EMMS-ST and Optimised Motion Series (for drives EPCO, ELGR, ERMO) • Easy and convenient: commissioning and firmware updates via SD card slot • Reliable and easy commissioning and parameterisation with the Festo Configuration Tool (FCT) • Integrated process interface: digital I/O module, CAN, RS485 • Safe torque off (STO) safety function, PLd • Optional PROFIBUS and DeviceNet®
→ Page/online	825	cmms-st

Product overview

Multi-axis controllers

Type	 Controllers CMXH-ST2	 Control blocks CPX-CEC-M1	 Controllers CECX-X-C1, CECX-X-M1
CPU data		256 MB RAM, 32 MB flash, 800 MHz processor	64 MB DRAM, 400 MHz processor
Configuration support	FCT (Festo Configuration Tool)	CODESYS V3	
Processing time		Approx. 200 µs/1 k instructions	
Degree of protection	IP 20	IP65, IP67	IP20
Fieldbus coupling	1x CANopen Slave		
Description	<ul style="list-style-type: none"> For actuating two stepper motors in servo mode For actuating planar surface gantries EXCM-30 and EXCM-40 Easy and convenient actuation using integrated transformation and linear interpolation Supports the safe torque off (STO) safety function Simple actuation via digital I/O interface, CAN interface or Ethernet TCP/IP H-rail mounting possible Parameterisation with the Festo Configuration Tool (FCT) 	<ul style="list-style-type: none"> Easy actuation of valve terminal configurations Programming with CODESYS to IEC 61131-3 Connection to all fieldbuses as a remote controller and for pre-processing Actuation of electric drives via CANopen SoftMotion functions for coordinated multi-axis movements 	<ul style="list-style-type: none"> Modular master controller with CODESYS or motion controller with CODESYS and SoftMotion Programming to standard IEC 61131-3 Three plug-in slots for optional modules Optional: communication module for PROFIBUS
→ Page/online	cpx-cec-m1	cpx-cec-m1	cecx



Positioners for process automation

Type	 Positioners CMSX	★
Standard nominal flow rate	50 ... 130 l/min	
Ambient temperature	-5 ... 60 °C	
Setpoint value	0 - 20 mA, 4 - 20 mA, 0 - 10 V	
Operating voltage range DC	21.6 ... 26.4 V	
Operating pressure	3 ... 8 bar	
Safety information	Adjustable, opening, closing, holding	
Degree of protection	IP65	
Type of mounting	On flange ISO 5211, via accessories	
Information on materials - housing	PC	
Description	<ul style="list-style-type: none"> Digital electropneumatic positioner for single-acting or double-acting pneumatic quarter turn actuators and double-acting pneumatic linear actuators No air consumption at rest Safety function in the event of a power failure: fail-safe or fail-freeze function (opening/closing or blocking) 	
→ Page/online	cmsx	


05

Motors and controllers

Accessories for motors and controllers

Type	 Safety modules CAMC-G-S1	 Safety modules CAMC-G-S3
Safety function	Safe Torque Off (STO)	Safe Torque Off (STO), Safe Stop 1 (SS1), Safe Stop 2 (SS2), Safe Operating Stop (SOS), Safely Limited Speed (SLS), Safe Speed Range (SSR), Safe Brake Control (SBC), Safe Speed Monitor (SSM)
Safety Integrity Level (SIL)	Safe Torque Off (STO)/SIL 3/SILCL 3	Safe Brake Control (SBC)/SIL 3, Safely Limited Speed (SLS)/SIL 3, Safe Operating Stop (SOS)/SIL 3, Safe Stop 1 (SS1)/SIL 3, Safe Stop 2 (SS2)/SIL 3, Safe Speed Monitor (SSM)/SIL 3, Safe Speed Range (SSR)/SIL 3, Safe Torque Off (STO)/SIL 3
Characteristics of logic inputs	Electrically isolated	4 safe, 2-channel inputs equivalent/antivalent switching, configurable test pulses, configurable function, 6 safe, 1-channel inputs, configurable test pulses
No. of digital logic inputs	2	10
Digital output design	Potential-free signal contact	3 safe, 2-channel semiconductor outputs
Description	<ul style="list-style-type: none"> Plug-in module For motor controller CMMP-AS-...-M3 	<ul style="list-style-type: none"> Plug-in module For motor controller CMMP-AS-...-M3
→ Page/online	camc	camc

Power supply units

Type	 Power supply units CACN
Nominal output voltage DC	24 ... 48 V
Nominal output current	5 ... 20 A
Input voltage range AC	100 ... 500 V
Power failure buffering	24 ... 110 ms
Description	<ul style="list-style-type: none"> H-rail mounting Mounting position: free convection
→ Page/online	cacn



Economical solution

- + Wear-free and maintenance-free synchronous motor for a long service life
- + Short delivery times
- + SIL2 multi-turn encoder for high safety requirements
- + High efficiency ensures economical operation

Servo motors >

Servo motors

EMME-AS


Servo motors >

Servo motors

EMME-AS

 Overview, configuration and ordering
→ www.festo.com/catalogue/emme-as



 Additional information, support and user documentation
→ www.festo.com/sp/emme-as



- + Brushless, permanently excited synchronous servo motor
- + Choice of feedback systems: digital absolute displacement encoder, single-turn or multi-turn
- + Optional: absolute displacement encoder, multi-turn with SIL2
- + Optimised connection technology

Product range overview

Motor flange size	Nominal voltage [V AC]	Nominal torque [Nm]	Product options									
			S	M	LS	LV	HS	A	S	M	MX	B
40	360	0.12 ... 0.21	■	■	-	■	-	■	■	■	-	■
60	360	0.6 ... 1.2	■	■	■	-	-	■	■	■	■	■
80	360, 565	2.3 ... 3.2	■	■	■	-	■	■	■	■	■	■
100	565	4.8 ... 6.4	■	■	-	-	■	■	■	■	■	■

Product options

S	Short length	LS	Low-voltage, standard	A	Push-in L-connector	MX	Absolute safety encoder, multi-turn
M	Medium length	LV	Low-voltage, speed-optimised	S	Absolute, single-turn	B	Brake
K	Shaft to DIN 6885 (with feather key)	HS	High-voltage, standard	M	Absolute encoder, multi-turn		

Data sheet



Technical data		Motor flange size								Dimensions → Page 748	
		40		60		80		100		S	M
Length		S	M	S	M	S	M	S	M	S	M
Winding		LV	LV	LS	LS	LS	HS	LS	HS	HS	HS
Nominal voltage	[V AC]	360	360	360	360	360	565	360	565	565	565
Nominal current	[A]	0.7	1.2	0.8	1.5	2.6	1.6	3.7	2.1	3.0	4.1
Continuous stall current		0.8	1.6	0.9	1.8	3.1	1.8	3.9	2.2	3.4	4.6
Peak current	[A]	3.2	6.4	3.6	7.2	12.4	7.2	15.6	8.8	13.6	18.4
Nominal power	[W]	110	200	190	380	750	720	1000	1000	1500	2000
Nominal torque	[Nm]	0.12	0.21	0.6	1.2	2.4	2.3	3.2	3.2	4.8	6.4
Peak torque	[Nm]	0.7	1.4	2.8	6.0	11.2	11.2	14.0	14.0	22.4	30.0
Standstill torque	[Nm]	0.18	0.35	0.7	1.5	2.8	2.8	3.5	3.5	5.6	7.5
Nominal rotational speed	[rpm]	9000	9000	3000	3000	3000	3000	3000	3000	3000	3000
Max. rotational speed	[rpm]	10000	10000	5131	4925	4690	4192	4627	4097	3910	3941
Brake											
Operating voltage	[V DC]	24 +6 ... -10%									
Performance	[W]	8		11		12		18			
Holding torque	[Nm]	0.4		2.0		4.5		9.0			

Operating conditions

Ambient temperature	[°C]	-10 ... +40 (up to 100 °C with derating of 1.5% per degree Celsius)
Degree of protection		
Motor shaft		IP21
Motor housing incl. connection technology		IP65
Insulation class		F (155 °C)
Rating class to EN 60034-1		S1 (continuous operation)
Thermal class to EN 60034-1		F (155 °C)

Servo motors >

Servo motors EMME-AS

Data sheet

Safety characteristics – Encoder

Type	EMME-AS-...-S				EMME-AS-...-M											
Flange size	40	60	80	100	40	60	80	100								
Measuring unit	Absolute, single-turn (SEK 34/37)				Absolute, multi-turn (SEL 34/37)											
Rotor position encoder																
MTTFd ¹⁾	Years 340				271											
Holding brake																
MTTF	Years 371				538				797				1037			
Switching cycles ²⁾	5 million idle actuations															

1) Fault exclusions for the mechanical encoder connection are not possible.

2) Guide value for the number of switching actuations (release/application) during exclusive use as holding brake without friction (i.e. jamming at standstill).

Technical data – Encoder

Type	EMME-AS-...-S				EMME-AS-...-M			
Measuring unit	Absolute, single-turn (SEK 34/37)				Absolute, multi-turn (SEL 34/37)			
Operating voltage	[V DC] 7 ... 12 (±5%)							
Interface signals/Protocol – HIPERFACE®								
Measuring principle	Capacitive							
Process data channel	SIN, REFSIN, COS, REFCOS (analogue differential)							
Sinusoidal/cosinusoidal periods per revolution	16							
Parameter channel	RS485 (digital)							
Absolute position values per revolution	512 (resolution 9 bits)							
Max. rotational speed								
For absolute value generation	[rpm] 6000							
Mechanical	[rpm] 12000							
Revolutions	1				4096 revolutions, 12 bits			
Interpolation of sine/cosine signals in the motor controller ³⁾								
Measurement step at e.g. 12 bits per period	20" (angular seconds) $[360^\circ/16/2^{12}=20"]$							
Angular accuracy	±20' (angular minutes)							

3) Dependent on the motor controller.

Safety characteristics – Encoder with SIL transmitter⁴⁾

Type	EMME-AS-...-MX			
Measuring unit	Absolute, multi-turn (SKM36S)			
Rotor position encoder				
MTTFd	874 years			
Performance Level (PL) to EN ISO 13849-1	Category 3, Performance Level d			
Safety Integrity Level (SIL) to EN 62061, EN 61508	SIL2			
PFHd	1.3×10^{-8}			
T _M (duration of use)	20 years			
CE marking (see declaration of conformity)	To EU EMC Directive ⁵⁾			

4) Related documents from SICK AG → www.sick.com:

Description of HIPERFACE® Interface

Implementation Manual on HIPERFACE® Safety

Operating Instructions on SKM36S Stand-Alone

5) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the device is subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Data sheet

Technical data – Encoder with SIL transmitter

Type	EMME-AS-...-MX	
Measuring unit	Absolute, multi-turn (SKM36S)	
Operating voltage	[V DC]	7 ... 12 (±5%)
Interface signals/Protocol – HIPERFACE®		
Measuring principle	Optical	
Process data channel	SIN, REFSIN, COS, REFCOS (analogue differential)	
Sinusoidal/cosinusoidal periods per revolution	128	
Parameter channel	RS485 (digital)	
Absolute position values per revolution	4096 (resolution 12 bits)	
Max. rotational speed		
For absolute value generation	[rpm]	9000
Mechanical	[rpm]	9000
Revolutions	4096 revolutions, 12 bits	
Interpolation of sine/cosine signals in the motor controller ¹⁾		
Measurement step at e.g. 12 bits per period	2.5" (angular seconds) [$360°/128/212=2.5"$]	
Angular accuracy	±20' (angular minutes)	

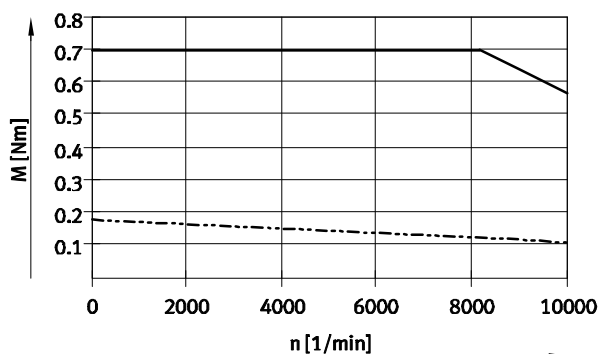
1) Dependent on the motor controller.

Torque M as a function of rotational speed n

Flange size 40

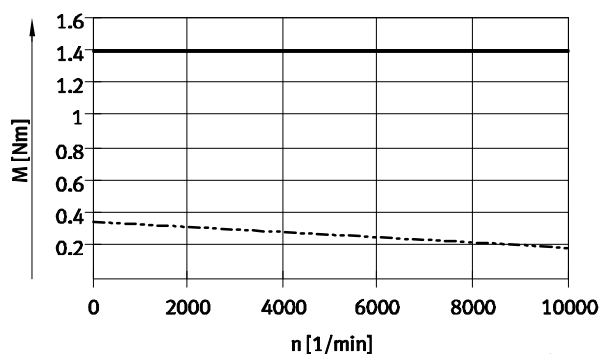
Length S

Winding LV



Length M

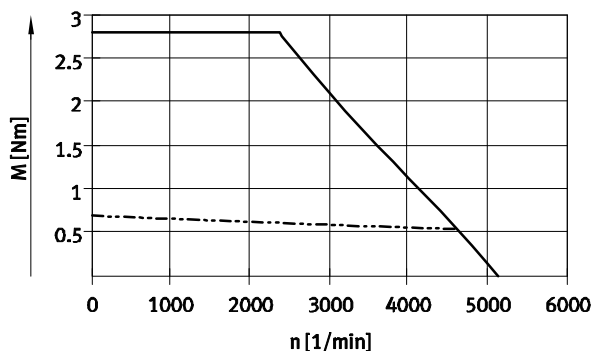
Winding LV



Flange size 60

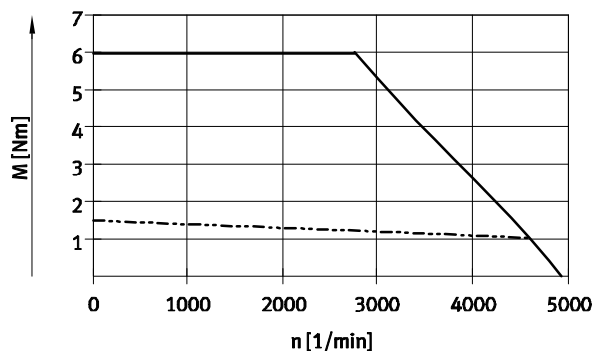
Length S

Winding LS



Length M

Winding LS



— Peak torque
 - - - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

Servo motors EMME-AS

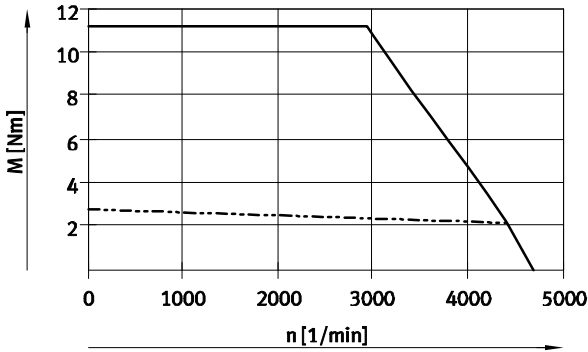
Data sheet

Torque M as a function of rotational speed n

Flange size 80

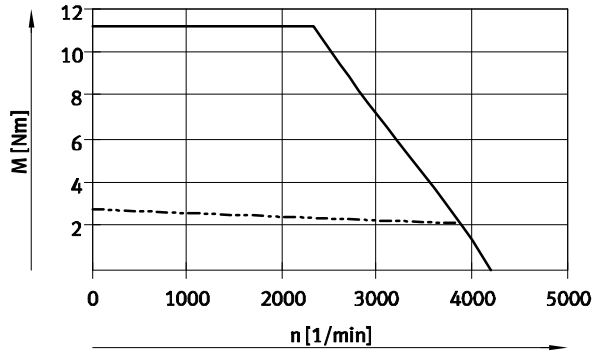
Length S

Winding LS



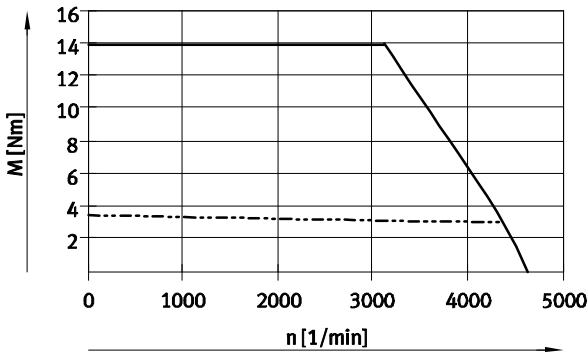
Length S

Winding HS



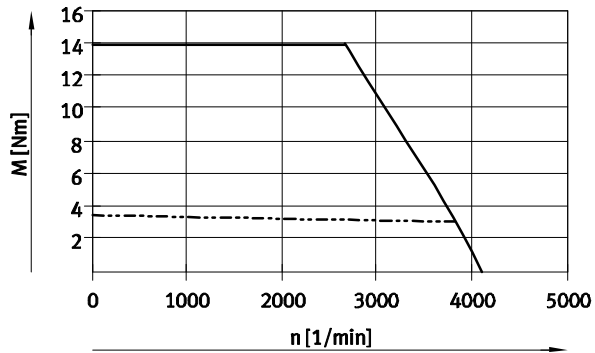
Length M

Winding LS



Length M

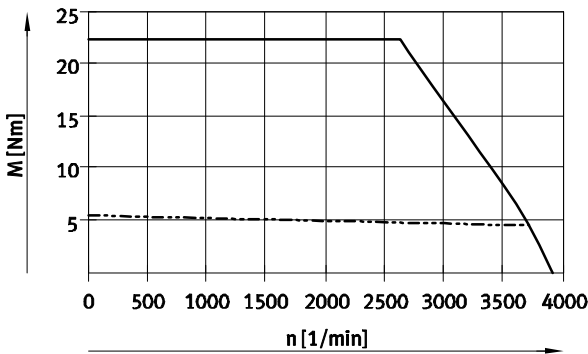
Winding HS



Flange size 100

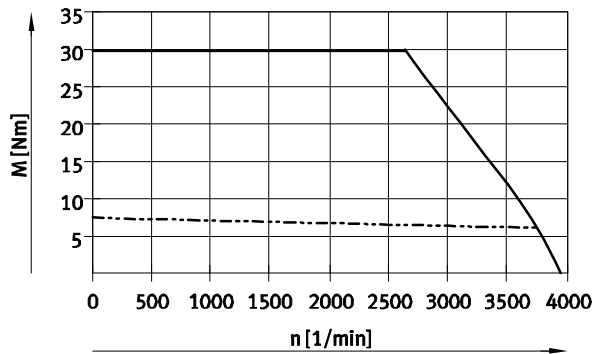
Length S

Winding HS



Length M

Winding HS

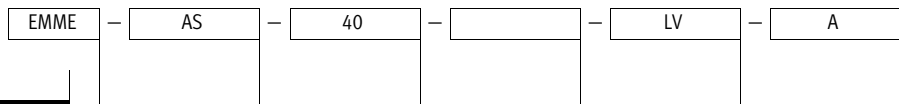


— Peak torque
 - - - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

Order code – Flange size 40



Type	
EMME	Motor
Motor type	
AS	Servo motor
Motor flange size	
40	40 mm
Length	
S	Short
M	Medium
Winding	
LV	Low-voltage, speed optimised
Electrical connection	
A	Push-in L-connector, fixed – outlet direction: shaft
Measuring unit	
S	Absolute encoder, single-turn
M	Absolute encoder, multi-turn
Brake	
-	None
B	With brake

05
Motors and controllers

Order example:

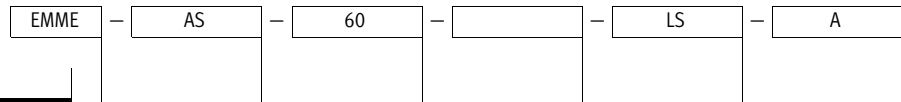
EMME-AS-40-M-LV-ASB

Motor EMME - servo motor - flange size 40 - length: medium - winding: low-voltage, speed-optimised - push-in L-connector - measuring unit: absolute encoder, single-turn - with brake

Servo motors >

Servo motors EMME-AS

Order code – Flange size 60



Type

EMME	Motor
------	-------

Motor type

AS	Servo motor
----	-------------

Motor flange size

60	60 mm
----	-------

Length

S	Short
M	Medium

Output shaft

-	Smooth shaft
K	Shaft to DIN 6885 (with feather key) ^[1]

Winding

LS	Low voltage, standard
----	-----------------------

Electrical connection

A	Push-in L-connector, fixed – outlet direction: shaft
---	--

Measuring unit

S	Absolute encoder, single-turn
M	Absolute encoder, multi-turn
MX	Absolute safety encoder, multi-turn

Brake

-	None
B	With brake

^[1] Only with measuring unit MX

Order example:

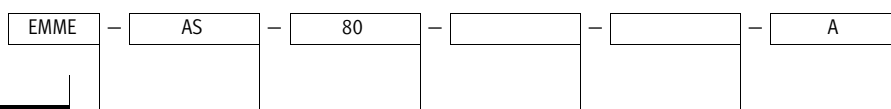
EMME-AS-60-M-LS-ASB

Motor EMME - servo motor - flange size 60 - length: medium - smooth shaft - winding: low-voltage, standard - push-in L-connector - measuring unit: absolute encoder, single-turn - with brake

05

Motors and controllers

Order code – Flange size 80



Type	
EMME	Motor

Motor type	
AS	Servo motor

Motor flange size	
80	80 mm

Length	
S	Short
M	Medium

Output shaft	
–	Smooth shaft
K	Shaft to DIN 6885 (with feather key) ¹

Winding	
LS	Low voltage, standard
HS	High-voltage, standard

Electrical connection	
A	Push-in L-connector, fixed – outlet direction: shaft

Measuring unit	
S	Absolute encoder, single-turn
M	Absolute encoder, multi-turn
MX	Absolute safety encoder, multi-turn

Brake	
–	None
B	With brake

¹ Only with measuring unit MX

Order example:

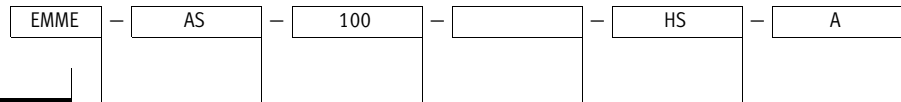
EMME-AS-80-M-LS-ASB

Motor EMME - servo motor - flange size 80 - length: medium - smooth shaft - winding: low-voltage, standard - push-in L-connector - measuring unit: absolute encoder, single-turn - with brake

Servo motors >

Servo motors EMME-AS

Order code – Flange size 100



Type

EMME	Motor
------	-------

Motor type

AS	Servo motor
----	-------------

Motor flange size

100	100 mm
-----	--------

Length

S	Short
M	Medium

Output shaft

-	Smooth shaft
K	Shaft to DIN 6885 (with feather key) ^[1]

Winding

HS	High-voltage, standard
----	------------------------

Electrical connection

A	Push-in L-connector, fixed – outlet direction: shaft
---	--

Measuring unit

S	Absolute encoder, single-turn
M	Absolute encoder, multi-turn
MX	Absolute safety encoder, multi-turn

Brake

-	None
B	With brake

05

Motors and controllers

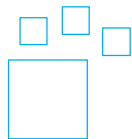
^[1] Only with measuring unit MX

Order example:

EMME-AS-100-M-HS-ASB

Motor EMME - servo motor - flange size 100 - length: medium - smooth shaft - winding: high-voltage, standard - push-in L-connector - measuring unit: absolute encoder, single-turn - with brake

Ordering – Product options




Configurable product

This product and all its options can be ordered using the configurator.

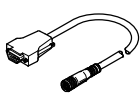
The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Accessories – Ordering data

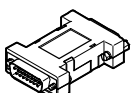
Motor cable		Part no.	Type
Cable length [m]			
			
For EMME-AS-40/60 with CMMP-AS (cable cross section output: 0.75 mm²)			
2.5		8004662	NEBM-M16G8-E-2.5-Q7-LE8
5.0		8003770	NEBM-M16G8-E-5-Q7-LE8
7.5		8004663	NEBM-M16G8-E-7.5-Q7-LE8
10.0		8003771	NEBM-M16G8-E-10-Q7-LE8
15.0		8003772	NEBM-M16G8-E-15-Q7-LE8
X length ¹⁾		8003773	NEBM-M16G8-E-...-Q7-LE8
For EMME-AS-40/60 with CMMT-AS (cable cross section output: 0.75 mm²)			
2.5		5391541	NEBM-M16G8-E-2.5-Q7-LE8-1
5.0		5391543	NEBM-M16G8-E-5-Q7-LE8-1
7.5		5391548	NEBM-M16G8-E-7.5-Q7-LE8-1
10.0		8085952	NEBM-M16G8-E-10-Q7-LE8-1
15.0		8085953	NEBM-M16G8-E-15-Q7-LE8-1
X length ¹⁾		8085954	NEBM-M16G8-E-...-Q7-LE8-1
For EMME-AS-80/100 with CMMP-AS (cable cross section output: 1.5 mm²)			
2.5		8004660	NEBM-M16G8-E-2.5-Q9-LE8
5.0		8003766	NEBM-M16G8-E-5-Q9-LE8
7.5		8004661	NEBM-M16G8-E-7.5-Q9-LE8
10.0		8003767	NEBM-M16G8-E-10-Q9-LE8
15.0		8003768	NEBM-M16G8-E-15-Q9-LE8
X length ¹⁾		8003769	NEBM-M16G8-E-...-Q9-LE8
For EMME-AS-80/100 with CMMT-AS (cable cross section output: 1.5 mm²)			
2.5		5391540	NEBM-M16G8-E-2.5-Q9-LE8-1
5.0		5391545	NEBM-M16G8-E-5-Q9-LE8-1
7.5		5391547	NEBM-M16G8-E-7.5-Q9-LE8-1
10.0		5391549	NEBM-M16G8-E-10-Q9-LE8-1
15.0		5391550	NEBM-M16G8-E-15-Q9-LE8-1
X length ¹⁾		5392489	NEBM-M16G8-E-...-Q9-LE8-1

1) Selectable cable length: 0.5 ... 99.9 m, in 0.1 m increments. Cable lengths >25 m possible following technical clarification. For motors with a holding brake, the max. cable length is 50 m.

Encoder cable		Part no.	Type
Cable length [m]			
			
For EMME-AS-40/60/80/100 with CMMP-AS			
2.5		8004664	NEBM-M12G8-E-2.5-N-S1G15
5.0		8003762	NEBM-M12G8-E-5-N-S1G15
7.5		8004665	NEBM-M12G8-E-7.5-N-S1G15
10.0		8003763	NEBM-M12G8-E-10-N-S1G15
15.0		8003764	NEBM-M12G8-E-15-N-S1G15
X length ¹⁾		8003765	NEBM-M12G8-E-...-N-S1G15
For EMME-AS-40/60/80/100 with CMMT-AS			
2.5		5212312	NEBM-M12G8-E-2.5-N-R3G8
5.0		5212313	NEBM-M12G8-E-5-N-R3G8
7.5		5212314	NEBM-M12G8-E-7.5-N-R3G8
10.0		5212315	NEBM-M12G8-E-10-N-R3G8
15.0		5212316	NEBM-M12G8-E-15-N-R3G8
X length ^{1) 2)}		5212317	NEBM-M12G8-E-...-N-R3G8

1) Selectable cable length: 0.5 ... 99.9 m, in 0.1 m increments. Cable lengths >25 m possible following technical clarification. For motors with a holding brake, the max. cable length is 50 m.

2) EMC filter CAMF-C5-FC included in the scope of delivery.

EMC filter ³⁾		Part no.	Type
Degree of protection	Ambient temperature [°C]		
 IP 30 in assembled state	-40 ... +80	4825847	CAMF-C5-FC

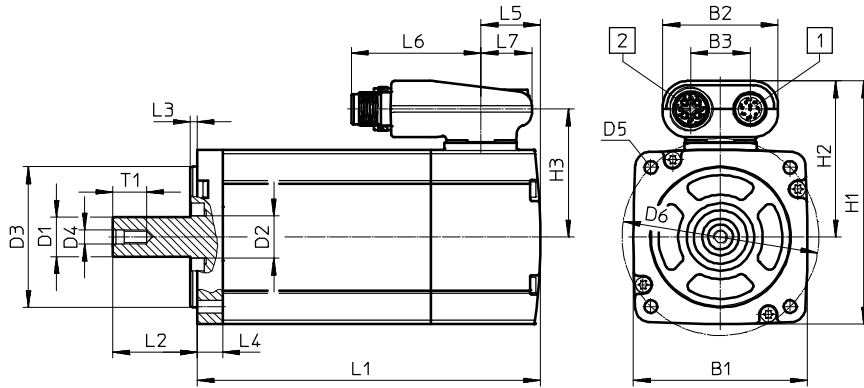
3) For cable lengths ≥ 10 m, the use of the EMC filter is recommended to reduce EMC interference.
For encoder cables ≥ 10 m, the filter is included in the scope of delivery of the cable.

Servo motors >

Servo motors EMME-AS

Dimensions

Download CAD data → www.festo.com



- 1 Encoder cable
- 2 Motor cable

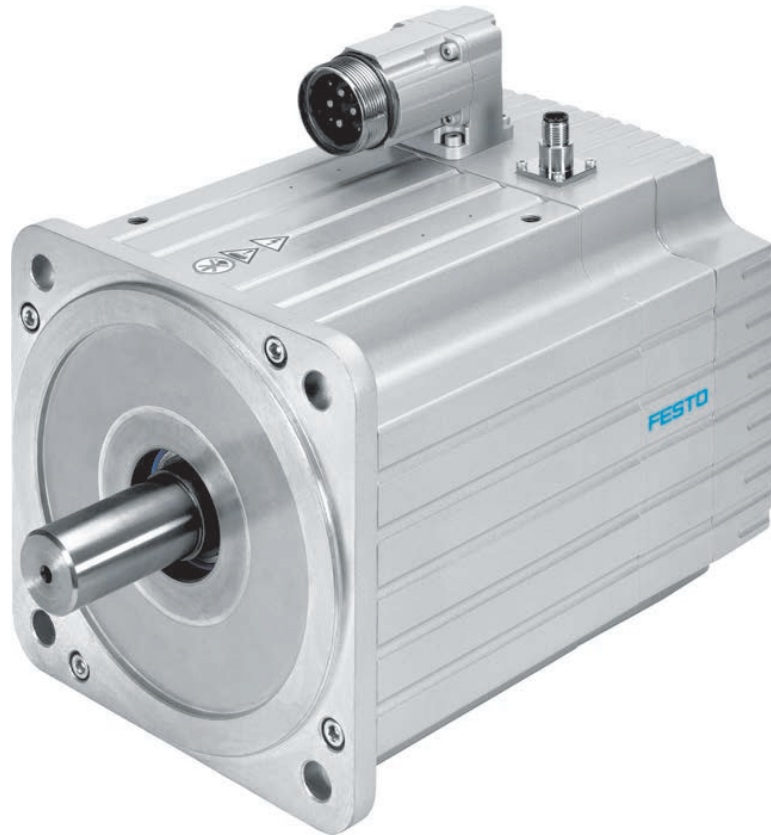
Flange size	Length	B1	B2	B3	D1 ∅ h6	D2 ∅	D3 ∅ h7	D4
40	S	40	41	21	8	10	30	M3
	M							
60	S	62	41	21	14	15	50	M5
	M							
80	S	82	41	21	19	20	70	M6
	M							
100	S	102	41	21	19	25	95	M6
	M							

Flange size	Length	D5 ∅	D6 ∅ ±0.3	H1	H2	H3	L1 ±2	With brake ±2
40	S	3.4	45	68.5	48.5	38.5	89	124
	M							149
60	S	4.5	70	86.5	55.5	45.5	122	156
	M							186
80	S	5.5	90	106.5	65.5	55.5	158	200
	M							220
100	S	9	115	126.5	75.5	65.5	200	242
	M							267

Flange size	Length	L2	L3 ±0.2	L4 ±0.3	L5	L6	L7	T1
40	S	20+0.5/-0.7	2.5	4.5	25.3	46.2	18	9
	M							
60	S	30+0.5/-0.2	2.5	9	21	46.2	18	12.5
	M							
80	S	35+0.4/-0.2	3	10	23	46.2	18	16
	M							
100	S	40+0.4/-0.2	3	12	25.5	46.2	18	16
	M							

05

Motors and controllers



Short delivery time

- + Always the perfect fit and best choice for your application with numerous best sellers in stock or as build-to-order variants
- + Wear-free and maintenance-free synchronous motor for a long service life
- + High efficiency ensures economical operation

Servo motors >

Servo motors

EMMS-AS


Servo motors >

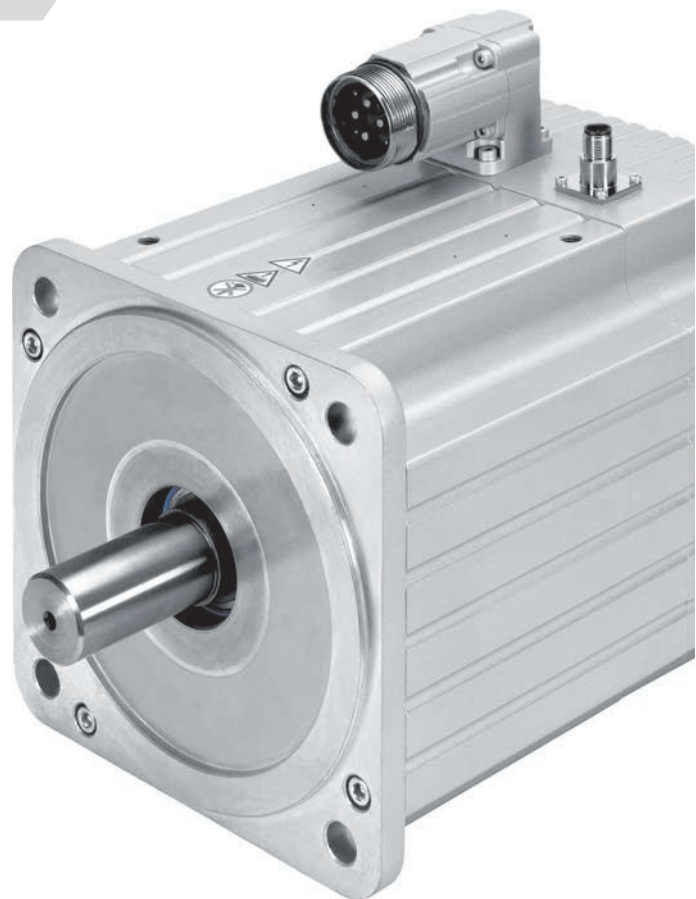
Servo motors

EMMS-AS

 Overview, configuration and ordering
→ www.festo.com/catalogue/emms-as



 Additional information, support and user documentation
→ www.festo.com/sp/emms-as



- + Brushless, permanently excited synchronous servo motor
- + Digital absolute displacement encoder in single-turn or multi-turn version
- + Range of options: holding brake, shaft sealing ring, woodruff key, resolver and different winding variants
- + Over 60 variants in stock

Product range overview

Motor flange size	Nominal voltage [V AC]	Nominal torque [Nm]	Product options																
			S	M	L	K	LS	LV	HS	HV	A	R	S	T	S	M	R	B	S1
40	360	0.14 ... 0.22	■	■	-	■	■	-	-	-	-	-	■	■	■	■	■	-	
55	360, 565	0.31 ... 0.68	■	-	-	■	■	-	■	-	-	■	-	■	■	■	■	■	
70	360, 565	1.37 ... 2.29	■	■	-	■	■	-	■	■	-	-	-	■	■	■	■	■	
100	565	3.24 ... 7.51	■	■	■	■	-	-	■	■	-	-	-	■	■	■	■	■	
140	565	9.55 ... 21.12	■	-	■	■	-	-	■	■	-	■	-	-	■	■	■	■	
190	565	17.47 ... 22.63	■	-	-	■	-	-	■	-	■	-	-	-	■	■	■	■	

Product options

S	Short length	LS	Low voltage, standard	A	Push-in L-connector	S	Absolute encoder, single turn
M	Medium length	LV	Low voltage, speed-optimised	R	Push-in L-connector, rotatable	M	Absolute encoder, multi-turn
L	Long length	HS	High voltage, standard	S	Straight plug	R	Resolver
K	Shaft to DIN 6885 (with feather key)	HV	High voltage, speed-optimised	T	Terminal box	B	Brake
						S1	IP65 (with rotary shaft seal)

Data sheet



Technical data		Dimensions → Page 765									
Motor flange size		40			55			70			
Length		S	M	S	S	M	M	S	S	S	S
Winding		LS	LS	LS	HS	LS	HS	LS	LV	HS	HV
Nominal voltage	[V AC]	360	360	360	565	360	565	360	360	565	565
Nominal current	[A]	0.83	0.63	0.83	0.49	1.19	0.80	2.20	2.64	1.29	1.60
Peak current	[A]	3.3	3.3	4.30	2.70	5	4.90	5	11	5.90	7.50
Nominal power	[W]	135	232	261	246	461	470	866	945	794	992
Nominal torque	[Nm]	0.14	0.22	0.34	0.31	0.67	0.68	1.43	1.37	1.31	1.28
Peak torque	[Nm]	0.5	1	1.65	1.62	2.7	3.8	3.10	5	5.17	5.17
Standstill torque	[Nm]	0.16	0.26	0.49	0.46	0.97	0.99	1.64	1.64	1.50	1.62
Nominal rotational speed	[rpm]	9000	10,300	7400	7600	6600	6600	5300	6600	5800	7400
Max. rotational speed	[rpm]	23,040	11,520	9800	9840	7330	7750	6450	8070	6460	8200
Brake											
Operating voltage	[V DC]	24 +6 ... -10%									
Holding torque	[Nm]	0.4			0.8			2			

Flange size		70				100			
Length		M	M	M	M	S	M	L	L
Winding		LS	LV	HS	HV	HS	HS	HS	HV
Nominal voltage	[V AC]	360	360	565	565	565	565	565	565
Nominal current	[A]	2.60	3.02	1.70	1.84	3.30	3.40	3.80	3.79
Peak current	[A]	10	12.50	7.40	8.30	15	15	24.80	24.80
Nominal power	[W]	1061	1100	1044	1146	1560	2000	2360	2240
Nominal torque	[Nm]	2.29	2.28	2.26	2.19	3.24	5.63	7.51	6.29
Peak torque	[Nm]	7.75	8.30	8.55	8.55	12.50	22.10	39.80	35.40
Standstill torque	[Nm]	2.56	2.57	2.53	2.52	4.71	8.01	10.94	10.93
Nominal rotational speed	[rpm]	4100	4600	4400	5000	4600	3400	3000	3400
Max. rotational speed	[rpm]	4880	5570	4960	5560	6680	4030	3360	4040
Brake									
Operating voltage	[V DC]	24 +6 ... -10%							
Holding torque	[Nm]	2				9			

Servo motors >

Servo motors EMMS-AS

Data sheet

Flange size		140				190	
Length		S	S	L	L	S	M
Winding		HS	HV	HS	HV	HS	HS
Nominal voltage	[V AC]	565	565	565	565	565	565
Nominal current	[A]	4.40	5.23	7.80	9.96	14.43	14.24
Peak current	[A]	15	24.40	20	51.50	77.20	88.20
Nominal power	[W]	2600	3140	4420	5110	5490	6880
Nominal torque	[Nm]	9.55	7.70	21.12	17.41	17.47	22.63
Peak torque	[Nm]	25.60	27	48.80	67.50	80	120
Standstill torque	[Nm]	11.20	11.08	25.60	25.50	26.20	38.77
Nominal rotational speed	[rpm]	2600	3900	2000	2800	3000	2900
Max. rotational speed	[rpm]	3060	4510	2460	3830	5300	4060
Brake							
Operating voltage	[V DC]	24 +6 ... -10%					
Holding torque	[Nm]	18				30	

Operating conditions		Encoder	Resolver
Ambient temperature	[°C]	-10 ... +40 (up to 100°C with derating)	-40 ... +40 (up to 130°C with derating)
Degree of protection			
Motor shaft		IP54	
Motor housing incl. connection technology		IP65	
With shaft sealing ring		IP65	
Insulation class		F	
Rating class to EN 60034-1		S1	
Thermal class to EN 60034-1		F	

Technical data – Encoder			
Type		EMMS-AS-...-...S... Absolute, single turn	EMMS-AS-...-...M... Absolute, multi-turn
Operating voltage	[V DC]	5	
Protocol		EnDat 2.1, digital channel only, max. cycle rate (CLOCK) 2 MHz	
Position values per revolution		262 144	
Resolution		18 bit	
		-	4096 revolutions, 12 bits

Technical data – Resolver			
Version		Transmitter	
Input voltage	[V DC]	4	
Input current	[mA]	50	
Number of poles		2	
Carrier frequency	[kHz]	3.4 ... 8.0	

05

Motors and controllers

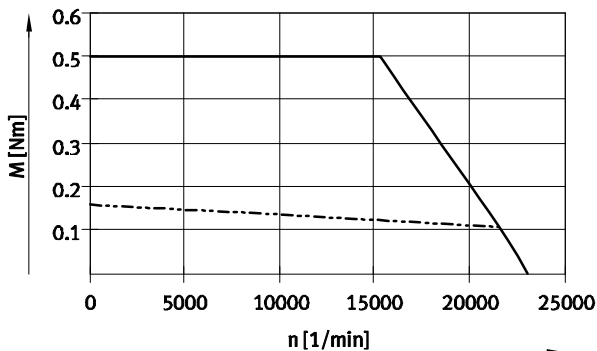
Data sheet

Torque M as a function of rotational speed n

Flange size 40

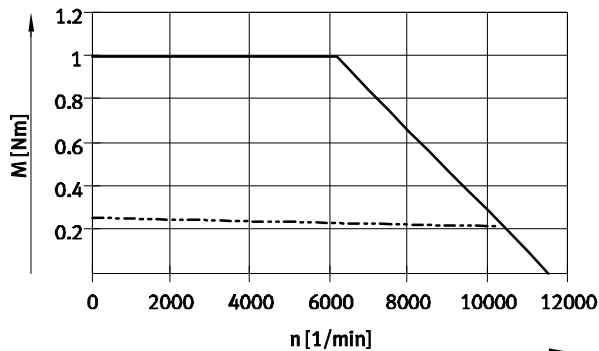
Length S

Winding LS



Length M

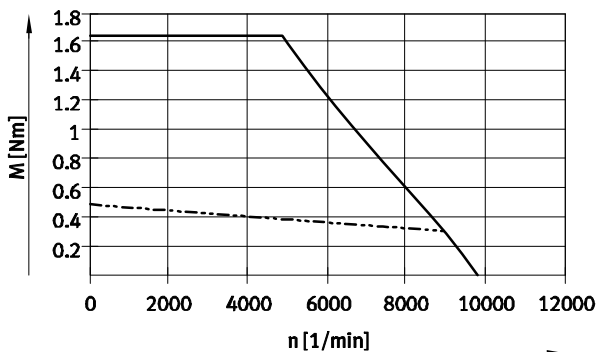
Winding LS



Flange size 55

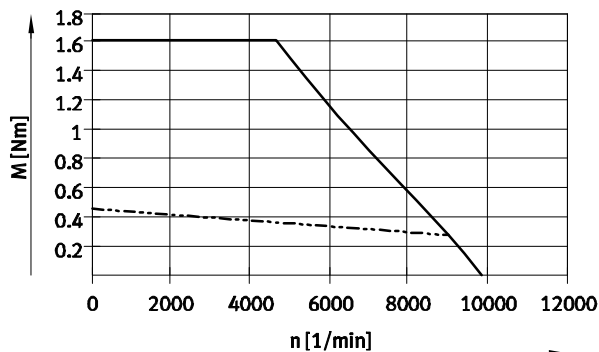
Length S

Winding LS



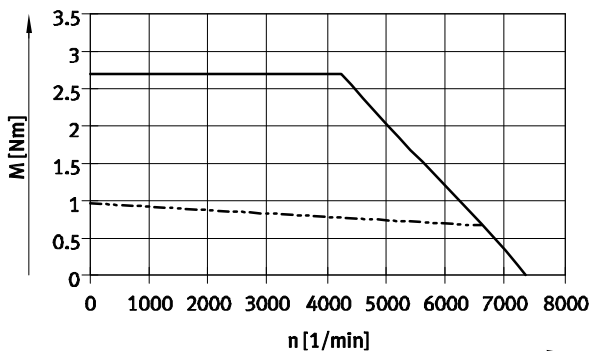
Length S

Winding HS



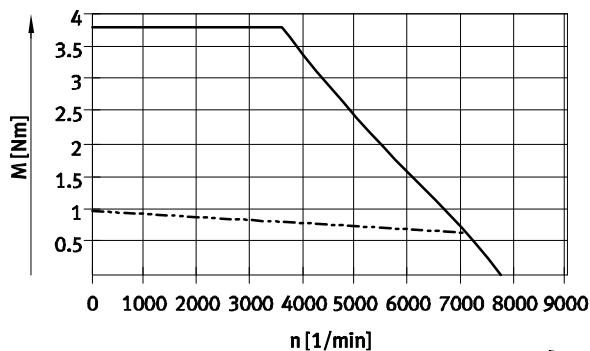
Length M

Winding LS



Length M

Winding HS



— Peak torque
- - - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

05
Motors and controllers

Servo motors >

Servo motors EMMS-AS

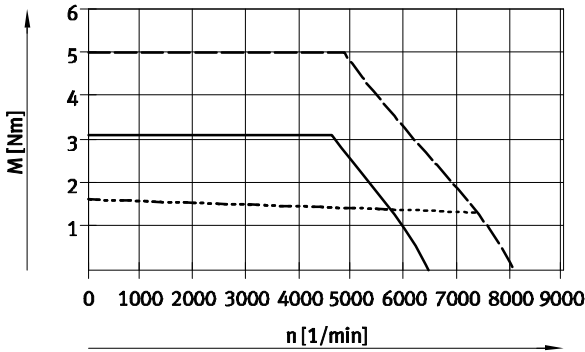
Data sheet

Torque M as a function of rotational speed n

Flange size 70

Length S

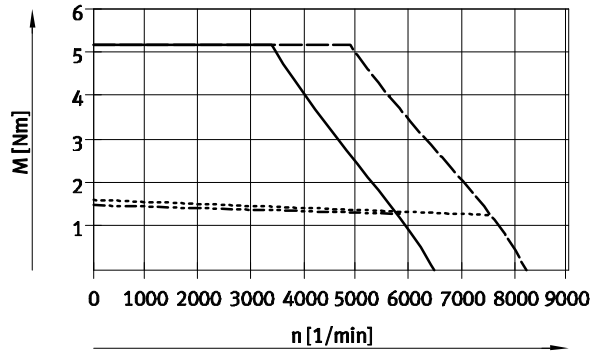
Winding LS, LV



- Peak torque EMMS-AS-...-LS
- - - - - Nominal torque EMMS-AS-...-LS
- · - · - Peak torque EMMS-AS-...-LV
- · · · · Nominal torque EMMS-AS-...-LV

Length S

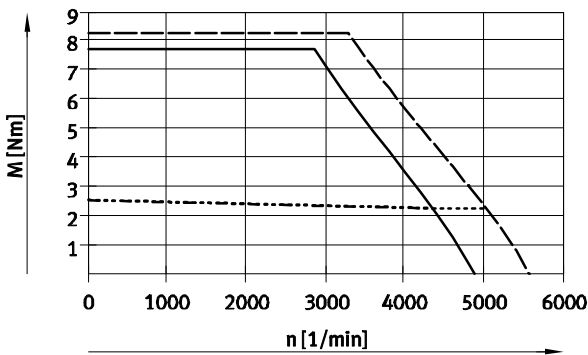
Winding HS, HV



- Peak torque EMMS-AS-...-HS
- - - - - Nominal torque EMMS-AS-...-HS
- · - · - Peak torque EMMS-AS-...-HV
- · · · · Nominal torque EMMS-AS-...-HV

Length M

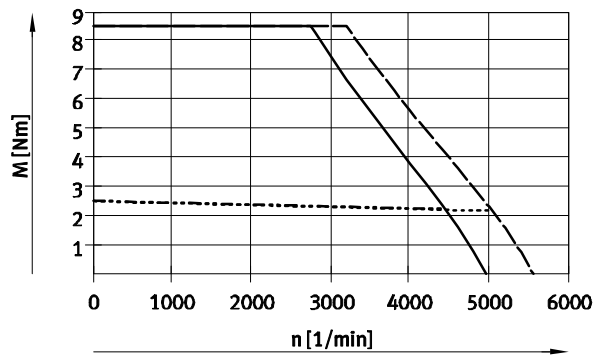
Winding LS, LV



- Peak torque EMMS-AS-...-LS
- - - - - Nominal torque EMMS-AS-...-LS
- · - · - Peak torque EMMS-AS-...-LV
- · · · · Nominal torque EMMS-AS-...-LV

Length M

Winding HS, HV



- Peak torque EMMS-AS-...-HS
- - - - - Nominal torque EMMS-AS-...-HS
- · - · - Peak torque EMMS-AS-...-HV
- · · · · Nominal torque EMMS-AS-...-HV

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

Motors and controllers

05

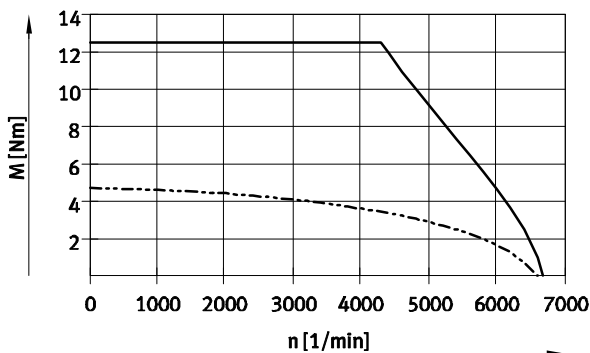
Data sheet

Torque M as a function of rotational speed n

Flange size 100

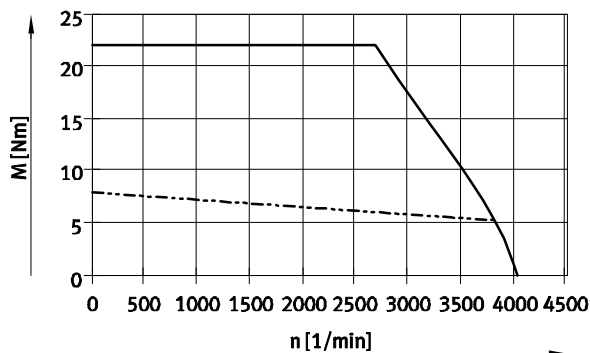
Length S

Winding HS



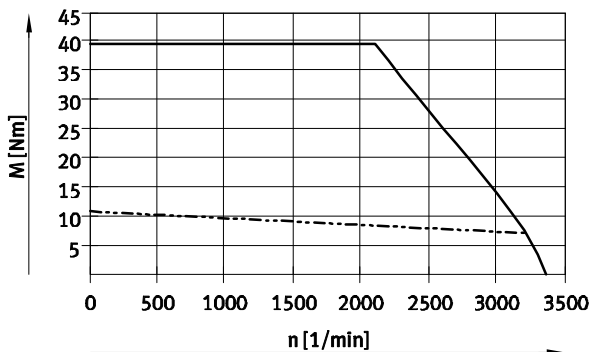
Length M

Winding HS



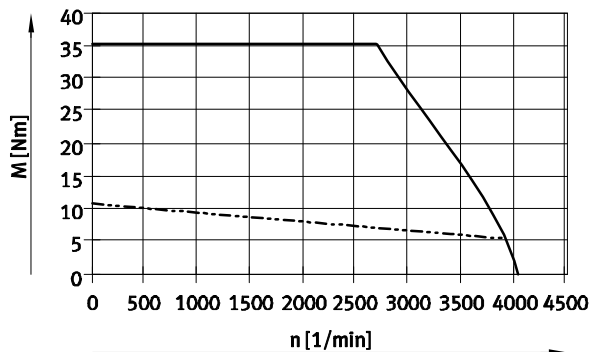
Length L

Winding HS



Length L

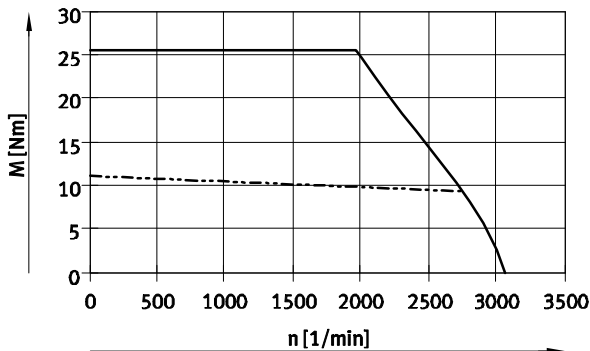
Winding HV



Flange size 140

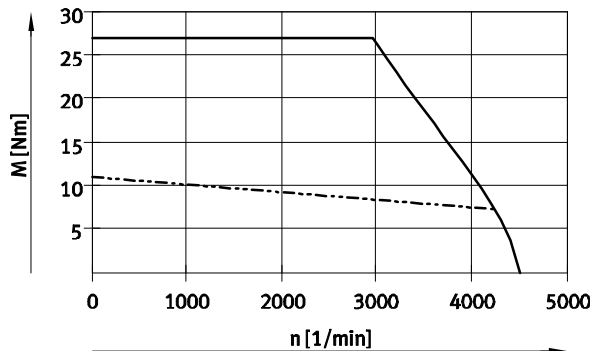
Length S

Winding HS



Length S

Winding HV



— Peak torque
 - - - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

Servo motors >

Servo motors EMMS-AS

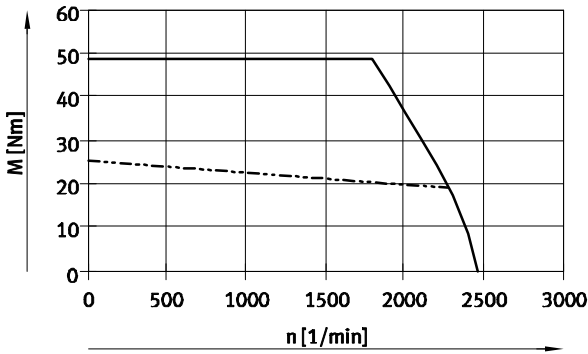
Data sheet

Torque M as a function of rotational speed n

Flange size 140

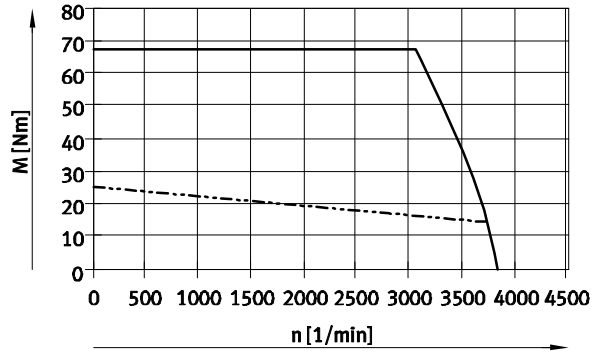
Length L

Winding HS



Length L

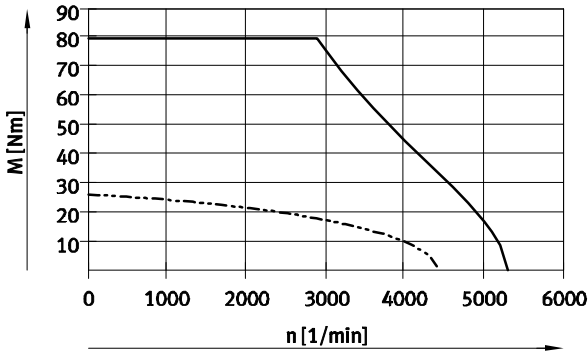
Winding HV



Flange size 190

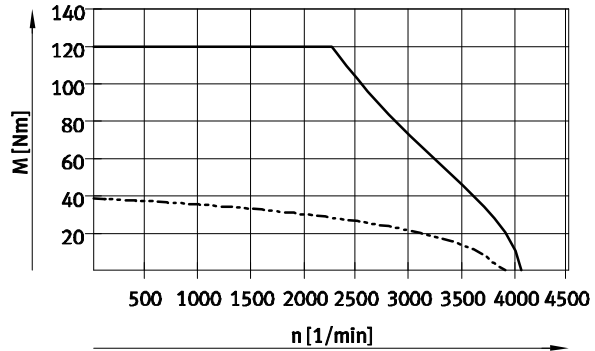
Length S

Winding HS



Length M

Winding HS



— Peak torque
 - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

05

Motors and controllers

Order code – Flange size 40

		EMMS	–	AS	–	40	–		–	LS	–	
Type												
EMMS	Motor											
Motor type												
AS	Servo motor											
Motor flange size												
40	40 mm											
Length												
S	Short											
M	Medium											
Output shaft												
–	Smooth shaft											
K	Shaft to DIN 6885 (with feather key)											
Winding												
LS	Low voltage, standard											
Electrical connection												
S	Straight plug											
T	Terminal box											
Measuring unit												
S	Absolute encoder, single turn		[1]									
M	Absolute encoder, multi-turn		[1]									
R	Resolver		[2]									
Brake												
–	None											
B	With brake											

[1] Only with electrical connection T.

[2] Only with electrical connection S.

Order example:

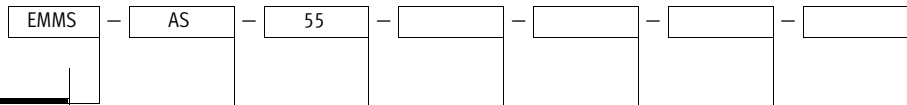
EMMS-AS-40-M-LS-TSB

Motor EMMS - servo motor - flange size 40 - length: medium - output shaft: smooth shaft - winding: low voltage, standard - electrical connection: terminal box - measuring unit: absolute encoder, single turn - with brake

Servo motors >

Servo motors EMMS-AS

Order code – Flange size 55



Type

EMMS	Motor
------	-------

Motor type

AS	Servo motor
----	-------------

Motor flange size

55	55 mm
----	-------

Length

S	Short
M	Medium

Output shaft

-	Smooth shaft
K	Shaft to DIN 6885 (with feather key)

Winding

LS	Low voltage, standard
HS	High voltage, standard

Electrical connection

R	Push-in L-connector, rotatable
T	Terminal box

Measuring unit

S	Absolute encoder, single turn	1
M	Absolute encoder, multi-turn	1
R	Resolver	2

Brake

-	None
B	With brake

Degree of protection

-	Standard
S1	IP65 (with rotary shaft seal)

1 Only with electrical connection T.

2 Only with electrical connection R.

Order example:

EMMS-AS-55-M-LS-TSB

Motor EMMS - servo motor - flange size 55 - length: medium - output shaft: smooth shaft - winding: low voltage, standard - electrical connection: terminal box - measuring unit: absolute encoder, single turn - with brake

05

Motors and controllers

Order code – Flange size 70

		EMMS	–	AS	–	70	–		–		–		–	
Type														
EMMS	Motor													
Motor type														
AS	Servo motor													
Motor flange size														
70	70 mm													
Length														
S	Short													
M	Medium													
Output shaft														
–	Smooth shaft													
K	Shaft to DIN 6885 (with feather key)													
Winding														
LS	Low voltage, standard													
LV	Low voltage, speed-optimised													
HS	High voltage, standard													
HV	High voltage, speed-optimised													
Electrical connection														
R	Push-in L-connector, rotatable													
Measuring unit														
S	Absolute encoder, single turn													
M	Absolute encoder, multi-turn													
R	Resolver													
Brake														
–	None													
B	With brake													
Degree of protection														
–	Standard													
S1	IP65 (with rotary shaft seal)													

Order example:

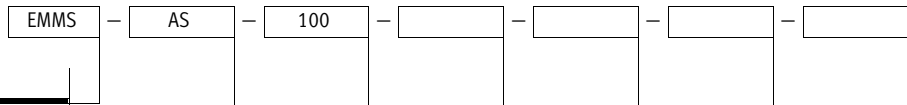
EMMS-AS-70-M-LS-RSB

Motor EMMS - servo motor - flange size 70 - length: medium - output shaft: smooth shaft - winding: low voltage, standard - electrical connection: push-in L-connector, rotatable - measuring unit: absolute encoder, single turn - with brake - degree of protection: standard

Servo motors >

Servo motors EMMS-AS

Order code – Flange size 100



Type

EMMS	Motor
------	-------

Motor type

AS	Servo motor
----	-------------

Motor flange size

100	100 mm
-----	--------

Length

S	Short
M	Medium
L	Long

Output shaft

-	Smooth shaft
K	Shaft to DIN 6885 (with feather key)

Winding

HS	High voltage, standard
HV	High voltage, speed-optimised 1

Electrical connection

R	Push-in L-connector, rotatable
---	--------------------------------

Measuring unit

S	Absolute encoder, single turn
M	Absolute encoder, multi-turn
R	Resolver

Brake

-	None
B	With brake

Degree of protection

-	Standard
S1	IP65 (with rotary shaft seal)

05

Motors and controllers

1 Only with length L.

Order example:

EMMS-AS-100-M-HS-RSB

Motor EMMS - servo motor - flange size 100 - length: medium - output shaft: smooth shaft - winding: high voltage, standard - electrical connection: push-in L-connector, rotatable - measuring unit: absolute encoder, single turn - with brake - degree of protection: standard

Order code – Flange size 140

		EMMS	–	AS	–	140	–		–		–		–		
Type		EMMS	Motor												
Motor type		AS	Servo motor												
Motor flange size		140	140 mm												
Length		S	Short												
		L	Long												
Output shaft		–	Smooth shaft												
		K	Shaft to DIN 6885 (with feather key)												
Winding		HS	High voltage, standard												
		HV	High voltage, speed-optimised												
Electrical connection		R	Push-in L-connector, rotatable												
Measuring unit		S	Absolute encoder, single turn												
		M	Absolute encoder, multi-turn												
		R	Resolver												
Brake		–	None												
		B	With brake												
Degree of protection		–	Standard												
		S1	IP65 (with rotary shaft seal)												

Order example:

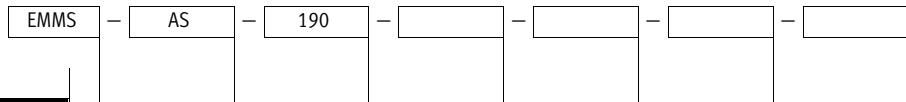
EMMS-AS-140-L-HS-RSB

Motor EMMS - servo motor - flange size 140 - length: long - output shaft: smooth shaft - winding: high voltage, standard - electrical connection: push-in L-connector, rotatable - measuring unit: absolute encoder, single turn - with brake - degree of protection: standard

Servo motors >

Servo motors EMMS-AS

Order code – Flange size 190



Type

EMMS	Motor
------	-------

Motor type

AS	Servo motor
----	-------------

Motor flange size

190	190 mm
-----	--------

Length

S	Short
M	Medium

Output shaft

-	Smooth shaft
K	Shaft to DIN 6885 (with feather key)

Winding

HS	High voltage, standard
----	------------------------

Electrical connection

A	Push-in L-connector
---	---------------------

Measuring unit

S	Absolute encoder, single turn
M	Absolute encoder, multi-turn
R	Resolver

Brake

-	None
B	With brake

Degree of protection

-	Standard
S1	IP65 (with rotary shaft seal)

05

Motors and controllers

Order example:

EMMS-AS-190-M-HS-ASB

Motor EMMS - servo motor - flange size 190 - length: medium - output shaft: smooth shaft - winding: high voltage, standard - electrical connection: push-in L-connector - measuring unit: absolute encoder, single turn - with brake - degree of protection: standard

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

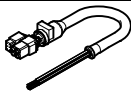

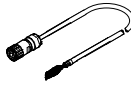
762

→ www.festo.com/catalogue/...

★ Generally ready for shipping ex works in 24 hours

Subject to change – 2018/11

Accessories – Ordering data

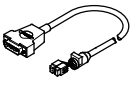
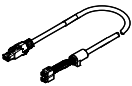
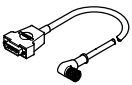
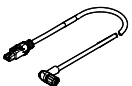
Motor cable		Part no.	Type	
	Cable length [m]			
	For EMMS-AS-40/55 with encoder with CMMP-AS (cable cross section output: 0.75 mm²)			
	5.0	550306	NEBM-T1G8-E-5-Q7N-LE8	
	10.0	550307	NEBM-T1G8-E-10-Q7N-LE8	
	15.0	550308	NEBM-T1G8-E-15-Q7N-LE8	
	X length ¹⁾	550309	NEBM-T1G8-E-...-Q7N-LE8	
	For EMMS-AS-40/55 with encoder with CMMT-AS (cable cross section output: 0.75 mm²)			
	5.0	8085948	NEBM-T1G8-E-5-Q7N-LE8-1	
	10.0	8085949	NEBM-T1G8-E-10-Q7N-LE8-1	
	15.0	8085950	NEBM-T1G8-E-15-Q7N-LE8-1	
X length ¹⁾	8085951	NEBM-T1G8-E-...-Q7N-LE8-1		
	For EMMS-AS-40/55 with resolver and EMMS-AS-70/100/140 with CMMP-AS (cable cross section output: 1.5 mm²)			
	5.0	550310	NEBM-M23G8-E-5-Q9N-LE8	
	10.0	550311	NEBM-M23G8-E-10-Q9N-LE8	
	15.0	550312	NEBM-M23G8-E-15-Q9N-LE8	
	X length ¹⁾	550313	NEBM-M23G8-E-...-Q9N-LE8	
	For EMMS-AS-70/100/140 with CMMT-AS (cable cross section output: 1.5 mm²)			
	5.0	5391141	NEBM-M23G8-E-5-Q9N-LE8-1	
	10.0	5391144	NEBM-M23G8-E-10-Q9N-LE8-1	
	15.0	5391139	NEBM-M23G8-E-15-Q9N-LE8-1	
	X length ¹⁾	5391145	NEBM-M23G8-E-...-Q9N-LE8-1	
	For EMMS-AS-190 with CMMP-AS (cable cross section output: 2.5 mm²)			
	5.0	1750241	NEBM-M40G8-E-5-Q10N-LE8	
	10.0	1750242	NEBM-M40G8-E-10-Q10N-LE8	
	15.0	1750243	NEBM-M40G8-E-15-Q10N-LE8	
	X length ¹⁾	1750244	NEBM-M40G8-E-...-Q10N-LE8	
	For EMMS-AS-190 with CMMT-AS (cable cross section output: 2.5 mm²)			
	5.0	8085961	NEBM-M40G8-E-5-Q10N-LE8-1	
	10.0	8085960	NEBM-M40G8-E-10-Q10N-LE8-1	
	15.0	8085962	NEBM-M40G8-E-15-Q10N-LE8-1	
	X length ¹⁾	8085959	NEBM-M40G8-E-...-Q10N-LE8-1	

1) Choice of cable lengths: 0.5 ... 99.9 m, in 0.1 m increments. Cable lengths >25 m possible following technical clarification. In the case of motors with holding brake, the maximum cable length is 50 m.

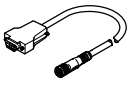
Servo motors >

Servo motors EMMS-AS

Accessories – Ordering data

Encoder cable		Part no.	Type
	Cable length [m]		
	For EMMS-AS-40/55 with CMMP-AS		
	5.0	550314	NEBM-T1G8-E-5-N-S1G15
	10.0	550315	NEBM-T1G8-E-10-N-S1G15
	15.0	550316	NEBM-T1G8-E-15-N-S1G15
	X length ¹⁾	550317	NEBM-T1G8-E-...-N-S1G15
	For EMMS-AS-40/55 with CMMT-AS		
	5.0	8085944	NEBM-T1G8-E-5-N-R3G8
	10.0	8085945	NEBM-T1G8-E-10-N-R3G8
	15.0	8085946	NEBM-T1G8-E-15-N-R3G8
	X length ¹⁾	8085947	NEBM-T1G8-E-...-N-R3G8
	For EMMS-AS-70/100/140/190 with CMMP-AS		
	5.0	550318	NEBM-M12W8-E-5-N-S1G15
	10.0	550319	NEBM-M12W8-E-10-N-S1G15
	15.0	550320	NEBM-M12W8-E-15-N-S1G15
	X length ¹⁾	550321	NEBM-M12W8-E-...-N-S1G15
	For EMMS-AS-70/100/140/190 with CMMT-AS		
	5.0	5213423	NEBM-M12W8-E-5-N-R3G8
	10.0	5213425	NEBM-M12W8-E-10-N-R3G8
	15.0	5213426	NEBM-M12W8-E-15-N-R3G8
	X length ¹⁾	5213428	NEBM-M12W8-E-...-N-R3G8

1) Choice of cable lengths: 0.5 ... 99.9 m, in 0.1 m increments. Cable lengths >25 m possible following technical clarification. In the case of motors with holding brake, the maximum cable length is 50 m.

Resolver cable only for CMMP-AS		Part no.	Type
	Cable length [m]		
	For EMMS-AS-40/55/70/100/140/190		
	5.0	1732653	NEBM-M23G12-E-5-N-S1G9
	10.0	1732654	NEBM-M23G12-E-10-N-S1G9
	15.0	1732655	NEBM-M23G12-E-15-N-S1G9
	X length ¹⁾	1732656	NEBM-M23G12-E-...-N-S1G9

1) Choice of cable lengths: 0.5 ... 99.9 m, in 0.1 m increments. Cable lengths >25 m possible following technical clarification. In the case of motors with holding brake, the maximum cable length is 50 m.

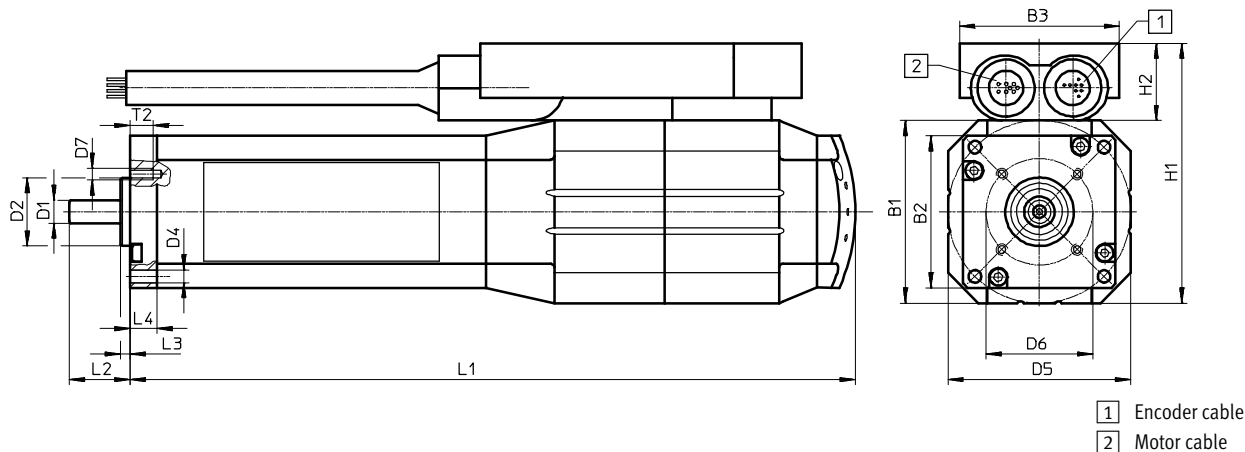
05

Motors and controllers

Dimensions

Download CAD data → www.festo.com

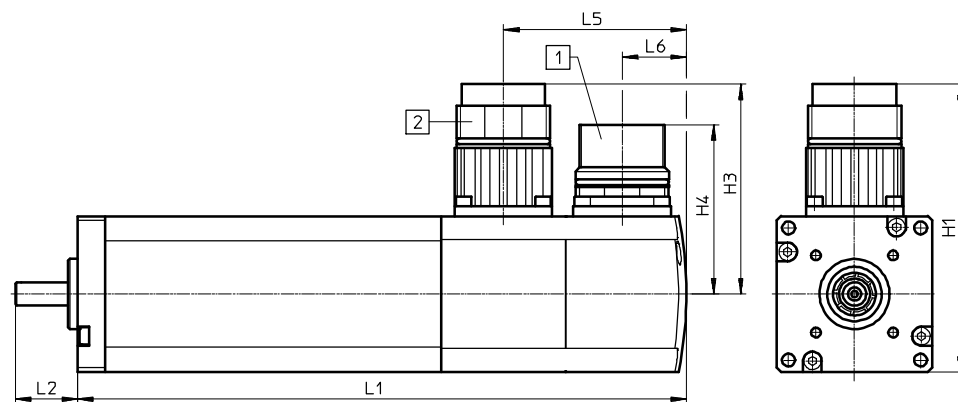
Flange size 40 – With encoder



Length	B1	B2	B3	D1 ∅ +0.009/-0.001	D2 ∅ +0.012/-0.006	D4 ∅	D5 ∅	D6 ∅
S	48	40	42	6	18	3.3	48	28
M								

Length	D7	H1	H2	L1	L2	L3 -0.1	L4	T2
S	M3	68.3	20.3	170.5	16	2.5	7	6
M				190.5				

Flange size 40 – With resolver



Note
Dimensions of the shaft and mounting holes → drawing above

Length	H1	H3	H4	L1		L2	L5		L6
					With brake			With brake	
S	74	54	44	134.9	136.4	16	46.5	48	17
M				154.9	156.4				

05 Motors and controllers

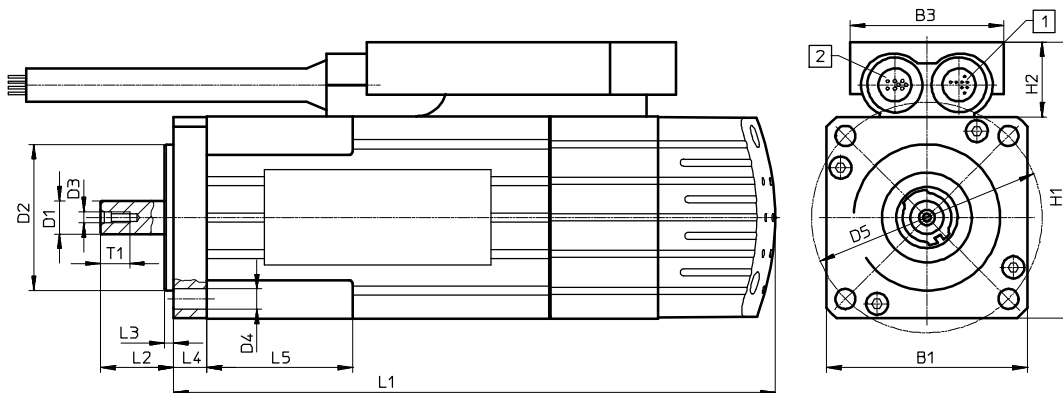
Servo motors >

Servo motors EMMS-AS

Dimensions

Download CAD data → www.festo.com

Flange size 55 – With encoder

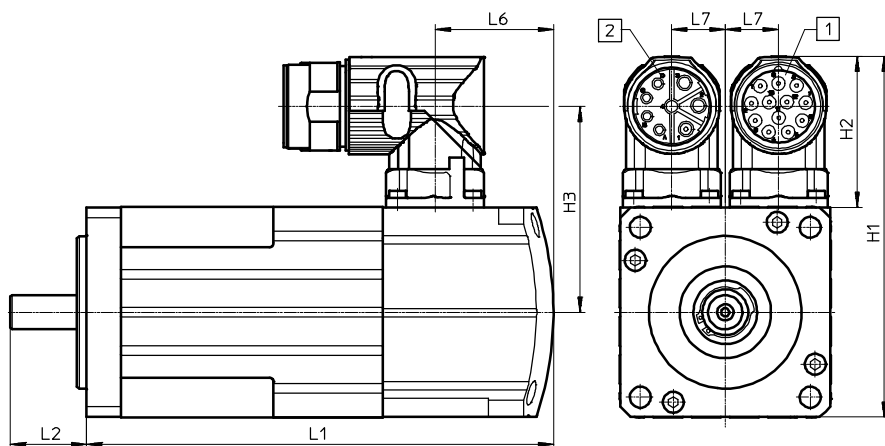


- 1 Encoder cable
- 2 Motor cable

Length	B1	B3	D1 ∅ +0.01/-0.001	D2 ∅ +0.11/-0.005	D3	D4 ∅	D5 ∅
S	55	42	9	40	M2.5	5.5	63
M							

Length	H1	H2	L1	L2	L3 ±0.05	L4	L5	T1
S			139.4					
M	76	20.5	164.4	20	2.5	9	40	8

Flange size 55 – With resolver



Note
Dimensions of the shaft and mounting holes → drawing above

- 1 Resolver connection
- 2 Motor connection

Length	H1	H2	H3	L1		L2	L6		L7
					With brake			With brake	
S				122.4	139.4				
M	94.7	39.7	54	147.4	164.4	20	31	48	14

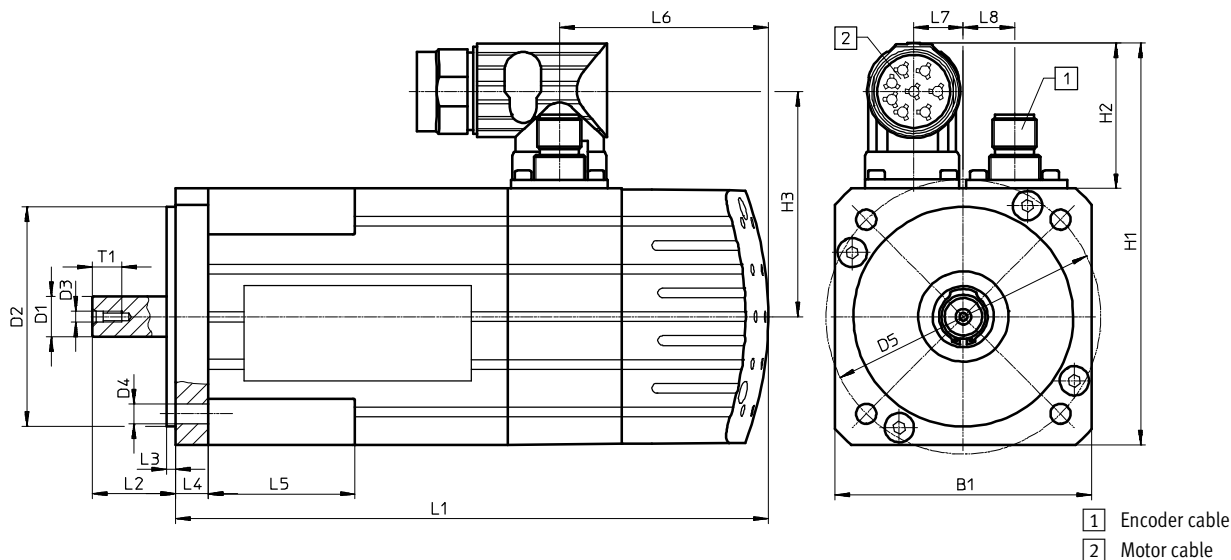
05

Motors and controllers

Dimensions

Download CAD data → www.festo.com

Flange size 70, 100, 140, 190 – With encoder



Length	B1	D1 ∅	D2 ∅	D3	D4 ∅	D5 ∅	H1	H2	H3
Flange size 70									
S	70	11+0.012/+0.001	60+0.012/-0.007	M2.5	5.5	75	109.7	39.7	61.5
M									
Flange size 100									
S	100.5	19+0.015/+0.002	95+0.013/-0.009	M4	9.2	115	140	39.7	77
M									
L									
Flange size 140									
S	140.5	24+0.015/-0.002	130+0.018/-0.007	M4	11.3	165	181	39.7	97.7
L									
Flange size 190									
S	190	32+0.018/+0.002	180+0.14/-0.011	M4	13.7	215	251	61	136
M									

Length	L1	L2	L3	L4	L5	L6	L7	L8	T1
Flange size 70									
S	161.8	22.7	2.5 _{-0.1}	9	40	57	14	14	8
M	187.3								
Flange size 100									
S	192.3	40	3	9.8	-	58.9	19	19	16
M	243.3								
L	294.3								
Flange size 140									
S	209	50	3.5	12.2	-	58.6	33.5	33.5	16
L	285.5								
Flange size 190									
S	262	60	4 _{-0.1}	11	-	81	25	33	16
M	300								

05 Motors and controllers

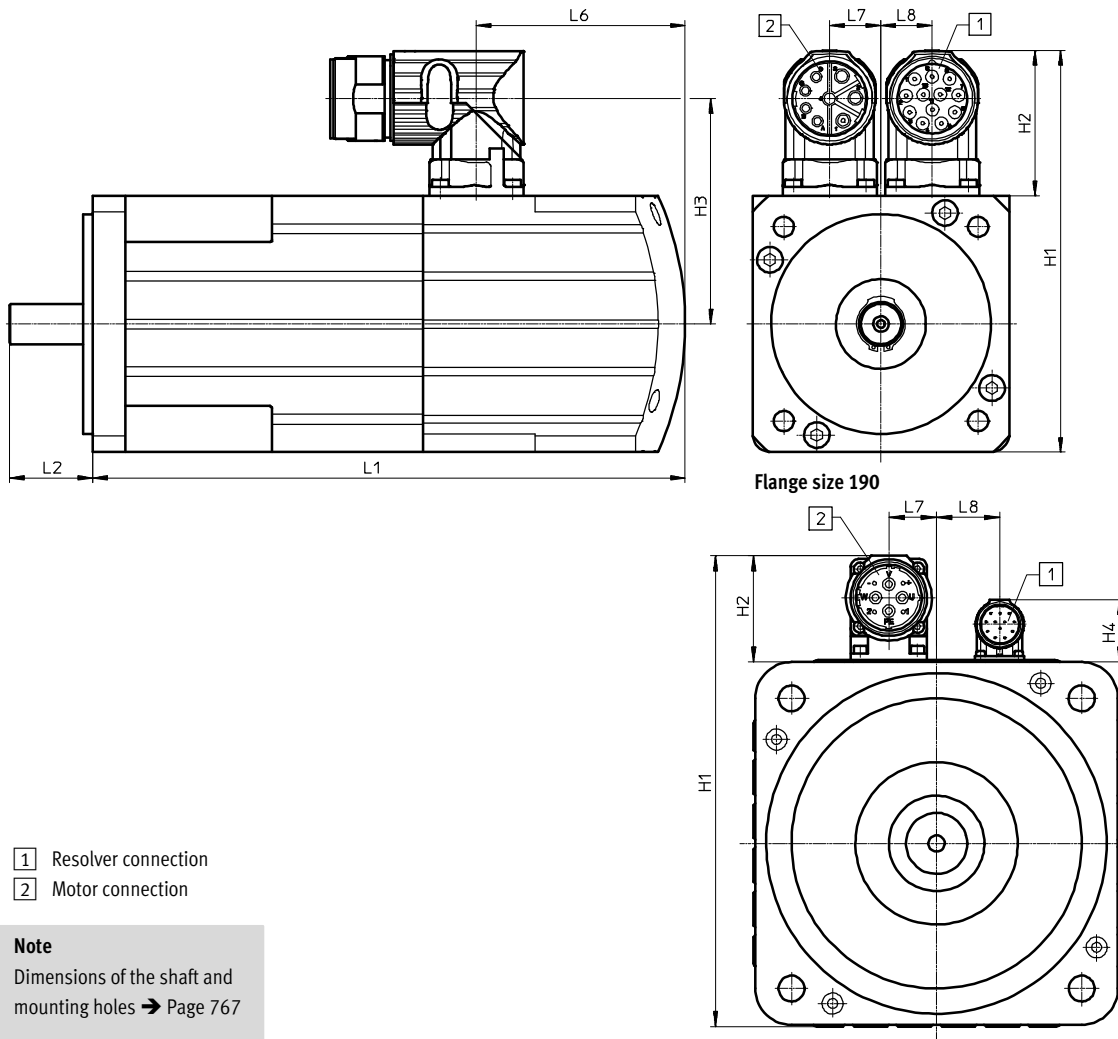
Servo motors >

Servo motors EMMS-AS

Dimensions

Download CAD data → www.festo.com

Flange size 70, 100, 140, 190 – With resolver



- 1 Resolver connection
- 2 Motor connection

Note
Dimensions of the shaft and mounting holes → Page 767

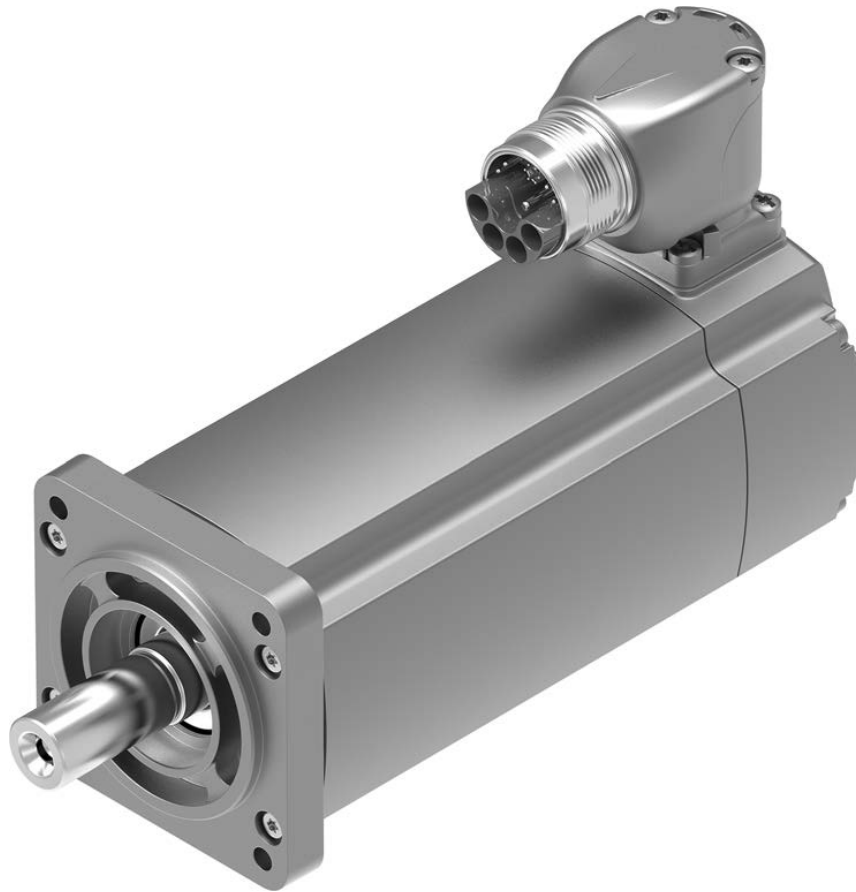
Length	H1	H2	H3	H4	L1		L2	L6		L7	L8
					With brake			With brake			
Flange size 70											
S	109.7	39.7	61.5	-	139.8	161.8	22.7	35	57	14	14
M					165.3	187.3					
Flange size 100											
S	140.2	39.7	76.8	-	171.1	192.1	40	37.8	58.9	19	19
M					222.1	243.1					
L					273.1	294.1					
Flange size 140											
S	180.2	39.7	96.8	-	194.6	209	50	44.2	58.6	33.5	33.5
L					271.1	285.5					
Flange size 190											
S	244	54	128.8	33	225	262	60	44	81	25	33
M					263	300					

Note
Only motors without feather key may be used in combination with parallel and axial kits (EAMM-U/EAMM-A).

05

Motors and controllers

New New series



Dynamic and efficient

- + Optimised torque, optimised rotational speed
- + Wear-free and maintenance-free synchronous motor for a long service life
- + High efficiency ensures economical operation

Servo motors >

Servo motors

EMMT-AS

Servo motors >

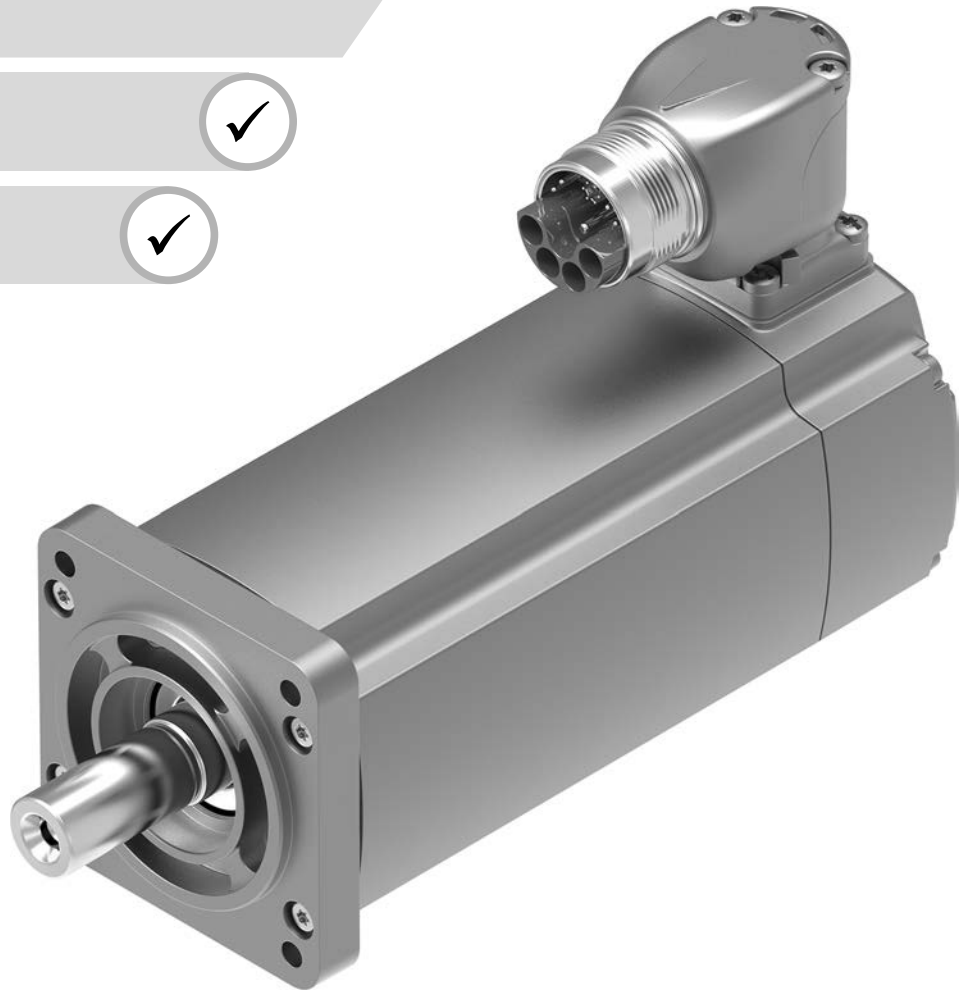
Servo motors

EMMT-AS

 Overview, configuration and ordering
→ www.festo.com/catalogue/emmt-as



 Additional information, support and user documentation
→ www.festo.com/sp/emmt-as



- + Dynamic, brushless, permanently excited synchronous servo motors
- + Extremely low resting torque – supports high synchronisation even at low rotational speeds
- + Simple connection technology (OCP: one cable plug) – one connecting cable for supply and encoder

NEW

Servo motors >

Servo motors EMMT-AS

Product range overview

Motor flange size	Nominal voltage [V AC]	Nominal torque [Nm]	Product options											
			S	M	L	K	R	LS	HS	R	S	M	B	
60	325, 565	0.64 ... 1.4	■	■	■	■	■	■	■	■	■	■	■	■

Product options

S	Short length	K	Shaft to DIN 6885 (with feather key)	LS	Low-voltage, standard	S	Absolute encoder, single turn
M	Medium length	R	With standard shaft seal	HS	High-voltage, standard	M	Absolute encoder, multi-turn
L	Long length			R	Push-in L-connector, rotatable	B	Brake

Data sheet



Technical data		Dimensions → Page 776					
Motor flange size		60					
Length		S		M		L	
Winding		LS		HS		LS	
Nominal voltage	[V DC]	325	565	325	565	325	565
Nominal current ¹⁾	[A]	1.6	1.6	2.4	2.4	3.2	3.2
Peak current ¹⁾	[A]	5.4	5.4	11.0	11.0	18.3	18.3
Nominal power ¹⁾	[W]	200	200	350	350	440	440
Nominal torque ¹⁾	[Nm]	0.64	0.64	1.1	1.1	1.4	1.4
Peak torque	[Nm]	1.6	1.6	3.4	3.4	5.6	5.6
Standstill torque ¹⁾	[Nm]	0.7	0.7	1.24	1.24	1.66	1.66
Nominal rotational speed	[rpm]	3000					
Max. rotational speed	[rpm]	7100	12,500	6800	11,800	6800	11,900
Brake							
Operating voltage	[V DC]	24 (+6 ... -10%)					
Holding torque	[Nm]	2.5					

1) Without brake

Operating conditions	
Ambient temperature	[°C] -15 ... +40 (up to 80°C with derating of -1.5% per degree Celsius)
Degree of protection	
Motor shaft	IP40
Motor housing incl. connection technology	IP67
With rotary shaft seal	IP67
Rating class to EN 60034-1	S1
Thermal class to EN 60034-1	F

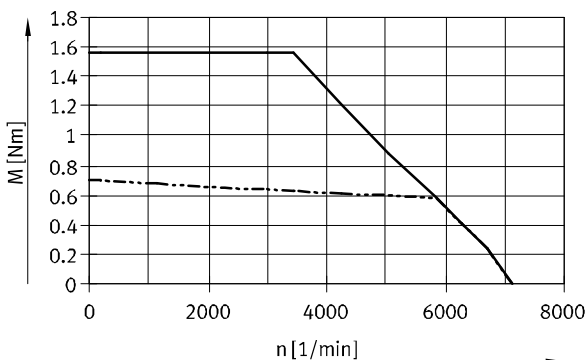
Technical data – Encoder	
Measuring unit	Absolute, single turn Absolute, multi-turn
Operating voltage	[V DC] 5
Protocol	EnDat 2.2, digital channel only, max. cycle rate (CLOCK) ≤16 MHz
Position values per revolution	262144 524288
Resolution	18 bit 19 bit
	- 4096 revolutions, 12 bits

Data sheet

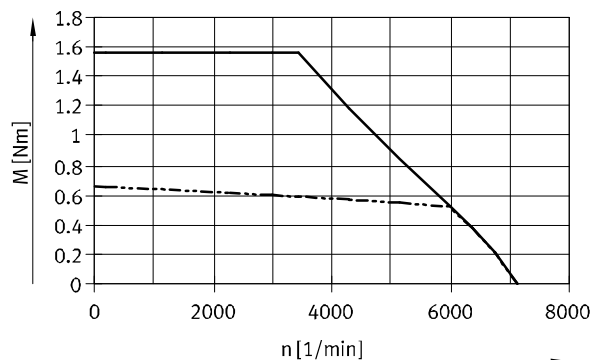
Torque M as a function of rotational speed n

Length S

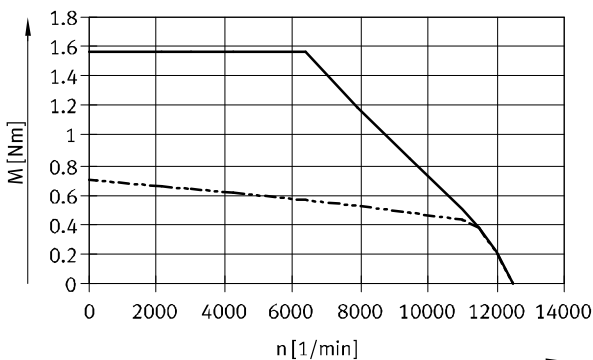
Winding LS (without brake)



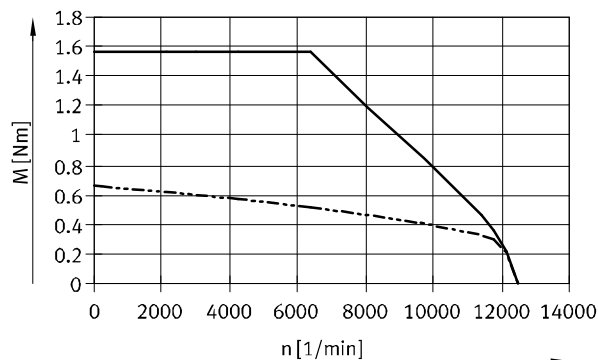
Winding LS-B (with brake)



Winding HS (without brake)

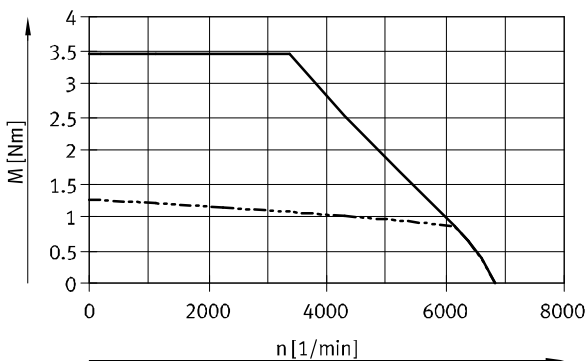


Winding HS-B (with brake)

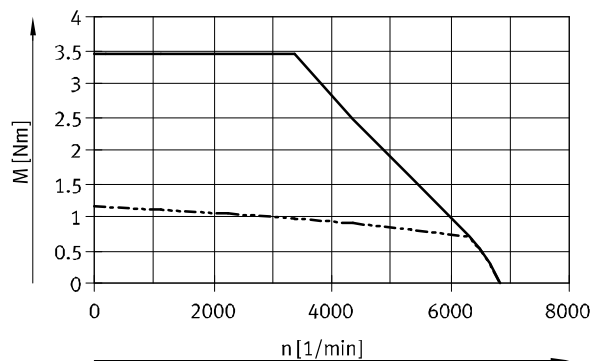


Length M

Winding LS (without brake)



Winding LS-B (with brake)



— Peak torque
 - - - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

Note the maximum permissible rotational speeds of add-on and installation components (such as brake, encoder, etc.).

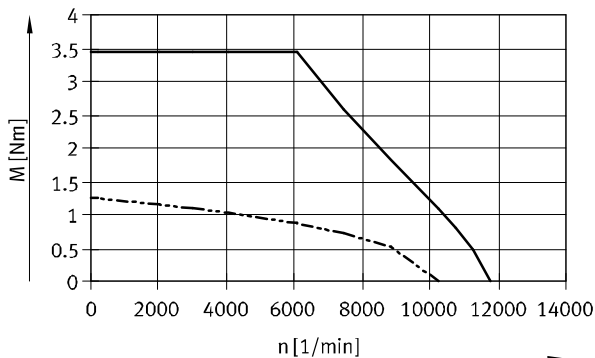
NEW

Data sheet

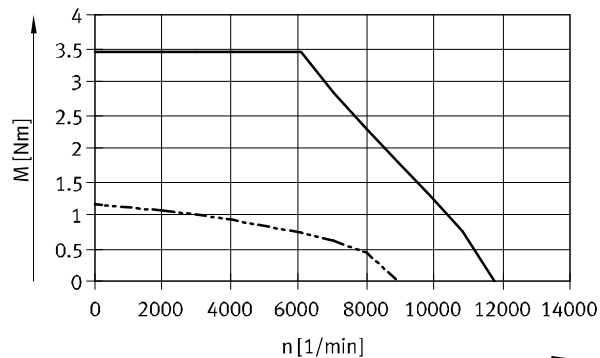
Torque M as a function of rotational speed n

Length M

Winding HS (without brake)

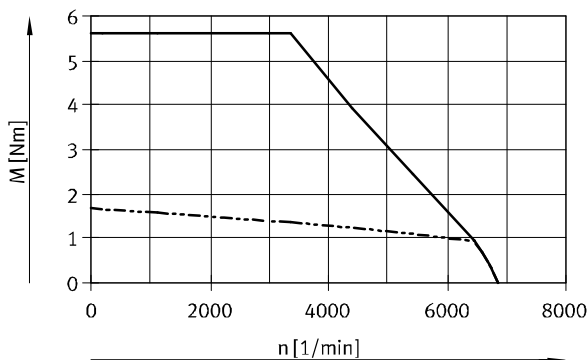


Winding HS-B (with brake)

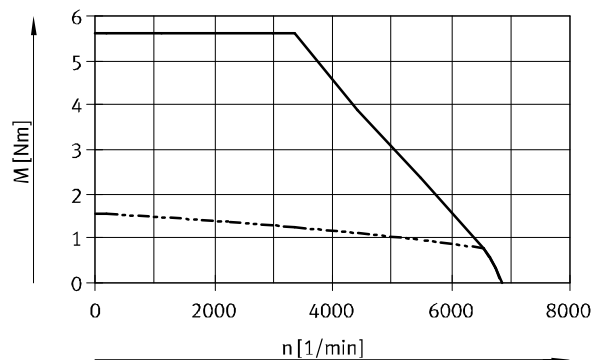


Length L

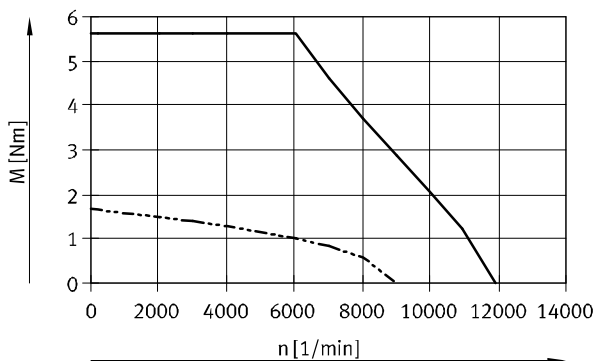
Winding LS (without brake)



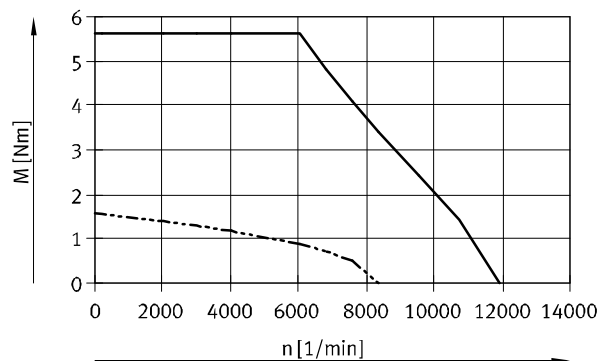
Winding LS-B (with brake)



Winding HS (without brake)



Winding HS-B (with brake)



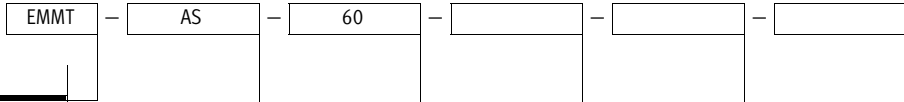
— Peak torque
 - - - - - Nominal torque

Note

Typical motor characteristic curve with nominal voltage and optimal motor controller.

Note the maximum permissible rotational speeds of add-on and installation components (such as brake, encoder, etc.).

Order code



Type

EMMT	Motor
------	-------

Motor type

AS	Servo motor
----	-------------

Motor flange size

60	60 mm
----	-------

Length

S	Short
M	Medium
L	Long

Output shaft

-	Smooth shaft
K	Shaft to DIN 6885 (with featherkey)

Rotary shaft seal

-	Without
R	With standard shaft seal

Winding

LS	Low-voltage, standard
HS	High-voltage, standard

Electrical connection

R	Push-in L-connector, rotatable
---	--------------------------------

Measuring unit

S	Absolute encoder, single turn
M	Absolute encoder, multi turn

Brake

-	Without
B	With brake

05

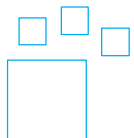
Motors and controllers

Order example:

EMMT-AS-60-MR-LS-RSB

Motor EMMT - servo motor - flange size 60 - length: medium - output shaft: smooth shaft - standard shaft seal - winding: low-voltage, standard - push-in L-connector, rotatable - single turn - with brake

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or www.festo.com/catalogue/...

Enter the type code in the search field.

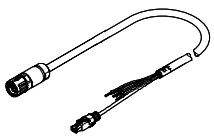
NEW

Servo motors >

Servo motors EMMT-AS

Accessories – Ordering data

Ordering data – Motor cable

	Cable length [m]	Part no.	Type
	2.5	5251374	NEBM-M23G15-EH-2.5-Q7N-R3LEG14
	5	5251375	NEBM-M23G15-EH-5-Q7N-R3LEG14
	7.5	5251376	NEBM-M23G15-EH-7.5-Q7N-R3LEG14
	10	5251377	NEBM-M23G15-EH-10-Q7N-R3LEG14
	15	5251378	NEBM-M23G15-EH-15-Q7N-R3LEG14
	20	5251379	NEBM-M23G15-EH-20-Q7N-R3LEG14
	X length ¹⁾	5251373	NEBM-M23G15-EH-...-Q7N-R3LEG14


1) Choice of cable lengths: 0.5 ... 99.9 m, in increments of 0.1 m.

Note

Cable lengths > 25 m possible following technical consultation.

In the case of motors with a holding brake, the max. cable length is 50 m.

Ordering data – Rotary shaft seal

	Description	Part no.	Type
	<ul style="list-style-type: none"> • Protection to IP67 is achieved in combination with the sealing ring • Based on the operating conditions, the shaft seal must be replaced after 5000 operating hours at the latest • Notes on installation/replacement → www.festo.com/sp 	8079786	EASS-RS-T-A-4P-15-30-B7

05

Motors and controllers

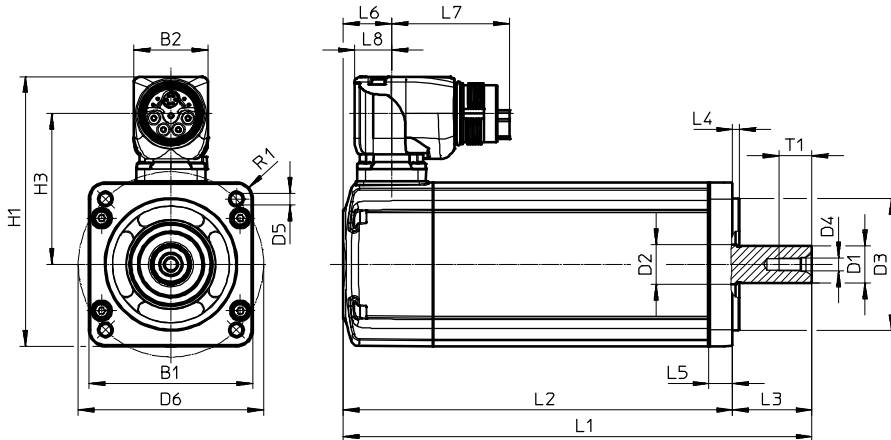
Servo motors >

Servo motors EMMT-AS

NEW

Dimensions

Download CAD data → www.festo.com



Size	Length	B1	B2	D1 ∅ h6	D2 ∅	D3 ∅ h7	D4	D5 ∅
60	S	62	28	14	15	50	M5	4.3
	M							
	L							

Size	Length	D6 ∅ ±0.3	H1	H3	L1		L2	
						With brake	±2	With brake ±2
60	S	70	102	57	144.5	177.3	114.5	147.3
	M				164.5	197.3	134.5	167.3
	L				184.5	217.3	154.5	187.3

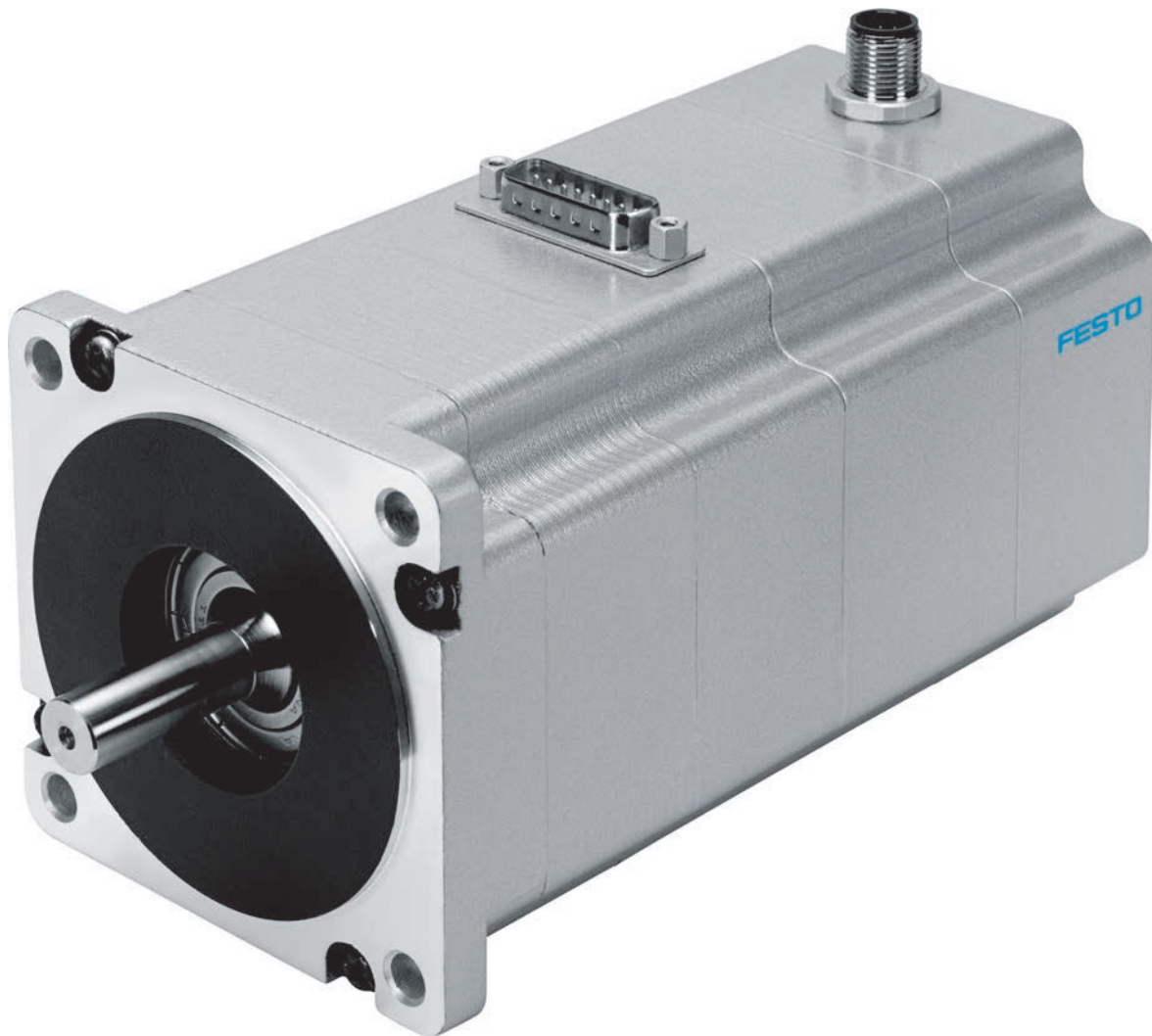
Size	Length	L3 +0.5/-0.2	L4 ±0.2	L5 ±0.3	L6	L7	L8	R1	T1
60	S	30	2.5	9	18.4	44.7	14	6	12.5
	M								
	L								

Note

Only motors without feather key may be used in combination with parallel and axial kits (EAMM-U/EAMM-A).

05

Motors and controllers



Controlled progress

- + For a long service life
- + No step losses and high running performance thanks to closed loop
- + Reliable position and torque control in the servo motor system with integrated encoder
- + Excellent price/performance ratio in combination with motor controller CMMO-ST

Stepper motors ›

Stepper motors

EMMS-ST

Stepper motors >

Stepper motors

EMMS-ST



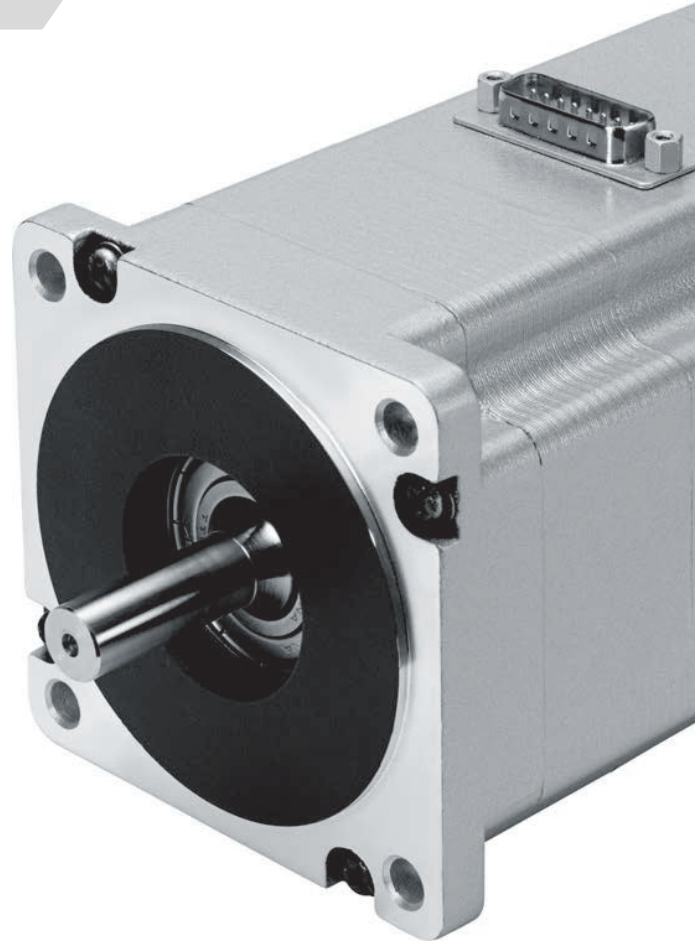
Overview, configuration and ordering

→ www.festo.com/catalogue/emms-st



Additional information, support and user documentation

→ www.festo.com/sp/emms-st



- + 2-phase hybrid technology
- + Standard industrial connection technology
- + Optional: encoder and brake
- + Cost-effective complete solutions for simple positioning tasks

Product range overview

Motor flange size	Nominal voltage [V DC]	Holding torque [Nm]	Product options						
			S	M	L	S	E	B	G2
28	48	0.09	–	–	■	■	■	■	–
42	48	0.5	■	–	–	■	■	■	■
57	48	0.8 ... 1.4	■	■	–	■	■	■	■
87	48	2.5 ... 9.3	■	■	■	■	■	■	■

Product options

S Short length
M Medium length
L Long length

S Straight connection
E Encoder
B Brake

G2 Second generation

Data sheet



Technical data		Dimensions → Page 783						
Motor flange size		28	42	57-S	57-M	87-S	87-M	87-L
Nominal voltage	[V DC]	48						
Nominal current	[A]	1.4	1.8	5		9.5		
Holding torque	[Nm]	0.09	0.5	0.8	1.4	2.5	5.9	9.3
Step angle	[°]	1.8 ±5%						
Brake								
Operating voltage	[V DC]	24 ±10%						
Holding torque	[Nm]	0.2	0.4	0.4	1	2		

Technical data – Encoder

Encoder, optical		
Operating voltage	[V DC]	5
Pulses/revolution	[1/rev]	500
Zero pulse		Yes
Line driver		RS422 protocol

Operating conditions

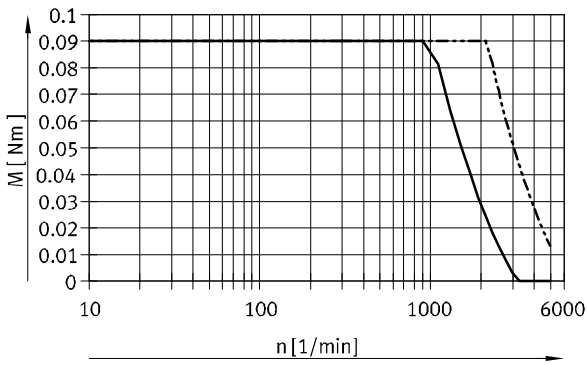
Motor flange size		28	42	57-S	57-M	87-S	87-M	87-L
Ambient temperature	[°C]	–10 ... +50						
Degree of protection: motor shaft		IP40						
Degree of protection: motor housing incl. connection technology		IP65		IP54				
Insulation class		B						

Stepper motors EMMS-ST

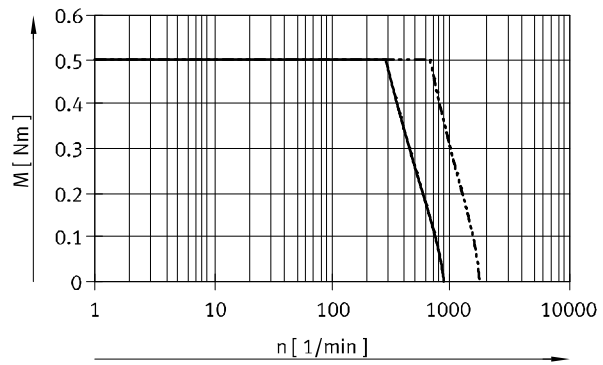
Data sheet

Torque M as a function of rotational speed n

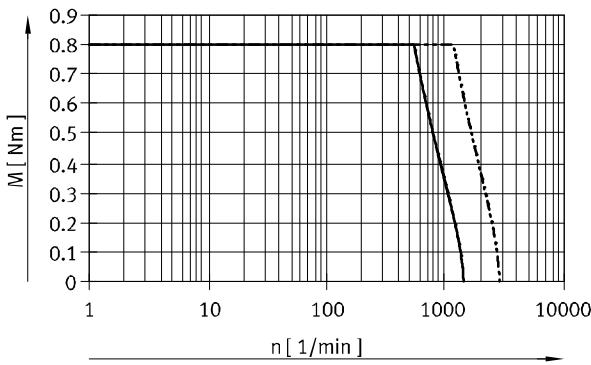
EMMS-ST-28



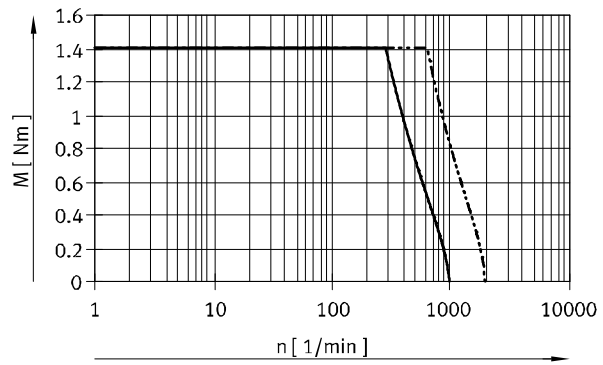
EMMS-ST-42



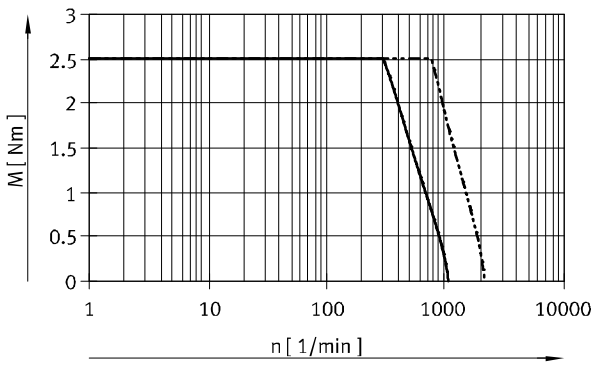
EMMS-ST-57-S



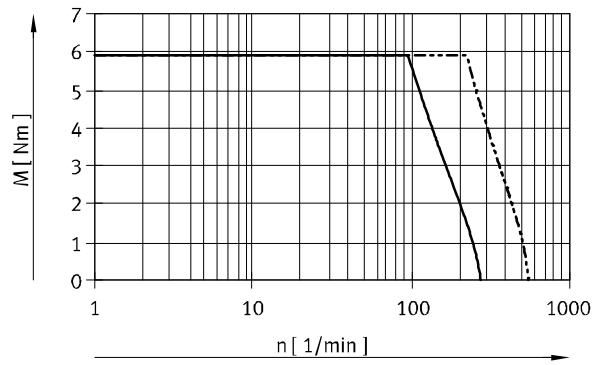
EMMS-ST-57-M



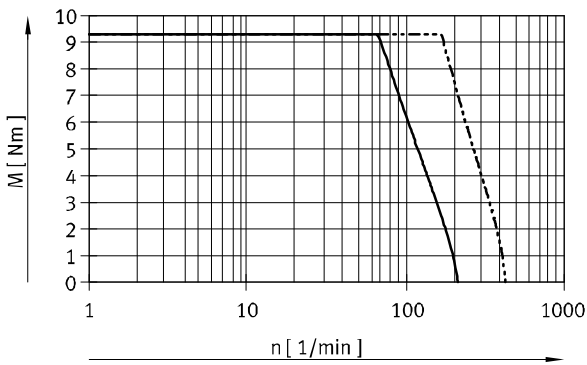
EMMS-ST-87-S



EMMS-ST-87-M



EMMS-ST-87-L



Note
 Typical motor characteristics
 (typical production tolerances ±20%) at nominal voltage and with suitable motor controller.

— 24 V DC
 - - - 48 V DC

Order code

EMMS		-	ST		-			-			-	S		-			-			
Type																				
EMMS		Motor																		
Motor technology																				
ST		Stepper motor																		
Motor flange size																				
28	28																			1
42	42																			2
57	57																			3
87	87																			
Length																				
S		Short																		
M		Medium																		
L		Long																		
Electrical connection																				
S		Straight plug																		
Measuring unit																				
-		Not specified																		
E		Encoder																		
Brake																				
-		Not specified																		
B		Brake																		
Generation																				
G2		2nd generation																		4

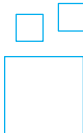
- 1 Only with length L
- 2 Only with length S
- 3 Only with lengths S and M
- 4 Not with flange size 28

Order example:

EMMS-ST-42-S-SEB-G2

Motor EMMS - stepper motor - flange size 42 - length: short - electrical connection: straight plug - measuring unit: encoder - brake - second generation

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

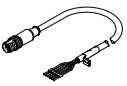
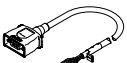
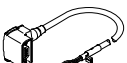
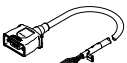

The configurator can be found under Products on the DVD or www.festo.com/catalogue/...

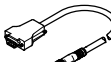


Enter the type code in the search field.

Stepper motors >

Stepper motors EMMS-ST

Accessories – Ordering data

Motor cable			
	Cable length [m]	Part no.	Type
For EMMS-ST-28 and motor controller CMMO-ST			
Straight plug			
	1.5	1449600	NEBM-SM12G8-E-1.5-Q5-LE6
	2.5	1449601	NEBM-SM12G8-E-2.5-Q5-LE6
	5.0	1449602	NEBM-SM12G8-E-5-Q5-LE6
	7.0	1449603	NEBM-SM12G8-E-7-Q5-LE6
	10.0	1449604	NEBM-SM12G8-E-10-Q5-LE6
	X length ¹⁾	1449605	NEBM-SM12G8-E-...-Q5-LE6
For EMMS-ST-42/57 and motor controller CMMS-ST/CMMO-ST			
Straight plug			
	1.5	1450368	NEBM-S1G9-E-1.5-Q5-LE6
	2.5	1450369	NEBM-S1G9-E-2.5-Q5-LE6
	5.0	1450370	NEBM-S1G9-E-5-Q5-LE6
	7.0	1450371	NEBM-S1G9-E-7-Q5-LE6
	10.0	1450372	NEBM-S1G9-E-10-Q5-LE6
	X length ¹⁾	1450373	NEBM-S1G9-E-...-Q5-LE6
Angled plug			
	1.5	1450736	NEBM-S1W9-E-1.5-Q5-LE6
	2.5	1450737	NEBM-S1W9-E-2.5-Q5-LE6
	5.0	1450738	NEBM-S1W9-E-5-Q5-LE6
	7.0	1450739	NEBM-S1W9-E-7-Q5-LE6
	10.0	1450740	NEBM-S1W9-E-10-Q5-LE6
	X length ¹⁾	1450741	NEBM-S1W9-E-...-Q5-LE6
For EMMS-ST-87 and motor controller CMMS-ST/CMMO-ST			
Straight plug			
	1.5	1450834	NEBM-S1G15-E-1.5-Q7-LE6
	2.5	1450835	NEBM-S1G15-E-2.5-Q7-LE6
	5.0	1450836	NEBM-S1G15-E-5-Q7-LE6
	7.0	1450837	NEBM-S1G15-E-7-Q7-LE6
	10.0	1450838	NEBM-S1G15-E-10-Q7-LE6
	X length ¹⁾	1450839	NEBM-S1G15-E-...-Q7-LE6
Angled plug			
	1.5	1450943	NEBM-S1W15-E-1.5-Q7-LE6
	2.5	1450944	NEBM-S1W15-E-2.5-Q7-LE6
	5.0	1450945	NEBM-S1W15-E-5-Q7-LE6
	7.0	1450946	NEBM-S1W15-E-7-Q7-LE6
	10.0	1450947	NEBM-S1W15-E-10-Q7-LE6
	X length ¹⁾	1450948	NEBM-S1W15-E-...-Q7-LE6

Encoder cable			
	Cable length [m]	Part no.	Type
For motor controller CMMS-ST			
Straight plug			
	5.0	550748	NEBM-M12G8-E-5-S1G9
	10.0	550749	NEBM-M12G8-E-10-S1G9
	15.0	550750	NEBM-M12G8-E-15-S1G9
	X length ¹⁾	550751	NEBM-M12G8-E-...-S1G9
For motor controller CMMO-ST			
Straight plug			
	1.5	1451586	NEBM-M12G8-E-1.5-LE8
	2.5	1451587	NEBM-M12G8-E-2.5-LE8
	5.0	1451588	NEBM-M12G8-E-5-LE8
	7.0	1451589	NEBM-M12G8-E-7-LE8
	10.0	1451590	NEBM-M12G8-E-10-LE8
X length ¹⁾	1451591	NEBM-M12G8-E-...-LE8	
Angled plug			
	1.5	1451674	NEBM-M12W8-E-1.5-LE8
	2.5	1451675	NEBM-M12W8-E-2.5-LE8
	5.0	1451676	NEBM-M12W8-E-5-LE8
	7.0	1451677	NEBM-M12W8-E-7-LE8
	10.0	1451678	NEBM-M12W8-E-10-LE8
	X length ¹⁾	1451679	NEBM-M12W8-E-...-LE8

1) Max. 25 m. Cable lengths > 25 m possible following technical consultation; up to 100 m on request. Available in 0.1 m increments.

05

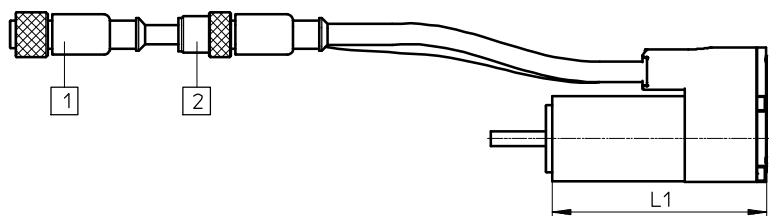
Motors and controllers

Download CAD data → www.festo.com

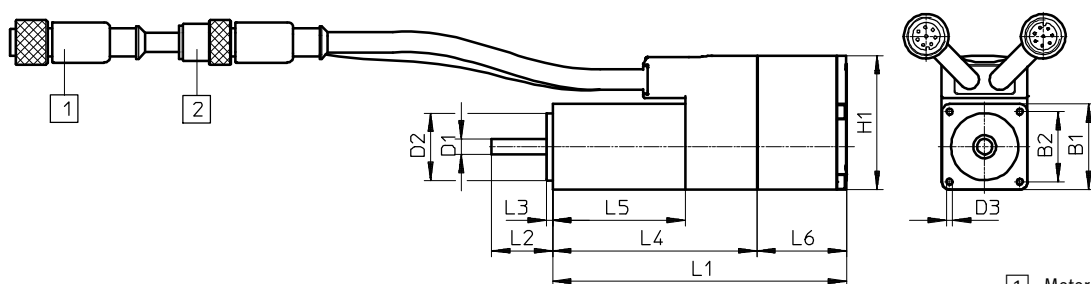
Dimensions

Size 28

EMMS-ST...-S/SE



EMMS-ST...-SB/SEB



- 1 Motor cable
- 2 Encoder cable

Type	B1	B2	D1 ∅	D2 ∅	D3	H1
EMMS-ST-28-L-S	±1	±0.2	-0.013	-0.03		
EMMS-ST-28-L-SE	28	23	5	22	M2.5x4.5	44
EMMS-ST-28-L-SB						
EMMS-ST-28-L-SEB						

Type	L1	L2	L3	L4	L5	L6			
EMMS-ST-28-L-S	70±1	±1		±1	±1	-			
EMMS-ST-28-L-SE		20	2	67	43				
EMMS-ST-28-L-SB	96±1.5								
EMMS-ST-28-L-SEB									

05
Motors and controllers

Stepper motors >

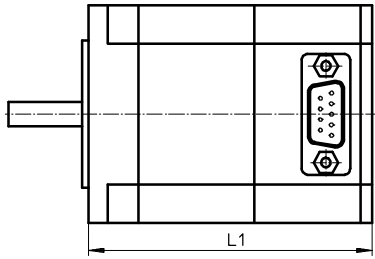
Stepper motors EMMS-ST

Dimensions

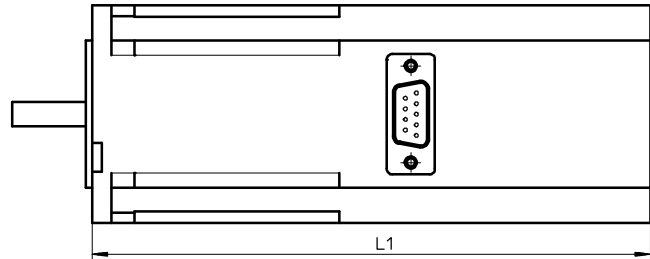
Download CAD data → www.festo.com

Sizes 42, 57, 87

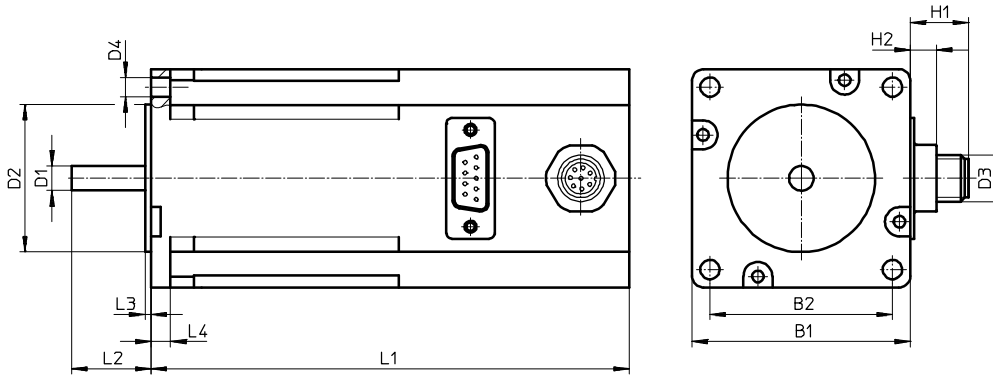
EMMS-ST...-S



EMMS-ST...-SB

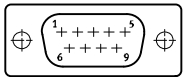


EMMS-ST...-SE/SEB

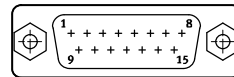


Plug pattern

9-pin Sub-D plug with size 42, 57



15-pin Sub-D plug with size 87



Type	B1	B2 ±0.2	D1 ∅	D2 ∅	D3	D4 ∅	H1	H2	L1	L2	L3	L4
EMMS-ST-42-S-S-G2	42.3	31	5-0.012	22-0.05	-	M3x4.5	-	6.5	66±1	24±1	2	-
EMMS-ST-42-S-SE-G2					M12		13		94±1.2			
EMMS-ST-42-S-SB-G2					-		-		114±1.3			
EMMS-ST-42-S-SEB-G2					M12		13		127±1.3			
EMMS-ST-57-S-S-G2	56.4	47.14	6.35-0.013	38.1±0.025	-	5	-	6.5	73.5±0.8	20.6±0.5	1.6	5
EMMS-ST-57-S-SE-G2					M12		13		102.5±1.1			
EMMS-ST-57-S-SB-G2					-		-		123.5±1.1			
EMMS-ST-57-S-SEB-G2					M12		13		138±1.1			
EMMS-ST-57-M-S-G2					-		-		95±0.8			
EMMS-ST-57-M-SE-G2					M12		13		124±1.1			
EMMS-ST-57-M-SB-G2					-		-		145±1.1			
EMMS-ST-57-M-SEB-G2					M12		13		159.5±1.1			
EMMS-ST-87-S-S-G2	85.85	69.5	11-0.013	73-0.046	-	6.6	-	6.5	82.6±1	27±1	2	8.38
EMMS-ST-87-S-SE-G2					M12		13		112.6±1.3			
EMMS-ST-87-S-SB-G2					-		-		132.6±1.3			
EMMS-ST-87-S-SEB-G2					M12		13		152.6±1.3			
EMMS-ST-87-M-S-G2					-		-		114.9±1			
EMMS-ST-87-M-SE-G2					M12		13		144.9±1.3			
EMMS-ST-87-M-SB-G2					-		-		164.9±1.3			
EMMS-ST-87-M-SEB-G2					M12		13		184.9±1.3			
EMMS-ST-87-L-S-G2					-		-		144.9±1			
EMMS-ST-87-L-SE-G2					M12		13		174.9±1.3			
EMMS-ST-87-L-SB-G2	-	-	194.9±1.3									
EMMS-ST-87-L-SEB-G2	M12	13	214.9±1.3									



... for integrated drives EMCA

- + Short delivery times thanks to gear ratios available from stock
- + Compact design and low weight ensure high performance density

Gear units ›

Gear units for integrated drives

EMGC

Gear units >

Gear units for integrated drives

EMGC

 Overview, configuration and ordering
→ www.festo.com/catalogue/emgc



 Additional information, support and user documentation
→ www.festo.com/sp/emgc



- + Planetary gear units EMGC for integrated drives EMCA
- + Gear ratio $i = 5$ and $i = 20$, available from stock
- + Customised gear ratios available at short notice
- + Sturdy and maintenance-free with life-time lubrication
- + High efficiency for economical operation

Product range overview

Gear unit type	Flange size [mm]	Output torque [Nm]	Gear ratio		Product options		
			[i]		P	A	SEC
Planetary gear unit	40	10 ... 17.5	1-stage	3 ... 7	-	■	■
			2-stage	12 ... 35	-	■	■
	60	24 ... 52	1-stage	3 ... 10	-	■	■
			2-stage	12 ... 40	-	■	■
Right-angle gear unit	67	2.1	-	1	■	-	■

Product options

A Right-angle gear unit P Planetary gear unit SEC EC motor interface

Data sheet – Planetary gear unit

Technical data		Dimensions → Page 789									
Gear unit type		EMGC-40-P-G...									
Gear ratio	[i]	3	4	5	7	12	16	20	25	35	
Gear unit type		Planetary gear unit									
		1-stage					2-stage				
Continuous output torque ¹⁾	[Nm]	5	6.5	6.5	6.5	10	14	14	14	14	
Max. output torque ²⁾	[Nm]	10	13	13	13	12.5	17.5	17.5	17.5	17.5	
Max. torsional backlash	[deg]	0.5					0.67				
Mass moment of inertia ³⁾	[kgcm ²]	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	
Operating temperature	[°C]	-20 ... +90									
Degree of protection		IP54									

Technical data		Dimensions → Page 789											
Gear unit type		EMGC-60-P-G...											
Gear ratio	[i]	3	4	5	7	10	12	16	20	25	35	40	
Gear unit type		Planetary gear unit											
		1-stage						2-stage					
Continuous output torque ¹⁾	[Nm]	20	26	26	26	16	36	42	42	44	44	42	
Max. output torque ²⁾	[Nm]	36	44	44	44	24	45	52	52	55	55	52	
Max. torsional backlash	[deg]	0.5						0.67					
Mass moment of inertia ⁶⁾	[kgcm ²]	0.4	0.34	0.32	0.3	0.29	0.34	0.34	0.32	0.32	0.3	0.29	
Operating temperature	[°C]	-20 ... +90											
Degree of protection		IP54											

1) At the output shaft

2) In relation to a rotational speed of 3000 rpm and operating mode S1.

3) In relation to the drive shaft.

4) Note the temperature range of the motor.

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Ordering data – Planetary gear unit

Motor flange size	Part no.	Type
67	8000594	EMGC-40-P-G3-SEC-67
	8000595	EMGC-40-P-G4-SEC-67
	8000597	EMGC-40-P-G7-SEC-67
	8000598	EMGC-40-P-G12-SEC-67
	8000599	EMGC-40-P-G16-SEC-67
	8000601	EMGC-40-P-G25-SEC-67
	8000602	EMGC-40-P-G35-SEC-67

Motor flange size	Part no.	Type
67	8000612	EMGC-60-P-G3-SEC-67
	8000613	EMGC-60-P-G4-SEC-67
	8000615	EMGC-60-P-G7-SEC-67
	8000616	EMGC-60-P-G10-SEC-67
	8000617	EMGC-60-P-G12-SEC-67
	8000618	EMGC-60-P-G16-SEC-67
	8000620	EMGC-60-P-G25-SEC-67
	8000621	EMGC-60-P-G35-SEC-67
	8000622	EMGC-60-P-G40-SEC-67

Data sheet – Right-angle gear unit

Dimensions → Page 790

Technical data		
Gear unit type		EMGC-67-A-G1-...
Gear ratio	[i]	1
Gear unit type		Right-angle gear unit
Continuous output torque ¹⁾	[Nm]	2
Max. output torque ²⁾	[Nm]	2.1
Max. torsional backlash	[deg]	0.67
Mass moment of inertia ³⁾	[kgcm ²]	0.09
Max. efficiency	[%]	90
Operating temperature ⁴⁾	[°C]	-20 ... +90
Degree of protection		IP54

- 1) At the output shaft
- 2) In relation to a rotational speed of 3000 rpm and operating mode S1.
- 3) In relation to the drive shaft.
- 4) Note the temperature range of the motor.

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Ordering data – Right-angle gear unit

Motor flange size	Part no.	Type
67	2321480	EMGC-67-A-G1-SEC-67

Motors and controllers

05

788

→ www.festo.com/catalogue/...

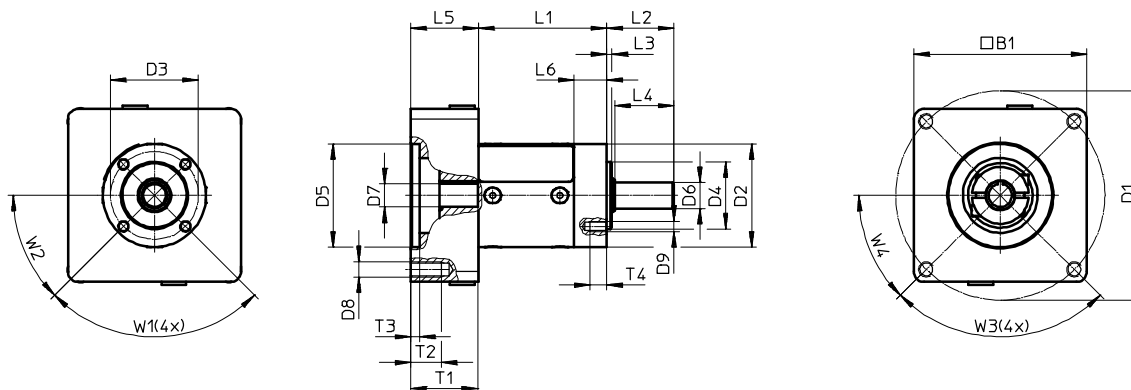
★ Generally ready for shipping ex works in 24 hours

Subject to change – 2018/11

Dimensions – Planetary gear unit

Download CAD data → www.festo.com

EMGC-40-P-...

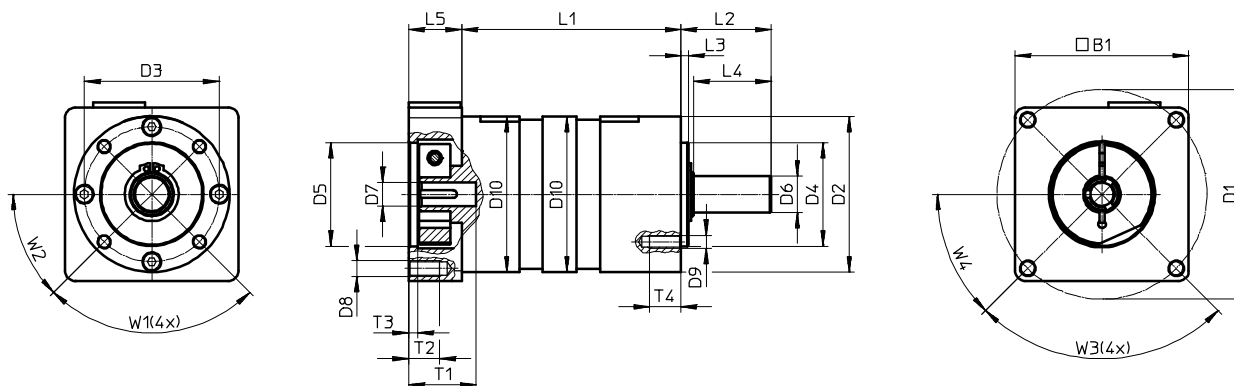


Type	B1	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3
		∅	∅	∅	∅	∅	∅	∅					
		±0.1	-0.1	±0.1	h6	G7	h7	G6			±0.5	-0.3	±0.2
EMGC-40-P-...	67	81	40	34	26	40	10	9	M6	M4	49.7 ¹⁾ /65.3 ²⁾	26	2

Type	L4	L5	L6	T1	T2	T3	T4	W1	W2	W3	W4
	-0.1					+0.2					
EMGC-40-P-...	23	26.3	12.7	26	13	3.5	6.5	90°	45°	90°	45°

- 1) EMGC-40-P-G3/G4/G5/G7
- 2) EMGC-40-P-G12/G16/G20/G25/G35

EMGC-60-P-...



Type	B1	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1
		∅	∅	∅	∅	∅	∅	∅			∅	
		±0.1	-0.1	±0.1	h6	G7	h6	G6				±0.5
EMGC-60-P-...	67	81	60	52	40	40	14	9	M6	M5	60	62.5 ¹⁾ /84.5 ²⁾

Type	L2	L3	L4	L5	T1	T2	T3	T4	W1	W2	W3	W4
	-0.3	±0.2	-0.1				+0.2					
EMGC-60-P-...	35	3	30	20.5	26.1	13	3.5	12	90°	45°	90°	45°

- 1) EMGC-60-P-G3/G4/G5/G7/G10
- 2) EMGC-60-P-G12/G16/G20/G25/G35/G40

05 Motors and controllers

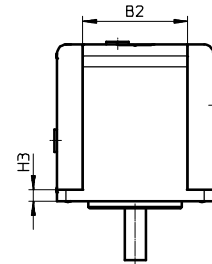
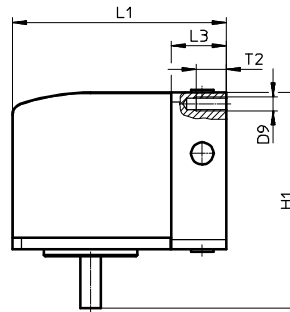
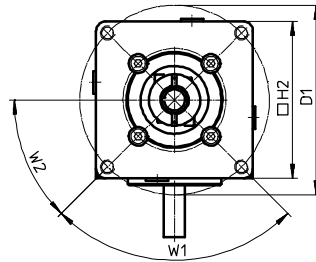
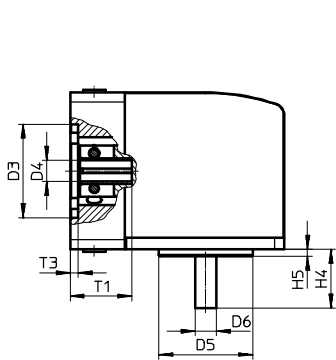
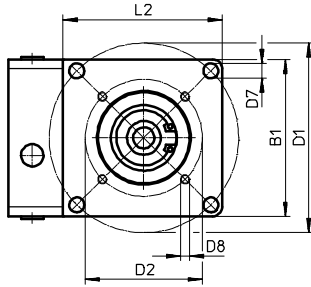
Gear units >

Gear units EMGC

Dimensions – Right-angle gear unit

Download CAD data → www.festo.com

EMGC-67-A...



Motors and controllers

Type	B1	B2	D1	D2	D3	D4	D5	D6	D7	D8	D9	H1
EMGC-67-A-G1-SEC-67	67	45 ±0.2	81 ±0.1	50 ±0.1	40 G7	9 G6	40 h7	9 h7	6.4 H12	M4	M6	92

Type	H2	H3	H4	H5	L1	L2	L3	T1	T2	T3	W1	W2
EMGC-67-A-G1-SEC-67	67	5 ±0.1	25 -0.1	3	91.5	68	23.5	26.3	13	3.5 +0.2	90°	45°



Decentralised positioning drive for modular system architecture

- + Wear-free and maintenance-free EC motor for a long service life
- + Reduces installation costs and space requirement
- + High performance with small dimensions

Servo motors >

Integrated drives

EMCA

Servo motors >

Integrated drives

EMCA



Overview, configuration and ordering

→ www.festo.com/catalogue/emca

Additional information, support and user documentation

→ www.festo.com/sp/emca

- + Multi-turn encoder with buffering
- + Degree of protection IP54 as standard
- + Optional: protection to IP65 in combination with the standard clean look for challenging environments
- + Activation via PROFINET[®], EtherCAT[®], Modbus/TCP[®], CANopen[®], EtherNet/IP[®] and I/O interface
- + Interpolating movement via CANopen[®] and EtherCAT[®]

Product range overview

Flange size	Nominal voltage [V DC]	Nominal torque [Nm]	Product options											
			S	M	E	M	B	DIO	CO	PN	EP	EC	S1	
67	24	0.37 ... 0.45	■	■	■	■	■	■	■	■	■	■	■	■

Product options

S Short length
M Medium length

E Absolute encoder, single turn
M Absolute encoder, multi-turn
B With holding brake

DIO Digital I/O interface
CO CANopen
PN PROFINET

EP EtherNet/IP
EC EtherCAT
S1 Degree of protection IP65

At a glance

The positioning drive EMCA is a brushless DC motor (EC motor) for positioning tasks with integrated power and control electronics.

This prevents the need for long motor cables, improves the electromagnetic compatibility and reduces the installation time and space requirements.

- 64 freely programmable position sets (target variable: position, speed or torque)
- Absolute position sensing via:
 - Standard: single-turn absolute encoder
 - Optional: multi-turn absolute displacement encoder with integrated buffer for saving the position values of movements for up to 7 days

- Optional: integrated holding brake including holding brake control
- Bus protocol: digital I/O interface; CANopen, PROFINET; EtherNet/IP; EtherCAT
- Safety function: "Safe Torque Off" (STO)

- Selectable degree of protection:
 - Standard: IP54 housing and connection technology
 - Optional: IP65 housing and connection technology for increased requirements

Data sheet

Bus protocol

CANopen

PROFINET

EtherNet/IP

EtherCAT

Modbus



Technical data

Dimensions → Page 798

Controller operating mode	PWM MOSFET power output stage Cascade controller with: P position controller; PI speed controller; PI current controller	
Parameterisation interface	Ethernet	
Ethernet, supported protocols	TCP/IP	
Max. transmission rate	[Mbps]	100
Rotary position encoder	Absolute encoder, single turn Absolute encoder, multi-turn displacement encoder	
Rotary position encoder measuring principle	Magnetic	
Resolution		
Single turn	[bit]	12 (4096 increments per revolution)
Multi-turn displacement encoder	[bit]	12 (4096 increments per revolution; ±2,147,483,648 revolutions)

Electrical data

Size		S	M
Nominal voltage	[V DC]	24 ±20%	
Nominal current	[A]	6.9	7.2
Peak current	[A]	10.2	10.3
Nominal motor power	[W]	120	150
Peak motor power	[W]	158	200
Max. current, digital outputs	[mA]	100	
Switching logic, input/output		PNP	

Servo motors >

Integrated drives EMCA

Data sheet

Technical data – Motor			
Size		S	M
Nominal rotational speed	[rpm]	3100	3150
Max. rotational speed	[rpm]	3500	3300
Nominal torque	[Nm]	0.37	0.45
Peak torque	[Nm]	0.85	0.91
Mass moment of inertia of rotor	[kg cm ²]	0.175	0.301
Permissible shaft load			
Axial	[N]	60	
Radial	[N]	100	
Holding brake			
Holding torque	[Nm]	1	
Power consumption	[W]	9	
Mass moment of inertia	[kg cm ²]	0.021	

Technical data					
Interfaces	I/O	CANopen	PROFINET	EtherNet/IP	EtherCAT
Number of digital logic outputs	4	2	2	2	2
Number of digital logic inputs	11	2	2	2	2

Technical data – Bus protocol					
Interfaces	Modbus TCP	CANopen	PROFINET	EtherNet/IP	EtherCAT
Position sets	64	64	64	64	64
Communication profile	FHPP	CiA 402 and FHPP	FHPP	FHPP	CiA 402 and FHPP
Max. fieldbus transmission rate	[Mbps]	100	1	100	100
Terminating resistor	[Ω]	–	120 (can be activated via DIP switches)	–	–

Safety data	
Safety function to EN 61800-5-2	Safe Torque Off (STO)
Performance Level (PL) to EN ISO 13849-1	Category 3, Performance Level d
Safety Integrity Level (SIL) to EN 61800-5-2	SIL 2
Certificate issuing authority	TÜV 01/205/5514.00/16
CE marking (see declaration of conformity)	To EU EMC Directive ¹⁾ To EC Machinery Directive

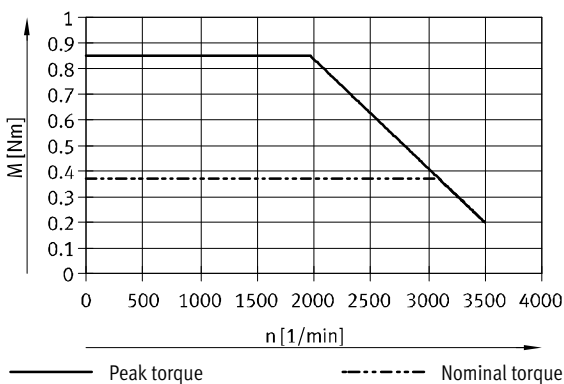
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the device is subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Operating conditions	
Degree of protection	
EMCA-..., motor shaft	IP54
EMCA-... ²⁾	IP54
EMCA-...-S1 ²⁾	IP65
Ambient temperature	[°C] 0 ... +50
Note on ambient temperature	Power must be reduced by 1.75% per °C at ambient temperatures above 20°C

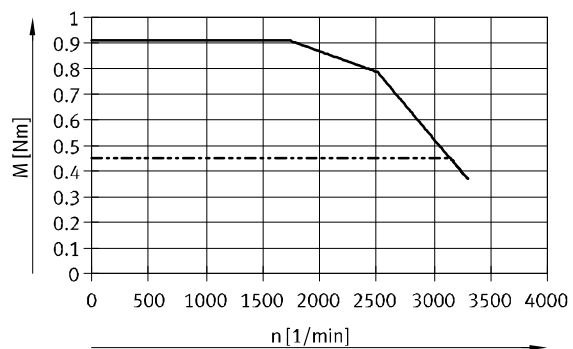
2) Motor housing incl. connection technology

Torque M as a function of speed n

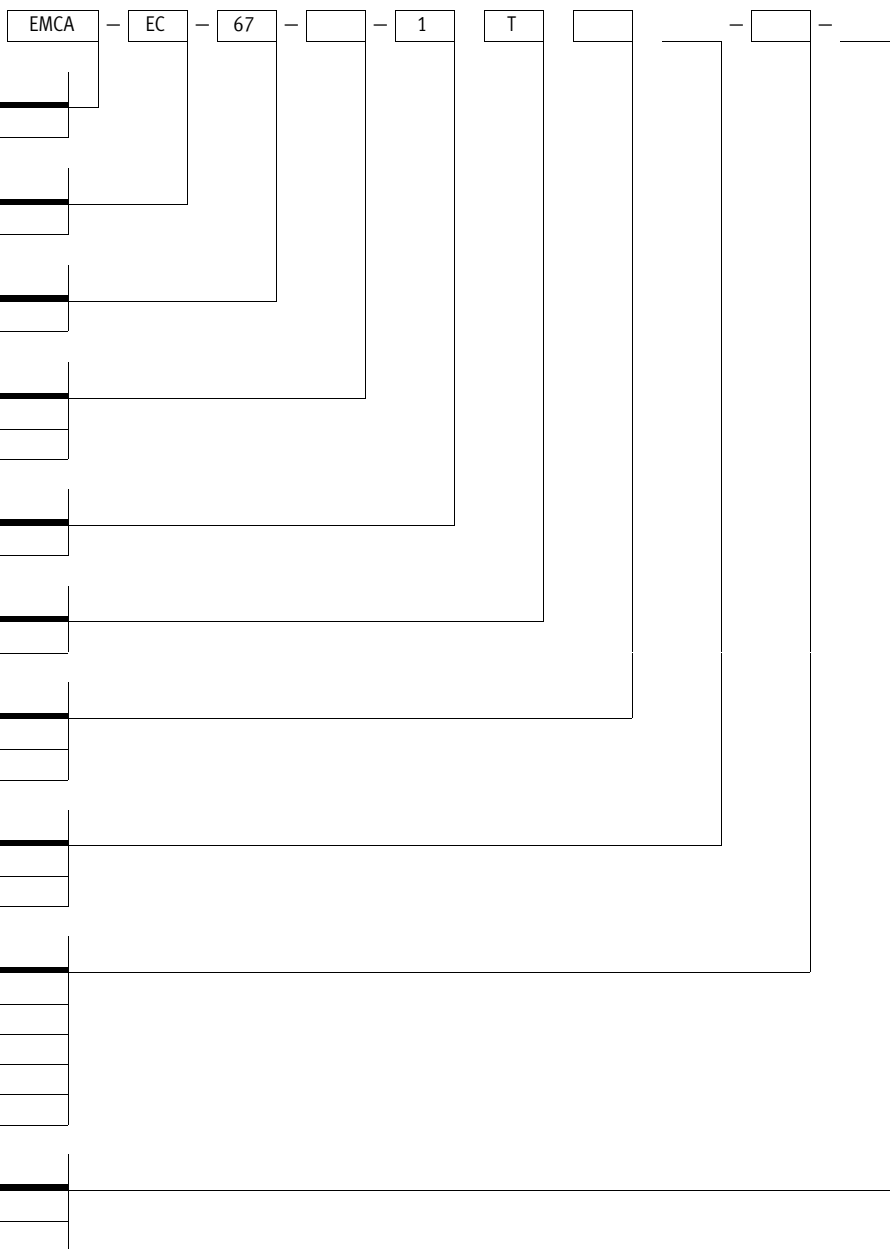
EMCA-EC-67-S



EMCA-EC-67-M



Order code



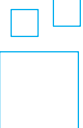
Type	
EMCA	Motor with controller
Motor technology	
EC	EC motor
Motor flange size	
67	67 mm
Length	
S	Short
M	Medium
Nominal operating voltage	
1	24 V DC
Electrical connection	
T	Terminal box
Measuring unit	
E	Absolute encoder, single turn
M	Absolute encoder, multi-turn
Brake	
-	Without
B	With holding brake
Bus protocol/activation	
DIO	Digital I/O interface + Modbus TCP
CO	CANopen
PN	PROFINET
EP	EtherNet/IP
EC	EtherCAT
Degree of protection, electrical system	
-	Standard
S1	IP65

Order example:

EMCA-EC-67-M-1TEB-CO

Motor EMCA - servo motor - flange size 67 - length: medium - nominal operating voltage 24 V DC - electrical connection: terminal box - measuring unit: absolute encoder, single turn - with holding brake - bus protocol: CANopen - degree of protection IP54

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or www.festo.com/catalogue/...

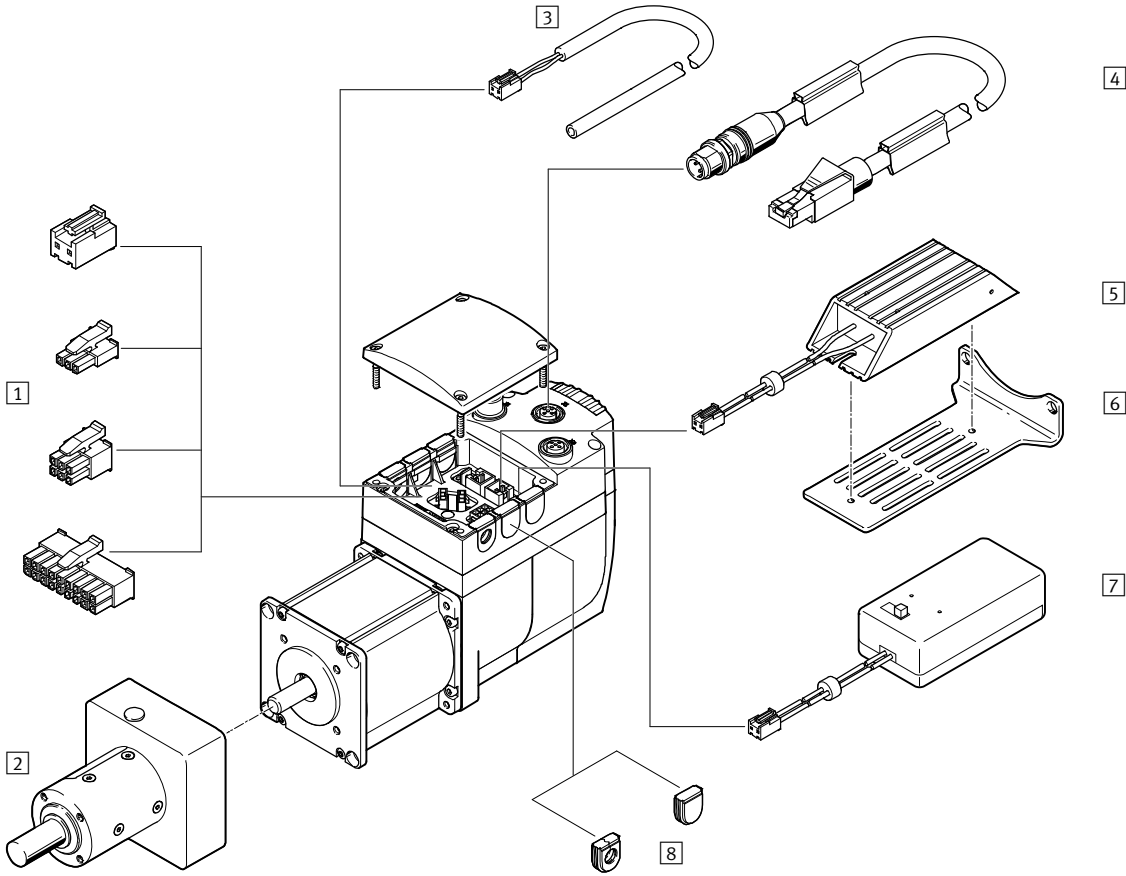
Enter the type code in the search field.

Servo motors >

Integrated drives EMCA

Accessories

Using the variant EMCA-...-CO as an example



Motors and controllers

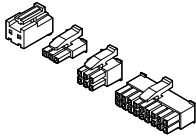
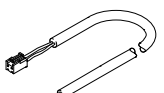

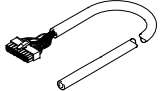
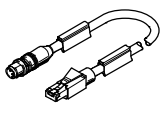
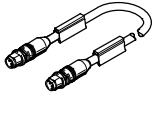
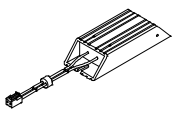
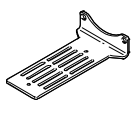
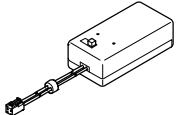
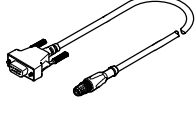
05

Accessories ¹⁾	→ Page/online
1 Assortment of plugs NEKM	797
2 Gear unit EMGC	787
3 Pre-assembled cable NEBM	797
4 Connecting cable NEBC-D12G4	797

Accessories ¹⁾	→ Page/online
5 Braking resistor CACR-LE2	797
6 Mounting bracket EAHM.M1	797
7 Battery box EADA	797
8 Rubber seals ²⁾	emca

1) Not included in the scope of delivery of the integrated drive
 2) Assortment of seals included in the scope of delivery

Accessories – Ordering data

	Description	Cable length [m]	Part no.	Type
1 Assortment of plugs				
	CANopen, PROFINET, EtherNet/IP, EtherCAT	–	8034242	NEKM-C-20
	I/O interface with Modbus TCP	–	8034243	NEKM-C-21
3 Pre-assembled cable				
	For power supply	10	4977492	NEBM-L4G2-E-10-N-LE2T
	For STO interface	10	4977493	NEBM-L5G6-E-10-N-LE6
	For I/O interface	10	4977494	NEBM-L5G18-E-10-N-LE18
4 Connecting cable				
	For parameterisation interface	1	8040451	NEBC-D12G4-ES-1-S-R3G4-ET
		3	8040452	NEBC-D12G4-ES-3-S-R3G4-ET
		5	8040453	NEBC-D12G4-ES-5-S-R3G4-ET
		10	8040454	NEBC-D12G4-ES-10-S-R3G4-ET
	For PROFINET, EtherNet/IP, EtherCAT interface	0.5	8040446	NEBC-D12G4-ES-0.5-S-D12G4-ET
		1	8040447	NEBC-D12G4-ES-1-S-D12G4-ET
		3	8040448	NEBC-D12G4-ES-3-S-D12G4-ET
		5	8040449	NEBC-D12G4-ES-5-S-D12G4-ET
		10	8040450	NEBC-D12G4-ES-10-S-D12G4-ET
5 Braking resistor Data sheets online: → cacr				
	Resistance value: 6 Ω Nominal power: 60 W	0.3	8047913	CACR-LE2-6-W60
6 Mounting bracket				
	For flexible mounting of the braking resistor	–	8047912	EAHM-M1-AB
7 Battery box				
	To save the position values in combination with the multi-turn absolute displacement encoder	0.3	8080406	EADA-A-9
Fieldbus adapter for CANopen				
	Bus terminating resistor must be connected externally	0.1	540324	FBA-CO-SUB-9-M12

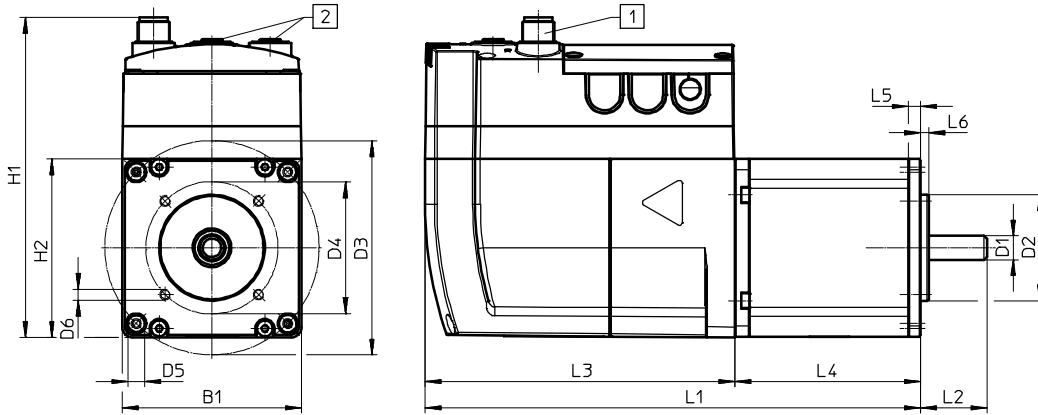
Servo motors >

Integrated drives EMCA

Dimensions

Download CAD data → www.festo.com

EMCA-...-CO



- 1 Plug M12x1
- 2 Socket M12x1

Type	B1	D1 ∅ h6	D2 ∅ h8	D3 ∅ ±0.2	D4 ∅ ±0.2	D5 ∅ +0.2	D6	H1 ±0.5
EMCA-...-S	67	9	40	81	50	6.3	M4x5	121.1
EMCA-...-M								

Type	H2	L1	L2 ±0.5	L3 ±0.3	L4 ±0.8	L5 ±0.3	L6 -0.1
EMCA-...-S	67	169.9	25	117.2	52.7	4.7	3
EMCA-...-M		187.4			70.2		

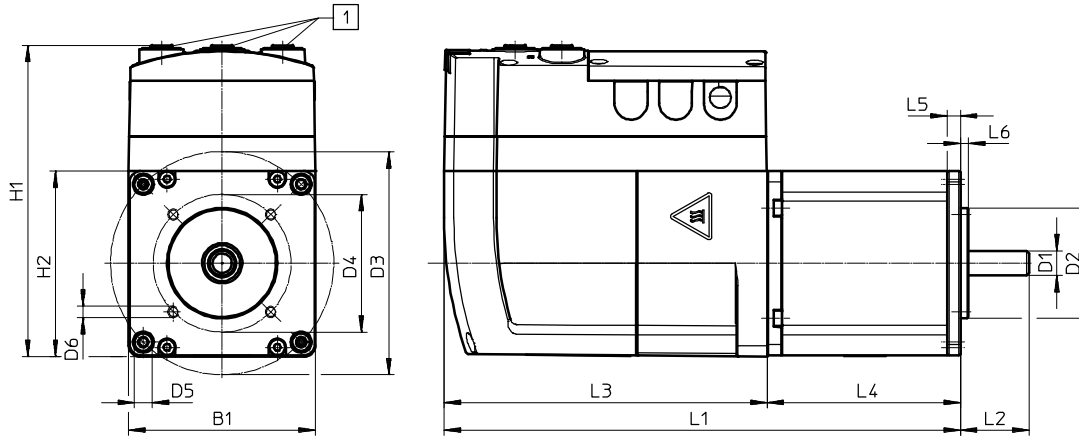
Motors and controllers

05

Dimensions

Download CAD data → www.festo.com

EMCA-...-PN/-EP/-EC/-DIO



1 Socket M12x1

Type	B1	D1 Ø h6	D2 Ø h8	D3 Ø ±0.2	D4 Ø ±0.2	D5 Ø +0.2	D6	H1 ±0.5
------	----	---------------	---------------	-----------------	-----------------	-----------------	----	------------

With PROFINET, EtherNet/IP, EtherCAT interface								
EMCA-...-S	67	9	40	81	50	6.3	M4x5	113
EMCA-...-M								
With I/O interface								
EMCA-...-S	67	9	40	81	50	6.3	M4x5	111.5
EMCA-...-M								

Type	H2	L1	L2 ±0.5	L3 ±0.3	L4 ±0.8	L5 ±0.3	L6 -0.1
------	----	----	------------	------------	------------	------------	------------

With PROFINET, EtherNet/IP, EtherCAT interface							
EMCA-...-S	67	169.9	25	117.2	52.7	4.7	3
EMCA-...-M		187.4			70.2		
With I/O interface							
EMCA-...-S	67	169.9	25	117.2	52.7	4.7	3
EMCA-...-M		187.4			70.2		



... for stepper motors EMMS-ST

- + Maintenance-free operation thanks to life-time lubrication
- + Low torsional backlash permits precise positioning
- + Short delivery times thanks to gear ratios available from stock
- + Customised gear ratios – including for third-party motors – available at short notice

Accessories > Gear units >

Gear units for stepper motors

EMGA-SST


Accessories > Gear units >

Gear units for stepper motors

EMGA-SST

 Overview, configuration and ordering
→ www.festo.com/catalogue/emga-sst



 Additional information, support and user documentation
→ www.festo.com/sp/emga-sst



- + Planetary gear units for stepper motors EMMS-ST
- + Gear ratios $i = 3$ and $i = 5$ available from stock
- + Maintenance-free operation thanks to life-time lubrication
- + Low torsional backlash permits precise positioning

Gear units EMGA-SST, for stepper motors

Product range overview

Flange size	Output torque [Nm]	Gear ratio	
		3	5
42, 57, 87	17.6 ... 176	■	■

Product options

P	Planetary gear	G5	Gear ratio 5:1
G3	Gear ratio 3:1	SST	Stepper motor

Data sheet

Technical data		Dimensions → Page 804					
Motor flange size		42		57		87	
Gear unit type		EMGA-40-P-G...		EMGA-60-P-G...		EMGA-80-P-G...	
Gear ratio	[i]	3	5	3	5	3	5
Continuous output torque ¹⁾	[Nm]	11	14	22	22	85	110
Max. output torque	[Nm]	17.6	22	35.2	35.2	136	176
Torsional backlash	[deg]	0.25		0.17		0.12	
Mass moment of inertia ²⁾	[kgcm ²]	0.031	0.019	0.135	0.078	0.77	0.45
Operating temperature ³⁾	[°C]	-25 ... +90					
Degree of protection		IP54					
Note on materials		RoHS-compliant					

1) At the output shaft.

2) In relation to the drive shaft.

3) Note the temperature range of the motor.

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Ordering data

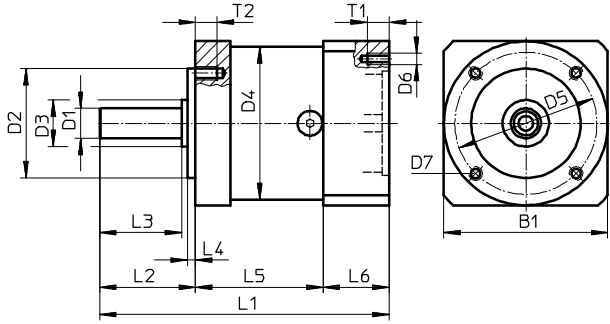
Motor flange size	Part no.	Type
42	549428	EMGA-40-P-G3-SST-42
	549429	EMGA-40-P-G5-SST-42
57	549430	EMGA-60-P-G3-SST-57
	549431	EMGA-60-P-G5-SST-57

Motor flange size	Part no.	Type
87	549432	EMGA-80-P-G3-SST-87
	549433	EMGA-80-P-G5-SST-87

Gear units EMGA-SST, for stepper motors

Dimensions

Download CAD data → www.festo.com



Motor flange size	B1	D1 ∅ h7	D2 ∅ h7	D3 ∅	D4 ∅	D5 ∅	D6	D7
42	40	10	26	12	40	34	∅3.4	M4
57	60	11	40	17	60	52	M4	M5
87	90	20	60	25	80	70	M5	M6

Motor flange size	L1 ±1.5	L2	L3 ±0.2	L4 ±0.2	L5	L6	T1	T2
42	92.5	26±0.6	23	2	39	27.5	5	6
57	106	35±0.8	30	3	47	24	8	8
87	135.5	40±0.8	36	3	60	35.5	12	10

05

Motors and controllers



... for servo motors EMMx-AS

- + Maintenance-free operation thanks to life-time lubrication
- + Low torsional backlash permits precise positioning
- + Short delivery times thanks to gear ratios available from stock
- + Other ratios and versions on request

Accessories > Gear units >

Gear units for servo motors

EMGA-EAS EMGA-SAS

Accessories > Gear units >

Gear units for servo motors

EMGA-EAS, -SAS



Overview, configuration and ordering

→ www.festo.com/catalogue/emga

Additional information, support and user documentation

→ www.festo.com/sp/emga

- + Planetary gear units EMGA-EAS for servo motors EMMS-AS
- + Planetary gear units EMGA-SAS for servo motors EMMS-AS
- + Gear ratio $i = 3$ and $i = 5$, available from stock
- + Maintenance-free operation thanks to life-time lubrication
- + Low torsional backlash permits precise positioning

Gear units EMGA-EAS, for servo motors

Product range overview

Flange size	Output torque [Nm]	Gear ratio	
		3	5
40 ... 140	17.6 ... 312	■	■

Product options

P	Planetary gear	G5	Gear ratio 5:1
G3	Gear ratio 3:1	EAS	Eco AC synchronous

Data sheet

Technical data		Dimensions → Page 808			
Motor flange size		40		60	
Gear unit type		EMGA-40-P-G...-40		EMGA-60-P-G...-60	
Gear ratio	[i]	3	5	3	5
Continuous output torque ¹⁾	[Nm]	11	14	28	40
Max. output torque ²⁾	[Nm]	17.6	22	45	64
Torsional backlash	[deg]	0.25		0.17	
Moment of inertia ³⁾	[kgcm ²]	0.031	0.019	0.135	0.078
Operating temperature ⁴⁾	[°C]	-25 ... +90			
Degree of protection		IP54			
Note on materials		RoHS-compliant			

Motor flange size	80		100		120		
	EMGA-80-P-G...-80		EMGA-80-P-G...-100		EMGA-120-P-G...-100		
Gear ratio	[i]	3	5	3	5	3	5
Continuous output torque ¹⁾	[Nm]	85	110	85	110	115	195
Max. output torque ²⁾	[Nm]	136	176	136	176	184	312
Torsional backlash	[deg]	0.12		0.12		0.12	
Moment of inertia ³⁾	[kgcm ²]	0.77	0.45	0.77	0.45	2.63	1.53
Operating temperature ⁴⁾	[°C]	-25 ... +90					
Degree of protection		IP54					
Note on materials		RoHS-compliant					

- 1) At the output shaft.
 2) The specifications refer to an output shaft speed of 100 rpm as well as operating mode S1 and a temperature of 30 °C.
 3) In relation to the drive shaft.
 4) Note the temperature range of the motor.

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Ordering data

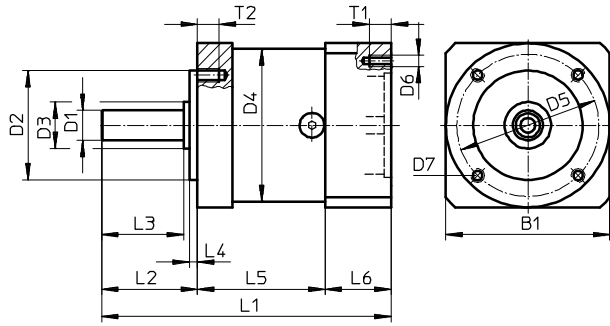
Motor flange size	Part no.	Type
40	2297684	EMGA-40-P-G3-EAS-40
	2297685	EMGA-40-P-G5-EAS-40
60	2297686	EMGA-60-P-G3-EAS-60
	2297687	EMGA-60-P-G5-EAS-60
80	2297690	EMGA-80-P-G3-EAS-80
	2297691	EMGA-80-P-G5-EAS-80

Motor flange size	Part no.	Type
100	552194	EMGA-80-P-G3-SAS-100
	552195	EMGA-80-P-G5-SAS-100
	552196	EMGA-120-P-G3-SAS-100
	552197	EMGA-120-P-G5-SAS-100

Gear units EMGA-EAS, for servo motors

Dimensions

Download CAD data → www.festo.com



05

Type	B1	D1 ∅ h7	D2 ∅ h7	D3 ∅	D4 ∅	D5 ∅	D6	D7
EMGA-40-...-40	40	10	26	12	40	34	M3	M4
EMGA-60-...-60	60	14	40	17	60	52	M5	M5
EMGA-80-...-80	80	20	60	25	80	70	M5	M6
EMGA-80-...-100	100	20	60	25	80	70	M8	M6
EMGA-120-...-100	115	25	80	35	115	100	M8	M10

Type	L1	L2	L3 ±0.2	L4 ±0.2	L5	L6	T1	T2
EMGA-40-...-40	93.5	26	23	2	39	28.5	8	6
EMGA-60-...-60	113.5	35	30	3	47	31	10	8
EMGA-80-...-80	138.5	40	36	3	60	38.5	12	10
EMGA-80-...-100	143.5	40	36	3	60	43.5	16	10
EMGA-120-...-100	176.5	55	50	4	74	47.5	20	16

Motors and controllers

Gear units EMGA-SAS, for servo motors

Product range overview

Flange size	Output torque [Nm]	Gear ratio	
		3	5
40 ... 140	17.6 ... 720	■	■

Product options

P	Planetary gear	G5	Gear ratio 5:1
G3	Gear ratio 3:1	SAS	AC synchronous

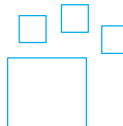
Data sheet

Technical data		Dimensions → Page 810							
Motor flange size		40		55		70			
Gear unit type		EMGA-40-P-G...-40		EMGA-60-P-G...-55		EMGA-60-P-G...-70		EMGA-80-P-G...-70	
Gear ratio	[i]	3	5	3	5	3	5	3	5
Continuous output torque ¹⁾	[Nm]	11	14	22	22	22	22	85	110
Max. output torque ²⁾	[Nm]	17.6	22	35.2	35.2	35.2	35.2	136	176
Torsional backlash	[deg]	0.25		0.17		0.17		0.12	
Mass moment of inertia ³⁾	[kgcm ²]	0.031	0.019	0.135	0.078	0.135	0.078	0.77	0.45
Operating temperature ⁴⁾	[°C]	-25 ... +90							
Degree of protection		IP54							
Note on materials		RoHS-compliant							

Motor flange size		100				140			
Gear unit type		EMGA-80-P-G...-100		EMGA-120-P-G...-100		EMGA-120-P-G...-140		EMGA-160-P-G...-140	
Gear ratio	[i]	3	5	3	5	3	5	3	5
Continuous output torque ¹⁾	[Nm]	85	110	115	195	115	195	400	450
Max. output torque ²⁾	[Nm]	136	176	184	312	184	312	640	720
Torsional backlash	[deg]	0.12		0.12		0.12		0.1	
Mass moment of inertia ³⁾	[kgcm ²]	0.77	0.45	2.63	1.53	2.63	1.53	12.14	6.07
Operating temperature ⁴⁾	[°C]	-25 ... +90							
Degree of protection		IP54							
Note on materials		RoHS-compliant							

- 1) At the output shaft.
 2) The specifications refer to an output shaft speed of 100 rpm as well as operating mode S1 and a temperature of 30 °C.
 3) In relation to the drive shaft.
 4) Note the temperature range of the motor.

Ordering – Product options



Configurable product

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The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

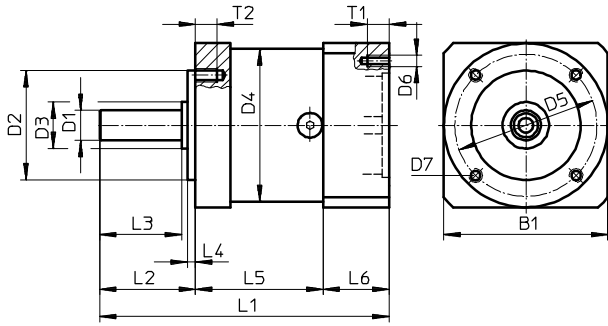
Ordering data

Motor flange size	Part no.	Type	Motor flange size	Part no.	Type
40	552186	EMGA-40-P-G3-SAS-40	100	552194	EMGA-80-P-G3-SAS-100
	552187	EMGA-40-P-G5-SAS-40		552195	EMGA-80-P-G5-SAS-100
55	552188	EMGA-60-P-G3-SAS-55		552196	EMGA-120-P-G3-SAS-100
	552189	EMGA-60-P-G5-SAS-55		552197	EMGA-120-P-G5-SAS-100
70	552190	EMGA-60-P-G3-SAS-70		552198	EMGA-120-P-G3-SAS-140
	552191	EMGA-60-P-G5-SAS-70		552199	EMGA-120-P-G5-SAS-140
	552192	EMGA-80-P-G3-SAS-70	552200	EMGA-160-P-G3-SAS-140	
	552193	EMGA-80-P-G5-SAS-70	552201	EMGA-160-P-G5-SAS-140	

Gear units EMGA-SAS, for servo motors

Dimensions

Download CAD data → www.festo.com



Type	B1	D1 ∅ h7	D2 ∅ h7	D3 ∅	D4 ∅	D5 ∅	D6	D7
EMGA-40-...-40	40	10	26	12	40	34	M3	M4
EMGA-60-...-55	60	11	40	17	60	52	M5	M5
EMGA-60-...-70	70	11	40	17	60	52	M5	M5
EMGA-80-...-70	80	20	60	25	80	70	M5	M6
EMGA-80-...-100	100	20	60	25	80	70	M8	M6
EMGA-120-...-100	115	25	80	35	115	100	M8	M10
EMGA-120-...-140	140	25	80	35	115	100	M10	M10
EMGA-160-...-140	140	40	130	55	160	145	M10	M12

Type	L1	L2	L3 ±0.2	L4 ±0.2	L5	L6	T1	T2
EMGA-40-...-40	88.5±1.5	26±0.6	23	2	39	23.5	6	6
EMGA-60-...-55	106±1.5	35±0.8	30	3	47	24	12	8
EMGA-60-...-70	106±1.5	35±0.8	30	3	47	24	12	8
EMGA-80-...-70	133.5±1.5	40±0.8	36	3	60	33.5	12	10
EMGA-80-...-100	143.5±1.5	40±0.8	36	3	60	43.5	16	10
EMGA-120-...-100	176.5±2	55±0.8	50	4	74	47.5	20	16
EMGA-120-...-140	186±2	55±0.8	50	4	74	57.5	25	16
EMGA-160-...-140	255.5±2	87±0.8	80	5	104	64.5	25	20

New New series



Universal and precise

- + Universal servo drive for PM-synchronous servo motors up to 700 W
- + Precise force, speed and position control

Controllers > Controllers for servo motors >
Servo drives

CMMT-AS

Controllers > Controllers for servo motors >

Servo drives

CMMT-AS

 Overview, configuration and ordering
→ www.festo.com/catalogue/cmmt-as



 Additional information, support and user documentation
→ www.festo.com/sp/cmmt-as



- + Movements from point-to-point to interpolated motion
- + Integrated safety functions
- + Bus protocol EtherCAT[®] with the profile CIA 402

NEW

Controllers > Controllers for servo motors >

Servo drives CMMT-AS**Product range overview**

Type	Output voltage range [V AC]	Nominal current [A _{eff}]	Interfaces EtherCAT
CMMT-AS-C2-3A...	3x (0 – Input)	2	■
CMMT-AS-C4-3A...	3x (0 – Input)	4	■

Product options

C2 Nominal current 2 A

3A Input voltage

C4 Nominal current 4 A

100 ... 230 V AC

Features

- Universal servo drive for PM-synchronous servo motors up to 700 W
- Supports the motor series EMMT-AS, EMME-AS and EMMS-AS as well as third-party motors
- Integrated single-phase mains connection 230 V AC, mains filter and braking resistor, connection option for external braking resistor
- Precise force, speed and position control
- Point-to-point to interpolated motion
- Comprehensively integrated protective functions for the servo drive, motor and axis with automatic motor shut-down/quick stop
- Bus protocol EtherCAT® with the profile CIA 402
- Prepared device description files and function elements for integration in PLC systems
- Configuration
 - Automatically with the "Festo Automation Suite" as well as auto-tuning
 - Directly via fieldbus and PLC
 - Data backup concept via PLC or control unit CDSB
- Supports digital absolute encoders (EnDat, Hiperface, Nikon-A) in the motor as well as incremental (A/B, Sin/Cos) displacement encoders on the axis

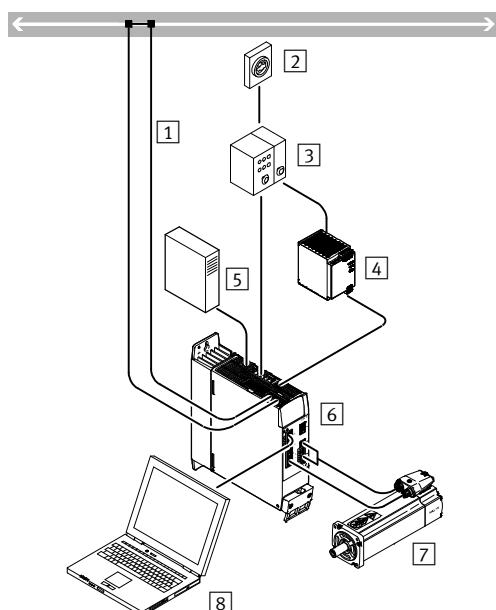
Fieldbus interfaces**EtherCAT** **Library for EPLAN****EPLAN**
electric 8

EPLAN macros for fast and reliable planning of electrical projects in combination with motor controllers, motors and cables.

Integrated safety functions

- Safe Torque Off (STO) up to SIL3/Cat. 4 PL e
- Safe Stop 1 (SS1) when using a suitable external safety switching device and suitable circuitry for the servo drive
- Safe Brake Control (SBC) up to SIL3/Cat. 3 PL e
- Diagnostic outputs STA and SBA for feedback on the active safety function

This enables a high level of planning reliability, standardisation of documentation, no need to create symbols, graphics and master data.

System overview

- 1 Bus/network
- 2 Power switch
- 3 Circuit breaker/fuses
- 4 Power supply unit for logic voltage supply 24 V DC (PELV)
- 5 External braking resistor (optional)
- 6 Servo drive CMMT-AS
- 7 Servo motor
- 8 PC with Ethernet connection for parameterisation

EtherCAT®, ePlan® is a registered trademark of its respective trademark holder in certain countries.

Servo drives CMMT-AS

NEW

Data sheet

Bus protocol



05

Motors and controllers

Download CAD data → www.festo.com

Technical data		C2-3A-...	C4-3A-...
Operating mode		<ul style="list-style-type: none"> Field-oriented control, position resolution 24-bit/U Sampling rate 16 kHz PWM with 8 or 16 KHz, vector modulation with third harmonic Real-time data acquisition: <ul style="list-style-type: none"> – 2x input capture (x, v, F) – 2x output trigger (x, v, F) – 2x position encoder input – 1x SYNC interface for encoder emulation or encoder input 	
Protocol		DHCP FTP TCP/IP	
Ethernet		Parameterisation and commissioning	
Function of position encoder 1		ENDAT 2.1 encoder, ENDAT 2.2 encoder Hiperface sensor Incremental encoder SIN/COS encoder Nikon-A encoder	
Function of position encoder 2		Incremental encoder SIN/COS encoder	
Encoder output, characteristics		Resolution up to 16384 ppr 1 MHz maximum output frequency	
Encoder input, characteristics		Resolution up to 16384 ppr 1 MHz maximum input frequency	
Braking resistor, integrated	[Ω]	100	
Braking resistor, pulse power	[kVA]	1.6	
Braking resistor, external	[Ω]	100 ... 160	70 ... 100
Number of digital inputs		12	
Operating range of digital inputs	[V]	0 ... 30	
Number of digital outputs		6	
Number of analogue inputs		1	
Operating range of analogue inputs	[V]	±10	
Number of potential-free switching outputs		1	

Electrical data		C2-3A-...	C4-3A-...
Output connection data			
Output voltage range	[V AC]	3x (0 – Input)	
Nominal current per phase	[A _{eff}]	2	4
Nominal power	[VA]	350	700
Peak power	[VA]	1000	2000
Output frequency	[Hz]	0 ... 599	
Load voltage AC			
Nominal operating voltage phases		Single-phase	
Input voltage range	[V AC]	100 ... 230 –20%/+15%	
Nominal current	[A]	2.8	5.6
Nominal power	[VA]	350	700
Peak power	[VA]	1000	2000
Mains frequency	[Hz]	48 ... 62	
Mains filter		Integrated	

NEW

Controllers > Controllers for servo motors >

Servo drives CMMT-AS

Data sheet

Electrical data			
CMMT-AS-		C2-3A-...	C4-3A-...
Load voltage DC			
Input voltage range	[V DC]	80 ... 360	
Max. DC link voltage	[VA]	395	
Nominal current at 320 V DC	[A]	1.3	2.6
Active PTC	[VA]	No	
Logic supply			
Nominal voltage	[V DC]	24 ±20%	
Max. current consumption	[A]	0.5/2.1 ¹⁾	0.5/2.3 ¹⁾

1) Max. current at full expansion, with two position encoders, brake output and all I/Os with max. specified loads connected.

Operating and environmental conditions

Ambient temperature ²⁾	[°C]	0 ... +50	
Degree of protection		IP20	
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive	
		To EU Machinery Directive	
		To EU Low Voltage Directive	
		To EU RoHS Directive	

2) Above 40 °C power is reduced by 3% per K.

3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the component is subject to usage restrictions in residential, office or commercial locations or small businesses, further measures for the reduction of the emitted interference may be necessary.

Bus protocol

Interfaces		EtherCAT
Function		Bus connection incoming/outgoing
Process interfacing		Interpolated mode CSP
		Interpolated mode CSV
		Interpolated mode CST
		Point-to-point mode PP
		Point-to-point mode PV
		Point-to-point mode TQ
		Homing mode HM
	Record table with 128 entries	
Communication profile		CiA402
		CoE (CANopen over EtherCAT)
		EoE (Ethernet over EtherCAT)
Max. fieldbus transmission rate	[Mbps]	100

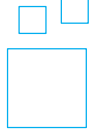
Safety data

Safety function to EN 61800-5-2		Safe Torque Off (STO)
		Safe Stop 1 (SS1)
		Safe Brake Control (SBC)
Performance Level (PL) to EN ISO 13849-1		
Safe Torque Off (STO)		Category 4, Performance Level e
Safe Brake Control (SBC)		Category 3, Performance Level e
Safety Integrity Level (SIL) to EN 62061 and EN 61508		
Safe Torque Off (STO)		SIL 3/SILCL 3
Safe Brake Control (SBC)		SIL 3/SILCL 3
Certificate issuing authority		TÜV Rheinland 01/205/5640.00/18
Safe Failure Fraction (SFF)		Up to 99%

05

Motors and controllers

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Ordering data

	Description	Part no.	Type
	The assortment of plugs NEKM is not included in the delivery of the servo drive.	5340819	CMMT-AS-C2-3A-EC-S1
		5340820	CMMT-AS-C4-3A-EC-S1

Accessories – Ordering data

	Part no.	Type
Control unit		
	8070984	CDSB-A1
Assortment of plugs¹⁾		
	For single wiring connection	
	4325822	NEKM-C-6-C16-S
For double wiring connection		
	5054513	NEKM-C-6-C16-D
Blanking plate		
	5395254	CAFC-06-C
Shield clamp		
	1501329	CAMC-DS-M1

	Part no.	Type
Connecting cable²⁾		
	8082383	NEBC-R3G8-KS-0.2-N-S-R3G8-ET
Mains filter		
	8 A, for: 2x CMMT-AS-C2-3A or 1x CMMT-AS-C4-3A	
	8088928	CAMF-C6-F-C8-3A
	20 A, for: 6x CMMT-AS-C2-3A or 3x CMMT-AS-C4-3A	
	8088929	CAMF-C6-F-C20-3A
Filter flow control		
	For: 2x CMMT-AS-C2-3A or 1x CMMT-AS-C4-3A	
	8088930	CAMF-C6-FD-C6-3A
Braking resistor		
	For CMMT-AS-C2-3A	
	1336615	CACR-LE2-100-W500
	For CMMT-AS-C4-3A	
	1336611	CACR-LE2-72-W500
	1336615	CACR-LE2-100-W500

1) The assortment of plugs is not included in the delivery of the servo drive.
 2) Patch cable for the daisy-chain connection of the bus interfaces X19A/B



Maximum flexibility and modularity

- + Power factor correction: increase the motor voltage independently of the supply voltage
- + Integrated safety functions reduce wiring and commissioning costs
- + Large number of functions for applications outside of classic drive electronics

Controllers > Controllers for servo motors >
Motor controller

CMMP-AS

Controllers > Controllers for servo motors >

Motor controllers

CMMP-AS

 Overview, configuration and ordering
→ www.festo.com/catalogue/cmmp-as



 Additional information, support and user documentation
→ www.festo.com/sp/cmmp-as



- + CMMP-AS-M3: Always flexibly tailored to the application thanks to three plug-in slots
- + CMMP-AS-M0: Particularly economical thanks to full integration of the STO safety function
- + Short machine cycle times thanks to temporary four-fold increase in motor current and high acceleration
- + High precision and mass inertia ratio thanks to short scanning times of the cascade controller
- + SD card backup for fast recommissioning and convenient firmware upgrades and downgrades
- + Simple connection to a higher-order controller even in the basic version via I/O, CANopen[®] or Modbus/TCP[®]

Motor controllers CMMP-AS, for servo motors

Product range overview

Type	Output voltage range [V AC]	Nominal current [A _{eff}]	Interfaces ¹⁾							
			I/O interface	CANopen	Modbus/TCP	PROFIBUS DP	DeviceNet	EtherCAT	EtherNet/IP	PROFINET RT
CMMP-AS-C2-...	3x 0 ... 270	2.5	■	■	■	■	■	■	■	■
CMMP-AS-C5-3A-...	3x 0 ... 270	5	■	■	■	■	■	■	■	■
CMMP-AS-C5-11A-...	3x 0 ... 360	5	■	■	■	■	■	■	■	■
CMMP-AS-C10-...	3x 0 ... 360	10	■	■	■	■	■	■	■	■
CMMP-AS-C15-...	3x 0 ... 360	15	■	■	■	■	■	■	■	■

1) Additional information → page 822 (top table)

Product options

C2	Nominal current 2.5 A	3A	Input voltage 100 ... 230 V AC	P3	3-phase
C5	Nominal current 5 A			M0	Without slot
C10	Nominal current 10 A	11A	Input voltage 3x 230 ... 480 V AC	M3	With 3 slots
C15	Nominal current 15 A				

Features

Compactness

- Small dimensions
- Full integration of all components for the controller and power section, including CANopen interface
- Integrated brake chopper
- Integrated EMC filters
- Automatic actuation for a holding brake

Motion control

- Evaluation of digital absolute encoder (EnDat/HIPERFACE) in single-turn or multi-turn versions
- Can be operated as a torque, speed or position controller
- Integrated position controller
- Time-optimised (trapezoidal) or jerk-free (S-shaped) positioning
- Absolute and relative movements
- Point-to-point positioning with and without motion path smoothing
- Position synchronisation
- Electronic gear unit
- 255 position sets
- Wide range of homing methods

Fieldbus interfaces

Integrated:

CANopen

Modbus

Optional:

PROFIBUS

DeviceNet

Optional:

EtherCAT

PROFINET

EtherNet/IP

Input/output

- Freely programmable I/Os
- High-resolution 16-bit analogue input
- Jog/teach mode
- Easy connection to a higher-order controller via I/O or fieldbus
- Synchronous operation
- Master/slave mode
- Additional I/Os with the plug-in card CAMC-D-8E8A → page 824

Integrated sequence control

- Automatic sequence of position sets without a higher-order controller
- Linear and cyclical position sequences
- Adjustable delay times
- Branches and wait positions
- Overlapping restart possible during the movement

PROFIBUS®, PROFINET®, DeviceNet®, CANopen®, Modbus®, EtherCAT®, EtherNet/IP® is a registered trademark of its respective trademark holder in certain countries.

Motor controllers CMMP-AS, for servo motors

Features

Integrated safety functions

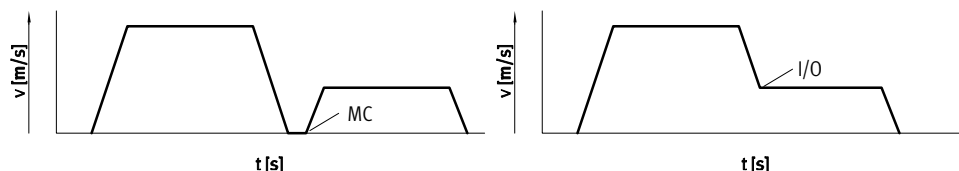
- Depending on the variant or plug-in card, the motor controller supports the following safety functions:
 - Safe Torque Off (STO)
 - Safe Stop 1 (SS1)
 - Safe Brake Control (SBC)
 - Safe Operating Stop (SOS)
 - Safe Stop 2 (SS2)
 - Safely Limited Speed (SLS)
 - Safe Speed Range (SSR)
 - Safe Speed Monitor (SSM)

Interpolating multi-axis movement

- With a suitable controller, the CMMP-AS can perform path movements with interpolation via CANopen or EtherCAT. To do this, the controller specifies setpoint position values in a fixed time slot pattern. In between, the servo position controller independently interpolates the data values between two data points.

Travel program

- Linking of any number of position sets into a travel program
- Step criteria for the travel program possible via digital inputs, for example
 - MC – motion complete
 - I/O – digital inputs



Library for EPLAN



EPLAN macros for fast and reliable planning of electrical projects in combination with motor controllers, motors and cables.

This enables a high level of planning reliability, standardisation of documentation, no need to create symbols, graphics and master data.

Cam disc functionality

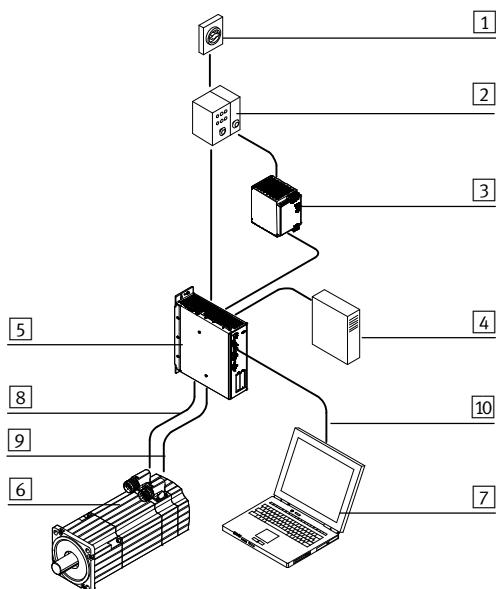
The "electronic cam disc" application type creates optimised motion profiles that generate less vibration and acceleration force at the machine. In addition, the motion of the motor is always synchronous in position with a master axis, which enables easy definition of overlapping, time-optimised motion sequences.

To be able to use the cam disc function, you will need the Festo Configuration Tool (FCT) and also the curve editor → online: cmmmp.

Key features:

- High flexibility of the system. The mechanical system does not need to be modified if the requirements for the curve shapes change.
- User-friendly motion plan editor. All limits for position, speed and acceleration are immediately displayed in the editor.
- Up to 16 cam discs with a total of up to 2048 data points can be managed. The data points can be randomly distributed along the cam discs.
- There are four digital trip cams coupled with each cam disc.
- Each cam disc can be offset by a certain amount from the master axis.

System overview



- 1 Mains switch
- 2 Circuit breaker
- 3 24 V DC power supply unit
- 4 External braking resistor (optional)
- 5 Motor controller CMMP-AS
- 6 Motor EMMS-AS
- 7 PC
- 8 Encoder cable
- 9 Motor cable
- 10 Programming cable

Motor controllers CMMP-AS, for servo motors

Data sheet

Fieldbus interfaces

CANopen

PROFI[®]
PROCESS FIELD BUS
BUS

DeviceNet

EtherCAT

Modbus

PROFI[®]
Industrial Ethernet
NET

EtherNet/IP



Technical data		Download CAD data → www.festo.com				
CMMP-AS-		C2-3A-...	C5-3A-...	C5-11A-P3-...	C10-11A-P3-...	C15-11A-P3-...
Parameterisation interface		USB, Ethernet				
Active PFC		Yes		–		
Encoder interface input		Resolver				
		Incremental encoder with analogue or digital tracking signals				
		Absolute encoder with EnDat V2.1 serial/V2.2				
		Absolute encoder with HIPERFACE				
Encoder interface output		Additional input for synchronous/cam disc operation				
		Actual value feedback via encoder signals in speed control mode				
		Setpoint specification for downstream slave drive				
Braking resistor, integrated	[Ω]	60		68		
	Pulse power of braking resistor	[kVA]	2.8		8.5	
	Number of analogue outputs		2			
Operating range of analogue outputs	[V]	±10				
Resolution of analogue outputs	[bit]	9				
Number of analogue inputs		3				
Operating range of analogue inputs	[V]	±10				
Mains filter		Integrated				External ¹⁾

1) The mains filter is mandatory for compliance with the CE and EN standards.

Electrical data						
CMMP-AS-		C2-3A-...	C5-3A-...	C5-11A-P3-...	C10-11A-P3-...	C15-11A-P3-...
Load supply						
Input voltage range	[V AC]	100 ... 230 ±10%		3x 230 ... 480 ±10%		
Max. nominal input current	[A]	3	6	5.5	11	13
Nominal power	[VA]	500	1000	3000	6000	9000
Peak power	[VA]	1000	2000	6000	12000	18000
Mains frequency	[Hz]	50 ... 60				
Output connection data						
Output voltage range	[V AC]	3x 0 ... 270		3x 0 ... 360		
Nominal current	[A _{eff}]	2.5	5	5	10	15
Logic supply						
Nominal voltage	[V DC]	24 ±20%				
Nominal current	[A]	0.55/2.05 ²⁾	0.65/2.15 ²⁾	1/3.5 ²⁾		

2) Max. current with brake and I/Os.

Operating conditions						
Ambient temperature	[°C]	0 ... +40				
Degree of protection						
With plug at X6 and X9		IP20				
Without plug at X6 and X9		IP10				
CE marking (see declaration of conformity)		To EU EMC Directive ³⁾				
		To EC Machinery Directive				
		To EU Low Voltage Directive				

3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to usage restrictions in residential, office or commercial locations or small businesses, further measures for the reduction of the emitted interference may be necessary.

Motor controllers CMMP-AS, for servo motors

Data sheet

Technical data – Fieldbus interfaces										
Interfaces	I/O	Additional I/O ¹⁾	CANopen	Modbus/TCP	PROFIBUS DP	DeviceNet	EtherCAT	EtherNet/IP	PROFINET RT	
Number of digital logic outputs	5	8	5							
Characteristics of digital logic outputs	Freely configurable									
Number of digital logic inputs	10	8	10							
Characteristics of logic inputs	Freely configurable									
Process coupling	16 (127) position sets ²⁾	255 position sets	250 position sets							
Communication profile	–	–	DS301, FHPP+ DS301, DSP402	FHPP+	DP-VO/FHPP+	FHPP+	DS301, FHPP+ CoE: DS301, DSP402	FHPP+	FHPP+	FHPP+
Max. fieldbus transmission rate [Mbps]	–	–	1	100	12	0.5	100	100	100	100
Interface										
CMMP-AS-...-M0	Integrated	■	–	■	■	–	–	–	–	–
CMMP-AS-...-M3	Integrated	■	–	■	■	–	–	–	–	–
	Optional ³⁾	–	■	–	–	■	■	■	■	■

- 1) With additional I/O plug-in card CAMC-D8E8A → page 824
 2) Can be expanded with configurable logic inputs up to max. 127 position sets
 3) Plug-in cards can be ordered separately → page 824

Safety functions to EN 61800-5-2

Motor controller	CMMP-AS-		
	C2/C5/C10-...-M0 ⁴⁾	C2/C5/C10/C15-...-M3 ⁵⁾	
With plug-in card	–	CAMC-G-S1 → page 824	CAMC-G-S3 → page 824
Safe Torque Off (STO)	■	■	■
Safe Stop 1 (SS1)	–	–	■
Safe Brake Control (SBC)	■	■	■
Safe Operating Stop (SOS)	–	–	■
Safe Stop 2 (SS2)	–	–	■
Safely Limited Speed (SLS)	–	–	■
Safe Speed Range (SSR)	–	–	■
Safe Speed Monitor (SSM)	–	–	■

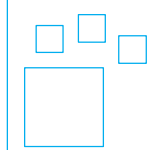
Safety data

CMMP-AS-	C2/C5/C10-...-M0 ⁴⁾
Safety function to EN 61800-5-2	Safe Torque Off (STO)
Performance Level (PL) to EN ISO 13849-1	Category 4, Performance Level e
Safety Integrity Level (SIL) to EN 61800-5-2, EN 62061, EN 61508	SIL 3
Certificate issuing authority	TÜV 01/205/5262.01/14

- 4) Motor controller without slot.
 5) Motor controller with 3 slots.

Motor controllers CMMP-AS, for servo motors

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Ordering data

	Description	Part no.	Type
	with 3 slots – CMMP-AS-...-M3		
	The plug assortment NEKM is included in the scope of delivery of the motor controller.	1501325	CMMP-AS-C2-3A-M3
	A plug-in card in slot 1 → page 824 is mandatory for operation.	1501326	CMMP-AS-C5-3A-M3
	Possible plug-in cards:	1501327	CMMP-AS-C5-11A-P3-M3
	• CAMC-DS-M1, CAMC-G-S1, CAMC-G-S3 → page 824	1501328	CMMP-AS-C10-11A-P3-M3
		3215473	CMMP-AS-C15-11A-P3-M3
	without slot – CMMP-AS-...-M0		
	The plug assortment NEKM is included in the scope of delivery of the motor controller.	1622901	CMMP-AS-C2-3A-M0
		1622902	CMMP-AS-C5-3A-M0
		1622903	CMMP-AS-C5-11A-P3-M0
	1622904	CMMP-AS-C10-11A-P3-M0	

Accessories – Ordering data

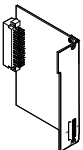
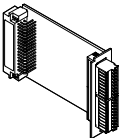
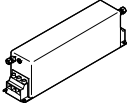
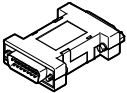
	Cable length [m]	Part no.	Type
Cable and plug			
Control cable, for I/O interface to any controller			
	2.5	552254	NEBC-S1G25-K-2.5N-LE26¹⁾
	3.2	8001373	NEBC-S1G25-K-3.2N-LE25²⁾
Programming cable			
	1.8	1501332	NEBC-U1G-K-1.8-N-U2G
Encoder plug			
	–	564264	NECC-A-S-S1G9-C2M
Plugs			
	For PROFIBUS interface	–	533780 FBS-SUB-9-WS-PB-K
	For CANopen interface	–	533783 FBS-SUB-9-WS-CO-K
	For DeviceNet interface	–	525635 FBSD-KL-2X5POL

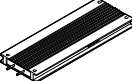
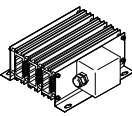
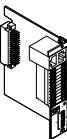
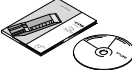
	Part no.	Type
Cable and plug		
Plug assortment		
	For CMMP-AS-C2/-C5-3A-M0, CMMP-AS-C2/-C5-3A-M3	1659228 NEKM-C-7
	For CMMP-AS-C5/-C10-11A-P3-M0, for CMMP-AS-C5/-C10/-15-11A-P3-M3	552256 NEKM-C-3
	For interface CAMC-D-8E8A	569959 NEKM-C-5³⁾
	For safety module CAMC-G-S1 Motor controller CMMP-AS-...-M0	1660640 NEKM-C-8³⁾
	For safety module CAMC-G-S3	1660937 NEKM-C-9³⁾
	Plug-in card	
	For PROFIBUS interface	547450 CAMC-PB
	For DeviceNet interface	547451 CAMC-DN
	For EtherCAT interface	567856 CAMC-EC
	For EtherNet/IP interface	1911917 CAMC-F-EP
	For PROFINET RT interface	1911916 CAMC-F-PN

- 1) Recommended for analogue signals since the cable is shielded
- 2) Cannot be used if the incremental encoder interface (input) is in use
- 3) Plugs are included in the scope of delivery of the plug-in card

Motor controllers CMMP-AS, for servo motors

Accessories – Ordering data

	Part no.	Type
Plug-in card¹⁾		
Switch module		
	1501329	CAMC-DS-M1
Interface, for extending the digital I/Os ²⁾		
	567855	CAMC-D-8E8A
Mains filter		
	3947275	CADF-C15-11A-P3
For CMMP-AS-C15-11A		
EMC filter³⁾		
	4825847	CAMF-C5-FC
For servo motors EMME-AS		

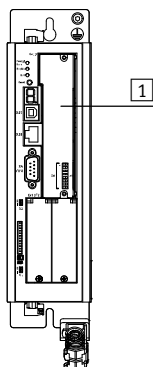
	Part no.	Type
Braking resistor		
	2882342	CACR-LE2-50-W500 ⁴⁾
	1336611	CACR-LE2-72-W500
For CMMP-AS-C2-3A, CMMP-AS-C5-3A		
	1336617	CACR-KL2-67-W1800
	2882343	CACR-KL2-40-W2000 ⁴⁾
For CMMP-AS-C5-11A, CMMP-AS-C10-11A, CMMP-AS-C15-11A		
Safety module (see following table)		
	1501330	CAMC-G-S1
	1501331	CAMC-G-S3
Documentation and software		
	Ordering data → online: cmmp	

- 1) The plugs are included in the scope of delivery.
- 2) 8 digital input/outputs.
- 3) To reduce EMC interference, the use of the EMC filter is recommended above a cable length of ≥ 10 m. For encoder cables ≥ 10 m, the filter is included in the scope of delivery of the cable.
- 4) Recommended braking resistor.

	Safety module CAMC-G-S1	Safety module CAMC-G-S3
Safety functions to EN 61800-5-2	<ul style="list-style-type: none"> • Safe Torque Off (STO) • Safe Brake Control (SBC) 	<ul style="list-style-type: none"> • Safe Torque Off (STO) • Safe Brake Control (SBC) • Safe Stop 1 (SS1) • Safe Operating Stop (SOS) • Safe Stop 2 (SS2) • Safely Limited Speed (SLS) • Safe Speed Range (SSR) • Safe Speed Monitor (SSM)
Performance Level (PL) to EN ISO 13849-1	Category 4, Performance Level e	Category 4, Performance Level e
Safety Integrity Level (SIL) to EN 61800-5-2, EN 62061, EN 61508	SIL 3	SIL 3
Certificate issuing authority	TÜV 01/205/5165.01/14	TÜV 01/205/5165.01/14

Note

One of the plug-in cards CAMC-G-S1, CAMC-G-S3 or CAMC-DS-M1 must be inserted in slot 1 for operation of the motor controller CMMP-AS-...-M3.



Note

The mains filter is mandatory with CMMP-AS-C15... for compliance with the CE and EN standards.



Cost-optimised, convenient

- + Excellent price/performance ratio in combination with motors EMMS-ST
- + Convenient and safe thanks to integrated Safe Torque Off (STO) safety function
- + Extremely quick and easy commissioning thanks to web technology and parameter cloud
- + Compact and space-saving, optimised design

Controllers > Controllers for stepper motors >
Motor controllers for stepper motors

CMMO-ST

Controllers > Controllers for stepper motors >

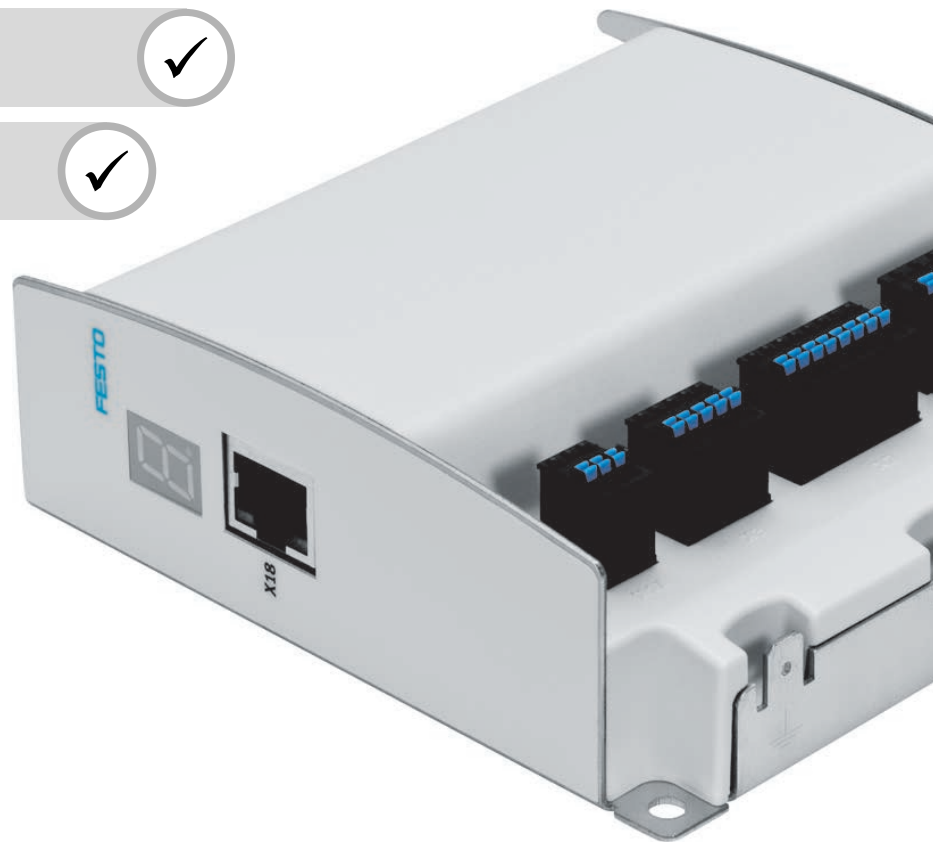
Motor controllers for stepper motors

CMMO-ST

 Overview, configuration and ordering
→ www.festo.com/catalogue/cmmo-st



 Additional information, support and user documentation
→ www.festo.com/sp/cmmo-st



- + Extremely quick and easy commissioning thanks to web technology and parameter cloud
- + Full access and diagnostics via a standard web browser do away with the need for handheld terminals
- + Supports the Safe Torque Off (STO) safety function
- + Compact and space-saving, optimised design
- + Reliable position and torque control in the servo motor system for motors with integrated encoder

Motor controllers CMMO-ST, for stepper motors

Product range overview

Type	Nominal voltage [V DC]	Nominal current [A]	Interfaces	
			I/O interface	IO-Link
CMMO-ST	24 ±15%	6	■	■

Product options

DIO	Control via inputs/outputs	N	Switching input/output NPN
LK	Bus protocol IO-Link	P	Switching input/output PNP

Data sheet

Technical data		Download CAD data → www.festo.com	
CMMO-ST-...	-DIOP/-DION	-LKP	
Operating mode			
Open-loop operation	Sinusoidal current form		
Closed-loop operation	Controlled sinusoidal current, cascade controller for speed and position		
Rotary position encoder	Encoder		
Encoder interface input	RS422		
Parameterisation interface	Ethernet		
Ethernet, supported protocols	TCP/IP	TCP/IP, Modbus TCP	
Protocol	-	IO-Link	
		I-Port	
		Modbus TCP	
Position sets	32	64	
Communication profile	-	FHPP	
Number of digital logic inputs	11	1	
Number of digital logic outputs	11	3	

Electrical data			
CMMO-ST-...	-DIOP	-DION	-LKP
General			
Max. DC link voltage	[V DC]	28	31
Nominal output current	[A]	5.7	
Load voltage			
Nominal voltage	[V DC]	24 ±15%	
Nominal current	[A]	6	
Peak current	[A]	8	
Logic supply			
Nominal voltage	[V DC]	24 ±15%	
Nominal current	[A]	0.3	
Max. current per output	[mA]	100	
Switching logic, input/output	PNP	NPN	PNP

Operating conditions		
Ambient temperature	[°C]	0 ... +50
Degree of protection	IP40	
CE marking (see declaration of atmosphere)	To EU EMC Directive ¹⁾	
	To EU Machinery Directive	

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to usage restrictions in residential, office or commercial locations or small businesses, further measures for the reduction of the emitted interference may be necessary.

Safety data	
Safety function to EN 61800-5-2	Safe Torque Off (STO)
Performance Level (PL) to EN ISO 13849-1	Category 3, Performance Level e
Safety Integrity Level (SIL) to EN 61800-5-2, EN 62061, EN 61508	SIL 3 / SIL CL 3
Certificate issuing authority	TÜV 01/205/5252.01/15

Motor controllers CMMO-ST, for stepper motors

Ordering – Product options



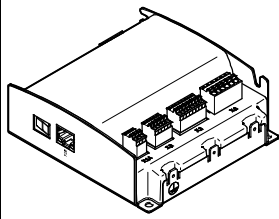
Configurable product

This product and all its options can be ordered using the configurator.

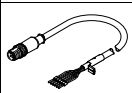
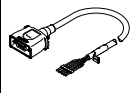
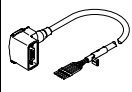
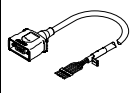
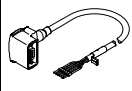
The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

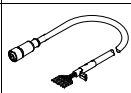
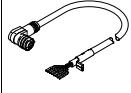
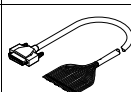
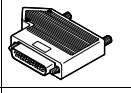
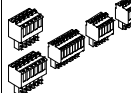
Enter the type code in the search field.

Ordering data

	Description	Part no.	Type
	With I/O interface		
	Switching input/output PNP	1512316	CMMO-ST-C5-1-DIOP
	Switching input/output NPN	1512317	CMMO-ST-C5-1-DION
	With IO-Link		
	Switching input/output PNP	1512320	CMMO-ST-C5-1-LKP

Accessories – Ordering data

	Cable length [m] ¹⁾	Part no.	Type
Motor cable			
For EPCO-16; ERMO-12/-16; EMMS-ST-28			
Straight plug			
	1.5	1449600	NEBM-SM12G8-E-1.5-Q5-LE6
	2.5	1449601	NEBM-SM12G8-E-2.5-Q5-LE6
	5.0	1449602	NEBM-SM12G8-E-5-Q5-LE6
	7.0	1449603	NEBM-SM12G8-E-7-Q5-LE6
	10.0	1449604	NEBM-SM12G8-E-10-Q5-LE6
For EPCO-25/-40; ELGR-35; ERMO-25/-32; EMMS-ST-42/-57			
Straight plug			
	1.5	1450368	NEBM-S1G9-E-1.5-Q5-LE6
	2.5	1450369	NEBM-S1G9-E-2.5-Q5-LE6
	5.0	1450370	NEBM-S1G9-E-5-Q5-LE6
	7.0	1450371	NEBM-S1G9-E-7-Q5-LE6
	10.0	1450372	NEBM-S1G9-E-10-Q5-LE6
Angled plug			
	1.5	1450736	NEBM-S1W9-E-1.5-Q5-LE6
	2.5	1450737	NEBM-S1W9-E-2.5-Q5-LE6
	5.0	1450738	NEBM-S1W9-E-5-Q5-LE6
	7.0	1450739	NEBM-S1W9-E-7-Q5-LE6
	10.0	1450740	NEBM-S1W9-E-10-Q5-LE6
For ELGR-45/-55; EMMS-ST-87			
Straight plug			
	Straight plug		
	1.5	1450834	NEBM-S1G15-E-1.5-Q7-LE6
	2.5	1450835	NEBM-S1G15-E-2.5-Q7-LE6
	5.0	1450836	NEBM-S1G15-E-5-Q7-LE6
	7.0	1450837	NEBM-S1G15-E-7-Q7-LE6
10.0	1450838	NEBM-S1G15-E-10-Q7-LE6	
Angled plug			
	1.5	1450943	NEBM-S1W15-E-1.5-Q7-LE6
	2.5	1450944	NEBM-S1W15-E-2.5-Q7-LE6
	5.0	1450945	NEBM-S1W15-E-5-Q7-LE6
	7.0	1450946	NEBM-S1W15-E-7-Q7-LE6
	10.0	1450947	NEBM-S1W15-E-10-Q7-LE6

	Cable length [m] ¹⁾	Part no.	Type
Encoder cable			
For EPCO-16/-25/-40; ELGR-35/-45/-55; ERMO-12/-16/-25/-32; EMMS-ST-28/-42/-57/-87			
Straight plug			
	1.5	1451586	NEBM-M12G8-E-1.5-LE8
	2.5	1451587	NEBM-M12G8-E-2.5-LE8
	5.0	1451588	NEBM-M12G8-E-5-LE8
	7.0	1451589	NEBM-M12G8-E-7-LE8
	10.0	1451590	NEBM-M12G8-E-10-LE8
For EPCO-25/-40; ERMO-25/32; EMMS-ST-42/-57/-87			
Angled plug			
	1.5	1451674	NEBM-M12W8-E-1.5-LE8
	2.5	1451675	NEBM-M12W8-E-2.5-LE8
	5.0	1451676	NEBM-M12W8-E-5-LE8
	7.0	1451677	NEBM-M12W8-E-7-LE8
	10.0	1451678	NEBM-M12W8-E-10-LE8
Control cable for I/O interface to any controller			
	3.2	8001373	NEBC-S1G25-K-3.2-N-LE25
Plug for I/O interface to any controller			
	–	8001372	NEFC-S1G25-C2W25-S6
Assortment of plugs			
	For CMMO-ST-...-DIOP/-DION		
	–	576005	NEKM-C-10 ²⁾
			For CMMO-ST-...-LKP
–	2948940	NEKM-C-14 ²⁾	

1) Other cable lengths on request.
 2) Plugs are included in the scope of delivery of the motor controller.

6 Handling systems

- + With the Handling Guide Online you will find the right standard system quickly and easily
- + Handling modules with electric or pneumatic drives
- + Cartesian systems: variants consisting of linear drives and slide drives
- + Parallel kinematic systems: high-speed handling system with robotic functionality for free movement in three dimensions
- + Ready-to-install control systems



Contents

Product overview 832

Handling Guide Online HGO, for single-axis systems to 3D gantries 835

Linear gantries EXCT 843

Planar surface gantries EXCM 847

Planar surface gantries EXCH 851

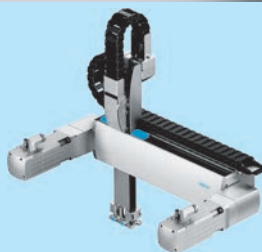
HGO

Handling Guide Online



- + Configuration and ordering system for handling systems of the YXC... series
- + Economical and safe

→ page 835



EXCT

Linear gantries

- + Short cycle times thanks to high dynamic response

→ page 843



EXCM

Planar surface gantries

- + Compact gantry
- + Perfectly matched drive and controller packages

→ page 847



EXCH


Planar surface gantries

- + Maximum working space coverage
- + Low moving mass
- + High payload

→ page 851

Product overview

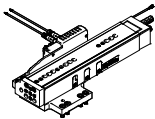


Software tool

<p>Configurator</p>		<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
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Handling modules

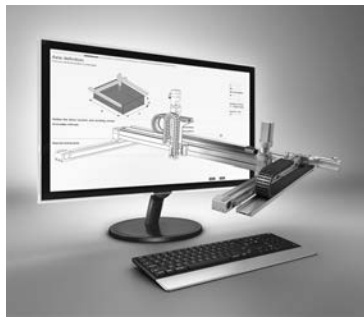
06

Handling systems

Type	 Handling modules DHMZ-DGSL	 Handling modules HSP	 Handling modules, pneumatic HSW-AP, HSW-AS
Size	8 mm, 16 mm, 20 mm, 25 mm, 32 mm	12, 16, 25	10, 12, 16
Working stroke	10 ... 200 mm		
Y stroke		52 ... 170 mm	
Z stroke		20 ... 70 mm	80 ... 100 mm
Repetition accuracy		+/-0.01 mm, +/-0.02 mm	
Minimum cycle time		0.6 ... 1 s	0.6 ... 1 s
Theoretical force at 6 bar		40 ... 65 N	30 ... 55 N
Max. speed	0.5 ... 0.8 m/s		
Description	<ul style="list-style-type: none"> Intended for combination with handling modules EHYM 	<ul style="list-style-type: none"> Function module for the automatic transfer, feeding in and removal of small parts in extremely confined spaces Guided vertical and horizontal motion sequence High precision and good rigidity Compact design Extremely short cycle times Cost-optimised Stroke adjustment along Y- and Z-axes 	<ul style="list-style-type: none"> Function module for the automatic transfer, feeding in and removal of small parts in extremely confined spaces Guided swivel and linear motion High precision and good rigidity HSW-AP: pneumatic, with swivel module DSM; HSW-AS: without drive, with drive shaft Fast and compact Low-cost and ideal for universal use
→ Page/online	yxcl	hsp	hsw

Software tool

Engineering tool:
Handling Guide Online (HGO)
→ 835







Planning and designing complex handling systems, e.g. for pick & place applications, generally takes a lot of time. With the innovative Handling Guide Online (HGO) you can design a tailor-made system in just a few steps, simply using your application data such as the load mass, travel and cycle time.

Advantages:




- 1D- ... 3D kinematics
- Tailor-made system solution within just a few minutes
- CAD model available immediately
- Fully automatic selection of all relevant components
- Fully automated processing including ordering function
- Fully assembled or partly assembled systems
- Including commissioning files

This tool is integrated in the Festo electronic catalogue or can be called up directly at www.festo.com/handling-guide

Cartesian systems

Type	 Single-axis systems YXCS	 Linear gantries YXCL	 Planar surface gantries YXCF	 Three-dimensional gantries YXCR
Description	<ul style="list-style-type: none"> • Ready-to-install single-axis solution including energy chain for cables and tubing routing as well as matching motor and motor controller package • For any single-axis movement • Ideal for long gantry strokes and heavy loads • High mechanical rigidity and sturdy design 	<ul style="list-style-type: none"> • Ideal for long gantry strokes and heavy loads • High mechanical rigidity and sturdy design • Frequently used in feeding or loading applications • Use of tried and tested drives/axes from Festo 	<ul style="list-style-type: none"> • Can be used universally for handling light to very heavy workpieces or high payloads • Especially suitable for very long strokes • High mechanical rigidity and sturdy design • Freely positionable; any intermediate positions 	<ul style="list-style-type: none"> • Can be used universally for handling light to very heavy workpieces or high payloads • Especially suitable for very long strokes • High mechanical rigidity and sturdy design • Pneumatic or electric vertical axis on request • As an electrical solution – freely positionable/any intermediate positions
→ Page/online	835	835	835	835

Cartesian systems

Type	 Linear gantries EXCT	 Planar surface gantries EXCM	 Planar surface gantries EXCH
Description	<ul style="list-style-type: none"> • Short cycle times thanks to high dynamic response • Perfectly matched drive and controller package for quick commissioning • Especially economical due to the low moving dead weight 	<ul style="list-style-type: none"> • Excellent functionality in confined spaces • Low moving dead weight • Actuation via two stepper motors with integrated optical encoder and two-axis controller • With recirculating ball bearing guide 	<ul style="list-style-type: none"> • Optimal dynamic response when compared with other Cartesian gantry systems • Drive concept with low moving dead weight • Flat system design • High acceleration in both axial directions • Large working space
→ Page/online	843	847	851

Product overview

Parallel kinematic systems



Type	Parallel kinematic system EXPT
Max. payload	5 kg
Working space nominal diameter	450 ... 1200 mm
Working space nominal height	100 mm
Max. picking rate	150 picks/min in 12" cycle
Description	<ul style="list-style-type: none"> • Low moving mass – ideal for high demands on dynamic response in three dimensions • Great path accuracy with a range of path profiles, even for very dynamic operation • Optional: rotary unit as 4th axis, on request with pneumatic rotary throughfeed for vacuum or gauge pressure
→ Page/online	expt

06

Control systems



Type	Control systems CMCA
Electrical connection	Spring-loaded terminal
Mains voltage AC	230/400 V
Nominal operating voltage phases	3-phase
Mains frequency	50 ... 60 Hz
Safety function	Safe Stop 1 (SS1)
Description	<ul style="list-style-type: none"> • Control system for handling systems from Festo • Available on a mounting plate with or without control cabinet housing • Includes the multi-axis controller CMXR and the motor controller CMMP required for actuation • Controller solution CMCA is pre-parameterised and already tested with the respective parallel kinematic system • Version with the control cabinet housing additionally features control components and fans in the door • Also included: terminals for control cabinet lighting, plug socket for PC in the control cabinet, terminals for Festo camera, terminals for two proximity sensors per axis
→ Page/online	cmca

Handling systems

Note

Control system cabinets for controlling handling systems → page 1689

Customised components – for your specific requirements



Compact handling system for desktop applications

- Modular system kit comprising operating software and planar surface gantry EXCM-30
- Quick and easy programming and commissioning using the predefined function elements from the Positioning Desktop Lib
- One basic platform for a wide range of applications (screwing, dispensing, testing, soldering, gripping, machine vision and much more)

- Predefined function elements from the software library make for easy programming and commissioning
- Easy integration, even in the most compact of installation spaces – Fit for Industry 4.0 thanks to the OPC UA interface at the controller

Many variants are possible. Ask your Festo sales engineer, who will be happy to help.

→ www.festo.com/contact



Quick and easy

- + The right handling system for you in just three steps
- + Ready-to-install handling systems significantly shorten your processes, from project engineering to commissioning

Cartesian systems >

Handling Guide Online

HGO

Single-axis systems YXCS

2D linear gantries YXCL

2D planar surface gantries YXCF

3D gantries YXCR


Cartesian systems >

Handling Guide Online

HGO

 Overview, configuration and ordering
 → www.festo.com/catalogue/hgo



 Additional information, support and user documentation
 → www.festo.com/sp/hgo



- + With the Handling Guide Online you will find the right handling system quickly and easily in just three steps
- + The correct CAD model and data sheet for the configuration
- + Assembled and ready to install or partly assembled
- + Including commissioning files

At a glance

Handling systems from Festo: versatile, economical, perfectly fitting

Are you looking for the right partner for your new handling system? Festo offers you a diverse range of handling systems for a multitude of applications, from standard solutions for common applications through to customised solutions for your own very specific requirements. In addition, our ready-to-install systems and support services

mean less work for you. We support you from the design stage through to installation and commissioning. That allows you to concentrate entirely on your core business and increase your productivity.

Handling Guide Online



Selecting the handling solution

Select your handling system

Single-axis system

Single-axis movement:
Single-axis module as a complete system.
Easy to connect to your own front unit.
 Animation

2D linear gantry

Movements in 2D in the vertical working space:
Linear gantries as complete systems.
Electric and pneumatic axes can be combined
 Animation

2D gantry

Movements in 2D in the horizontal working space:
Planar surface gantries as complete systems.
Combining electric axes.
Easy to connect to your own Z unit.
 Animation

3D gantry

Movements in 3D:
Three-dimensional gantries as complete systems.
Electric and pneumatic axes can be combined
 Animation

Add to basket
3D/2D CAD
Documentation
Technical data
Send request
Handling solution:
 Standard system
 Save system
 Load system
Selected: none
Enter system ID

The Handling Guide Online is a configuration and ordering platform in one. You will find it - like all our products - on Festo's website under the tab "Products". It reduces your engineering time and effort to a minimum and guides you to the right handling system in record time.

All you have to do is enter the data for your application. The Handling Guide Online automatically works out suitable solutions, including CAD model, data sheet and net price. You then simply select the system you want, which you can order immediately through the Online Shop. There's no faster or simpler way to get the right handling system. Try out the new tool today!

Advantages at a glance

Economical

- Minimal engineering work
- Reduced time and effort for logistics, installation and commissioning

Everything from a single source

- Hardware, software, service
- With the right drive package

Ready to install

- Completely assembled, all tubing and wiring fitted and fully tested
- Including user documentation

Reliable

- Tried and tested standard axes
- Perfectly matching components

Cartesian systems >

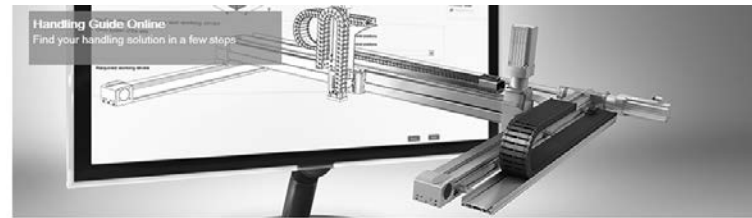
Handling Guide Online HGO

At a glance

Three steps to your handling system

1st step:

Choose the type of handling system and enter your application data into the Handling Guide Online. The tool calculates appropriate handling systems, including price.



Selecting the handling solution

Select your handling system

Single-axis system

Single-axis movement:
Single-axis module as a complete system.
Easy to connect to your own front unit.
 Animation

2D linear gantry

Movements in 2D in the vertical working space:
Linear gantries as complete systems.
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2D gantry

Movements in 2D in the horizontal working space:
Planar surface gantries as complete systems.
Combining electric axes.
Easy to connect to your own Z unit.
 Animation

3D gantry

Movements in 3D:
Three-dimensional gantries as complete systems.
Electric and pneumatic axes can be combined
 Animation

Add to basket

2D/3D CAD

Documentation

Technical data

Send request

Handling solution:

Standard system

Save system:

Load system

Selected: none

Enter system ID

OK

3D Raumportal

Bewegungen in 3D:
Raumportale als Komplettsystem.
Kombination von elektrischen und pneumatischen Achsen möglich.

Animation

2nd step:

Select the suitable handling system from the list of suggestions. The correctly configured CAD model and the data sheet with all the relevant figures are immediately available for download.

Result of calculation

Select the appropriate system and continue with the configuration:

No.	System series	System workload	Repetition accuracy (H-)
<input checked="" type="checkbox"/> 1	YXCR-2	16 %	0.11 mm
<input type="checkbox"/> 2	YXCR-2	18 %	0.11 mm
<input type="checkbox"/> 3	YXCR-2	19 %	0.11 mm
<input type="checkbox"/> 4	YXCR-2	16 %	0.11 mm
<input type="checkbox"/> 5	YXCR-2	18 %	0.11 mm

3D gantry YXCR-2: #1

Drive module	X module: toothed belt axis EOC-80	Y module: toothed belt axis EGC-80	Z module: Electric mini slide EGSL-45
Stroke	300 mm	500 mm	100 mm
Repetition accuracy (H-)	0.08 mm	0.08 mm	0.02 mm
Gear units	6:1	5:1	Without
Motor type	Servo motor EMMS-AS	Servo motor EMMS-AS	Servo motor EMMS-AS
Motor position	Middle	Left	Top
Motor controller	CMMP-AS-M3	CMMP-AS-M3	CMMP-AS-M3
Nominal voltage phases	1-phase	1-phase	1-phase

Add to basket

2D/3D CAD

Documentation

Technical data

Send request

Handling solution:

Standard system

Save system:

Load system

Selected: system # 1

3rd step:

You can use additional options to configure your selected system in accordance with your requirements. Then add the preferred handling system to your shopping basket and confirm your order. Festo will deliver a ready-to-install system, including all user documentation in accordance with the EC Machinery Directive, as quickly as possible.

Your handling solution

Your selected system overview:

Your system ID: C137963

Your next step:

Send request

Add to basket

Update CAD Preview

Your entries | Your system | Your options

Feature	Value

Back

Add to basket

2D/3D CAD

Documentation

Technical data

Send request

Handling solution:

Standard system

Save system:

Load system

Selected: system # 1

Vacuum technology

Find the right vacuum generators and suction cups for your application.

More about vacuum technology

At a glance

Standard handling systems

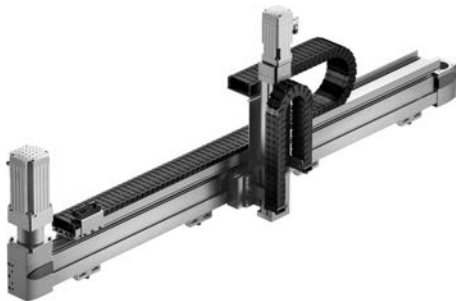
Ready-to-install standard handling systems from Festo provide you with fast and reliable solutions for all standard applications: fully assembled and tested, including energy chain, connection technology and matching drive package. The individual components are perfectly harmonised and guarantee reliable operation.

Single-axis system YXCS



- For one-dimensional movements
- High mechanical rigidity
- For the following strokes:
Y direction: up to 3000 mm
- Outstanding operational and process reliability ensured by routing of tubing and cables through energy chains in Y direction
- Standardised interface for easy connection of a front unit

Linear gantry YXCL



- For vertical movements in 2D
- High mechanical rigidity
- For the following strokes:
Y direction: up to 3000 mm
Z direction: up to 800 mm
- Outstanding operational and process reliability ensured by routing of tubing and cables through energy chains in Y and Z direction

Planar surface gantry YXCF



- For horizontal movements in 2D
- High mechanical rigidity
- For the following strokes:
X direction: up to 3000 mm
Y direction: up to 2000 mm
- Outstanding operational and process reliability ensured by routing the tubing and cables through energy chains in X and Y direction
- Standardised interface for easy connection of a front unit

Three-dimensional gantry YXCR



- For three-dimensional movements in a space
- High mechanical rigidity
- For the following strokes:
X direction: up to 3000 mm
Y direction: up to 2000 mm
Z direction: up to 800 mm
- In the Z direction, you can choose between pneumatic and electric components
- Outstanding operational and process reliability ensured by routing the tubing and cables through energy chains in X, Y and Z direction

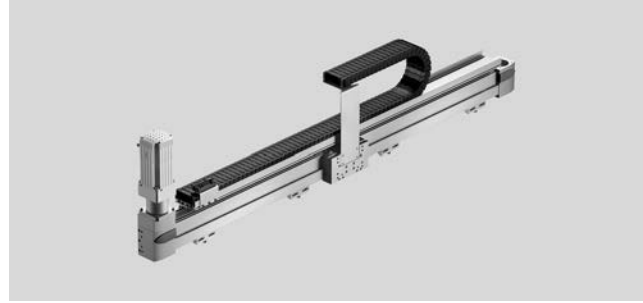
Cartesian systems >

Handling Guide Online HGO

Data sheet – Single-axis systems

Range of applications

- For any single-axis movement
- Ideal for long gantry strokes and heavy loads



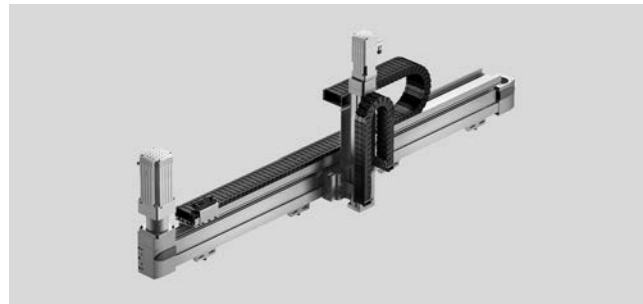
Technical data

Size	Y direction	Max. working stroke [mm]	Max. payload [N]	Mounting position
YXCS	EGC-50-TB-KF	1900	Dependent on the selected dynamic response	Horizontal
	EGC-80-TB-KF	3000		
	EGC-120-TB-KF	3000		
	EGC-185-TB-KF	3000		
	EGC-HD-125-TB-KF	3000		
	EGC-HD-160-TB-KF	3000		
	EGC-HD-220-TB-KF	3000		
Other requirements	Customised on request			

Data sheet – Linear gantries

Range of applications

- Ideal for long gantry strokes and heavy loads
- Frequently used in feeding or loading applications



Technical data

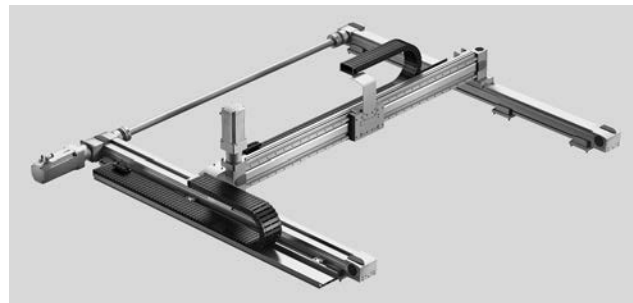
Size	Y direction	Z direction	Max. working stroke [mm]	Max. payload [N]	Mounting position
YXCL-1	• EGC-50-TB-KF	• EGSL-35 • DGSL-6	Y: 1900 Z: 50	Dependent on the selected dynamic response	Horizontal
YXCL-2	• EGC-80-TB-KF • EGC-HD-125-TB-KF	• EGSL-45/55 • DGEA-18 • EGC-70-BS-KF • DGSL-12/16	Y: 3000 Z: 800		
YXCL-3	• EGC-120-TB-KF • EGC-HD-160-TB-KF	• EGSL-75 • DGEA-25/40 • EGC-80-BS-KF • DGSL-20/25	Y: 3000 Z: 800		
YXCL-4	• EGC-120-TB-KF • EGC-HD-160-TB-KF	• EGSL-75 • DGEA-25/40 • EGC-80-BS-KF • DGSL-20/25	Y: 3000 Z: 800		
Other requirements	Customised on request				

Handling systems

Data sheet – Planar surface gantries

Range of applications

- For any movement in 2D space
- For very high requirements in terms of precision combined with long strokes
- Can be used universally for handling light to very heavy workpieces or high payloads



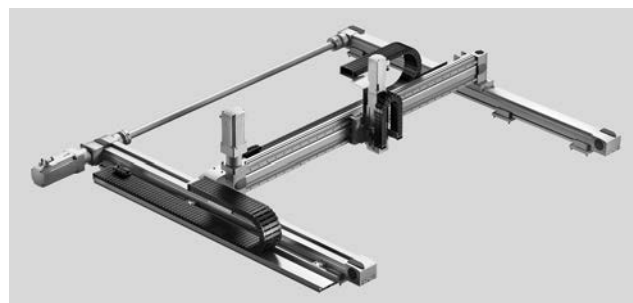
Technical data

Size	Y direction	Z direction	Max. working stroke [mm]	Max. payload [N]	Mounting position
YXCF-1	• EGC-50-TB-KF	• EGC-50-TB-KF	Y: 1900 Z: 1900	Dependent on the selected dynamic response	Horizontal
YXCF-2	• EGC-80-TB-KF	• EGC-80-TB-KF • EGC-HD-125-TB-KF	Y: 3000 Z: 2000		
YXCF-3	• EGC-120-TB-KF	• EGC-120-TB-KF • EGC-HD-160-TB	Y: 3000 Z: 2000		
YXCF-4	• EGC-185-TB-KF	• EGC-185-TB-KF • EGC-HD-220-TB-KF	Y: 3000 Z: 2000		
Other requirements	Customised on request				

Data sheet – Three-dimensional gantries

Range of applications

- For any movement in 3D space
- For very high requirements in terms of precision combined with long strokes
- Can be used universally for handling light to very heavy workpieces or high payloads



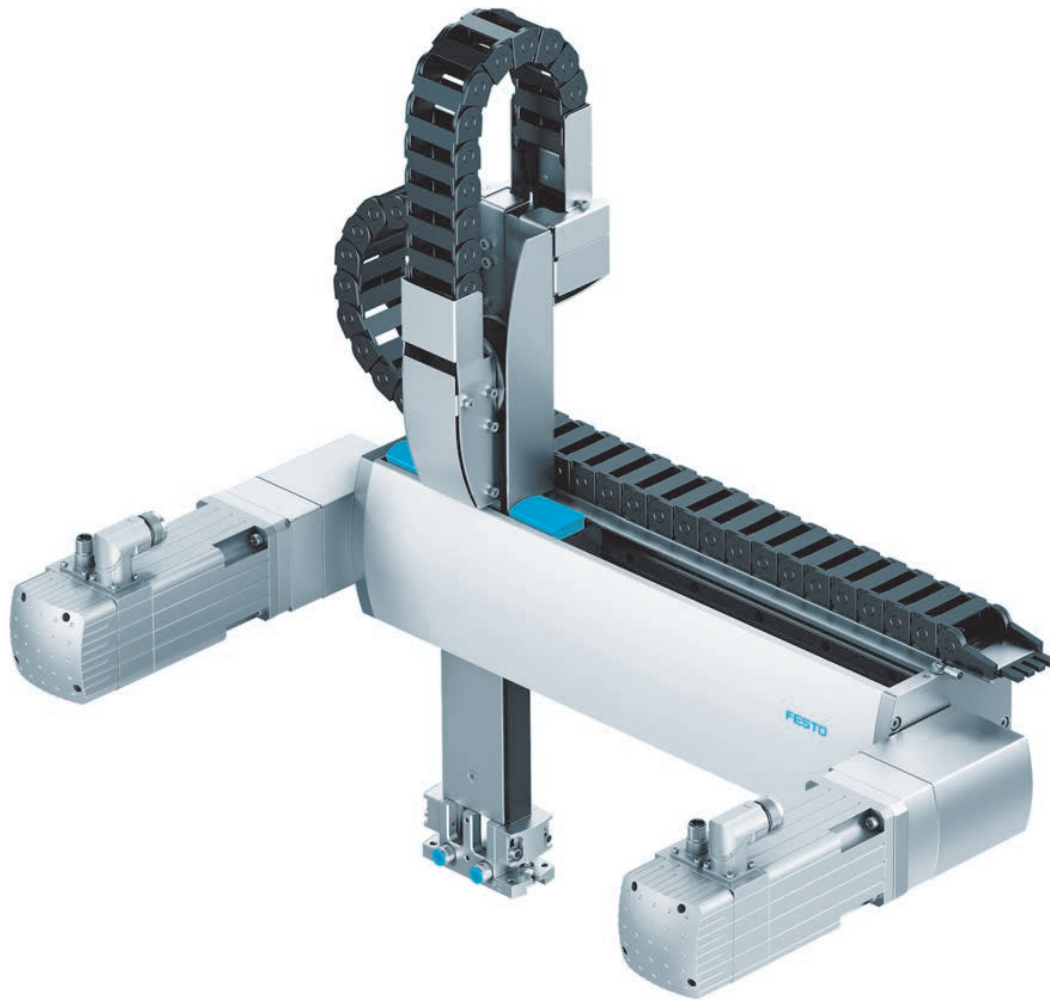
Technical data

Size	X direction	Y direction	Z direction	Max. working stroke [mm]	Max. payload [N]	Mounting position
YXCR-1	• EGC-50-TB-KF	• EGC-50-TB-KF	• EGSL-35 • DGSL-6	X: 1900 Y: 1900 Z: 50	Dependent on the selected dynamic response	Horizontal
YXCR-2	• EGC-80-TB-KF	• EGC-80-TB-KF • EGC-HD-125-TB	• EGSL-45/55 • DGEA-18 • EGC-70-BS-KF • DGSL-12/16	X: 3000 Y: 2000 Z: 800		
YXCR-3	• EGC-120-TB-KF	• EGC-120-TB-KF • EGC-HD-160-TB	• EGSL-75 • DGEA-25/40 • EGC-80-BS-KF • DGSL-20/25	X: 3000 Y: 2000 Z: 800		
YXCR-4	• EGC-185-TB-KF	• EGC-185-TB-KF • EGC-HD-220-TB-KF	• DGEA-40 • EGC-120-BS-KF	X: 3000 Y: 2000 Z: 800		
Other requirements	Customised on request					

Cartesian systems >

06

Handling systems



Short cycle times

- + Thanks to a high dynamic response
- + Perfectly matched drive and controller package for quick commissioning
- + Especially economical operation due to the low moving dead weight

Cartesian systems > 2D linear gantries >
Linear gantries

EXCT


Cartesian systems > 2D linear gantries >

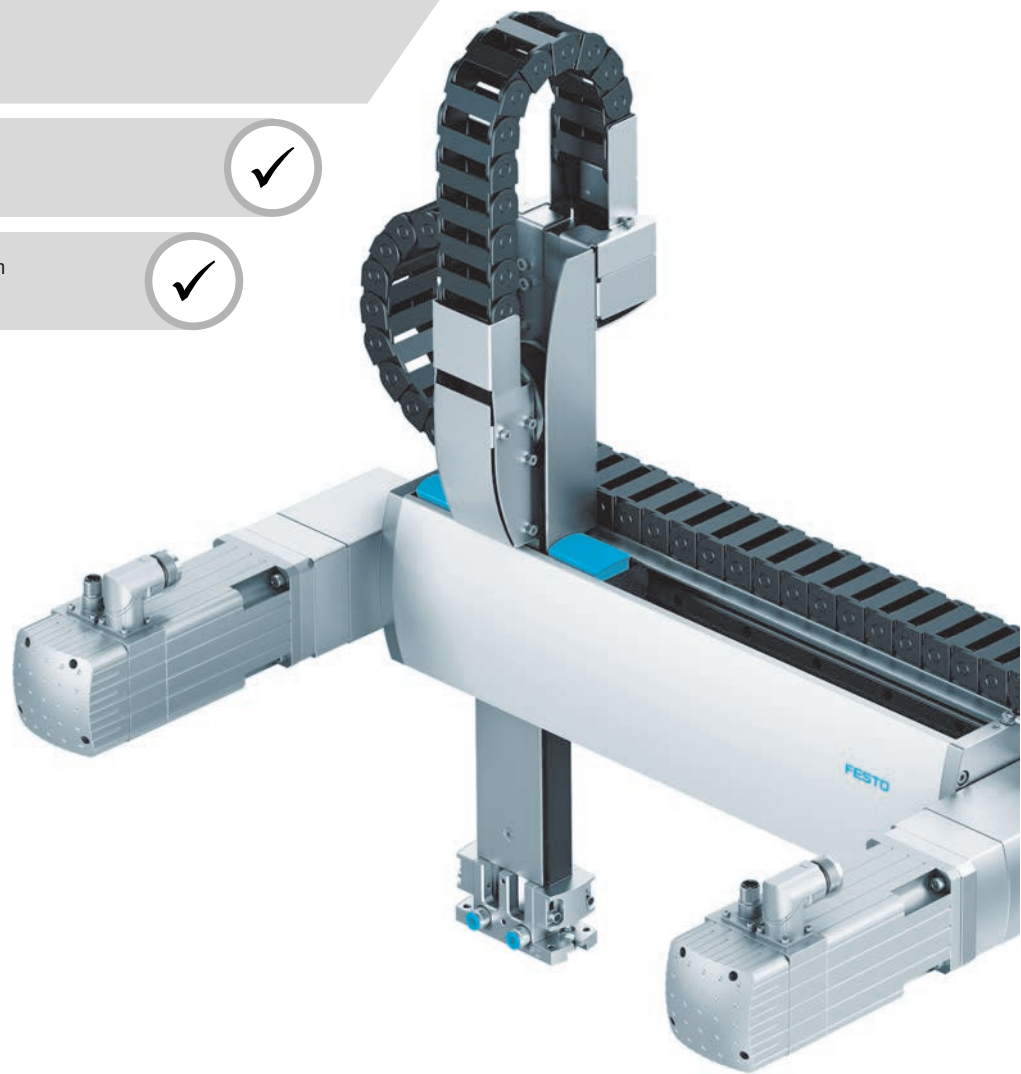
Linear gantries

EXCT

 Overview, configuration and ordering
→ www.festo.com/catalogue/exct



 Additional information, support and user documentation
→ www.festo.com/sp/exct



- + High acceleration in both axis directions
- + Optimal dynamic response when compared with other Cartesian gantry systems
- + Interface for many grippers from Festo
- + Optional: Rotary drive as front unit, with pneumatic rotary feedthrough

At a glance

Operating principle

Two fixed servo motors drive a toothed belt arranged in a T-shape.

The toothed belt moves the slide of the Y-axis and the interface located on the Z-axis in a two-dimensional space.

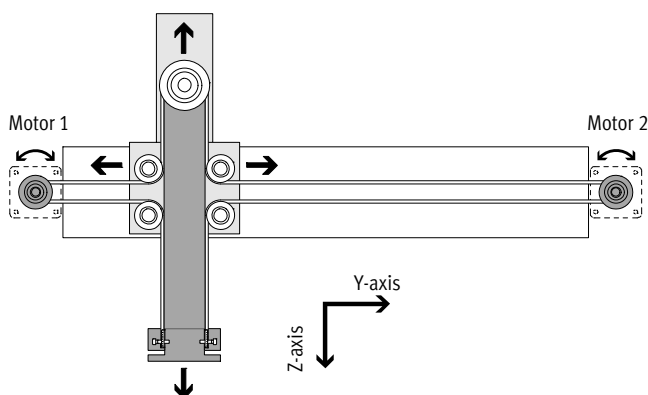
A controller calculates the position of the interface. The controlled interaction of the motors results in the corresponding movement of the interface.

The use of attachment components enables additional processes to be carried out.

General

- Optimal dynamic response when compared with other Cartesian gantry systems
- The drive concept ensures low moving dead weight
- Flat system design
- Perfectly matched drive and controller package
- High acceleration in both axis directions
- Interface for many grippers from Festo
- Fast repositioning of parts and modules in a large, rectangular working space, e.g.:
 - Sorting
 - Loading, unloading
 - Gluing, cutting

		Motor 2	
		↶	•
Motor 1	↶	→	↘
	•	↗	•
	↶	↑	↙



Data sheet

Size		15	30	100
Guide		Recirculating ball bearing guide		
Stroke of the				
Y-axis	[mm]	100 ... 1000	100 ... 1500	100 ... 2000
Z-axis	[mm]	100, 200	250, 500	250, 500, 800
Rated load at max. dynamic response ¹⁾	[kg]	1.5	3	10
Max. process force in Z direction	[N]	100	300	500
Max. acceleration	[m/s ²]	50	50	30
Max. speed ²⁾	[m/s]	4.8	5	4
Repetition accuracy	[mm]	±0.1		
Mounting position		Vertical		

1) Rated load = tool load (attachment component + gripper, for example) + payload.

2) These data only apply under ideal conditions.

For a precise configuration please consult a sales engineer from Festo.

Cartesian systems > 2D linear gantries >

06

Handling systems



Movements in 2D in the horizontal working space

- + Small planar surface gantry with rectangular working space offering extensive functionality with a highly compact design
- + Simple integration thanks to the matched drive and controller package
- + Small moving mass thanks to the parallel kinematic drive concept

Cartesian systems > 2D planar surface gantries >
Planar surface gantries

EXCM

Cartesian systems > 2D planar surface gantries >

Planar surface gantries

EXCM



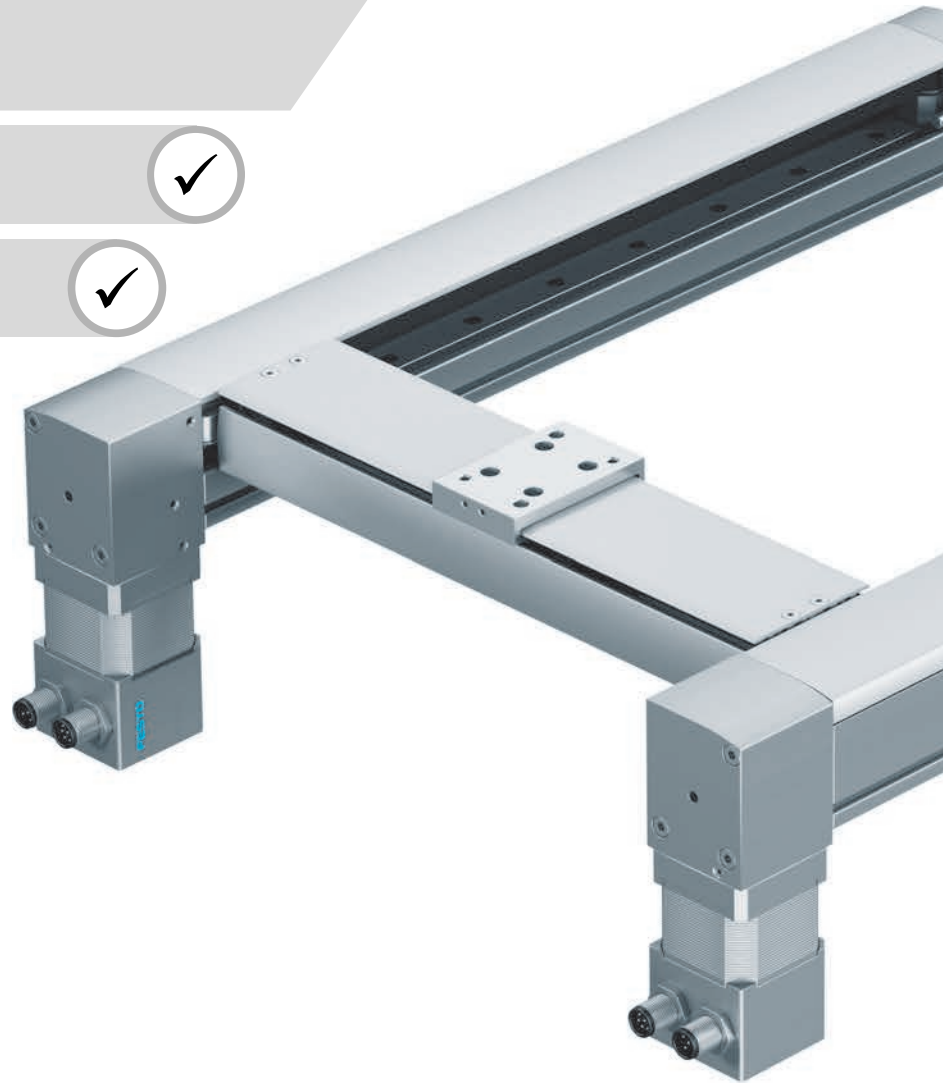
Overview, configuration and ordering

→ www.festo.com/catalogue/excm



Additional information, support and user documentation

→ www.festo.com/sp/excm



- + Movements in 2D in the horizontal working space
- + Compact planar surface gantry with extremely neat design
- + Maximum working space coverage
- + Low moving masses enable high payloads
- + Commissioning and maintenance are child's play thanks to the two-axis controller with integrated transformation and interpolation
- + Optional Z-axis for movements in 3D space
- + New: Motor controller with 48 V load voltage for higher dynamic response

At a glance

Operating principle

The planar surface gantry EXCM can approach any position within its working space. The recirculating toothed belt, driven by fixed motors, moves the slide within a two-dimensional area.

Drive and controller package

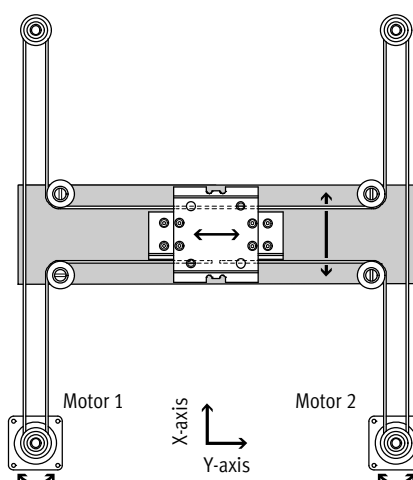
The drive and controller package are optimally adapted to each other.

The encoder allows closed-loop operation on the basis of position control.

EXCM-30/40

For applications in the area of small parts assembly or automated laboratory applications.

		Motor 1		
		+	•	-
Motor 2	+	→	↘	↓
	•	↗	•	↖
	-	↑	↖	←



Data sheet

Size		30	40
Guide		Recirculating ball bearing guide	Recirculating ball bearing guide
Stroke of the			
X-axis	[mm]	100, 150, 200, 300, 400, 500	-
		90 ... 700	200 ... 2000
Y-axis	[mm]	110, 160, 210, 260, 310, 360, 410, 460, 510	-
		110 ... 510	200 ... 1000
Rated load at max. dynamic response ¹⁾	[kg]	2/3 ²⁾	4
Max. speed	[m/s]	1	2
Max. acceleration	[m/s ²]	20	20
Repetition accuracy	[mm]	±0.05	±0.1
Mounting position		Any ³⁾	Horizontal

1) Rated load = tool load (attachment components) + payload.

2) Vertical/horizontal mounting position.

3) Motors with brake must be used in the case of vertical installation.



Highly dynamic movements in 2D

- + Ready-to-install complete system, including matching motor and motor controller package
- + High dynamic response and large working space
- + Small moving mass thanks to the parallel kinematic drive concept

Cartesian systems > 2D planar surface gantries >
Planar surface gantries

EXCH

Cartesian systems > 2D planar surface gantries >

Planar surface gantries

EXCH



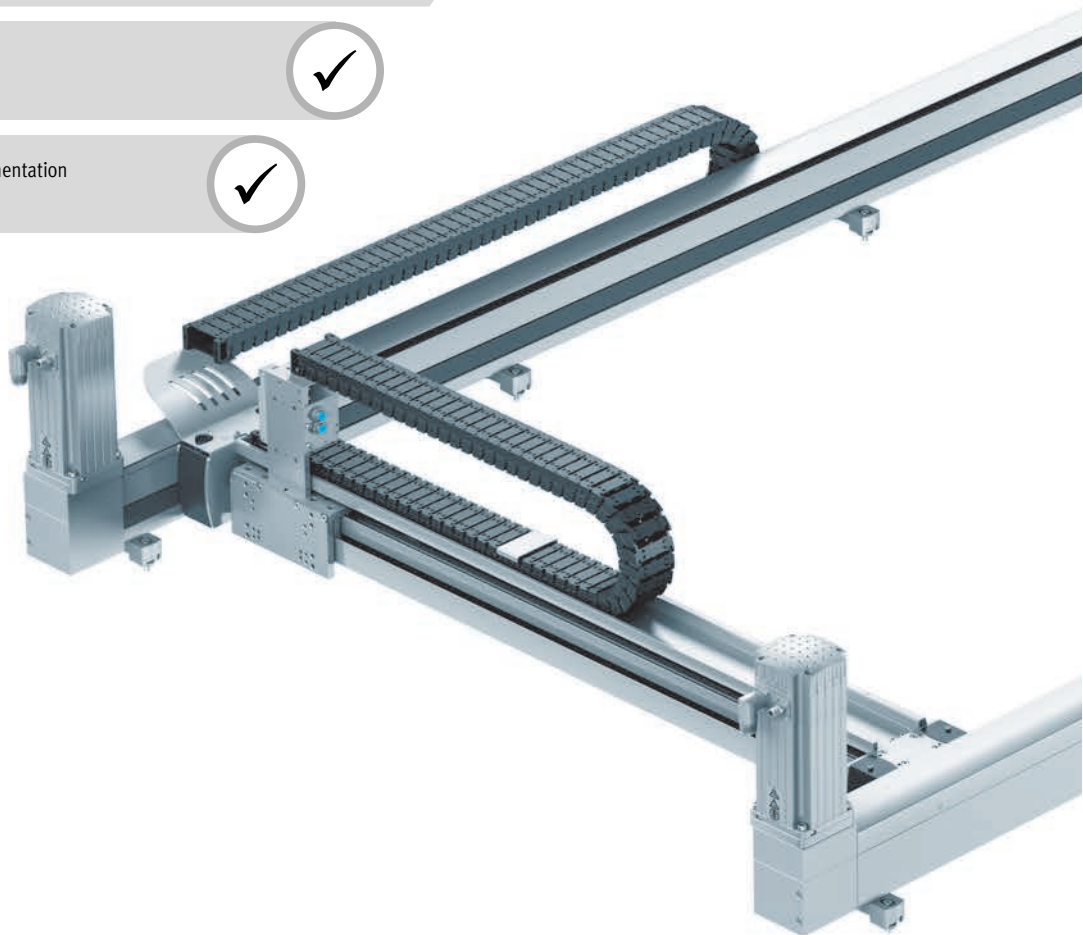
Overview, configuration and ordering

→ www.festo.com/catalogue/exch



Additional information, support and user documentation

→ www.festo.com/sp/exch



- + High dynamic planar surface gantry
- + Optimal dynamic response when compared with other Cartesian gantry systems
- + Perfectly matched drive and controller packages
- + Optional complete control system CMCA incl. safety circuit
- + Attachment components for pneumatic and electric Z-axes

At a glance

Operating principle

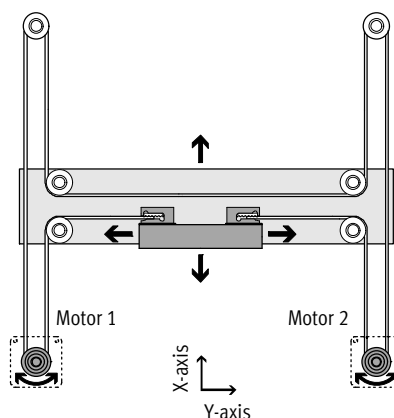
A slide is moved in a two-dimensional space (X-axis/Y-axis) via a toothed belt. The system is powered by two fixed motors. The motors are coupled to the toothed belt. The belt is guided via pulleys so that the slide can move to any position in a working space when the motors are actuated accordingly.

When using attachment components, additional processes can be carried out by independent Z-axes.

Drive and controller package

The drive and controller package are optimally adapted to each other. The encoder allows closed-loop operation on the basis of position control.

		Motor 1		
		+	•	-
Motor 2	+	→	↘	↓
	•	↗	•	↖
	-	↑	↖	←



Data sheet

Size		40	60
Guide		Recirculating ball bearing guide	
Stroke of the			
X-axis	[mm]	200 ... 2000	500 ... 2500
Y-axis	[mm]	200 ... 1000	500 ... 1500
Z-axis	[mm]	50, 100, 150, 200	
Rated load at max. dynamic response ¹⁾	[kg]	4	6
Max. speed			
Horizontal	[m/s]	5	
Vertical	[m/s]	4	3
Max. acceleration			
Horizontal	[m/s ²]	50	
Vertical	[m/s ²]	30	
Repetition accuracy ²⁾	[mm]	±0.1	
Mounting position ³⁾		Vertical or horizontal	

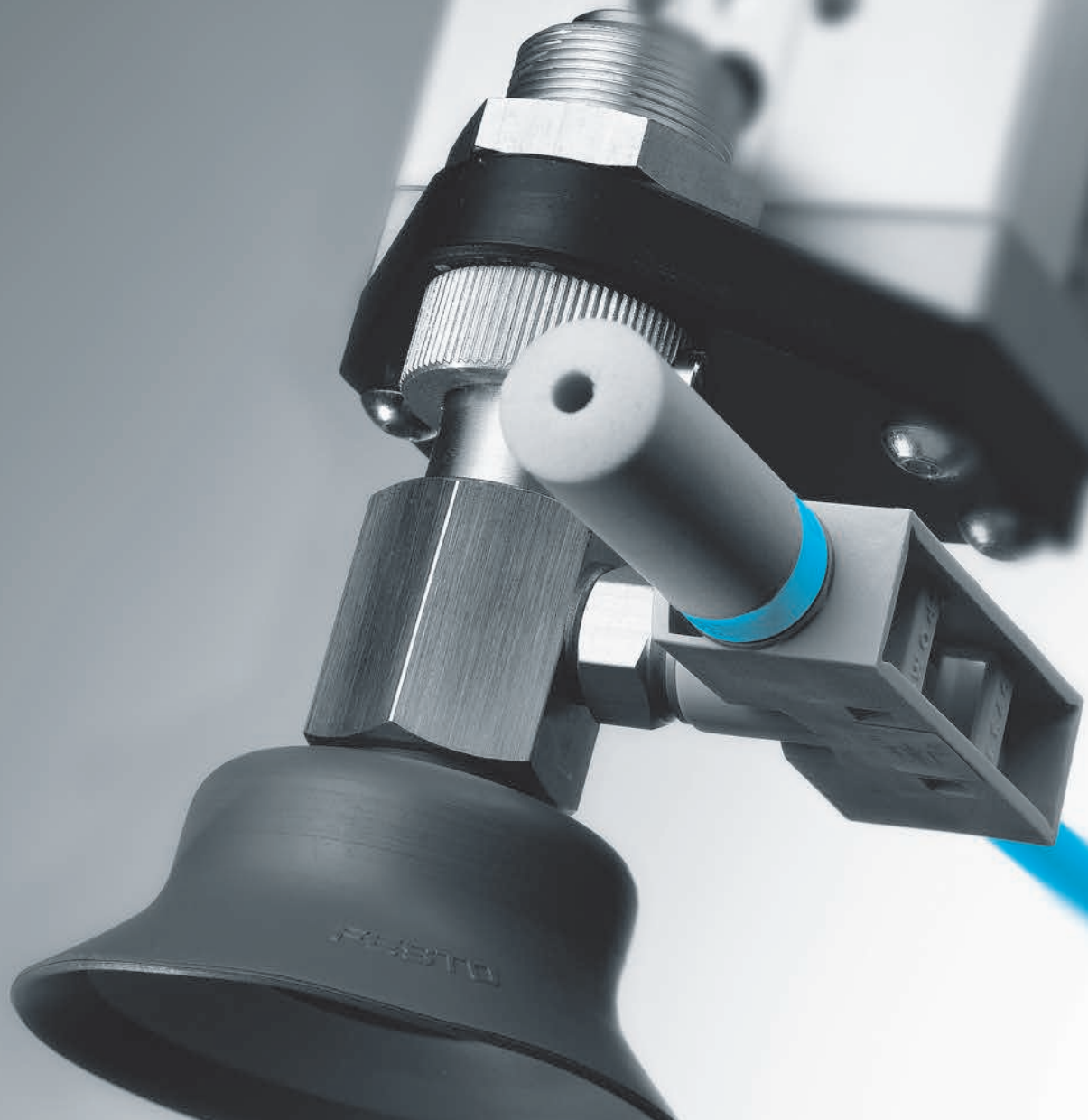
1) Rated load = tool load (attachment component (Z-axis) + gripper, for example) + payload.

2) The repetition accuracy relates to the centre point of the slide.

3) Vertical installation only permitted with motors with brake and braking resistors.

7 Vacuum technology

- + Vacuum generators: according to the Venturi principle in various performance categories
- + Vacuum gripping technology: wide variety of suction grippers and suction cups
- + Assembly, connection and compensating elements
- + Accessories





OVEL

Vacuum generators

- + Ideal for quick small-parts handling
- + Lightweight design for assembly in the gripping area

→ page 861



OVEM

Vacuum generators

- + Compact design
- + Monitoring with vacuum sensor

→ page 871



VN

Vacuum generators

- + Generate a vacuum easily and quickly
- + Lightweight design for assembly in the gripping area

→ page 881



OGGB

Bernoulli grippers

- + Ideally suited to transporting thin, extremely delicate and brittle workpieces
- + Low energy costs thanks to minimised air consumption

→ page 857

Contents

Product overview 856

Vacuum generators OVEL 861


NEW Additional versions

Vacuum generators OVEM 871

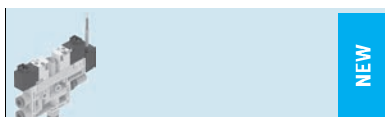


Vacuum generators VN 881

Product overview

Software tool

<p>Vacuum selection</p>		<p>Which suction cup for which surface and which movement? Don't experiment – calculate! This software tool even enables a differentiation to be made between linear and rotary movements.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
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Vacuum generators

Type	 <p>Vacuum generators OVEL</p>	 <p>Vacuum generators OVEM</p>	 <p>Vacuum generators, pneumatic VN</p>
Nominal width of Laval nozzle	0.45 ... 0.95 mm	0.45 ... 2 mm	0.45 ... 3 mm
Ejector characteristics	Standard, high suction rate, high vacuum	Standard, high suction rate, high vacuum	Inline, standard, high suction rate, high vacuum
Integrated function	Electric ejector pulse valve, flow control valve, pressure sensor, pressure transmitter, electric on-off valve, filter, open silencer	Electric ejector pulse valve, flow control valve, electric on-off valve, filter, electric air saving function, check valve, open silencer, vacuum switch	Pneumatic ejector pulse valve, open silencer, vacuum switch
Max. vacuum	92%	93%	86 ... 93%
Max. suction rate with respect to atmosphere	4 ... 45 l/min	6 ... 92 l/min	6.1 ... 339 l/min
NEW	<ul style="list-style-type: none"> • Additional versions 		
Description	<ul style="list-style-type: none"> • Low-cost, compact vacuum generator • Lightweight • Various output stages and vacuum types • Short switching times thanks to integrated solenoid valves • Quick, precise and safe placement of the workpiece by means of the ejector pulse • Simple installation via H3 plugs and push-in fittings 	<ul style="list-style-type: none"> • Compact design • Monitoring with vacuum sensor with IO-Link • Central electrical connection via an M12 plug • Maintenance-free operation and reduced noise level through an integrated, open silencer • Integrated filter with inspection window • Optionally with air-saving function and LCD display • Adjustable ejector pulse 	<ul style="list-style-type: none"> • Can be used directly in the work space • Available as straight type (inline: vacuum port in line with the supply port) or T-shape (standard: vacuum port at 90° to the supply port) • Compact and cost-effective • Maintenance-free operation and reduced noise level through an integrated, open silencer
→ Page/online	861	871	881




07

Vacuum technology

Vacuum generators



Type	 Vacuum generators, electropneumatic VN	 Vacuum generators for valve terminal CPV CPV10-M1H, CPV14-M1H, CPV18-M1H	 Vacuum generator cartridges VN
Nominal width of Laval nozzle	0.45 ... 3 mm	0.7 ... 1.4 mm	0.45 ... 2 mm
Ejector characteristics	Standard, high suction rate, high vacuum	High vacuum	Standard, high suction rate, high vacuum
Integrated function	Pneumatic ejector pulse, electric on-off valve, open silencer		
Max. vacuum	92 ... 93%	85%	92 ... 93%
Max. suction rate with respect to atmosphere	7.2 ... 186 l/min		7.2 ... 184.4 l/min
Description	<ul style="list-style-type: none"> • Can be used directly in the work space • Cost-effective • Maintenance-free operation and reduced noise level through an integrated, open silencer • With solenoid valve vacuum on/off 	<ul style="list-style-type: none"> • Combinations of switching valves with vacuum generators are possible on a valve terminal • With solenoid valve vacuum on/off • Optionally with ejector pulse 	<ul style="list-style-type: none"> • For fitting into customised housing for decentralised vacuum generation
→ Page/online	881	cpv10-m1h	vn

Vacuum gripping technology


Type	 Bernoulli grippers OGGB	 Suction grippers ESG	 Suction cups with connection attachments ESS
Suction cup size		10x30 mm, 15x45 mm, 20x60 mm, 25x75 mm, 30x90 mm, 4x10 mm, 4x20 mm, 6x10 mm, 6x20 mm, 8x20 mm, 8x30 mm	10x30 mm, 15x45 mm, 20x60 mm, 25x75 mm, 30x90 mm, 4x10 mm, 4x20 mm, 6x10 mm, 6x20 mm, 8x20 mm, 8x30 mm
Suction cup diameter	60 mm, 100 mm, 140 mm	2 ... 200 mm	2 ... 200 mm
Holding force at nominal operating pressure	6 ... 10 N	0.1 ... 1610 N	0.1 ... 1610 N
Design		Vacuum port on top, vacuum port on the side, with height compensator, with long height compensator	Round, bell-shaped
Information on materials - suction cup	POM, NBR	BR, FPM, NBR, PUR, VMQ (silicone), Vulkollan	BR, FPM, NBR, PUR, VMQ (silicone), Vulkollan
Description	<ul style="list-style-type: none"> • Ideally suited to transporting thin, extremely delicate and brittle workpieces • Minimised workpiece contact, gentle workpiece handling • Low energy costs thanks to minimised air consumption • The solution for low-contact, flexible, porous, brittle gripping tasks 	<ul style="list-style-type: none"> • Modular system of suction cup holders and suction cups with over 5000 variants • Optionally with angle compensator, height compensator, filter • 15 suction cup diameters • 6 suction cup shapes • Suction cup volume: 0.002 ... 245 cm³ • Min. workpiece radius: 10 ... 680 mm • Vacuum port: push-in connector or barbed fitting for plastic tubing, threaded connection 	<ul style="list-style-type: none"> • Suction cup consisting of the suction cup itself, plus the support plate with mounting • Suction cup volume: 0.002 ... 245 cm³ • Min. workpiece radius: 10 ... 680 mm • Mounting for suction cup holder: female thread, male thread, push-in connector • Suction cup with mounting thread
→ Page/online	oggb	esg	ess

Product overview




Vacuum gripping technology

		
Type	Vacuum suction cups ESV	Suction cups with connection attachments VAS, VASB
Suction cup size		
Suction cup diameter	20 ... 200 mm	2 ... 125 mm
Holding force at nominal operating pressure	8.2 ... 1610 N	0.14 ... 700 N
Design	Bell-shaped or round bellows	Vacuum port on top, vacuum port on the side, round, bellows 1.5 convolutions, round, flat
Information on materials - suction cup	BR, FPM, NBR, PUR, VMQ (silicone), Vulkollan	NBR, PUR, TPE-U(PU), VMQ (silicone)
Description	<ul style="list-style-type: none"> Wearing part for suction cup Easily interchangeable Suction cup volume: 0.318 ... 245 cm³ Min. workpiece radius: 10 ... 680 mm 	<ul style="list-style-type: none"> Sturdy and reliable Suction cups with fixed connecting thread 11 suction cup diameters Round suction cup shape, bellows Vacuum port on top, on the side Screw-in thread
→ Page/online	esv	vas




Assembly and connection components

	
Type	Suction cup holders ESH
Design	Vacuum port on top, vacuum port on the side, with height compensator
Description	<ul style="list-style-type: none"> With or without height compensator 6 holder sizes 8 holder types 3 tubing connector options
→ Page/online	esh



Accessories for vacuum

			
Type	Elbow fittings LJK	Height compensators VAL	Vacuum gauges VAM, FVAM
Description	<ul style="list-style-type: none"> Vacuum port M5, G1/8, G1/4 	<ul style="list-style-type: none"> Vacuum port M5, G1/8, G1/4 	<ul style="list-style-type: none"> Designs based on DIN EN 837-1, available with red-green range Pneumatic connection via R or G thread Double or single scale For front panel mounting, screw-in Display units bar, in Hg, psi
→ Page/online	ljk	val	vam

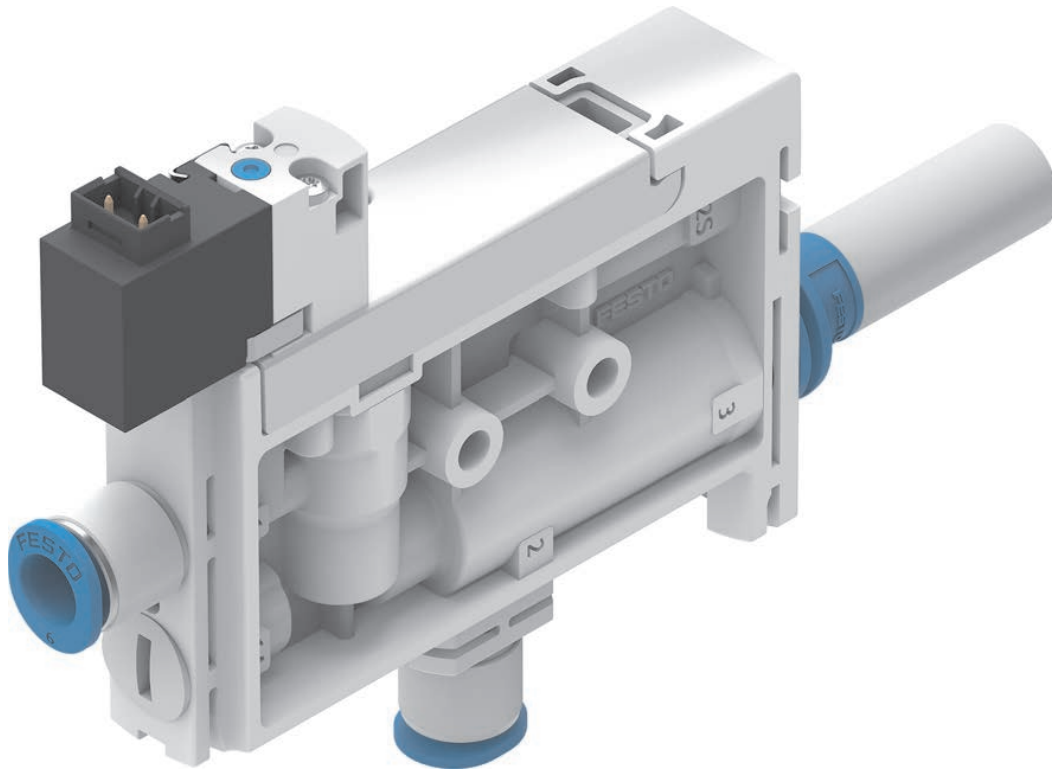
Accessories for vacuum

			
Type	Vacuum filters ESF, VAF, OAFF	Angle compensators ESWA	Vacuum security valves ISV
Description	<ul style="list-style-type: none"> Vacuum port G1/2, G1/4, G3/8, M4, M6 Grade of filtration 10 µm, 40 µm, 50 µm, 80 µm Vacuum filter ESF: for suction grippers ESG Vacuum filter VAF: with transparent housing or transparent bowl for identifying the degree of contamination Vacuum filter OAFF: for vacuum generators OVEL 	<ul style="list-style-type: none"> Vacuum connection M4x0.7, M6x1, M10x1.5 	<ul style="list-style-type: none"> For maintaining the vacuum when using multiple suction cups and one fails Gripping of randomly placed products Saves air and energy
→ Page/online	esf	eswa	isv

Accessories for vacuum

		
Type	Silencers UO, UOM Silencer extensions UOMS	Adapters AD
Description	<ul style="list-style-type: none"> For vacuum generators Facilitates trouble-free operation of the vacuum generator Special open minimal resistance silencer 	<ul style="list-style-type: none"> Vacuum port G1/8, G1/4, G1/2, G3/8, G3/4, G1
→ Page/online	1659	ad

New Additional versions



Affordable and lightweight

- + Various performance levels and vacuum types
- + Short switching times thanks to integrated solenoid valves
- + Quick, precise and safe placement of the workpiece by means of the ejector pulse

Vacuum generators >

Vacuum generators

OVEL

Vacuum generators >

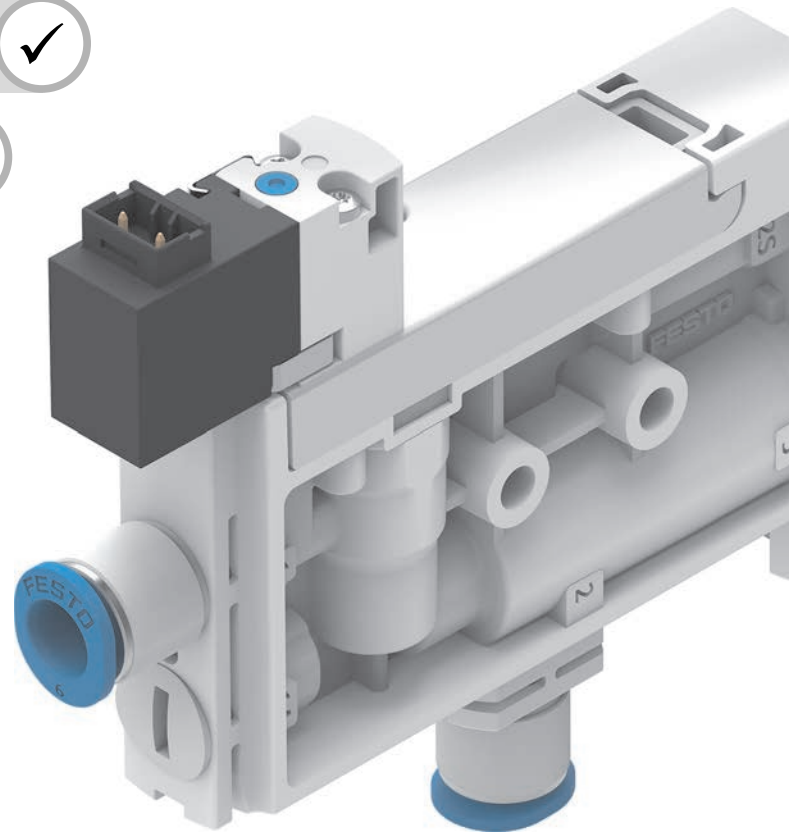
Vacuum generators

OVEL

 Overview, configuration and ordering
→ www.festo.com/catalogue/ovel



 Additional information, support and user documentation
→ www.festo.com/sp/ovel



- + Compact and lightweight design for assembly in the gripping area
- + Ideal for quick small-parts handling
- + Maintenance-free open silencer

NEW

Vacuum generators >

Vacuum generators OVEL

Product range overview

Type	Nominal width of Laval nozzle [mm]	Product options																	
		H	L	P	PQ	VQ3	VQ4	VQ6	RQ	UA	Z	C	A	V1	B2	B	V	PNLK	H3
Grid dimension 10 mm																			
OVEL-05	0.45	■	■	■	■	■	■	-	■	■	■	■	■	■	■	■	■	■	■
Grid dimension 15 mm																			
OVEL-07	0.7	■	■	■	■	-	■	■	■	■	■	■	■	■	■	■	■	■	■
OVEL-10	0.95	■	■	■	■	-	■	■	■	■	■	■	■	■	■	■	■	■	■

Product options

H	High vacuum	VQ4	Vacuum connection with push-in connector 4 mm	Z	Ejector pulse via additional connection	V	Output signal, vacuum sensor 0 ... 10 V
L	High suction rate	VQ6	Vacuum connection with push-in connector 6 mm	C	Normally closed	PNLK	Output signal, vacuum sensor PNP, NPN or IO-Link
P	Pneumatic connection 1 prepared for common supply manifold	RQ	Pneumatic connection 3 with push-in connectors, metric	A	Ejector pulse, electric	H3	Connection pattern H, vertical plug
PQ	Pneumatic connection 1 with push-in connectors, metric	UA	Pneumatic connection 3 with open silencer	V1	Pressure measuring range, vacuum sensor -1 ... 0 bar		
VQ3	Vacuum connection with push-in connector 3 mm			B2	Pressure measuring range, vacuum sensor -1 ... 1 bar		
				B	Output signal, vacuum sensor 1 ... 5 V		

07

Vacuum technology

Vacuum generators OVEL

NEW

At a glance

Rapid purging of vacuum for safe placement of the workpiece by a solenoid valve to control the ejector pulse, optional

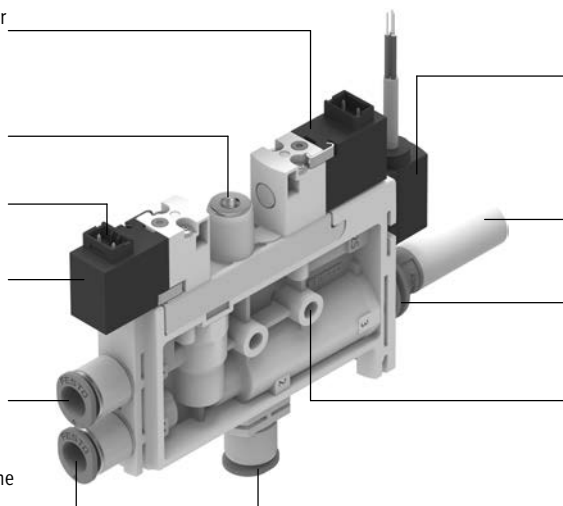
Flow control screw to adjust the ejector impulse

Electrical connection via H3 plug

Fast vacuum build-up using a solenoid valve to control the compressed air supply

Supply port, secured with clamp strap

Additional supply port for the separate supply of the ejector pulse, optional, secured with clamp strap



Pressure transmitter SPTE/pressure sensor SPAE to monitor the vacuum, optional, secured with clamp strap

Maintenance-free operation and reduced noise level through an open silencer, optional

Vacuum generator cartridge, secured with clamp strap

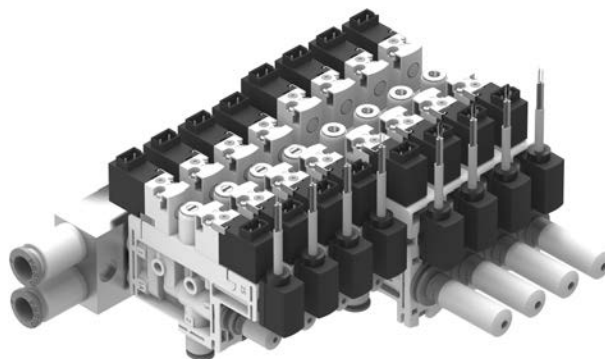
Housing with mounting holes

Vacuum connection, secured with clamp strap

The compact vacuum generator

- Reasonably priced, compact vacuum generator
- Light weight
- Various performance levels and vacuum types
- Short switching times thanks to integrated solenoid valves
 - Vacuum on/off
 - Ejector pulse
- Quick, precise and safe placement of the workpiece via the ejector pulse
- Simple installation via H3 plug and push-in fittings
- Straightforward mounting with mounting screws
- Low-noise operation due to integrated silencer
- Integrated filter
- Reduced contamination of the vacuum generator thanks to an open silencer
- Solenoid valves are switched via mechanical manual override
- Monitoring of the vacuum by a vacuum sensor
- Interlocking of multiple vacuum generators on a common supply manifold

Vacuum generators OVEL on common supply manifold OABM-P



Functional principle OVEL

Vacuum ON/OFF

The compressed air supply is controlled by a solenoid valve. The solenoid valve can be supplied with the NC (normally closed) switching function, i.e. the vacuum is not generated until the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.

Vacuum sensor, optional

The set or taught-in reference value for the generated vacuum is monitored via a vacuum sensor. If the reference value is reached or if it is not reached due to mal-

functions, e.g. leakages, dropped workpiece, the vacuum sensor emits an electrical signal.

Ejector pulse, optional

After the vacuum is switched off, an ejector pulse is activated and generated by a second solenoid valve to release the workpiece safely from the suction cup and to purge the vacuum

quickly. The compressed air for the ejector pulse can be supplied either via the supply port or a separate connection.

OVEL-...-V1B/V1V/B2B/B2V:

Pressure transmitter SPTE with an analogue output. Recording of the analogue signals and conversion into digital switching signals with subsequent signal converter SCDN and LCD display.

OVEL-...-V1PNLK/B2PNLK:

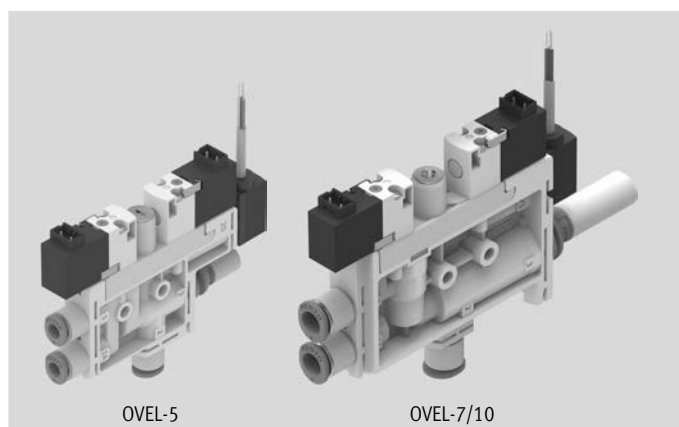
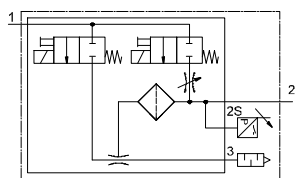
Pressure sensor SPAE with different switching outputs as well as LCD display, IO-Link and teach function.

NEW

Vacuum generators >

Vacuum generators OVEL

Data sheet



Technical data		Download CAD data → www.festo.com			
Type		OVEL-5-H/L	OVEL-7-H	OVEL-7-L	OVEL-10-H/L
Nominal width of Laval nozzle	[mm]	0.45			0.95
Grid dimension	[mm]	10	15		15
Ejector characteristics		High vacuum/standard H		–	High vacuum/standard H
		High suction rate/standard L	–	High suction rate/standard L	
Grade of filtration	[µm]	40			
Pneumatic connection 1	OVEL-...-P	Common connection via manifold rail			
	OVEL-...-PQ-VQ3	For tubing O.D. 3 mm	–		–
	OVEL-...-PQ-VQ4	For tubing O.D. 4 mm	For tubing O.D. 4 mm		–
	OVEL-...-PQ-VQ6	–	–		For tubing O.D. 6 mm
Vacuum connection	OVEL-...-VQ3	For tubing O.D. 3 mm	–	–	–
	OVEL-...-VQ4	For tubing O.D. 4 mm	For tubing O.D. 4 mm	–	–
	OVEL-...-VQ6	–	–	For tubing O.D. 6 mm	For tubing O.D. 6 mm
Pneumatic connection 3	OVEL-...-UA	Silencer open			
	OVEL-...-RQ	For tubing O.D. 4 mm	For tubing O.D. 6 mm		For tubing O.D. 6 mm
Connection for ejector pulse ¹⁾	OVEL-...-Z-A	Corresponds to the selected size of pneumatic connection 1			
Type of mounting		Via through-hole			
		On manifold rail			
Mounting position		Any			
Design		T-shape			
Integrated function		Electric on-off valve			
		Filter			
	OVEL-...-UA	Silencer open			
	OVEL-...-A	Ejector pulse, electric			
	OVEL-...-A	Flow control valve			
	OVEL-...-V1B/V1V/B2B/B2V	Pressure transmitter			
	OVEL-...-V1PNLK/B2PNLK	Pressure sensor			
Valve function		Closed			
Manual override		Non-detenting			
Length [mm]	OVEL-...-RQ	70	99		99
	OVEL-...-UA-...-V1B/V1V/B2B/B2V	81	115		115
	OVEL-...-UA-...-V1PNLK/B2PNLK	99	115		115
Width [mm]		10	15		15
Height [mm]		62	74		74

1) If there is no ejector impulse or the ejector impulse is generated via pneumatic connection 1, the additional connection for the ejector impulse is sealed with a blanking plug.

Vacuum generators OVEL

NEW

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation not possible
Operating pressure [bar]	2 ... 7
Ambient temperature [°C]	0 ... +50

Performance data – High vacuum			
Type	OVEL-5-H	OVEL-7-H	OVEL-10-H
Max. vacuum [%]	89	92	92
Operating pressure for max. vacuum [bar]	4.2	4.5	3.8
Operating pressure for max. suction rate [bar]	3	4	4
Max. suction rate with respect to atmosphere [l/min]	4	17	21
Air supply time at nominal operating pressure 4 bar (for 1 l volume) ¹⁾ [s]	2	1.2	1
Noise level at p1 = 4 bar [db(A)]	64	61	68

1) Time required to reduce the vacuum to a residual vacuum of -0.05 bar after switching off the operating pressure.

Performance data – High suction rate			
Type	OVEL-5-L	OVEL-7-L	OVEL-10-L
Operating pressure for max. suction rate [bar]	5	5	6
Max. suction rate with respect to atmosphere [l/min]	11	33	45
Air supply time at nominal operating pressure 4 bar (for 1 l volume) ²⁾ [s]	0.8	0.4	0.4
Noise level at p1 = 4 bar [db(A)]	52	64	67

2) Time required to reduce the vacuum to a residual vacuum of -0.05 bar after switching off the operating pressure.

Technical data – Electrical connection		
Solenoid valve		
Electrical connection input	Function	Ejector pulse Vacuum generation
	Connection type	2x plug
	Connection technology	Connection pattern H
	Number of poles/wires	2
	Type of mounting	Snap-locking
Operating voltage range [V DC]	21.6 ... 26.4	
Duty cycle [%]	100	
Coil characteristics, 24 V DC [W]	1.0	
Vacuum sensor		
Electrical connection output	Function	Sensor
	Connection type	Cable
	Connection technology	Open end
	Number of poles/wires	3
Cable diameter [mm]	2.9 ±0.1	
Cable length [m]	2.5	
Conductor nominal cross section [mm ²]	0.14	
Cable characteristic	Suitable for energy chains	

Vacuum technology

07

NEW

Vacuum generators >

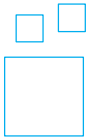
Vacuum generators OVEL

Data sheet

Technical data – Vacuum sensor							
Type		OVEL-...-V1B	OVEL-...-V1V	OVEL-...-B2B	OVEL-...-B2V	OVEL-...-V1PNLK	OVEL-...-B2PNLK
Mechanical							
Method of measurement		Piezoresistive pressure sensor				Piezoresistive pressure sensor with display	
Pressure measuring range	[bar]	-1 ... 0		-1 ... 1		-1 ... 0	-1 ... 1
Setting options		-				Teach-in	
						IO-Link	
						Via display and keys	
Display type		-				LED display, 2-digit	
Electrical							
Operating voltage range, sensor	[V DC]	10 ... 30	18 ... 30	10 ... 30	18 ... 30	18 ... 30	
Switching output		-				PNP/NPN, switchable	
Switching element function		-				N/C or N/O contact, switchable	
Switching function		-				Freely programmable	
Analogue output	[V]	1 ... 5	0 ... 10	1 ... 5	0 ... 10	-	

Materials	
Housing	PA reinforced
Silencer	PE
Filter	POM
Adjusting screw	Steel
Connecting thread	POM
Screws	Steel
Cable sheath	PVC (colour: grey)
Seals	NBR

Ordering – Product options



Configurable product

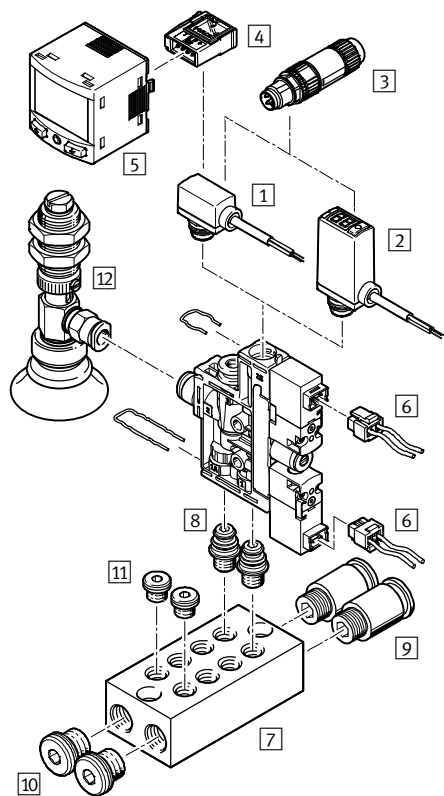
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

NEW

Accessories



Accessories	Page/online
1 Pressure transmitter SPTE	869
2 Pressure sensor SPAE	869
3 Plug NECU-S-M8G3/M12G3	869
4 Plug NECU-S-ECG4	869
5 Signal converter SCDN	869
6 Plug socket with cable NEBV	869
7 Common supply manifold OABM-P ¹⁾	870
8 Mounting kit OABM-MK	870
9 Push-in fitting QS	870
10 Blanking plug B-1/8	870
11 Blanking plug B-M7	870
12 Suction gripper ESG	esg
- Vacuum filter OAFF	870

1) On the common supply manifold, vacuum generators with an additional connection for the ejector impulse (OVEL...-Z-C-A) cannot be combined with vacuum generators without an additional connection (OVEL...-C-A).

Accessories – Ordering data

	Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Analogue output [V]	Cable length [m]	Part no.	Type
1 Pressure transmitter SPTE							Data sheets online: → spte
	Cartridge 10 mm	Cable, 3-wire, open end	-1 ... 0	0 ... 10	2.5	8025974	SPTE-V1R-PC10-V-2.5K
				1 ... 5	2.5	8025975	SPTE-V1R-PC10-B-2.5K
			-1 ... 1	0 ... 10	2.5	8025976	SPTE-B2R-PC10-V-2.5K
				1 ... 5	2.5	8025977	SPTE-B2R-PC10-B-2.5K
2 Pressure sensor SPAE							Data sheets online: → spae
	Cartridge 10 mm	Cable, 3-wire, open end	-1 ... 0	-	2.5	8025978	SPAE-V1R-PC10-PNLK-2.5K
			-1 ... 1	-	2.5	8025979	SPAE-B2R-PC10-PNLK-2.5K

	Part no.	Type
3 Plug NECU-S-M8G3/M12G3		Data sheets online: → necu
	562024	NECU-S-M8G3-HX
	562027	NECU-S-M12G3-HX
4 Plug NECU-S-ECG4		Data sheets online: → necu
	570922	NECU-S-ECG4-HX-Q3
5 Signal converter SCDN		Data sheets online: → scdn
	8035555	SCDN-2V-EC4-PNLK-L1

	Cable length [m]	Part no.	Type
6 Plug socket with cable NEBV			Data sheets online: → nebv
	0.5	★ 566654	NEBV-H1G2-KN-0.5-N-LE2
	1	★ 566655	NEBV-H1G2-KN-1-N-LE2
	2.5	★ 566656	NEBV-H1G2-KN-2.5-N-LE2
	5	566657	NEBV-H1G2-KN-5-N-LE2
	0.5	★ 566658	NEBV-H1G2-P-0.5-N-LE2
	1	★ 566659	NEBV-H1G2-P-1-N-LE2
	2.5	★ 566660	NEBV-H1G2-P-2.5-N-LE2
	5	566661	NEBV-H1G2-P-5-N-LE2

Vacuum generators OVEL

NEW

Accessories – Ordering data

	Description	Number of device locations	Part no.	Type
7	Common supply manifold OABM-P		Data sheets online: → oabm-p	
	For OVEL-5	2	8049141	OABM-P-G3-10-2
		4	8049142	OABM-P-G3-10-4
		8	8049143	OABM-P-G3-10-8
	For OVEL-5/7/10	2	8049144	OABM-P-G3-15-2
		4	8049145	OABM-P-G3-15-4
		8	8049146	OABM-P-G3-15-8

	Description	Part no.	Type	PU ¹⁾
8	Mounting kit OABM-MK			
	–	8065850	OABM-MK-G3	
9	Push-in fitting QS	Data sheets → Page 1443		
	G1/8	★ 186098	QS-G1/8-8	10
	G1/8	★ 186109	QS-G1/8-8-I	10
10	Blanking plug B-1/8	Data sheets → Page 1510		
	G1/8	★ 3568	B-1/8	10
11	Blanking plug B-M7	Data sheets → Page 1510		
	M7	★ 174309	B-M7	10

	Description	Part no.	Type	PU ¹⁾
	Vacuum filter OAFF			
Data sheets online: → oaff				
	For OVEL-5	8068944	OAFF-G3-5	10
	For OVEL-7/10	8068945	OAFF-G3-7	10

1) Packaging unit quantity

07

Vacuum technology



Powerful

- + Monitoring with vacuum sensor with IO-Link
- + Integrated filter with inspection window
- + Optionally with air-saving function and LCD display
- + Adjustable ejector pulse

Vacuum generators >

Vacuum generators

OVEM

Vacuum generators >

Vacuum generators

OVEM



Overview, configuration and ordering

→ www.festo.com/catalogue/ovem



Additional information, support and user documentation

→ www.festo.com/sp/ovem



- + Generate and monitor a reliable vacuum
- + Maintenance-free open silencer
- + Highly efficient with air-saving function

Product range overview

Type	Nominal width of Laval nozzle [mm]	Product options																					
		Ejector characteristics		Pneumatic connections P-V-R						Normal position of the vacuum generator				Vacuum sensor, electrical switching output									
		H	L	QO	QS	GN	GO	PL	PO	ON	OE	CN	CE	1P	1PD	1N	2P	2N	PU	PI	NU	NI	LK
Grid dimension 20 mm																							
OVEM-05	0.45																						
OVEM-07	0.7																						
OVEM-10	0.95	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
OVEM-14	1.4																						
OVEM-20	2.0		–																				

Product options

H	High vacuum	PL	Common supply manifold prepared,	CN	N/C, normally closed (no vacuum generation)	PU	Switching output 1x PNP, 1 analogue output 0 ... 10 V
L	High suction rate		V-R with QS fitting	CE	N/C, normally closed (no vacuum generation) with ejector pulse	PI	Switching output 1x PNP, 1 analogue output 4 ... 20 mA
QO	P-V with QS fitting, R with open silencer	PO	Common supply manifold prepared, V with QS fitting, R with open silencer	1P	Switching output 1x PNP	NU	Switching output 1x NPN, 1 analogue output 0 ... 10 V
QS	P-V-R with QS fitting	ON	N/O, normally open (vacuum generation)	1PD	Switching output 1x PNP and LCD display	NI	Switching output 1x NPN, 1 analogue output 4 ... 20 mA
GN	P-V-R with female thread	OE	N/O, normally open (vacuum generation) with ejector pulse	1N	Switching output 1x NPN	LK	IO-Link
GO	P-V with female thread, R with open silencer			2P	Switching output 2x PNP	H	Alternative vacuum display inchHG
				2N	Switching output 2x NPN		

Key features

Configurable

The modular vacuum generator series OVEM offers a wide range of individually selectable functions, making it possible to find a solution for the most varied of applications.

- 5 nominal widths
- Vacuum generator characteristics in two designs: high vacuum and high suction rate

Reliable

- Permanent monitoring of the entire vacuum system via a vacuum sensor (condition monitoring)
- Prevention of pressure drop using an integrated air-saving function in conjunction with an integrated check valve

- Various pneumatic connection variants (QS fitting or female thread)
- Electrical switching output of the vacuum sensor can be selected
- Various switching functions (N/O / N/C) with or without ejector pulse can be supplied

Space-optimised

- All functions are compactly integrated in one unit.
- No protruding elements such as valves or vacuum sensors
 - Space-optimised installation is possible as all the control elements can be accessed from one side

Economical

- Short switching times thanks to integrated solenoid valves
 - Vacuum on/off
 - Ejector pulse
- Quick, precise and safe placement of the workpiece via the ejector pulse
- Cost saving through preventive main-

- tenance/service thanks to maintenance indicator
- Cost saving through integrated air-saving function
- Low-cost variants with one switching output (OVEM-...-1P/1N)

Easy to maintain

- Integrated filter with inspection window for maintenance indication
- Reduced contamination of the vacuum generator thanks to an open silencer

Choice of mounting types

- Direct mounting or via mounting bracket
- Straightforward mounting on H-rail via accessories
- Interlocking of multiple vacuum generators on a common supply manifold

Vacuum generators OVEM

At a glance

Rapid purging of vacuum for safe placement of the workpiece using an integrated solenoid valve to control the ejector pulse

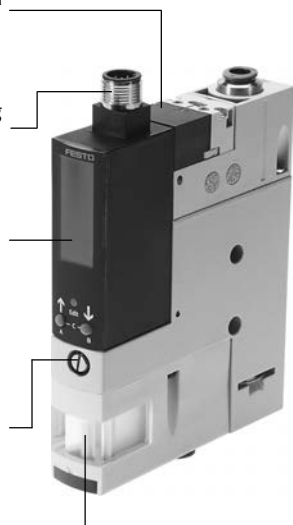
Central electrical connection via an M12 plug

OVEM-...-1PD/2P/2N/PU/NU/PI/NI/LK
Monitoring and visualisation of the vacuum pressure using a vacuum sensor with LCD display (bar)

OVEM-...-LK
Vacuum sensor with IO-Link

Adjustment of the ejector pulse via a flow control screw

Contamination of the vacuum generator is prevented by an integrated filter



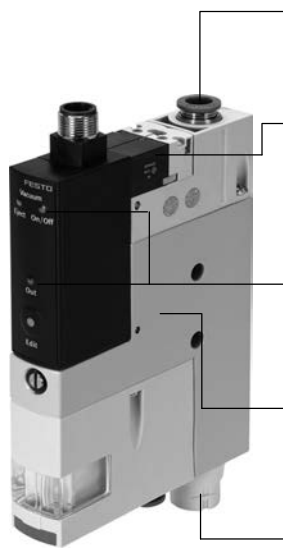
Quick and secure installation thanks to QS fitting

Fast vacuum build-up using an integrated solenoid valve to control the compressed air supply

OVEM-...-1P/1N
Monitoring of the vacuum pressure and status displays for switching output and solenoid valves using a vacuum sensor with LED display

Prevention of pressure drop using an integrated check valve

Maintenance-free operation and reduced noise level through an integrated, open silencer



07

Vacuum technology

Functional principle of OVEM

Vacuum ON/OFF

The compressed air supply is controlled by an integrated solenoid valve.

The solenoid valve can be supplied with two different switching functions, N/C and N/O.

- N/C - normally closed:
The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.

- N/O - normally open:
The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve is in the normal position.

Connection to higher-level systems and configuration of the switching outputs

OVEM-...-1P/1PD/1N

- Switching inputs for actuating the solenoid valves for vacuum generation and ejector pulse
- OVEM-...-1P/1N only:
one switching output for supplying a control signal
 - Configured as an N/O contact
 - Switching function configured as a threshold value comparator
- OVEM-...-1PD only:
one digital switching output for supplying a control signal
 - Switching output can be configured as N/C or N/O contact
 - Switching function of the output can be configured as a threshold value or window comparator

OVEM-...-2P/2N/PU/NU/PI/NI

- One digital switching input for actuating the solenoid valves
- Two digital switching outputs or one digital switching output and one analogue output for supplying control signals
 - Switching outputs can be configured as N/C or N/O contacts
 - Switching function of the outputs can be configured as a threshold value or window comparator

Vacuum sensor

The set or taught-in reference value for the generated vacuum is monitored via an integrated vacuum sensor. If the reference value is reached or if it is not reached due to malfunctions, e.g. leakages, dropped workpiece, the vacuum sensor emits an electrical signal.

Ejector pulse

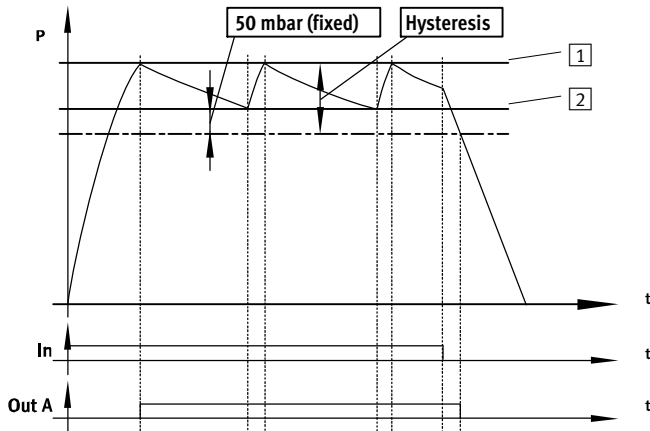
After the vacuum is switched off, an ejector pulse is activated and generated by a second integrated solenoid valve to release the workpiece safely from the suction cup and to purge the vacuum quickly.

OVEM-...-LK

- Digital setpoint and actual value transfer for simple parameterisation and diagnostic feedback. Communication takes place in IO-Link mode with an IO-Link master.
- SIO mode is supported. In the case of this local configuration using the operating buttons on the vacuum sensor, the OVEM takes on the function of an OVEM-...-2P.

At a glance

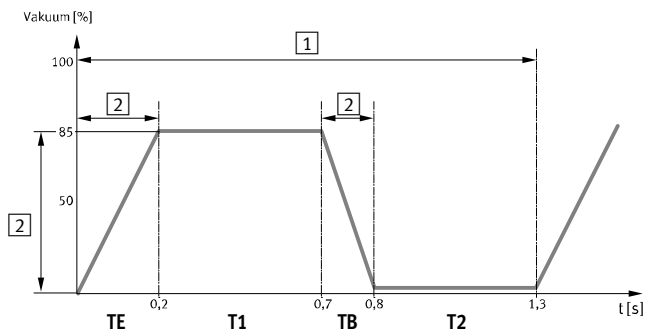
OVEM-...-1PD/2P/2N/PU/NU/PI/NI/LK – Air saving function LS (-CE, -OE)



If the desired threshold value 1 for the vacuum is reached, vacuum generation is automatically switched off. A check valve prevents a decrease of the vacuum. Nonetheless, leakage, e.g. due to rough workpiece surfaces, will slowly reduce

the vacuum. If the vacuum drops below the threshold value 2, vacuum generation is switched on automatically. Vacuum is generated until the set threshold value 1 is reached again.

OVEM-...-1PD/2P/2N/PU/NU/PI/NI/LK – Condition monitoring and diagnostics



- 1 Cycle time
- 2 Monitoring
- TE Evacuation time
- T1 Transport time
- TB Air supply time
- T2 Return time

The most important operating parameters:

- Vacuum
- Evacuation time
- Air supply time

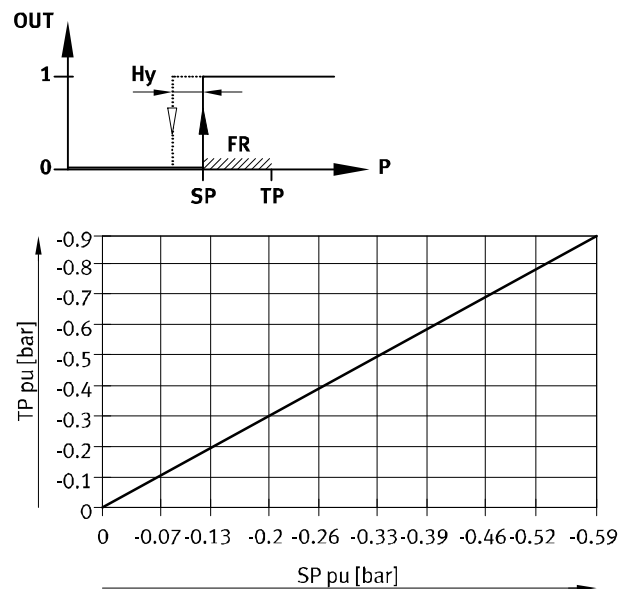
are continuously measured in the vacuum generator and compared with the individually set reference values (condition monitoring). If deviations in the reference values occur, these will be determined by the vacuum generator and shown on the display (diagnostics).

In addition, in the case of an OVEM with switching outputs (-2P, -2N, -LK in SIO mode), diagnostic messages can also be transmitted by the switching output Out B.

This permits preventive action:

- in order to prevent machine failure or downtime, for example, through timely maintenance
- and to ensure process reliability (adherence to the cycle time).

OVEM-...-1P/1N – From the teach-in point to the switching point



- TP Teach-in point
- SP Switching point
- Hy Hysteresis
- FR Function reserve

The switching point is determined from the teach pressure and the function reserve.

A function reserve (35% of the teach pressure) is deducted from the teach pressure ($SP = TP - 0.35 \cdot TP$).

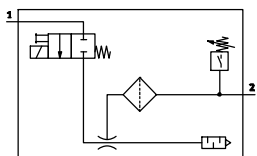
For example, with a teach pressure of -0.5 bar, a switching point of -0.33 bar is set.

The hysteresis has a fixed value.

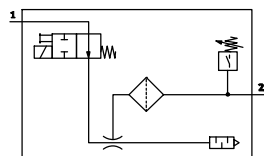
Vacuum generators OVEM

Data sheet

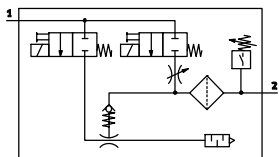
OVEM-...-CN



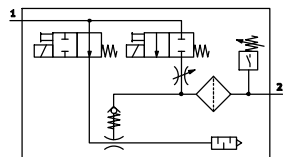
OVEM-...-ON



OVEM-...-CE



OVEM-...-OE



Technical data

Download CAD data → www.festo.com

Type	OVEM-05-H/L	OVEM-07-H/L	OVEM-10-H/L	OVEM-14-H/L	OVEM-20-H
Nominal width of Laval nozzle [mm]	0.45	0.7	0.95	1.4	2.0
Grid dimension [mm]	20				
Ejector characteristics	High vacuum/standard H				
	High suction rate/standard L				–
Grade of filtration [µm]	40				
Pneumatic connection 1	OVEM-...-QO	QS-6	QS-8	QS-8	QS-8
	OVEM-...-GO	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{4}$
Vacuum connection	OVEM-...-QO	QS-6	QS-8	QS-8	QS-8
	OVEM-...-GO	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{4}$
Pneumatic connection 3	Silencer open				
Type of mounting	Via through-hole				
	Via female thread				
	Via accessories				
Mounting position	Any				
Design	Modular				
Integrated function	OVEM-...-ON/CN	Electric on-off valve			
		Vacuum sensor			
Filter					
Silencer open					
OVEM-...-OE/CE		Electric on-off valve			
	Electric ejector pulse				
	Flow control valve				
	Vacuum sensor				
	Air saving function, electric (only possible with OVEM-...-1PD/2P/2N/LK)				
	Check valve				
	Filter				
	Silencer open				
Valve function	OVEM-...-ON/OE	Open			
	OVEM-...-CN/CE	Closed			
Manual override	Non-detenting				
	Additionally via operating buttons (only possible with OVEM-...-1PD/2P/2N/LK)				
Length/width/height [mm]	145/21/90	165/21/90	165/21/90	195/21/90	195/21/90

Operating conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation not possible
Operating pressure [bar]	2 ... 8
Ambient temperature [°C]	0 ... +50

Data sheet

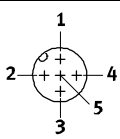
Performance data – High vacuum																					
Type	[mm]	OVEM-05-H				OVEM-07-H				OVEM-10-H				OVEM-14-H				OVEM-20-H			
Normal position of the vacuum generator		ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE
Max. vacuum	[%]	93																			
Operating pressure for max. vacuum	[bar]	5.1				4.1				3.5				3.6				5.3			
Max. suction rate with respect to atmosphere	[l/min]	6				16				19.5				50.5				86.5			
Suction rate at $p_1 = 6$ bar	[l/min]	5.9				15.1				18.6				46				80.5			
Air supply time at nominal operating pressure 6 bar (for 1 l volume) ¹⁾	[s]	4.8	2	4.8	2	1.9	0.4	1.9	0.4	1.2	0.2	1.2	0.2	0.6	0.2	0.6	0.2	0.4	0.2	0.4	0.2
Noise level at $p_1 = 6$ bar	[db(A)]	51				58				73				77				74			

1) Time required to reduce the vacuum to a residual vacuum of -0.05 bar after switching off the operating pressure.

Performance data – High suction rate																					
Type	[mm]	OVEM-05-L				OVEM-07-L				OVEM-10-L				OVEM-14-L							
Normal position of the vacuum generator		ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE				
Max. suction rate with respect to atmosphere	[l/min]	13				31.5				45				92							
Suction rate at $p_1 = 6$ bar	[l/min]	12.8				31.5				45.1				88.7							
Air supply time at nominal operating pressure 6 bar (for 1 l volume) ²⁾	[s]	2	1.3	2	1.3	1	0.2	1	0.2	0.8	0.2	0.8	0.2	0.4	0.2	0.4	0.2				
Noise level at $p_1 = 6$ bar	[db(A)]	45				53				64				70							

2) Time required to reduce the vacuum to a residual vacuum of -0.05 bar after switching off the operating pressure.

Technical data – Electrical connection					
Type		OVEM-...-1P	OVEM-...-1PD	OVEM-...-2P/2N	OVEM-...-LK
Electrical connection		Plug M12x1, 5-pin			
Standard switching input		IEC 61131-2			
Operating voltage range	[V DC]	20.4 ... 27.6			
Duty cycle	[%]	100			
Coil characteristics 24 V DC	[W]	Low-current phase: 0.3 High-current phase: 2.55			
Max. current consumption	[mA]	180	170	270	150 (270 in SIO mode)
Insulation voltage	[V]	50			
Surge resistance	[kV]	0.8			
Reverse polarity protection		For all electrical connections			
Degree of protection		IP65			
Protection class		III			

Pin allocation					
Plug M12x1, 5-pin	Pin	Meaning			
		OVEM-...-1P	OVEM-...-1PD	OVEM-...-2P/2N	OVEM-...-LK
	1	Supply voltage +24 V DC			
	2	Switching input for vacuum ON/OFF	Digital output Out A (switching output for vacuum sensor)	Digital output Out B	
	3	0 V			
	4	Switching output (switching output for vacuum sensor)	Digital switching input (ejector pulse)	Digital output Out A (switching output for vacuum sensor)	IO-Link communication or digital output Out A (switching output for vacuum sensor) ³⁾
	5	Switching input for ejector pulse ON/OFF	Digital switching input (vacuum ON/OFF)	Digital switching input (vacuum ON/OFF and ejector pulse)	Not assigned or digital switching input (vacuum ON/OFF and ejector pulse) ⁴⁾

3) After a fallback or in SIO mode, this pin has the configuration of a digital switching output.

4) This pin is not allocated in the IO-Link mode. After a fallback or in SIO mode, this pin has the configuration of a digital input.

Vacuum generators OVEM

Data sheet

Technical data – Vacuum sensor		OVEM-...-1P	OVEM-...-1PD	OVEM-...-2P	OVEM-...-2N	OVEM-...-LK
Type						
Mechanical						
Measured variable		Relative pressure				
Measuring principle		Piezoresistive				
Pressure measuring range	[bar]	-1 ... 0				
Accuracy FS ¹⁾	[%]	±0.5	±3			
Reproducibility of switching value FS ¹⁾	[%]	0.6	0.6			
Setting options		Teach-in	Via display and keys			IO-Link
Threshold value setting range	[bar]	-1 ... 0	-0.999 ... 0			
Hysteresis setting range	[bar]	-	-0.9 ... 0			
Setting range duration, ejector pulse	[ms]	-	- ²⁾	20 ... 9999 (OVEM-05)	40 ... 9999	
				40 ... 9999 (OVEM-07/10/14/20)		
Display type		LED	4-character alphanumeric, backlit LCD			
Display range	[bar]	-	-0.999 ... 0			
Switching status indication		Opto-electrical	Opto-electrical			
Switching position indication		LED	LCD			
Protection against tampering		-	PIN code	-	Electronic locking	
Electrical						
Switching output		1x PNP	1x PNP	2x PNP	2x NPN	2x PNP
Switching element function		N/O contact				
		-	N/C contact			
Switching function		-	Window comparator			
		Threshold value comparator ³⁾				
Fixed hysteresis	[mbar]	20	-			
Idle current	[mA]	< 80	< 70			
Residual current	[mA]	0.1				
Max. output current	[mA]	100				
Voltage drop	[V]	≤1.5	≤2	≤1.5	≤1.8	
Inductive protective circuit		Adapted to MZ, MY, ME coils				
Short circuit protection		Yes				
Overload protection		Yes				

- 1) % FS = % of the measuring range final value (full scale).
- 2) Generation of an ejector pulse via a control signal at the digital switching input.
- 3) OVEM-...-1P threshold value with fixed hysteresis.

Materials		OVEM-...-1P	OVEM-...-1PD/2P/2N/LK
Housing		Die-cast aluminium, PA reinforced	
Filter housing		PA reinforced	
Silencer		Polyurethane foam, wrought aluminium alloy	
Keypad		PA reinforced	TPE-U
Inspection window		-	PA
Fitting		Nickel-plated brass	
Plug housing		Nickel-plated brass	
Connecting thread		Anodised wrought aluminium alloy	
Seals		NBR	

Order code

OVEM				-		-		-	B	-		-		-	N	-	
Type																	
OVEM	Vacuum generator																
Nominal width of Laval nozzle [mm]																	
05	0.45																
07	0.7																
10	0.95																
14	1.4																
20	2.0																
Ejector characteristics																	
H	High vacuum/standard																
L	High suction rate/standard 1																
Housing size/width																	
B	Grid dimension 20 mm																
Pneumatic connections																	
Supply port (P)																	
Vacuum connection (V)																	
Exhaust port (R)																	
QO	QS fitting	QS fitting	Silencer, open														
GO	Female thread	Female thread	Silencer, open														
Normal position of the vacuum generator																	
ON	N/O, normally open (vacuum generation)																
OE	N/O, normally open (vacuum generation) with ejector impulse																
CN	N/C, normally closed (no vacuum generation)																
CE	N/C, normally closed (no vacuum generation) with ejector pulse																
Electrical connection																	
N	Plug M12 (5-pin)																
Vacuum sensor, electrical switching output																	
1P	Switching output 1x PNP																
1PD	Switching output 1x PNP and LCD display 2																
2P	Switching output 2x PNP																
2N	Switching output 2x NPN																
LK	IO-Link 2																

1 Not with Laval nozzle nominal width 20.


2 Not where ON or CN are the normal position of the vacuum generator.

Order example:

OVEM-05-H-B-QO-ON-N-2P

Vacuum generator OVEM - nominal width of Laval nozzle 0.45 mm - high vacuum/standard - grid dimension 20 mm - P-V with QS fitting, R with open silencer - N/O, normally open - plug M12 (5-pin) - switching output 2x PNP

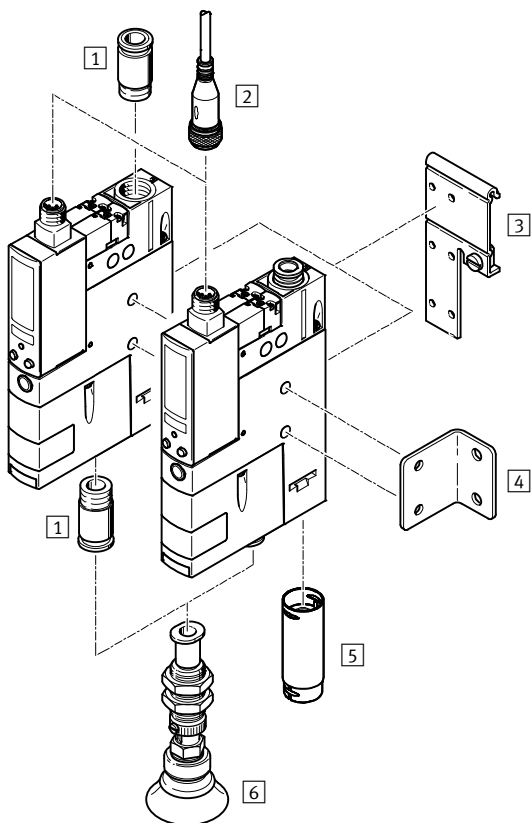
Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or www.festo.com/catalogue/...	Enter the type code in the search field.
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Vacuum generators >

Vacuum generators OVEM

Accessories



Accessories	→ Page/online
1 Push-in fitting QS	1443
2 Connecting cable NEBU-M12	880
3 H-rail mounting OABM-H	880
4 Mounting bracket HRM-1	880
5 Silencer extension UOMS ¹⁾	880
6 Suction gripper ESG	esg

1) Silencer extension UOMS is included in the scope of delivery of the OVEM-20.

07

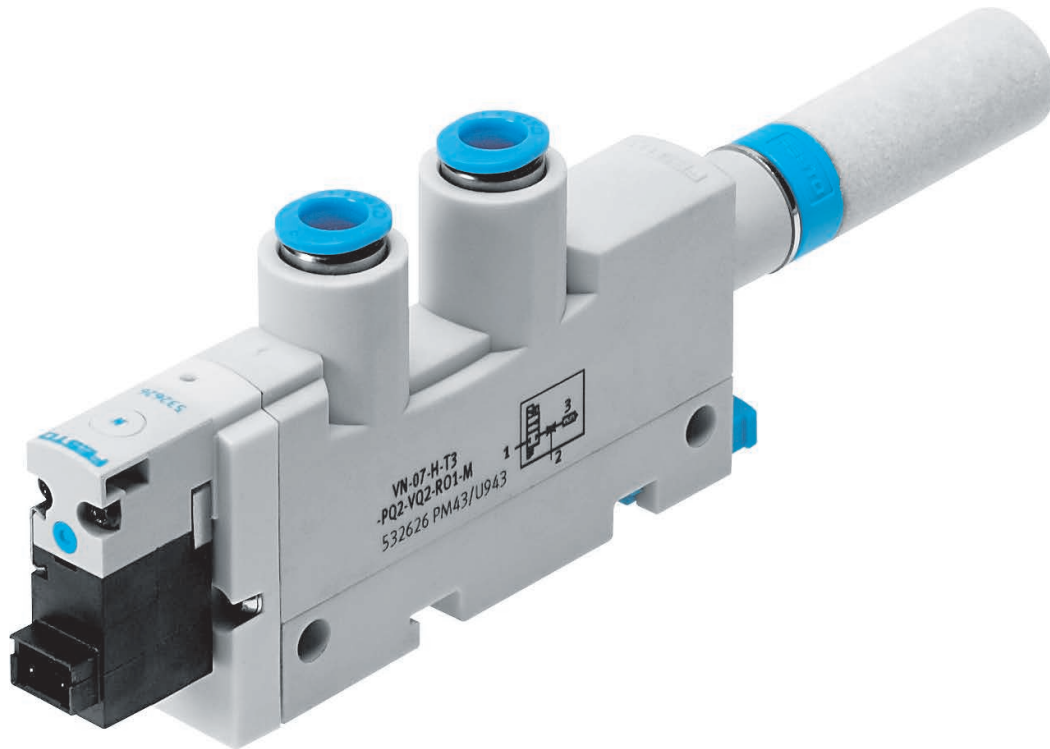
Vacuum technology

Accessories – Ordering data

	Electrical connection	Cable length [m]	Part no.	Type
2 Connecting cable NEBU-M12				Data sheets → 1544
	Straight socket, M12x1, 5-pin	Open end, 5-wire	2.5	541330 NEBU-M12G5-K-2.5-LE5
			5	541331 NEBU-M12G5-K-5-LE5
			10	554038 NEBU-M12G5-K-10-LE5
	Angled socket, M12x1, 5-pin	Open end, 5-wire	2.5	567843 NEBU-M12W5-K-2.5-LE5
			5	567844 NEBU-M12W5-K-5-LE5

	Description	Part no.	Type
3 H-rail mounting OABM-H			Data sheets online: → oabm-h
	For H-rail TH-35-15	549461	OABM-H
4 Mounting bracket HRM-1			Data sheets online: → hrm-1
	-	9769	HRM-1

	Description	Part no.	Type
5 Silencer extension UOMS			Data sheets → Page 1664
	-	538436	UOMS-1/4



Lightweight and affordable

- + Can be used directly in the work space
- + Cost-effective
- + Maintenance-free operation and reduced noise level through an integrated, open silencer
- + With solenoid valve vacuum on/off

Vacuum generators >

Vacuum generators

VN

Vacuum generators >

Vacuum generators

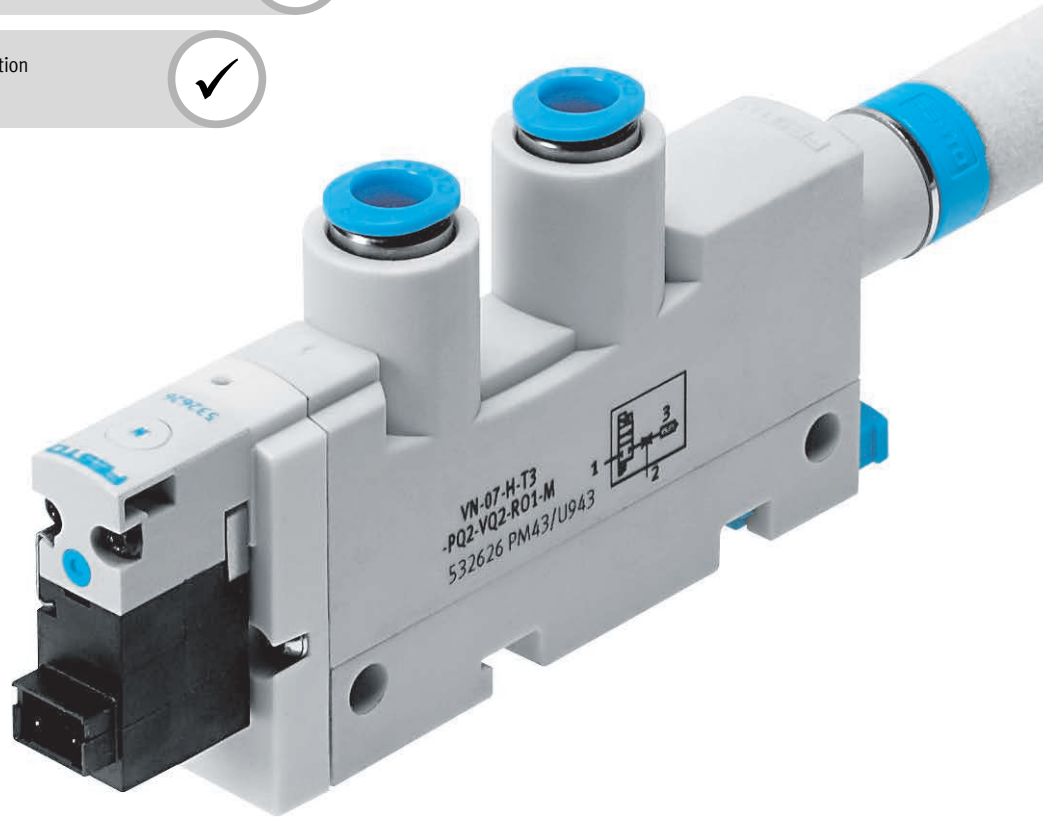
VN



Overview, configuration and ordering

→ www.festo.com/catalogue/vn

Additional information, support and user documentation

→ www.festo.com/sp/vn

- + Generate a vacuum easily and quickly
- + The compact and lightweight design permits assembly in the gripping area
- + Maintenance-free open silencer
- + Optional: integrated solenoid valve and ejector pulse

Product range overview

Type	Nominal width of Laval nozzle [mm]	High vacuum		High suction rate		Grid dimension		→ Page/ online
		Standard H	Inline M	Standard L	Inline N	T-shape	Straight	
						[mm]	[mm]	
VN-05	0.45	■	–	■	–	10, 14	–	884
		–	■	–	–	10, 14	10, 13	
		–	–	–	■	14	13	
VN-07	0.7	■	–	–	–	10, 14	–	
		–	–	■	–	14	–	
		–	■	–	–	10, 14	10, 13	
VN-10	0.95	■	–	■	–	14, 18	–	
		–	■	–	–	–	13	
VN-14	1.4	■	–	■	–	18	–	
VN-20	2.0	■	–	■	–	24	–	
VN-30	3.0	■	–	■	–	24	–	
With integrated vacuum switch								
VN-05-...-P	0.45	■	–	■	–	16	–	891
VN-07-...-P	0.7	■	–	■	–	16	–	
VN-10-...-P	0.95	■	–	■	–	16	–	
With ejector pulse								
VN-05-...-A	0.45	■	–	■	–	14	–	894
		–	■	–	■	–	14.5	
VN-07-...-A	0.7	■	–	■	–	14	–	
		–	■	–	■	–	14.5	
VN-10-...-A	0.95	■	–	■	–	14	–	
VN-14-...-A	1.4	■	–	■	–	18	–	
With solenoid valve vacuum ON/OFF								
VN-05-...-M	0.45	■	–	■	–	14	–	894
VN-07-...-M	0.7	■	–	■	–	14	–	
VN-10-...-M	0.95	■	–	■	–	14	–	
VN-14-...-M	1.4	■	–	■	–	18	–	
VN-20-...-M	2.0	■	–	–	–	24	–	
VN-30-...-M	3.0	■	–	–	–	24	–	
With ejector pulse and solenoid valve vacuum ON/OFF								
VN-05-...-B	0.45	■	–	■	–	14	–	894
VN-07-...-B	0.7	■	–	■	–	14	–	
VN-10-...-B	0.95	■	–	■	–	14	–	
VN-14-...-B	1.4	■	–	■	–	18	–	

At a glance

- Vacuum generators for high vacuum up to 93%
- Vacuum generators for high suction rates and thus particularly short evacuation times
- Modular principle: large selection of different types
- Laval nozzles in six nominal widths
- Minimal space required
- Wear- and maintenance-free
- Compact and robust design
- Can be used directly in the work space, making it particularly effective
- Plastic housing
- Flexible connection options:
- Without or with integrated vacuum switch for monitoring the vacuum with PNP output

Two functional principles

Standard

Compressed air and vacuum connection offset by 90°.

- T-shape housing

Inline

Compressed air and vacuum connection arranged in a line.

- T-shape housing
- Straight housing without exhaust port

Two housing types

T-shape

Connection options:

- QS push-in connectors
- Female thread
- Male thread
- Silencer

Straight

Connection options:

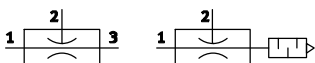
- QS push-in connectors
- Push-in sleeve

Vacuum generators >

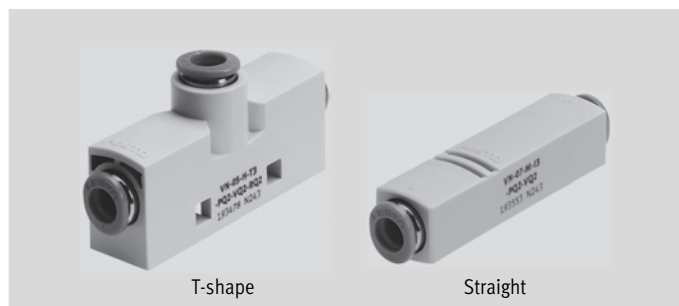
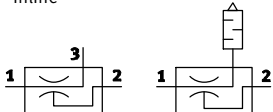
Vacuum generators VN

Data sheet

Standard



Inline



T-shape

Straight

Technical data – Standard		Download CAD data → www.festo.com								
Design		T-shape								
Type		VN-05		VN-07		VN-10		VN-14	VN-20	VN-30
Grid dimension	[mm]	10	14	10	14	14	18	18	24	24
Nominal width of Laval nozzle	[mm]	0.45		0.7		0.95		1.4	2.0	3.0
Ejector characteristics		High vacuum H								
		High suction rate L			High suction rate L					
Pneumatic connection 1	Push-in connector	QS-4	QS-6	QS-4	QS-6	QS-6	QS-6	QS-6	QS-10	QS-10
	Female thread	M5	G $\frac{1}{8}$	M5	G $\frac{1}{8}$	G $\frac{1}{8}$	–	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$
Vacuum connection 2	Push-in connector	QS-4	QS-6	QS-4	QS-6	QS-6	QS-8	QS-8	QS-12	QS-12
	Male thread	–	G $\frac{1}{8}$	–	G $\frac{1}{8}$	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{4}$
	Female thread	M5	G $\frac{1}{8}$	M5	G $\frac{1}{8}$	G $\frac{1}{8}$	–	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{3}{8}$
Pneumatic connection 3	Push-in connector	QS-4	QS-6	QS-4	QS-6	QS-6	QS-8	QS-8	–	–
	Female thread	M5	G $\frac{1}{8}$	M5	G $\frac{1}{8}$	G $\frac{1}{8}$	–	G $\frac{1}{4}$	–	–
	Silencer	Open	Open	Open	Open	Open	Open	Open	Open	Open
Type of mounting		Via through-hole								
		Via H-rail								
		Via accessories								
Mounting position		Any								
Length [mm]	With push-in connector	58	59	58	59	59	64	64	–	–
	With push-in connector and silencer	87	98	87	98	98	126	126	221	221
	Via female thread	61	70	61	70	70	81	81	–	–
	With female thread and silencer	88	103	88	103	103	129	129	229	229
Width [mm]		10	14	10	14	14	18	18	24	24
Height [mm]	With push-in connector	31	30	31	30	30	36	36	75	75
	Via male thread	–	42	–	42	42	51	51	92	92
	Via female thread	33	36	33	36	36	48	48	83	83

Technical data – Inline		Download CAD data → www.festo.com								
Design		T-shape				Straight				
Type		VN-05		VN-07		VN-05		VN-07		VN-10
Grid dimension	[mm]	10	14	10	14	10	13	10	13	13
Nominal width of Laval nozzle	[mm]	0.45		0.7		0.45		0.7		0.95
Ejector characteristics		High vacuum M								
		–	High suction rate N	–	–	–	High suction rate N	–	–	–
Pneumatic connection 1	Push-in connector	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-6
	Female thread	M5	G $\frac{1}{8}$	M5	G $\frac{1}{8}$	–	–	–	–	–
Vacuum connection 2	Push-in connector	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-6
	Female thread	M5	G $\frac{1}{8}$	M5	G $\frac{1}{8}$	–	–	–	–	–
	Push-in sleeve	–	–	–	–	QS-4	QS-6	QS-4	QS-6	–
Pneumatic connection 3	Push-in connector	QS-4	QS-6	QS-4	QS-6	Not ducted				
	Female thread	M5	G $\frac{1}{8}$	M5	G $\frac{1}{8}$					
	Silencer	Open	Open	Open	Open					

Vacuum technology

07

Data sheet

Technical data – Inline		Download CAD data → www.festo.com								
Design		T-shape				Straight				
Type		VN-05		VN-07		VN-05		VN-07		VN-10
Grid dimension [mm]		10	14	10	14	10	13	10	13	13
Type of mounting		Via through-hole				In-line installation				
		Via H-rail								
		Via accessories								
Mounting position		Any								
Length [mm]	With push-in connector	58	59	58	59	57	59	57	59	66
	With push-in connector and push-in sleeve	–				62	60	62	60	–
	Via female thread	61	70	61	70	–				
Width [mm]		10	14	10	14	10	13	10	13	13
Height [mm]	Without connection	–				10	13	10	13	22
	With push-in connector	31	30	31	30	–				
	Via female thread	33	36	33	36	–				
	With silencer	60	69	60	69	–				

Operating conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation not possible
Operating pressure [bar]	1 ... 8
Ambient temperature [°C]	0 ... +60

Performance data – High vacuum

Ejector characteristics		Standard H					Inline M			
Nominal width of Laval nozzle [mm]		0.45	0.7	0.95	1.4	2.0	3.0	0.45	0.7	0.95
Max. vacuum [%]		88	88	89	88	92	93	86	86	86
Operating pressure for max. vacuum [bar]		4.5	4.7	4.5	5.0	3.5	3.7	6.0	5.8	5.8
Max. suction rate with respect to atmosphere [l/min]		6.2	16	25	51.6	98	186	6.1	13.5	28
Operating pressure for max. suction rate [bar]		2.1	2.1	3.1	5.1	2.0	3.0	6.3	7.0	5.0
Air supply time at nominal operating pressure 6 bar (for 1 l volume) ¹⁾	[s]	4.8	1.9	1.1	0.5	0.2	0.1	4.7	2.1	0.96

1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar after switching off the operating pressure.

Performance data – High suction rate

Ejector characteristics		Standard L					Inline N	
Nominal width of Laval nozzle [mm]		0.45	0.7	0.95	1.4	2.0	3.0	0.45
Max. suction rate with respect to atmosphere [l/min]		15.7	38.8	62.7	90.0	188.0	339.0	12.0
Operating pressure for max. suction rate [bar]		5.0	6.2	4.0	8.0	3.0	6.0	6.0
Air supply time at nominal operating pressure 6 bar (for 1 l volume) ²⁾	[s]	1.7	0.5	0.46	0.25	0.15	0.1	1.57

2) Time required to reduce the vacuum to a residual vacuum of –0.05 bar after switching off the operating pressure.

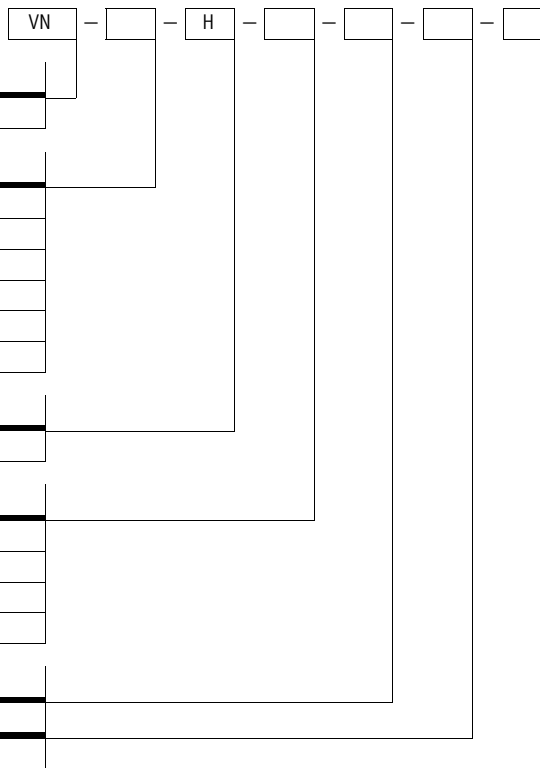
Materials

Type	VN-...-R01	VN-...-R02
Housing	POM-reinforced	
Silencer	PE	POM, polyurethane foam, wrought aluminium alloy
Fitting	Nickel-plated brass	
Seals	NBR	

Vacuum generators >

Vacuum generators VN

Order code – High vacuum/Standard



Type

VN	Vacuum generator
----	------------------

Nominal width of Laval nozzle [mm]

05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

Ejector characteristics

H	High vacuum/Standard
---	----------------------

Housing type

T2	T-shape, grid dimension 10 mm (only Laval nozzle nominal width 05 or 07)
T3	T-shape, grid dimension 14 mm (only Laval nozzle nominal width 05, 07 or 10)
T4	T-shape, grid dimension 18 mm (only Laval nozzle nominal width 10 or 14)
T6	T-shape, grid dimension 24 mm (only Laval nozzle nominal width 20 or 30)

Supply port (P)

		Vacuum connection (V)		Exhaust port (R)	
--	--	-----------------------	--	------------------	--

Housing type T2					
PQ1	Push-in connector QS-4	VQ1	Push-in connector QS-4	RQ1	Push-in connector QS-4
				RO1	Silencer, open
PI2	Female thread M5	VI2	Female thread M5	RI2	Female thread M5
				RO1	Silencer, open
Housing type T3					
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	RQ2	Push-in connector QS-6
				RO1	Silencer, open
PQ2	Push-in connector QS-6	VA4	Male thread G ¹ / ₈	RQ2	Push-in connector QS-6
				RO1	Silencer, open
PI4	Female thread G ¹ / ₈	VI4	Female thread G ¹ / ₈	RI4	Female thread G ¹ / ₈
				RO1	Silencer, open
Housing type T4					
PQ2	Push-in connector QS-6	VQ3	Push-in connector QS-8	RQ3	Push-in connector QS-8
				RO2	Silencer, open
PQ2	Push-in connector QS-6	VA5	Male thread G ¹ / ₄	RQ3	Push-in connector QS-8
				RO2	Silencer, open
PI4	Female thread G ¹ / ₈	VI5	Female thread G ¹ / ₄	RI5	Female thread G ¹ / ₄ 1
				RO2	Silencer, open 1
Housing type T6					
PQ4	Push-in connector QS-10	VQ5	Push-in connector QS-12	RO2	Silencer, open
PQ4	Push-in connector QS-10	VA5	Male thread G ¹ / ₄	RO2	Silencer, open
PI5	Female thread G ¹ / ₄	VI6	Female thread G ³ / ₈	RO2	Silencer, open

1 Not with Laval nozzle nominal width 10.

Order example:

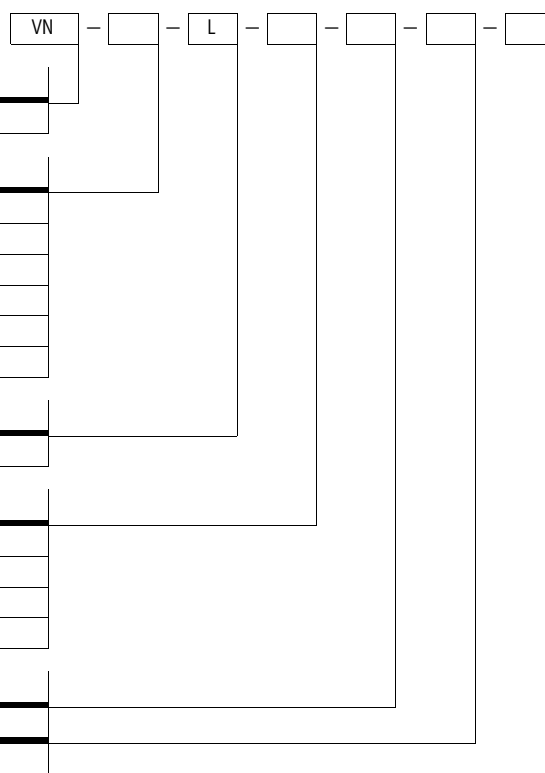
VN-30-H-T6-PQ4-VA5-RO2

Vacuum generator VN - Laval nozzle nominal width 3.0 mm - high vacuum/standard - housing type T-shape, grid dimension 24 mm - compressed air connection push-in connector QS-10 - vacuum connection male thread G¹/₄ - exhaust port silencer, open

07

Vacuum technology

Order code – High suction rate/Standard

**Type**

VN	Vacuum generator
----	------------------

Nominal width of Laval nozzle [mm]

05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

Ejector characteristics

L	High suction rate/standard
---	----------------------------

Housing type

T2	T-shape, grid dimension 10 mm (only Laval nozzle nominal width 05)
T3	T-shape, grid dimension 14 mm (only Laval nozzle nominal width 05, 07 or 10)
T4	T-shape, grid dimension 18 mm (only Laval nozzle nominal width 10 or 14)
T6	T-shape, grid dimension 24 mm (only Laval nozzle nominal width 20 or 30)

Supply port (P)

		Vacuum connection (V)				Exhaust port (R)	
Housing type T2							
PQ1	Push-in connector QS-4	VQ1	Push-in connector QS-4	RQ1	Push-in connector QS-4	RO1	Silencer, open
PI2	Female thread M5	VI2	Female thread M5	RI2	Female thread M5	RO1	Silencer, open
Housing type T3							
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	RQ2	Push-in connector QS-6	RO1	Silencer, open
PQ2	Push-in connector QS-6	VA4	Male thread G $\frac{1}{8}$	RQ2	Push-in connector QS-6	RO1	Silencer, open
PI4	Female thread G $\frac{1}{8}$	VI4	Female thread G $\frac{1}{8}$	RI4	Female thread G $\frac{1}{8}$	RO1	Silencer, open
PI4	Female thread G $\frac{1}{8}$	VA4	Male thread G $\frac{1}{8}$	RO1	Silencer, open		1
Housing type T4							
PQ2	Push-in connector QS-6	VQ3	Push-in connector QS-8	RQ3	Push-in connector QS-8	RO2	Silencer, open
PQ2	Push-in connector QS-6	VA5	Male thread G $\frac{1}{4}$	RQ3	Push-in connector QS-8	RO2	Silencer, open
PI4	Female thread G $\frac{1}{8}$	VI5	Female thread G $\frac{1}{4}$	RI5	Female thread G $\frac{1}{4}$	RO2	Silencer, open
Housing type T6							
PQ4	Push-in connector QS-10	VQ5	Push-in connector QS-12	RO2	Silencer, open		3
PQ4	Push-in connector QS-10	VA5	Male thread G $\frac{1}{4}$	RO2	Silencer, open		
PI5	Female thread G $\frac{1}{4}$	VI6	Female thread G $\frac{3}{8}$	RO2	Silencer, open		

1 Only with Laval nozzle nominal width 10.

3 Not with Laval nozzle nominal width 30.

2 Not with Laval nozzle nominal width 10.

Order example:

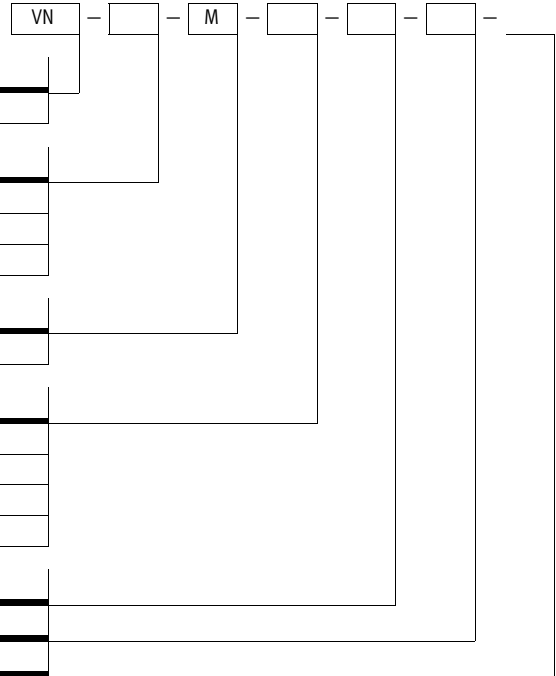
VN-07-L-T3-PQ2-VQ2-RQ2

Vacuum generator VN - Laval nozzle nominal width 0.7 mm - high suction rate/standard - housing type T-shape, grid dimension 14 mm - compressed air connection push-in connector QS-6 - vacuum connection push-in connector QS-6 - exhaust port push-in connector QS-6

Vacuum generators >

Vacuum generators VN

Order code – High vacuum/Inline



Type					
VN	Vacuum generator				
Nominal width of Laval nozzle [mm]					
05	0.45				
07	0.7				
10	0.95				
Ejector characteristics					
M	High vacuum/inline				
Housing type					
T2	T-shape, grid dimension 10 mm (only Laval nozzle nominal width 05 or 07)				
T3	T-shape, grid dimension 14 mm (only Laval nozzle nominal width 05 or 07)				
I2	Straight, grid dimension 10 mm (only Laval nozzle nominal width 05 or 07)				
I3	Straight, grid dimension 13 mm				
Supply port (P)					
Vacuum connection (V)					
Exhaust port (R)					
Housing type T2					
PQ1	Push-in connector QS-4	VQ1	Push-in connector QS-4	RQ1	Push-in connector QS-4
				RO1	Silencer, open
PI2	Female thread M5	VI2	Female thread M5	RI2	Female thread M5
				RO1	Silencer, open
Housing type T3					
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	RQ2	Push-in connector QS-6
				RO1	Silencer, open
PI4	Female thread G $\frac{1}{8}$	VI4	Female thread G $\frac{1}{8}$	RI4	Female thread G $\frac{1}{8}$
				RO1	Silencer, open
Housing type I2					
PQ1	Push-in connector QS-4	VQ1	Push-in connector QS-4	–	–
		VT1	Push-in sleeve \varnothing 4 mm	–	–
Housing type I3					
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	–	–
		VT2	Push-in sleeve \varnothing 6 mm	–	–

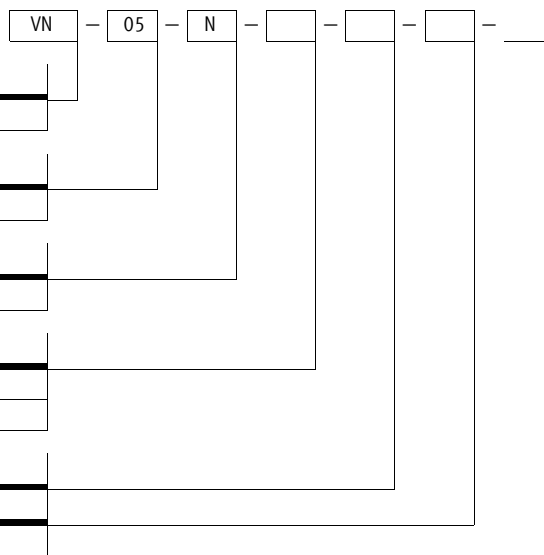
1 Not with Laval nozzle nominal width 10.

Order example:

VN-05-M-I3-PQ2-VT2

Vacuum generator VN - Laval nozzle nominal width 0.45 mm - high vacuum/inline - housing type, straight, grid dimension 13 mm - compressed air connection push-in connector QS-6 - vacuum connection push-in sleeve \varnothing 6 mm

Order code – High suction rate/inline



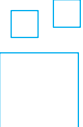
Type					
VN	Vacuum generator				
Nominal width of Laval nozzle [mm]					
05	0.45				
Ejector characteristics					
N	High suction rate/inline				
Housing type					
T3	T-shape, grid dimension 14 mm				
I3	Straight, grid dimension 13 mm				
Supply port (P)					
			Vacuum connection (V)		
			Exhaust port (R)		
Housing type T3					
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	RQ2	Push-in connector QS-6
				RO1	Silencer, open
PI4	Female thread G $\frac{1}{8}$	VI4	Female thread G $\frac{1}{8}$	RI4	Female thread G $\frac{1}{8}$
				RO1	Silencer, open
Housing type I3					
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	-	-
		VT2	Push-in sleeve \varnothing 6 mm	-	-

Order example:

VN-05-N-T3-PI4-VI4-RO1

Vacuum generator VN - Laval nozzle nominal width 0.45 mm - high suction rate/inline - housing type T-shape, grid dimension 14 mm - compressed air connection female thread Gx - vacuum connection female thread Gx - exhaust port silencer, open

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
www.festo.com/catalogue/...

Enter the type code in the search field.

07 Vacuum technology

Vacuum generators >

Vacuum generators VN

Accessories

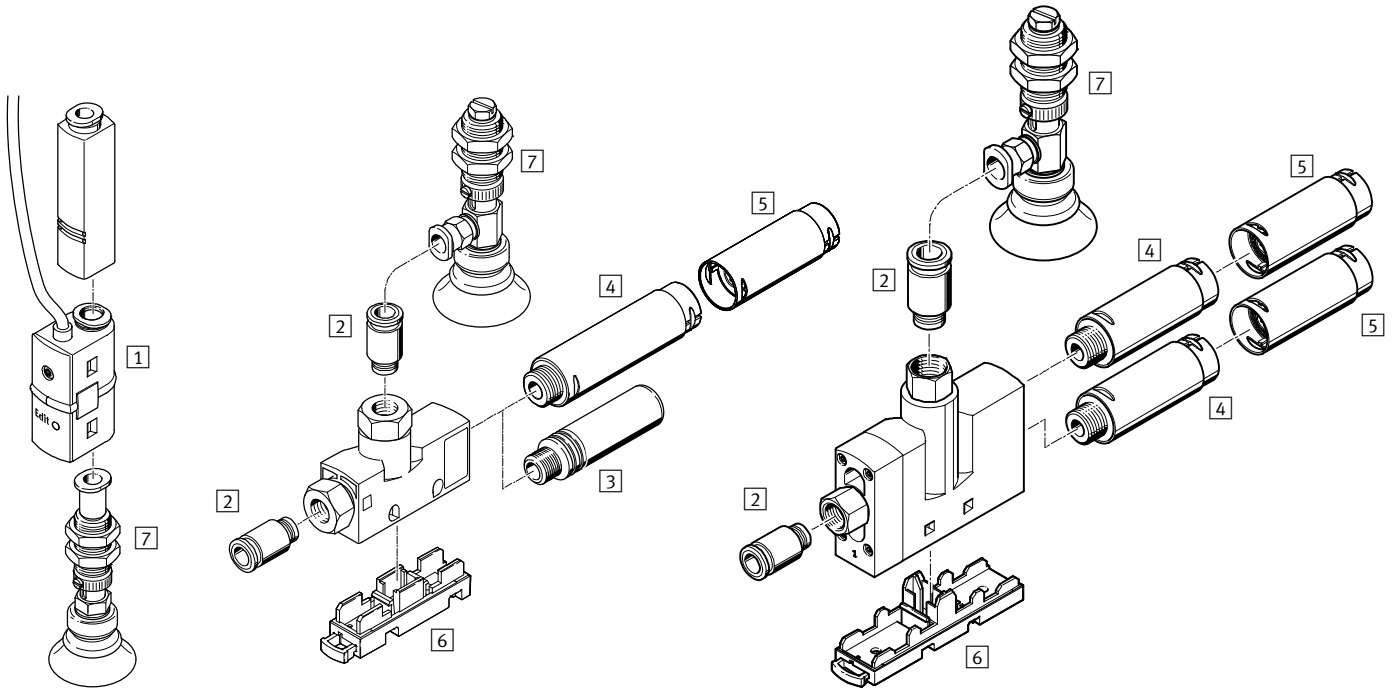
Straight

VN-05/07/10

T-shape

VN-05/07/10/14

VN-20/30



Accessories	→ Page/online
1 Pressure switch SDE5	1247
2 Push-in fitting QS	1443
3 Silencer UO	890
4 Silencer UOM	890

Accessories	→ Page/online
5 Silencer extension UOMS	890
6 Mounting plate VN-T	890
7 Suction gripper ESG	esg

Accessories – Ordering data

	Pneumatic connection	Part no.	Type
3 Silencer UO		Data sheets → Page 1664	
	M7	197582	UO-M7
	G1/8	197583	UO-1/8
	G1/4	197584	UO-1/4
4 Silencer UOM		Data sheets → Page 1664	
	G1/4	538432	UOM-1/4
	G3/8	538433	UOM-3/8
5 Silencer extension UOMS		Data sheets → Page 1664	
	-	538436	UOMS-1/4
	-	538437	UOMS-3/8

	Description	Part no.	Type
6 Mounting plate VN-T		Data sheets online: → vn-t	
	Grid dimension 10 mm	196951	VN-T2-BP-NRH
	Grid dimension 14 mm	193641	VN-T3-BP-NRH
	Grid dimension 18 mm	195279	VN-T4-BP-NRH
	Grid dimension 24 mm	196956	VN-T6-BP-NRH ¹⁾

1) Horizontal wall mounting is not permitted with mounting plate VN-T6-BP-NRH.

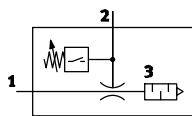
Vacuum technology

07

Vacuum generators VN-P, with integrated vacuum switch

Data sheet

Standard



Technical data		Download CAD data → www.festo.com		
Design		T-shape		
Type		VN-05	VN-07	VN-10
Grid dimension	[mm]	16	16	16
Nominal width of Laval nozzle	[mm]	0.45	0.7	0.95
Ejector characteristics		High vacuum/Standard H High suction rate/Standard L		
Pneumatic connection 1		QS-6		
Vacuum connection		QS-6		
Pneumatic connection 3		Silencer, open		
Type of mounting		Via through-hole		
Mounting position		Any ¹⁾		
Measured variable		Relative pressure		
Pressure measuring range	[bar]	-1 ... 0		
Display type/switching status indication		LED		
Switching output		PNP		
Switching element function		N/O contact		
Switching function		Threshold value comparator with fixed hysteresis Threshold value comparator with variable hysteresis		
Operating voltage range	[V DC]	15 ... 30		
Electrical connection		M8x1, 3-pin		
Length/width/height	[mm]	94/16/40	107/16/40	107/16/40

1) It should not be possible for condensed water to collect in the sensor.

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation not possible
Operating pressure	[bar] 1 ... 8
Ambient temperature	[°C] 0 ... +50

Performance data		High vacuum/Standard H			High suction rate/Standard L		
Ejector characteristics							
Nominal width of Laval nozzle	[mm]	0.45	0.7	0.95	0.45	0.7	0.95
Max. vacuum	[%]	92	92	93	–	–	–
Operating pressure for max. vacuum	[bar]	4.9	4.4	3.5	–	–	–
Max. suction rate with respect to atmosphere	[l/min]	7.2	16.2	21.8	13.6	30.9	41.5
Operating pressure for max. suction rate	[bar]	3	3	3	5	4	5

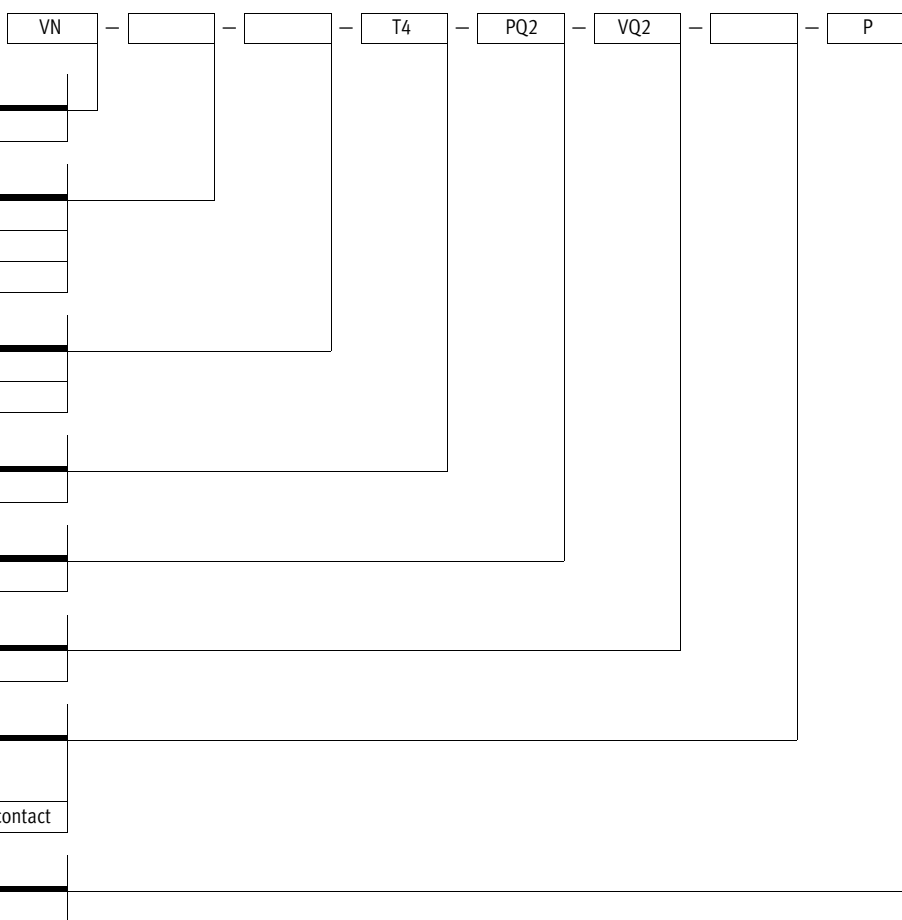
Vacuum generators >

Vacuum generators VN-P, with integrated vacuum switch

Data sheet

Materials	
Housing	POM-reinforced
Silencers	PE
Fitting	Nickel-plated brass
Plug connector housing	PA, chrome- and nickel-plated brass
Keypad	POM
Fibre-optic cable	PC
Seals	NBR

Order code



Type	
VN	Vacuum generator

Nominal width of Laval nozzle [mm]	
05	0.45
07	0.7
10	0.95

Ejector characteristics	
H	High vacuum/standard
L	High suction rate/standard

Housing type	
T4	T-shape, grid dimension 16 mm

Supply port (P)	
PQ2	Push-in connector QS-6

Vacuum connection (V)	
VQ2	Push-in connector QS-4

Switching function	
01	Threshold value with fixed hysteresis, 2 teach-in points, N/O contact
02	Threshold value with variable hysteresis, N/O contact

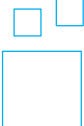
Electrical output	
P	Switching output PNP

Order example:

VN-07-L-T4-PQ2-VQ2-02-P

Vacuum generator VN - Laval nozzle nominal width 0.7 mm - high suction rate/standard - housing type T-shape, grid dimension 16 mm - compressed air connection push-in connector QS-6 - vacuum connection push-in connector QS-4 - switching function threshold value with variable hysteresis, N/O contact - switching output PNP

Ordering – Product options



Configurable product

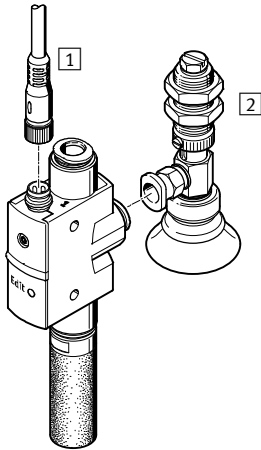
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Vacuum generators VN-P, with integrated vacuum switch

Accessories



Accessories		→ Page/online
1	Connecting cable NEBU-M8	893
2	Suction gripper ESG	esg

Accessories – Ordering data

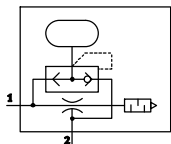
	Electrical connection	Cable length [m]	Part no.	Type	
1	Connecting cable NEBU-M8				Data sheets → 1544
	M8x1, 3-pin	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3	
		5	★ 541334	NEBU-M8G3-K-5-LE3	
	M8x1, 3-pin	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3	
		5	★ 541341	NEBU-M8W3-K-5-LE3	

Vacuum generators >

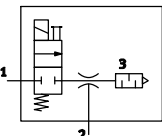
Vacuum generators VN-A/M/B, with additional functions

Data sheet

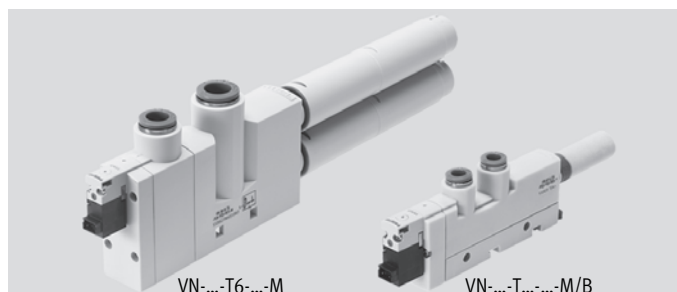
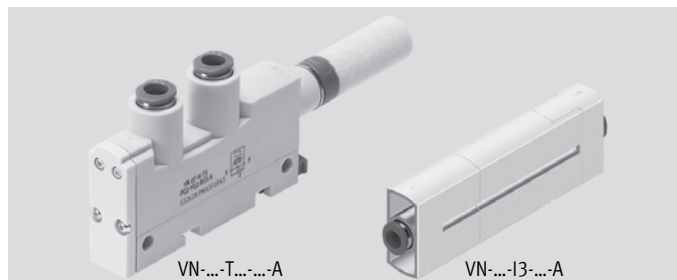
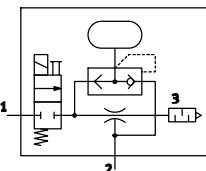
VN-A



VN-M



VN-B



Technical data – Standard

Download CAD data → www.festo.com

Design		T-shape															
Type		VN-05			VN-07			VN-10			VN-14			VN-20		VN-30	
Grid dimension [mm]		14			14			14			18			24		24	
Integrated function		A	M	B	A	M	B	A	M	B	A	M	B	M	M		
Nominal width of Laval nozzle [mm]		0.45			0.7			0.95			1.4			2.0		3.0	
Ejector characteristics		High vacuum H															
		High suction rate L															
		-															
Pneumatic connection 1	Push-in connector	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-8	QS-8	QS-8	QS-10	QS-10		
	Female thread	G $\frac{1}{8}$	-	-	G $\frac{1}{8}$	-	-	G $\frac{1}{8}$	-	-	G $\frac{1}{4}$	-	-	-	-		
Vacuum connection	Push-in connector	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-6	QS-8	QS-8	QS-8	QS-12	QS-12		
	Female thread	G $\frac{1}{8}$	-	-	G $\frac{1}{8}$	-	-	G $\frac{1}{8}$	-	-	G $\frac{1}{4}$	-	-	-	-		
Pneumatic connection 3		Silencer open															
Type of mounting		Via through-hole															
		Via H-rail															
		Via accessories															
Mounting position		Any															
Length [mm]	Push-in connector	110	132		119	141		119	141		166	192		253			
	Female thread	110	-		119	-		119	-		166	-		-			
Width [mm]		14			14			14			18			24			
Height [mm]	Push-in connector	48			48			48			50			75			
	Female thread	53	-		53	-		53	-		62	-		-			

Technical data – Inline

Download CAD data → www.festo.com

Design		Straight	
Type		VN-05	
Type		VN-07	
Grid dimension [mm]		14.5	
Grid dimension [mm]		14.5	
Integrated function		A	
Integrated function		A	
Nominal width of Laval nozzle [mm]		0.45	
Nominal width of Laval nozzle [mm]		0.7	
Ejector characteristics		High vacuum M	
		High suction rate N	
Pneumatic connection 1		QS-6	
Vacuum connection		QS-6	
Type of mounting		In-line installation	
Mounting position		Any	
Length [mm]		81	
Length [mm]		97	
Width [mm]		14.5	
Width [mm]		14.5	
Height [mm]		33.1	
Height [mm]		33.1	

Vacuum technology

Vacuum generators VN-A/M/B, with additional functions

Data sheet

Operating conditions		Via push-in fitting			Via female thread	
Pneumatic connection						
Integrated function		A	M	B	A	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium		Lubricated operation not possible				
Operating pressure	[bar]	1 ... 8		2 ... 8		1 ... 8
Ambient temperature	[°C]	0 ... +60		0 ... +50		0 ... +60

Performance data – High vacuum		Standard H										Inline M		
Ejector characteristics														
Nominal width of Laval nozzle	[mm]	0.45		0.7		0.95		1.4		2.0	3.0	0.45	0.7	
Integrated function		A	M	B	A	M	B	A	M	B	M	M	A	A
Max. vacuum	[%]	92		92		93		92		92	93	93	93	
Operating pressure for max. vacuum	[bar]	4.9		4.4		3.5		3.5		3.5	3.7	4.3	4.3	
Max. suction rate with respect to atmosphere	[l/min]	7.2		16.2		21.8		48.8		98	186	7.2	16.6	
Operating pressure for max. suction rate	[bar]	3		3		3		4		2	3	2	2	
Air supply time at nominal operating pressure 6 bar (for 1 l volume) ¹⁾	[s]	3.63	3.9	1.5	1.69	0.96	1.06	0.43	0.5	0.24	0.13	4.1	1.69	

1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar after switching off the operating pressure.

Performance data – High suction rate		Standard L										Inline N			
Ejector characteristics															
Nominal width of Laval nozzle	[mm]	0.45		0.7		0.95		1.4				0.45	0.7		
Integrated function		A	M	B	A	M	B	A	M	B	A	M	B	A	A
Max. suction rate with respect to atmosphere	[l/min]	13.6		30.9		40.5		92.6				13.3	32.6		
Operating pressure for max. suction rate	[bar]	5		4		5		5				5	4		
Air supply time at nominal operating pressure 6 bar (for 1 l volume) ²⁾	[s]	1.93	1.97	0.79	0.83	0.62	0.67	0.28	0.32			2.24	0.89		

2) Time required to reduce the vacuum to a residual vacuum of –0.05 bar after switching off the operating pressure.

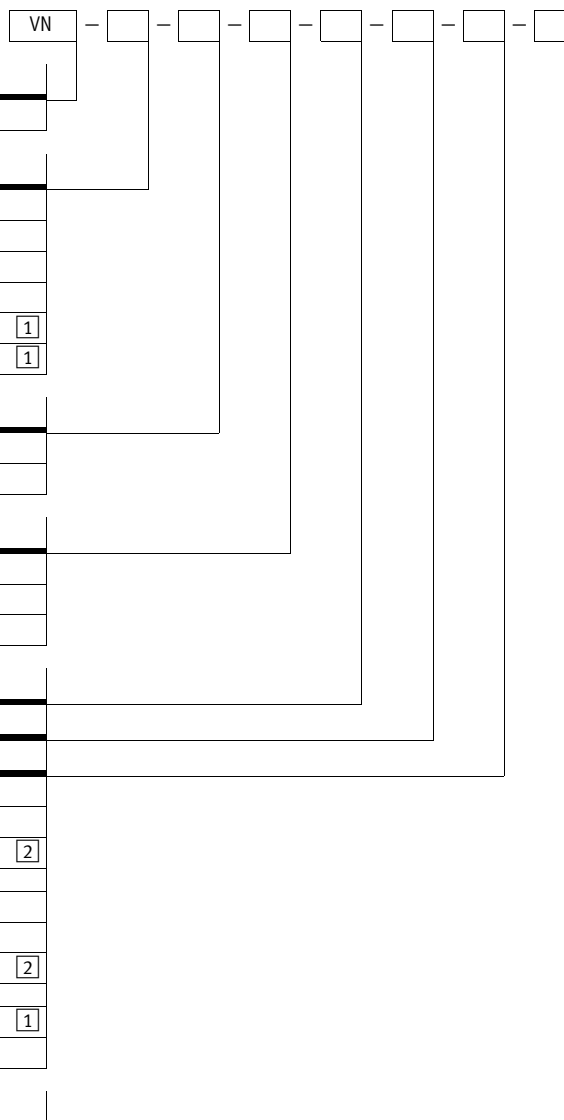
Technical data of solenoid valve	
Operating voltage range	[V DC] 21.6 ... 26.4
Duty cycle	[%] 100
Degree of protection	IP40 (to EN 60529)
Valve function	2/2-way valve
Manual override	Non-detenting

Materials	
Type	VN-...-R01 VN-...-R02
Housing	POM-reinforced, PA-reinforced
Pneumatic silencers	PE POM, polyurethane foam, wrought aluminium alloy
Fitting	Nickel-plated brass
Seals	NBR

Vacuum generators >

Vacuum generators VN-A/M/B, with additional functions

Order code – High vacuum/standard, high suction rate/standard



Type	
VN	Vacuum generator

Nominal width of Laval nozzle [mm]	
05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

Ejector characteristics	
H	High vacuum/standard
L	High suction rate/standard

Housing type	
T3	T-shape, grid dimension 14 mm (only Laval nozzle nominal width 05, 07 or 10)
T4	T-shape, grid dimension 18 mm (only Laval nozzle nominal width 14)
T6	T-shape, grid dimension 24 mm (only Laval nozzle nominal width 20 or 30)

Supply port (P)		Vacuum connection (V)		Exhaust port (R)	
Housing type T3					
PQ2	Push-in connector QS-6	VQ2	Push-in connector QS-6	RO1	Silencer, open
PI4	Female thread G $\frac{1}{8}$	VI4	Female thread G $\frac{1}{8}$	RO1	Silencer, open
Housing type T4					
PQ3	Push-in connector QS-8	VQ3	Push-in connector QS-8	RO2	Silencer, open
PI5	Female thread G $\frac{1}{4}$	VI5	Female thread G $\frac{1}{4}$	RO2	Silencer, open
Housing type T6					
PQ4	Push-in connector QS-10	VQ5	Push-in connector QS-12	RO2	Silencer, open

Additional function	
A	Ejector impulse
M	Solenoid valve vacuum ON/OFF
B	Solenoid valve vacuum ON/OFF and ejector pulse

1 Only with ejector characteristic, high vacuum and additional function solenoid valve vacuum ON/OFF.

2 Only with additional function, ejector pulse.

Order example:

VN-30-H-T6-PQ4-VQ5-RO2-M

Vacuum generator VN - Laval nozzle nominal width 3.0 mm - high vacuum/standard - housing type T-shape, grid dimension 24 mm - compressed air connection push-in connector QS-10 - vacuum connection push-in connector QS-12 - exhaust port silencer, open - additional function solenoid valve vacuum ON/OFF

07

Vacuum technology

Vacuum generators VN-A/M/B, with additional functions

Order code – High vacuum/inline, high suction rate/inline


		VN		-				-				I3		-		PQ2		-		VQ2		-		A	
Type																									
VN		Vacuum generator																							
Nominal width of Laval nozzle [mm]																									
05		0.45																							
07		0.7																							
Ejector characteristics																									
M		High vacuum/inline																							
N		High suction rate/inline																							
Housing type																									
I3		Straight, grid dimension 14.5 mm																							
Supply port (P)																									
		Vacuum connection (V)																							
Housing type I3																									
PQ2		Push-in connector QS-6				VQ2		Push-in connector QS-6																	
Additional function																									
A		Ejector impulse																							

Order example:

VN-07-N-I3-PQ2-VQ2-A

Vacuum generator VN - Laval nozzle nominal width 0.7 mm - high suction rate/inline - straight, grid dimension 14.5 mm - compressed air connection push-in connector QS-6 - vacuum connection push-in connector QS-6 - additional function ejector pulse

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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07
Vacuum technology

Vacuum generators >

Vacuum generators VN-A/M/B, with additional functions

Accessories

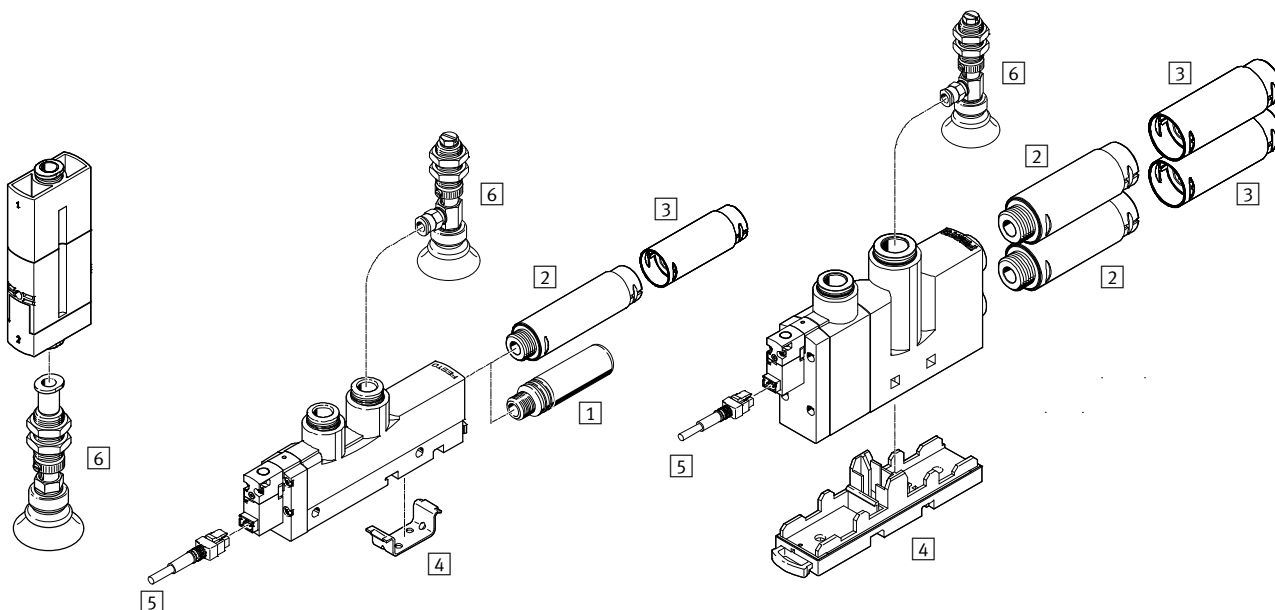
Straight

VN-05/07-...-A

T-shape

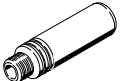
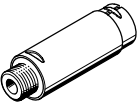

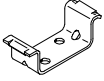
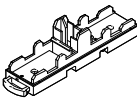
VN-05/07/10/14-...-A/M/B

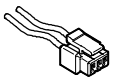
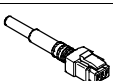
VN-20/30-...-M



Mounting components and accessories		→ Page/online
1	Silencer UO	898
2	Silencer UOM	898
3	Silencer extension UOMS	898
4	Mounting plate VN-T	898
5	Plug socket with cable NEBV	898
6	Suction gripper ESG	esg

Accessories – Ordering data

	Pneumatic connection	Part no.	Type
1 Silencer UO Data sheets → Page 1664			
	M7	197582	UO-M7
	G1/8	197583	UO-1/8
	G1/4	197584	UO-1/4
2 Silencer UOM Data sheets → Page 1664			
	G1/4	538432	UOM-1/4
	G3/8	538433	UOM-3/8
3 Silencer extension UOMS Data sheets → Page 1664			
	-	538436	UOMS-1/4
	-	538437	UOMS-3/8
4 Mounting plate VN-T Data sheets online: → vn-t			
	Grid dimension 14 mm	547436	VN-T3-BP
	Grid dimension 18 mm	547437	VN-T4-BP
	Grid dimension 24 mm	196956	VN-T6-BP-NRH ¹⁾

	Cable length [m]	Part no.	Type
5 Plug socket with cable NEBV Data sheets online: → nebv			
	0.5	★ 566654	NEBV-H1G2-KN-0.5-N-LE2
	1	★ 566655	NEBV-H1G2-KN-1-N-LE2
	2.5	★ 566656	NEBV-H1G2-KN-2.5-N-LE2
	5	566657	NEBV-H1G2-KN-5-N-LE2
	0.5	★ 566658	NEBV-H1G2-P-0.5-N-LE2
	1	★ 566659	NEBV-H1G2-P-1-N-LE2
	2.5	★ 566660	NEBV-H1G2-P-2.5-N-LE2
	5	566661	NEBV-H1G2-P-5-N-LE2

1) Horizontal wall mounting is not permitted with mounting plate VN-T6-BP-NRH.

8 Valves

- + Standard directional control valves, universal directional control valves and application-specific directional control valves with electrical or pneumatic actuation
- + Directional control valves with mechanical actuating elements such as stems, rollers, roller levers, swivel levers, whiskers etc.
- + Shut-off valves: check valves, ball valves and shut-off valves, quick exhaust valves, logic valves
- + Pressure regulators
- + Flow control valves: time delay valves, throttle valves, one-way flow control valves
- + Proportional valves
- + Process and media valves with electrical, pneumatic or mechanical actuation



VUVS ★

Universal directional control valves

- + Piston spool with sealing cartridge (VUVS-L) or sealing ring (VUVS-LK)
- + Can be used as an individual valve or manifold valve VTUS

→ page 1091



VUVG ★

Universal directional control valves

- + Universal valve, sturdy and durable
- + Can be used as an individual valve or manifold valve VTUG

→ page 923



HGL ★

Piloted check valves

- + Manually actuated exhaust possible with separate accessory
- + Pneumatically piloted

→ page 1021



VPPM

Proportional pressure regulators

- + Choice of 3 regulator settings (rapid, universal, precise)
- + Display optionally available
- + Also available on valve terminal MPA-S

→ page 1053

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NEW New series

Selector valves VHEF-ES 909

NEW New series

Pinch valves VZQA 918

NEW Additional versions

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NEW New series

Piezo valves VEVM 920

NEW New series

Solenoid valves VUVG 923

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Solenoid valves VSVA, VSPA, to ISO 15407-1 981

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Proportional pressure regulators VEAB 1047

Proportional pressure regulators VPPM 1053




Solenoid valves VUVS/valve manifolds VTUS 1091

Product overview





Universal directional control valves

				
Type	Solenoid valves, for individual connection VUVG ★	Solenoid valves, plug-in VUVG ★	Pneumatic valves VUWG	Solenoid valves VUVS ★
Type of actuation	Electric	Electric	Pneumatic	Electric
Pneumatic connection 1	G1/4, G1/8, M3, M5, M7		G1/8, G1/4, M3, M5, M7	G1/8, G1/4, G3/8
Pneumatic working port	G1/4, G1/8, M3, M5, M7, QS-1/4, QS-1/8, QS-10, QS-3, QS-3/16, QS-3/8, QS-4, QS-5/16, QS-5/32, QS-6, QS-8, flange	G1/4, G1/8, M5, M7, flange	G1/4, G1/8, M3, M5, M7, QS-1/4, QS-1/8, QS-10, QS-3, QS-3/16, QS-3/8, QS-4, QS-5/16, QS-5/32, QS-6, QS-8	G1/4, G1/8, G3/8, NPT1/4-18, NPT1/8-27, QS-1/4, QS-10, QS-12, QS-3/8, QS-4, QS-5/16, QS-5/32, QS-6, QS-8
Standard nominal flow rate	90 ... 1380 l/min	130 ... 1200 l/min	80 ... 1380 l/min	600 ... 2400 l/min
Valve function	2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid, open, 2x3/2-way, single solenoid, open/closed, 5/2-way, double solenoid, 5/2-way, single solenoid, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid open, 2x3/2-way, single solenoid, open/closed, 3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, double solenoid, 5/2-way, single solenoid, 5/3-way pressurised, 5/3-way exhausted, 5/3-way closed	2x3/2-way, monostable, closed, 2x3/2-way, monostable, open, 2x3/2-way, monostable, open/closed, 5/2-way, bistable, 5/2-way, monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, double solenoid, 5/2-way, single solenoid, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed
Electrical connection	Plug, via electrical connection box, connection pattern H, horizontal connection, M8x1, A-coded to EN 61076-2-104, 2-pin, 3-pin	Via sub-base		Type B, type C, to EN 175301-803
Description	<ul style="list-style-type: none"> Compact universal valve Connection technology via E-box High flow rate relative to its size In-line valves can be used as individual valves or manifold valves 	<ul style="list-style-type: none"> Sub-base valve For valve terminal VTUG with plug-in 	<ul style="list-style-type: none"> Compact universal valve Pneumatically actuated High flow rate relative to its size In-line valves can be used as individual valves or manifold valves Can be combined with individual electric valves on terminal strip 	<ul style="list-style-type: none"> Universal valve, sturdy and durable Low cost, no limitations with regard performance Can be used as individual valves or manifold valves VTUS
→ Page/online	923	923	vuwg	1091

Universal directional control valves




			
Type	Pneumatic valves VUWS	Solenoid valves VMPA1, VMPA14, VMPA2	Solenoid valves CPE10, CPE14, CPE18, CPE24
Type of actuation	Pneumatic	Electric	Electric, via pilot interface to ISO 15218
Pneumatic connection 1	G1/8, G1/4, G3/8	G1/8, M7	G1/8, G1/4, G3/8, M5, M7, QS-4, QS-6, QS-8, QS-10, QS-12
Pneumatic working port	G1/4, G1/8, G3/8, NPT1/4-18, NPT1/8-27, QS-1/4, QS-10, QS-3/8, QS-4, QS-5/16, QS-5/32, QS-6, QS-8, QS-12	G1/8, M7	G1/8, G1/4, G3/8, M5, M7, QS-4, QS-6, QS-8, QS-10, QS-12
Standard nominal flow rate	600 ... 2400 l/min	160 ... 900 l/min	180 ... 3200 l/min
Valve function	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, double solenoid, 5/2-way, monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	2x2/2-way, single solenoid, closed, 2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid, open, 2x3/2-way, single solenoid, open/closed, 3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, double solenoid, 5/2-way, single solenoid, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, double solenoid, 5/2-way, single solenoid, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed
Electrical connection		4-pin, M8x1, plug, to EN 60947-5-2	2-pin, 4-pin, type C, M8x1
Description	<ul style="list-style-type: none"> Universal valve, sturdy and durable Pneumatically actuated Can be used as individual valves or manifold valves VTUS 	<ul style="list-style-type: none"> For valve terminal MPA As individual valve mounted on sub-base Comprehensive valve range 	<ul style="list-style-type: none"> Universally applicable individual valve High flow rate relative to its size
→ Page/online	vuws	vmpa1	cpe

Universal directional control valves

				
Type	Solenoid valves, pneumatic valves, Tiger 2000 MFH, MVH, JMFH, JMVH, VL, J	Solenoid valves, pneumatic valves, Tiger Classic MFH, MOFH, JMFH, JMFH, VL/O, VL, JH, JDH	Solenoid valves, pneumatic valves, midi pneumatic MEBH, MOEBH, MEH, MOEH, JMEBH, JMEH, VL, J	Cassette valves C, CJ, CJM, CL, CM
Type of actuation	Electric, pneumatic	Electric, pneumatic	Electric, pneumatic	Pneumatic
Pneumatic connection 1	G1/8, G1/4, G3/8	G1/8, G1/4, G1/2, G3/4, NPT1/8-27	Sub-base, G1/8	Sub-base, G1/4, G1/2
Pneumatic working port	G1/8, G1/4, G3/8	G1/8, G1/4, G1/2, G3/4	Sub-base, G1/8	Sub-base, G1/4, G1/2
Standard nominal flow rate	750 ... 2600 l/min	500 ... 7500 l/min	300 ... 700 l/min	1400 l/min
Valve function	5/2-way, double solenoid/bistable, 5/2-way, single solenoid/monostable, closed, 5/2-way, single solenoid/monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	3/2-way, single solenoid/monostable, closed, 3/2-way, single solenoid/monostable, open, 5/2-way, double solenoid/bistable, 5/2-way, double solenoid/bistable, dominant, 5/2-way, single solenoid/monostable, closed, 5/2-way, single solenoid/monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	3/2-way, single solenoid/monostable, closed, 3/2-way, single solenoid/monostable, open, 5/2-way, double solenoid/bistable, 5/2-way, single solenoid/monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	5/2-way, bistable, 5/2-way, monostable
Electrical connection	Plug pins for plug sockets MSSD-F, KMF; via F solenoid coil, to be ordered separately; V solenoid coil to EN 175301-803 type B	Via F coil, to be ordered separately	Plug, square design to EN 175301-803, type C; plug, square design, connection pattern type C, to industry standard 9.4 mm	
Description	<ul style="list-style-type: none"> Sturdy and reliable Wide range of voltages due to individual coils Principle with armature guide tube 	<ul style="list-style-type: none"> Sturdy and reliable Poppet valve All-metal version Principle with armature guide tube 	<ul style="list-style-type: none"> Sub-base valve, semi in-line valve Individual mounting or manifold assembly for 2 ... 10 valves Operating voltage 24 V DC, 110/230 V AC (50 ... 60 Hz) 	<ul style="list-style-type: none"> Sturdy Direct mounting on sub-base With and without manual override
→ Page/online	tiger 2000	tiger classic	mebh	cm

08





Universal directional control valves

			
Type	Solenoid valves supplementary product range JMC, JMF, MC, MCH, MF, MFH, MOCH	Pneumatic valves supplementary product range A, VL	Basic valves LC, LOCB
Type of actuation	Electric		Pneumatic, electric
Pneumatic connection 1	M5, G1/8, G1/4, G1/2	G1/4	G1/8, G1/4
Pneumatic working port	M5, G1/8, G1/4, G1/2	G1/4	
Standard nominal flow rate	46 ... 300 l/min	700 l/min	80 ... 600 l/min
Valve function	2/2-way, single solenoid, closed, 2x3/2-way, single solenoid, closed, 3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 3x3/2-way, single solenoid, closed, 4/2-way double solenoid, 4/2-way single solenoid	5/2-way, bistable, 5/4-way, closed	3/2-way, directly actuated, 5/4-way, indirectly actuated
Electrical connection	Plug		
Description	<ul style="list-style-type: none"> Manifold mounting or individual valve Especially suited for positioning, for stopping in the event of an emergency stop and for holding double-acting cylinders in any position With and without manual override 	<ul style="list-style-type: none"> For actuating cylinders for single stroke and oscillating movements For positioning, for stopping in the event of an emergency stop and for holding double-acting cylinders in any position For controlling functions of pneumatic feed units such as feed motions and reciprocal clamping Actuation either manually by means of switch lever, mechanically by means of control stem or pneumatically 	<ul style="list-style-type: none"> Screw-in actuator attachments For positioning, for stopping in the event of an emergency stop and for holding double-acting cylinders in any position
→ Page/online	jmc	vl	lc

Valves

Product overview




Standard directional control valves

Type	 Solenoid valves VSNC	 Solenoid valves with central plug VSVA-R5, VSVA-R2	 Solenoid valves with individual plug VSVA-C1, VSVA-P1	 Solenoid valves, plug-in VSVA-T1
Type of actuation	Electric	Electric	Electric	Electric
Pneumatic connection 1	G1/4, NPT 1/4-18	Sub-base size 1 to ISO 5599-1, size 2 to ISO 5599-1	Sub-base size 18 mm to ISO 15407-1, size 26 mm to ISO 15407-1	Sub-base size 1 to ISO 5599-2, size 2 to ISO 5599-2, size 18 mm to ISO 15407-2, size 26 mm to ISO 15407-2
Standard nominal flow rate	800 ... 1350 l/min	400 ... 2800 l/min	400 ... 1400 l/min	370 ... 2900 l/min
Valve function	5/2-way, double solenoid, 5/2-way or 3/2-way, convertible, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	5/2-way, double solenoid, 5/2-way, double solenoid, dominant, 5/2-way, single solenoid, 5/3-way, closed, 5/3-way, exhausted, 5/3-way, pressurised, 2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid, open/closed, 2x3/2-way, single solenoid, open	5/2-way, double solenoid, 5/2-way, double solenoid, dominant, 5/2-way, single solenoid, 5/3-way, closed, 5/3-way, exhausted, 5/3-way, pressurised, 2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid, open/closed, 2x3/2-way, single solenoid, open	5/2-way, single solenoid, 5/2-way, double solenoid, 5/2-way, double solenoid, dominant, 5/3-way, port 2 pressurised, 4 exhausted, 5/3-way, closed, 5/3-way, exhausted, 5/3-way, pressurised 1 to 2, 4 to 5 closed, 5/3-way, pressurised, 2x2/2-way, single solenoid, closed, 2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid, open, 2x3/2-way, single solenoid, open/closed
Electrical connection	3-pin, type B, to industry standard (11 mm), plug, to EN 175301-803	3-pin, 4-pin, M12x1, M8x1, round design, central plug	Type C, with protective earth conductor, to DIN EN 175301-803, without protective earth conductor	2-pin, 4-pin, to ISO 15407-2, to ISO 5599-2, plug-in, plug
Description	<ul style="list-style-type: none"> NAMUR connection pattern to VDE/VDI 3845 Rotatable seal for 3/2-way or 5/2-way valve Wide choice of EX solenoid systems Sturdy and powerful Extended temperature range Outstanding value for money All solenoid coils can be used on an armature tube The variant VSNC-...FN is more energy efficient through reduced power consumption 	<ul style="list-style-type: none"> Corresponds to ISO 5599-1 Electrical connection by central plug Robust metal housing Manifold assembly with mixture of sizes possible 	<ul style="list-style-type: none"> Corresponds to ISO 15407-1 and to ISO 15218 for pilot valve with interface Electrical connection via type C plug Robust metal housing Manifold assembly with mixture of sizes possible 	<ul style="list-style-type: none"> For valve terminal VTSA/VTSA-F Robust metal housing
→ Page/online	967	981	981	vsva



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Valves

Standard directional control valves





			
Type	Pneumatic valves, to ISO 15407-1 VSPA	Solenoid valves, to ISO 5599-1 MN1H, MFH, MDH, MEBH, JMN1H, JMN1DH, JMFH, JMFDH, JMDH, JMEBH, JMEBDH, JMDDH	Pneumatic valves, to ISO 5599-1 VL, J, JD
Type of actuation	Pneumatic	Electric	Pneumatic
Pneumatic connection 1	Sub-base size 18 mm to ISO 15407-1, size 26 mm to ISO 15407-1	Sub-base size 1 to ISO 5599-1, size 2 to ISO 5599-1, size 3 to ISO 5599-1, size 4 to ISO 5599-1	Sub-base size 1 to ISO 5599-1, size 2 to ISO 5599-1, size 3 to ISO 5599-1, size 4 to ISO 5599-1
Standard nominal flow rate	400 ... 1100 l/min	1200 ... 6000 l/min	1200 ... 6000 l/min
Valve function	2x3/2-way, monostable, closed, 2x3/2-way, monostable, open, 2x3/2-way, monostable, open/closed, 5/2-way, bistable, 5/2-way, bistable, dominant, 5/2-way, monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	5/2-way, double solenoid, 5/2-way, double solenoid, dominant, 5/2-way, single solenoid, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed	5/2-way, bistable, 5/2-way, bistable, dominant, 5/2-way, monostable, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed
Electrical connection		M12x1, central plug, via F coil, to be ordered separately, via N1 coil, to be ordered separately, round design, to DIN EN 175301-803	
Description	<ul style="list-style-type: none"> Conforms to ISO 15407-1 Pneumatic actuation Manifold assembly with mixture of sizes possible 	<ul style="list-style-type: none"> Conforms to ISO 5599-1 Robust metal housing Manifold assembly with mixture of ISO sizes 1, 2, 3 possible Extensive range of electrical connection options Wide range of vertical stacking modules: pressure regulator, flow control valve, vertical pressure shut-off plate, etc. Also available as a valve terminal 	<ul style="list-style-type: none"> Conforms to ISO 5599-1 Pneumatic actuation
→ Page/online	981	999	iso 5599-1

Standard directional control valves




		
Type	Standards-based valves to ISO 15218 (CNOMO) MDH, MGXDH, MGXIAH, VSCS	Solenoid valves, as per NAMUR (VDI/VDE 3845) NVF3
Type of actuation	Electric	Electric
Pneumatic connection 1	Sub-base	G1/4
Standard nominal flow rate	13.5 ... 50 l/min	900 l/min
Valve function	3/2-way, single solenoid, closed	5/2-way or 3/2-way, single solenoid
Electrical connection	Type A, type C, M12x1, to DIN EN 175301-803, to IEC 61076-2-101	Plug, 3-pin or cable, 3-wire
Description	<ul style="list-style-type: none"> CNOMO connection pattern, to ISO 15218 With and without manual override 	<ul style="list-style-type: none"> NAMUR connection pattern as per VDI/VDE 3845 Electrically actuated, piloted Mechanical spring return Explosion protection to ATEX Can be converted from 5/2-way to 3/2-way function
→ Page/online	iso 15218	namur

Product overview



Application-specific directional control valves

Type	 Control blocks VOFA	 Solenoid valves VOFD	 Solenoid valves VOFC	 Solenoid valves VOVG
Design	Piston spool	Directly actuated poppet valve	Soft-switching piston valve, piloted piston poppet valve	Piston spool
Valve function	3/2-way, single solenoid, closed, 5/2-way, single solenoid	3/2-way, single solenoid, closed	3/2-way, single solenoid, closed, 5/2-way, double solenoid, 5/2-way, single solenoid	3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, single solenoid
Operating pressure	3 ... 10 bar	0 ... 12 bar	0 ... 8 bar	-0.9 ... 8 bar
Ambient temperature	-5 ... 50°C	-25 ... 60°C	-25 ... 60°C	-5 ... 50°C
Pneumatic connection 1	G1/4	G1/4, M5, NPT1/4-18, NAMUR connection pattern	G1/2, G1/4, M5, NPT1/4-18, NAMUR connection pattern	Sub-base, M5, M7
Standard nominal flow rate	950 ... 1050 l/min	49 ... 1888 l/min	766 ... 2686 l/min	180 ... 200 l/min
Description	<ul style="list-style-type: none"> Redundantly constructed valve block, can be used for safe reversing of a hazardous movement Can be selected as a decentralised individual connection variant with electrical and pneumatic individual connection or as a feature integrated in the valve terminal VTSA/VTSA-F Equipped with valves VSVA Switching position sensing by sensors Safety device as per EU Directive 2006/42/EC (Machinery) Can be used as a press safety valve to EN 692 	<ul style="list-style-type: none"> Suitable for process automation, for applications in the chemical and petrochemical industries Suitable for outdoor use under harsh ambient conditions Especially suitable for quarter turn actuators thanks to flange pattern as per NAMUR Variants with TÜV approval up to SIL4 to IEC 61508 	<ul style="list-style-type: none"> Suitable for process automation, for applications in the chemical and petrochemical industries Suitable for outdoor use under harsh ambient conditions Especially suitable for quarter turn actuators thanks to flange pattern as per NAMUR Valve can switch between internal and external pilot air Variants with TÜV approval up to SIL3 to IEC 61508 	<ul style="list-style-type: none"> Very compact valve for solutions with extremely high component density Suitable for applications in the electronics and light assembly industry In-line, semi in-line and sub-base valve Manifold rail for 2 ... 10 valves
→ Page/online	vofa	vofd	vofc	vovg




Application-specific directional control valves

Type	 Solenoid valves MHA1, MHP1	 Solenoid valves MHE2, MHP2, MHA2, MHE3, MHP3, MHA3, MHE4, MHP4, MHA4	 Solenoid valves CDV15.0
Design	Poppet valve with spring return	Pressure-relieved poppet valve	Piston spool
Valve function	2/2-way, single solenoid, closed, 2x2/2-way, single solenoid, closed, 3/2-way, single solenoid, closed, 3/2-way, single solenoid, open	3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, single solenoid	2/2-way, single solenoid, closed, 2/2-way, single solenoid, open, 2x3/2-way, single solenoid, closed, 2x3/2-way, single solenoid, open, 3/2-way, single solenoid, closed, 3/2-way, single solenoid, open, 5/2-way, double solenoid, 5/2-way, single solenoid, 5/3-way, pressurised, 5/3-way, exhausted, 5/3-way, closed
Operating pressure	-0.9 ... 8 bar	-0.9 ... 8 bar	-0.9 ... 10 bar
Ambient temperature	-5 ... 50°C	-5 ... 60°C	-5 ... 50°C
Pneumatic connection 1	Sub-base, QS3, QS4, prepared for QSP10	Sub-base, G1/4, G1/8, M7, QS4, QS6, QS8	Sub-base
Standard nominal flow rate	10 ... 30 l/min	90 ... 400 l/min	300 ... 650 l/min
Description	<ul style="list-style-type: none"> Directly actuated poppet valve Miniature valve: grid dimension 10 mm Switching times down to 4 ms Sub-base valve Manifold block for 2 ... 10 valves Use as pilot valve UL approval; same connections and cables as with VUVG 	<ul style="list-style-type: none"> Directly actuated poppet valve Fast-switching valve: switching times down to 2 ms Direct mounting, individual sub-base, manifold assembly Manifold block for 2 ... 10 valves 	<ul style="list-style-type: none"> Sub-base valve in clean design Easy-to-clean design Individual valve for clean design Can be used in the food zone (based on standard EN 1672-2)
→ Page/online	mh1	mh2	cdv15.0




Application-specific directional control valves

		
Type	Fast-switching valves MHJ9, MHJ10	Pneumatic and solenoid valves, M5 Compact System J, JD, JMFH, MFH, MUFH, VD, VL/O, VL, VLL
Design	Poppet valve without spring return	Piston valve, disc seat valve
Valve function	2/2-way, single solenoid, closed	3/2-way, bistable/double solenoid, 3/2-way, monostable/single solenoid, closed, 3/2-way, monostable/single solenoid, open, 5/2-way, bistable/double solenoid, 5/2-way, bistable/double solenoid, dominant, 5/2-way, monostable/single solenoid
Operating pressure	0.5 ... 8 bar	-0.9 ... 8 bar
Ambient temperature	-5 ... 60°C	-10 ... 60°C
Pneumatic connection 1	Sub-base, QS-4, QS-6	PK-3
Standard nominal flow rate	50 ... 160 l/min	50 ... 105 l/min
Description	<ul style="list-style-type: none"> Directly actuated poppet valve Individual valve with integrated QS fitting Switching frequencies up to 1000 Hz Service life > 5 billion switching cycles Very good reproducibility Use: high-speed sorting with blow-out function 	<ul style="list-style-type: none"> Control elements with all functions for pneumatic sequence controls For control cabinet installation Fast replacement of components
→ Page/online	mhj9	m5 compact

Manually actuated directional control valves: swivel lever valves



			
Type	Hand lever valves VHEF-HS	Hand lever valves VHER	Hand lever valves H-3-1/4-B, H-5-1/4-B
Valve function	3/2-way, bistable, 3/2-way, bistable, open/closed, 5/2-way, bistable, 5/2-way, monostable, 5/3-way exhausted, 5/3-way closed	4/3-way, exhausted, 4/3-way, closed, 4/3-way, pressurised	3/2-way, bistable, 5/2-way, bistable
Type of control	Direct	Direct	Direct
Standard nominal flow rate	530 ... 1200 l/min	170 ... 3800 l/min	550 ... 600 l/min
Pneumatic working port	G1/8, G1/4	G1/8, G1/4, G1/2, M5	G1/4
Operating pressure	-0.95 ... 10 bar	0 ... 10 bar	-0.95 ... 10 bar
NEW	<ul style="list-style-type: none"> New series 		
Description	<ul style="list-style-type: none"> With hand lever on the side Sturdy design 	<ul style="list-style-type: none"> Lever in metal or polymer design Front panel mounting, through or mounting holes 	<ul style="list-style-type: none"> Die-cast aluminium design
→ Page/online	vhef-hs	vher	n_v14

Manually actuated directional control valves: pushbutton valves





			
Type	Pushbutton valves VHEM-P	Pushbutton valves K/O-3-PK	Pushbutton valves K-3-M5
Valve function	5/2-way, bistable, 5/2-way, monostable, 3/2-way, monostable, closed, 3/2-way, monostable, open	3/2-way, monostable, open/closed	3/2-way, monostable, closed
Type of control	Direct, piloted	Direct	Direct
Standard nominal flow rate	500 ... 1000 l/min	80 l/min	80 l/min
Pneumatic working port	G1/8, G1/4	PK-3	M5
Operating pressure	-0.95 ... 10 bar	0 ... 8 bar	-0.95 ... 8 bar
Description	<ul style="list-style-type: none"> With button switch Reverse operation possible 	<ul style="list-style-type: none"> With button switch Polymer design Ducted exhaust air 	<ul style="list-style-type: none"> With button switch Suitable for vacuum operation Sturdy die-cast zinc design
→ Page/online	vhem-p	n_vpk	k-3

Product overview



Manually actuated directional control valves: pushbutton valves

		
Type	Pushbutton valves T-5/3-1/4	Pushbutton valves F-3-M5
Valve function	5/3-way, closed	3/2-way, monostable, closed
Type of control	Piloted	Direct
Standard nominal flow rate	680 l/min	80 l/min
Pneumatic working port	G1/4	M5
Operating pressure	2 ... 10 bar	-0.95 ... 8 bar
Description	<ul style="list-style-type: none"> • With pushbutton • For positioning, for stopping in the event of an emergency stop and for holding a double-acting cylinder in any position • Aluminium design 	<ul style="list-style-type: none"> • With pedal • Suitable for vacuum operation • Sturdy die-cast zinc design
→ Page/online	n_msv	f-3-m5



Manually actuated directional control valves: finger lever valves

				
Type	Finger lever valves VHEF-L	Finger lever valves TH/O-3-PK-3	Finger lever valves TH-3-M5, TH-3-1/4-B, TH-5-1/4-B, THO-3-1/4-B	Finger lever valves H-4/3-M5
Valve function	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, monostable	3/2-way, monostable, open/closed	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, monostable	4/3-way, exhausted
Type of control	Direct	Direct	Direct	Piloted
Standard nominal flow rate	750 ... 1200 l/min	80 l/min	80 ... 600 l/min	125 l/min
Pneumatic working port	G1/8, G1/4	PK-3	G1/4, M5	M5
Operating pressure	-0.95 ... 10 bar	0 ... 8 bar	-0.95 ... 10 bar	0 ... 8 bar
Description	<ul style="list-style-type: none"> • With finger lever • Sturdy design 	<ul style="list-style-type: none"> • With finger lever • Polymer design • Ducted exhaust air 	<ul style="list-style-type: none"> • With finger lever • Die-cast zinc or die-cast aluminium design 	<ul style="list-style-type: none"> • With detenting finger lever • Front panel mounting or mounting on sub-base • Aluminium design
→ Page/online	vhf-l	n_vpk	th-3-m5	h-4



Manually actuated directional control valves: toggle lever valves

		
Type	Toggle lever valves KH/O-3-PK-3	Toggle lever valves H-5/3-1/4
Valve function	3/2-way, monostable, open/closed	5/3-way, closed
Type of control	Direct	Piloted
Standard nominal flow rate	80 l/min	680 l/min
Pneumatic working port	PK-3	G1/4
Operating pressure	0 ... 8 bar	2 ... 10 bar
Description	<ul style="list-style-type: none"> • With toggle lever • Polymer design • Ducted exhaust air 	<ul style="list-style-type: none"> • With toggle lever • For positioning, for stopping in the event of an emergency stop and for holding double-acting cylinders in any position • Aluminium design
→ Page/online	n_vpk	n_msv




Manually actuated directional control valves: foot valves

		
Type	Foot valves F-3-1/4-B, FO-3-1/4-B, F-5-1/4-B	Foot valves with detent FP-3-1/4-B, FPB-3-1/4, FP-5-1/4-B
Valve function	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, monostable	3/2-way, bistable, 5/2-way, bistable
Type of control	Direct	Direct
Standard nominal flow rate	550 ... 600 l/min	550 ... 600 l/min
Pneumatic working port	G1/4	G1/4
Operating pressure	-0.95 ... 10 bar	-0.95 ... 10 bar
Description	<ul style="list-style-type: none"> With foot pedal Sturdy die-cast zinc design 	<ul style="list-style-type: none"> With foot pedal with detent Sturdy die-cast zinc design
→ Page/online	fo-3	fpb-3

Manually operated directional control valves: selector switches


		
Type	Selector valves VHEF-ES	Selector switches HW-6-38
Valve function	3/2-way, bistable, 3/2-way, monostable, open/closed, 5/2-way, bistable, 5/2-way, monostable, 5/3-way exhausted, 5/3-way closed	8/6-way, bistable
Type of control	Direct	Direct
Standard nominal flow rate	530 ... 1200 l/min	180 l/min
Pneumatic working port	G1/4, G1/8	M5
Operating pressure	-0.95 ... 10 bar	0 ... 8 bar
NEW	<ul style="list-style-type: none"> New series 	
Description	<ul style="list-style-type: none"> With selector switch on the side Sturdy design 	<ul style="list-style-type: none"> With rotary knob and arrow Front panel mounting or mounting on sub-base With six switching positions
→ Page/online	vhf-es	hw-6

Manually operated directional control valves: front panel valves

			
Type	Front panel valves SV/O-3-PK-3x2	Front panel valves SVS-3-1/8, SVS-4-1/8, SVSO-3-1/8	Front panel valves SV-3-M5, SV-5-M5-B
Valve function	2x3/2-way, monostable, closed	3/2-way, monostable, closed, 3/2-way, monostable, open, 4/2-way, monostable	3/2-way, monostable, closed, 5/2-way, monostable
Type of control	Direct	Direct, piloted	Direct
Standard nominal flow rate	70 l/min	120 l/min	65 ... 95 l/min
Pneumatic working port	PK-3	G1/8	M5
Operating pressure	0 ... 8 bar	3.5 ... 8 bar	-0.95 ... 8 bar
Description	<ul style="list-style-type: none"> For actuator attachments such as toggle and selector switches Reliable coupling system for rapid assembly and dismantling Polymer design 	<ul style="list-style-type: none"> For actuator attachments such as pushbutton actuators, mushroom pushbuttons, mushroom actuators, selector switches, toggle levers, key actuators Reliable coupling system for rapid assembly and dismantling 	<ul style="list-style-type: none"> For actuator attachments such as pushbutton actuators, mushroom pushbuttons, mushroom pushbuttons with detent, selector switches or toggle levers Reliable coupling system for rapid assembly and dismantling Polymer design
→ Page/online	sv	svos	sv-3




Product overview

Mechanically operated directional control valves: stem actuated valves

				
Type	Stem actuated valves VMEF-S	Stem actuated valves V/O-3-PK-3, V/O-3-1/8	Stem actuated micro valves S-3-PK-3-B, SO-3-PK-3-B	Stem actuated valves VS-3-1/8, VS-4-1/8, VOS-3-1/8
Valve function	3/2-way, monostable, closed, 5/2-way, monostable	3/2-way, monostable, open/closed	3/2-way, monostable, closed, 3/2-way, monostable, open	3/2-way, monostable, closed, 3/2-way, monostable, open, 4/2-way, monostable
Type of control	Direct, piloted	Direct	Direct	Piloted
Standard nominal flow rate	750 ... 1200 l/min	80 ... 140 l/min	60 l/min	140 ... 161 l/min
Pneumatic working port	G1/8, G1/4	PK-3, G1/8	PK-3	G1/8
Operating pressure	-0.95 ... 10 bar	-0.95 ... 8 bar	-0.95 ... 8 bar	3.5 ... 8 bar
Description	<ul style="list-style-type: none"> • Small and compact for a wide range of pneumatic applications • High pneumatic performance for a wide range of tasks • Light weight • Low actuating forces 	<ul style="list-style-type: none"> • Through-holes in housing • Polymer or aluminium design 	<ul style="list-style-type: none"> • Dimensions according to DIN 41635, type A • Polymer design • Various actuator attachments 	<ul style="list-style-type: none"> • Aluminium design • Minimal actuating force with pilot control
→ Page/online	vmef-s	n_v18	s-3-pk	vos





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Mechanically operated directional control valves: stem actuated valves





			
Type	Stem actuated valves V-3-1/4-B, V-5-1/4-B, VO-3-1/4-B	Limit switches with push-in connector SDK-3-PK-3, SDK-4-PK-3	Limit stop signal generators with push-in connector SDV-2-B, SDV-3
Valve function	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, monostable	3/2-way, monostable, closed	3/2-way, monostable, closed
Type of control	Direct	Direct	Direct
Standard nominal flow rate	550 ... 600 l/min	16 l/min	8 ... 16 l/min
Pneumatic working port	G1/4	PK-3	PK-3
Operating pressure	-0.95 ... 10 bar	0 ... 8 bar	0 ... 8 bar
Description	<ul style="list-style-type: none"> • Die-cast aluminium design 	<ul style="list-style-type: none"> • For end-position sensing and position control • High accuracy • Stainless steel design 	<ul style="list-style-type: none"> • For end-position sensing and position control • High precision and low actuating forces • Sturdy design
→ Page/online	vo-3	sdk	sdv

Valves




Mechanically operated directional control valves: roller lever valves

				
Type	Roller lever valves VMEF-R	Roller lever valves R/O-3-PK-3	Roller lever valves RS-3-1/8, RS-4-1/8, ROS-3-1/8	Roller lever valves R-3-M5, R-3-1/4-B, R-5-1/4-B, RO-3-1/4-B
Valve function	3/2-way, monostable, 5/2-way, monostable	3/2-way, monostable, open/closed	3/2-way, monostable, closed, 3/2-way, monostable, open, 4/2-way, monostable	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, monostable
Type of control	Direct	Direct	Piloted	Direct
Standard nominal flow rate	750 ... 1200 l/min	80 l/min	128 ... 169 l/min	80 ... 600 l/min
Pneumatic working port	G1/8, G1/4	PK-3	G1/8	G1/4, M5
Operating pressure	-0.95 ... 10 bar	0 ... 8 bar	3.5 ... 8 bar	-0.95 ... 10 bar
Description	<ul style="list-style-type: none"> • Small and compact for a wide range of pneumatic applications • High pneumatic performance for a wide range of tasks • Light weight • Low actuating forces 	<ul style="list-style-type: none"> • With roller lever • Polymer design • Ducted exhaust air 	<ul style="list-style-type: none"> • With roller lever • Aluminium design • Minimal actuating force with pilot control 	<ul style="list-style-type: none"> • With roller lever • Die-cast aluminium design
→ Page/online	vmef-r	n_vpik	ros-3	ro-3


Mechanically operated directional control valves: roller lever valves

				
Type	Roller lever valves VMEF-K	Roller lever valves L/O-3-PK-3	Roller lever valves LS-3-1/8, LS-4-1/8, LOS-3-1/8	Roller lever valves L-3-M5, L-3-1/4-B, L-4-1/4-B, LO-3-1/4-B
Valve function	3/2-way, monostable, 5/2-way, monostable	3/2-way, monostable, open/closed	3/2-way, monostable, closed, 3/2-way, monostable, open, 4/2-way, monostable	3/2-way, monostable, closed, 3/2-way, monostable, open, 5/2-way, monostable
Type of control	Direct	Direct	Piloted	Direct
Standard nominal flow rate	750 ... 1200 l/min	80 l/min	128 ... 175 l/min	80 ... 600 l/min
Pneumatic working port	G1/8, G1/4	PK-3	G1/8	G1/4, M5
Operating pressure	-0.95 ... 10 bar	0 ... 8 bar	3.5 ... 8 bar	-0.95 ... 10 bar
Description	<ul style="list-style-type: none"> • Small and compact for a wide range of pneumatic applications • High pneumatic performance for a wide range of tasks • Light weight • Low actuating forces 	<ul style="list-style-type: none"> • With roller lever with idle return • Polymer design • Ducted exhaust air 	<ul style="list-style-type: none"> • With toggle lever • Aluminium design • Minimal actuating force with pilot control 	<ul style="list-style-type: none"> • With roller lever • Die-cast aluminium design
→ Page/online	vmef-k	n_vpk	los-3	lo-3

Mechanically operated directional control valves: swivel lever valves




			
Type	Swivel lever valves RW/O-3-1/8	Pneumatic limit valves RWN/O-3-1/8-B	Swivel lever valves RW-3-M5
Valve function	3/2-way, monostable, open/closed	3/2-way, monostable, open/closed	3/2-way, monostable, closed
Type of control	Direct	Direct	Direct
Standard nominal flow rate	140 l/min	120 l/min	80 l/min
Pneumatic working port	G1/8	G1/8	M5
Operating pressure	-0.95 ... 8 bar	-0.95 ... 8 bar	-0.95 ... 8 bar
Description	<ul style="list-style-type: none"> • Basic valve for actuator attachments such as swivel lever short, long, swivel lever rod • Aluminium design 	<ul style="list-style-type: none"> • Directly actuated in one direction • Aluminium design 	<ul style="list-style-type: none"> • With swivel lever • Sturdy die-cast zinc design • Various actuator attachments
→ Page/online	rw	rwn	rw-3

Mechanically operated directional control valves: whisker valves




	
Type	Whisker valves FVS-3-1/8, FVSO-3-1/8
Valve function	3/2-way, monostable, closed, 3/2-way, monostable, open
Type of control	Piloted
Standard nominal flow rate	146 ... 175 l/min
Pneumatic working port	G1/8
Operating pressure	3.5 ... 8 bar
Description	<ul style="list-style-type: none"> • With whisker • For sensing dissimilar workpieces or workpieces not precisely in position • Aluminium design • Minimal actuating force with pilot control
→ Page/online	fvs-3

Product overview

Check valves and quick exhaust valves

			
Type	Check valves, piloted HGL	★ Check valves, piloted VBNF	Quick exhaust valves VBQF
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, M5, QS-4, QS-6, QS-8, QS-10, QS-12	QS-6, QS-8	G1/8, G1/4, QS-6, QS-8
Standard nominal flow rate			
Standard flow rate exhaust 6->0 bar			1300 ... 2500 l/min
Standard nominal flow rate pressurisation 6->5 bar			350 ... 960 l/min
Standard nominal flow rate 1->2 from 6 to 5 bar	130 ... 1600 l/min	260 ... 620 l/min	
Operating pressure	0.5 ... 10 bar		0.2 ... 10 bar
Operating pressure for entire temperature range		0.2 ... 10 bar	
Description	<ul style="list-style-type: none"> Valve function: piloted non-return function Pneumatically piloted Screw-in with male thread Pilot air connection: M5, G1/8, G1/4, G3/8, QS-4 Manually actuated exhaust possible with separate accessory 	<ul style="list-style-type: none"> Minimal height High flow rate Can be rotated horizontally through 360° in assembled state Manually actuated exhaust possible 	<ul style="list-style-type: none"> Minimal height High flow rate Reduced noise emission Available with and without silencer Available with ducted or unducted exhaust air For higher cycle times
→ Page/online	1021	vbnf	vbqf




Check valves and quick exhaust valves

			
Type	Check valves H, HA, HB	Manual overrides HAB	Quick exhaust valves SE, SEU
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, M5, QS-4, QS-6, QS-8, QS-10, QS-12, R1/8, R1/4, R3/8, R1/2	G1/8, G1/4, G3/8, G1/2	G1/8, G1/4, G3/8, G1/2, G3/4
Standard nominal flow rate	115 ... 2230 l/min		
Standard flow rate exhaust 6->0 bar		165 l/min	1000 ... 6500 l/min
Standard nominal flow rate pressurisation 6->5 bar			300 ... 4560 l/min
Standard nominal flow rate 1->2 from 6 to 5 bar	1000 ... 5900 l/min		
Operating pressure	-1 ... 12 bar	0 ... 10 bar	0.2 ... 10 bar
Operating pressure for entire temperature range			
Description	<ul style="list-style-type: none"> Valve function: non-return Screw-in or in-line installation With connecting thread at both ends, push-in connector at both ends, thread/push-in connector 	<ul style="list-style-type: none"> Valve function: exhaust component For check valve HGL For manual exhausting air trapped in a cylinder 	<ul style="list-style-type: none"> Valve function: quick exhaust Shut-off valve, piloted Screw-in With or without silencer
→ Page/online	h-qs	hab	se





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Valves



Ball valves and shut-off valves

Type	 Hand slide valves VBOH	 Shut-off valves HE	 Ball valves QH, QHS
Valve function	3/2-way, bistable	2/2-way, bistable, 3/2-way, bistable	2/2-way, bistable
Pneumatic connection 1	G1/8, G1/4, G1/2, G3/8, G3/4, M5	QS-6, QS-8, QS-10, QS-12, R1/8, R1/4, R3/8, R1/2	G1/4, G3/8, G1/2, G3/4, G1, G1 1/2, QS-4, QS-6, R1/8
Standard nominal flow rate	236 ... 7691 l/min	270 ... 840 l/min	148 ... 84,000 l/min
Operating pressure	-0.95 ... 12 bar	-0.95 ... 10 bar	-1 ... 10 bar
Description	<ul style="list-style-type: none"> Used as a shut-off function for pressurising and exhausting compressed air systems, for example, upstream of service unit combinations, for air guns and also for exhausting pneumatic cylinders Non-overlapping, so no pressure losses when switching Minimal installation 	<ul style="list-style-type: none"> Shut-off valve, manually actuated Connection: thread at both ends, push-in connector at both ends, thread/push-in connector Various mounting variants 	<ul style="list-style-type: none"> Shut-off valve, manually actuated In-line installation, can be screwed in, bulkhead fitting Variants: thread at both ends, push-in connector at both ends, thread/push-in connector
→ Page/online	1021	1021	1021

Logic valves





Type	 OR gates OS	 Amplifier modules VK	 NOT modules VLO	 AND- modules ZK
Valve function	OR function			AND function
Pneumatic connection 1	G1/2, G1/4, G1/8, PK-3, PK-4	M5	M5	G1/8, PK-3, PK-4
Standard nominal flow rate	100 ... 5000 l/min	80 l/min	80 l/min	100 ... 550 l/min
Operating pressure	0.001 ... 10 bar	0.001 ... 6 bar	0.001 ... 6 bar	0.001 ... 10 bar
Description	<ul style="list-style-type: none"> Pneumatic control system Mounting via through-holes 	<ul style="list-style-type: none"> For pneumatic sensors 	<ul style="list-style-type: none"> For pneumatic sensors 	<ul style="list-style-type: none"> Dual-pressure valve Connects two input signals in the AND function Mounting via through-holes
→ Page/online	os	vk	vlo	zk

Pressure regulators





Type	 Pressure regulators LR-QS, LRMA-QS	 Differential pressure regulators LRL, LRLl
Pressure regulation range	1 ... 8 bar	2 ... 6 bar
Standard nominal flow rate	22 ... 150 l/min	
Nominal flow rate, closed		30 ... 730 l/min
Nominal flow rate, open		30 ... 760 l/min
Pneumatic connection 1	G1/8, G1/4, M5, QS-4, QS-6, QS-8	G1/8, G1/4, G3/8, G1/2, M5
Pneumatic connection 2	QS-4, QS-6, QS-8	QS-4, QS-6, QS-8, QS-10, QS-12
Description	<ul style="list-style-type: none"> Piston regulator with through pressure supply Optionally with pressure gauge Directly actuated Connections: push-in connector at both ends, thread/push-in connector Push-in connector can be rotated 360° Higher energy efficiency through motion-specific pressure adjustment 	<ul style="list-style-type: none"> Piston regulator with through pressure supply Without pressure gauge Connections: thread/push-in connector on top or at side Push-in connector can be rotated 360°
→ Page/online	lrma	lrl

Product overview

One-way flow control valves

				
Type	One-way flow control valves GRLA, GRLZ ★	One-way flow control valves VFOH	One-way flow control valves VFOF	One-way flow control valves VFOC
Valve function	Exhaust air one-way flow control function, one-way flow control function, supply air one-way flow control function	Exhaust air one-way flow control function	Exhaust air one-way flow control function	Supply air one-way flow control function
Pneumatic connection 1	G1/8, G1/4, G1/2, G3/8, G3/4, M3, M5, PK3, PK3 with union nut, PK4, PK4 with union nut, PK6 with union nut, QS3, QS4, QS6, QS8, QS10, QS12	QS-4, QS-6, QS-8, QS-10	QS-6, QS-8	QS-4, QS-6
Standard nominal flow rate in flow control direction	0 ... 4320 l/min	180 ... 530 l/min	250 ... 650 l/min	0 ... 270 l/min
Adjusting element	Internal hex, knurled screw, slotted head screw	External hex	Internal hex	Slotted head screw
Description	<ul style="list-style-type: none"> Flow control valve, flow control at one end Polymer, metal or stainless steel design Standard, mini, in-line variants with different flow rates Functional combination with one-way flow control valve and piloted check valve Connections: thread at both ends, push-in connector at both ends, thread/push-in connector 	<ul style="list-style-type: none"> Easy to clean Increased corrosion protection Can be rotated horizontally through 360° in assembled state 	<ul style="list-style-type: none"> High flow rate Can be rotated horizontally through 360° in assembled state Functional combination with one-way flow control valve and piloted check valve Compact and can be operated from the side 	<ul style="list-style-type: none"> Shut-off valve, flow control at one end Metal design Precision adjustment for low and medium speeds Push-in connector/push-in sleeve
→ Page/online	1029	VFOH	1029	1029




One-way flow control valves

				
Type	One-way flow control valves GR, GRA	One-way flow control valves GG, GGO, GRR	Precision one-way flow control valves GRP	One-way flow control valves, M5 Compact System GRF
Valve function	One-way flow control function	One-way flow control function	One-way flow control function	One-way flow control function
Pneumatic connection 1	G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, QS-3, QS-4, QS-6, QS-8	G1/2, G1/4	G1/8, PK-3, PK-4	PK-3
Standard nominal flow rate in flow control direction	29.5 ... 3300 l/min	870 ... 1300 l/min	3.8 ... 75.8 l/min	45 l/min
Adjusting element	Knurled screw	Roller lever	Rotary knob with scale	Knurled screw
Description	<ul style="list-style-type: none"> Non-return and flow control valve In-line installation 	<ul style="list-style-type: none"> Non-return and flow control valves With roller lever 	<ul style="list-style-type: none"> Non-return and flow control valve Mounting on sub-base or for front panel mounting 	<ul style="list-style-type: none"> Complete system offering control components with all the functions required for pneumatic sequence controls For control cabinet installation Fast replacement of components
→ Page/online	1029	gs	grp	m5 compact

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Valves

Flow control valves

			
Type	Flow control/silencers VFFK	Flow control valves GRLO	Flow control valves, barbed Y-connectors with restrictor GRO, Y-PK3
Valve function	Flow control silencer function	Flow control function	Flow control function
Pneumatic connection 1	M5, M7, R1/8, R1/4	M3, M5	G1/4, G1/8, M5, QS-3, QS-4, QS-6
Standard flow rate in flow control direction 6 → 0 bar		33 ... 169 l/min	
Standard flow rate in flow control direction		18 ... 95 l/min	85 ... 350 l/min
Standard flow rate 6 → 0 bar	0 ... 420 l/min		
Adjusting element	Knurled screw	Slotted head screw	Knurled screw
Description	<ul style="list-style-type: none"> With polymer silencer 	<ul style="list-style-type: none"> Flow control valve, flow control at both ends Standard or mini flow control valve Precision adjustment for low and medium speeds Connections: thread at both ends, thread/push-in connector Connections: elbow outlet or parallel outlet Metal version 	<ul style="list-style-type: none"> Flow control valve, flow control at both ends In-line flow control valve Connections: push-in connector at both ends Connections: in-line, Y-shape Polymer design
→ Page/online	1029	grio	gro


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Flow control valves

		
Type	Precision flow control valves GRPO	Exhaust air flow control valves, flow control/silencer GRE, GRU
Valve function	Flow control function	Flow control silencer function
Pneumatic connection 1	G1/8, PK-3, PK-4	G1/8, G1/4, G1/2, G3/8, G3/4
Standard flow rate in flow control direction 6 → 0 bar	5.2 ... 129 l/min	
Standard flow rate in flow control direction	3.8 ... 75.8 l/min	520 ... 3600 l/min
Standard flow rate 6 → 0 bar		0 ... 8000 l/min
Adjusting element	Rotary knob with scale	Slotted head screw
Description	<ul style="list-style-type: none"> Metal design Connections: threaded connection at both ends, push-in connector at both ends 	<ul style="list-style-type: none"> Exhaust air flow control valve GRE: sintered metal Flow control/silencer GRU: polymer
→ Page/online	grpo	gre





Valves

Time delay valves




	
Type	Time delay valves, M5 Compact product range VZO, VZ, VLK
Pneumatic connection	PK-3
Standard nominal flow rate	60 ... 90 l/min
Adjustable delay time	0.25 ... 5 s
Operating pressure	2.5 ... 8 bar
Type of mounting	Optional: front panel mounting, on mounting frame
Description	<ul style="list-style-type: none"> Complete system offering control components with all the functions required for pneumatic sequence controls For control cabinet installation Fast replacement of components
→ Page/online	m5 compact

Product overview




Proportional valves

Type	 Proportional pressure regulators VEAA	 Proportional pressure regulators VEAB	 Proportional flow control valves VPCF	 Proportional pressure regulators VPPX
Valve function	3-way proportional pressure regulator	3-way proportional pressure regulator	3-way proportional flow control valve	3-way proportional pressure regulator
Pneumatic connection 1	QS-4, flange	QS-4, flange	G3/8	Sub-base, G1/8, G1/4, G1/2
Pressure regulation range	0.01 ... 10 bar	-1 ... 6 bar		0.1 ... 10 bar
Operating pressure for positioning/Soft Stop				
Operating pressure			1 ... 10 bar	
Standard nominal flow rate	≥7 l/min	≥4.5 l/min	20 ... 1500 l/min	1400 ... 7000 l/min
Description	<ul style="list-style-type: none"> • Silent operation • Very low power consumption • High precision • Integrated piezo technology • Durable • Mounting: via through-holes, H-rail mounting, on mounting or sub-base 	<ul style="list-style-type: none"> • Silent operation • Very low power consumption • High precision • Integrated piezo technology • Short switching times • Mounting: via through-holes, H-rail mounting 	<ul style="list-style-type: none"> • Linear characteristic curve for extremely easy programming • ATEX-certified • High dynamic response • Piston spool with integrated sensor • Electrical connection via M12x1 plug, 8-pin 	<ul style="list-style-type: none"> • Pressure regulator with additional sensor input • Multi-sensor control (cascade control) • Control characteristic adjustable via FCT (Festo Configuration Tool) software • Integrated pressure sensor with separate output • Pressure is maintained if the controller fails
→ Page/online	1041	1047	vpcf	vppx




Proportional valves

Type	 Proportional pressure regulators VPPM	 Proportional directional control valves VPWP	 Proportional pressure regulators MPPES
Valve function	3-way proportional pressure regulator	5/3-way proportional regulator, closed	3-way proportional pressure regulator, closed
Pneumatic connection 1	Sub-base, G1/8, G1/4, G1/2	G1/4, G1/8, G3/8	G1/8, G1/4, G1/2
Pressure regulation range	0.02 ... 10 bar		0 ... 10 bar
Operating pressure for positioning/Soft Stop		4 ... 8 bar	
Operating pressure		0 ... 10 bar	≤12 bar
Standard nominal flow rate	380 ... 7000 l/min	350 ... 2000 l/min	230 ... 8500 l/min
Description	<ul style="list-style-type: none"> • Pilot actuated pressure regulator • Multi-sensor control (cascade control) • Integration in valve terminal MPA • User interface with LED displays, LCD display, adjustment/selection buttons • Integrated pressure sensor • Electrical connection via plug, round design, 8-pin, M12 or terminal linking 	<ul style="list-style-type: none"> • Controlled piston spool valve • Digital actuation • Integrated pressure sensors for monitoring function and force control • With auto identification • Integrated digital output, e.g. for a clamping/brake unit • Suitable for servopneumatic applications with CPX-CMAX and CPX-CMPX 	<ul style="list-style-type: none"> • Directly actuated (G1/8), pilot actuated (G1/4, G1/2) • Setpoint value input as analogue voltage or current signal • Choice of pressure regulation ranges • Optionally with setpoint module • Electrical connection via plug, round design to DIN 45326, M16 x 0.75, 8-pin • With proportional solenoid
→ Page/online	1053	vpwp	mppes

Proportional valves




Type	 Proportional pressure regulators VPPE	 Proportional directional control valves MPYE	 Proportional directional control valves VPPL
Valve function	3-way proportional pressure regulator, 3-way proportional pressure regulator, closed	5/3-way, closed	3-way proportional pressure regulator, closed
Pneumatic connection 1	G1/8	G1/8, G1/4, G3/8, M5	Flange, G1/4
Pressure regulation range	0.02 ... 10 bar		0.2 ... 40 bar
Operating pressure for positioning/Soft Stop			
Operating pressure		0 ... 10 bar	0 ... 50 bar
Standard nominal flow rate	310 ... 1250 l/min	100 ... 2000 l/min	300 l/min
Description	<ul style="list-style-type: none"> Pilot actuated pressure regulator Setpoint input as analogue voltage signal (0 ... 10 V) Electrical connection via M12x1 plug, 4-pin Optionally with setpoint module For simple control tasks 	<ul style="list-style-type: none"> Controlled piston spool valve Analogue actuation Setpoint input as analogue voltage signal (0 ... 10 V) Suitable for servopneumatic applications with SPC11 	<ul style="list-style-type: none"> For high-pressure applications Directly actuated piston regulator Available in three variants: flanged valve, flanged valve with external pilot air supply, in-line valve
→ Page/online	vppe	mpye	vppl

Solenoid-actuated process and media valves





Type	 Solenoid valves VZWD	 Solenoid valves VZWF	 Solenoid valves VZWM
Design	Directly actuated poppet valve	Diaphragm valve, force pilot operated	Poppet valve with diaphragm seal
Type of actuation	Electric	Electric	Electric
Nominal width	1 ... 6 mm	13.5 ... 50 mm	13 ... 50 mm
Flow rate Kv	0.06 ... 0.4 m³/h	1.8 ... 28 m³/h	1.6 ... 39 m³/h
Temperature of medium	-10 ... 80°C	-10 ... 80°C	-10 ... 60°C
Medium pressure	0 ... 90 bar	0 ... 10 bar	
Process valve connection	G1/8, G1/4, NPT1/4, NPT1/8	G1/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2	G1/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2
Description	<ul style="list-style-type: none"> Extensive pressure range Directly actuated poppet valve No pressure difference required Can also be used in vacuum technology 	<ul style="list-style-type: none"> High flow rates Large nominal widths with relatively small solenoids No pressure difference required Can also be used in vacuum technology 	<ul style="list-style-type: none"> Brass or stainless steel casting design Electrical connection via solenoid armature tube Wide range of coils Coil can be ordered separately
→ Page/online	vzwd	vzwf	vzwm

Product overview





Solenoid-actuated process and media valves

Type	 Solenoid valves VZWE-E, VZWE-F	 Solenoid valves VZWP	 Solenoid valves MN1H-2
Design	Angled version, straight version with flange, diaphragm valve	Piloted piston poppet valve	Diaphragm valve
Type of actuation	Electric	Electric	Electric
Nominal width	20 ... 76 mm	13 ... 25 mm	13 ... 40 mm
Flow rate Kv	15 ... 210 m³/h	1.5 ... 11.5 m³/h	2000 ... 30,500 l/min
Temperature of medium	-20 ... 60°C	-10 ... 80°C	-10 ... 60°C
Medium pressure	0.35 ... 8 bar	0.5 ... 40 bar	0.5 ... 10 bar
Process valve connection		G1/4, G3/8, G1/2, G3/4, G1	G1/4, G3/8, G1/2, G3/4, G1, G1 1/2
Description	<ul style="list-style-type: none"> • High flow rates • For mechanically cleaning filters and dust filter systems • Fast opening and closing times • Sturdy pilot system 	<ul style="list-style-type: none"> • For all applications with a differential pressure of min. 0.5 bar • For high pressures and high flow rates with relatively small solenoids • For controlling gaseous and liquid media in open circuits 	<ul style="list-style-type: none"> • Pilot operated diaphragm valve • Brass design • Can only be used for gaseous media • Adjustable closing cushioning, in-line mounting or through-hole • Operating voltage 24 V DC, 110/230 V AC (50 ... 60 Hz)
→ Page/online	vzwe	vzwp	mn1h-2

Pneumatically and mechanically actuated process and media valves




Type	 Angle seat valves VZXF	 Angle seat valves VZXA	 Pinch valves VZQA	 Ball valves VZBD
Design	Poppet valve with spring return	Poppet valve with piston drive	Pneumatically actuated pinch valve	2-way ball valve
Valve function	2/2-way, monostable, closed	2/2-way	2/2-way, monostable, closed, 2/2-way, monostable, open	2/2-way
Type of actuation	Pneumatic	Pneumatic	Pneumatic	Mechanical
Nominal width	12 ... 45 mm			
Nominal size DN	15, 20, 25, 32, 40, 50	1/2" ... 2", DN13 ... DN50	6, 15, 25	15, 20, 25, 32, 40, 50, 65, 80, 100
Process valve connection	G1/2, G3/4, G1, G1 1/4, G1 1/2, G2, NPT1, NPT1 1/2, NPT1 1/4, NPT1/2, NPT2, NPT3/4		Clamp to ASME-BPE, clamp to DIN 32676, G1, G1/2, G1/4, NPT1/2, NPT1/4	Welded end to ISO 1127, welded end to ASME-BPE, clamp ferrule to DIN 32676-B, clamp ferrule to ASME-BPE
Flow rate Kv	3.3 ... 43 m³/h	6 ... 50.1 m³/h	0.7 ... 18 m³/h	3.5 ... 436.3 m³/h
Standard nominal flow rate				
Temperature of medium	-40 ... 200°C	-10 ... +180°C	-5 ... 100°C	-20 ... +200°C
Medium pressure	-0.9 bar, 0 ... 40 bar	4.4 ... 30 bar	0 ... 6 bar	
Process valve PN nominal pressure				63 bar
NEW			• Additional versions	
Description	<ul style="list-style-type: none"> • Sturdy design • Stainless steel and gunmetal process valves with stainless steel, brass or aluminium actuators • For operating pressures up to 40 bar • Safety position "closing" • Different actuator sizes and housing materials • Selection of different seat and shaft seals • Flow direction is freely selectable • For liquids, gases and other easily contaminated media • Easy-to-clean design 	<ul style="list-style-type: none"> • Highly flexible, extremely high flow rates • Long service life • Modular design • Hygienic design, insensitive to dirt • Quick and easy maintenance • Simple and sturdy: ideally suited for virtually all media up to a viscosity of 600 mm²/s • High chemical and thermal resistance 	<ul style="list-style-type: none"> • Modular design • Quick and easy replacement of the diaphragm • Selection of different materials for housing and connector caps • Different connection cap designs (G and NPT thread), clamp ferrule to DIN 32676 and ASME-BPE • For critical, abrasive and viscous media • Up to 2 million switching cycles • FDA-compliant materials • Easy-to-clean design • Flow direction is freely selectable 	<ul style="list-style-type: none"> • Electropolished surfaces • Stainless steel design • PTFE seal with little dead space • The powerful ball valve for the pharmaceutical and cosmetic industries • FDA-compliant seal to FDA 21 CFR 177.1550
→ Page/online	vzxf	vzxa	vzqa	vzbd

Pneumatically and mechanically actuated process and media valves

Type	 Ball valves VZBE	 Ball valves VZBF	 Ball valves VZBM	 Ball valves VAPB
Design	2-way ball valve, 3-way ball valve with L-shaped hole or T-shaped hole	2-way ball valve	2-way ball valve, 2-way ball valve with hand lever, 3-way ball valve with L-shaped hole or T-shaped hole	2-way ball valve
Valve function	2/2-way, 3/2-way	2/2-way	2/2-way, 3/2-way	
Type of actuation	Mechanical	Mechanical	Mechanical	Mechanical
Nominal size DN	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 65, 80, 100, 150, 200	8, 10, 15, 20, 25, 32, 40, 50	15, 20, 25, 32, 40, 50, 63
Process valve connection	NPT 1/4 ... NPT4	Flange to ANSI 150	Rp1/4 ... Rp2	Rp1/4, Rp3/8, Rp1, Rp1 1/4, Rp1 1/2, Rp1/2, Rp3/4, Rp2, Rp2 1/2
Flow rate Kv	5 ... 435.2 m³/h	8.5 ... 2078.3 m³/h	5.9 ... 292 m³/h	5.9 ... 535 m³/h
Standard nominal flow rate				
Temperature of medium	-20 ... +200°C	-20 ... +200°C	-15 ... +130°C	-20 ... 150°C
Medium pressure				
Process valve PN nominal pressure	63	20	25 ... 50	25 ... 40
NEW			• With quarter turn actuator DFPD	
Description	<ul style="list-style-type: none"> • 2-way or 2-way manual, with lockable hand lever • 3-way, L-shaped hole or T-shaped hole as horizontal design • Stainless steel design • Pipe thread to ASME B1.20.1 	<ul style="list-style-type: none"> • Thread to ANSI B 16.5. class 150 • Static dissipation guaranteed • Stainless steel design • API 607 fire safe approval • Easy to maintain 	<ul style="list-style-type: none"> • 2-way with hand lever • Pipe thread to EN 10226-1 • Brass design 	<ul style="list-style-type: none"> • Automatable 2-way ball valve • Brass design • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to DIN 2999 or DIN ISO 228-1 • Mounting flange according to ISO 5211
→ Page/online	vzbe	vzbf	vzbm	vapb

08




Pneumatically and mechanically actuated process and media valves

Type	 Ball valves VZBC	 Ball valve actuator units VZBC	 Ball valves VZBA
Design	2-way ball valve	2-way ball valve, quarter turn actuator	2-way ball valve, 3-way ball valve, L-shaped hole, T-shaped hole
Valve function	2/2-way		2/2-way, 3/2-way
Type of actuation	Mechanical	Pneumatic	Mechanical
Nominal size DN	15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 65, 80, 100	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100
Process valve connection	Ring housing with threaded flange	Ring housing with threaded flange	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2, Rp3, Rp4, welded ends/welded ends
Flow rate Kv	19.4 ... 1414 m³/h	19.4 ... 1414 m³/h	7 ... 1414 m³/h
Standard nominal flow rate			
Temperature of medium	-10 ... 200°C	-10 ... 200°C	-10 ... 200°C
Medium pressure		6 ... 8.4 bar	
Process valve PN nominal pressure	16 ... 40	16 ... 40	63
Description	<ul style="list-style-type: none"> • Automatable 2-way ball valve with compact flange • Stainless steel design • Short installed length • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to DIN 2999 or DIN ISO 228-1 • Mounting flange according to ISO 5211 • ATEX certification for zone 1, 21, 2, 22 	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting or single-acting quarter turn actuator • Stainless steel ball valve in compact design • NAMUR connection pattern for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions • ATEX certification for zone 1, 21, 2, 22 	<ul style="list-style-type: none"> • Automatable 2-way or 3-way ball valve • Stainless steel design • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to DIN 2999 or DIN ISO 228-1 • Mounting flange according to ISO 5211 • ATEX certification for zone 1, 21, 2, 22
→ Page/online	vzbc	vzbc	vzba



Valves

Product overview




Pneumatically and mechanically actuated process and media valves

Type	 Ball valve actuator units VZBA	 Ball valve actuator units VZPR	 Pneumatic valves VLX
Design	2-way ball valve, 3-way ball valve, L-shaped hole, quarter turn actuator, T-shaped hole	2-way ball valve, quarter turn actuator	Diaphragm valve
Valve function			2/2-way, monostable, closed
Type of actuation	Pneumatic	Electric, pneumatic	Pneumatic
Nominal width			13 ... 25 mm
Nominal size DN	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 63	
Process valve connection	Rp1, Rp1 1/2, Rp1 1/4, Rp1/2, Rp1/4, Rp2, Rp2 1/2, Rp3, Rp3/4, Rp3/8, Rp4, welded ends/welded ends	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2	G1/4, G3/8, G1/2, G3/4, G2
Flow rate Kv	7 ... 1414 m³/h	5.9 ... 535 m³/h	
Standard nominal flow rate			2400 ... 14,000 l/min
Temperature of medium	-10 ... 200°C	-20 ... 150°C	-10 ... 80°C
Medium pressure	6 ... 8.4 bar	1 ... 8.4 bar	1 ... 10 bar
Process valve PN nominal pressure	63	25 ... 40	
Description	<ul style="list-style-type: none"> Ball valve actuator unit with double-acting or single-acting quarter turn actuator Stainless steel ball valve NAMUR connection pattern for solenoid valves/sensor boxes to VDI/VDE 3845 Flow is fully opened or closed in both directions ATEX certification for zone 1, 21, 2, 22 	<ul style="list-style-type: none"> Ball valve actuator unit with double-acting quarter turn actuator Brass ball valve NAMUR connection pattern for solenoid valves/sensor boxes to VDI/VDE 3845 Flow is fully opened or closed in both directions 	<ul style="list-style-type: none"> Poppet valve Indirectly actuated Brass design In-line mounting or via through-holes
→ Page/online	vzba	vzpr	vlx



Piezo valves

Type	 Piezo valves VEMP	 Valves VEVM
Valve function	2/2-way, single solenoid, closed, 3/3-way, single solenoid, closed	Can be assigned using Motion Apps
Type of actuation	Electric	Electric
Standard nominal flow rate	19 ... 28 l/min	480 l/min
Operating pressure	0 ... 1.7 bar	3 ... 8 bar
Pneumatic connection 1	Flange	G3/8
Nominal width	1.3 ... 1.6 mm	4.2 mm
Nominal operating voltage DC	250 ... 310 V	24 V
Electrical connection		
Type of mounting	On sub-base	On sub-base
Temperature of medium	-20 ... +60°C	-20 ... +60°C
NEW		<ul style="list-style-type: none"> New series
Description	<ul style="list-style-type: none"> Very low power consumption High precision Integrated piezo technology 	<ul style="list-style-type: none"> Functionality can be assigned using Motion Apps
→ Page/online	vemp	vevm

Pneumatic control systems

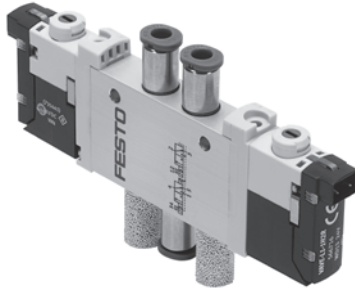
Type	 Quickstepper FSS	 Two-hand control blocks ZSB	 Adding counters, M5 Compact System PZA, PZV
Design	Sequencer with 12 switching steps (additive)	Poppet valve with spring return, two-hand operation in accordance with EN ISO 12100	Mechanical sequence counter with pneumatic drive
Pneumatic connection	Barbed connector 3 mm, barbed connector 4 mm	G1/8	M5
Operating pressure	2 ... 6 bar	4 ... 8 bar	2 ... 8 bar
Type of mounting	On 2n mounting frame, front panel mounting	Mounting thread, optionally: with through-hole, with female thread	Front panel mounting, with through-hole
Description	<ul style="list-style-type: none"> • Pneumatic/mechanical sequencer with 12 steps and linked to start • Ready-to-install sequence controller • Acknowledgement-controlled motion sequences • Fast replacement, tubing can be left in place 	<ul style="list-style-type: none"> • Used wherever manual actuation poses a risk of accident to operating personnel • Safety component in accordance with EU Machinery Directive 	<ul style="list-style-type: none"> • Complete system offering control components with all the functions required for pneumatic sequence controls • For control cabinet installation • Fast replacement of components • Available with protective cap
→ Page/online	fss	zsb	pza

Pneumatic control systems

Type	 Timers, M5 Compact System PZVT	 Adding counters CCES
Design	Mechanical sequence counter with pneumatic drive	Electric adding counter with battery
Pneumatic connection	Female thread M5	
Operating pressure	2 ... 6 bar	
Type of mounting	Front panel mounting	Front panel mounting
Description	<ul style="list-style-type: none"> • Complete system offering control components with all the functions required for pneumatic sequence controls • For control cabinet installation • Fast replacement of components • Mechanical sequence counter with pneumatic drive • Adjustable delay time • Available with protective cap 	<ul style="list-style-type: none"> • 8-digit LCD display • Independent power supply • Connection via terminal strip • Reset button
→ Page/online	pzvt	cces

Product overview

Customised components – for your specific requirements



Valves with customised designs

Can't find the valve you need in our catalogue?

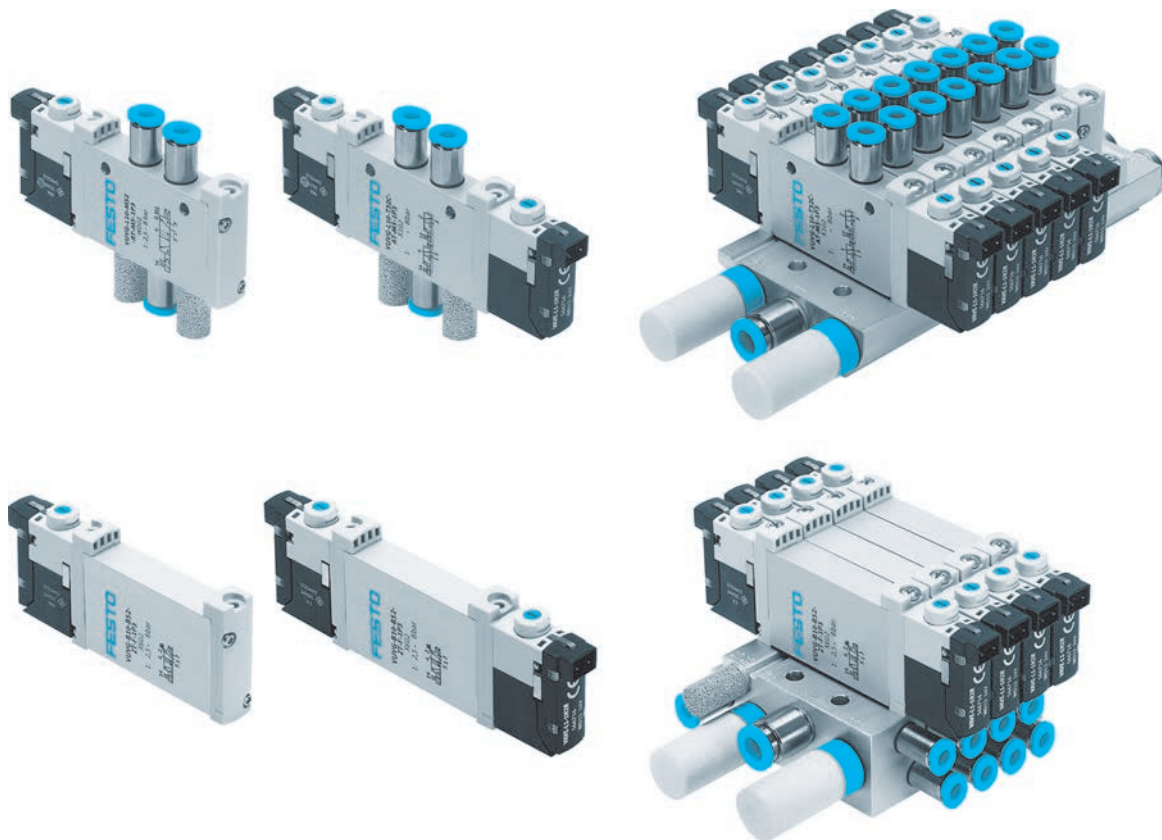
We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Coatings for special ambient conditions
- Customised cables: length, pin allocation, pre-assembled with plug
- Modified actuating elements
- Modified connecting thread
- Modified valve sub-bases

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help.

→ www.festo.com/contact



Affordable and compact

- + Minimum space requirement thanks to compact design
- + Maximum flow in the smallest of spaces
- + Universal use thanks to comprehensive range of valve functions

Electrically and pneumatically actuated directional control valves >
Universal directional control valves >
Solenoid valves

VUVG 


Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves


VUVG ★

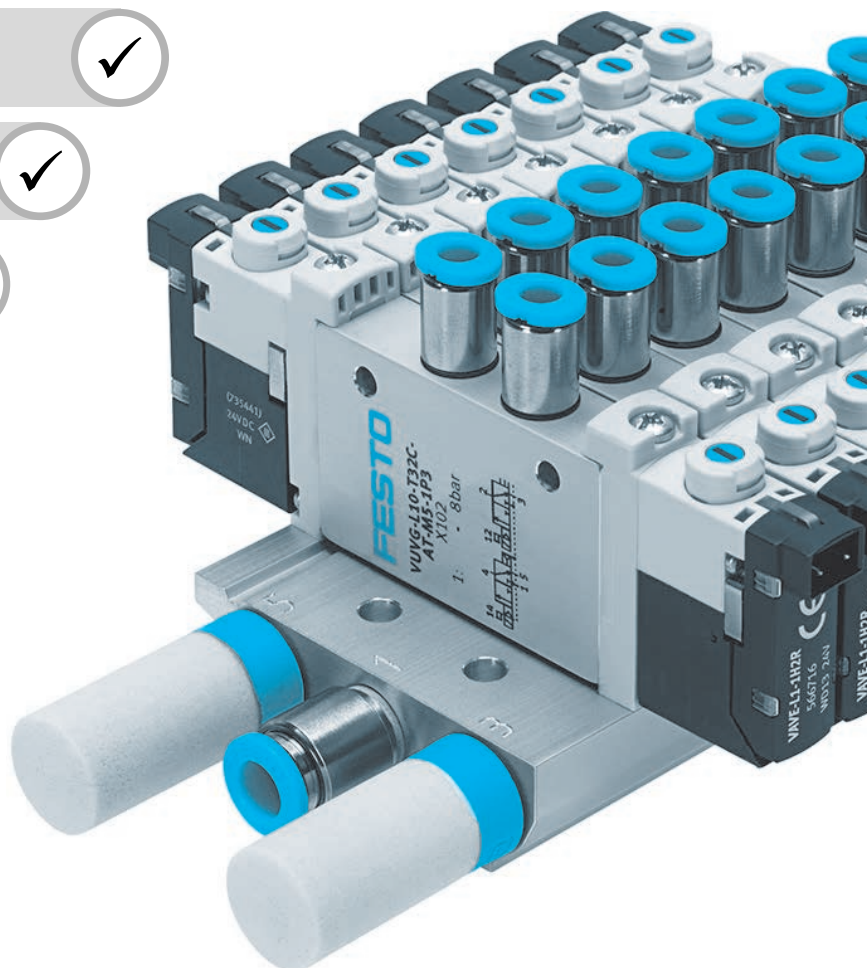
 Overview, configuration and ordering
→ www.festo.com/catalogue/vuvg



 Additional information, support and user documentation
→ www.festo.com/sp/vuvg



 Quick ordering of basic designs
→ page 931, 938, 944, 951, 958



- + Connection technology via E-box
- + Specific I-Port interface from Festo for fieldbus node
- + IO-Link mode for direct connection to a higher-order IO-Link master
- + Variable multi-pin plug connection using Sub-D or ribbon cable
- + Sturdy and durable metal components
- + Reversible piston spool valves
- + Up to 24 valve positions

Product range overview

Type	Design	Working port	Valve functions and flow rate [l/min]													→ Page/ online	
			T32C-A	T32U-A	T32H-A	T32C-M	T32U-M	T32H-M	M52-A	M52-M	M52-R	B52	P53C	P53U	P53E		
In-line valves																	
VUVG-LK	Piston spool with sealing ring	M5	180	–	–	–	–	–	–	195	–	–	195	–	–	–	927
		M7	280	–	–	–	–	–	–	340	–	–	340	–	–	–	927
		G1/8	570	–	–	–	–	–	–	660	–	–	660	–	–	–	934
VUVG-L	Piston spool with sealing cartridge	M3	–	–	–	–	–	–	–	80	100	100	90	90	90	vuvg	
		M5	150	150	150	135	125	125	–	190	220	220	210	210	210	927	
		M7	190	190	190	150	140	140	–	320	380	380	320	320	320	927	
		G1/8	650	600	650	550	500	500	780	780	–	780	650	600	600	934	
		G1/4	1000	1000	1000	1000	1000	1000	–	1300	1300	1380	1200	1000	1000	940	
Semi in-line valves for manifold assembly																	
VUVG-S	Piston spool with sealing cartridge	M3	–	–	–	–	–	–	–	80	100	100	90	90	90	vuvg	
		M5	150	150	150	135	125	125	–	190	220	220	210	210	210	927	
		M7	170	170	170	140	130	130	–	290	340	340	300	300	300	927	
		G1/8	620	580	580	520	480	480	730	730	–	730	620	580	580	934	
		G1/4	1000	1000	1000	1000	1000	1000	–	1300	1300	1380	1200	1000	1000	940	
Sub-base valves																	
VUVG-BK	Piston spool with sealing ring	M5	160	–	–	–	–	–	–	160	–	–	160	–	–	–	947
		M7	160	–	–	–	–	–	–	160	–	–	160	–	–	–	947
		G1/8	350	–	–	–	–	–	–	380	–	–	380	–	–	–	954
VUVG-B	Piston spool with sealing cartridge	M3	–	–	–	–	–	–	–	80	100	100	90	90	90	vuvg	
		M5	150	150	150	130	120	120	–	180	210	210	200	200	200	947	
		M7	160	160	160	140	130	130	–	230	270	270	250	250	250	947	
		G1/8	540	510	540	430	410	410	580	580	–	580	540	510	510	954	
		G1/4	800	800	800	800	800	800	–	1000	1000	1000	950	950	950	960	

Valve functions:

- T32C-A 2x 3/2-way valve, normally closed, pneumatic spring
T32U-A 2x 3/2-way valve, normally open, pneumatic spring
T32H-A 2x 3/2-way valve, 1x normally closed, 1x normally open, pneumatic spring
T32C-M 2x 3/2-way valve, normally closed, mechanical spring
T32U-M 2x 3/2-way valve, normally open, mechanical spring
T32H-M 2x 3/2-way valve, 1x normally closed, 1x normally open, mechanical spring
M52-A 5/2-way valve, single solenoid/monostable, pneumatic spring
M52-M 5/2-way valve, single solenoid/monostable, mechanical spring
M52-R 5/2-way valve, single solenoid/monostable, pneumatic/mechanical spring
B52 5/2-way valve, double solenoid/bistable
P53C 5/3-way valve, mid-position closed
P53U 5/3-way valve, mid-position pressurised
P53E 5/3-way valve, mid-position exhausted

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves M5/M7

Data sheet

Technical data		Download CAD data → www.festo.com		
		VUVG-LK		
Valve function		T32-A	M52-A	B52
Normal position		C ¹⁾	–	–
Design		Piston spool with sealing ring		
Pneumatic spring reset method		Yes		
Port: in-line valve		1, 2, 3, 4, 5		
Type of mounting		M5, M7		
Electrical connection		Via through-holes ⁶⁾ or on manifold rail		
Nominal operating voltage [V DC]		Via electrical connection block		
Power [W]		24 ±10%		
Duty cycle [%]		0.7		
Degree of protection to EN 60529		100		
		IP40 (with plug socket), IP65 (with plug M8x1)		

Technical data		Download CAD data → www.festo.com											
		VUVG-L											
Valve function		T32-A	T32-M	M52-R	B52	M52-M	P53						
Normal position		C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾	U ²⁾	E ³⁾
Design		Piston spool with sealing cartridge											
Pneumatic spring reset method		Yes		No		Yes ⁵⁾		–		No		–	
Mechanical spring reset method		No		Yes		Yes ⁵⁾		–		Yes		Yes	
Port: in-line valve		1, 2, 3, 4, 5		M5, M7		12, 14		M3					
Vacuum operation at port 1		No		Only with external pilot air supply									
Type of mounting		Via through-holes ⁶⁾ or on manifold rail											
Electrical connection		Via electrical connection block											
Nominal operating voltage VUVG-L [V DC]		5, 12 and 24 ±10%											
Power VUVG-L [W]		1, reduced to 0.35 with holding current reduction											
Duty cycle [%]		100											
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)											

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.
- 5) Combined reset method.
- 6) If several valves are to be screwed together via the through-holes to form a block, a minimum distance of 0.3 mm must be ensured by placing spacer discs between them.

Operating conditions		VUVG-LK	VUVG-L
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]		–5 ... +50	–5 ... +50, –5 ... +60 with holding current reduction
Temperature of medium [°C]		–5 ... +50	–5 ... +50, –5 ... +60 with holding current reduction

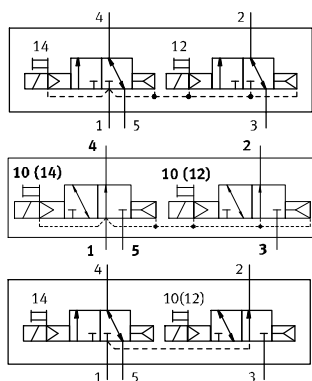
Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

08

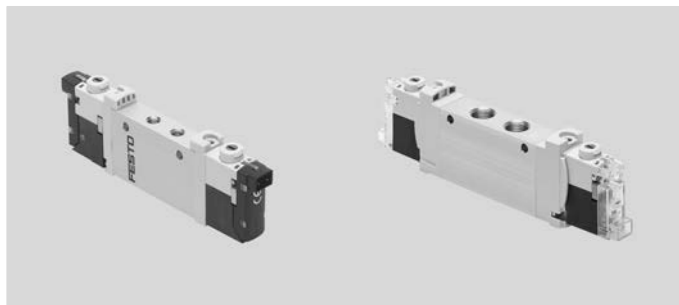
Valves

Solenoid valves VUVG ★, in-line valves M5/M7

Data sheet – 2x 3/2-way valve



Internal or external pilot air supply



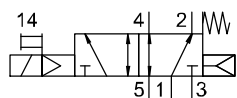
Technical data

Download CAD data → www.festo.com

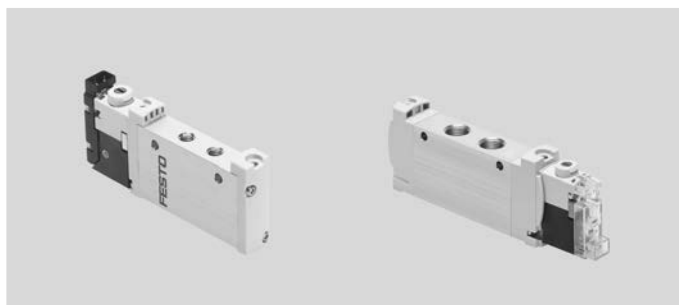
Valve function		VUVG-LK			VUVG-L	
		T32-A		T32-M		
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8	2.5 ... 8	
	External	[bar]	–	1.5 ... 10	–0.9 ... +10	
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8	2 ... 8	
Standard nominal flow rate M5		[l/min]	180	150	125 ... 135	
Standard nominal flow rate M7		[l/min]	280	190	140 ... 150	
Switching time on/off		[ms]	12/14	6/16	8/11	

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/2-way valve, single solenoid



Internal or external pilot air supply



Technical data

Download CAD data → www.festo.com

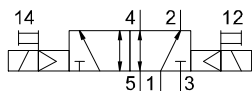
Valve function		VUVG-LK			VUVG-L	
		M52-A		M52-R		
Operating pressure	Internal	[bar]	2.5 ... 7	2.5 ... 8	3 ... 8	
	External	[bar]	–	–0.9 ... +10	–0.9 ... +8	
Pilot pressure ¹⁾		[bar]	–	2.5 ... 8	3 ... 8	
Standard nominal flow rate M5		[l/min]	195	220	190	
Standard nominal flow rate M7		[l/min]	340	380	320	
Switching time on/off		[ms]	14/17	7/19	8/24	

1) Minimum pilot pressure 50% of operating pressure.

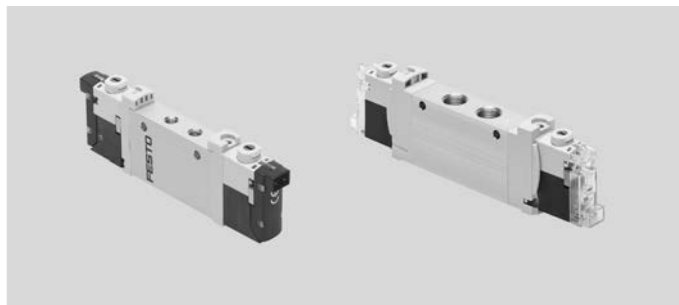
Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves M5/M7

Data sheet – 5/2-way valve, double solenoid



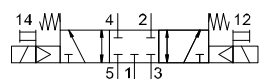
Internal or external pilot air supply



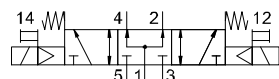
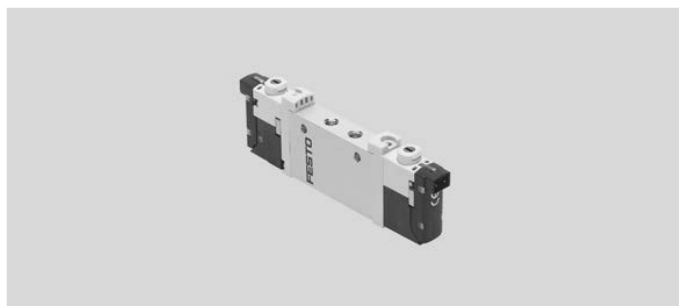
Technical data			Download CAD data → www.festo.com	
			VUVG-LK	VUVG-L
Valve function			B52	B52
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8
	External	[bar]	–	–0.9 ... +10
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8
Standard nominal flow rate M5		[l/min]	195	220
Standard nominal flow rate M7		[l/min]	340	380
Changeover time		[ms]	7	7

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/3-way valve



Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com	
			VUVG-L	
Valve function			P53	
Operating pressure	Internal	[bar]	3 ... 8	
	External	[bar]	–0.9 ... +10	
Pilot pressure ¹⁾		[bar]	3 ... 8	
Standard nominal flow rate M5		[l/min]	210	
Standard nominal flow rate M7		[l/min]	320	
Switching time on/off		[ms]	11/30	
Changeover time		[ms]	14	

1) Minimum pilot pressure 50% of operating pressure.

08

Valves

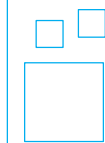
Solenoid valves VUVG ★, in-line valves M5/M7

Order code – VUVG-LK

VUVG	-	L	K	10	-	-	A	T	-	-	1	L	-	S
Type of directional control valve														
In-line valve														
Design principle														
Piston spool with sealing ring														
Size														
10 mm														
Valve function														
2x 3/2-way valve, normally closed														
5/2-way valve, single solenoid														
5/2-way valve, double solenoid														
Reset method														
Pneumatic spring with T32 and M52														
With B52 and P53														
Pilot air supply														
Internal														
Manual override														
Non-detenting, detenting														
Version														
S Core features														
Display														
L LED														
Circuitry														
- Without holding current reduction (HCR)														
Electrical connection														
H2 Connection pattern H, horizontal plug														
R8 Individual plug M8, 3-pin														
Nominal operating voltage														
1 24 V DC														
Exhausting														
- Thread M5/M7														
Pneumatic connection														
M5 Thread M5														
Q3 Push-in connector 3 mm/M5														
Q4 Push-in connector 4 mm/M5														
Q6 Push-in connector 6 mm/M5														
M7 Thread M7														
Q4H Push-in connector 4 mm/M7														
Q6H Push-in connector 6 mm/M7														

Solenoid valves VUVG ★, in-line valves M5/M7

Ordering – Product options



Configurable
product

This product and all its options can
be ordered using the configurator.

The configurator can be found under
Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Part no.	Type
In-line valve M5, 2x 3/2-way valve	
8042542	VUVG-LK10-T32C-AT-M5-1R8L-S
8042538	VUVG-LK10-T32C-AT-M5-1H2L-S
In-line valve M5, 5/2-way single solenoid valve	
8042543	VUVG-LK10-M52-AT-M5-1R8L-S
8042539	VUVG-LK10-M52-AT-M5-1H2L-S
In-line valve M5, 5/2-way double solenoid valve	
8042544	VUVG-LK10-B52-T-M5-1R8L-S
8042540	VUVG-LK10-B52-T-M5-1H2L-S

Part no.	Type
In-line valve M7, 2x 3/2-way valve	
8042550	VUVG-LK10-T32C-AT-M7-1R8L-S
8042546	VUVG-LK10-T32C-AT-M7-1H2L-S
In-line valve M7, 5/2-way single solenoid valve	
8042551	VUVG-LK10-M52-AT-M7-1R8L-S
8042547	VUVG-LK10-M52-AT-M7-1H2L-S
In-line valve M7, 5/2-way double solenoid valve	
8042552	VUVG-LK10-B52-T-M7-1R8L-S
8042548	VUVG-LK10-B52-T-M7-1H2L-S

Part no.	Type
In-line valve M5, 2x 3/2-way valve	
577347	VUVG-L10-T32C-AT-M5-1R8L
In-line valve M5, 5/2-way single solenoid valve	
572634	VUVG-L10-M52-RT-M5-1R8L
In-line valve M5, 5/2-way double solenoid valve	
576664	VUVG-L10-B52-T-M5-1R8L
In-line valve M5, 5/3-way valve	
577346	VUVG-L10-P53C-T-M5-1R8L

Part no.	Type
In-line valve M7, 2x 3/2-way valve	
574218	VUVG-L10-T32C-AT-M7-1R8L
In-line valve M7, 5/2-way single solenoid valve	
574221	VUVG-L10-M52-RT-M7-1R8L
In-line valve M7, 5/2-way double solenoid valve	
574222	VUVG-L10-B52-T-M7-1R8L
In-line valve M7, 5/3-way valve	
574223	VUVG-L10-P53C-T-M7-1R8L

1) All products in this table are easy to select and quick to order.

08

Valves

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves M5/M7

Accessories – Ordering data

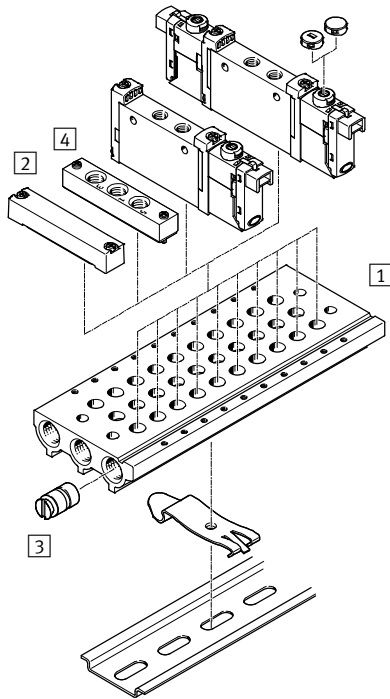
Order code – Manifold rails

VABM	-	L1	-	10	S	-	G18	-	
Valve manifold parts									
Manifold rail	VABM								
Valve series									
VUVG	L1								
Size									
10 mm	10								
Manifold rail with ports 1, 3, 5									
For M5 and M7 in-line valves									S

Number of valve positions	
2 to 10, 12, 14 and 16	

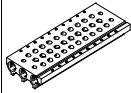




Port 1, 3, 5	
G18	Thread G1/8

Manifold assembly



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Valves

		Part no.	Type
1 Manifold rail			
	For M5/M7	★ 566558	VABM-L1-10S-G18-2
		★ 566559	VABM-L1-10S-G18-3
		★ 566560	VABM-L1-10S-G18-4
		566561	VABM-L1-10S-G18-5
		★ 566562	VABM-L1-10S-G18-6
		566563	VABM-L1-10S-G18-7
		★ 566564	VABM-L1-10S-G18-8
		566565	VABM-L1-10S-G18-9
		★ 566566	VABM-L1-10S-G18-10
		566567	VABM-L1-10S-G18-12
		566568	VABM-L1-10S-G18-14
		566569	VABM-L1-10S-G18-16
2 Cover plate			
	For M5/M7	★ 566462	VABB-L1-10-S
3 Blanking plug			
	Separator for pressure zones	569995	VABD-8-B
4 Supply plate			
	For M5	569991	VABF-L1-10-P3A4-M5
	For M7	569992	VABF-L1-10-P3A4-M7
Seals for in-line valves (10 pieces incl. 20 screws)			
	For VUVG-LK		
	For M5	★ 8043718	VABD-L1-10XK-S-M5-S
	For M7	★ 8043719	VABD-L1-10XK-S-M7-S
	For VUVG-L		
	For M5	★ 566672	VABD-L1-10X-S-M5
	For M7	★ 566673	VABD-L1-10X-S-M7

Solenoid valves VUVG ★, in-line valves G1/8

Data sheet

Technical data		Download CAD data → www.festo.com		
		VUVG-LK		
Valve function		T32-A	M52-A	B52
Normal position		C ¹⁾	–	–
Design		Piston spool with sealing ring		
Pneumatic spring reset method		Yes	Yes	–
Port: in-line valve	2, 4	G1/8		
Type of mounting		Via through-holes ⁵⁾ or on manifold rail		
Electrical connection		Via electrical connection box		
Nominal operating voltage	[V DC]	24 ±10%		
Power	[W]	0.7		
Duty cycle	[%]	100		
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)		

Technical data		Download CAD data → www.festo.com						
		VUVG-L						
Valve function		T32-A	T32-M	M52-A	B52	M52-M	P53	
Normal position		C ¹⁾ U ²⁾ H ⁴⁾	C ¹⁾ U ²⁾ H ⁴⁾	–	–	–	C ¹⁾ U ²⁾ E ³⁾	
Design		Piston spool with sealing cartridge						
Pneumatic spring reset method		Yes	No	Yes	–	No	–	
Mechanical spring reset method		No	Yes	No	–	Yes	Yes	
Port: in-line valve	1, 2, 3, 4, 5 12, 14	G1/8 M5						
Vacuum operation at port 1		No	Only with external pilot air supply					
Type of mounting		Via through-holes ⁵⁾						
Electrical connection		Via electrical connection box						
Nominal operating voltage	[V DC]	5, 12 and 24 ±10%						
Power	[W]	1, reduced to 0.35 with holding current reduction						
Duty cycle	[%]	100						
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)						

1) C=Normally closed.

2) U=Normally open/mid-position pressurised.

3) E=Normally exhausted.

4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.

5) If several valves are to be screwed together via the through-holes to form a block, a minimum gap of 0.3 mm must be ensured by placing spacer discs between them.

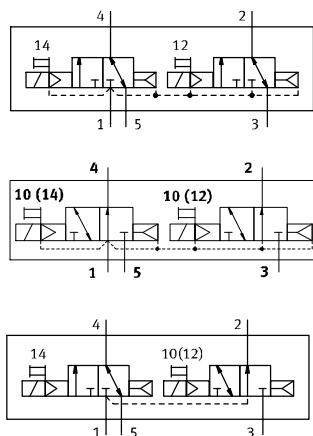
Operating conditions		VUVG-LK		VUVG-L	
		Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)			
Ambient temperature	[°C]	–5 ... +50		–5 ... +50, –5 ... +60 with holding current reduction	
Temperature of medium	[°C]	–5 ... +50		–5 ... +50 –5 ... +60 with holding current reduction	

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

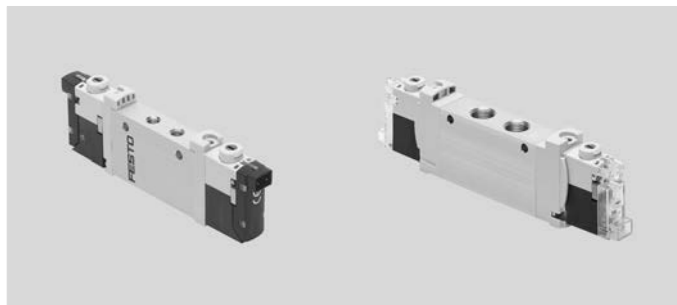
Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves G1/8

Data sheet – 2x 3/2-way valve



Internal or external pilot air supply



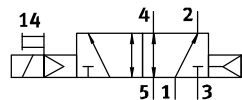
Technical data

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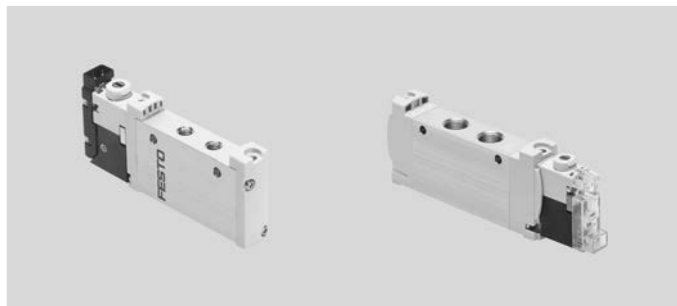
Valve function			VUVG-LK		VUVG-L	
			T32-A		T32-M	
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8	3 ... 8	
	External	[bar]	–	1.5 ... 10	–0.9 ... +10	
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8	3.5 ... 8	
Standard nominal flow rate		[l/min]	570	560 ... 590	500 ... 550	
Switching time on/off		[ms]	13/20	12/25	11/18	

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/2-way valve, single solenoid



Internal or external pilot air supply



Technical data

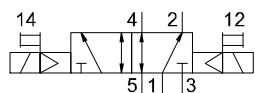
Download CAD data → www.festo.com

Valve function			VUVG-LK		VUVG-L	
			M52-A		M52-M	
Operating pressure	Internal	[bar]	2.5 ... 7	2.5 ... 8	3 ... 8	
	External	[bar]	–	–0.9 ... +10	–0.9 ... +8	
Pilot pressure ¹⁾		[bar]	–	2.5 ... 8	3 ... 8	
Standard nominal flow rate		[l/min]	660	730	730	
Switching time on/off		[ms]	14/24	14/22	13/37	

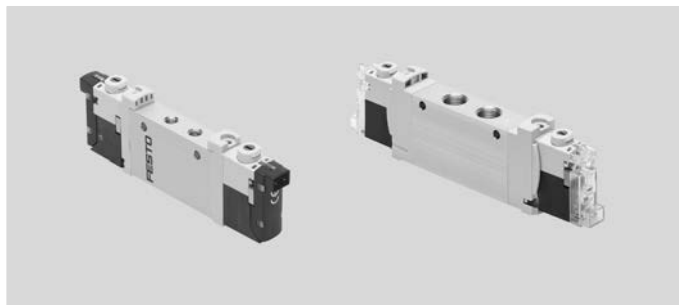
1) Minimum pilot pressure 50% of operating pressure.

Solenoid valves VUVG ★, in-line valves G1/8

Data sheet – 5/2-way valve, double solenoid



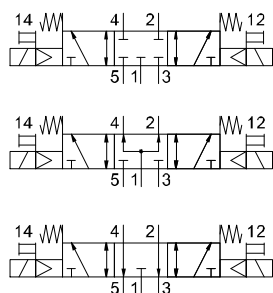
Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com	
			VUVG-LK	VUVG-L
Valve function			B52	B52
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8
	External	[bar]	–	–0.9 ... +10
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8
Standard nominal flow rate		[l/min]	660	780
Changeover time		[ms]	8	8

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/3-way valve



Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com	
			VUVG-L	
Valve function			P53C	
Operating pressure	Internal	[bar]	3 ... 8	
	External	[bar]	–0.9 ... +10	
Pilot pressure ¹⁾		[bar]	3 ... 8	
Standard nominal flow rate		[l/min]	550 ... 650	
Switching time on/off		[ms]	12/40	
Changeover time		[ms]	14	

1) Minimum pilot pressure 50% of operating pressure.

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves G1/8

Order code – VUVG-LK

VUVG	-	L	K	14	-	-	-	-	T
Type of directional control valve									
In-line valve									
Design principle									
Piston spool with sealing ring									
Size									
14 mm									
Valve function									
2x 3/2-way valve, normally closed									
5/2-way valve, single solenoid									
5/2-way valve, double solenoid									
Reset method									
Pneumatic spring with T32 and M52									
With B52 and P53									
Pilot air supply									
Internal									
Manual override									
Non-detenting, detenting									

-	-	1	-	L	-	S
Version						
S Core features						
Display						
L LED						
Circuitry						
- Without holding current reduction (HCR)						
Electrical connection						
H2 Connection pattern H, horizontal plug						
R8 Individual plug M8, 3-pin						
Nominal operating voltage						
1 24 V DC						
Exhausting with VUVG-L						
- Thread G1/8						

Pneumatic connection	
G18	G1/8 thread
Q4	Push-in connector 4 mm
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm

08

Valves

Solenoid valves VUVG , in-line valves G1/8

Order code – VUVG-L

VUVG	-	14	-	-	-	-	-	-	-	-	-	L	-	-
Type of directional control valve													Version	
In-line valve													L	
Semi in-line valve													S	
Design principle													-	
Piston spool with sealing cartridge													-	
Size													14	
14 mm														
Valve function													Accessories for valve/ connecting cable	
2x 3/2-way valve, normally closed													T32C	
2x 3/2-way valve, normally open													T32U	
2x 3/2-way valve, 1x normally open, 1x normally closed													T32H	
5/2-way valve, single solenoid													M52	
5/2-way valve, double solenoid													B52	
5/3-way valve, mid-position closed													P53C	
5/3-way valve, mid-position exhausted													P53E	
5/3-way valve, mid-position pressurised													P53U	
Reset method													W1...4⁶⁾ Connection pattern H, not sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
Pneumatic spring with T32 and M52													A	
Mechanical spring with T32 and M52													M	
With B52 and P53													-	
Pilot air supply													C1...4⁶⁾ Connection pattern H, sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
Internal													-	
External													Z	
Manual override													N1...4⁵⁾ M8x1, 3-pin, straight: 1 = 2.5 m, 2 = 5 m; angled: 3 = 2.5 m, 4 = 5 m	
Non-detenting, detenting													T	
Detenting, without accessories													Y	
Display													L LED	
Circuitry													Electrical connection	
-													Without holding current reduction (HCR)	
R ⁴⁾													With holding current reduction (HCR)	
H2													Connection pattern H, horizontal plug	
H3													Connection pattern H, vertical plug	
L1...4³⁾													With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R8													Individual plug M8, 3-pin	
Nominal operating voltage													1 24 V DC	
5													12 V DC	
4													5 V DC	
Exhausting													QN²⁾ Push-in fitting	
U¹⁾													Silencer	
-													Thread G1/8	
Pneumatic connection													G18 Thread G1/8	
Q4													Push-in connector 4 mm	
Q6													Push-in connector 6 mm	
Q8													Push-in connector 8 mm	

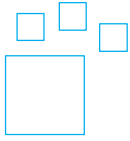
- Not with type of directional control valve S
- Not with type of directional control valve S,
not in combination with pneumatic connection G1/8
- Not with nominal operating voltage 4

- Only with nominal operating voltage 1,
not in combination with electrical connection R8
- Straight: N1 = 2.5 m, N2 = 5 m
Angled: N3 = 2.5 m, N4 = 5 m
Only in combination with electrical connection R8

- W1/C1 = 0.5 m, W2/C2 = 1 m,
W3/C3 = 2.5 m, W4/C4 = 5 m
Only in combination with electrical connection H2 or H3

Solenoid valves VUVG ★, in-line valves G1/8

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Part no.	Type
In-line valve G1/8, 2x 3/2-way valve	
8042566	VUVG-LK14-T32C-AT-G18-1R8L-S
8042562	VUVG-LK14-T32C-AT-G18-1H2L-S
In-line valve G1/8, 5/2-way single solenoid valve	
8042567	VUVG-LK14-M52-AT-G18-1R8L-S
8042563	VUVG-LK14-M52-AT-G18-1H2L-S

Part no.	Type
In-line valve G1/8, 5/2-way double solenoid valve	
8042568	VUVG-LK14-B52-T-G18-1R8L-S
8042564	VUVG-LK14-B52-T-G18-1H2L-S

Part no.	Type
In-line valve G1/8, 2x 3/2-way valve	
574226	VUVG-L14-T32C-AT-G18-1R8L
In-line valve G1/8, 5/2-way single solenoid valve	
574229	VUVG-L14-M52-AT-G18-1R8L

Part no.	Type
In-line valve G1/8, 5/2-way double solenoid valve	
574230	VUVG-L14-B52-T-G18-1R8L
In-line valve G1/8, 5/3-way valve	
574231	VUVG-L14-P53C-T-G18-1R8L

1) All products in this table are easy to select and quick to order.

Solenoid valves VUVG ★, in-line valves G1/8

Accessories – Ordering data

Order code – Manifold rails

VABM	-	L1	-	14	S	-	G14	-
Valve manifold parts								
Manifold rail	VABM							
Valve series								
VUVG	L1							
Size								
14 mm	14							
Manifold rail with ports 1, 3, 5								
For G1/8 in-line valves	S							

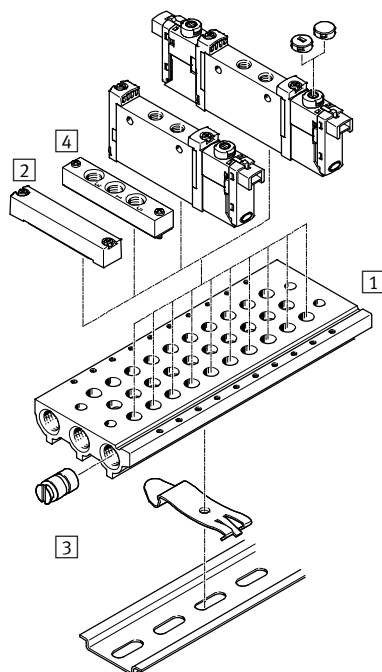
Number of valve positions

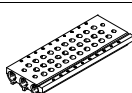




2 to 10, 12, 14 and 16

Ports 1, 3, 5

G14 Thread G1/4

Manifold assembly



	Part no.	Type
1 Manifold rail		
 For G1/8	★ 566618	VABM-L1-14S-G14-2
	★ 566619	VABM-L1-14S-G14-3
	★ 566620	VABM-L1-14S-G14-4
	566621	VABM-L1-14S-G14-5
	★ 566622	VABM-L1-14S-G14-6
	566623	VABM-L1-14S-G14-7
	★ 566624	VABM-L1-14S-G14-8
	566625	VABM-L1-14S-G14-9
	★ 566626	VABM-L1-14S-G14-10
	566627	VABM-L1-14S-G14-12
	566628	VABM-L1-14S-G14-14
	566629	VABM-L1-14S-G14-16
	2 Blanking plate	
 For G1/8	★ 569989	VABB-L1-14
3 Blanking plug		
 Separator for pressure zones	569996	VABD-10-B
4 Supply plate		
 For G1/8	569993	VABF-L1-14-P3A4-G18
Seals for in-line valves (10 pieces incl. 20 screws)		
	For VUVG-LK	
	For G1/8	★ 8043720 VABD-L1-14XK-S-G18-S
	For VUVG-L	
For G1/8	★ 566675 VABD-L1-14X-S-G18	

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Valves

Solenoid valves VUVG ★, in-line valves G1/4

Data sheet

Download CAD data → www.festo.com

Technical data		VUVG-L											
Valve function		T32-A			T32-M			M52-R	B52	M52-M	P53		
Normal position		C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾	U ²⁾	E ³⁾
Design		Piston spool with sealing cartridge											
Pneumatic spring reset method		Yes			No			Yes ⁵⁾	–	No	–		
Mechanical spring reset method		No			Yes			Yes ⁵⁾	–	Yes	Yes		
Port: in-line valve	1, 2, 3, 4, 5	G1/4											
	12, 14	M5											
Vacuum operation at port 1		No			Only with external pilot air supply								
Type of mounting		Via through-holes ⁶⁾ or on manifold rail											
Electrical connection		Via electrical connection box											
Nominal operating voltage	[V DC]	5, 12 and 24 ±10%											
Power	[W]	1, reduced to 0.35 with holding current reduction											
Duty cycle	[%]	100											
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)											

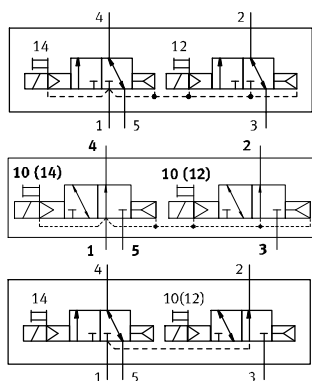
- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.
- 5) Combined reset method.
- 6) If several valves are to be screwed together via the through-holes to form a block, a minimum distance of 0.3 mm must be ensured by placing spacer discs between them.

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C] –5 ... +50, –5 ... +60 with holding current reduction
Temperature of medium	[°C] –5 ... +50, –5 ... +60 with holding current reduction

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

Solenoid valves VUVG ★, in-line valves G1/4

Data sheet – 2x 3/2-way valve



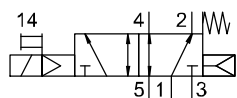
Internal or external pilot air supply



Technical data		Download CAD data → www.festo.com	
		VUVG-L	T32-M
Valve function		T32-A	T32-M
Operating pressure	Internal [bar]	1.5 ... 8	3 ... 8
	External [bar]	1.5 ... 10	-0.9 ... +10
Pilot pressure ¹⁾ [bar]		1.5 ... 8	2 ... 8
Standard nominal flow rate [l/min]		880 ... 970	870 ... 990
Flow rate on manifold rail [l/min]		780 ... 980	780 ... 820
Switching time on/off [ms]		13/27	15/22

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/2-way valve, single solenoid



Internal or external pilot air supply



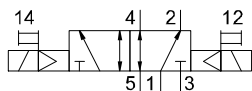
Technical data		Download CAD data → www.festo.com	
		VUVG-L	M52-M
Valve function		M52-R	M52-M
Operating pressure	Internal [bar]	2.5 ... 8	3 ... 8
	External [bar]	-0.9 ... +10	-0.9 ... +10
Pilot pressure ¹⁾ [bar]		2.5 ... 8	3 ... 8
Standard nominal flow rate [l/min]		1300	1300
Flow rate on manifold rail [l/min]		1300	1300
Switching time on/off [ms]		15/31	10/45

1) Minimum pilot pressure 50% of operating pressure.

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves G1/4

Data sheet – 5/2-way valve, double solenoid



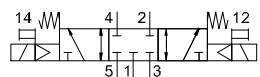
Internal or external pilot air supply



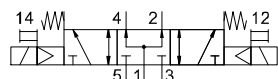
Technical data			Download CAD data → www.festo.com
Valve function			VUVG-L B52
Operating pressure	Internal	[bar]	1.5 ... 8
	External	[bar]	-0.9 ... +10
Pilot pressure ¹⁾		[bar]	1.5 ... 8
Standard nominal flow rate		[l/min]	1380
Flow rate on manifold rail		[l/min]	1370
Changeover time		[ms]	11

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/3-way valve



Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com
Valve function			VUVG-L P53
Operating pressure	Internal	[bar]	3 ... 8
	External	[bar]	-0.9 ... +10
Pilot pressure ¹⁾		[bar]	3 ... 8
Standard nominal flow rate		[l/min]	910 ... 1200
Flow rate on manifold rail		[l/min]	1050 ... 1220
Switching time on/off		[ms]	15/48
Changeover time		[ms]	29

1) Minimum pilot pressure 50% of operating pressure.

Solenoid valves VUVG ★, in-line valves G1/4

Order code – VUVG-L

VUVG	-	18	-	-	-	-	-	-	-	L	-	-
Type of directional control valve												
In-line valve											L	
Semi in-line valve											S	
Design principle												
Piston spool with sealing cartridge											-	
Size												
18 mm											18	
Valve function¹⁾												
2x 3/2-way valve, normally closed											T32C	
2x 3/2-way valve, normally open											T32U	
2x 3/2-way valve, 1x normally open, 1x normally closed											T32H	
5/2-way valve, single solenoid											M52	
5/2-way valve, double solenoid											B52	
5/3-way valve, mid-position closed											P53C	
5/3-way valve, mid-position exhausted											P53E	
5/3-way valve, mid-position pressurised											P53U	
Reset method												
Pneumatic spring with T32 and M52											A	
Mechanical spring with T32 and M52											M	
Pneu./mech. spring with M52											R	
With B52 and P53											-	
Pilot air supply												
Internal											-	
External											Z	
Manual override												
Non-detenting, detenting											T	
Detenting, without accessories											Y	
Version												
- Extended features												
Accessories for valve/ connecting cable												
W1...4⁶⁾ Connection pattern H, not sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m												
C1...4⁶⁾ Connection pattern H, sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m												
N1...4⁵⁾ M8x1, 3-pin, straight: 1 = 2.5 m, 2 = 5 m; angled: 3 = 2.5 m, 4 = 5 m												
Display												
L LED												
Circuitry												
- Without holding current reduction (HCR)												
R⁴⁾ With holding current reduction (HCR)												
Electrical connection												
H2 Connection pattern H, horizontal plug												
H3 Connection pattern H, vertical plug												
L1...4³⁾ With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m												
R8³⁾ Individual plug M8, 3-pin												
Nominal operating voltage												
1 24 V DC												
5 12 V DC												
4 5 V DC												
Exhausting												
QN²⁾ Push-in fitting												
U²⁾ Silencer												
- Thread G1/4												
Pneumatic connection												
G14 Thread G1/4												
Q6 Push-in connector 6 mm												
Q8 Push-in connector 8 mm												
Q10 Push-in connector 10 mm												

2) Not with type of directional control valve S
 3) Not with nominal operating voltage 4
 4) Only with nominal operating voltage 1, not in combination with electrical connection R8

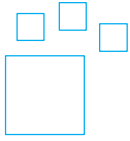
5) Straight: N1 = 2.5 m, N2 = 5 m
 Angled: N3 = 2.5 m, N4 = 5 m
 Only in combination with electrical connection R8

6) W1/C1 = 0.5 m, W2/C2 = 1 m, W3/C3 = 2.5 m, W4/C4 = 5 m
 Only in combination with electrical connection H2 or H3

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, in-line valves G1/4

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Part no.	Type
In-line valve G1/4, 3/2-way valve	
8031525	VUVG-L18-T32C-AT-G14-1R8L
In-line valve G1/4, 5/2-way single solenoid valve	
8031531	VUVG-L18-M52-RT-G14-1R8L
8031532	VUVG-L18-M52-MT-G14-1R8L

Part no.	Type
In-line valve G1/4, 5/3-way valve	
8031534	VUVG-L18-P53C-T-G14-1R8L

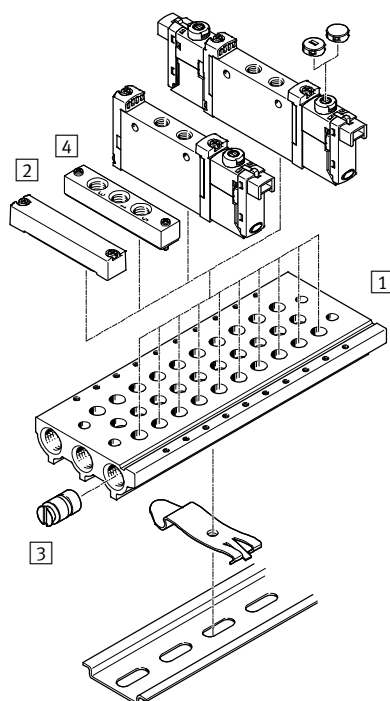
1) All products in this table are easy to select and quick to order.

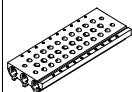




Accessories – Ordering data

Order code – Manifold rails

VABM	-	L1	-	18	S	-	G38	-	
Valve manifold parts									
Manifold rail	VABM								
Valve series									
VUVG	L1								
Size									
18 mm	18								
Manifold rail with ports 1, 3, 5									
For G1/4 in-line valves	S								
Number of valve positions									
2 to 10, 12, 14 and 16									
Ports 1, 3, 5									
G38 Thread G3/8									

Manifold assembly



	Part no.	Type
1 Manifold rail		
 For G1/4	★	574455 VABM-L1-18S-G38-2
	★	574456 VABM-L1-18S-G38-3
	★	574457 VABM-L1-18S-G38-4
		574458 VABM-L1-18S-G38-5
	★	574459 VABM-L1-18S-G38-6
		574460 VABM-L1-18S-G38-7
	★	574461 VABM-L1-18S-G38-8
		574462 VABM-L1-18S-G38-9
	★	574463 VABM-L1-18S-G38-10
		574464 VABM-L1-18S-G38-12
		574465 VABM-L1-18S-G38-14
		574466 VABM-L1-18S-G38-16
	2 Blanking plate	
 For G1/4	★	574482 VABB-L1-18
3 Blanking plug		
 Separator for pressure zones		574483 VABD-14-B
4 Supply plate		
 For G1/4		574481 VABF-L1-18-P3A4-G14
Seals for in-line valves (10 pieces incl. 20 screws)		
 For G1/4	★	574479 VABD-L1-18X-S-G14

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Valves

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves M5/M7

Data sheet

Technical data		Download CAD data → www.festo.com		
		VUVG-BK		
Valve function		T32-A	M52-A	B52
Normal position		C ¹⁾	–	–
Design		Piston spool with sealing ring		
Pneumatic spring reset method		Yes	Yes	–
Port 2, 4		M5 or M7 in manifold rail		
Type of mounting		On manifold rail		
Electrical connection		Via electrical connection box		
Nominal operating voltage [V DC]		24 ±10%		
Power [W]		0.7		
Duty cycle [%]		100		
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)		

Technical data		Download CAD data → www.festo.com						
		VUVG-B						
Valve function		T32-A	T32-M	M52-R	B52	M52-M	P53	
Normal position		C ¹⁾ U ²⁾ H ⁴⁾	C ¹⁾ U ²⁾ H ⁴⁾	–	–	–	C ¹⁾ U ²⁾ E ³⁾	
Design		Piston spool with sealing cartridge						
Pneumatic spring reset method		Yes	No	Yes ⁵⁾	–	No	–	
Mechanical spring reset method		No	Yes	Yes ⁵⁾	–	Yes	Yes	
Port 1, 3, 5		G1/8 in manifold rail						
2, 4		M5 or M7 in manifold rail						
12/14, 82/84		M5 in manifold rail						
Vacuum operation at port 1		No	Only with external pilot air supply					
Type of mounting		On manifold rail						
Electrical connection		Via electrical connection box						
Nominal operating voltage [V DC]		5, 12 and 24 ±10%						
Power [W]		1, reduced to 0.35 with holding current reduction						
Duty cycle [%]		100						
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)						

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.
- 5) Combined reset method.

Operating conditions		VUVG-BK	VUVG-B
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]		–5 ... +50	–5 ... +50, –5 ... +60 with holding current reduction
Temperature of medium [°C]		–5 ... +50	–5 ... +50, –5 ... +60 with holding current reduction

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

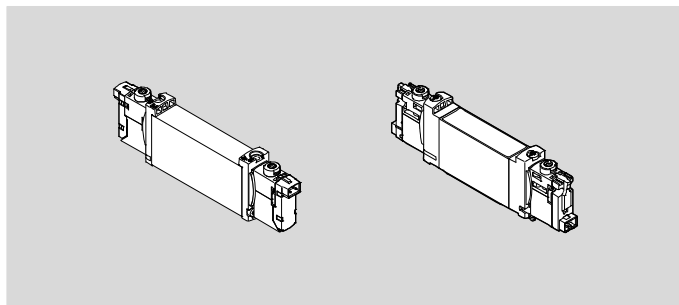
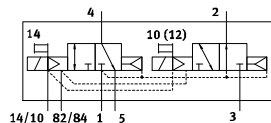
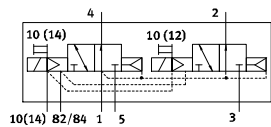
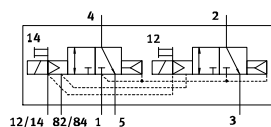
08

Valves

Solenoid valves VUVG ★, sub-base valves M5/M7

Data sheet – 2x 3/2-way valve

Internal or external pilot air supply



Technical data

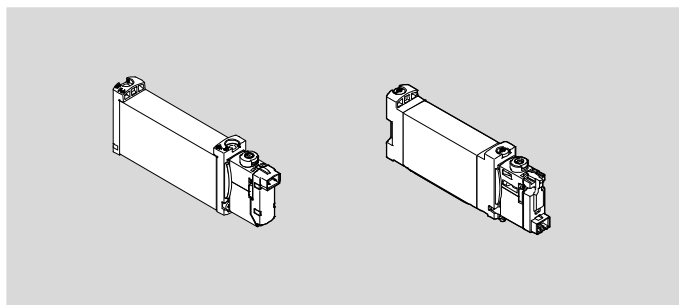
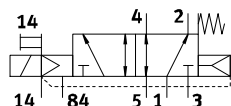
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Valve function			VUVG-BK	VUVG-B	
			T32-A	T32-A	T32-M
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8	3 ... 8
	External	[bar]	–	1.5 ... 10	–0.9 ... +10
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8	2 ... 8
Flow rate on manifold rail M5		[l/min]	160	150	120 ... 130
Flow rate on manifold rail M7		[l/min]	160	160	130 ... 140
Switching time on/off		[ms]	12/14	6/16	8/11

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/2-way valve, single solenoid

Internal or external pilot air supply



Technical data

Download CAD data → www.festo.com

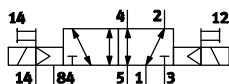
Valve function			VUVG-BK	VUVG-B	
			M52-A	M52-R	M52-M
Operating pressure	Internal	[bar]	2.5 ... 7	2.5 ... 8	3 ... 8
	External	[bar]	–	–0.9 ... +10	–0.9 ... +8
Pilot pressure ¹⁾		[bar]	–	2.5 ... 8	3 ... 8
Flow rate on manifold rail M5		[l/min]	160	210	180
Flow rate on manifold rail M7		[l/min]	160	270	230
Switching time on/off		[ms]	14/17	7/19	8/24

1) Minimum pilot pressure 50% of operating pressure.

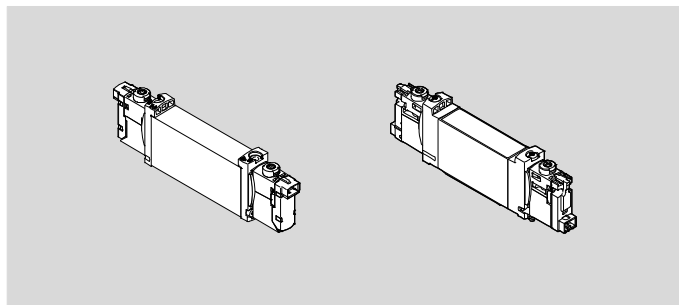
Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves M5/M7

Data sheet – 5/2-way valve, double solenoid



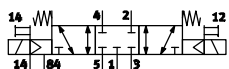
Internal or external pilot air supply



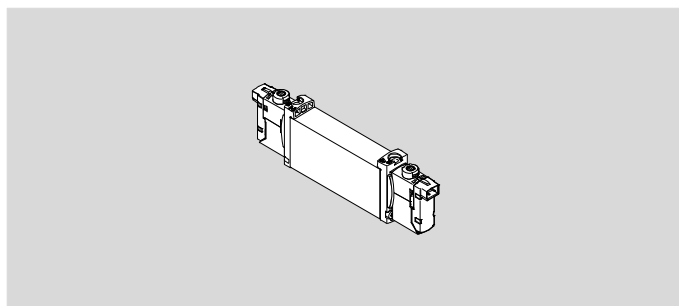
Technical data			Download CAD data → www.festo.com	
			VUVG-BK	VUVG-B
Valve function			B52	B52
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8
	External	[bar]	–	–0.9 ... +10
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8
Flow rate on manifold rail M5		[l/min]	160	210
Flow rate on manifold rail M7		[l/min]	160	270
Changeover time		[ms]	7	7

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/3-way valve



Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com	
			VUVG-B	
			P53	
Operating pressure	Internal	[bar]	3 ... 8	
	External	[bar]	–0.9 ... +10	
Pilot pressure ¹⁾		[bar]	3 ... 8	
Flow rate on manifold rail M5		[l/min]	200	
Flow rate on manifold rail M7		[l/min]	250	
Switching time on/off		[ms]	11/30	
Changeover time		[ms]	14	

1) Minimum pilot pressure 50% of operating pressure.

Solenoid valves VUVG ★, sub-base valves M5/M7

Order code – VUVG-BK

VUVG	-	B	K	10	-	-	A	T	F	-	1	L	-	S
Type of directional control valve														
Sub-base, manifold valve including seal and screws														
B														
Design principle														
Piston spool with sealing ring														
K														
Size														
10 mm														
10														
Valve function														
2x 3/2-way valve, normally closed														
T32C														
5/2-way valve, single solenoid														
M52														
5/2-way valve, double solenoid														
B52														
Reset method														
Pneumatic spring with T32 and M52														
A														
With B52														
-														
Pilot air supply														
Internal														
-														
Manual override														
Non-detenting, detenting														
T														
Version														
S Core features														
Display														
L LED														
Circuitry														
- Without holding current reduction (HCR)														
Electrical connection														
H2 Connection pattern H, horizontal plug														
R8 Individual plug M8, 3-pin														
Nominal operating voltage														
1 24 V DC														
Pneumatic connection														
F In manifold rail														

08

Valves

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves M5/M7

Order code – VUVG-B

VUVG	-	B	10	-	-	Z		F	-			L	-	-
Type of directional control valve														
Sub-base, manifold valve including seal and screws														
Design principle														
Piston spool with sealing cartridge														
Size														
10 mm														
Valve function¹⁾														
2x 3/2-way valve, normally closed														
T32C														
2x 3/2-way valve, normally open														
T32U														
2x 3/2-way valve, 1x normally open, 1x normally closed														
T32H														
5/2-way valve, single solenoid														
M52														
5/2-way valve, double solenoid														
B52														
5/3-way valve, mid-position closed														
P53C														
5/3-way valve, mid-position exhausted														
P53E														
5/3-way valve, mid-position pressurised														
P53U														
Reset method														
Pneumatic spring with T32 and M52														
A														
Mechanical spring with T32 and M52														
M														
Pneu./mech. spring with M52														
R														
With B52 and P53														
-														
Pilot air supply														
External														
Z														
Manual override														
Non-detenting, detenting														
T														
Detenting, without accessories														
Y														
Version														
- Extended features														
Accessories for valve/ connecting cable														
W1...4⁵⁾ Connection pattern H, not sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
C1...4⁵⁾ Connection pattern H, sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
N1...4⁴⁾ M8x1, 3-pin, straight: 1 = 2.5 m, 2 = 5 m; angled: 3 = 2.5 m, 4 = 5 m														
Display														
L LED														
Circuitry														
- Without holding current reduction (HCR)														
R³⁾ With holding current reduction (HCR)														
Electrical connection														
H2 Connection pattern H, horizontal plug														
H3 Connection pattern H, vertical plug														
L1...4²⁾ With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
R8²⁾ Individual plug M8, 3-pin														
Nominal operating voltage														
1 24 V DC														
5 12 V DC														
4 5 V DC														
Pneumatic connection														
F In manifold rail														

08

Valves

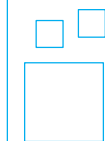
2) Not with nominal operating voltage 4
3) Only with nominal operating voltage 1, not in combination with electrical connection R8

4) Straight: N1 = 2.5 m, N2 = 5 m
Angled: N3 = 2.5 m, N4 = 5 m
Only in combination with electrical connection R8

5) W1/C1 = 0.5 m, W2/C2 = 1 m, W3/C3 = 2.5 m, W4/C4 = 5 m
Only in combination with electrical connection H2 or H3

Solenoid valves VUVG ★, sub-base valves M5/M7

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Part no.	Type
Sub-base valve M5/M7, 3/2-way valve	
8042558	VUVG-BK10-T32C-AT-F-1R8L-S
8042554	VUVG-BK10-T32C-AT-F-1H2L-S
Sub-base valve M5/M7, 5/2-way single solenoid valve	
8042559	VUVG-BK10-M52-AT-F-1R8L-S
8042555	VUVG-BK10-M52-AT-F-1H2L-S

Part no.	Type
Sub-base valve M5/M7, 5/2-way double solenoid valve	
8042560	VUVG-BK10-B52-T-F-1R8L-S
8042556	VUVG-BK10-B52-T-F-1H2L-S

1) All products in this table are easy to select and quick to order.

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

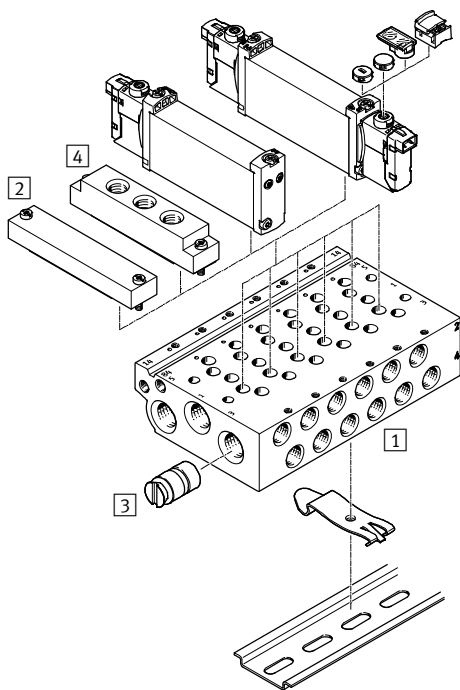
Solenoid valves VUVG ★, sub-base valves M5/M7

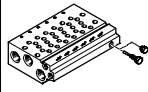
Accessories – Ordering data

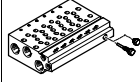




Order code – Manifold rails

VABM	- L1	- 10	- G18	-
Valve manifold parts			Number of valve positions	
Manifold rail	VABM		2 to 10, 12, 14 and 16	
Valve series			Ports 1, 3, 5	
VUVG	L1		G18 Thread G1/8	
Size				
10 mm			10	
Manifold rail with ports 1, 2, 3, 4, 5, 12/14, 82/84				
Port 2 and 4 with thread M5			W	
Port 2 and 4 with thread M7			HW	

Manifold assembly



		Part no.	Type
1 Manifold rail 	For size 10 mm (M5)	★ 566582	VABM-L1-10W-G18-2
		★ 566583	VABM-L1-10W-G18-3
		★ 566584	VABM-L1-10W-G18-4
		566585	VABM-L1-10W-G18-5
		★ 566586	VABM-L1-10W-G18-6
		566587	VABM-L1-10W-G18-7
		★ 566588	VABM-L1-10W-G18-8
		566589	VABM-L1-10W-G18-9
		★ 566590	VABM-L1-10W-G18-10
		566591	VABM-L1-10W-G18-12
		566592	VABM-L1-10W-G18-14
		566593	VABM-L1-10W-G18-16

		Part no.	Type		
1 Manifold rail 	For size 10 mm (M7)	★ 566606	VABM-L1-10HW-G18-2		
		★ 566607	VABM-L1-10HW-G18-3		
		★ 566608	VABM-L1-10HW-G18-4		
		566609	VABM-L1-10HW-G18-5		
		★ 566610	VABM-L1-10HW-G18-6		
		566611	VABM-L1-10HW-G18-7		
		★ 566612	VABM-L1-10HW-G18-8		
		566613	VABM-L1-10HW-G18-9		
		★ 566614	VABM-L1-10HW-G18-10		
		566615	VABM-L1-10HW-G18-12		
		566616	VABM-L1-10HW-G18-14		
		566617	VABM-L1-10HW-G18-16		
		2 Blanking plate 	For size 10 mm	★ 566495	VABB-L1-10-W
		3 Blanking plug 	Separator for pressure zones	569994	VABD-6-B
		4 Supply plate 	For M5	569991	VABF-L1-10-P3A4-M5
For M7	569992		VABF-L1-10-P3A4-M7		
Seals for in-line valves (10 pieces incl. 20 screws)					
	For size 10 mm	566674	VABD-L1-10B-S-M7		

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Valves

Solenoid valves VUVG ★, sub-base valves G1/8

Data sheet

Technical data		Download CAD data → www.festo.com		
		VUVG-BK		
Valve function		T32-A	M52-A	B52
Normal position		C ¹⁾	–	–
Design		Piston spool with sealing ring		
Pneumatic reset method		Yes	Yes	–
Port	2, 4	G1/8 in manifold rail		
Type of mounting		On manifold rail		
Electrical connection		Via electrical connection box		
Nominal operating voltage	[V DC]	24 ±10%		
Power	[W]	0.7		
Duty cycle	[%]	100		
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)		

Technical data		Download CAD data → www.festo.com						
		VUVG-B						
		T32-A	T32-M	M52-A	B52	M52-M	P53	
Valve function								
Normal position		C ¹⁾ U ²⁾ H ⁴⁾	C ¹⁾ U ²⁾ H ⁴⁾	–	–	–	C ¹⁾ U ²⁾ E ³⁾	
Design		Piston spool with sealing cartridge						
Pneumatic reset method		Yes	No	Yes	–	No	–	
Mechanical reset method		No	Yes	No	–	Yes	Yes	
Port	1, 3, 5	G1/4 in manifold rail						
	2, 4	G1/8 in manifold rail						
	12/14, 82/84	M5 in manifold rail						
Vacuum operation at port 1		No	Only with external pilot air supply					
Type of mounting		On manifold rail						
Electrical connection		Via electrical connection box						
Nominal operating voltage	[V DC]	5, 12 and 24 ±10%						
Power	[W]	1, reduced to 0.35 with holding current reduction						
Duty cycle	[%]	100						
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)						

1) C=Normally closed.

2) U=Normally open/mid-position pressurised.

3) E=Normally exhausted.

4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.

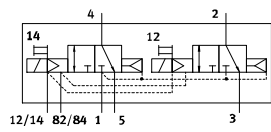
Operating conditions		VUVG-BK	VUVG-B
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature	[°C]	–5 ... +50	–5 ... +50, –5 ... +60 with holding current reduction
Temperature of medium	[°C]	–5 ... +50	–5 ... +50, –5 ... +60 with holding current reduction

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

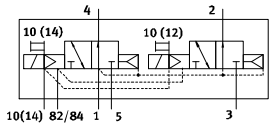
Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves G1/8

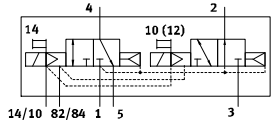
Data sheet – 2x 3/2-way valve



12/14 82/84 1 5 3

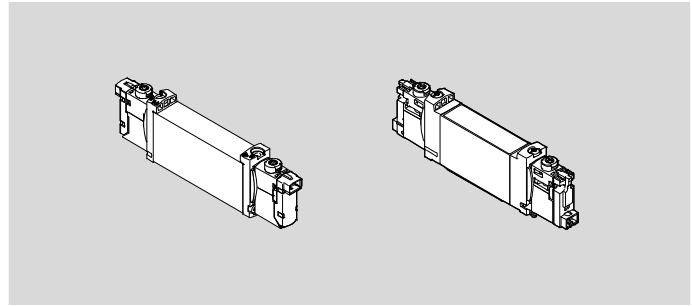


10(14) 82/84 1 5 3



14/10 82/84 1 5 3

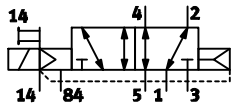
Internal or external pilot air supply



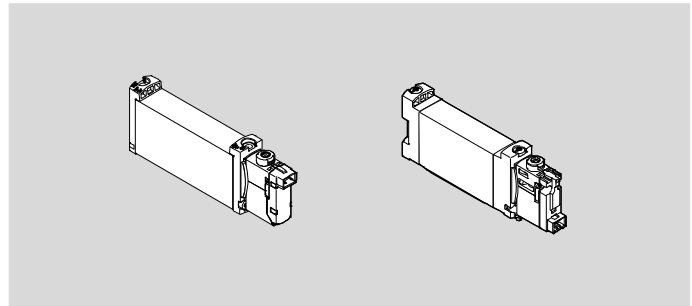
Technical data			Download CAD data → www.festo.com		
			VUVG-BK		VUVG-B
Valve function			T32-A	T32-A	T32-M
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8	3 ... 8
	External	[bar]	–	1.5 ... 10	–0.9 ... +10
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8	3 ... 8
Flow rate on manifold rail		[l/min]	350	510	410 ... 430
Switching time on/off		[ms]	13/20	12/25	11/18

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/2-way valve, single solenoid



Internal or external pilot air supply

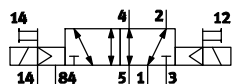


Technical data			Download CAD data → www.festo.com		
			VUVG-BK		VUVG-B
Valve function			M52-A	M52-A	M52-M
Operating pressure	Internal	[bar]	2.5 ... 7	2.5 ... 8	3 ... 8
	External	[bar]	–	–0.9 ... +10	–0.9 ... +8
Pilot pressure ¹⁾		[bar]	–	2.5 ... 8	3 ... 8
Flow rate on manifold rail		[l/min]	380	520	570
Switching time on/off		[ms]	14/24	14/24	13/37

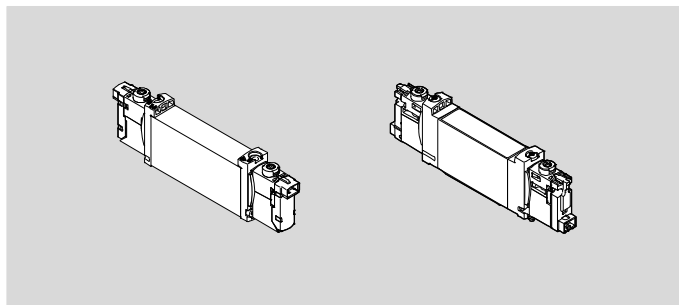
1) Minimum pilot pressure 50% of operating pressure.

Solenoid valves VUVG ★, sub-base valves G1/8

Data sheet – 5/2-way valve, double solenoid



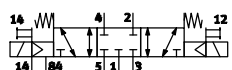
Internal or external pilot air supply



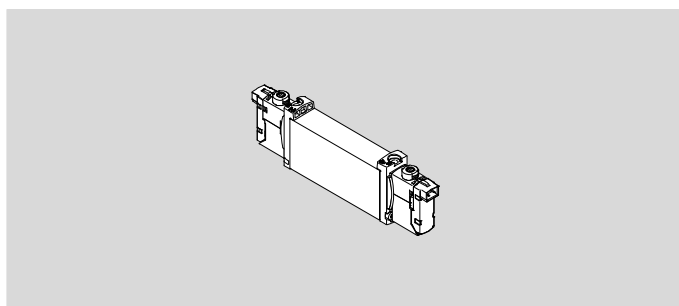
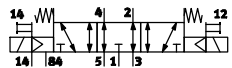
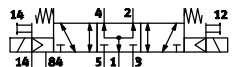
Technical data			Download CAD data → www.festo.com	
			VUVG-BK B52	VUVG-B B52
Operating pressure	Internal	[bar]	1.5 ... 7	1.5 ... 8
	External	[bar]	–	–0.9 ... +10
Pilot pressure ¹⁾		[bar]	–	1.5 ... 8
Flow rate on manifold rail		[l/min]	380	570
Changeover time		[ms]	8	8

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/3-way valve



Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com	
			VUVG-B P53	
Operating pressure	Internal	[bar]	3 ... 8	
	External	[bar]	–0.9 ... +10	
Pilot pressure ¹⁾		[bar]	3 ... 8	
Flow rate on manifold rail		[l/min]	460 ... 520	
Switching time on/off		[ms]	12/40	
Changeover time		[ms]	14	

1) Minimum pilot pressure 50% of operating pressure.

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves G1/8

Order code – VUVG-BK

VUVG	-	B	K	14	-	-	-	-	T	F	-	1	-	L	-	S
Type of directional control valve																
Sub-base, manifold valve including seal and screws																
B																
Design principle																
Piston spool with sealing ring																
K																
Size																
14 mm																
14																
Valve function																
2x 3/2-way valve, normally closed																
T32C																
5/2-way valve, single solenoid																
M52																
5/2-way valve, double solenoid																
B52																
Reset method																
Pneumatic spring with T32 and M52																
A																
With B52																
-																
Pilot air supply																
Internal																
-																
Manual override																
Non-detenting, detenting																
T																
Version																
S Core features																
Display																
L LED																
Circuitry																
- Without holding current reduction (HCR)																
Electrical connection																
H2 Connection pattern H, horizontal plug																
R8 Individual plug M8, 3-pin																
Nominal operating voltage																
1 24 V DC																
Pneumatic connection																
F In manifold rail																

08

Valves

Solenoid valves VUVG ★, sub-base valves G1/8

Order code – VUVG-B

VUVG	-	B	14	-	-	Z		F	-			L	-	-
Type of directional control valve														
Sub-base, manifold valve including seal and screws														
B														
Design principle														
Piston spool with sealing cartridge														
-														
Size														
14 mm														
14														
Valve function¹⁾														
2x 3/2-way valve, normally closed														
T32C														
2x 3/2-way valve, normally open														
T32U														
2x 3/2-way valve,														
1x normally open, 1x normally closed														
T32H														
5/2-way valve, single solenoid														
M52														
5/2-way valve, double solenoid														
B52														
5/3-way valve, mid-position closed														
P53C														
5/3-way valve, mid-position exhausted														
P53E														
5/3-way valve, mid-position pressurised														
P53U														
Reset method														
Pneumatic spring with T32 and M52														
A														
Mechanical spring with T32 and M52														
M														
With B52 and P53														
-														
Pilot air supply														
External														
Z														
Manual override														
Non-detenting, detenting														
T														
Detenting, without accessories														
Y														
Version														
- Extended features														
Accessories for valve/ connecting cable														
W1...4 ⁵⁾ Connection pattern H, not sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
C1...4 ⁵⁾ Connection pattern H, sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
N1...4 ⁴⁾ M8x1, 3-pin, straight: 1 = 2.5 m, 2 = 5 m; angled: 3 = 2.5 m, 4 = 5 m														
Display														
L LED														
Circuitry														
- Without holding current reduction (HCR)														
R ³⁾ With holding current reduction (HCR)														
Electrical connection														
H2 Connection pattern H, horizontal plug														
H3 Connection pattern H, vertical plug														
L1...4 ²⁾ With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
R8 ²⁾ Individual plug M8, 3-pin														
Nominal operating voltage														
1 24 V DC														
5 12 V DC														
4 5 V DC														
Pneumatic connection														
F In manifold rail														

2) Not with nominal operating voltage 4
 3) Only with nominal operating voltage 1, not in combination with electrical connection R8

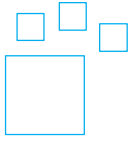
4) Straight: N1 = 2.5 m, N2 = 5 m
 Angled: N3 = 2.5 m, N4 = 5 m
 Only in combination with electrical connection R8

5) W1/C1 = 0.5 m, W2/C2 = 1 m,
 W3/C3 = 2.5 m, W4/C4 = 5 m
 Only in combination with electrical connection H2 or H3

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves G1/8

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Part no.	Type
Sub-base valve G1/8, 3/2-way valve	
8042574	VUVG-BK14-T32C-AT-F-1R8L-S
8042570	VUVG-BK14-T32C-AT-F-1H2L-S
Sub-base valve G1/8, 5/2-way single solenoid valve	
8042575	VUVG-BK14-M52-AT-F-1R8L-S
8042571	VUVG-BK14-M52-AT-F-1H2L-S

Part no.	Type
Sub-base valve G1/8, 5/2-way double solenoid valve	
8042576	VUVG-BK14-B52-T-F-1R8L-S
8042572	VUVG-BK14-B52-T-F-1H2L-S

1) All products in this table are easy to select and quick to order.

Solenoid valves VUVG ★, sub-base valves G1/8

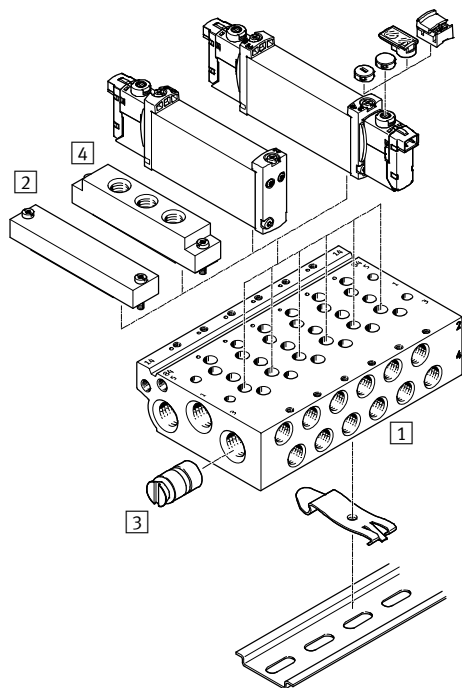
Accessories – Ordering data

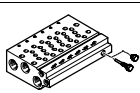




Order code – Manifold rails

VABM	-	L1	-	14	W	-	G14	-
Valve manifold parts								
Manifold rail	VABM							
Valve series								
VUVG	L1							
Size								
14 mm	14							
Manifold rail with ports 1, 2, 3, 4, 5, 12/14, 82/84								
For G1/8 sub-base valves	W							

Number of valve positions
2 to 10, 12, 14 and 16
Ports 1, 3, 5
G14 Thread G1/4

Manifold assembly



	Part no.	Type
1 Manifold rail		
	For G1/8	★ 566642 VABM-L1-14W-G14-2
		★ 566643 VABM-L1-14W-G14-3
		★ 566644 VABM-L1-14W-G14-4
		566645 VABM-L1-14W-G14-5
		★ 566646 VABM-L1-14W-G14-6
		566647 VABM-L1-14W-G14-7
		★ 566648 VABM-L1-14W-G14-8
		566649 VABM-L1-14W-G14-9
		★ 566650 VABM-L1-14W-G14-10
		566651 VABM-L1-14W-G14-12
		566652 VABM-L1-14W-G14-14
		566653 VABM-L1-14W-G14-16
	2 Blanking plate	
	For G1/8	★ 569989 VABB-L1-14
3 Blanking plug		
	Separator for pressure zones	569996 VABD-10-B
4 Supply plate		
	For G1/8	569993 VABF-L1-14-P3A4-G18
Seals for in-line valves (10 pieces incl. 20 screws)		
	For G1/8	566676 VABD-L1-14B-S-G18

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Valves

Solenoid valves VUVG ★, sub-base valves G1/4

Data sheet

Download CAD data → www.festo.com

Technical data		VUVG-B											
Valve function		T32-A			T32-M			M52-R	B52	M52-M	P53		
Normal position		C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾	U ²⁾	E ³⁾
Design		Piston spool with sealing cartridge											
Pneumatic spring reset method		Yes			No			Yes ⁵⁾	–	No	–		
Mechanical spring reset method		No			Yes			Yes ⁵⁾	–	Yes	Yes		
Port		1, 3, 5		G3/8 in manifold rail									
		2, 4		G1/4 in manifold rail									
		12/14, 82/84		M5 in manifold rail									
Vacuum operation at port 1		No			Only with external pilot air supply								
Type of mounting		On manifold rail											
Electrical connection		Via electrical connection box											
Nominal operating voltage		[V DC]	5, 12 and 24 ±10%										
Power		[W]	1, reduced to 0.35 with holding current reduction										
Duty cycle		[%]	100										
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with plug M8x1)											

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.
- 5) Combined reset method.

Operating conditions

Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]											
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)											
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction										
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction										

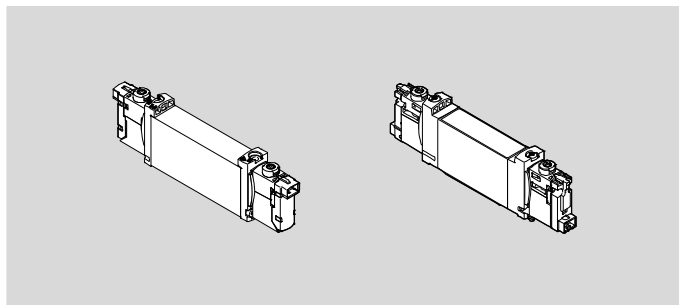
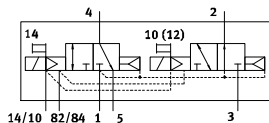
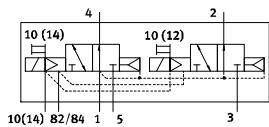
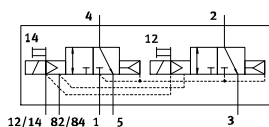
Materials

Housing		Wrought aluminium alloy											
Seals		HNBR, NBR											

Solenoid valves VUVG ★, sub-base valves G1/4

Data sheet – 2x 3/2-way valve

Internal or external pilot air supply



Technical data

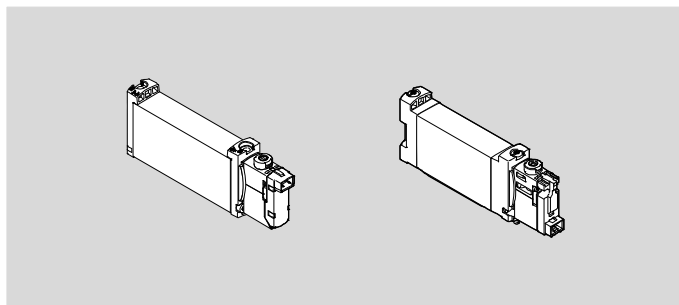
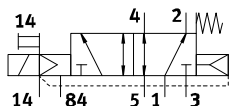
Download CAD data → www.festo.com

Valve function			VUVG-B	
			T32-A	T32-M
Operating pressure	Internal	[bar]	1.5 ... 8	3.5 ... 8
	External	[bar]	1.5 ... 10	-0.9 ... +10
Pilot pressure ¹⁾		[bar]	1.5 ... 8	3 ... 8
Flow rate on manifold rail		[l/min]	800	800
Switching time on/off		[ms]	13/27	15/22

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/2-way valve, single solenoid

Internal or external pilot air supply



Technical data

Download CAD data → www.festo.com

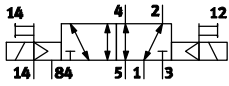
Valve function			VUVG-B	
			M52-R	M52-M
Operating pressure	Internal	[bar]	2.5 ... 8	3 ... 8
	External	[bar]	-0.9 ... +10	-0.9 ... +8
Pilot pressure ¹⁾		[bar]	2.5 ... 8	3 ... 8
Flow rate on manifold rail		[l/min]	1000	1000
Switching time on/off		[ms]	15/31	10/45

1) Minimum pilot pressure 50% of operating pressure.

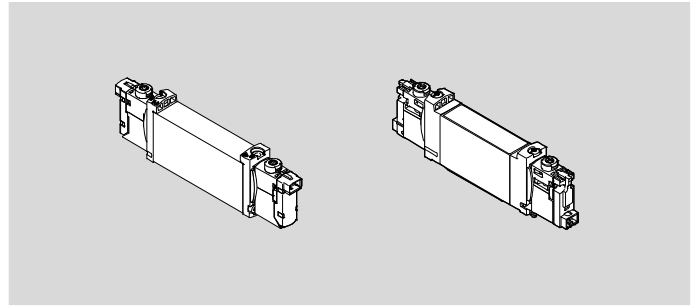
Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves G1/4

Data sheet – 5/2-way valve, double solenoid



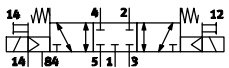
Internal or external pilot air supply



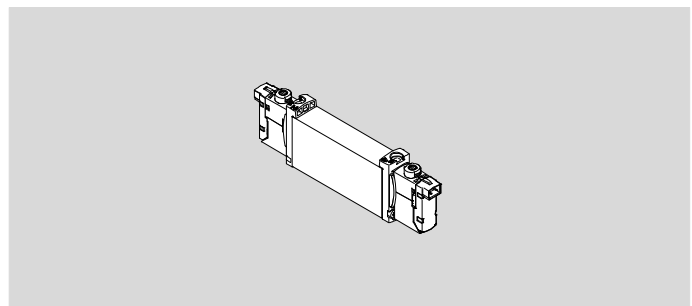
Technical data			Download CAD data → www.festo.com
Valve function			VUVG-B B52
Operating pressure	Internal	[bar]	1.5 ... 8
	External	[bar]	-0.9 ... +10
Pilot pressure ¹⁾		[bar]	1.5 ... 8
Flow rate on manifold rail		[l/min]	1000
Changeover time		[ms]	11

1) Minimum pilot pressure 50% of operating pressure.

Data sheet – 5/3-way valve



Internal or external pilot air supply



Technical data			Download CAD data → www.festo.com
Valve function			VUVG-B P53
Operating pressure	Internal	[bar]	3 ... 8
	External	[bar]	-0.9 ... +10
Pilot pressure ¹⁾		[bar]	3 ... 8
Flow rate on manifold rail		[l/min]	950
Switching time on/off		[ms]	15/48
Changeover time		[ms]	29

1) Minimum pilot pressure 50% of operating pressure.

Solenoid valves VUVG ★, sub-base valves G1/4

Order code – VUVG-B

VUVG	-	B	18	-	-	Z		F	-			L	-	-
Type of directional control valve														
Sub-base, manifold valve including seal and screws														
Design principle														
Piston spool with sealing cartridge -														
Size														
18 mm 18														
Valve function¹⁾														
2x 3/2-way valve, normally closed T32C														
2x 3/2-way valve, normally open T32U														
2x 3/2-way valve, 1x normally open, 1x normally closed T32H														
5/2-way valve, single solenoid M52														
5/2-way valve, double solenoid B52														
5/3-way valve, mid-position closed P53C														
5/3-way valve, mid-position exhausted P53E														
5/3-way valve, mid-position pressurised P53U														
Reset method														
Pneumatic spring with T32 and M52 A														
Mechanical spring with T32 and M52 M														
Pneu./mech. spring with M52 R														
With B52 and P53 -														
Pilot air supply														
External Z														
Manual override														
Non-detenting, detenting T														
Detenting, without accessories Y														
Version														
- Extended features														
Accessories for valve/ connecting cable														
W1...4⁵⁾ Connection pattern H, not sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
C1...4⁵⁾ Connection pattern H, sheathed, 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
N1...4⁴⁾ M8x1, 3-pin, straight: 1 = 2.5 m, 2 = 5 m; angled: 3 = 2.5 m, 4 = 5 m														
Display														
L LED														
Circuitry														
- Without holding current reduction (HCR)														
R³⁾ With holding current reduction (HCR)														
Electrical connection														
H2 Connection pattern H, horizontal plug														
H3 Connection pattern H, vertical plug														
S2 Connection pattern S, horizontal plug														
L1...4²⁾ With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m														
R8²⁾ Individual plug M8, 3-pin														
Nominal operating voltage														
1 24 V DC														
5 12 V DC														
4 5 V DC														
Pneumatic connection														
F In manifold rail														

2) Not with nominal operating voltage 4
 3) Only with nominal operating voltage 1, not in combination with electrical connection R8

4) Straight: N1 = 2.5 m, N2 = 5 m
 Angled: N3 = 2.5 m, N4 = 5 m
 Only in combination with electrical connection R8

5) W1/C1 = 0.5 m, W2/C2 = 1 m, W3/C3 = 2.5 m, W4/C4 = 5 m
 Only in combination with electrical connection H2 or H3

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

Solenoid valves VUVG ★, sub-base valves G1/4

Accessories – Ordering data

Order code – Manifold rails

VABM	- L1	- 18	W	- G38	-
Valve manifold parts					
Manifold rail	VABM				
Valve series					
VUVG	L1				
Size					
18 mm	18				
Manifold rail with ports 1, 2, 3, 4, 5, 12/14, 82/84					
Port 2 and 4 with thread G1/4	W				

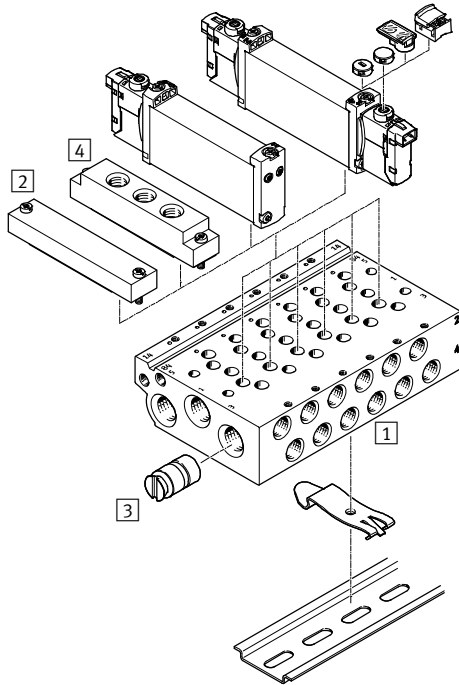
Number of valve positions

2 to 10, 12, 14 and 16

Ports 1, 3, 5

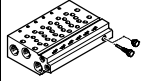
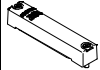

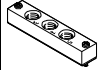

G38 Thread G3/8

Manifold assembly

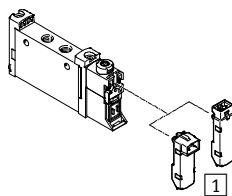


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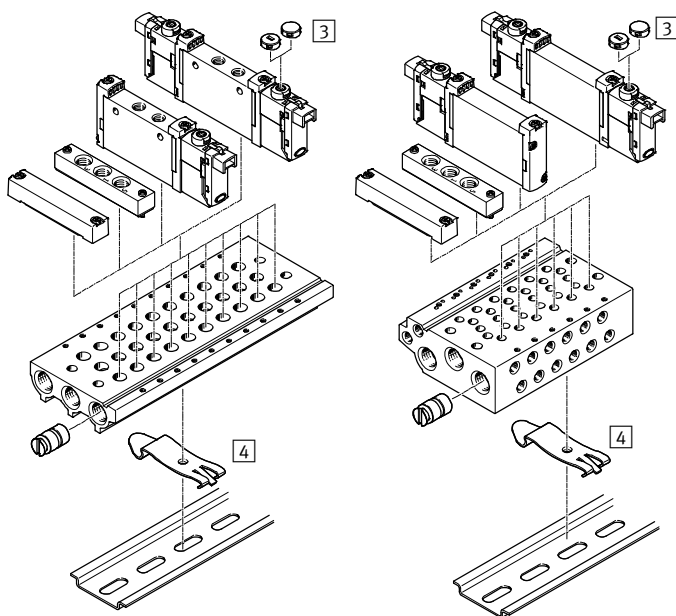
Valves

		Part no.	Type
1	Manifold rail		
	For G1/4	574467	VABM-L1-18W-G38-2
		574468	VABM-L1-18W-G38-3
		574469	VABM-L1-18W-G38-4
		574470	VABM-L1-18W-G38-5
		574471	VABM-L1-18W-G38-6
		574472	VABM-L1-18W-G38-7
		574473	VABM-L1-18W-G38-8
		574474	VABM-L1-18W-G38-9
		574475	VABM-L1-18W-G38-10
		574476	VABM-L1-18W-G38-12
		574477	VABM-L1-18W-G38-14
		574478	VABM-L1-18W-G38-16
2	Blanking plate		
	For G1/4	★ 574482	VABB-L1-18
3	Blanking plug		
	Separator for pressure zones	574483	VABD-14-B
4	Supply plate		
	For G1/4	574481	VABF-L1-18-P3A4-G14
Seals for in-line valves (10 pieces incl. 20 screws)			
	For G1/4	574480	VABD-L1-18B-S-G14

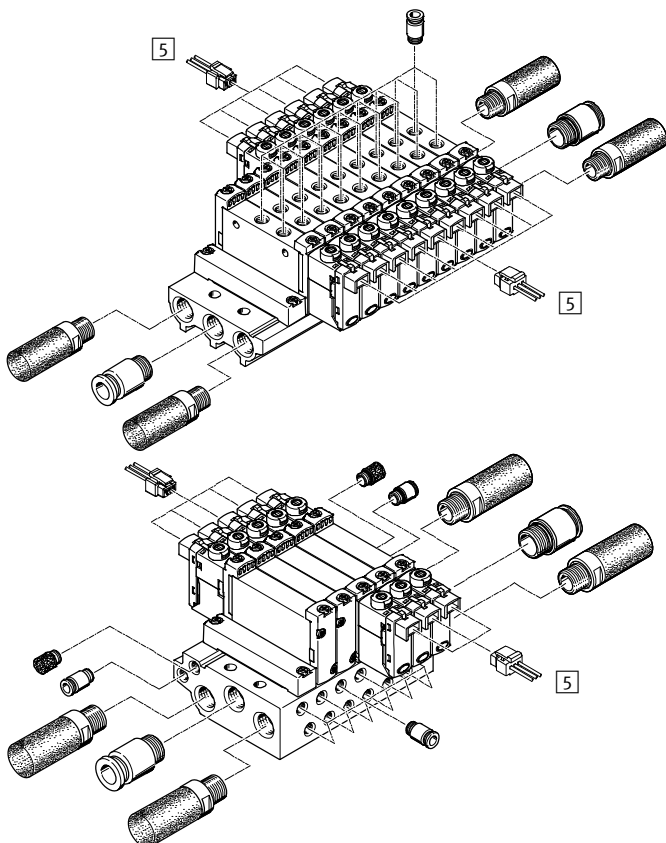
Electrical connection boxes



System overview



Accessories overview



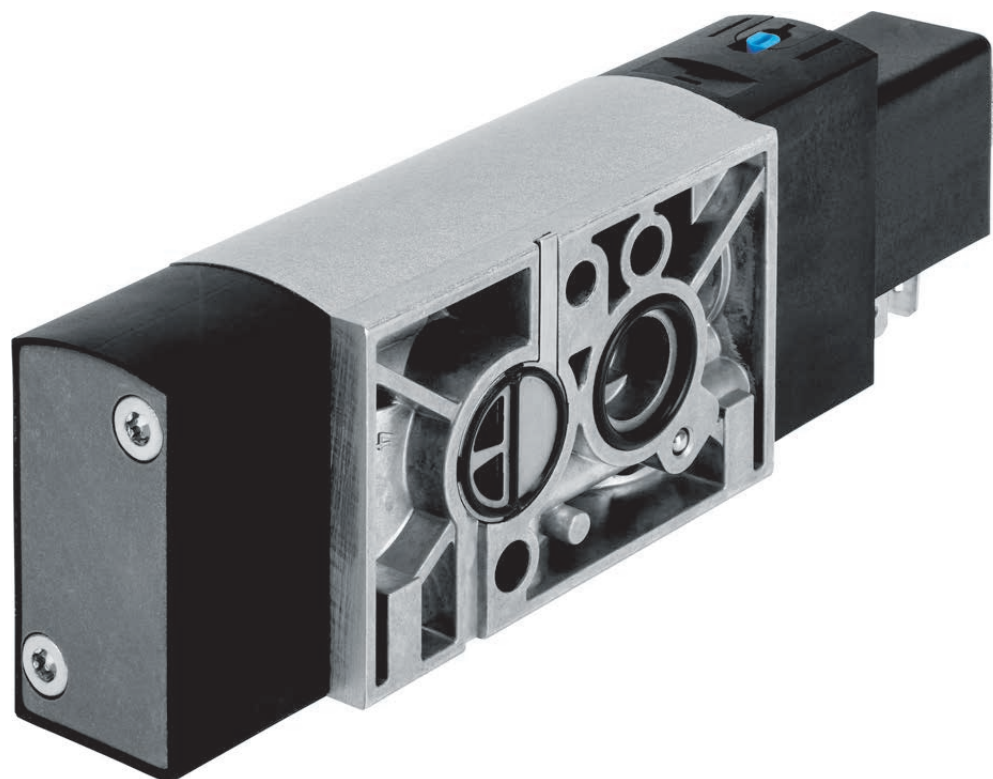
Accessories – Ordering data

		Part no.	Type		
1 Electrical connection boxes, connection pattern H, horizontal plug					
	12 V DC	★ 566714	VAVE-L1-1VH2-LP		
	24 V DC				
	24 V DC	★ 566716	VAVE-L1-1H2-LR		
Connection pattern H, vertical plug					
	12 V DC		566715 VAVE-L1-1VH3-LP		
	24 V DC				
	24 V DC		566717 VAVE-L1-1H3-LR		
With 2x flying leads					
	24 V DC		566726 VAVE-L1-1L1-LR		
			566727 VAVE-L1-1L2-LR		
			566728 VAVE-L1-1L3-LR		
			566729 VAVE-L1-1L4-LR		
	12 V DC 24 V DC		566722 VAVE-L1-1VL1-LP		
			566723 VAVE-L1-1VL2-LP		
			566724 VAVE-L1-1VL3-LP		
			566725 VAVE-L1-1VL4-LP		
		Individual plug M8, 3-pin			
			12 V DC	★ 573919	VAVE-L1-1VR8-LP
24 V DC					
24 V DC			573920 VAVE-L1-1R8-LR		
With cable					
	12 V DC 24 V DC		573941 VAVE-L1-1VK6-LP		
		★ 573942	VAVE-L1-1VK7-LP		
			573943 VAVE-L1-1VK8-LP		
			573944 VAVE-L1-1VK9-LP		
	24 V DC		573945 VAVE-L1-1K6-LR		
			573946 VAVE-L1-1K7-LR		
			573947 VAVE-L1-1K8-LR		
			573948 VAVE-L1-1K9-LR		
3 Covers for manual override					
	Covered	540898	VMPA-HBV-B		
	Non-detenting	540897	VMPA-HBT-B		
4 H-rail mounting					
	2 pieces	★ 569998	VAME-T-M4		
5 Plug socket with cable, connection pattern H					
	0.5 m	★ 566654	NEBV-H1G2-KN-0.5-N-LE2		
	1 m	★ 566655	NEBV-H1G2-KN-1-N-LE2		
	2.5 m	★ 566656	NEBV-H1G2-KN-2.5-N-LE2		
	5 m		566657 NEBV-H1G2-KN-5-N-LE2		
	0.5 m	★ 566658	NEBV-H1G2-P-0.5-N-LE2		
	1 m	★ 566659	NEBV-H1G2-P-1-N-LE2		
	2.5 m	★ 566660	NEBV-H1G2-P-2.5-N-LE2		
	5 m		566661 NEBV-H1G2-P-5-N-LE2		
Inscription label holder					
	10 pieces	570818	ASLR-D-L1		

Electrically and pneumatically actuated directional control valves > Universal directional control valves >

08

Valves



NAMUR connection pattern

- + ...to VDE/VDI 3845
- + Wide choice of EX solenoid systems, IEC Ex, FM EX
- + Can be converted from 5/2 to 3/2-way function

Electrically and pneumatically actuated directional control valves ›
Standards-based directional control valves ›

NAMUR solenoid valves

VSNC 


Electrically and pneumatically actuated directional control valves > Standards-based directional control valves >

NAMUR solenoid valves


VSNC

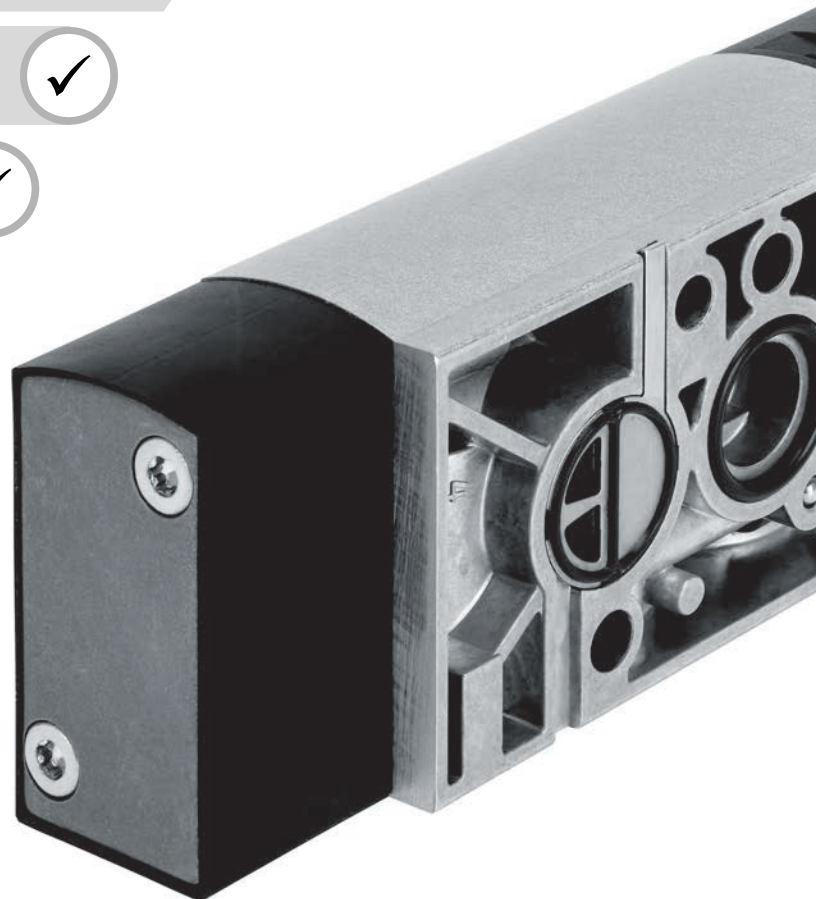
 Overview, configuration and ordering
→ www.festo.com/catalogue/vsnc



 Additional information, support and user documentation
→ www.festo.com/sp/vsnc



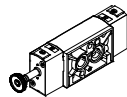
 Quick ordering of basic designs
→ page 972, 974



- + Connection G1/4, NPT 1/4
- + Flow rate 900 ... 1350 l/min
- + Voltage 12, 24, 48 V DC, 24, 48, 120, 230 V AC
- + Namur connection pattern to VDE/VDI 3845
- + Electrically actuated, piloted
- + Mechanical spring return
- + Wide choice of EX solenoid systems, IEC Ex, FM EX
- + Can be converted from 5/2 to 3/2-way function

Product range overview

VSNC-F8



- Material of valve cap: Plastic/metal
- Material of armature: Brass
- Pilot air (incoming air armature tube), unprotected

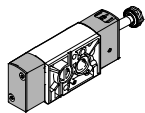
Version	Type	Pneumatic port 1, 3, 5	Pneumatic port 2, 4, based on standard	Standard nominal flow rate [l/min]	→ Page
5/2-way or 3/2-way valve, convertible, single solenoid					
	VSNC-FC-M52-MD-G14-F8	G1/4	VDI/VDE 3845 NAMUR 1/4	1250	971
	VSNC-FC-M52-MD-N14-F8	NPT1/4			
	VSNC-FC-M52-MD-G14-F8-1A1	G1/4			
5/2-way valve, double solenoid					
	VSNC-F-B52-D-G14-F8	G1/4	VDI/VDE 3845 NAMUR	1350	vsnc
	VSNC-F-B52-D-N14-F8	G1/4			
5/3-way valve					
	VSNC-F-P53C-MD-G14-F8	G1/4	VDI/VDE 3845 NAMUR	1250	vsnc
	VSNC-F-P53U-MD-G14-F8	G1/4		950	
	VSNC-F-P53E-MD-G14-F8	G1/4		1050	
	VSNC-F-P53C-MD-N14-F8	NPT1/4		1250	
	VSNC-F-P53-U-MD-N14-F8	NPT1/4		950	
	VSNC-F-P53-E-MD-G14-F8	NPT1/4		1050	

Electrically and pneumatically actuated directional control valves > Standards-based directional control valves >

Solenoid valves VSNC ★

Product range overview

VSNC-F ... -FN – Piston spool

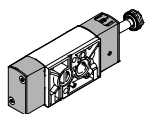


- Design: Piston spool
- Material of valve cap: Aluminium/metal
- Material of armature: Stainless steel
- Pilot air (incoming air armature tube), protected

Version	Type	Pneumatic port 1, 3, 5	Pneumatic port 2, 4, based on standard	Standard nominal flow rate [l/min]	→ Page
5/2-way or 3/2-way valve ...-FN, convertible, single solenoid					
	VSNC-FC-M52-MD-G14-FN	G1/4	VDI/VDE 3845 NAMUR	1250	973
	VSNC-FC-M52-MD-N14-FN	NPT1/4-18			
	VSNC-FC-M52-MD-G14-FN-1A1-EX4-A	G1/4			
	VSNC-FC-M52-MD-N14-FN-1A1-EX4-A	NPT1/4-18			
	VSNC-FC-M52-MD-G14-GN-1A1+G	G1/4			
	VSNC-FC-M52-MD-G14-FN-3AA1+G	G1/4			
5/2-way valve ...-FN, double solenoid					
	VSNC-F-B52-D-G14-FN	G1/4	VDI/VDE 3845 NAMUR	1350	vsnc
	VSNC-F-B52-D-N14-FN	NPT1/4-18			
	VSNC-F-B52-D-G14-FN-1A1-EX4-A	G1/4			
	VSNC-F-B52-D-N14-FN-1A1-EX4-A	NPT1/4-18			
5/3-way valve ...-FN					
	VSNC-F-P53C-MD-G14-FN	G1/4	VDI/VDE 3845 NAMUR	1250	vsnc
	VSNC-F-P53U-MD-G14-FN			950	
	VSNC-F-P53E-MD-G14-FN			1050	
	VSNC-F-P53C-MD-N14-FN	NPT1/4-18		1250	
	VSNC-F-P53U-MD-N14-FN			950	
	VSNC-F-P53E-MD-N14-FN			1050	

Product range overview

VSNC-FT ... -FN – Poppet seat



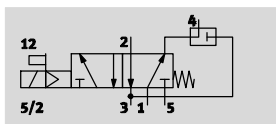
- Design: Poppet seat
- Material of valve cap: Aluminium/metal
- Material of armature: Stainless steel
- Pilot air (incoming air armature tube), protected

Version	Type	Pneumatic port 1, 3, 5	Pneumatic port 2, 4, based on standard	Standard nominal flow rate [l/min]	→ Page
5/2-way or 3/2-way valve ...-FN, convertible, single solenoid					
	VSNC-FTC-M52-MD-G14-FN	G1/4	VDI/VDE 3845 NAMUR	800	vsnc
	VSNC-FTC-M52-MD-N14-FN	NPT1/4-18			
	VSNC-FTC-M52-MD-G14-FN-1A1	G1/4			
5/2-way valve ...-FN, double solenoid					
	VSNC-FT-B52-D-G14-FN	G1/4	VDI/VDE 3845 NAMUR	1000	vsnc
	VSNC-FT-B52-D-N14-FN	NPT1/4-18			
	VSNC-FT-B52-D-G14-FN-1A1	G1/4			

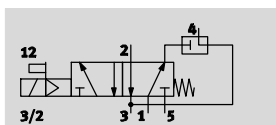
Data sheet – VSNC-F8

Function¹⁾




5/2-way valve

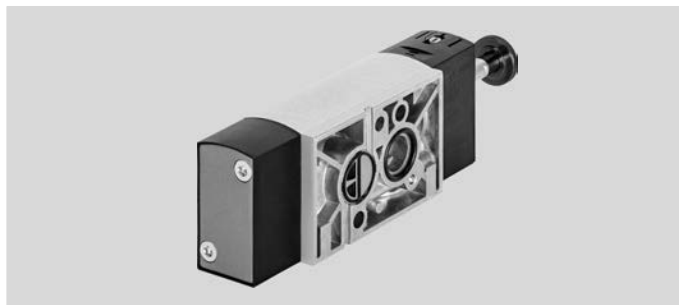


3/2-way valve with exhaust return



1) Can be converted by exchanging the seal plate

-  Voltage
24 V DC
-  Operating pressure
2.5 ... 10 bar
-  Temperature range
-20 ... +60°C



General technical data

	VSNC-FC- ... -G14-F8 VSNC-FC- ... -N14-F8	VSNC-FC- ... -G14-F8-1B2	VSNC-FC- ... -G14-F8-1A1
Valve function	5/2-way or 3/2-way, convertible		
Width [mm]	32		
Design	Piston spool		
Reset method	Mechanical spring		
Type of control	Piloted		
Manual override	Detenting, non-detenting		
Type of mounting	Via through-hole		
Mounting position	Any		
Max. tightening torque for valve mounting [Nm]	3.5		-
Non-overlapping	Yes		
Standard nominal flow rate 1 → 2 [l/min]	1250		
Exhaust return 4 → 3 [l/min]	110		
Pneumatic port 1, 3, 5	G1/4, NPT1/4-18	G1/4	G1/4
2, 4	Connection pattern as per NAMUR		
Conforms to standard	VDI/VDE 3845 NAMUR		
Product weight [g]	335	390	335

08

Valves

Solenoid valves VSNC ★

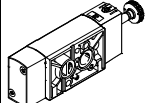
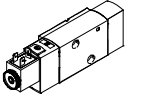
Data sheet – VSNC-F8

Operating and environmental conditions		VSNC-FC- ... -G14-F8 VSNC-FC- ... -N14-F8	VSNC-FC- ... -G14-F8-1B2	VSNC-FC- ... -G14-F8-1A1
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	2.5 ... 10		
Ambient temperature	[°C]	-20 ... +60		
Temperature of medium	[°C]	-20 ... +60		

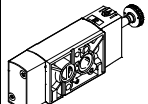
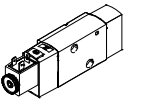
Electrical data		VSNC-FC- ... -G14-F8 VSNC-FC- ... -N14-F8	VSNC-FC- ... -G14-F8-1B2	VSNC-FC- ... -G14-F8-1A1
Electrical connection		-	3-pin plug, type B to industry standard (11 mm)	To EN 175301-801, type A
Coil characteristics, 24 V DC	[W]	See solenoid coil, to be ordered separately	3.3	2.6
Permissible voltage fluctuations	[%]	-	±10	±10
Duty cycle	[%]	-	100	100
Degree of protection		-	IP65, IP67	IP65, IP67 to IEC 60529 with plug socket
Switching time on	[ms]	11	11	11
Switching time off	[ms]	38	48	48

Materials	
Housing	Wrought aluminium alloy
Seals	NBR
-	RoHS-compliant

★ Quick ordering¹⁾

Ordering data – Valves		Directional control valve without solenoid coil		Directional control valve with 24 V DC solenoid coil, without socket	
	Part no.	Type		Part no.	Type
	577257	VSNC-FC-M52-MD-G14-F8		577295	VSNC-FC-M52-MD-G14-F8-1B2

1) All products in this table are easy to select and quick to order.

Ordering data – Valves		Directional control valve without solenoid coil		Directional control valve with 24 V DC solenoid coil, without socket	
	Part no.	Type		Part no.	Type
	577262	VSNC-FC-M52-MD-N14-F8		8074945	VSNC-FC-M52-MD-G14-F8-1A1

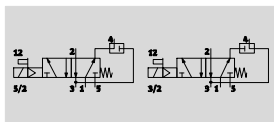
08


Valves


Data sheet – VSNC-FN

Function

3/2-way or 5/2-way valve,
convertible



 Operating pressure
2.5 ... 8 bar

 Temperature range
-20 ... +60°C



General technical data		VSNC- ... -G14-FN	VSNC- ... -N14-FN
Valve function		5/2-way or 3/2-way, convertible	
Width	[mm]	32	
Design		Piston spool	
Reset method		Mechanical spring	
Type of control		Piloted	
Pilot air supply		Internal	
Manual override		Detenting, non-detenting	
Mounting position		Any	
Non-overlapping		Yes	
Exhaust air function		With flow control	
Connection for venting hole		Not ducted	
Standard nominal flow rate	1 → 2 [l/min]	1250	
Exhaust return flow rate	4 → 3 [l/min]	110	
Pneumatic port	1, 3, 5 2, 4	G1/4	NPT1/4-18
Connection pattern		Connection pattern as per NAMUR	
Conforms to standard		VDI/VDE 3845 (NAMUR)	
Product weight	[g]	415	

Operating and environmental conditions		VSNC- ... -G14-FN	VSNC- ... -N14-FN
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	2.5 ... 8	
Ambient temperature	[°C]	-20 ... +60	
Temperature of medium	[°C]	-20 ... +60	

08

Valves

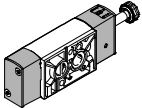
Solenoid valves VSNC ★

Data sheet – VSNC-FN

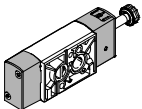
Electrical data		VSNC- ... -G14-FN	VSNC- ... -N14-FN
Coil characteristics, 24 V DC	[W]	See solenoid coil, to be ordered separately	
Switching time on	[ms]	32	
Switching time off	[ms]	92	

Materials	
Housing	Wrought aluminium alloy
Seals	NBR
–	RoHS-compliant

★ Quick ordering¹⁾

Ordering data – Valves	
Directional control valve without solenoid coil	
Part no.	Type
 577267	VSNC-FC-M52-MD-G14-FN

1) All products in this table are easy to select and quick to order.

Ordering data – Valves	
Directional control valve without solenoid coil	
Part no.	Type
 577272	VSNC-FC-M52-MD-N14-FN

Solenoid valves VSNC ★

Order code

Nominal operating voltage

-	None
1A	24 V AC/50-60 Hz
3A	230 V AC/50-60 Hz
3W	230 V AC/240 V AC/50-60 Hz
16B	120 V AC/60 Hz and 110 V AC/50-60 Hz
1	24 V DC
5	12 V DC

Electrical connection

-	None
A1	Connecting cable type A, to EN 175301
B2	Connecting cable type B, industry standard
C3	Cable, 3 m
K11	Cable with insulating conduit connection

Degree of protection, electrical system

-	Standard
S8	IP67

EU certification

-	None
EX2	II 3GD
EX4	II 2GD

Approval

-	None
U4	Class 1 Div 1 to NEC 500

Type of ignition protection

-	None
A	Intrinsically safe
M	Encapsulation
N	Non-sparking

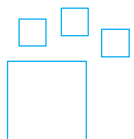
Electrical accessories, valve

-	None
G	Connector socket without LED

08

Valves

Ordering – Product options



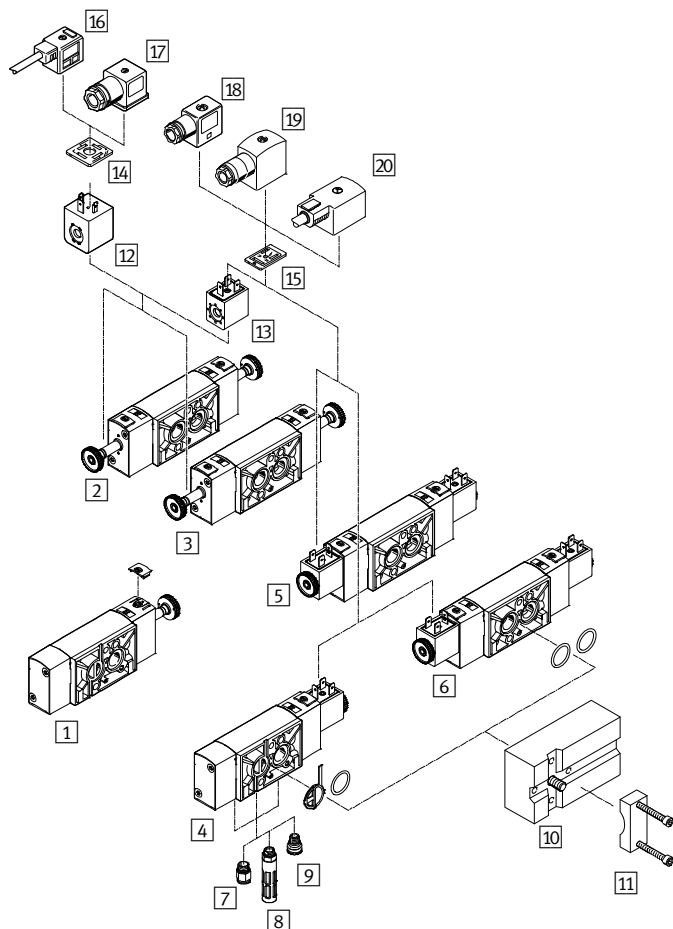
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

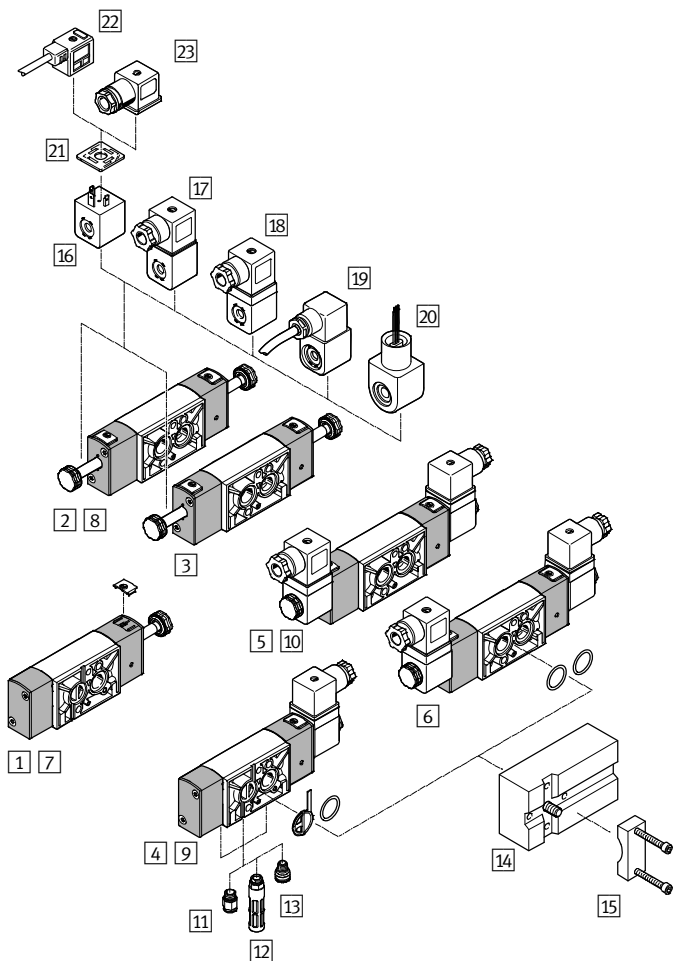
Accessories – Ordering data – VSNC-F8



		→ Page/ online
Solenoid valves VSNC- ... -F8		
1	3/2-way and 5/2-way single solenoid valve with reversible seal, plastic cover cap, brass armature tube for controlling single-acting or double-acting drives	971
2	5/2-way double solenoid valve with plastic cover cap, brass armature tube for controlling double-acting drives	vsnc
3	5/3-way single solenoid valve, normally open, closed or exhausted with plastic cover cap, brass armature tube for controlling double-acting drives	vsnc
4	3/2-way and 5/2-way single solenoid valve with reversible seal, plastic cover cap, brass armature tube and 24 V DC solenoid coil for controlling single-acting or double-acting drives	971
5	5/2-way double solenoid valve with plastic cover cap, brass armature tube and 24 V DC solenoid coil for controlling double-acting drives	vsnc
6	5/3-way single solenoid valve, normally open, closed or exhausted with plastic cover cap, brass armature tube and 24 V DC solenoid coil for controlling double-acting drives	vsnc
Accessories		
7	Push-in fitting QS	980
8	Silencer U	980
9	Exhaust protection VABD-D3-SN-G14	980
10	Connection set VABS-S7-S-G14	979
11	Mounting bracket VAME-S7-Y	979
12	Solenoid coil VACF-A	979
13	Solenoid coil VACF-B	979
14	Illuminating seal MC-LD	980
15	Illuminating seal MF-LD	980
16	Connecting cable KMC	980
17	Plug socket MSSD-C	980
18	Plug socket MSSD-F	980
19	Plug socket MSSD-F-S	980
20	Connecting cable KMF	980

Solenoid valves VSNC ★

Accessories – Ordering data – VSNC-...-FN

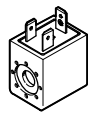
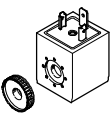


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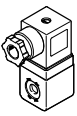
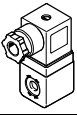
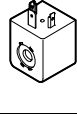
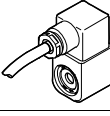

Valves

	→ Page/ online
Solenoid valves VSNC-F- ... -FN – Piston slide	
1	3/2-way and 5/2-way single solenoid valve with reversible seal, aluminium cover cap, stainless steel armature tube 973
2	5/2-way double solenoid valve with aluminium cover cap, stainless steel armature tube VSNC
3	5/3-way single solenoid valve, normally open, closed or exhausted with aluminium cover cap, stainless steel armature tube VSNC
4	3/2-way and 5/2-way single solenoid valve with reversible seal, aluminium cover cap, stainless steel armature tube and Ex ia solenoid coil 973
5	5/2-way double solenoid valve with aluminium cover cap, stainless steel armature tube and Ex ia solenoid coil VSNC
6	5/3-way single solenoid valve, normally open, closed or exhausted with aluminium cover cap, stainless steel armature tube and Ex ia solenoid coil VSNC
7	3/2-way and 5/2-way single solenoid valve with reversible seal, aluminium cover cap, stainless steel armature tube VSNC
Solenoid valves VSNC-F- ... -FN – Poppet seat	
7	3/2-way and 5/2-way single solenoid valve with reversible seal, aluminium cover cap, stainless steel armature tube VSNC
8	5/2-way double solenoid valve with aluminium cover cap, stainless steel armature tube VSNC
9	3/2-way and 5/2-way single solenoid valve with reversible seal, aluminium cover cap, stainless steel armature tube and 24 V DC solenoid coil VSNC
10	5/2-way double solenoid valve with aluminium cover cap, stainless steel armature tube and 24 V DC solenoid coil VSNC
Accessories	
11	Push-in fitting QS 980
12	Silencer U 980
13	Exhaust protection VABD-D3-SN-G14 980
14	Connection set VABS-S7-S-G14 979
15	Mounting bracket VAME-S7-Y 979
16	Solenoid coil VACN-N 979
17	Solenoid coil VACN-N- ... -Ex2-N 979
18	Solenoid coil VACN-N- ... -Ex4-A 979
19	Solenoid coil VACN-N- ... -Ex4-M 979
20	Solenoid coil VACN-N- ... -U4-M 979
21	Illuminating seal MC-LD 980
22	Connecting cable KMC 980
23	Plug socket MSSD-C -

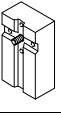
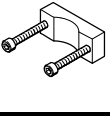
Accessories – Ordering data – VSNC-F8

	Description	Part no.	Type
Solenoid coil VACF-B		Technical data online: → vacf	
	Electrical connection to Festo standard for MSSD-F	8030801	VACF-B-B2-5
		8030802	VACF-B-B2-1
		8030803	VACF-B-B2-7
		8030804	VACF-B-B2-1A
		8030805	VACF-B-B2-7A
		8030806	VACF-B-B2-16B
		8030808	VACF-B-B2-3W
Solenoid coil VACF-A			
	Type A to EN 175301-803	8030821	VACF-A-A1-5
		★ 8030822	VACF-A-A1-1
		8030823	VACF-A-A1-7
		8030824	VACF-A-A1-1A
		8030825	VACF-A-A1-7A
		8030826	VACF-A-A1-16B
		8030828	VACF-A-A1-3W

Accessories – Ordering data – VSNC-FN






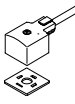
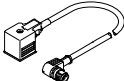




	Description	Part no.	Type
Solenoid coil VACN-N		Technical data online: → vacn	
	Type of ignition protection: intrinsically safe Ex ia	8029139	VACN-N-A1-1-EX-4-A
	Type of ignition protection: non-sparking Ex nA	8029136	VACN-N-A1-1-EX2-N
		8029137	VACN-N-A1-16B-EX2-N
		8029138	VACN-N-A1-3A-EX2-N
	Degree of protection IP65 with socket	★ 8029144	VACN-N-A1-1
		8029134	VACN-N-A1-16B
		8029135	VACN-N-A1-3A
	Type of ignition protection: encapsulated Ex me	8029141	VACN-N-K1-3A-EX4-M
		8029142	VACN-N-K1-16B-EX4-M
		8029143	VACN-N-K1-1-EX4-M
	Type of ignition protection: encapsulated AEx m, Class 1, Div 1 to NEC 500	8029140	VACN-N-K11-3A-0.5-U4-M
		8029145	VACN-N-K11-16B-0,5-U4-M
		8029146	VACN-N-K11-1-0,5-U4-M

Accessories – Ordering data

	Description	Part no.	Type
Sub-base VABS		Technical data online: → vacf	
		563396	VABS-S7-S-G14
Mounting bracket VAME			
		563403	VAME-S7-Y

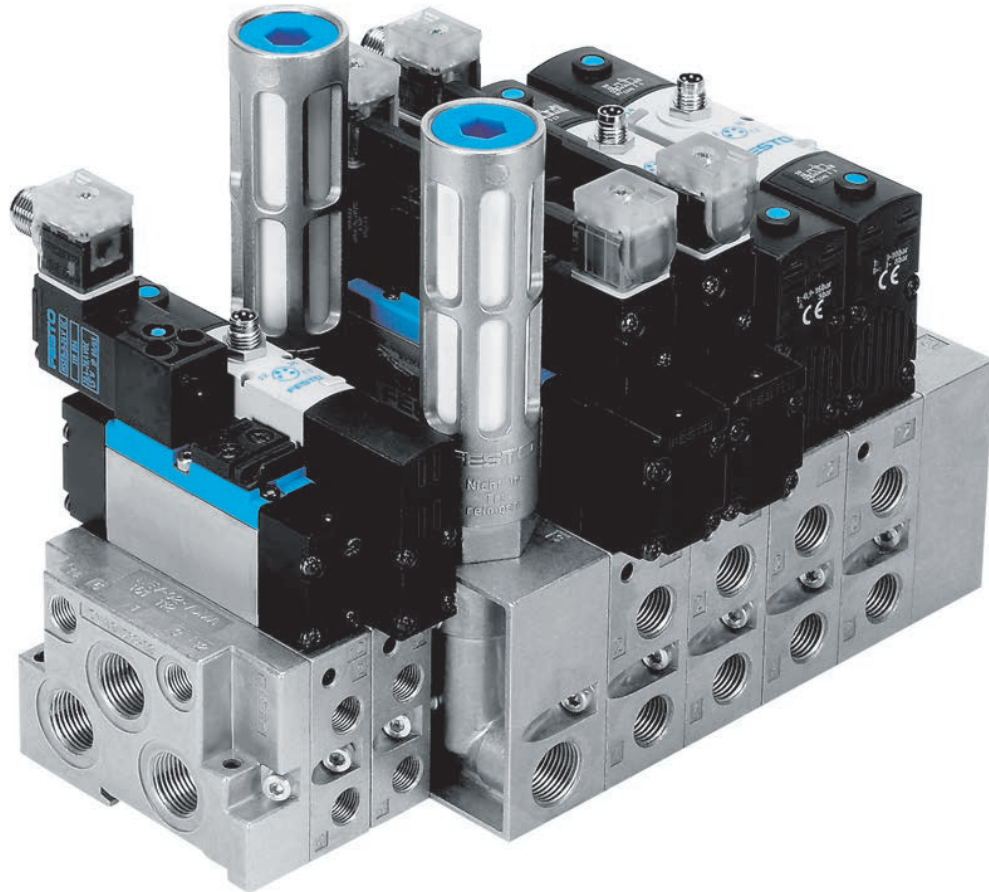
Solenoid valves VSNC ★

Accessories – Ordering data

	Description	Part no.	Type
Plug socket Technical data online: → mssd			
	3-pin, angled socket, square design, connection pattern type B to industry standard 11 mm	539710	MSSD-F-M16
	3-pin, angled socket, square design, connection pattern type A to DIN EN 175301-803, type A	539709	MSSD-C-M16
	3-pin, IP67 socket to IEC 60529, type B	192746	MSSD-F-S-M16
	4-pin, IP67 socket to IEC 60529, type A	192748	MSSD-C-S-M16
	3-pin, angled socket, square design, IP65 to DIN EN 175301-803, type A	34583	MSSD-C
Push-in fittings QS Technical data online: → qs			
	G male thread with internal hex	★ 186108	QS-G1/4-6-I
		★ 186110	QS-G1/4-8-I
		★ 186112	QS-G1/4-10-I
Silencer U Technical data online: → u			
	G male thread, polymer design	534223	U-1/4-20
		★ 2316	U-1/4
	G male thread, die-cast metal design	★ 6842	U-1/4-B
Connecting cable Technical data online: → kmc			
	For valves with D and N1 solenoid coils	30931	KMC-1-24 DC-2,5-LED
		30932	KMC-1-230 AC-2,5
		30933	KMC-1-24 DC-5-LED
		30934	KMC-1-230 AC-5
		★ 30935	KMF-1-24DC-2,5-LED
	For valves with F solenoid coils	3579466	NEBV-A1W3-K-0,6-N-LE3
		3679776	NEBV-A1W3-P-K-0,6-LE3
		3579461	NEBV-A1W3-K-0,3-N-M12W3
		3579462	NEBV-A1W3-K-0,6-N-M12W3
		3679771	NEBV-A1W3-P-0,3-N-M12W3
		3679772	NEBV-A1W3-P-0,6-N-M12W3
Illuminating seal Technical data online: → mc-ld			
	For F solenoid coils	19143	MF-LD-12-24 DC
		19144	MF-LD-230 AC
	For valves with D and N1 solenoid coils	19145	MC-LD-12-24 DC
		19146	MC-LD-230 AC
Cover cap			
	For valves	8028240	VAMC-B10-20-CH2
Exhaust protection			
	For valves	563400	VABD-D3-SN-G14

08

Valves



Usable worldwide and indestructible

- + Globally standardised pneumatic interfaces
- + Extensive range of electrical connection options
- + Universal valve range

Electrically and pneumatically actuated directional control valves >
Standards-based directional control valves >
Solenoid/pneumatic valves, to ISO 15407-1

VSVA 
VSPA

Electrically and pneumatically actuated directional control valves > Standards-based directional control valves >

Solenoid/pneumatic valves, to ISO 15407-1


VSVA ★ /VSPA

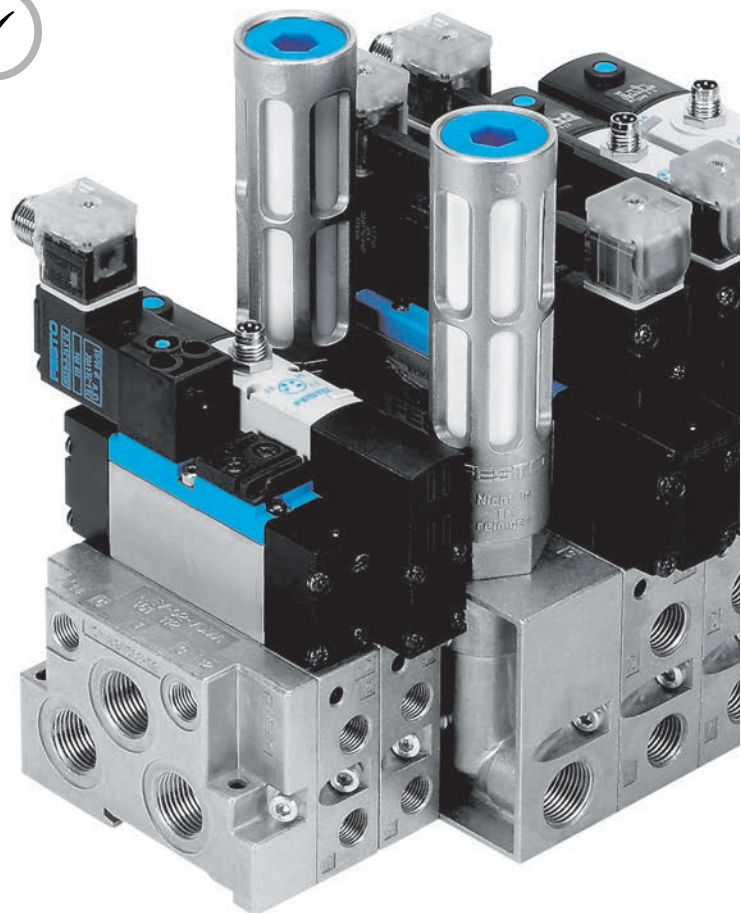
 Overview, configuration and ordering
→ www.festo.com/catalogue/vsva



 Additional information, support and user documentation
→ www.festo.com/sp/vsva



 Quick ordering of basic designs
→ page 988



- + Conforms to ISO 15407-1
- + Optional: pilot valve with interface to ISO 15218
- + High-performance valves in a sturdy metal housing
- + Manifold assembly with mixture of sizes possible
- + Wide range of vertical stacking modules: pressure regulator, flow control and vertical pressure shut-off plate, etc.

Solenoid/pneumatic valves, ISO 15407-1 ★

Product range overview

Type code	Actuation type	Valve function	qnN [l/min]		Pilot air supply	→ Page/ online
			Width 18 mm	Width 26 mm		
VSVA-B-T22	Solenoid coil	2x 2/2-way valve, normally closed	500	1000	Internal/external	vtia
VSVA-B-T32	Pilot interface to ISO 15218	2x 3/2-way valve, normally closed	400	900	Internal/external	985
		2x 3/2-way valve, normally open				
		2x 3/2-way valve, normally closed/open				
VSVA-B-M52	12, 24 V DC 24, 110, 230 V AC	5/2-way valve, single solenoid	550	1100	Internal/external	985
VSVA-B-B52		5/2-way valve, double solenoid	550	1100	Internal/external	986
VSVA-B-D52	Plug M12 24 V DC	5/2-way valve, double solenoid, with dominant signal at 14	550	1100	Internal/external	vtia
VSVA-B-P53C		5/3-way valve, normally closed	450	1000	Internal/external	986
VSVA-B-P53U		Round central plug M8/M12 24 V DC	5/3-way valve, normally open	450	1000	Internal/external
VSVA-B-P53E	5/3-way valve, normally exhausted		450	1000	Internal/external	vtia
VSVA-B-D52	Solenoid coil Pilot interface to ISO 15218 with position sensing	5/2-way valve, single solenoid	–	1100	External	vtia
VSPA-B-T32	Pneumatic	2x 3/2-way valve, normally closed	400	900	–	992
		2x 3/2-way valve, normally open				
		2x 3/2-way valve, normally closed/open				
VSPA-B-M52		5/2-way valve, single solenoid	550	1100		992
VSPA-B-B52		5/2-way valve, bistable	550	1100		993
VSPA-B-D52		5/2-way valve, double solenoid, with dominant signal at 14	550	1100		vtia
VSPA-B-P53C		5/3-way valve, normally closed	450	1000		993
VSPA-B-P53U		5/3-way valve, normally open	450	1000		vtia
VSPA-B-P53E		5/3-way valve, normally exhausted	450	1000		vtia

Standards-based directional control valves >

Solenoid/pneumatic valves, ISO 15407-1 ★

Data sheet – Solenoid valves

Download CAD data → www.festo.com

Technical data			Download CAD data → www.festo.com						
Width	18 mm				26 mm				
Valve function	2x 3/2 single solenoid	5/2 single solenoid	5/2 double solenoid	5/3-way closed	2x 3/2 single solenoid	5/2 single solenoid	5/2 double solenoid	5/3-way closed	
Sub-base	1, 2, 3, 4, 5	G1/8			G1/4				
Pilot air	12, 14	M5			M5				
Design	Piston spool								
Type of mounting	Via through-hole on sub-base								
Electrical data – Valve with central plug M8x1, M12x1									
Operating voltage	[V DC]	24							
Power consumption	DC [W]	High-current phase: 2.4; low-current phase: 1							
Protective circuit and LED	Integrated in the valve								
Electrical connection	Central plug, round design, M8x1 or M12x1								
Degree of protection to EN 60529	IP65, Nema 4 (in combination with plug socket)								
Electrical data – Valve with plug type C									
Operating voltage	[V DC]	24							
	[V AC]	24, 110, 230							
Power consumption	DC [W]	1.8							
	AC [VA]	2.1 at 110/230 V 2.3 at 24 V							
Electrical connection	Plug, square design to EN 175301-803, type C								
Degree of protection to EN 60529	IP65, Nema 4 (in combination with plug socket)								

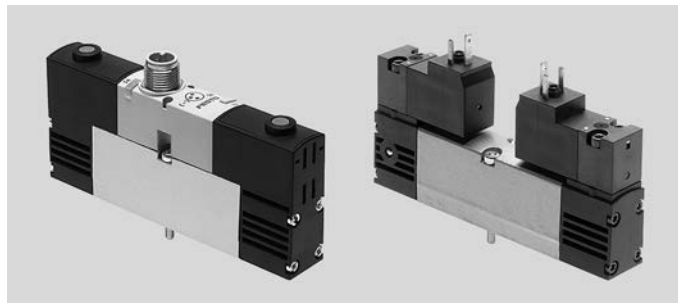
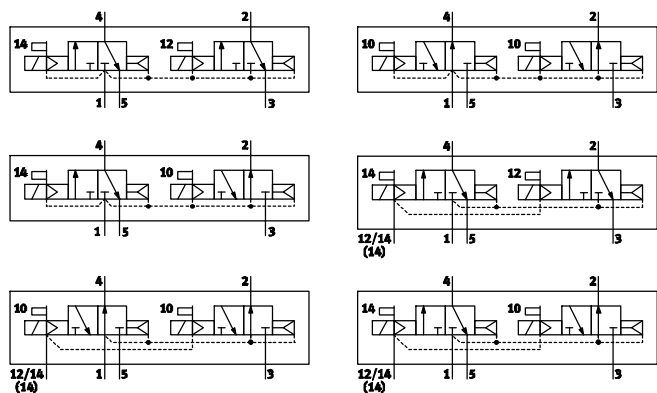
Operating conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature	[°C]	-5 ... +50
Temperature of medium	[°C]	-5 ... +50

Materials

Housing	Die-cast aluminium
Seals	NBR
Screws	Galvanised steel

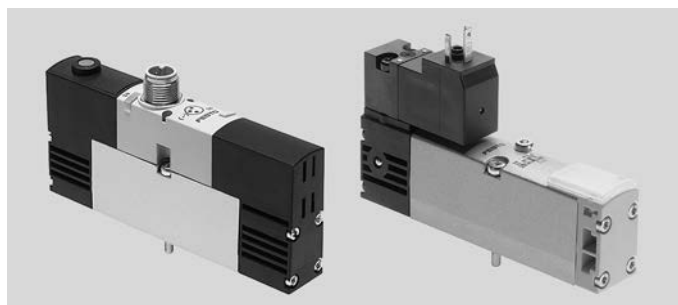
Data sheet – 2x 3/2-way solenoid valves



Technical data		Download CAD data → www.festo.com			
		Plug M8x1, M12x1		Plug type C	
Electrical connection					
Width		18 mm 26 mm		18 mm 26 mm	
Operating pressure	Internal pilot air supply [bar]	3 ... 8		2 ... 10	
	External pilot air supply [bar]	3 ... 10		2 ... 10	
Pilot pressure [bar]		3 ... 8		3 ... 10	
Standard nominal flow rate qnN [l/min]		400	900	400	900
Switching time on/off	Non-reversible types [ms]	10/22	20/33	13/21	20/28
	Reversible types [ms]	–	–	21/13	28/20
Length/width/height [mm]		108/18/57	113/27/67	108/18/63	127/27/72

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Data sheet – 5/2-way valves, single solenoid



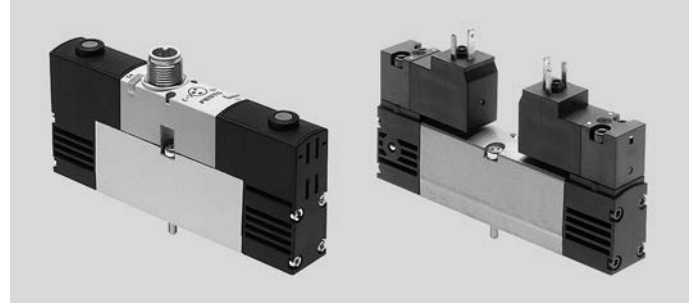
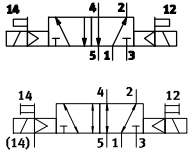
Technical data		Download CAD data → www.festo.com							
		Plug M8x1, M12x1				Plug type C			
Electrical connection									
Width		18 mm		26 mm		18 mm		26 mm	
Reset method		Mechanical	Pneumatic	Mechanical	Pneumatic	Mechanical	Pneumatic	Mechanical	Pneumatic
Operating pressure	Internal pilot air supply [bar]	3 ... 8		3 ... 8		3 ... 10		2 ... 10	
	External pilot air supply [bar]	-0.9 ... +10		-0.9 ... +16		-0.9 ... +10		-0.9 ... +16	
Pilot pressure [bar]		3 ... 8		3 ... 8		3 ... 10		3 ... 10	
Standard nominal flow rate qnN [l/min]		550		1100		550		1100	
Switching time on/off [ms]		12/34	20/25	20/52	25/40	17/35	21/19	26/56	35/43
Length/width/height [mm]		108/18/57		113/27/67		96/18/63		114/27/72	

Valves

Standards-based directional control valves >

Solenoid/pneumatic valves, ISO 15407-1 ★

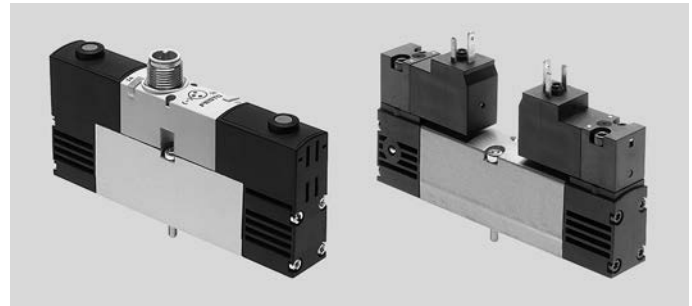
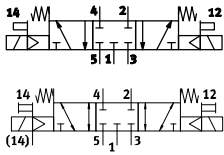
Data sheet – 5/2-way solenoid valves, double solenoid



Technical data		Plug M8x1, M12x1		Download CAD data → www.festo.com	
				Plug type C	
Electrical connection					
Width		18 mm	26 mm	18 mm	26 mm
Operating pressure	Internal pilot air supply	[bar]	3 ... 8	3 ... 8	2 ... 10
	External pilot air supply	[bar]	-0.9 ... +10	-0.9 ... +16	-0.9 ... +16
Pilot pressure		[bar]	3 ... 8	3 ... 8	3 ... 10
Standard nominal flow rate qnN		[l/min]	550	1100	550
Changeover time		[ms]	10	15	15
Length/width/height		[mm]	108/18/57	113/27/67	108/18/63

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Data sheet – 5/3-way solenoid valves, normally closed



Technical data		Plug M8x1, M12x1		Download CAD data → www.festo.com	
				Plug type C	
Electrical connection					
Width		18 mm	26 mm	18 mm	26 mm
Operating pressure	Internal pilot air supply	[bar]	3 ... 8	3 ... 8	3 ... 10
	External pilot air supply	[bar]	-0.9 ... +10	-0.9 ... +16	-0.9 ... +16
Pilot pressure		[bar]	3 ... 8	3 ... 8	3 ... 10
Standard nominal flow rate qnN		[l/min]	450	1000	450
Switching time on/off		[ms]	15/36	20/52	18/30
Length/width/height		[mm]	108/18/57	113/27/67	108/18/63

Valves

Order code – Solenoid valves

VSVA		B													
Type code															
VSVA	Solenoid valve to ISO 15407-1														
Version															
B	Sub-base valve														
Valve function															
T32C	2x 3/2-way valve, single solenoid, normally closed														
T32U	2x 3/2-way valve, single solenoid, normally open														
T32H	2x 3/2-way valve, single solenoid, 1x normally closed, 1x open														
M52	5/2-way valve, single solenoid														
B52	5/2-way valve, double solenoid														
P53C	5/3-way valve, normally closed														
Reset method for single solenoid directional control valves															
–	Double solenoid and 5/3-way valve														
A	Pneumatic spring														
M	Mechanical spring 1														
Pilot air supply port															
–	Internal														
Z	External														
Manual override															
–	Without pilot valve														
H	Non-detenting														
Pneumatic connection															
A1	Port pattern, ISO size 26 mm (01)														
A2	Port pattern, ISO size 18 mm (02)														
Operating voltage															
–	Without pilot valve														
1	24 V DC														
1A	24 V AC 2														
2A	110 V AC 2														
3A	230 V AC 2														
Electrical connection															
P1	Without pilot valve														
C1	Plug, type C														
R2L	Plug, M8x1														
R5L	Plug, M12x1														

1 Only for 5/2-way valves2 Only for plug type C**Order example:**

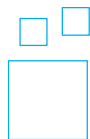
VSVA-B-T32H-AZH-A1-1R5L

Solenoid valve VSVA to ISO 15407-1 – sub-base valve - 2x 3/2-way valve, single solenoid, 1x normally closed, 1x open – pneumatic spring reset method, external pilot air supply, non-detenting manual override – ISO size 26 mm (01) - 24 V DC, plug M12x1, with LED display

Standards-based directional control valves >

Solenoid/pneumatic valves, ISO 15407-1 ★

Ordering – Product options



**Configurable
product**

**This product and all its options can
be ordered using the configurator.**

The configurator can be found under
Products on the DVD or

→ www.festo.com/catalogue/...



Enter the type code in the search field.

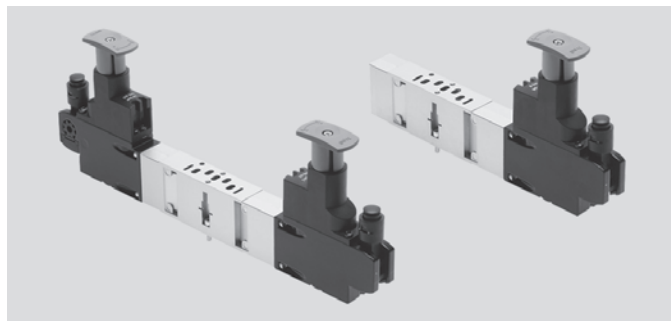
★ Quick ordering¹⁾

		Part no.	Type code
5/2-way single solenoid valve, ISO size 18 mm			
With pilot control with square plug, type C	Pneumatic spring	546701	VSVA-B-M52-AH-A2-1C1
	Mechanical spring	546703	VSVA-B-M52-MH-A2-1C1
With pilot control with round plug M12x1	Pneumatic spring	546767	VSVA-B-M52-AH-A2-1R5L
	Mechanical spring	546768	VSVA-B-M52-MH-A2-1R5L
5/2-way double solenoid valve, ISO size 18 mm			
With pilot control with square plug, type C		546697	VSVA-B-B52-H-A2-1C1
With pilot control with round plug M12x1		546769	VSVA-B-B52-H-A2-1R5L
5/2-way single solenoid valve, ISO size 26 mm			
With pilot control with square plug, type C	Pneumatic spring	546700	VSVA-B-M52-AH-A1-1C1
	Mechanical spring	546702	VSVA-B-M52-MH-A1-1C1
With pilot control with round plug M12x1	Pneumatic spring	534555	VSVA-B-M52-AH-A1-1R5L
	Mechanical spring	534556	VSVA-B-M52-MH-A1-1R5L
5/2-way double solenoid valve, ISO size 26 mm			
With pilot control with square plug, type C		546696	VSVA-B-B52-H-A1-1C1
With pilot control with round plug M12x1		534557	VSVA-B-B52-H-A1-1R5L
5/3-way solenoid valve, ISO size 26 mm			
With pilot control with square plug, type C		546706	VSVA-B-P53E-H-A1-1C1
With pilot control with round plug M12x1		534560	VSVA-B-P53E-H-A1-1R5L

1) All products in this table are easy to select and quick to order.

Data sheet – Regulator plate VABF-S3

-  Temperature range
-5 ... +50°C
-  Operating pressure range
0.5 ... 6 bar
0.5 ... 10 bar



Materials	
Housing	Die-cast aluminium
Control section	PA

Order code – Regulator plate VABF-S3

VABF-S3		C2-C	
Type code			
VABF-S3	Valve accessories, function plate to ISO 15407-1		
Width			
1	26 mm		
2	18 mm		
Function			
R1	Pressure regulator for port 1		
R2	Pressure regulator for port 2		
R3	Pressure regulator for port 4		
R4	Pressure regulator for port 2 and 4		
R5	Pressure regulator for port 2 and 4, reversible		
R6	Pressure regulator for port 2, reversible		
R7	Pressure regulator for port 4, reversible		
Options			
C2-C	Pressure gauge connection closed		
Pressure regulation range			
6	0.5 to 6 bar		
10	0.5 to 10 bar		

Order example:

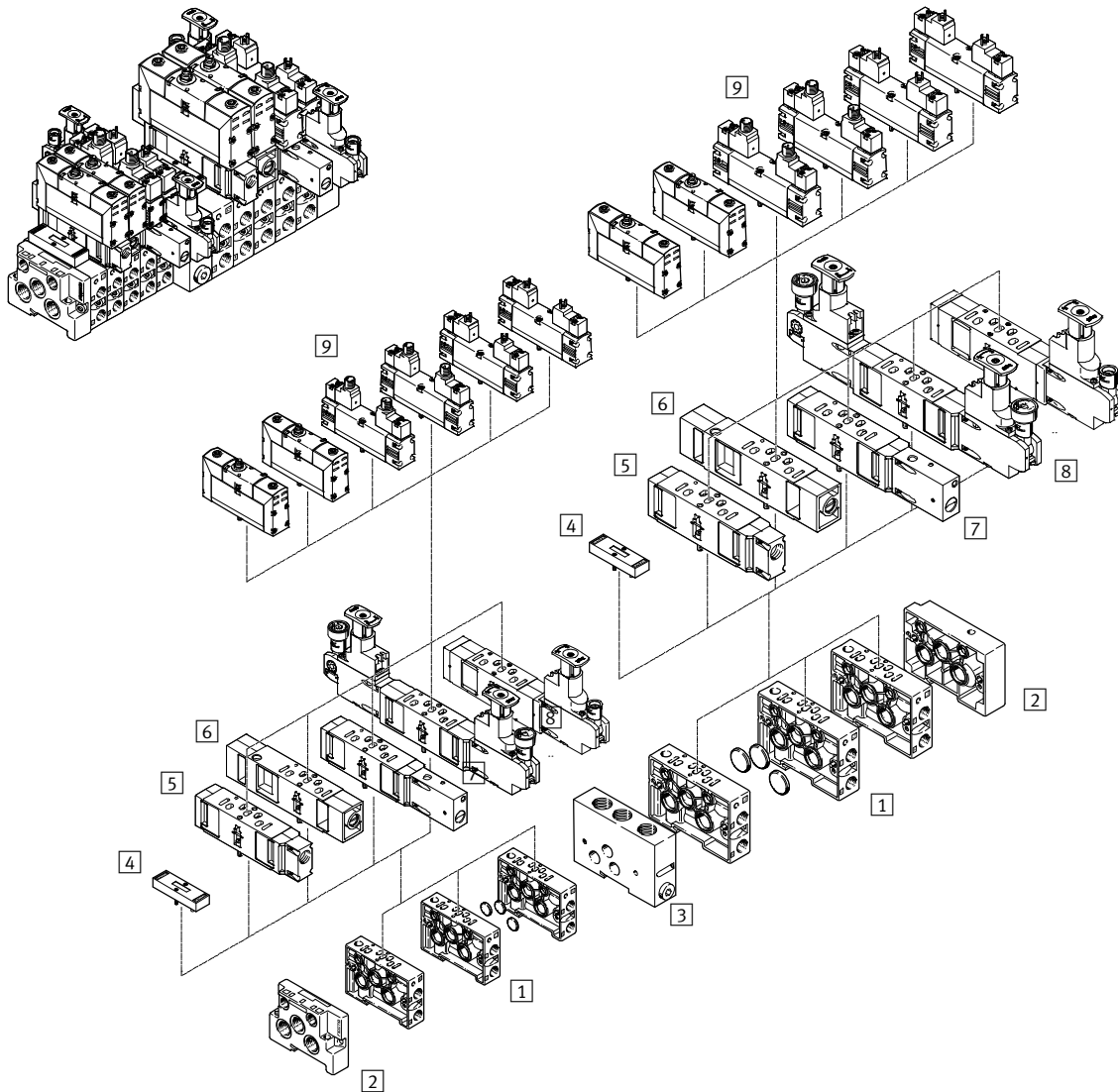
VABF-S3-1-R4C2-C-10

Valve accessories VABF - function plate ISO 15407-1 - width 26 mm - pressure regulator for port 2 and 4, pressure gauge connection closed - up to 10 bar

Standards-based directional control valves >

Solenoid/pneumatic valves, ISO 15407-1 ★

Accessories – Manifold assembly of solenoid valves

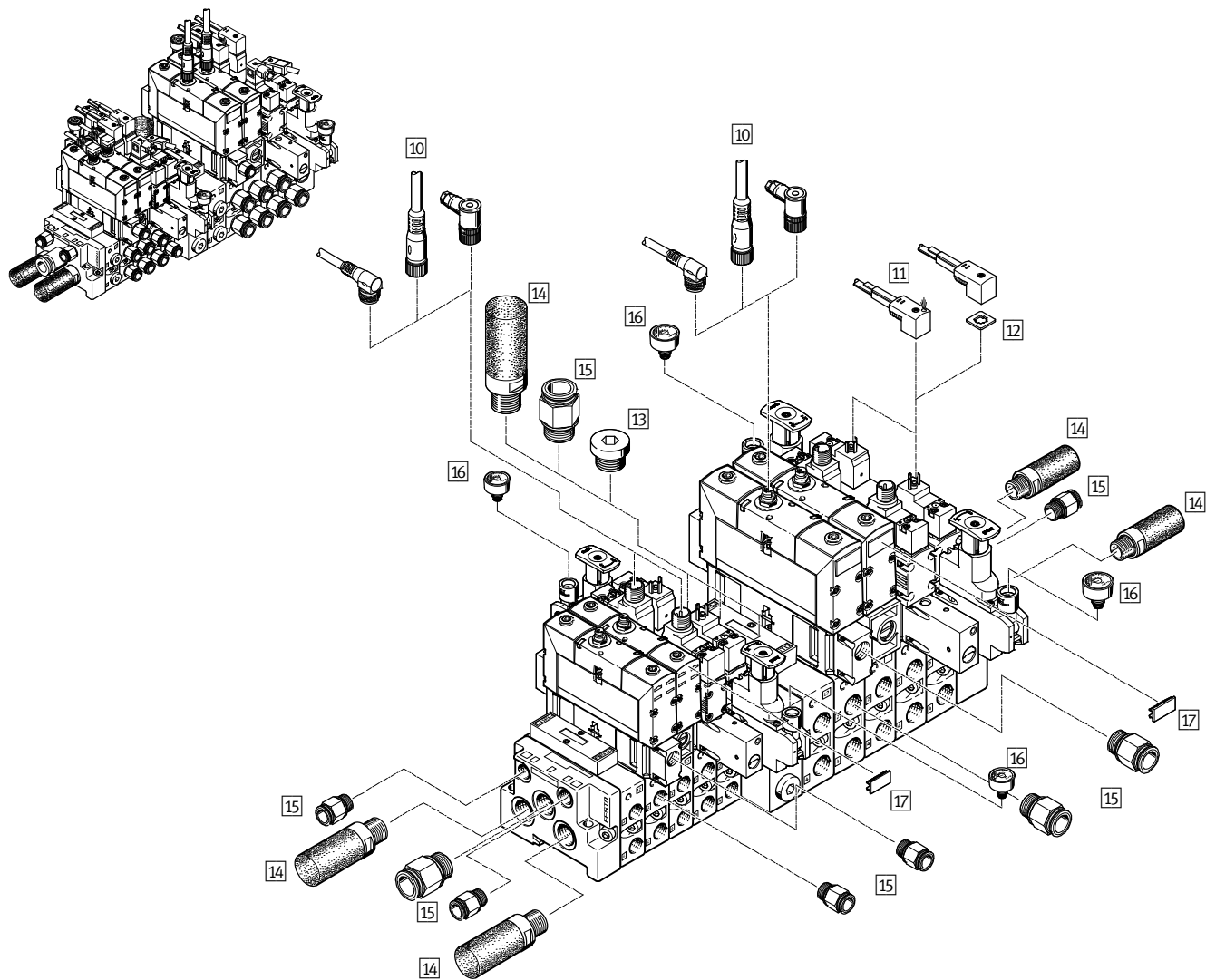


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Valves

Variants and accessories		→ Page/online
1	Manifold sub-base NAW with ports 2 and 4 on the side	997
2	End plate kit NEV for sealing the manifold sub-bases	997
3	Intermediate plate NZV for connecting width 18 mm with width 26 mm	997
4	Cover plate NDV for vacant or spare positions	997
5	Vertical supply plate VABF...P1-A3 for intermediate air supply	997
6	Flow control plate VABF...F1-B1 for flow control in ducts 3 and 5	997
7	Vertical pressure shut-off plate VABF...L1-D1 with switch for manual shut-off of duct 1	997
8	Pressure regulator plate VABF...R...-C2	989
9	Solenoid valve VSVA	988
-	Individual sub-base NAS	998

Accessories – Manifold assembly of solenoid valves



Accessories		→ Page/online
10	Round plug connector NEBU/SIE, connecting cable/plug socket M8/M12	997
11	Square plug KMEB/MSSD-EB, type C, connecting cable/plug socket	998
12	Illuminating seal MEB-LD for displaying the signal status	998
13	Blanking plug B for sealing unused ports	998
14	Silencer U for mounting in exhaust ports	998
15	Push-in fitting QS for compressed air tubing with standard O.D.	998
16	Pressure gauge PAGN-26-10-P10 for connection to the pressure regulator plate	998
17	Inscription labels IBS-9x20 for identifying the VSVA valves with round plug	997
-	Individual sub-base NAS	998

Standards-based directional control valves >

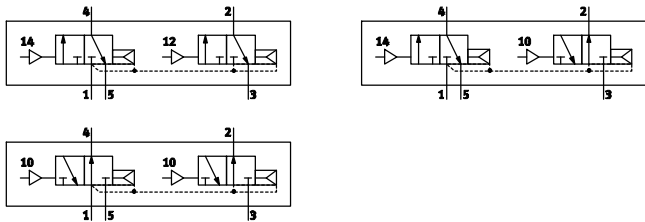
Solenoid/pneumatic valves, ISO 15407-1 ★

Data sheet – Pneumatic valves

Technical data		Download CAD data → www.festo.com							
Width		18 mm				26 mm			
Valve function		2x 3/2 monostable	5/2 monostable	5/2 bistable	5/3-way closed	2x 3/2 monostable	5/2 monostable	5/2 bistable	5/3-way closed
Sub-base	1, 2, 3, 4, 5	G1/8				G1/4			
Pilot air	12, 14	M5				M5			
Type of mounting		Via through-hole on sub-base							
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]							
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)							
Ambient temperature	[°C]	-10 ... +60							
Temperature of medium	[°C]	-10 ... +60							

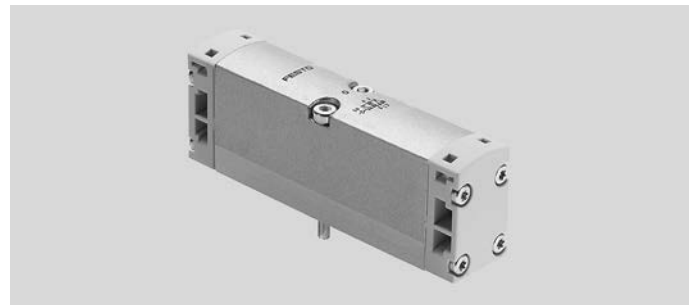
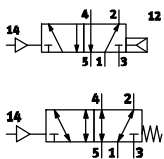
Materials	
Housing	Die-cast aluminium
Seals	NBR
Screws	Galvanised steel

Data sheet – 2x 3/2-way pneumatic valves



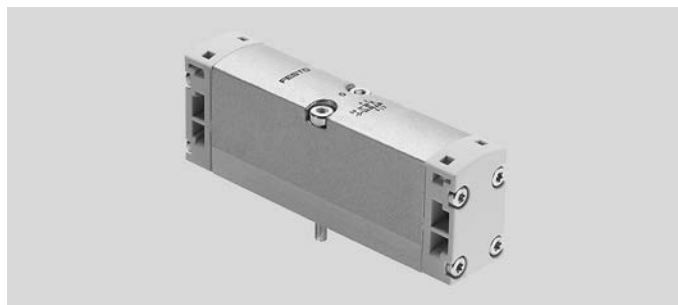
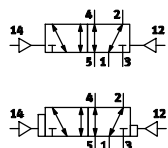
Technical data		Download CAD data → www.festo.com	
Width		18 mm	26 mm
Operating pressure	[bar]	2 ... 10	2 ... 10
Pilot pressure	[bar]	2 ... 10	2 ... 10
Standard nominal flow rate qnN	[l/min]	400	900
Switching time on/off	[ms]	10/15	15/28
Design		Piston spool	
Length/width/height	[mm]	83/18/29	100/26/38

Data sheet – 5/2-way pneumatic valves, monostable



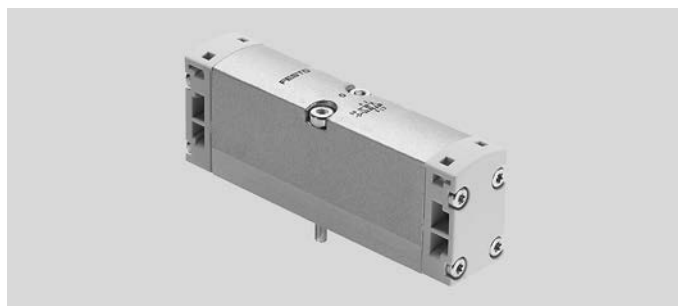
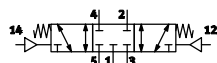
Technical data		Download CAD data → www.festo.com			
Width		18 mm		26 mm	
Reset method		Mechanical	Pneumatic	Mechanical	Pneumatic
Operating pressure	[bar]	-0.9 ... +10	2 ... 10	-0.9 ... +16	2 ... 10
Pilot pressure	[bar]	3 ... 10	2 ... 10	3 ... 10	2 ... 10
Standard nominal flow rate qnN	[l/min]	550		1100	
Switching time on/off	[ms]	8/18	11/20	10/35	18/30
Design		Piston spool			
Length/width/height	[mm]	83/18/29		100/26/38	

Data sheet – 5/2-way pneumatic valves, bistable



Technical data		Download CAD data → www.festo.com	
Width		18 mm	26 mm
Operating pressure	[bar]	-0.9 ... +10	-0.9 ... +16
Pilot pressure	[bar]	2 ... 10	2 ... 10
Standard nominal flow rate q _{nN}	[l/min]	550	1100
Changeover time	[ms]	6	10
Design		Piston spool	
Length/width/height	[mm]	83/18/29	100/26/38

Data sheet – 5/3-way pneumatic valves, normally closed



Technical data		Download CAD data → www.festo.com	
Width		18 mm	26 mm
Operating pressure	[bar]	-0.9 ... +10	-0.9 ... +16
Pilot pressure	[bar]	3 ... 10	3 ... 10
Standard nominal flow rate q _{nN}	[l/min]	450	1000
Switching time on/off	[ms]	9/18	13/32
Design		Piston spool	
Length/width/height	[mm]	83/18/29	100/26/38

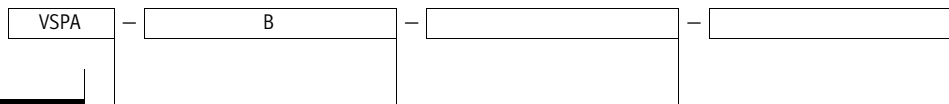
08

Valves

Standards-based directional control valves >

Solenoid/pneumatic valves, ISO 15407-1 ★

Order code – Pneumatic valve



Type code

VSPA	Standards-based valves to ISO 15407-1/-2
------	--

Version

B	Sub-base valve
---	----------------

Valve function

T32C	2x 3/2-way valve, monostable, normally closed
T32U	2x 3/2-way valve, monostable, normally open
T32H	2x 3/2-way valve, monostable, 1x normally closed, 1x open
M52-A	5/2-way valve, monostable, pneumatic spring return
M52-M	5/2-way valve, monostable, mechanical spring return
B52	5/2-way valve, bistable
P53C	5/3-way valve, normally closed
P53U	5/3-way valve, normally open
P53E	5/3-way valve, normally exhausted

Pneumatic connection

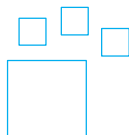
A1	Port pattern, ISO size 26 mm (01)
A2	Port pattern, ISO size 18 mm (02)

Order example:

VSPA-B-T32C-A2

Standards-based valve VSPA, to ISO 15407-1/-2 – sub-base valve - 2x 3/2-way valve, monostable, normally closed – ISO size 18 mm (02)

Ordering – Product options



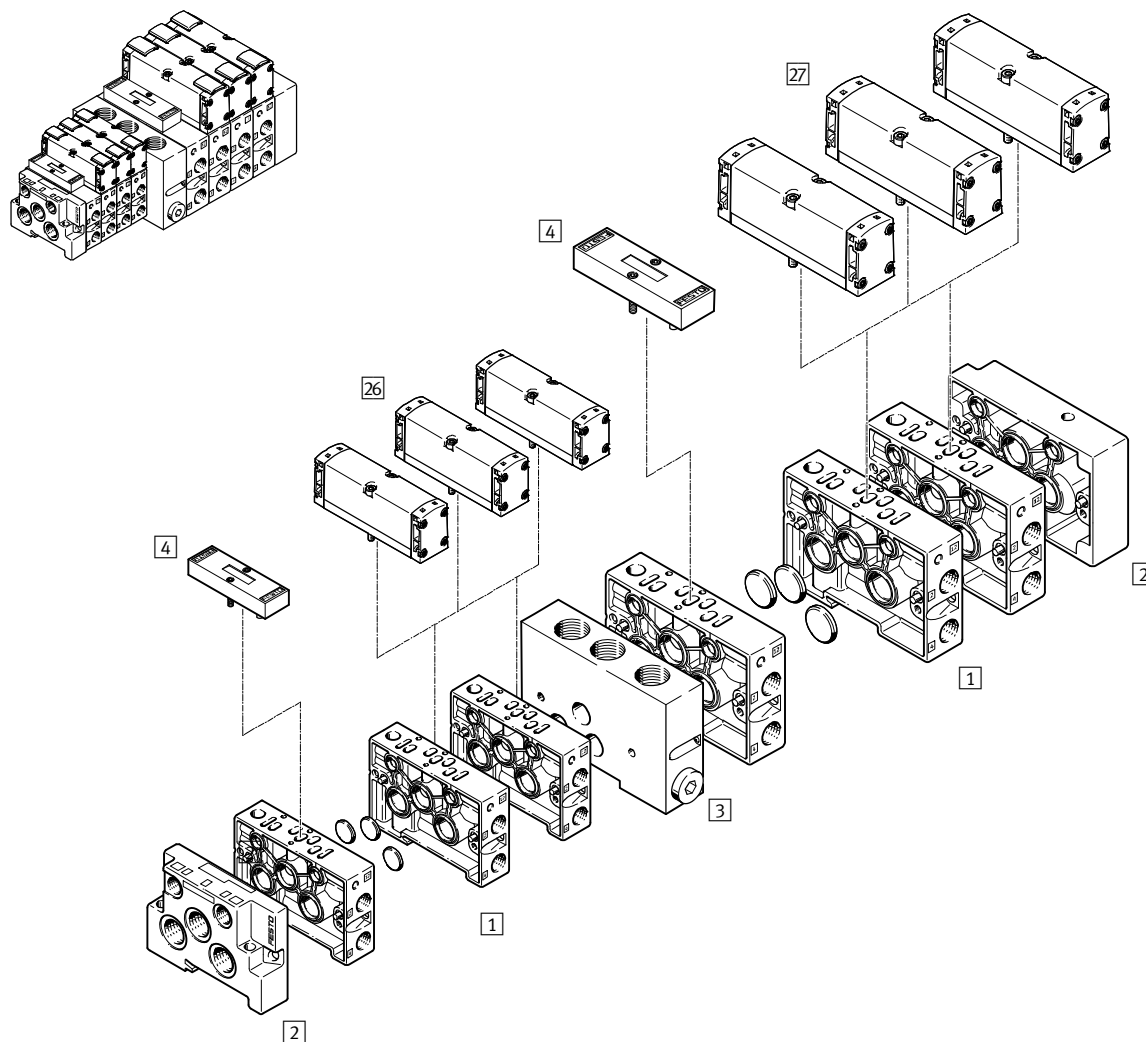
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

Accessories – Manifold assembly of pneumatic valves

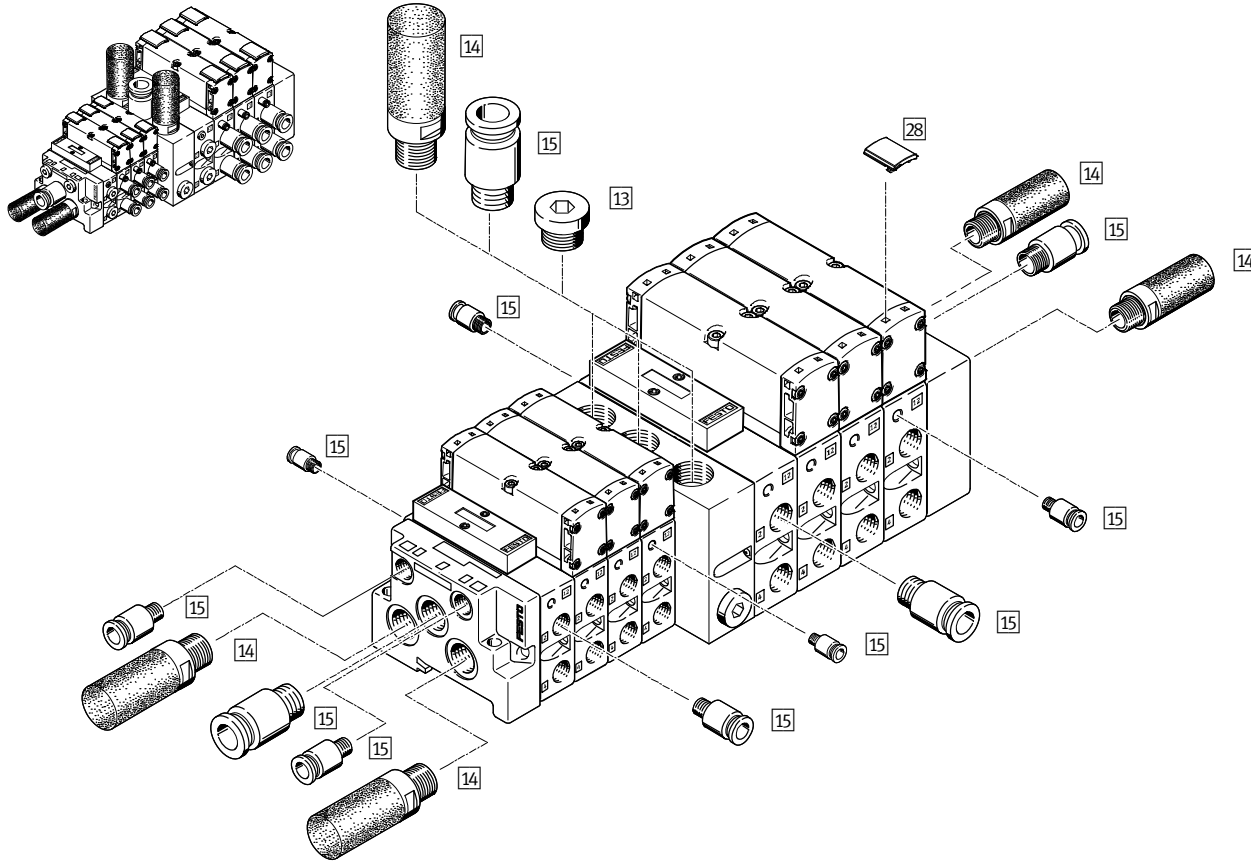


Variants and accessories		→ Page/online
1	Manifold sub-base NAW with ports 2 and 4 on the side	997
2	End plate kit NEV for sealing the manifold sub-bases	997
3	Intermediate plate NZV for connecting width 18 mm with width 26 mm	997
4	Cover plate NDV for vacant or spare positions	997
26	Pneumatic valve VSPA...A2, width 18 mm	994
27	Pneumatic valve VSPA...A1, width 26 mm	994
-	Individual sub-base NAS	998

Standards-based directional control valves >

Solenoid/pneumatic valves, ISO 15407-1 ★

Accessories – Manifold assembly of pneumatic valves

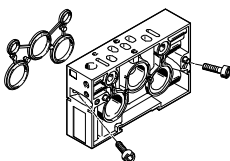
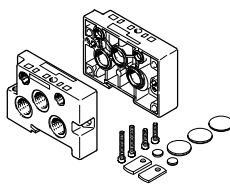
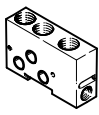
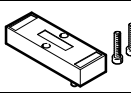
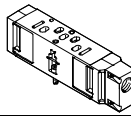
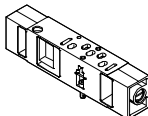
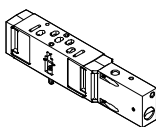
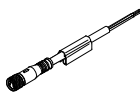


08

Valves

Accessories		→ Page/online
13	Blanking plug B for sealing unused ports	998
14	Silencer U for mounting in exhaust ports	998
15	Push-in fitting QS for compressed air tubing with standard O.D.	998
28	Inscription label holder ASCF for identifying the valves	998
–	Individual sub-base NAS	998

Accessories – Ordering data

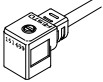







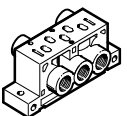
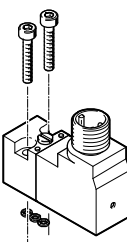
		Description	Part no.	Type code	
1 Manifold sub-base with ports 2 and 4 on the side					
	For solenoid valve	18 mm	★ 161110	NAW-1/8-02-VDMA	
		26 mm	★ 161102	NAW-1/4-01-VDMA	
	For pneumatic valve	18 mm	161111	NAW-1/8-02-VDMA-VL	
		26 mm	161103	NAW-1/4-01-VDMA-VL	
2 End plate kit					
	Width 18 mm		★ 161112	NEV-02-VDMA	
	Width 26 mm		★ 161104	NEV-01-VDMA	
3 Intermediate plate for connecting the sizes 02 and 01					
	Width 18/26 mm		161108	NZV-01/02-VDMA	
4 Cover plate for vacant position					
	Width 18 mm		★ 161114	NDV-02-VDMA	
	Width 26 mm		★ 161107	NDV-01-VDMA	
5 Vertical supply plate					
	Width 18 mm		544435	VABF-S3-2-P1A3-G18	
	Width 26 mm		544434	VABF-S3-1-P1A3-G14	
6 Flow control plate					
	Width 18 mm		543603	VABF-S3-2-F1B1-C	
	Width 26 mm		543604	VABF-S3-1-F1B1-C	
7 Vertical pressure shut-off plate					
	Width 18 mm		543601	VABF-S3-2-L1D1-C	
	Width 26 mm		543602	VABF-S3-1-L1D1-C	
10 Round plug connector					
	Connecting cable M8	Straight socket	2.5 m	541342	NEBU-M8G4-K-2.5-LE4
			5 m	541343	NEBU-M8G4-K-5-LE4
		Angled socket	2.5 m	541344	NEBU-M8W4-K-2.5-LE4
			5 m	541345	NEBU-M8W4-K-5-LE4
	Connecting cable M12	Straight socket	2.5 m	★ 550326	NEBU-M12G5-K-2.5-LE4
			5 m	★ 541328	NEBU-M12G5-K-5-LE4
		Angled socket	5 m	541329	NEBU-M12W5-K-5-LE4
	Socket M12, angled, 4-pin, screw terminal			12956	SIE-WD-TR

Data sheets → Page 1543

Standards-based directional control valves >

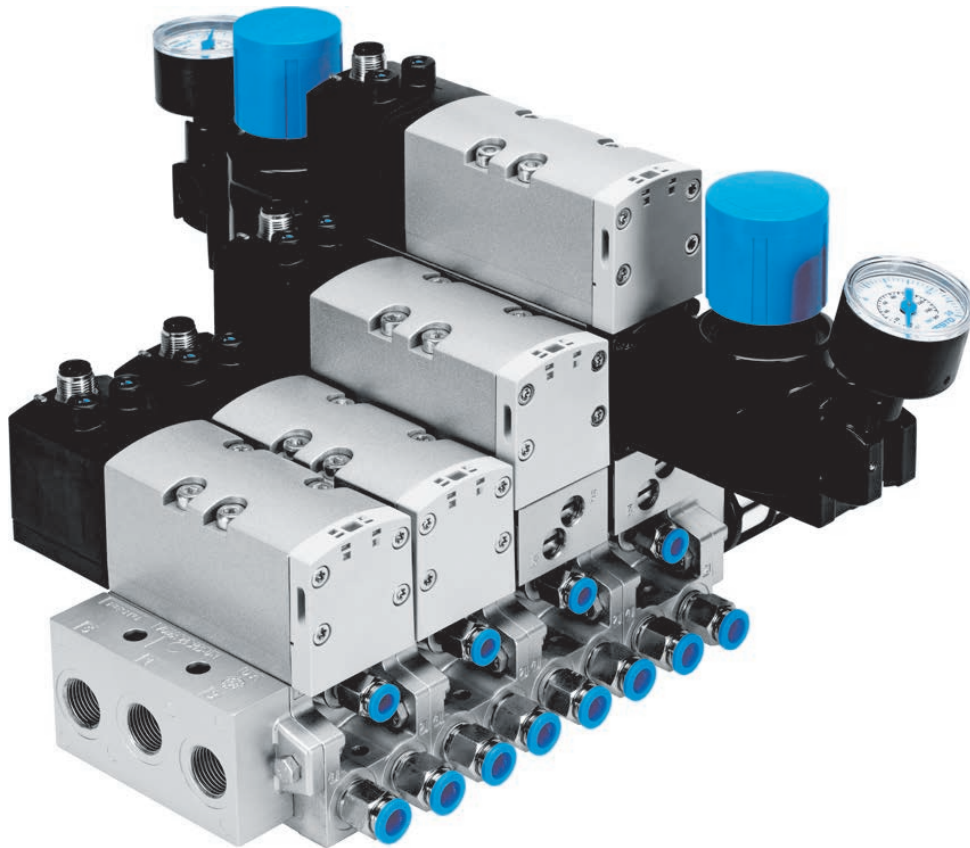
Solenoid/pneumatic valves, ISO 15407-1 ★

Accessories – Ordering data

Description		Part no.	Type code
11 Square plug type C Data sheets online: → kmeb			
	Connecting cable	24 V DC, with LED	2.5 m ★ 151688 KMEB-1-24-2,5-LED
			5 m 151689 KMEB-1-24-5-LED
			10 m 193457 KMEB-1-24-10-LED
	Plug socket	Up to 240 V, without LED	2.5 m 151690 KMEB-1-230AC-2,5
			5 m 151691 KMEB-1-230AC-5
	Screw terminal connection	151687 MSSD-EB	
	Insulation displacement technology	192745 MSSD-EB-S-M14	
12 Illuminating seal for plug type C			
	12 ... 24 V DC	151717 MEB-LD-12-24DC	
	230 V AC	151718 MEB-LD-230AC	
13 Blanking plug Data sheets online: → b-1			
	For thread G1/8	★ 3568 B-1/8	
	For thread G3/8	★ 3570 B-3/8	
	For thread G1/2	★ 3571 B-1/2	
14 Silencer Data sheets → Page 1661			
	For thread G1/8	★ 6841 U-1/8-B	
	For thread G3/8	★ 6843 U-3/8-B	
	For thread G1/2	★ 6844 U-1/2-B	
15 Push-in fitting Data sheets → Page 1443			
	For thread G1/8	★ 186098 QS-G1/8-8	
	For thread G3/8	★ 186103 QS-G3/8-12	
	For thread G1/2	★ 186104 QS-G1/2-12	
16 Pressure gauge Data sheets online: → pagn			
	With cartridge connection for regulator, 0 ... 16 bar	543487 PAGN-26-16-P10	
17 Inscription label for valves			
	Scope of delivery 24 labels in frame	18182 IBS-9x20	
28 Inscription label holder			
	Clip-on for valve cap	540888 ASCF-T-S6	
Individual sub-base			
	Width 18 mm	★ 161115 NAS-1/8-02-VDMA	
	Width 26 mm	★ 161109 NAS-1/4-01-VDMA	
Pilot valve to ISO 15218 Data sheets online: → vsccs			
	Plug, square design, type C	24 V DC	546256 VSCS-B-M32-MH-WA-1C1
	Plug M12	24 V DC	573215 VSCS-B-M32-MD-WA-1R3

08

Valves



Leaving nothing to be desired

- + Manifold assembly
with mixed sizes possible
- + Globally standardised pneumatic
interfaces with ISO size 1, 2, 3 and 4
- + Comprehensive range of valve
functions and accessories

Electrically and pneumatically actuated directional control valves >
Standards-based directional control valves >
Solenoid valves, to ISO 5599-1

MN1H
VSVA
MFH

Electrically and pneumatically actuated directional control valves > Standards-based directional control valves >

Solenoid valves, to ISO 5599-1

MN1H, VSVA, MFH



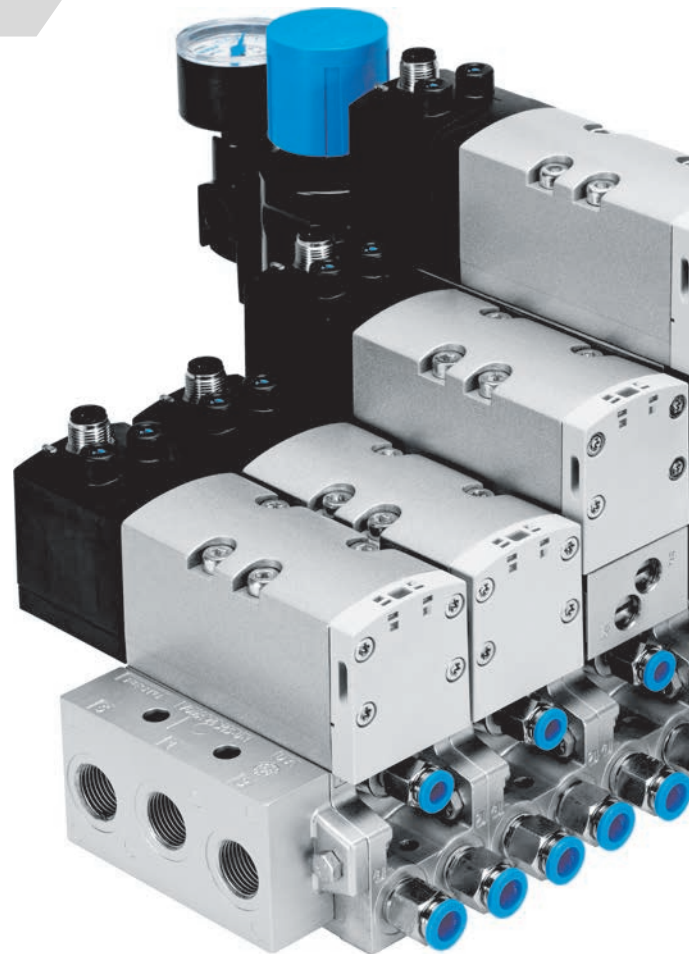
Overview, configuration and ordering

→ www.festo.com/catalogue/5599-1



Additional information, support and user documentation

→ www.festo.com/sp/5599-1



- + Sturdy metal design
- + ISO size 1, 2, 3 and 4
- + Manifold assembly with a mixture of ISO sizes 1, 2 and 3 possible
- + MN1H: N1 solenoid coil
- + VSVA: with central plug
- + MFH: F solenoid coil
- + Wide range of vertical stacking modules: pressure regulator, flow control valve, vertical pressure shut-off plate, etc.
- + Also available as a valve manifold

Product range overview

Type	Actuation type	Valve function	qnN [l/min]				Pilot air supply port	→ Page/ online
			Width					
			42 mm	52 mm	65 mm	76 mm		
MN1H-5/2	N1 solenoid coil ¹⁾	5/2-way valve, single solenoid	1200	2300	4500	–	Internal/external	1003
JMN1H-5/2	12, 24 V DC	5/2-way valve, double solenoid			4500			1003
JMN1DH-5/2	24, 110, 230 V AC	5/2-way valve, double solenoid with dominant signal at 14			4500			5599-1
MN1H-5/3G		5/3-way valve, normally closed			4100			1003
MN1H-5/3B		5/3-way valve, normally open			4000			5599-1
MN1H-5/3E		5/3-way valve, normally exhausted			4600			
MEBH-5/2	EB solenoid coil	5/2-way valve, single solenoid	–	–	4500	–	Internal	5599-1
JMEBH-5/2	24 V DC	5/2-way valve, double solenoid			4500			5599-1
JMEBDH-5/2		5/2-way valve, double solenoid with dominant signal at 14			4500			5599-1
MEBH-5/3G		5/3-way valve, normally closed			4100			5599-1
MEBH-5/3B		5/3-way valve, normally open			4000			5599-1
MEBH-5/3E		5/3-way valve, normally exhausted			4600			
VSVA-B-T22C	Solenoid coil with central plug M12	2x 2/2-way valve, 2x normally closed	1300	2800	–	–	Internal/external	5599-1
VSVA-B-T32C	24 V DC	2x 3/2-way valve, 2x normally closed	1100	2200	–	–		1005
VSVA-B-T32U		2x 3/2-way valve, 2x normally open						
VSVA-B-T32H		2x 3/2-way valve, 1x normally open, 1x normally closed						
VSVA-B-M52		5/2-way valve, single solenoid	1300	2800				1006
VSVA-B-B52		5/2-way valve, double solenoid						
VSVA-B-D52		5/2-way valve, double solenoid with dominant signal at 14						
VSVA-B-P53C		5/3-way valve, normally closed		2700				1007
VSVA-B-P53U		5/3-way valve, normally open						
VSVA-B-P53E		5/3-way valve, normally exhausted						
MFH-5/2	F solenoid coil	5/2-way valve, single solenoid	1200	2300	4500	–	Internal/external	1011
JMFH-5/2	12, 24, 42,	5/2-way valve, double solenoid			4500			1012
JMFDH-5/2	48 V DC	5/2-way valve, double solenoid with dominant signal at 14			4500			5599-1
MFH-5/3G	24, 42, 48, 110,	5/3-way valve, normally closed			4100			
MFH-5/3B	230 V AC	5/3-way valve, normally open			4000			
MFH-5/3E		5/3-way valve, normally exhausted			4600			1012
MDH-5/2...-M12	D solenoid coil	5/2-way valve, single solenoid	1200	2300	4500	–	Internal/external	5599-1
JMDH-5/2...-M12	24 V DC	5/2-way valve, double solenoid			4500		Internal	
JMDDH-5/2...-M12		5/2-way valve, double solenoid with dominant signal at 14			4500			
MDH-5/3G...-M12		5/3-way valve, normally closed			4100			
MDH-5/3B...-M12		5/3-way valve, normally open			4000			
MDH-5/3E...-M12		5/3-way valve, normally exhausted			4600			
MDH-5/2-3/4	D solenoid coil	5/2-way valve, single solenoid	–	–	–	6000	Internal	5599-1
JMDH-5/2-3/4	24 V DC	5/2-way valve, double solenoid						
MDH-5/3G-3/4	42, 110, 230 V AC	5/3-way valve, normally closed				4800		
MDH-5/3E-3/4		5/3-way valve, normally exhausted						
VL-5/2	Pneumatic	5/2-way valve, single solenoid	1200	2300	4500	6000	None	5599-1
J-5/2		5/2-way valve, double solenoid						
JD-5/2		5/2-way valve, double solenoid with dominant signal at 14				–		
VL-5/3G		5/3-way valve, normally closed			4100	4800		
VL-5/3B		5/3-way valve, normally open				–		
VL-5/3E		5/3-way valve, normally exhausted				4800		

1) The solenoid coil must be ordered separately.

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

Data sheet – MN1H/JMN1H

Technical data		Download CAD data → www.festo.com					
Width		42 mm			52 mm		
Valve function		5/2 single solenoid	5/2 double solenoid	5/3 closed	5/2 single solenoid	5/2 double solenoid	5/3 closed
Sub-base	1, 2, 3, 4, 5	G1/4			G3/8		
Pilot air	12, 14	G1/8			G1/8		
Type of mounting		Via through-hole on sub-base					
Electrical data – N1 solenoid coil							
Electrical connection		Plug pins, 3-pin, with connection pattern to EN 175301-803, type A					
Operating voltage		[V DC]	12, 24				
		[V AC]	24, 110, 230 (50 ... 60 Hz)				
Power consumption	DC	[W]	2.5				
	AC	[VA]	Pull: 7.5 Hold: 5				
Degree of protection to EN 60529		With plug socket to IP65					

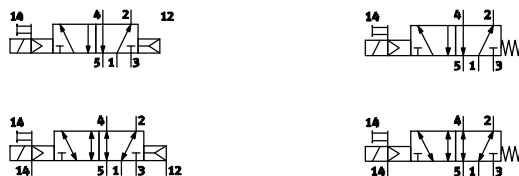
08 Operating conditions

Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature		[°C]	-5 ... +50				
Temperature of medium		[°C]	-5 ... +50				

Materials

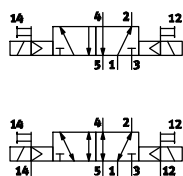
Housing		Die-cast aluminium					
Seals		HNBR, NBR					

Data sheet – 5/2-way valve MN1H, single solenoid



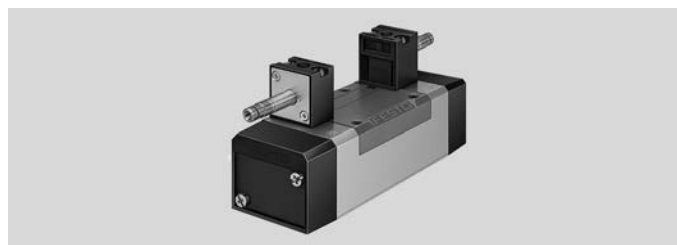
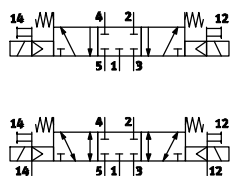
Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Reset method			Mechanical	Pneumatic	Mechanical	Pneumatic
Operating pressure	Internal pilot air supply	[bar]	3 ... 10	2 ... 10	3 ... 10	2 ... 10
	External pilot air supply	[bar]	-0.9 ... +16			
Pilot pressure		[bar]	3 ... 10	2 ... 10	3 ... 10	2 ... 10
Standard nominal flow rate	qnN	[l/min]	1200		2300	
Switching time	On/off	[ms]	17/39	23/32	24/62	46/69
Design			Piston spool			
Length/width/height		[mm]	128/42/74	118/42/74	162/54/84	148/54/84

Data sheet – 5/2-way valve JMN1H, double solenoid



Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10			
	External pilot air supply	[bar]	-0.9 ... +16			
Pilot pressure		[bar]	2 ... 10			
Standard nominal flow rate	qnN	[l/min]	1200		2300	
Switching time	Change-over	[ms]	18		21	
Design			Piston spool			
Length/width/height		[mm]	148/42/74		165/54/84	

Data sheet – 5/3-way valve MN1H, normally closed



Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Operating pressure	Internal pilot air supply	[bar]	3 ... 10			
	External pilot air supply	[bar]	-0.9 ... +16			
Pilot pressure		[bar]	3 ... 10			
Standard nominal flow rate	qnN	[l/min]	1200		2300	
Switching time	On/off	[ms]	20/44		33/82	
Design			Piston spool			
Length/width/height		[mm]	148/42/74		165/54/84	

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

Order code – MN1H/JMN1H

				D					C
Solenoid valve without coil									
MN1H	5/2-way valve, single solenoid								
	5/3-way valve								
JMN1H	5/2-way valve, double solenoid								
Valve function									
5/2	5/2-way valve								
5/3G	5/3-way valve, normally closed								
Standard identification									
D	Standard identification D								
Size									
1	Width 42 mm								
2	Width 52 mm								
Reset method for 5/2-way valve, single solenoid									
-	Pneumatic spring								
FR	Mechanical spring 1								
Pilot air supply port									
-	Internal								
S	External								
Generation									
C	C series								

1 Only for 5/2-way valves, single solenoid

Order example:

MN1H-5/2-D-2-FR-S-C

Solenoid valve without coil MN1H - 5/2-way valve, single solenoid - standard identification D - width 52 mm - mechanical spring reset method - external pilot air supply - C series

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Valves

08

1004

→ www.festo.com/catalogue/...

★ Generally ready for shipping ex works in 24 hours

Subject to change – 2018/11

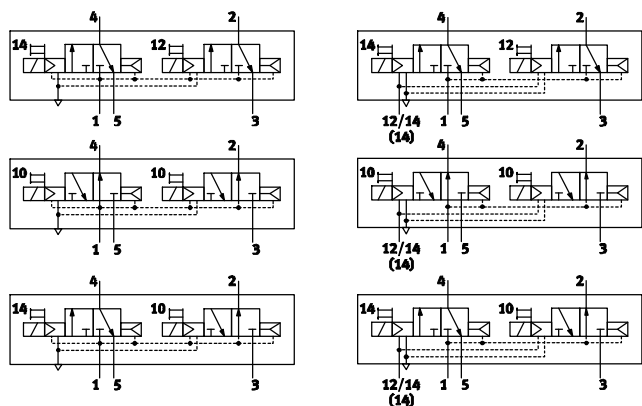
Data sheet – VSVA

Technical data		Download CAD data → www.festo.com							
Width		42 mm				52 mm			
Valve function		2x 3/2-way single solenoid	5/2 single solenoid	5/2 double solenoid	5/3 single solenoid	2x 3/2-way single solenoid	5/2 single solenoid	5/2 double solenoid	5/3 single solenoid
Sub-base	1, 2, 3, 4, 5 12, 14	G1/4				G3/8			
		M5				G1/8			
Type of mounting		On sub-base							
Electrical data – Solenoid coil									
Electrical connection		Central plug, round design M12x1, 3-pin							
Operating voltage	[V DC]	24							
Power consumption	DC [W]	1.3	1.6			4.6			
Degree of protection		With plug socket to IP65 (to EN 60529) and NEMA4							
Protective circuit and LED		Integrated in the valve							

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C] –5 ... +50

Materials	
Housing	Die-cast aluminium, PA
Screws	Galvanised steel
Seals	FPM, NBR

Data sheet – 2x 3/2-way valve VSVA

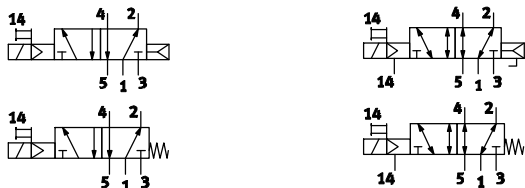


Technical data		Download CAD data → www.festo.com	
Width		42 mm	52 mm
Reset method		Pneumatic	
Operating pressure	Internal pilot air supply [bar]	3 ... 10	
	External pilot air supply [bar]	3 ... 10	
Pilot pressure	[bar]	3 ... 10	
Standard nominal flow rate	qnN [l/min]	1100	2200
Switching time	On/off [ms]	20/38	20/35
Design		Piston spool	
Length/width/height	[mm]	138/42/59	160/52/60

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

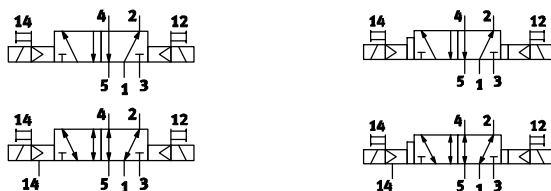
Data sheet – 5/2-way valve VSVA, single solenoid



Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Reset method			Mechanical	Pneumatic	Mechanical	Pneumatic
Operating pressure	Internal pilot air supply	[bar]	3 ... 10		3 ... 10	
	External pilot air supply	[bar]	-0.9 ... +16		-0.9 ... +16	
Pilot pressure		[bar]	3 ... 10		3 ... 10	
Standard nominal flow rate	qnN	[l/min]	1300		2800	
Switching time	On/off	[ms]	22/60	27/45	20/60	40/45
Design			Piston spool		Piston spool	
Length/width/height		[mm]	138/42/59		160/52/60	

08

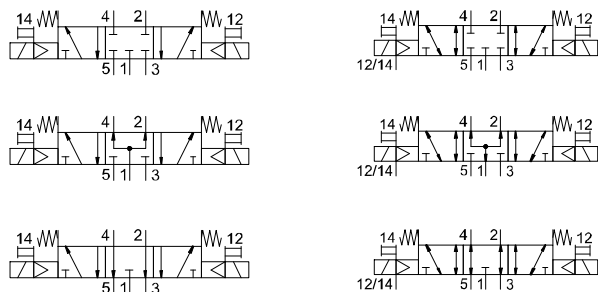
Data sheet – 5/2-way valve VSVA, double solenoid



Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Operating pressure	Internal pilot air supply	[bar]	3 ... 10		3 ... 10	
	External pilot air supply	[bar]	-0.9 ... +16		-0.9 ... +16	
Pilot pressure		[bar]	3 ... 10		3 ... 10	
Standard nominal flow rate	qnN	[l/min]	1300		2800	
Changeover time	Dominant at 1st signal	[ms]	16		18	
	Dominant at 14		19		18	
Design			Piston spool		Piston spool	
Length/width/height		[mm]	138/42/59		160/52/60	

Valves

Data sheet – 5/3-way valve VSVA



Technical data			Download CAD data → www.festo.com	
Width			42 mm	52 mm
Reset method			Mechanical	–
Operating pressure	Internal pilot air supply	[bar]	3 ... 10	3 ... 10
	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	3 ... 10	3 ... 10
Standard nominal flow rate	qnN	[l/min]	1300	2700
Switching time	On/off	[ms]	22/65	23/60
Design			Piston spool	Piston spool
Length/width/height		[mm]	138/42/59	160/52/60

08

Valves

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

Order code – VSVA 2x 3/2-way valves

VSVA	-	B	-	T	32	-	A	D	-	1	R5	L
Valve series												
VSVA	Standards-based valve to ISO 5599-1											
Valve type												
B	Sub-base valve											
Valve function												
T	2 single solenoid valves in one housing											
Connections/switching positions												
32	3/2-way valve											
Normal position/additional function												
C	Closed											
U	Open											
H	1x open, 1x closed											
Reset method												
A	Pneumatic spring											
Pilot air supply port												
-	Internal											
Z	External											
Manual override												
D	Non-detenting/detenting											
Standard												
D1	ISO size 1, width 42 mm											
D2	ISO size 2, width 52 mm											
Operating voltage												
1	24 V DC											
Electrical connection												
R5	Central plug M12x1											
Signal status display												
L	LED (integrated)											

08


Valves

Order example:

VSVA-B-T32C-AZD-D1-1R5L

Standards-based valve VSVA - sub-base valve - 2 single solenoid valves in one housing - 3/2-way valve - normally closed - pneumatic spring reset method - external pilot air supply - non-detenting/detenting manual override - width 42 mm - operating voltage 24 V DC - central plug M12x1 electrical connection - LED signal status display

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Order code – VSVA 5/2-way valves

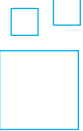
VSVA – B – 52 – D – 1 R5 L	
Valve series	
VSVA	Standards-based valve to ISO 5599-1
Valve type	
B	Sub-base valve
Valve function	
M	single solenoid
B	double solenoid
D	double solenoid with dominant signal at 14
Connections/switching positions	
52	5/2-way valve
Reset method	
A	Pneumatic spring
M	Mechanical spring
–	double solenoid valve
Pilot air supply port	
–	Internal
Z	External
Manual override	
D	Non-detenting/detenting
Standard	
D1	ISO size 1, width 42 mm
D2	ISO size 2, width 52 mm
Operating voltage	
1	24 V DC
Electrical connection	
R5	Central plug M12x1
Signal status display	
L	LED (integrated)

Order example:

VSVA-B-B52-D-D1-1R5L

Standards-based valve VSVA - sub-base valve - double solenoid - 5/2-way valve - internal pilot air supply - non-detenting/detenting manual override - width 42 mm - operating voltage 24 V DC - central plug M12x1 electrical connection - LED signal status display

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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★ Quick ordering¹⁾

	Part no.	Type
5/2-way valve, single solenoid	561362	VSVA-B-M52-AD-D1-1R5L
	561363	VSVA-B-M52-MD-D1-1R5L
5/2-way valve, double solenoid	561364	VSVA-B-B52-D-D1-1R5L

1) All products in this table are easy to select and quick to order.

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

Order code – VSVA 5/3-way valves

VSVA – B – P 53 – – – D – – 1 R5 L

Valve series	
VSVA	Standards-based valve to ISO 5599-1
Valve type	
B	Sub-base valve
Valve function	
P	single solenoid, mid-position
Connections/switching positions	
53	5/3-way valve
Normal position/additional function	
C	Closed
U	Open
E	Exhausting
Pilot air supply port	
–	Internal
Z	External
Manual override	
D	Non-detenting/detenting
Standard	
D1	ISO size 1, width 42 mm
D2	ISO size 2, width 52 mm
Operating voltage	
1	24 V DC
Electrical connection	
R5	Central plug M12x1
Signal status display	
L	LED (integrated)

08

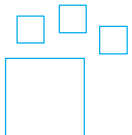
Valves

Order example:

VSVA-B-P53C-ZD-D1-1R5L

Standards-based valve VSVA - sub-base valve - single solenoid, mid-position - 5/3-way valve - normally closed - external pilot air supply - non-detenting/detenting manual override - width 42 mm - operating voltage 24 V DC - central plug M12x1 electrical connection - LED signal status display

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or

➔ www.festo.com/catalogue/...

Enter the type code in the search field.

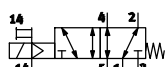
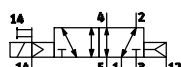
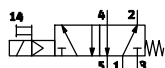
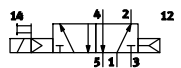
Data sheet – MFH/JMFH

Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Valve function			5/2 single solenoid	5/2 double solenoid	5/3 exhausting	5/2 single solenoid
Sub-base	1, 2, 3, 4, 5		G1/4		G3/8	
Type of mounting			Via through-hole on sub-base			
Electrical data – F solenoid coil						
Electrical connection			Plug pins, 3-pin, with connection pattern to Festo standard for MSSD-F			
Operating voltage	DC voltage	[V DC]	12, 24, 42, 48			
	AC voltage	[V AC]	24, 42, 48, 110, 230, 240 (50 ... 60 Hz)			
Coil characteristics	DC voltage	[W]	4.5			
	AC voltage	[VA]	Pull: 9 Hold: 7			
Degree of protection to EN 60529			With plug socket to IP65			

Operating conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	-5 ... +40
Temperature of medium	[°C]	-10 ... +60

Materials	
Housing	Die-cast aluminium
Seals	HNBR, NBR

Data sheet – 5/2-way valve MFH, single solenoid

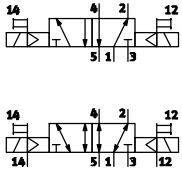


Technical data			Download CAD data → www.festo.com			
Width			42 mm		52 mm	
Reset method			Mechanical	Pneumatic	Mechanical	Pneumatic
Operating pressure	Internal pilot air supply	[bar]	3 ... 10	2 ... 10	3 ... 10	2 ... 10
	External pilot air supply	[bar]	-0.9 ... +16	-0.9 ... +16	-0.9 ... +16	-0.9 ... +16
Pilot pressure			[bar]		2 ... 10	
Standard nominal flow rate	qnN	[l/min]	1200		2300	
Switching time	On/off	[ms]	16/45	23/35	27/73	48/71
Design			Piston spool			
Length/width/height			[mm]	126/42/70	115/42/70	160/54/80
					142/54/80	

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

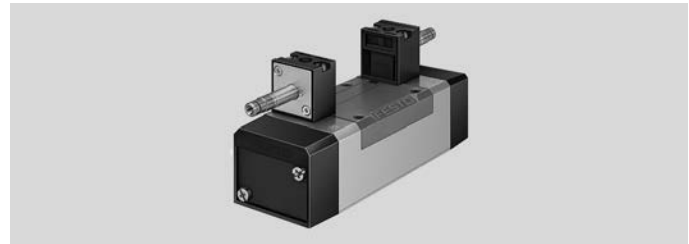
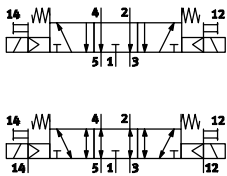
Data sheet – 5/2-way valve JMFH, double solenoid



Technical data			Download CAD data → www.festo.com	
Width			42 mm	52 mm
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	
	External pilot air supply	[bar]	-0.9 ... +16	
Pilot pressure		[bar]	2 ... 10	
Standard nominal flow rate	qnN	[l/min]	1200	2300
Switching time	Change-over	[ms]	16	18
Design			Piston spool	
Length/width/height		[mm]	143/42/70	160/54/80

08

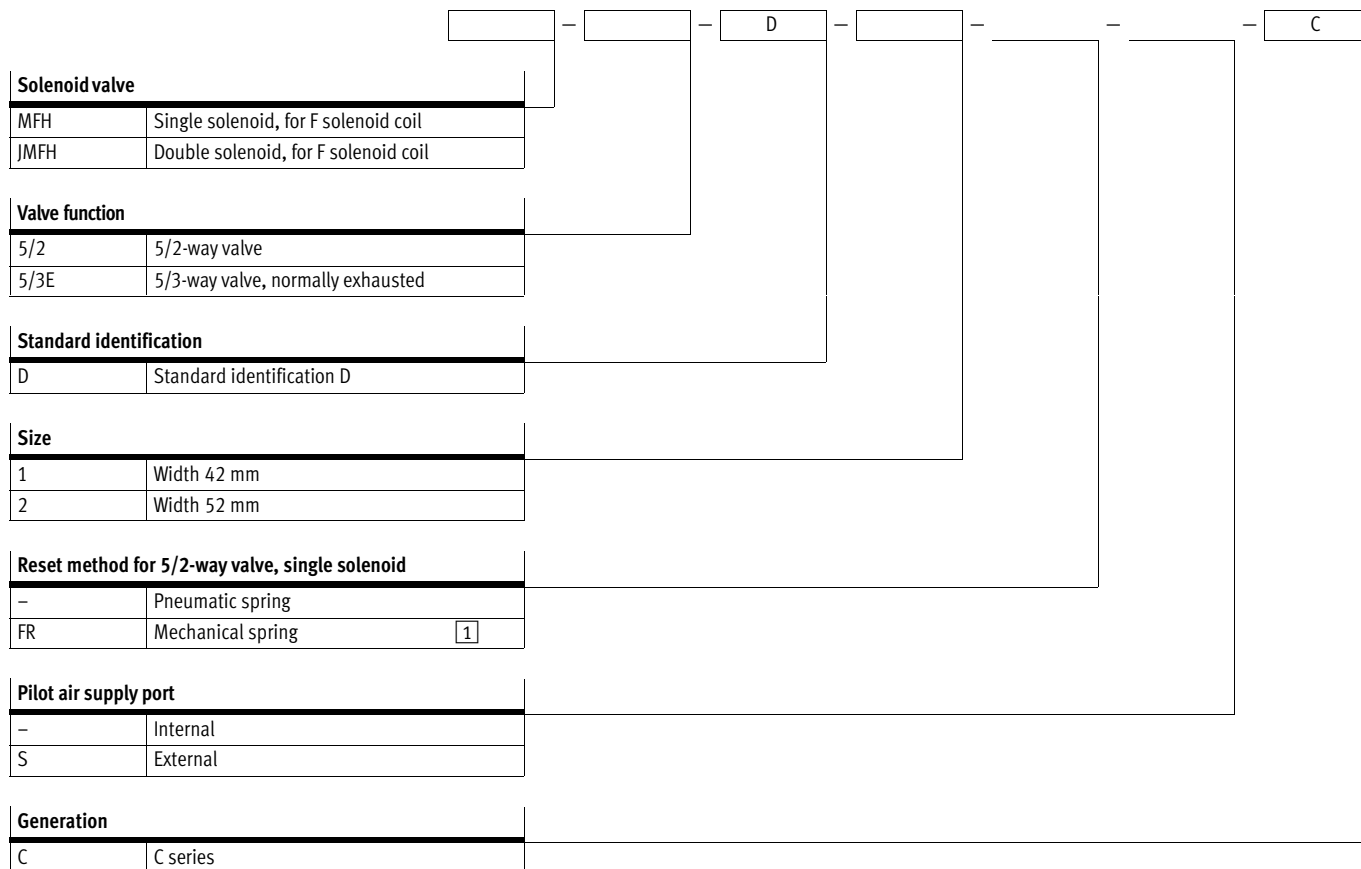
Data sheet – 5/3-way valve MFH, normally exhausted



Technical data			Download CAD data → www.festo.com	
Width			42 mm	52 mm
Operating pressure	Internal pilot air supply	[bar]	3 ... 10	
	External pilot air supply	[bar]	-0.9 ... +16	
Pilot pressure		[bar]	2 ... 10	
Standard nominal flow rate	qnN	[l/min]	1200	2300
Switching time	On/off	[ms]	18/36	35/67
Design			Piston spool	
Length/width/height		[mm]	143/42/70	160/54/80

Valves

Order code – MFH/JMFH



¹ Only for 5/2-way valves, single solenoid

Order example:

JMFH-5/2-D-1-C

Double solenoid valve without solenoid coil JMFH - 5/2-way valve - standard identification D - width 42 mm - C series

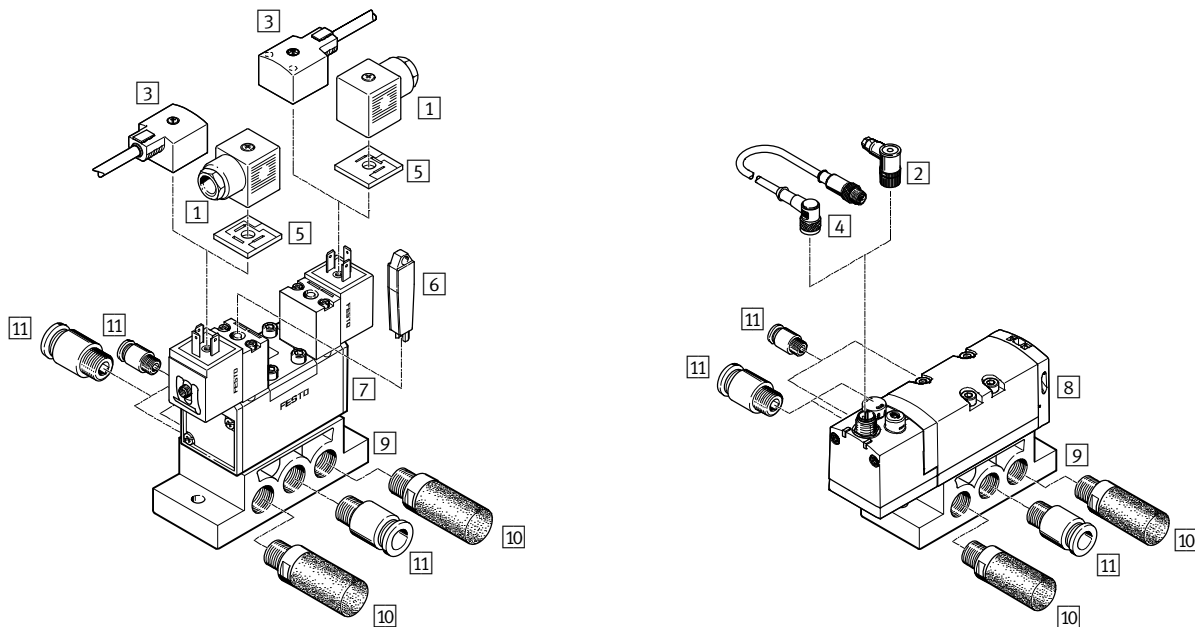
Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

Accessories – Individual mounting

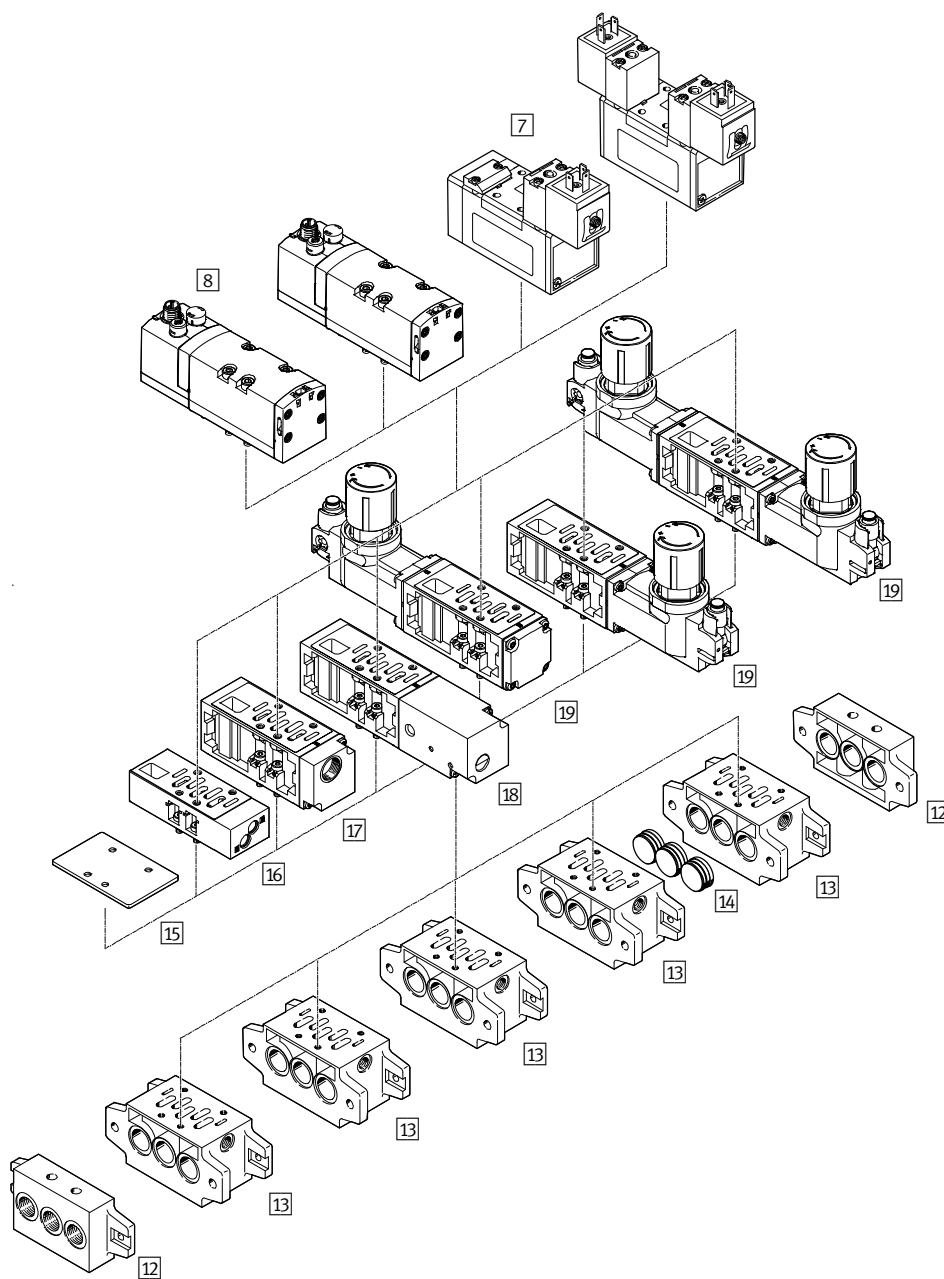


08

Valves

	→ Page/online
1 Angled plug socket MSSD, square design	1017
2 Plug socket SIE for plug M12x1	1017
3 Connecting cable KMC for plug type A	1017
4 Connecting cable NEBU-M12 for plug M12x1	1017
5 Illuminating seal MC-LD for N1 solenoid coil	1017
6 Manual override AHB	1017
7 Solenoid valve MN1H	1003
8 Solenoid valve VSVA	1005
9 Individual sub-base NAS (pneumatic connections on the side), NAU (pneumatic connections underneath)	1017
10 Silencer U	1017
11 Push-in fitting QS	1018
- N1 solenoid coil	1019
- F solenoid coil	1019
- Inscription label IBS-9x17	1019

Accessories – Manifold assembly



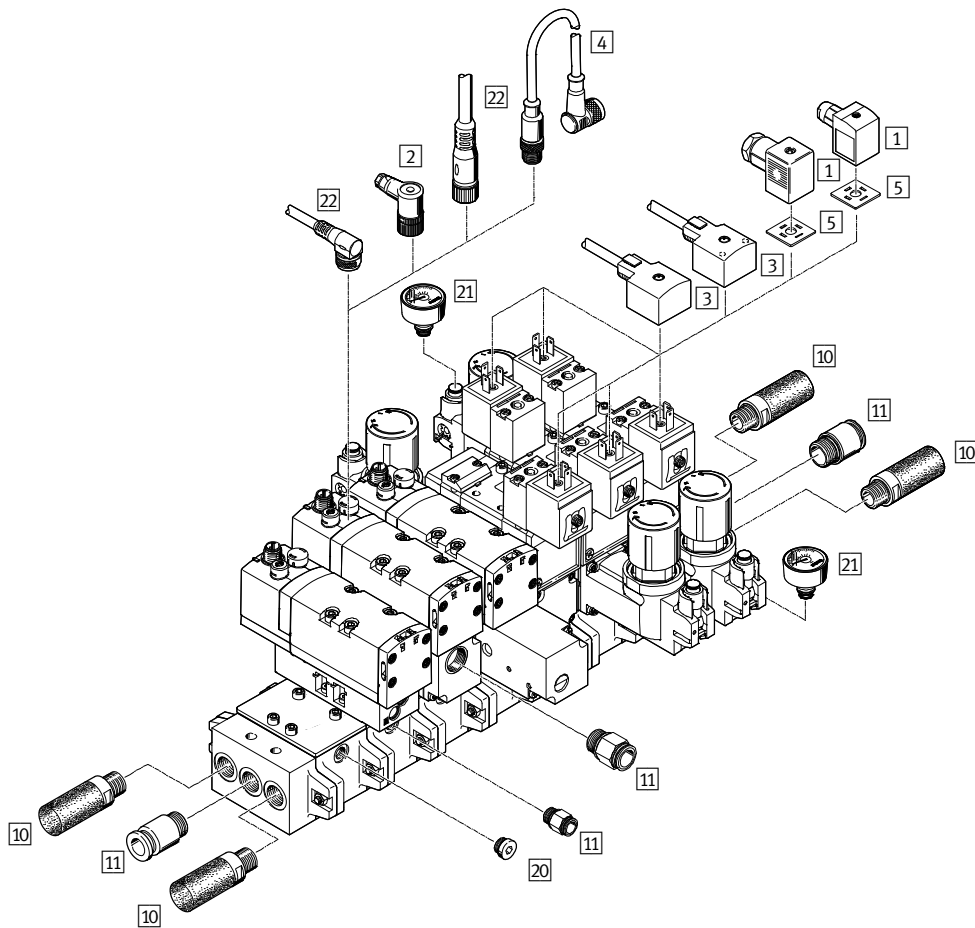
08 Valves

	→ Page/online
7 Solenoid valve MN1H	1003
8 Solenoid valve VSVA	1005
12 End plate kit NEV	1018
13 Manifold sub-base NAV	1018
14 Isolating disc NSC	1018
15 Cover plate NDV	1018
16 Throttle plate VABF-S1-1-F1B1	1018
17 Vertical pressure supply plate VABF-S1-1-P1A3	1018
18 Vertical pressure shut-off plate VABF-S1-1-L1D1	1018
19 Regulator plate VABF-S1-1-R	1019
– N1 solenoid coil	1019
– F solenoid coil	1019
– Inscription label IBS-9x17	1019

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

Accessories



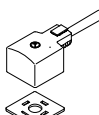
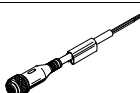


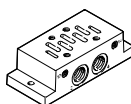



08

Valves

		→ Page/online
1	Angled plug socket MSSD, square design	1017
2	Plug socket SIE for plug M12x1	1017
3	Connecting cable KMC for plug type A	1017
4	Connecting cable NEBU-M12 for plug M12x1	1017
5	Illuminating seal MC-LD for N1 solenoid coil	1017
10	Silencer U	1017
11	Push-in fitting QS	1018
20	Blanking plug B	1019
21	Pressure gauge PAGN-26-10-P10	1019
-	N1 solenoid coil	1019
-	F solenoid coil	1019
-	Inscription label IBS-9x17	1019


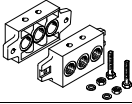
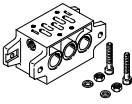

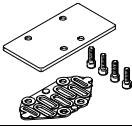
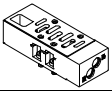
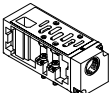
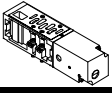
Accessories – Ordering data

Description		Part no.	Type		
1 Angled plug socket Data sheets online: → mssd					
	For plug type A	Cable fitting Pg9	Screw terminal	34583	MSSD-C
		Cable fitting M16	Screw terminal	539709	MSSD-C-M16
		–	Insulation displacement technology	192748	MSSD-C-S-M16
	For F solenoid coil	Cable fitting Pg9	Screw terminal	★ 34431	MSSD-F
2 Plug socket for plug M12x1 Data sheets online: → necu					
	Angled socket, M12, 4-pin	Screw terminal	12956	SIE-WD-TR	
3 Connecting cable for plug type A Data sheets online: → kmc					
	24 V DC	With LED	2.5 m	30931	KMC-1-24DC-2,5-LED
			5 m	30933	KMC-1-24DC-5-LED
			10 m	193459	KMC-1-24DC-10-LED
	Up to 230 V	Without LED	2.5 m	30932	KMC-1-230AC-2,5
			5 m	30934	KMC-1-230AC-5
4 Connecting cable for plug M12x1 Data sheets online: → nebu					
	Open cable end, 4-wire	Straight socket, 5-pin	2.5 m	★ 550326	NEBU-M12G5-K-2.5-LE4
			5 m	★ 541328	NEBU-M12G5-K-5-LE4
		Angled plug socket, 5-pin	5 m	541329	NEBU-M12W5-K-5-LE4
5 Illuminating seal for N1 solenoid coil					
	Illuminating seal	For N1 solenoid coils	12 ... 24 V DC	19145	MC-LD-12-24DC
			230 V DC/V AC	19146	MC-LD-230AC
6 Manual override					
	Tool for manual override	Valves MN1H/MFH	157651	AHB-MD/MF/MV	
9 Individual sub-base					
	For valve width 42 mm	Connections on the side	★ 9484	NAS-1/4-1A-ISO	
		Connections underneath	★ 9485	NAU-1/4-1B-ISO	
	For valve width 52 mm	Connections on the side	11310	NAS-3/8-2A-ISO	
		Connections underneath	11416	NAU-3/8-2B-ISO	
10 Silencer Data sheets → Page 1661					
	Silencer for noise reduction at exhaust ports	For thread G1/4	★ 6842	U-1/4-B	
		For thread G3/8	★ 6843	U-3/8-B	
		For thread G1/2	★ 6844	U-1/2-B	

Standards-based directional control valves >

Solenoid valves, ISO 5599-1 ★

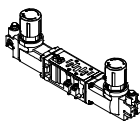



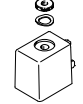
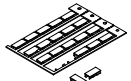
Accessories – Ordering data

Description		Part no.	Type
11 Push-in fitting Data sheets → Page 1443			
	Connecting thread G1/8	Tubing O.D. Ø 8 mm	10 pieces ★ 186098 QS-G1/8-8
	Connecting thread G1/4	Tubing O.D. Ø 8 mm	10 pieces ★ 186099 QS-G1/4-8
	Connecting thread G3/8, plastic releasing ring	Tubing O.D. Ø 10 mm	10 pieces ★ 186102 QS-G3/8-10
	Connecting thread G1/2	Tubing O.D. Ø 12 mm	1 piece ★ 186104 QS-G1/2-12
12 End plate kit			
	Right and left end plate	For valve width 42 mm	★ 10174 NEV-1DA/DB-ISO
		For valve width 52 mm	11306 NEV-2DA/DB-ISO
13 Manifold sub-base			
	One valve position	For valve width 42 mm	Connections underneath ★ 10173 NAV-1/4-1C-ISO
			Connections on the side and underneath ★ 152789 NAVW-1/4-1-ISO
		For valve width 52 mm	Connections underneath 11305 NAV-3/8-2C-ISO
14 Isolating disc			
	For pressure zone separation	For valve width 42 mm	★ 11550 NSC-1/4-1-ISO
		For valve width 52 mm	11908 NSC-3/8-2-ISO
15 Cover plate			
	With seal and mounting screws	For valve width 42 mm	★ 9489 NDV-1-ISO
		For valve width 52 mm	11308 NDV-2-ISO
16 Throttle plate			
	For exhaust air flow control in connections 3 and 5 of the valve	For valve width 52 mm	555788 VABF-S1-2-F1B1-C
17 Vertical pressure supply plate			
	For independently supplying working air to a valve	For valve width 52 mm	555785 VABF-S1-2-P1A3-G12
18 Vertical pressure shut-off plate			
	For shutting off a valve from the supply pressure	For valve width 52 mm	555790 VABF-S1-2-L1D1-C

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Valves

Accessories – Ordering data

Description		Part no.	Type		
19 Regulator plate, for valve width 52 mm					
	For port 1	P	0.5 ... 10 bar	555758	VABF-S1-2-R1C2-C-10
			0.5 ... 6 bar	555757	VABF-S1-2-R1C2-C-6
	For port 2	B	0.5 ... 10 bar	555760	VABF-S1-2-R2C2-C-10
			0.5 ... 6 bar	555759	VABF-S1-2-R2C2-C-6
	For port 4	A	0.5 ... 10 bar	555762	VABF-S1-2-R3C2-C-10
			0.5 ... 6 bar	555761	VABF-S1-2-R3C2-C-6
	For port 2 and 4	AB	0.5 ... 10 bar	555764	VABF-S1-2-R4C2-C-10
			0.5 ... 6 bar	555763	VABF-S1-2-R4C2-C-6
	For port 2 and 4, reversible	AB	0.5 ... 10 bar	555766	VABF-S1-2-R5C2-C-10
			0.5 ... 6 bar	555765	VABF-S1-2-R5C2-C-6
	For port 2, reversible	B	0.5 ... 10 bar	555768	VABF-S1-2-R6C2-C-10
			0.5 ... 6 bar	555767	VABF-S1-2-R6C2-C-6
For port 4, reversible	A	0.5 ... 10 bar	555770	VABF-S1-2-R7C2-C-10	
		0.5 ... 6 bar	555769	VABF-S1-2-R7C2-C-6	
20 Blanking plug Data sheets online: → b-1					
	For sealing connections	Connecting thread G1/4	10 pieces	★ 3569	B-1/4
		Connecting thread G3/8	10 pieces	★ 3570	B-3/8
21 Pressure gauge Data sheets online: → pagn					
	With cartridge fitting connection for regulator plate	0 ... 10 bar	543488	PAGN-26-10-P10	
N1 solenoid coil for valves MN1H, JMN1H					
	24 V DC		123060	MSN1G-24DC-OD	
	12 V DC and 24 V AC, 50 ... 60 Hz		170152	MSN1W-24AC/12DC	
	110 V AC, 50 ... 60 Hz		123061	MSN1W-110AC-OD	
	230 V AC, 50 ... 60 Hz		123062	MSN1W-230AC-OD	
F solenoid coil for valves MFH, JMFH					
	12 V DC		34410	MSFG-12DC-OD	
	24 V DC and 42 V AC, 50 ... 60 Hz, plug pins with connection pattern to Festo standard for MSSD-F		4527	MSFG-24/42-50/60	
			34411	MSFG-24/42-50/60-OD	
	42 V DC		34413	MSFG-42DC-OD	
	24 V AC		34415	MSFG-24AC-OD	
	48 V AC, 50 ... 60 Hz		34418	MSFW-48AC-OD	
	110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz		34420	MSFW-110AC-OD	
	230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz		34422	MSFW-230AC-OD	
240 V AC, 50 ... 60 Hz		34424	MSFW-240AC-OD		
Inscription label					
	Inscription label for valves	24 pieces in frame	161937	IBS-9x17	

Standards-based directional control valves >

08

Valves



Safely control the exhaust of your cylinders

- + Fast, controllable non-return function
- + Prevents pneumatic drives from dropping down in the event of a loss of compressed air

Shut-off valves > Check valves and quick exhaust valves >
Check, hand slide and shut-off valves

HGL ★
VBOH
HE
QH, QHS


Shut-off valves > Check valves and quick exhaust valves >

Check, hand slide and shut-off valves


HGL ★ , VBOH, HE, QH, QHS

 Overview, configuration and ordering
→ www.festo.com/catalogue/hgl



 Additional information, support and user documentation
→ www.festo.com/sp/hgl

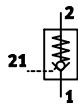


 Quick ordering of basic designs
→ page 1023



- + Thread at both ends, push-in connector at both ends, thread/push-in connector

Data sheet



Operating conditions		M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pneumatic connection 2						
Operating/pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure for entire temperature range	[bar]	0.5 ... 10				
Pilot pressure	[bar]	2 ... 10			1 ... 10	
Ambient temperature	[°C]	-10 ... +60				

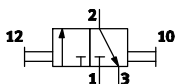
Materials		HGL...-B with threaded connection at both ends	HGL...-QS with push-in/threaded connection
Type			
Housing		Anodised wrought aluminium alloy	
Swivel connection		Die-cast zinc	
Releasing ring		-	POM
Non-return collar		NBR	
Seals		NBR	

Ordering data

	Pneumatic connection		Pilot air connection	Standard nominal flow rate qnN in flow direction at 6 bar → 5 bar [l/min]	Standard flow rate qn in flow direction at 6 bar → 0 bar [l/min]	Part no.	Type
	2	1					
Threaded connection at both ends							
	M5	M5	M5	130	200	★ 530029	HGL-M5-B
	G $\frac{1}{8}$	G $\frac{1}{8}$	M5	300	430	★ 530030	HGL-1/8-B
		G $\frac{1}{8}$	G $\frac{1}{8}$	300	430	★ 543253	HGL-1/8-1/8-B
	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{8}$	550	680	★ 530031	HGL-1/4-B
	G $\frac{3}{8}$	G $\frac{3}{8}$	G $\frac{1}{4}$	1100	1500	★ 530032	HGL-3/8-B
	G $\frac{1}{2}$	G $\frac{1}{2}$	G $\frac{3}{8}$	1600	2100	★ 530033	HGL-1/2-B
Push-in/threaded connection							
	M5	QS-4	QS-4	130	200	★ 530038	HGL-M5-QS-4
	G $\frac{1}{8}$	QS-4	M5	200	300	★ 530039	HGL-1/8-QS-4
		QS-6	M5	270	400	★ 530040	HGL-1/8-QS-6
	G $\frac{1}{4}$	QS-8	G $\frac{1}{8}$	390	640	★ 530041	HGL-1/4-QS-8
		QS-10	G $\frac{1}{8}$	400	670	★ 530042	HGL-1/4-QS-10
	G $\frac{3}{8}$	QS-8	G $\frac{1}{4}$	830	1200	★ 530043	HGL-3/8-QS-8
		QS-10	G $\frac{1}{4}$	890	1300	★ 530044	HGL-3/8-QS-10
	G $\frac{1}{2}$	QS-12	G $\frac{3}{8}$	1400	2100	★ 530045	HGL-1/2-QS-12

Hand slide valves VBOH

Data sheet



Technical data

Design	Sleeve valve
Valve function	3/2-way, bistable
Type of control	Direct

Operating conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	-0.95 ... +12
Ambient temperature [°C]	-10 ... +80

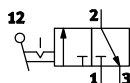
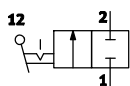
Materials

Housing	Anodised wrought aluminium alloy
Threaded plug	Anodised wrought aluminium alloy
Grip ring	PBT
Seals	NBR

Ordering data

	Pneumatic connection		Valve function	Nominal width [mm]	Standard nominal flow rate qnN [l/min]	Part no.	Type
	1	2					
	M5	M5	3/2-way, bistable	3.6	236	1609969	VBOH-32-M5
	G1/8	G1/8	3/2-way, bistable	5.7	777	1558073	VBOH-32-G18
	G1/4	G1/4	3/2-way, bistable	8.4	1675	1302994	VBOH-32-G14
	G3/8	G3/8	3/2-way, bistable	9.9	2201	1482679	VBOH-32-G38
	G1/2	G1/2	3/2-way, bistable	12.1	3420	1587988	VBOH-32-G12
	G3/4	G3/4	3/2-way, bistable	19.3	7691	1629664	VBOH-32-G34

Data sheet



Technical data	
Valve function	2/2-way, bistable 3/2-way, bistable
Design	Piston spool
Type of control	Direct
Flow direction	Non-reversible
Exhaust air function	– Without flow control option

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	–0.95 ... +10
Ambient temperature [°C]	0 ... +60

Materials	
Housing	PBT reinforced

Ordering data

	Pneumatic connection			Valve function	Nominal size [mm]	Standard nominal flow rate q _N [l/min]	Part no.	Type
	1	2	3					
Push-in connector at both ends								
	QS-6	QS-6	–	2/2-way, bistable	5	278	153467	HE-2-QS-6
			Not ducted	3/2-way, bistable	5	279	153475	HE-3-QS-6
	QS-8	QS-8	–	2/2-way, bistable	5	388	153468	HE-2-QS-8
			Not ducted	3/2-way, bistable	5	390	153476	HE-3-QS-8
	QS-10	QS-10	–	2/2-way, bistable	7	761	153469	HE-2-QS-10
			Not ducted	3/2-way, bistable	7	780	153477	HE-3-QS-10
QS-12	QS-12	–	2/2-way, bistable	7	831	153470	HE-2-QS-12	
		Not ducted	3/2-way, bistable	7	840	153478	HE-3-QS-12	
Threaded/push-in connector								
	R1/8	QS-6	–	2/2-way, bistable	5	307	153471	HE-2-1/8-QS-6
			Not ducted	3/2-way, bistable	5	301	153479	HE-3-1/8-QS-6
	R1/4	QS-8	–	2/2-way, bistable	5	396	153472	HE-2-1/4-QS-8
			Not ducted	3/2-way, bistable	5	380	153480	HE-3-1/4-QS-8
	R3/8	QS-10	–	2/2-way, bistable	7	728	153473	HE-2-3/8-QS-10
			Not ducted	3/2-way, bistable	7	733	153481	HE-3-3/8-QS-10
	R1/2	QS-12	–	2/2-way, bistable	7	776	153474	HE-2-1/2-QS-12
			Not ducted	3/2-way, bistable	7	796	153482	HE-3-1/2-QS-12
Threaded connection at both ends								
	R1/8	R1/8	Not ducted	3/2-way, bistable	5	301	153296	HE-3-1/8-1/8
	R1/4	R1/4	Not ducted	3/2-way, bistable	7	380	153297	HE-3-1/4-1/4
	R3/8	R3/8	Not ducted	3/2-way, bistable	7	733	153298	HE-3-3/8-3/8

Ball valves QH/QHS

Product range overview

Type	Version	Pneumatic connection 1	Pneumatic connection 2	→ Page/ online
QH	Push-in connector at both ends	QS-4	QS-4	1026
		QS-6	QS-6	
	Threaded/push-in connector	R1/8	QS-4	
			QS-6	
QHS	Push-in connector at both ends, bulkhead fitting	QS-6	QS-6	1027
QH	Female thread at both ends, with hand lever	G1/4	G1/4	
		G3/8	G3/8	
		G1/2	G1/2	
		G3/4	G3/4	
		G1	G1	
		G1 1/2	G1 1/2	

Data sheet



Technical data

Design	Ball valve
Valve function	2/2-way, bistable
Actuation type	Manual

Operating conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	-1 ... +10
Ambient temperature [°C]	0 ... +60

Materials

Housing	PBT
---------	-----

Ordering data

	Pneumatic connection		Valve function	Nominal width [mm]	Standard nominal flow rate qnN [l/min]	Part no.	Type
	1	2					
Push-in connector at both ends							
	QS-4	QS-4	2/2-way, bistable	2.5	148	153483	QH-QS-4
	QS-6	QS-6	2/2-way, bistable	4	533	153484	QH-QS-6
Threaded/push-in connector							
	R1/8	QS-4	2/2-way, bistable	2.5	235	153486	QH-QS-4-1/8
		QS-6	2/2-way, bistable	2.5	560	153487	QH-QS-6-1/8
Bulkhead fitting, push-in connector at both ends							
	QS-6	QS-6	2/2-way, bistable	4	528	153485	QHS-QS-6

Data sheet – With hand lever



Technical data

Design	Ball valve
Valve function	2/2-way, bistable
Actuation type	Manual

Operating conditions

Operating medium ¹⁾	Compressed air to ISO 8573-1:2010 [7:-:-]
	Water
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	-20 ... +180

- 1) Other media on request.
Not permitted for toxic gases such as natural gas, mains gas, etc.

Materials

Housing	Brass
Lever	Aluminium

Ordering data

	Pneumatic connection		Valve function	Nominal width [mm]	Standard nominal flow rate qnN [l/min]	Part no.	Type
	1	2					
Female thread at both ends							
	G1/4	G1/4	2/2-way, bistable	10	3400	9541	QH-1/4
	G3/8	G3/8	2/2-way, bistable	10	7500	9542	QH-3/8
	G1/2	G1/2	2/2-way, bistable	15	11,500	9543	QH-1/2
	G3/4	G3/4	2/2-way, bistable	20	21,000	9544	QH-3/4
	G1	G1	2/2-way, bistable	25	33,000	9545	QH-1
	G1 1/2	G1 1/2	2/2-way, bistable	40	84,000	6837	QH-1 1/2

Shut-off valves > Ball valves and on-off valves >

08

Valves



Innovative control elements for your pneumatic drive solutions

- + Space-saving design with up to three valve functions integrated in a single housing
- + Flexible connection options
- + Material suitable for the application

Flow control valves > One-way flow control valves >

One-way flow control valves and silencers

GRLA★ / GRLZ★

VFOC

VFOF

GR, GRA

VFFK

Flow control valves > One-way flow control valves >

One-way flow control valves and silencers

GRL... ★ /VF.../GR

 Overview, configuration and ordering
→ www.festo.com/catalogue/grla



 Additional information, support and user documentation
→ www.festo.com/sp/grla



★ Quick ordering of basic designs
→ page 1034



- + GR...: flow control valves, flow control at one end
- + Standard, mini, in-line variants with different flow rates and minimal height
- + Polymer, metal or stainless steel design
- + Connections: thread at both ends, push-in connector at both ends, thread/push-in connector
- + VFOF: functional combination with one-way flow control valve and piloted check valve
- + VFFK: flow control/silencers can be screwed into the exhaust port

One-way flow control valves

Product range overview

	Valve function	Type code	Connection outlet direction	Pneumatic connection 1	Pneumatic connection 2	qnN ¹⁾ [l/min]	Adjusting element	→ Page/online
Standard								
Metal	Exhaust air one-way flow control function	GRLA	Elbow outlet	QS-3, QS-4, QS-6, QS-8, QS-10, QS-12	M5, G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	100 ... 1580	Slotted head screw Knurled screw	1033
				M5, G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	M5, G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	95 ... 4320	Slotted head screw	grla
				M5, G $\frac{1}{8}$, G $\frac{1}{4}$	M5, G $\frac{1}{8}$, G $\frac{1}{4}$	95 ... 610	Knurled screw	
				PK-3, PK-4, PK-6	M5, G $\frac{1}{8}$, G $\frac{1}{4}$	83 ... 540	Slotted head screw	grla
		GRLSA	Elbow outlet	QS-6, QS-8	G $\frac{1}{8}$, G $\frac{1}{4}$	0 ... 450	Rotary knob with scale, internal hex	grlsa
	Supply air one-way flow control function	GRLZ	Elbow outlet	QS-3, QS-4, QS-6, QS-8	M5, G $\frac{1}{8}$	100 ... 215	Slotted head screw	1033
				M5, G $\frac{1}{8}$, G $\frac{1}{4}$	M5, G $\frac{1}{8}$, G $\frac{1}{4}$	95 ... 610	Slotted head screw Knurled screw	grlz
				PK-3, PK-4, PK-6	M5, G $\frac{1}{8}$, G $\frac{1}{4}$	83 ... 540	Slotted head screw	grlz
VFOC				Elbow outlet	QS-4, QS-6	Push-in sleeve ²⁾ QS-4, QS-6	0 ... 270	Slotted head screw
Nickel-plated metal	Exhaust air one-way flow control function	VFOH	Elbow outlet	QS-4, QS-6, QS-8, QS-10	G $\frac{1}{8}$, G $\frac{1}{4}$	180 ... 530	External hex	vfoh
Polymer	Exhaust air one-way flow control function	GRLA	Elbow outlet	QS-6, QS-8	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	520 ... 650	Knurled screw	grla
Flat								
Polymer	Exhaust air one-way flow control function	VFOF	Elbow outlet	QS-6, QS-8	G $\frac{1}{8}$, G $\frac{1}{4}$	250 ... 650	Internal hex	1036

1) Standard nominal flow rate in flow control direction at 6 bar → 5 bar.

2) Only suitable for push-in connector QS.

One-way flow control valves

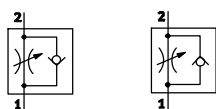
Product range overview

Type code	Valve function	Type code	Connection outlet direction	Pneumatic connection 1	Pneumatic connection 2	qnN ¹⁾ [l/min]	Adjusting element	→ Page/online
Mini								
Metal	Exhaust air one-way flow control function	GRLA	Elbow outlet	QS-3, QS-4	M3, M5	40 ... 41	Slotted head screw	grla
				M3	M3	0 ... 18	Slotted head screw	grla
	Supply air one-way flow control function	GRLZ	Elbow outlet	QS-3, QS-4	M3, M5	41 ... 48	Slotted head screw	grlz
				M3	M3	0 ... 18	Slotted head screw	grlz
In-line installation								
Polymer	One-way flow control function	GR	Straight	QS-3, QS-4, QS-6, QS-8	QS-3, QS-4, QS-6, QS-8	85 ... 265	Knurled screw	1037
Metal		GR/GRA		M3, M5, G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	M3, M5, G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	29.5 ... 3300	Knurled screw	1038
Corrosion-resistant								
Stainless steel	Exhaust air one-way flow control function	CRGRLA	Elbow outlet	M5, G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	M5, G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	95 ... 2100	Slotted head screw	crgla
Precision one-way flow control valve								
Metal	One-way flow control function	GRP	-	G ¹ / ₈	G ¹ / ₈	40.7 ... 75.8	Rotary knob with scale	grp
				PK-3, PK-4	PK-3, PK-4	3.8 ... 75.8	Rotary knob with scale	grp
M5 compact system								
Metal	One-way flow control function	GRF	-	PK-3	PK-3	45	Knurled screw	grf
Function combination								
Metal	Exhaust air one-way flow control function	GRXA	Elbow outlet	QS-4, QS-6, QS-8,	G ¹ / ₈ , G ¹ / ₄	130 ... 280	Slotted head screw	grxa
Polymer	Exhaust air one-way flow control function	VFOF	Elbow outlet	QS-6, QS-8,	G ¹ / ₈ , G ¹ / ₄	240 ... 590	Internal hex	1039

1) Standard nominal flow rate in flow control direction at 6 bar → 5 bar.

One-way flow control valves GRLA/GRLZ ★

Data sheet



Technical data – GRLA					
Pneumatic connection 2	M5	G1/8	G1/4	G3/8	G1/2
Pneumatic connection 1	QS-3, QS-4, QS-6	QS-3, QS-4, QS-6, QS-8	QS-6, QS-8, QS-10	QS-6, QS-8, QS-10	QS-12
Valve function	Exhaust air one-way flow control function				
Adjusting element	Slotted head screw				
	Knurled screw				




Technical data – GRLZ		
Pneumatic connection 2	M5	G1/8
Pneumatic connection 1	QS-3, QS-4, QS-6	QS-3, QS-4, QS-6, QS-8
Valve function	Supply air one-way flow control function	
Adjusting element	Slotted head screw	

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure for entire temperature range [bar]	0.2 ... 10
Ambient temperature [°C]	-10 ... +60

Materials		
Type code	GRLA/GRLZ with slotted head screw	GRLA-...-RS with knurled screw
Threaded plug, hollow bolt	Wrought aluminium alloy (GRLA/GRLZ-M5: brass)	
Swivel connection	Chromated die-cast zinc	
Knurled head	-	Anodised wrought aluminium alloy
Releasing ring	POM	
Adjustment screw	Brass	
Seals	NBR	

One-way flow control valves GRLA/GRLZ

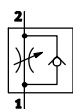
Quick ordering ¹⁾

	Pneumatic connection		Standard nominal flow rate qnN at 6 bar → 5 bar		Standard flow rate qn at 6 bar → 0 bar		Part no.	Type code
			In direction of flow control	In non-return direction	In direction of flow control	In non-return direction		
	2	1	[l/min]	[l/min]	[l/min]	[l/min]		
Exhaust air one-way flow control function								
GRLA with slotted head screw								
	M5	QS-3	100	60 ... 100	145	150 ... 170	193137	GRLA-M5-QS-3-D
		QS-4	110	65 ... 110	165	140 ... 160	193138	GRLA-M5-QS-4-D
		QS-6	115	70 ... 110	185	145 ... 170	193139	GRLA-M5-QS-6-D
	G1/8	QS-3	130	100 ... 130	180	200 ... 220	193142	GRLA-1/8-QS-3-D
		QS-4	160	120 ... 190	250	270 ... 300	193143	GRLA-1/8-QS-4-D
		QS-6	185	160 ... 240	370	330 ... 390	193144	GRLA-1/8-QS-6-D
			400	290 ... 420	600	570 ... 680	537075	GRLA-1/8-QS-6-MF-D
		QS-8	215	175 ... 250	400	330 ... 410	193145	GRLA-1/8-QS-8-D
		475	325 ... 500	720	610 ... 760	537076	GRLA-1/8-QS-8-MF-D	
	G1/4	QS-6	400	290 ... 420	600	570 ... 680	193146	GRLA-1/4-QS-6-D
		QS-8	475	325 ... 500	720	610 ... 760	193147	GRLA-1/4-QS-8-D
		QS-10	480	345 ... 500	760	630 ... 790	193148	GRLA-1/4-QS-10-D
	G3/8	QS-6	495	320 ... 495	740	840 ... 890	193149	GRLA-3/8-QS-6-D
		QS-8	820	450 ... 850	1300	1080 ... 1420	193150	GRLA-3/8-QS-8-D
		QS-10	900	540 ... 975	1400	1160 ... 1620	193151	GRLA-3/8-QS-10-D
G1/2	QS-12	1580	925 ... 1605	2220	1910 ... 2500	193152	GRLA-1/2-QS-12-D	
GRLA with knurled screw								
	M5	QS-3	100	60 ... 100	145	150 ... 170	197576	GRLA-M5-QS-3-RS-D
		QS-4	110	65 ... 110	165	140 ... 160	197577	GRLA-M5-QS-4-RS-D
		QS-6	115	70 ... 110	185	145 ... 170	197578	GRLA-M5-QS-6-RS-D
	G1/8	QS-3	130	100 ... 130	180	200 ... 220	197579	GRLA-1/8-QS-3-RS-D
		QS-4	160	120 ... 190	250	270 ... 300	197580	GRLA-1/8-QS-4-RS-D
		QS-6	185	160 ... 240	370	330 ... 390	197581	GRLA-1/8-QS-6-RS-D
		QS-8	215	175 ... 250	400	330 ... 410	534337	GRLA-1/8-QS-8-RS-D
	G1/4	QS-6	400	290 ... 420	600	570 ... 680	534338	GRLA-1/4-QS-6-RS-D
		QS-8	475	325 ... 500	720	610 ... 760	534339	GRLA-1/4-QS-8-RS-D
		QS-10	480	345 ... 500	760	630 ... 790	534340	GRLA-1/4-QS-10-RS-D
	G3/8	QS-6	495	320 ... 495	740	840 ... 890	534341	GRLA-3/8-QS-6-RS-D
		QS-8	820	450 ... 850	1300	1080 ... 1420	534342	GRLA-3/8-QS-8-RS-D
		QS-10	900	540 ... 975	1400	1160 ... 1620	534343	GRLA-3/8-QS-10-RS-D
	G1/2	QS-12	1580	925 ... 1605	2220	1910 ... 2500	534344	GRLA-1/2-QS-12-RS-D
	Supply air one-way flow control function							
GRLZ with slotted head screw								
	M5	QS-3	100	60 ... 100	135	130 ... 160	193153	GRLZ-M5-QS-3-D
		QS-4	110	65 ... 110	160	150 ... 180	193154	GRLZ-M5-QS-4-D
		QS-6	115	70 ... 110	170	160 ... 200	193155	GRLZ-M5-QS-6-D
	G1/8	QS-3	130	100 ... 130	200	180 ... 200	193156	GRLZ-1/8-QS-3-D
		QS-4	160	120 ... 190	300	260 ... 290	193157	GRLZ-1/8-QS-4-D
		QS-6	185	160 ... 240	340	390 ... 460	193158	GRLZ-1/8-QS-6-D
		QS-8	215	175 ... 250	370	390 ... 470	193159	GRLZ-1/8-QS-8-D

1) All products in this table are easy to select and quick to order.

One-way flow control valves VFOC

Data sheet



Technical data		
Pneumatic connection 2	Push-in sleeve QS-4 ¹⁾	Push-in sleeve QS-6 ¹⁾
Pneumatic connection 1	QS-4	QS-6
Valve function	Supply air one-way flow control function	
Adjusting element	Slotted head screw	

1) Only suitable for push-in connector QS.

Operating conditions		
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure [bar]	0.2 ... 10	
Ambient temperature [°C]	-10 ... +60	

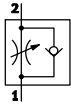
Materials	
Hollow bolt	Black anodised wrought aluminium alloy
Swivel connection	Die-cast zinc
Releasing ring	POM
Adjustment screw	High-alloy stainless steel
Seals	NBR

Ordering data

	Pneumatic connection		Standard nominal flow rate qnN at 6 bar → 5 bar		Standard flow rate qn at 6 bar → 0 bar		Part no.	Type code
			In direction of flow control	In non-return direction	In direction of flow control	In non-return direction		
			[l/min]	[l/min]	[l/min]	[l/min]		
	2	1						
	Push-in sleeve QS-4	QS-4	0 ... 100	60 ... 100	0 ... 170	130 ... 160	559723	VFOC-S-S4-Q4
	Push-in sleeve QS-6	QS-6	0 ... 270	170 ... 260	0 ... 430	330 ... 400	559724	VFOC-S-S6-Q6

One-way flow control valves VFOF

Data sheet



Technical data		
Pneumatic connection 2	G1/8	G1/4
Pneumatic connection 1	QS-6	QS-8
Valve function	Exhaust air one-way flow control function	
Adjusting element	Internal hex	

Operating conditions		
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure [bar]	0.2 ... 10	
Ambient temperature [°C]	-10 ... +60	

Materials	
Housing	PBT
Hollow bolt	Wrought aluminium alloy
Sleeve	Wrought aluminium alloy
Releasing ring	POM
Adjustment screw	Brass
Seals	NBR

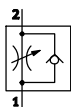
Ordering data

	Pneumatic connection		Standard nominal flow rate q _{nN} at 6 bar → 5 bar		Standard flow rate q _n at 6 bar → 0 bar		Part no.	Type code
			In direction of flow control	In non-return direction	In direction of flow control	In non-return direction		
	2	1	[l/min]	[l/min]	[l/min]	[l/min]		
	G1/8	QS-6	250	150 ... 260	420	460 ... 540	1526931	VFOF-LE-H-G18-Q6
	G1/4	QS-8	650	300 ... 650	1100	840 ... 1100	1505391	VFOF-LE-H-G14-Q8

Valves

One-way flow control valves GR, in-line installation

Data sheet – Push-in connector



Technical data				
Pneumatic connection 2	QS-3	QS-4	QS-6	QS-8
Pneumatic connection 1	QS-3	QS-4	QS-6	QS-8
Valve function	One-way flow control function			
Adjusting element	Knurled screw			

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	0.2 ... 10
Ambient temperature [°C]	-10 ... +60

Materials	
Housing	PA reinforced
Releasing ring	POM
Adjustment screw	High-alloy steel
Seals	NBR

Ordering data

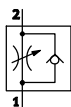
	Pneumatic connection		Standard nominal flow rate q _{nN} at 6 bar → 5 bar		Part no.	Type code
	2	1	In direction of flow control	In non-return direction		
			[l/min]	[l/min]		
	QS-3	QS-3	85	120	193965	GR-QS-3
	QS-4	QS-4	110	165	193967	GR-QS-4
	QS-6	QS-6	245	430	193969	GR-QS-6
	QS-8	QS-8	265	500	193970	GR-QS-8

Accessories – Ordering data

	For type	Description	Part no.	Type code
Retainer GR-H				
	GR-QS-3, GR-QS-4	For mounting on a flat surface via M3 screws. The one-way flow control valve is snapped into the retainer. Linking of multiple retainers via dovetail slot.	195495	GR-H-QS-3-4
	GR-QS-6, GR-QS-8		195496	GR-H-QS-6-8
Hex nut GRM for front panel mounting				
	GR-QS-3, GR-QS-4	M10x1 thread	6444	GRM-M5
	GR-QS-6, GR-QS-8	M12x1 thread	2107	GRM-1/8
Cover cap GRK				
	GR-QS-3, GR-QS-4	M10x1 thread	6436	GRK-M5
	GR-QS-6, GR-QS-8	M12x1 thread	2105	GRK-1/8

One-way flow control valves GR/GRA, in-line installation

Data sheet – Female thread



Technical data							
Pneumatic connection 2	M3	M5	G1/8	G1/4	G3/8	G1/2	G3/4
Pneumatic connection 1	M3	M5	G1/8	G1/4	G3/8	G1/2	G3/4
Valve function	One-way flow control function						
Adjusting element	Knurled screw						

Operating conditions							
Pneumatic connection 2	M3	M5	G1/8	G1/4	G3/8	G1/2	G3/4
Operating medium	Compressed air to ISO 8573-1:2010 [6:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]				Compressed air to ISO 8573-1:2010 [7:-:-]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure [bar]	0.3 ... 8	0.5 ... 10	0.1 ... 10			0.3 ... 15	
Ambient temperature [°C]	-10 ... +60	-20 ... +60	-20 ... +75			-10 ... +60	

Materials							
Pneumatic connection 2	M3	M5	G1/8	G1/4	G3/8	G1/2	G3/4
Housing	Wrought aluminium alloy			Die-cast zinc			Wrought aluminium alloy
Adjustment screw	Brass	High-alloy steel		Brass			
Seals	NBR						

Ordering data

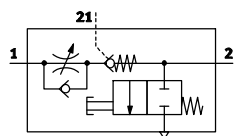
	Pneumatic connection		Standard nominal flow rate q _{nN} at 6 bar → 5 bar		Part no.	Type code
	2	1	In direction of flow control	In non-return direction		
			[l/min]	[l/min]		
	M3	M3	29.5	26 ... 27.5	15899	GR-M3
	M5	M5	115	130 ... 137	151213	GR-M5-B
	G1/8	G1/8	210	180 ... 275	151215	GR-1/8-B
	G1/4	G1/4	420	780	6509	GRA-1/4-B
	G3/8	G3/8	1010	1150	6308	GR-3/8-B
	G1/2	G1/2	1620	2760	3720	GR-1/2
	G3/4	G3/4	3300	4800	2103	GR-3/4

Accessories – Ordering data

	For type	Description	Part no.	Type code
	Hex nut GRM for front panel mounting			
	GR-M5-B	M10x1 thread	6444	GRM-M5
	GR-1/8-B	M12x1 thread	2107	GRM-1/8
	GRA-1/4-B, GR-3/8-B	M20x1.5 thread	204596	GRM-3/8
	Cover cap GRK			
	GR-M5-B	M10x1 thread	6436	GRK-M5
	GR-1/8-B	M12x1 thread	2105	GRK-1/8
	GRA-1/4-B, GR-3/8-B	M20x1.5 thread	6309	GRK-3/8-B

One-way flow control valves VFOF, function combination

Data sheet



Technical data		
Pneumatic connection 2	G1/8	G1/4
Pneumatic connection 1	QS-6	QS-8
Pilot air port 21	QS-6	QS-8
Valve function	Exhaust air one-way flow control function	
Adjusting element	Internal hex	
Actuation type	Manual	
Actuation type, piloted non-return function	Pneumatic	
Manual exhaust function	Non-detenting	

Operating conditions		
Operating/pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure for entire temperature range [bar]	0.2 ... 10	
Pilot pressure [bar]	2 ... 10	
Ambient temperature [°C]	-10 ... +60	

Materials	
Housing	PBT
End cap	PBT
Hollow bolt	Wrought aluminium alloy
Sleeve	Wrought aluminium alloy
Releasing ring	POM
Adjustment screw	Brass
Cover	ES-BE
Seals	NBR

Ordering data

	Pneumatic connection		Pilot air connection	Standard nominal flow rate q _{nN} at 6 bar → 5 bar		Standard flow rate q _n at 6 bar → 0 bar		Part no.	Type code
				In direction of flow control	In non-return direction	In direction of flow control	In non-return direction		
	2	1	21	[l/min]	[l/min]	[l/min]	[l/min]		
	G1/8	QS-6	QS-6	240	150 ... 230 120 ... 220 ¹⁾	420	400 ... 460 400 ... 460 ¹⁾	8001459	VFOF-LE-BAH-G18-Q6
	G1/4	QS-8	QS-8	590	315 ... 540 310 ... 540 ¹⁾	940	830 ... 1000 840 ... 1000 ¹⁾	1927030	VFOF-LE-BAH-G14-Q8

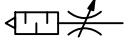
1) Unactuated.

08

Valves

Flow control/silencers VFFK

Data sheet



Technical data	
Pneumatic connection 1	M5 M7 R1/8 R1/4
Valve function	Flow control/silencer function
Adjusting element	Knurled screw
Type of seal on threaded plug	Sealing ring Coating

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Operation with lubricated medium possible
Operating pressure [bar]	0 ... 10
Ambient temperature [°C]	0 ... +60

Materials	
Pneumatic connection 1	M5 M7 R1/8 R1/4
Silencer insert	PE
Threaded plug	Nickel-plated brass
Adjustment screw	Nickel-plated brass
Knurled nut	Aluminium
Seals	NBR -

Ordering data

	Pneumatic connection 1	Standard flow rate qn at 6 bar → 0 bar [l/min]	Part no.	Type code
	M5	0 ... 80	133140	VFFK-C-K-M5-P
	M7	0 ... 100	133141	VFFK-C-K-M7-P
	R1/8	0 ... 270	133142	VFFK-C-K-R18-P
	R1/4	0 ... 420	133143	VFFK-C-K-R14-P



High-precision control

- + Long service life thanks to piezo technology
- + Large pressure regulation range: 0.01 ... 10 bar
- + Optimal performance due to short response times
- + Environmentally friendly due to soundless operation

Proportional valves >

Proportional pressure regulators

VEAA

Proportional valves >

Proportional pressure regulators

VEAA



Overview, configuration and ordering

→ www.festo.com/catalogue/veaa



Additional information, support and user documentation

→ www.festo.com/sp/veaa



- + High control precision
- + High repetition accuracy
- + Completely soundless – ideal for laboratory use
- + Large pressure regulation range: 0.01 ... 10 bar

Proportional pressure regulators VEAA

Product range overview

Type code	Valve function	Pneumatic connection	Pressure regulation range [bar]	Setpoint input		→ Page/ online
				Voltage type 0 ... 10 V	Current type 4 ... 20 mA	
Pressure regulator	In-line valve					
	3-way valve, normally closed	QS-4	0.01 ... 2	■	■	1044
			0.03 ... 6			
			0.05 ... 10			
	Sub-base valve					
	3-way valve, normally closed	Flange	0.01 ... 2	■	■	1044
0.03 ... 6						
0.05 ... 10						

Proportional valves >

Proportional pressure regulators VEAA

Data sheet – VEAA

Flow rate
7 ... 13 l/min

Voltage
24 V DC

Pressure regulation ranges
0.01 ... 2 bar
0.03 ... 6 bar
0.05 ... 10 bar



Technical data		Download CAD data → www.festo.com
Valve function	3-way valve	
Type of mounting	Via through-hole, via accessories	

Electrical data		
Operating voltage range	[V DC]	19 ... 29
Max. electrical power consumption	[W]	1
Degree of protection to EN 60529		IP65

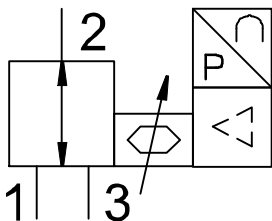
Operating conditions		
Input pressure 1 ¹⁾	[bar]	0 ... 11
FS (full scale) hysteresis	[%]	0.25
FS (full scale) linearity error	[%]	± 0.5
FS (full scale) repetition accuracy	[%]	± 0.4
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	+5 ... +50

1) Input pressure 1 should always be 1 bar greater than the maximum regulated output pressure.

Materials	
Housing	PA reinforced
Seals	NBR

Pin allocation, electrical connection		
	Pin	Function
	1	+24 V DC supply voltage
	2	+ Setpoint value
	3	GND
	4	+ Actual value

Function



An integrated pressure sensor records the pressure at the working port and compares this value with the setpoint value.

The pressure is automatically readjusted in the event of deviations.

Proportional pressure regulators VEAA

Order code – VEAA

VEAA		-		-	3	-		-		-		-	1	R1
Type														
VEAA	Proportional pressure regulator													
Valve type														
L	In-line valve													
B	Sub-base valve													
Valve function														
3	3-way valve, normally closed													
Pressure range														
D2	0 ... 2 bar													
D9	0 ... 6 bar													
D11	0 ... 10 bar													
Pneumatic connection														
Q4	Push-in connector 4 mm	1												
F	Flange/sub-base	2												
Setpoint input														
V1	Voltage variant 0 ... 10 V													
A4	Current variant 4 ... 20 mA													
Operating voltage														
1	24 V DC													
Electrical connection														
R1	Plug connector M8, 4-pin													

1 Only for valve type: in-line valve L

2 Only for valve type: sub-base valve B

Order example:

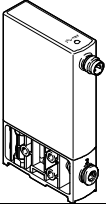
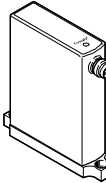

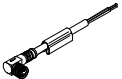
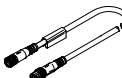
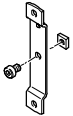
VEAA-L-3-D11-Q4-V1-1R1:

Proportional pressure regulator - in-line valve - 3-way valve, normally closed - pressure range 0 ... 10 bar - pneumatic connection: push-in connector 4 mm - setpoint input 0 ... 10 V - operating voltage 24 V DC - electrical connection: plug M8, 4-pin

Proportional valves >

Proportional pressure regulators VEAA

Accessories – Ordering data

	Description	Pressure regulation range [bar]	Part no.	Type code
In-line valve				
	Voltage type, 0 ... 10 V	0.05 ... 10	8046905	VEAA-L-3-D11-Q4-V1-1R1
		0.01 ... 2	8046901	VEAA-L-3-D2-Q4-V1-1R1
		0.03 ... 6	8046903	VEAA-L-3-D9-Q4-V1-1R1
	Current type, 4 ... 20 mA	0.05 ... 10	8046906	VEAA-L-3-D11-Q4-A4-1R1
		0.01 ... 2	8046902	VEAA-L-3-D2-Q4-A4-1R1
		0.03 ... 6	8046904	VEAA-L-3-D9-Q4-A4-1R1
Sub-base valve				
	Voltage type, 0 ... 10 V	0.05 ... 10	8046896	VEAA-B-3-D11-F-V1-1R1
		0.01 ... 2	8046892	VEAA-B-3-D2-F-V1-1R1
		0.03 ... 6	8046894	VEAA-B-3-D9-F-V1-1R1
	Current type, 4 ... 20 mA	0.05 ... 10	8046897	VEAA-B-3-D11-F-A4-1R1
		0.01 ... 2	8046893	VEAA-B-3-D2-F-A4-1R1
		0.03 ... 6	8046895	VEAA-B-3-D9-F-A4-1R1
Connecting cable Data sheets → Page 1544				
	Straight socket, M8x1, 4-pin Open end, 4-wire	Cable length 2.5 m	541342	NEBU-M8G4-K-2.5-LE4
		Cable length 5 m	541343	NEBU-M8G4-K-5-LE4
	Angled socket, M8x1, 4-pin Open end, 4-wire	Cable length 2.5 m	541344	NEBU-M8W4-K-2.5-LE4
		Cable length 5 m	541345	NEBU-M8W4-K-5-LE4
	Straight socket, M8x1, 4-pin Straight plug connector, M8x1, 4-pin	Cable length 2.5 m	554035	NEBU-M8G4-K-2.5-M8G4
Mounting plate				
	For in-line valve		4054655	VAME-P6-Y

08

Valves



High-precision control

- + Long service life thanks to piezo technology
- + Large pressure regulation range: -1 ... 6 bar
- + Optimal performance due to short response times
- + Environmentally friendly due to soundless operation

Proportional valves >

Proportional pressure regulators

VEAB

Proportional valves >

Proportional pressure regulators

VEAB



Overview, configuration and ordering

→ www.festo.com/catalogue/



Additional information, support and user documentation

→ www.festo.com/sp/



- + High control precision
- + High repetition accuracy
- + Completely soundless – ideal for laboratory use
- + Large pressure regulation range: –1 ... 6 bar

Proportional pressure regulators VEAB

Product range overview

Type code	Valve function	Pneumatic connection	Pressure regulation range [bar]	Setpoint input		→ Page/ online
				Voltage type 0 ... 10 V	Current type 4 ... 20 mA	
Pressure regulator	In-line valve					
	3-way valve	QS-4	-1 ... -0.005	■	■	1050
			0.001 ... 0.2			
			0.005 ... 1			
			0.01 ... 2			
			0.03 ... 6			
	Sub-base valve					
	3-way valve	Flange	-1 ... -0.005	■	■	1050
			0.001 ... 0.2			
			0.005 ... 1			
0.01 ... 2						
0.03 ... 6						

Proportional valves >

Proportional pressure regulators VEAB

Data sheet – VEAB

Flow rate
5 ... 20 l/min

Voltage
24 V DC

Pressure regulation ranges
-1 ... -0.005 bar
0.001 ... 0.2 bar
0.005 ... 1 bar
0.01 ... 2 bar
0.03 ... 6 bar



Technical data

Valve function	3-way valve
Type of mounting	Via through-hole, via accessories

Electrical data

Operating voltage range	[V DC]	19 ... 29
Max. electrical power consumption	[W]	1
Degree of protection to EN 60529		IP65

Operating conditions

Pressure regulation range		-1 ... -0.005	0.001 ... 0.2	0.005 ... 1	0.01 ... 2	0.03 ... 6
Input pressure connection 1 ¹⁾	[bar]	-	0 ... 1	0... 3	0 ... 4	0 ... 6.5
Input pressure connection 3	[bar]	-1	-	-	-	-
FS (full scale) hysteresis	[%]	0.25	0.5	0.25		
FS (full scale) linearity error	[%]	± 0.5	± 0.8	± 0.5		
FS (full scale) repetition accuracy	[%]	± 0.4				
Ambient temperature	[°C]	0 ... +50				
Temperature of medium	[°C]	+5 ... +50				

1) Input pressure 1 should always be 1 bar greater than the maximum regulated output pressure.

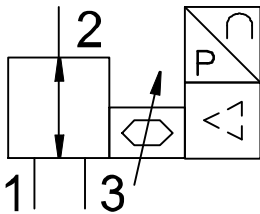
Materials

Housing	PA reinforced
Seals	NBR

Pin allocation, electrical connection

	Pin	Function
	1	+24 V DC supply voltage
	2	+ Setpoint value
	3	GND
	4	+ Actual value

Function



An integrated pressure sensor records the pressure at the working port and compares this value with the setpoint value.

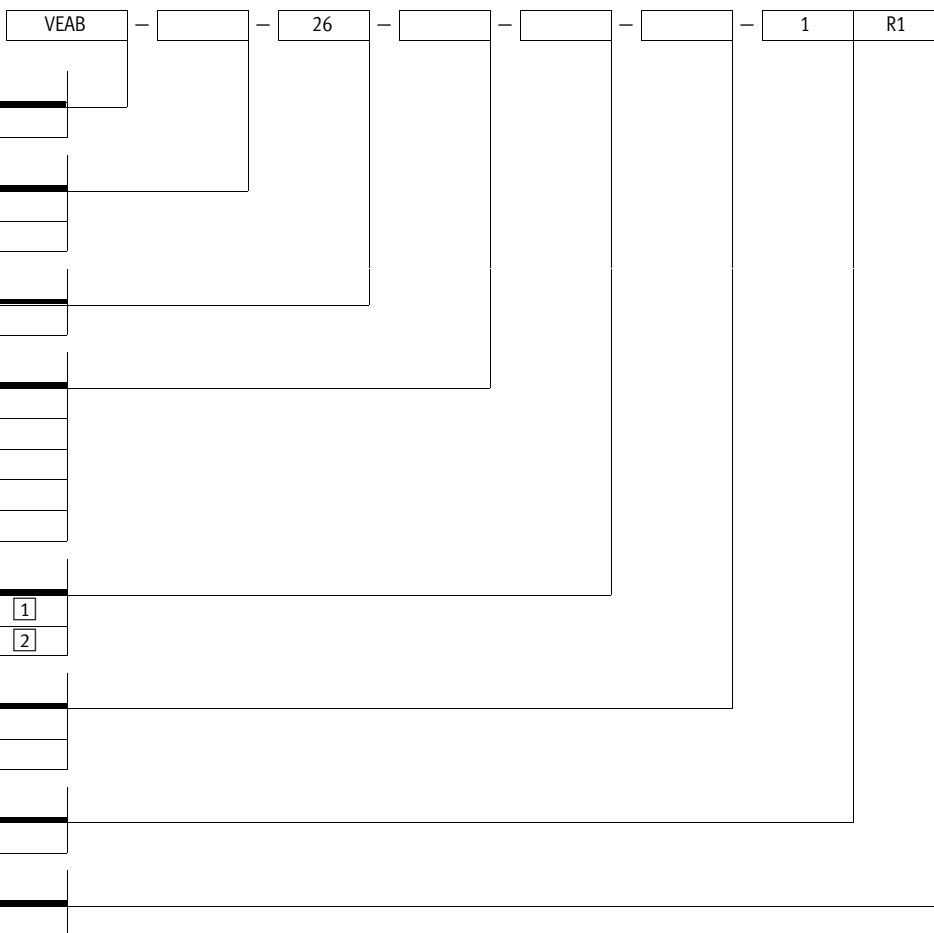
The pressure is automatically readjusted in the event of deviations.

08

Valves

Proportional pressure regulators VEAB

Order code – VEAB



1 Only for valve type: in-line valve L

2 Only for valve type: sub-base valve B

Order example:

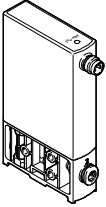
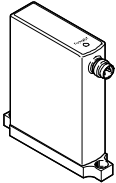
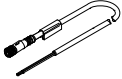
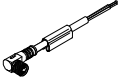

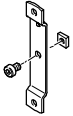
VEAB-L-26-D9-Q4-V1-1R1:

Proportional pressure regulator - in-line valve - 3-way valve, normally closed - pressure range 0.03 ... 6 bar - pneumatic connection: push-in connector 4 mm - setpoint input 0 ... 10 V - operating voltage 24 V DC - electrical connection: plug M8, 4-pin

Proportional valves >

Proportional pressure regulators VEAB

Accessories – Ordering data

	Description	Pressure regulation range [bar]	Part no.	Type code
In-line valve				
	Voltage type, 0 ... 10 V	-1 ... -0.005	8046307	VEAB-L-26-D14-Q4-V1-1R1
		0.001 ... 2	8046301	VEAB-L-26-D12-Q4-V1-1R1
		0.005 ... 1	8046303	VEAB-L-26-D7-Q4-V1-1R1
		0.01 ... 2	8046305	VEAB-L-26-D2-Q4-V1-1R1
		0.03 ... 6	8046299	VEAB-L-26-D9-Q4-V1-1R1
	Current type, 4 ... 20 mA	0.05 ... 10	8046308	VEAB-L-26-D14-Q4-A4-1R1
		0.01 ... 2	8046302	VEAB-L-26-D12-Q4-A4-1R1
		0.005 ... 1	8046304	VEAB-L-26-D7-Q4-A4-1R1
		0.01 ... 2	8046306	VEAB-L-26-D2-Q4-A4-1R1
		0.03 ... 6	8046300	VEAB-L-26-D9-Q4-A4-1R1
Sub-base valve				
	Voltage type, 0 ... 10 V	-1 ... -0.005	8046271	VEAB-B-26-D14-F-V1-1R1
		0.001 ... 2	8046265	VEAB-B-26-D12-F-V1-1R1
		0.005 ... 1	8046265	VEAB-B-26-D7-F-V1-1R1
		0.01 ... 2	8046269	VEAB-B-26-D2-F-V1-1R1
		0.03 ... 6	8046263	VEAB-B-26-D9-F-V1-1R1
	Current type, 4 ... 20 mA	0.05 ... 10	8046272	VEAB-B-26-D14-F-A4-1R1
		0.001 ... 2	8046266	VEAB-B-26-D12-F-A4-1R1
		0.005 ... 1	8046268	VEAB-B-26-D7-F-A4-1R1
		0.01 ... 2	8046270	VEAB-B-26-D2-F-A4-1R1
		0.03 ... 6	8046264	VEAB-B-26-D9-F-A4-1R1
Connecting cable Data sheets → Page 1544				
	Straight socket, M8x1, 4-pin Open end, 4-wire	Cable length 2.5 m	541342	NEBU-M8G4-K-2.5-LE4
		Cable length 5 m	541343	NEBU-M8G4-K-5-LE4
	Angled socket, M8x1, 4-pin Open end, 4-wire	Cable length 2.5 m	541344	NEBU-M8W4-K-2.5-LE4
		Cable length 5 m	541345	NEBU-M8W4-K-5-LE4
	Straight socket, M8x1, 4-pin Straight plug, M8x1, 4-pin	Cable length 2.5 m	554035	NEBU-M8G4-K-2.5-M8G4
Mounting plate				
	For in-line valve		4054656	VAME-P7-Y

08

Valves



Reduced complexity

- + Default controller presets reduce commissioning times
- + Direct mounting on a valve terminal means less wiring
- + Cascade control for precise control behaviour

Proportional valves >

Proportional pressure regulators

VPPM

Proportional valves >

Proportional pressure regulators

VPPM

 Overview, configuration and ordering
→ www.festo.com/catalogue/vppm



 Additional information, support and user documentation
→ www.festo.com/sp/vppm



- + A modular function system as the basis for many variants: from basic performance to high-tech device
- + Also available in a terminal version on the valve terminal MPA: lower costs thanks to function integration and multiplexing
- + Three default controller presets for fast commissioning
- + Multi-sensor control and cascade control for stable control and maximum precision

Proportional pressure regulators VPPM

Product range overview

Type code	Pressure regulation range	Operator unit	Pneumatic connection	Nominal width Pressurisation/ exhausting [mm]	Setpoint input			→ Page/ online
					Voltage type 0 ... 10 V	Current type 4 ... 20 mA	Digital	
Proportional pressure regulator with analogue interface								
VPPM	0.02 ... 2 bar 0.06 ... 6 bar 0.1 ... 10 bar	Operator unit with LED	G1/8	6/4.5	■	■	–	1056
			Sub-base	6/4.5; 8/7	■	■	–	
			G1/4	8/7	■	■	–	
			G1/2	12/12	■	■	–	
		Operator unit with LCD, pressure unit variable	G1/8	6/4.5	■	■	–	1056
			Sub-base	6/4.5	■	■	–	
			G1/4	8/7	■	■	–	
			G1/2	12/12	■	■	–	
Proportional pressure regulator with IO-Link® interface								
VPPM	0.02 ... 2 bar 0.06 ... 6 bar 0.1 ... 10 bar	Operator unit with LED with IO-Link®	G1/8	6/4.5	–	–	■	1058
			Sub-base	6/4.5; 8/7	–	–	■	
			G1/4	8/7	–	–	■	
			G1/2	12/12	–	–	■	
Flanged valve for valve terminal MPA-S								
VPPM	0.02 ... 2 bar 0.06 ... 6 bar 0.1 ... 10 bar	Operator unit with LED	Sub-base MPA	6/4.5, 8/7	–	–	■	mpas

Product options

...L Alternative lower pressure regulation range

...H Alternative upper pressure regulation range

Proportional valves >

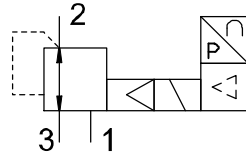
Proportional pressure regulators VPPM

Data sheet – VPPM with analogue interface

Flow rate
380 ... 7000 l/min

Voltage
21.6... 26.4 V DC

Pressure regulation range
0.02 ... 10 bar



Technical data

Download CAD data → www.festo.com

Design	Piloted diaphragm regulator
Type of mounting	Via through-hole, via accessories

Electrical data

Type code	VPPM-6	VPPM-8	VPPM-12
Operating voltage range	[V DC] 21.6 ... 26.4		
Max. electrical power consumption	[W] 7	7	12
Degree of protection to EN 60529	IP65 (with plug socket)		

Operating conditions

Pressure regulation range	[bar]	0.02 ... 2	0.06 ... 6	0.1 ... 10
Input pressure 1 ¹⁾	[bar]	0 ... 4	0 ... 8	0 ... 11
Max. pressure hysteresis	[mbar]	10	30	50
FS (full scale) linearity error	[%]	± 0.5		
FS (full scale) repetition accuracy	[%]	0.5		
Ambient temperature	Operator unit with LED	[°C] 0 ... +60		
	Operator unit with LCD	[°C] 0 ... +50		
Temperature of medium	[°C]	+10 ... +50		

1) Input pressure 1 should always be 1 bar greater than the maximum regulated outlet pressure.

Materials

Housing	Wrought aluminium alloy
Diaphragm	NBR

Pin allocation M12, electrical connection

	Pin	Function
	1	Digital input D1
	2	+24 V DC supply voltage
	3	Analogue input W-
	4	Analogue input W+
	5	Digital input D2
	6	Analogue output X
	7	0 V DC or GND
	8	Digital output D3

Proportional pressure regulators VPPM

Order code – VPPM with analogue interface

VPPM				L	1						
Type											
VPPM	Modular proportional pressure regulator										
Nominal width											
6	6 mm										
8	8 mm										
12	12 mm										
Design											
L	In-line valve										
F	Flanged valve										
Dynamic response class											
L	Low										
Valve function											
1	3/2-way valve, normally closed										
Pneumatic connection											
G18	Thread G1/8	1									
G14	Thread G1/4	2									
G12	Thread G1/2	3									
F	Flange/sub-base	4									
Pressure regulation range											
0L2H	0.02 ... 2 bar										
0L6H	0.06 ... 6 bar										
0L10H	0.1 ... 10 bar										
Setpoint specification for individual valve											
V1	0 ... 10 V										
A4	4 ... 20 mA										
Switching output											
N	NPN switching										
P	PNP switching										
Accuracy											
–	2% (standard)	5									
S1	1%										
Operator unit											
–	LED (standard)										
C1	With LCD, pressure unit variable										

1 Only for in-line valve design L and nominal width 6

3 Only for in-line valve design L and nominal width 12

4 Only for flanged valve design F

5 Not with nominal width 12

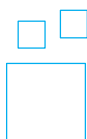
2 Only for in-line valve design L and nominal width 8

Order example:

VPPM-6L-L-1-G18-0L2H-V1P

Modular proportional pressure regulator - nominal width: 6 mm - design: in-line valve - dynamic response class: low - 3/2-way valve, normally closed - pneumatic connection: G1/8 thread - pressure regulation range: 0.02 ... 2 bar - setpoint specification: 0 ... 10 V, PNP switching - 2% accuracy - operator unit with LED

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Proportional valves >

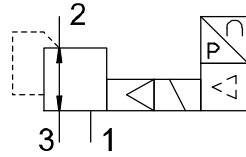
Proportional pressure regulators VPPM

Data sheet – VPPM with IO-Link® interface

Flow rate
380 ... 7000 l/min

Voltage
18 ... 30 V DC

Pressure regulation range
0.02 ... 10 bar



Technical data

Download CAD data → www.festo.com

Design	Piloted diaphragm regulator		
Type of mounting	Via through-hole, via accessories		
IO-Link®	Protocol	IO-Link®, I-Port	
	Protocol version	Device V1.1	
	Port type	A	
	Process data width OUT [byte]	2	
	Process data width IN [byte]	2	
Communication mode	COM1 [kBaud]	4.8	
	COM2 [kBaud]	38.4	
	COM3 [kBaud]	230.4	
IO-Link®	Minimum cycle time [ms]	0.5	

Electrical data

Type code	VPPM-6	VPPM-8	VPPM-12
Operating voltage range [V DC]	18 ... 30		
Max. electrical power consumption [W]	7	7	12
Degree of protection to EN 60529	IP65 (with plug socket)		

Operating conditions

Pressure regulation range [bar]	0.02 ... 2	0.06 ... 6	0.1 ... 10
Input pressure 1 ¹⁾ [bar]	0 ... 4	0 ... 8	0 ... 11
Max. pressure hysteresis [mbar]	10	30	50
FS (full scale) linearity error [%]	± 0.5		
FS (full scale) repetition accuracy [%]	0.5		
Ambient temperature [°C]	0 ... +60		
Temperature of medium [°C]	+10 ... +50		

1) Input pressure 1 should always be 1 bar greater than the maximum regulated outlet pressure.

Materials

Housing	Wrought aluminium alloy
---------	-------------------------

Pin allocation – IO-Link® interface

	Pin	Allocation	Function
	1	24 V DC (U _{EL} /SEN)	Operating voltage supply (PS)
	2	n.c.	Not connected
	3	0 V DC (U _{EL} /SEN)	Operating voltage supply (PS)
	4	C/Q I-Port	Data communication
	5	n.c.	Not connected
	–	FE	Functional earth

08

Valves

Proportional pressure regulators VPPM

Order code – VPPM with IO-Link® interface

VPPM		–		–		–	L	–	1	–		–		–	LK	–	S1	
Type																		
VPPM	Modular proportional pressure regulator																	
Nominal width																		
6	6 mm																	
8	8 mm																	
12	12 mm																	
Design																		
L	In-line valve																	
F	Flanged valve																	
Dynamic response class																		
L	Low																	
Valve function																		
1	3/2-way valve, normally closed																	
Pneumatic connection																		
G18	Thread G1/8																1	
G14	Thread G1/4																2	
G12	Thread G1/2																3	
F	Flange/sub-base																4	
Pressure regulation range																		
0L2H	0.02 ... 2 bar																	
0L6H	0.06 ... 6 bar																	
0L10H	0.1 ... 10 bar																	
Setpoint specification for individual valve																		
LK	IO-Link®																	
Accuracy																		
S1	1%																	

1 Only for in-line valve design L and nominal width 6

2 Only for in-line valve design L and nominal width 8

3 Only for in-line valve design L and nominal width 12

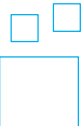
4 Only for flanged valve design F

Order example:

VPPM-8F-L-1-F-0L10H-LK-S1

Modular proportional pressure regulator - nominal width: 8 mm - design: flanged valve - dynamic response class: low - 3/2-way valve, normally closed - pneumatic connection: flange/sub-base - pressure regulation range: 0.1 ... 10 bar - setpoint specification: IO-Link® - 1% accuracy

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

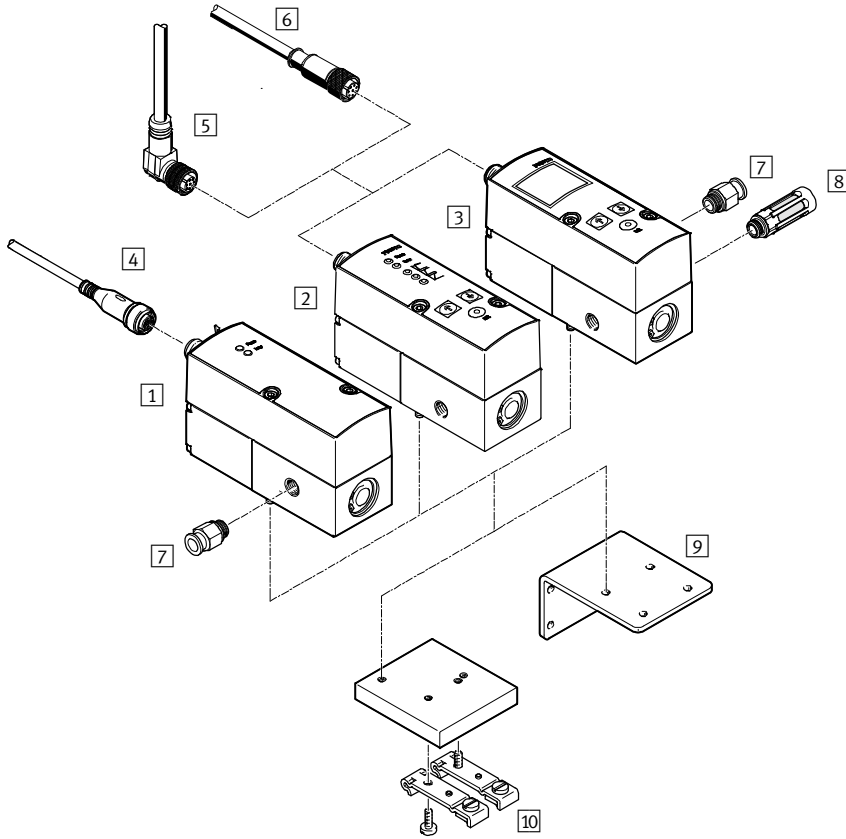
The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Proportional valves >

Proportional pressure regulators VPPM

Peripherals overview – Individual mounting

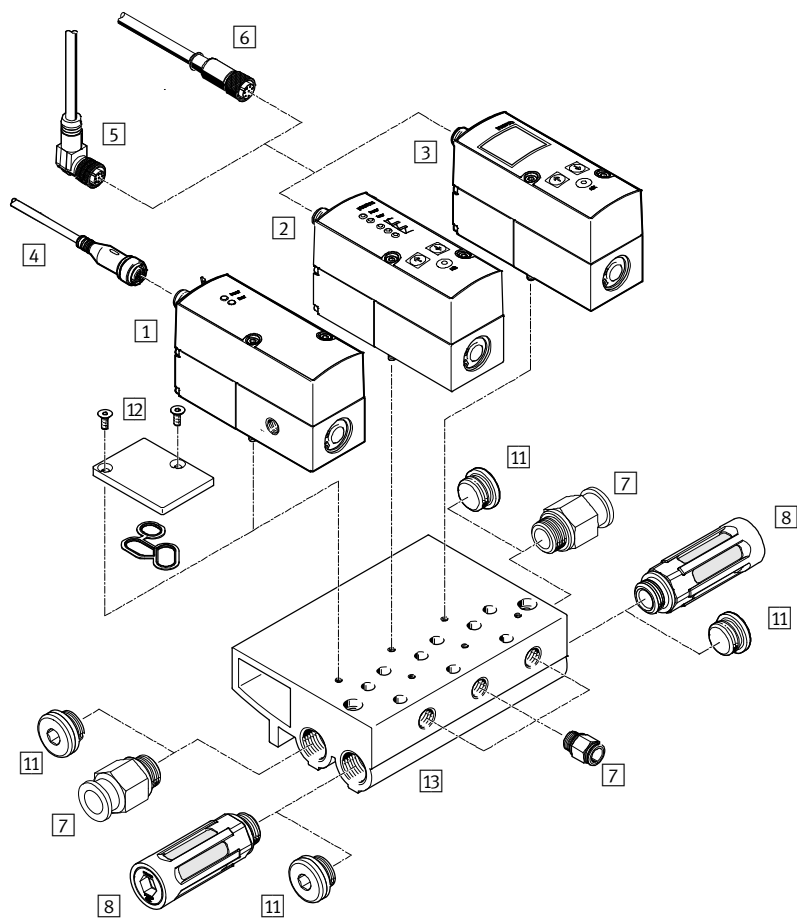


08

Valves

Accessories		→ Page/online
1	Proportional pressure regulator VPPM, operator unit with LED, IO-Link®	1058
2	Proportional pressure regulator VPPM, operator unit with LED	1056
3	Proportional pressure regulator VPPM, operator unit with LCD	1056
4	Connecting cable NEBU-M12G5	1062
5	Plug socket with cable, angled NEBU-M12W8	1062
6	Plug socket with cable, straight SIM-M12-8GD	1062
7	Push-in fitting QS for connecting compressed air tubing with standard O.D.	1062
8	Silencer U for mounting in exhaust ports	1062
9	Bracket VAME-P1-A for mounting the valve	1062
10	H-rail mounting VAME-P1-T for mounting on an H-rail	1062
-	Setpoint module MPZ	1063

Peripherals overview – Manifold assembly








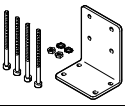
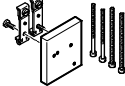

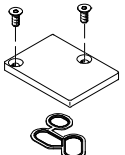


Accessories	→ Page/online
1 Proportional pressure regulator VPPM, operator unit with LED, IO-Link®	1058
2 Proportional pressure regulator VPPM, operator unit with LED	1056
3 Proportional pressure regulator VPPM, operator unit with LCD	1056
4 Connecting cable NEBU-M12G5	1062
5 Plug socket with cable, angled NEBU-M12W8	1062
6 Plug socket with cable, straight SIM-M12-8GD	1062
7 Push-in fitting QS for connecting compressed air tubing with standard O.D.	1062
8 Silencer U for mounting in exhaust ports	1062
11 Blanking plug B	1062
12 Blanking plate VABB-P1, for vacant position, seal and countersunk screws included in the scope of delivery	1062
13 Manifold block VABM	1063
– Setpoint module MPZ	1063

Proportional valves >

Proportional pressure regulators VPPM

Accessories – Ordering data

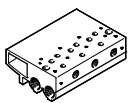
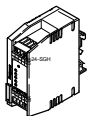
Description		Part no.	Type code
4 Connecting cable for IO-Link® Data sheets online: → nebu			
	Straight socket, M12x1, 5-pin, degree of protection IP65, IP68, IP69K	Cable length 5 m	574321 NEBU-M12G5-E-5-Q8N-M12G5
		Cable length 7.5 m	574322 NEBU-M12G5-E-7.5-Q8N-M12G5
		Cable length 10 m	574323 NEBU-M12G5-E-10-Q8N-M12G5
5 Plug socket with cable, angled socket Data sheets online: → nebu			
	M12, 8-pin	Cable length 2 m	542256 NEBU-M12W8-K-2-N-LE8
		Cable length 5 m	542257 NEBU-M12W8-K-5-N-LE8
		Cable length 10 m	570007 NEBU-M12W8-K-10-N-LE8
6 Plug socket with cable, straight socket Data sheets online: → sim			
	M12, 8-pin	Cable length 2 m	525616 SIM-M12-8GD-2-PU
		Cable length 5 m	525618 SIM-M12-8GD-5-PU
		Cable length 10 m	570008 SIM-M12-8GD-10-PU
Connecting cable Data sheets online: → nebu			
	Straight socket, 8-pin, and 1 straight plug, 4-pin	Cable length 2 m	553575 NEBV-M12G8-K-2-M12G4
		Cable length 5 m	553576 NEBV-M12G8-K-5-M12G4
	Straight socket, 8-pin, and 2 straight plugs, 4-pin	Cable length 3 m	547888 NEBV-M12G8-KD-3-M12G4
7 Push-in fitting Data sheets → Page 1443			
	For thread	G1/8	★ 186098 QS-G1/8-8
		G1/4	★ 186099 QS-G1/4-8
		G1/2	★ 186104 QS-G1/2-12
8 Silencer Data sheets → Page 1661			
	For thread	G1/8	★ 6841 U-1/8-B
		G1/4	★ 6842 U-1/4-B
		G1/2	★ 6844 U-1/2-B
9 Bracket			
	For valve mounting	542251	VAME-P1-A
10 H-rail mounting			
	For individual valve	542255	VAME-P1-T
11 Blanking plug Data sheets online: → b-1			
	For thread	G1/8	★ 3568 B-1/8
		G1/4	★ 3569 B-1/4
		G1/2	★ 3571 B-1/2
12 Blanking plate			
	For one valve position	558350	VABB-P1

08

Valves

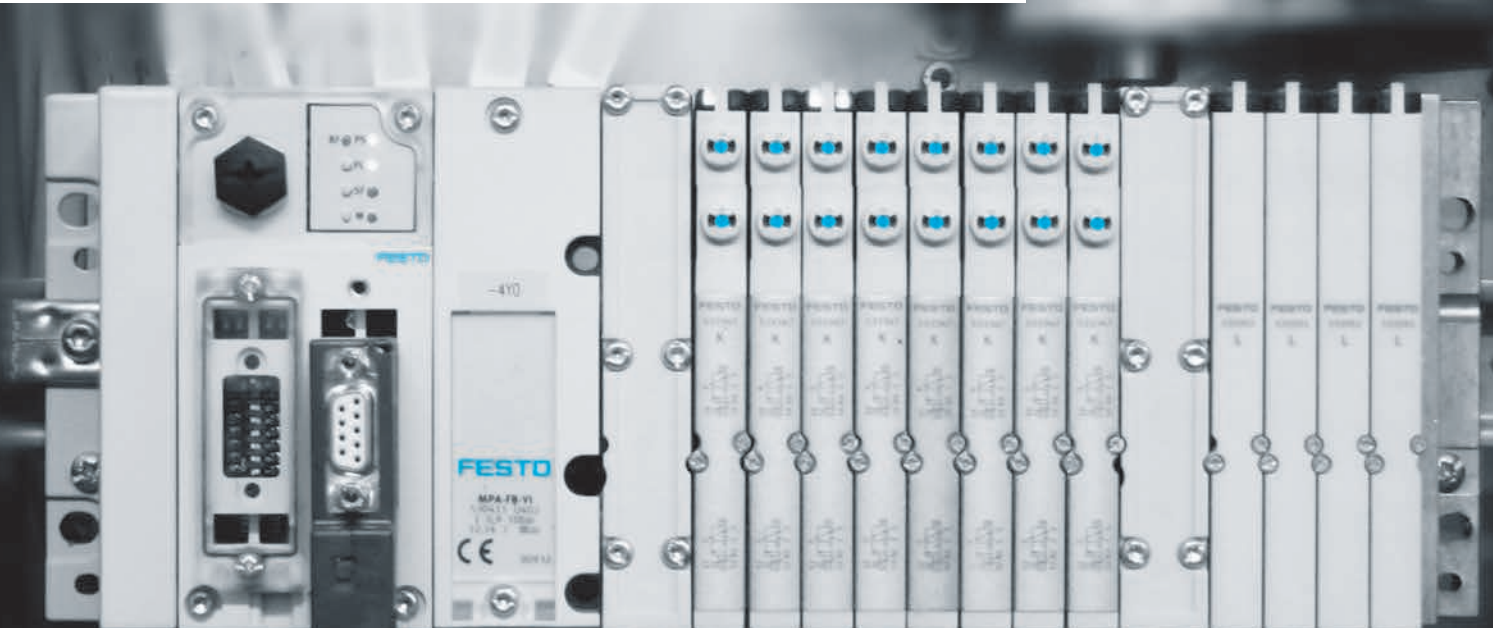
Proportional pressure regulators VPPM

Accessories – Ordering data

	Description	Part no.	Type code
13	Manifold block	Data sheets online: → vppm	
	2 valve positions	542252	VABM-P1-SF-G14-2-P3
	3 valve positions	542253	VABM-P1-SF-G14-3-P3
	4 valve positions	542254	VABM-P1-SF-G14-4-P3
Setpoint module			
		Data sheets online: → mpz	
	Setpoint module for generating 6 + 1 analogue voltage signals	546224	MPZ-1-24DC-SGH-6-SW

9 Valve terminals

- + Standards-based valve terminals: valve modules to ISO 15407-2 and ISO 5599-2 for standards-based valves with versatile valve functions and as plug-in or individual connection
- + Universal valve terminals: sturdy and modular valve modules on sub-bases for all standard tasks
- + Application-specific valve terminals: space-saving and compact valve modules for special requirements
- + Electrical peripherals: electric components for valve terminals and AS-Interface components
- + Accessories



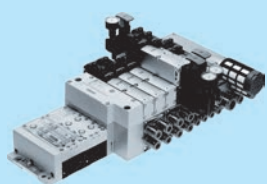


MPA-S

Valve terminals

- + Highly flexible
- + Open to PROFIBUS-DP, INTERBUS®, CANopen, DeviceNet®, CC-LINK®

→ page 1129



VTSA

Valve terminals, to ISO 15407-2, ISO 5599-2

- + Multi-pin plug connection or fieldbus connection via CPX system
- + Five valve sizes can be combined on one valve terminal

→ page 1139



CPX

Terminal

- + Automation platform
- + Open to all common fieldbus protocols and Ethernet

→ page 1595

Contents

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Dispense heads VTOE 1068

NEW New series

Valve terminals VTUG with multi-pin plug or fieldbus connection 1071

Solenoid valves VUVS/valve manifolds VTUS 1091

Valve terminals MPA-L 1117

Valve terminals MPA-S 1129

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2 1139

Fieldbus modules CTEU 1581


Terminal CPX 1595

Terminal CPX-E 1639




NEW New series

Product overview

Software tool

<p>Product Finder for valve terminals</p>		<p>Find the right valve terminal quickly with the help of the Product Finder. Start the Product Finder via the blue icons in the product tree. Select the technical features on the left-hand side step-by-step; the selection of suitable products on the right-hand side is automatically updated to reflect the chosen technical features.</p>	<p>The use of logic checks ensures that only correct configurations are available for selection. The Product Finder for valve terminals is part of the electronic catalogue and is not available as a separate software program.</p> <p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Product Finder" button • or on the DVD under "Product Finder"
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Universal valve terminals

Type	 Valve terminals with individual electrical connection VUVG-S	 Valve terminals with multi-pin plug or fieldbus connection VTUG	 Valve manifolds VTUS
Width	10 mm, 14 mm, 18 mm	10 mm, 14 mm, 18 mm	21 mm, 26.5 mm, 30 mm
Standard nominal flow rate	1380 l/min at 18 mm, 380 l/min at 10 mm, 780 l/min at 14 mm	1200 l/min at 18 mm, 330 l/min at 10 mm, 630 l/min at 14 mm	600... 2300 l/min
Max. no. of valve positions	16	24	16
Electrical actuation	Individual connection	Multi-pin plug, I-Port interface, IO-Link, fieldbus	Individual connection
Valve terminal design	Fixed grid	Fixed grid	Fixed grid
Description	<ul style="list-style-type: none"> • Compact with small valves VUVG • Connection technology easy to change via the electrical connection box • Wide range of valve functions • Also with semi in-line valves 	<ul style="list-style-type: none"> • Low-cost fixed grid • Extremely easy assembly • Exchangeable electrical actuation • IO-Link capable • Valves VUVG with individual electrical connection can be integrated • Also available with pneumatic multi-pin plug 	<ul style="list-style-type: none"> • Robust valves VUVS with long service life • Individual electrical connection • Pilot air supply in the manifold rail • Comprehensive range of accessories
→ Page/online	923	1071	1091

09




Valve terminals

Universal valve terminals

Type	 Valve terminals MPA-L	 Valve terminals MPA-S	 Valve terminals VTSA-F	 Valve terminals, Compact Performance CPV
Width	10 mm, 14 mm, 20 mm	10 mm, 20 mm	18 mm, 26 mm, 42 mm, 52 mm, 65 mm	10 mm, 14 mm, 18 mm
Standard nominal flow rate	360 l/min at 10 mm, 670 l/min at 14 mm, 870 l/min at 20 mm	360 l/min at 10 mm, 700 l/min at 20 mm	700 l/min at 18 mm, 1350 l/min at 26 mm, 1860 l/min at 42 mm, 2900 l/min at 52 mm, 4000 l/min at 65 mm	400 l/min at 10 mm, 800 l/min at 14 mm, 1600 l/min at 18 mm
Max. no. of valve positions	32	64	32	8
Electrical actuation	Fieldbus, multi-pin plug, electrical terminal CPX, IO-Link, I-Port	Fieldbus, multi-pin plug, electrical terminal CPX, AS-Interface®, CP installation system	Ethernet, fieldbus, multi-pin plug, electrical terminal CPX, integrated controller, AS-Interface® connection	AS-Interface, CP installation system, individual connection, fieldbus, multi-pin plug, IO-Link®
Valve terminal design	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed	Fixed grid
Description	<ul style="list-style-type: none"> • Maximum modularity • Single granular • Polymer sub-base • Three valve sizes • Max. 32 valves • Fieldbus connection via CPX • IO-Link capable 	<ul style="list-style-type: none"> • Valve terminals for universal applications • High-performance valves in a sturdy metal housing • Metal linking • Two valve sizes can be combined • Excellent communication thanks to serial linking • Fieldbus connection via CPX 	<ul style="list-style-type: none"> • Flow rate-optimised VTSA valve terminal • Linking with increased flow rates • Functions as per VTSA 	<ul style="list-style-type: none"> • Maximum performance in the smallest of spaces • Three sizes • Wide range of connection and mounting options • Multi-pin or fieldbus control • IO-Link capable
→ Page/online	1117	1129	vtsa	cpv

09



Universal valve terminals

Type	 Valve terminals, Smart Cubic CPV-SC	 Valve manifolds, Compact Performance CPV10-EX-VI	 Valve terminals VTUB-12
Width	10 mm	10 mm	12 mm, 24 mm
Standard nominal flow rate	170 l/min	400 l/min	400 l/min
Max. no. of valve positions	16	8	35
Electrical actuation	CP installation system, individual connection, fieldbus, multi-pin plug	Individual connection	Multi-pin plug, IO-Link, fieldbus
Valve terminal design	Fixed grid	Fixed grid	Fixed grid
Description	<ul style="list-style-type: none"> • Small and compact • High flow rate even with compact design • Suitable for vacuum • Multi-pin or fieldbus control 	<ul style="list-style-type: none"> • Intrinsically safe valve manifold design to ATEX Category 2 (Zone 1) • Optimised for control cabinet assembly • Optimal for pilot control of process valves 	<ul style="list-style-type: none"> • Compact dimensions • Poppet valves in polymer technology • Multi-pin or fieldbus control • IO-Link capable
→ Page/online	cpv-sc	cpv10-ex	vtub-12





Valve terminals

Product overview

Standards-based valve terminals

		
Type	Valve terminals, ISO 15407-2/ISO 5599-2 VTSA	Valve manifolds, ISO 15407-1 VTIA
Width	18 mm, 26 mm, 42 mm, 52 mm, 65 mm	18 mm, 26 mm
Max. standard nominal flow rate	1100 l/min at 26 mm, 1300 l/min at 42 mm, 2900 l/min at 52 mm, 4000 l/min at 65 mm, 550 l/min at 18 mm	1100 l/min at 26 mm, 550 l/min at 18 mm
Max. no. of valve positions	32	16
Electrical actuation	Ethernet, fieldbus, multi-pin plug, integrated controller	Individual connection
Valve terminal design	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed
Description	<ul style="list-style-type: none"> Conforms to ISO 15407-2/ISO 5599-2 Multi-pin plug connection or fieldbus connection via the CPX system Five valve sizes can be combined on one valve terminal Integratable safety functions 	<ul style="list-style-type: none"> Conforms to ISO 15407-1 Wide range of individual electrical connections Two valve sizes can be combined
→ Page/online	1139	vtia





Application-specific valve terminals

				
Type	Dispense heads VTOE	Valve terminals MPA-C	Valve terminals VTOC	Valve terminals MH1
Width		14 mm	10 mm	10 mm
Nominal width DN	0.8 mm			
Standard nominal flow rate		780 l/min	10 l/min	10 l/min
Operating pressure	0 ... 0.5 bar	-0.9 ... 8 bar	0 ... 8 bar	-0.9 ... 8 bar
Electrical connection	Cable, plug, open end, Sub-D, 9-pin, 2-wire			
Electrical actuation		Multi-pin plug, IO-Link, I-Port	Multi-pin plug, I-Port interface, IO-Link	Individual connection, multi-pin plug
Nominal operating voltage DC	24	24	24	5, 12, 24
Max. no. of valve positions		32	24	24
Valve terminal design		Modular and expandable	Fixed grid	Fixed grid
NEW	<ul style="list-style-type: none"> New series 			
Description	<ul style="list-style-type: none"> This ready-to-install dosing solution saves time and costs Compact 9 mm grid dimensions Maximum dosing precision down to the microlitre range Ideally suited to contactless dispensing and jetting of liquid media Small internal volume makes it easy to rinse 	<ul style="list-style-type: none"> Valve terminals in clean design Easy-to-clean design Excellent corrosion resistance IP69K degree of protection FDA-compliant materials Redundant sealing system 	<ul style="list-style-type: none"> Compact pilot valves Compact assembly Greater safety thanks to interlock function Multi-pin or fieldbus control IO-Link capable 	<ul style="list-style-type: none"> Miniaturised poppet valves Multi-pin or electrical individual connection
→ Page/online	vtoe	mpa-c	vtoe	mh1

09





Valve terminals

Electrical peripherals

Type	 Terminal CPX	 Fieldbus modules CTEU Installation system CTEL	 CPI installation system CTEC	 Automation systems CPX-E NEW
Protocol	INTERBUS, DeviceNet, PROFIBUS, CANopen, CC-Link, Ether-Net/IP, PROFINET, EtherCAT, ModbusTCP	AS-Interface®, CANopen, CC-Link, DeviceNet, EtherCAT, PROFINET, PROFIBUS DP, CPI-B	INTERBUS, DeviceNet, PROFIBUS, CANopen, CC-Link, Ether-Net/IP, PROFINET, EtherCAT, ModbusTCP	
Max. address volume for inputs	64 bytes	2 ... 64 bytes	16 bytes	64 bytes
Max. address volume for outputs	64 bytes	2 ... 64 bytes	16 bytes	64 bytes
Parameterisation	Diagnostic behaviour, failsafe response, forcing of channels, signal setup	Activate diagnostics, diagnostic behaviour, failsafe and idle response, failsafe response, watchdog disable, watchdog enable		
Degree of protection	IP65, IP67	IP65, IP67	IP65, IP67	IP20
Nominal operating voltage DC	24 V	24 ... 30 V	24 V	24 V
Operating voltage range DC	18 ... 30 V	18 ... 31.6 V	18 ... 30 V	
NEW				• New series
Description	<ul style="list-style-type: none"> Automation platform Open to all common fieldbus protocols and Ethernet Integrated diagnostic and maintenance functions Can be used as stand-alone as remote I/O or with valve terminals MPA-S, MPA-L, VTSA/VTSA-F Choice of polymer or metal housing with individual linking 	<ul style="list-style-type: none"> For valve terminals VTUB-12, VTUG, MPA-L, CPV, VTOC Can be expanded into installation system CTEL Fieldbus-typical LEDs, interfaces and switching elements available Isolated power supply for electronics and valves 	<ul style="list-style-type: none"> CPX master module for four CPI strings Combination of centralised and decentralised installation possible Decentralised pneumatic components and sensors for fast processes Can be connected to valve terminal CPV, MPA-S, CPV-SC 	<ul style="list-style-type: none"> Modern control system with high performance Fieldbus master interfaces, EtherCAT master, fieldbus slave interfaces, PROFINET, EtherNet/IP, PROFIBUS, EtherCAT Digital input modules (16DI), digital output modules (8DO/0.5 A) Analogue input modules (current, voltage), analogue output modules (current, voltage) Modern programming system CODESYS V3 to IEC 61131-3 Integration of motion functions (SoftMotion) High I/O component density Easy mounting of the control system on an H-rail
→ Page/online	1595	1581	ctec	1639

Product overview

Electrical peripherals

Type	 Terminal CPX-P	 AS-Interface® components ASI, CACC	 Electrical interfaces CPX-CTEL	 AS-Interface® modules CESA
Protocol	DeviceNet, PROFIBUS, EtherNet/IP, PROFINET, ModbusTCP		I-Port, IO-Link	AS-Interface®, CANopen, PROFIBUS
Max. address volume for inputs	64 bytes		32	
Max. address volume for outputs	64 bytes		32	
Parameterisation	Diagnostic behaviour, failsafe response, forcing of channels, signal setup		Diagnostic behaviour, fail-safe mode per channel, force mode per channel, idle mode per channel, module parameter, tool changeover mode	
Degree of protection	IP20, IP65	IP65	IP65, IP67	IP20
Nominal operating voltage DC	24 V	24 V	24 V	AS-Interface® voltage 30 V DC
Operating voltage range DC	18 ... 30 V	26.5 ... 31.6 V	18 ... 30 V	
Description	<ul style="list-style-type: none"> • Use of harmonised remote I/O and valve terminals in a control cabinet • Combination with modules of the electrical terminal CPX, which enables use for hybrid applications • Unique modular structure • Comprehensive integrated diagnostic and maintenance functions 	<ul style="list-style-type: none"> • Accessories for the AS-Interface® installation system • Modules for actuating individual valves ASI-EVA • Cable distributor ASI-KVT • Addressing device ASI-PRG-ADR • Compact I/O modules (IP65, IP67) • AS-Interface® power supply unit CACN 	<ul style="list-style-type: none"> • CPX-CTEL master module with 4 I-Port connections • Decentralised pneumatic components and sensors for fast processes • Standardised M12 connections 	<ul style="list-style-type: none"> • AS-Interface® master gateway • Duplicate address recognition • Direct operation via pushbuttons • Graphic display • Comprehensive diagnostics via LED and display • Specification 3.0
→ Page/online	cpx-p	as-interface	cpx-ctel	cesa

Customised components – for your specific requirements



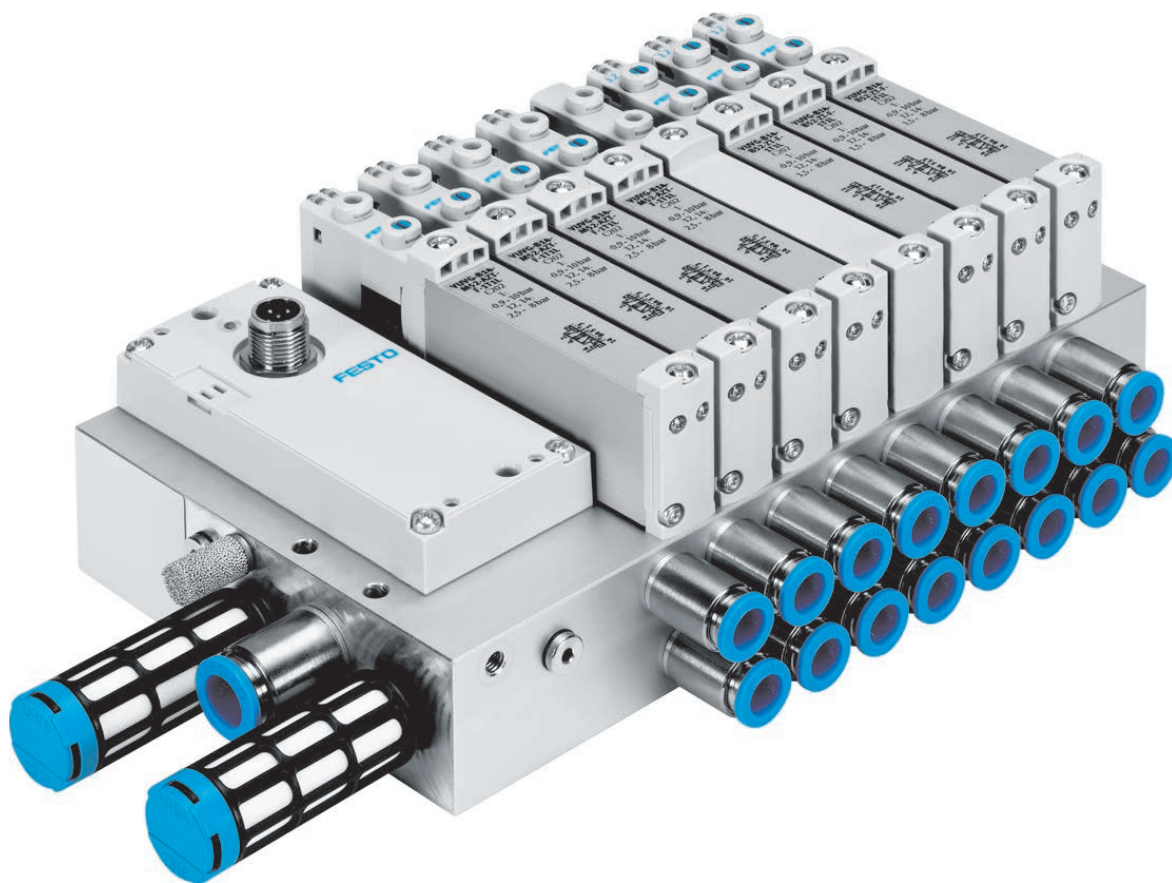
Valve terminals with customised designs

Can't find the valve terminal you need in our catalogue? We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Coatings for special ambient conditions
- Customised cables: length, pin allocation, pre-assembled with plug
- Modified actuating elements
- Modified connecting thread
- Modified valve sub-bases

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help. [→ www.festo.com/contact](http://www.festo.com/contact)



Cost-optimised and highly communicative

- + Excellent price/performance ratio thanks to fixed grid manifold
- + Universal interface for CTEU fieldbus nodes or IO-Link®
- + Up to 24 valve positions

Universal valve terminals >
Valve terminals

VTUG

Individual connection
Multi-pin plug
Fieldbus
IO-Link
I-Port

Universal valve terminals >

Valve terminals

VTUG



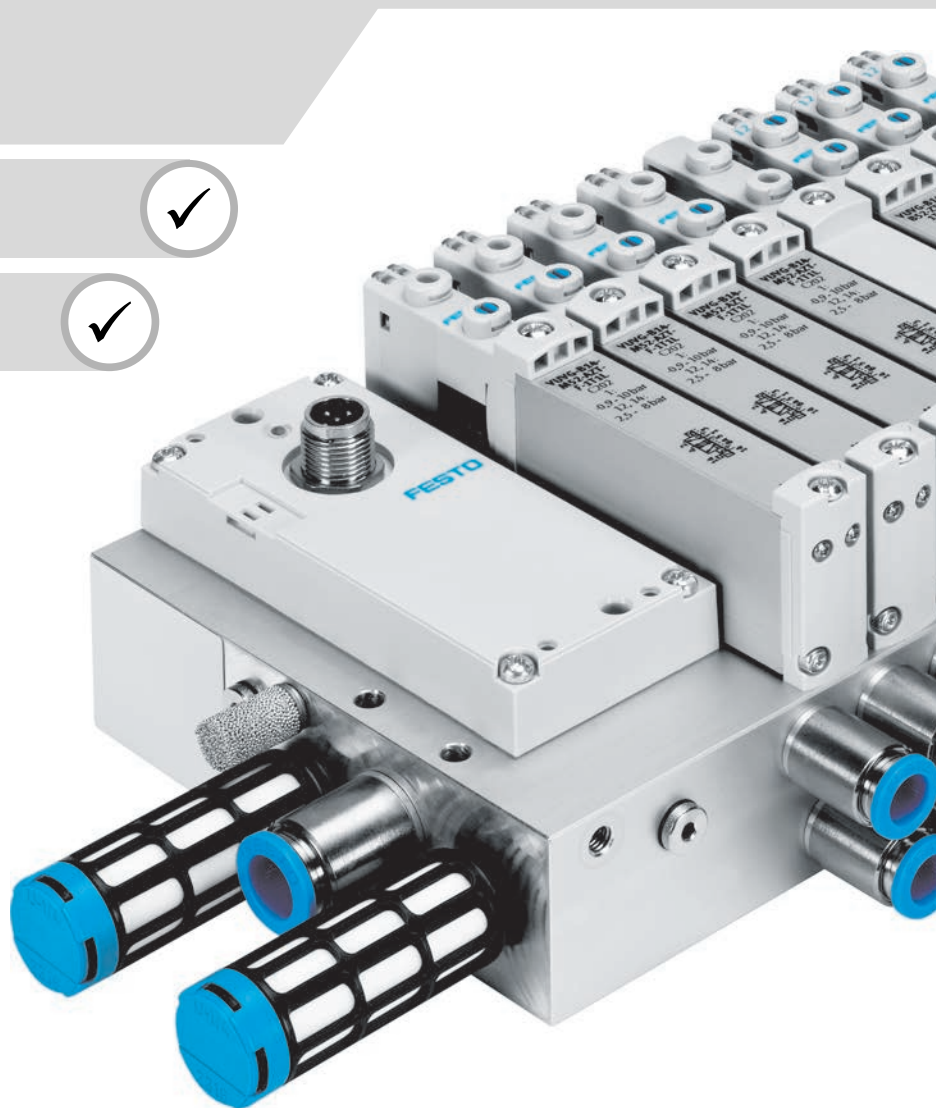
Overview, configuration and ordering

→ www.festo.com/catalogue/vtug



Additional information, support and user documentation

→ www.festo.com/sp/vtug



- + Variable multi-pin plug connection
- + I-Port interface for CTEU bus node
- + IO-Link mode for direct connection to an IO-Link master
- + Sturdy and durable metal components
- + Excellent price/performance ratio
- + Connection M5, M7, G1/8
- + Push-in connector 3, 4, 6, 8 mm
- + Degree of protection IP40/IP67

Valve terminals VTUG with multi-pin plug and fieldbus connection

Product range overview

Function	Version	Code	Size			→ Page/online
			10 mm	14 mm	18 mm	
Position function 0-23	5/2-way valve, single solenoid, mechanical spring	A	■	■	■	1076, 1078, 1080, 1082
	5/2-way valve, single solenoid, pneumatic/mechanical spring	P	■	–	■	1076, 1078, 1080, 1082
	5/3-way valve, mid-position pressurised	B	■	■	■	1076, 1078, 1080, 1082
	5/3-way valve, mid-position exhausted	E	■	■	■	1076, 1078, 1080, 1082
	5/3-way valve, mid-position closed	G	■	■	■	1076, 1078, 1080, 1082
	3/2-way valve, pneumatic/mechanical spring, normally closed	VX	■	–	–	vtug
	3/2-way valve, pneumatic spring, normally closed	VX	–	■	–	vtug
	3/2-way valve, pneumatic/mechanical spring, normally open	VW	■	–	–	vtug
	3/2-way valve, pneumatic spring, normally open	VW	–	■	–	vtug
	2x 3/2-way valve, 1x normally closed, 1x normally open, pneumatic spring	H	■	■	■	1076, 1078, 1080, 1082
	5/2-way double solenoid valve	J	■	■	■	1076, 1078, 1080, 1082
	2x 3/2-way valve, normally closed, pneumatic spring	K	■	■	■	1076, 1078, 1080, 1082
	5/2-way valve, single solenoid, pneumatic spring	M	–	■	–	1076, 1078, 1080, 1082
	2x 3/2-way valve, normally open, pneumatic spring	N	■	■	■	1076, 1078, 1080, 1082
	2x 3/2-way valve, 1x normally closed, 1x normally open, mechanical spring	VH	■	■	■	1076, 1078, 1080, 1082
	2x 3/2-way valve, normally closed, mechanical spring	VK	■	■	■	1076, 1078, 1080, 1082
	2x 3/2-way valve, normally open, mechanical spring	VN	■	■	■	1076, 1078, 1080, 1082
	Additional power supply	S	■	■	■	1076, 1078, 1080, 1082
	Vacant position	L	■	■	■	1076, 1078, 1080, 1082

Note

Valve terminals can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/vtug

Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features

Innovative

- Festo-specific I-Port interface for bus nodes (CTEU)
- IO-Link® mode for direct connection to a higher-order IO-Link® master
- Festo-specific I-Port interface with interlock
- Variable multi-pin plug connection using Sub-D or ribbon cable
- Reversible piston spool valves, up to 24 valve positions
- Reduced power consumption
- Excellent price/performance ratio

Flexible

- Choice of quick plug connectors
- Multiple pressure zones possible
- Sub-D variant and fieldbus connection rated to IP67
- Internal or external pilot air with the same manifold rail possible through the use of blanking plugs
- Sub-base valves with working ports underneath for installation in control cabinets

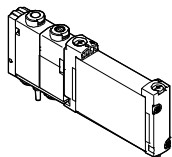
Reliable

- Sturdy and durable metal components
 - Valves
 - Manifold rails
- Fast troubleshooting thanks to LED display
- Choice of manual override: non-detenting, detenting or covered

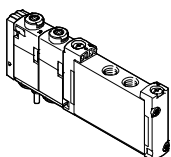
Easy to install

- Easy mounting thanks to captive screws and seal
- Connection technology easy to change
- Inscription label holder for labelling

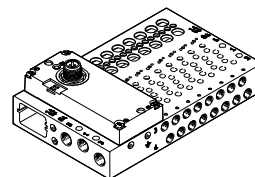
Sub-base and semi in-line valves



Sub-base valve
VUVG-B...1T1

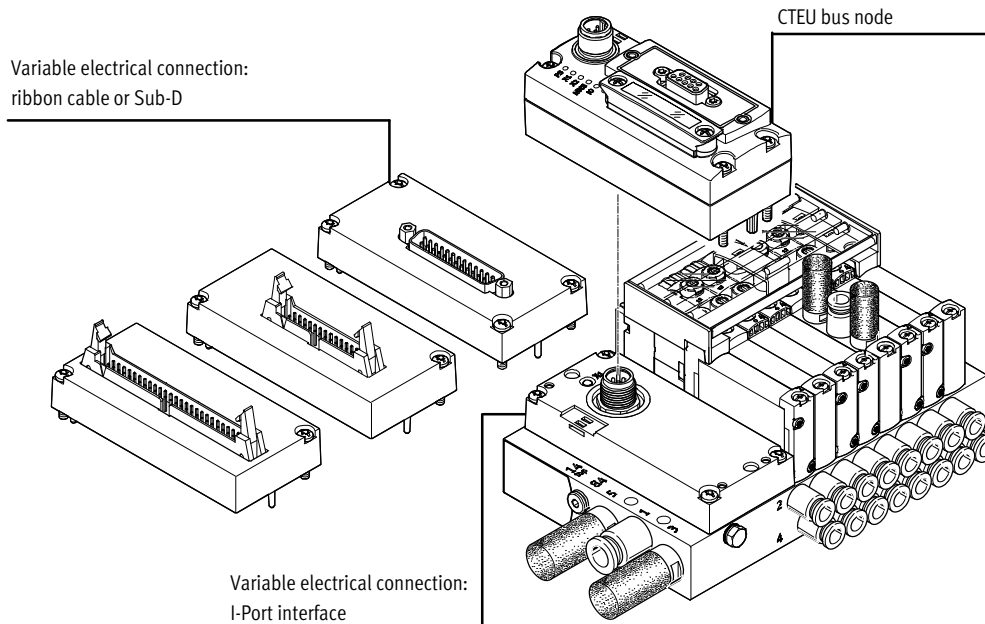


Semi in-line valve
VUVG-S...1T1



Valve terminal VTUG
with variable electrical connection

Overview



Equipment options

Valve functions

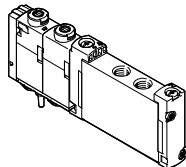
- 2x 3/2-way, 5/2-way, 5/3-way valves
- Reversible piston spool valves, up to 24 valve positions

- IO-Link® mode for direct connection to a higher-order IO-Link® master
- Festo-specific I-Port interface for bus nodes (CTEU)
- Variable multi-pin plug connection using Sub-D or ribbon cable
- Festo-specific I-Port interface with interlock (for valves of size 10 mm)

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features

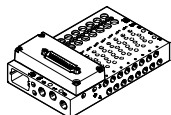
Basic valves VUVG



- Size 10 and 14 mm
- Semi in-line valves
- Sub-base valves
- 2x 3/2-way, 5/2-way and 5/3-way valves

Electrical connection

Multi-pin plug connection



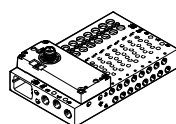
The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-wire cable to the multi-pin plug connection,

which substantially reduces installation time. The valve terminal can be equipped with max. 48 solenoid coils.

Versions:

- Sub-D connection
- Ribbon cable

I-Port interface



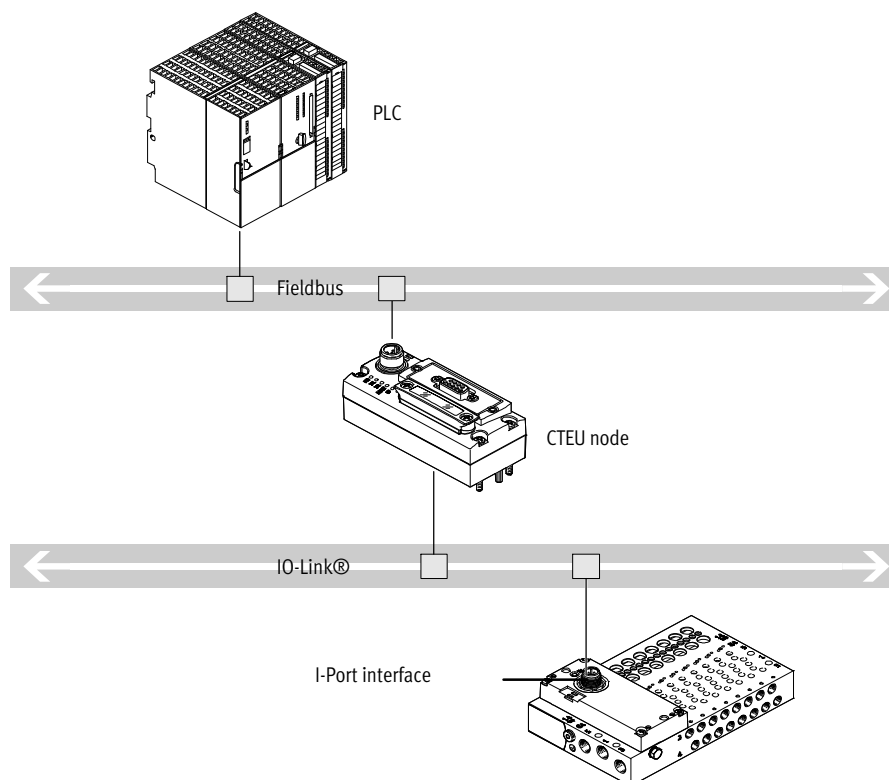
Festo-specific interface as a basis for bus nodes (CTEU) or in IO-Link® mode for direct connection to a higher-level IO-Link® master.

Communication and power supply take place via a common M12 interface on the terminal.

Connection options:

- As I-Port interface for bus nodes (CTEU)
- In IO-Link® mode for direct connection to an IO-Link® master

System overview – IO-Link®



- Communication with the higher-order controller via fieldbus
- Use a bus node CTEU compatible with the fieldbus protocol

- Up to 64 inputs/outputs (solenoid coils), depending on the valve terminal
- No preprocessing

Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Data sheet – Semi in-line valve M5/M7

Size 10 mm

Flow rate
130 ... 330 l/min

Voltage
24 V DC



Technical data		Download CAD data → www.festo.com											
Valve function		T32-A			T32-M			M52-R	B52	M52-M	P53		
Normal position		C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾	U ²⁾	E ³⁾
Pneumatic spring reset method		Yes			No			Yes ⁵⁾	–	No	–		
Mechanical spring reset method		No			Yes			Yes ⁵⁾	–	Yes	Yes		
Stable position		Monostable							Bistable	Monostable			
Port 1, 3, 5		On manifold rail											
Port 2, 4	VUVG-S10-...-M5	M5											
	VUVG-S10-...-M7	M7											
Port 12, 14		On manifold rail											
Flow rate on manifold rail M5	[l/min]	150			130			230	230	230	210		
Flow rate on manifold rail M7	[l/min]	160			140			330	330	290	280		
Vacuum operation at port 1		No			With external pilot air supply								
Design		Piston spool											
Type of mounting		On manifold rail											
Electrical connection		Via sub-base											
Manual override		Choice of non-detenting, covered, non-detenting/detenting or detenting											
Degree of protection to EN 60529	Individual valve	IP67/IP65											
	Valve terminal	IP40, IP67/IP65											

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.
- 5) Combined reset method.

Operating conditions								
Valve function		T32-A ⁶⁾	T32-M ⁷⁾	M52-R ⁸⁾	B52	M52-M ⁷⁾	P53	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]						
Operating pressure	Internal pilot air supply [bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8	
	External pilot air supply [bar]	1.5 ... 10	–0.9 ... 10	–0.9 ... 10	–0.9 ... 10	–0.9 ... 8	–0.9 ... 10	
Pilot pressure ⁹⁾		1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8	
Ambient temperature	[°C]	–5 ... +60						
Temperature of medium	[°C]	–5 ... +60						

- 6) Pneumatic spring.
- 7) Mechanical spring.
- 8) Pneumatic/mechanical spring.
- 9) Minimum pilot pressure 50% of operating pressure.

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

09

Valve terminals

Valve terminals VTUG with multi-pin plug and fieldbus connection

Order code – Semi in-line valve M5/M7

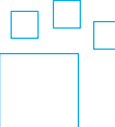
VUVG	-	S	10	-	-	Z	-	-	1	T1	L
Valve design										Display	
Semi in-line valve		S								L LED	
Size										Electrical connection	
10 mm		10								T1 Plug-in	
Valve function										Nominal operating voltage	
5/2-way valve, single solenoid										1 24 V DC	
5/2-way valve, double solenoid										Pneumatic connection	
5/3-way valve, mid-position closed										M5 M5	
5/3-way valve, mid-position pressurised										M7 M7	
5/3-way valve, mid-position exhausted										Q3 Push-in connector 3 mm	
2x 3/2-way valve, normally closed										Q4 Push-in connector 4 mm	
2x 3/2-way valve, 1x normally open, 1x normally closed										Q4H Push-in connector 4 mm	
2x 3/2-way valve, normally open										Q6 Push-in connector 6 mm	
										Q6H Push-in connector 6 mm	
										T14 Push-in connector 1/4"	
										T14H Push-in connector 1/4"	
										T18 Push-in connector 1/8"	
										T316 Push-in connector 3/16"	
										T316H Push-in connector 3/16"	
										T532 Push-in connector 5/32"	
										Manual override	
										H Non-detenting	
										S Covered	
										T Non-detenting, detenting	
										Y Detenting, without accessories	
										Pilot air	
										Z External	
										Reset method	
										A Pneumatic spring with T32	
										M Mechanical spring with T32 and M52	
										R Pneumatic/mechanical spring with M52	
										- With B52 and P53	

Order example:

VUVG-S10-T32C-MZT-M5-1T1L

Universal solenoid valve VUVG - semi in-line valve, size 10 mm - 2x 3/2-way valve, normally closed - mechanical spring reset method, external pilot air supply, non-detenting/detenting manual override - pneumatic connection M5 - nominal operating voltage 24 V DC, plug-in electrical connection, LED display

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Data sheet – Semi in-line valve G1/8

Size 14 mm

Flow rate
520 ... 630 l/min

Voltage
24 V DC



Technical data		Download CAD data → www.festo.com									
Valve function		T32-A			T32-M			M52-A	B52	M52-M	P53
Normal position		C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾ U ²⁾ E ³⁾
Pneumatic spring reset method		Yes			No			Yes	–	No	–
Mechanical spring reset method		No			Yes			No	–	Yes	Yes
Stable position		Monostable							Bistable	Monostable	
Port 1, 3, 5		On manifold rail									
Port 2, 4		G1/8									
Port 12, 14		On manifold rail									
Flow rate on manifold rail G1/8	[l/min]	610			520			620	630	620	590
Vacuum operation at port 1		No			Only with external pilot air supply						
Design		Piston spool									
Type of mounting		On manifold rail									
Electrical connection		Via sub-base									
Manual override		Choice of non-detenting, covered, non-detenting/detenting or detenting									
Degree of protection to EN 60529	Individual valve	IP67/IP65									
	Valve terminal	IP40, IP67/IP65									

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.

Operating conditions							
Valve function		T32-A ⁵⁾	T32-M ⁶⁾	M52-A ⁵⁾	B52	M52-M ⁶⁾	P53
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	Internal pilot air supply [bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External pilot air supply [bar]	1.5 ... 10	–0.9 ... 10	–0.9 ... 10	–0.9 ... 10	–0.9 ... 8	–0.9 ... 10
Pilot pressure ⁷⁾		1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
Ambient temperature	[°C]	–5 ... +60					
Temperature of medium	[°C]	–5 ... +60					

- 5) Pneumatic spring.
- 6) Mechanical spring.
- 7) Minimum pilot pressure 50% of operating pressure.

Materials			
Housing		Wrought aluminium alloy	
Seals		HNBR, NBR	

09

Valve terminals

Valve terminals VTUG with multi-pin plug and fieldbus connection

Order code – Semi in-line valve Gx

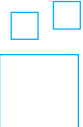
VUVG	-	S	14	-	-	Z	-	-	1	T1	L
Valve design											
Semi in-line valve											Display
											L LED
Size											
14 mm											14
Valve function											
5/2-way valve, single solenoid											M52
5/2-way valve, double solenoid											B52
5/3-way valve, mid-position closed											P53C
5/3-way valve, mid-position pressurised											P53U
5/3-way valve, mid-position exhausted											P53E
2x 3/2-way valve, normally closed											T32C
2x 3/2-way valve, 1x normally open, 1x normally closed											T32H
2x 3/2-way valve, normally open											T32U
Electrical connection											
T1											Plug-in
Nominal operating voltage											
1											24 V DC
Pneumatic connection											
G18											G1/8
T14											Push-in connector 1/4"
T516											Push-in connector 5/16"
Q4											Push-in connector 4 mm
Q6											Push-in connector 6 mm
Q8											Push-in connector 8 mm
Manual override											
H											Non-detenting
S											Covered
T											Non-detenting, detenting
Y											Detenting, without accessories
Pilot air											
Z											External
Reset method											
A											Pneumatic spring with M53 and T32
M											Mechanical spring with M53 and T32
-											With B52 and P53

Order example:

VUVG-S14-T32U-AZT-G18-1T1L

Universal solenoid valve VUVG - semi in-line valve, size 14 mm - 2x 3/2-way valve, normally open - pneumatic spring reset method, external pilot air supply, non-detenting/detenting manual override - pneumatic connection G1/8 - nominal operating voltage 24 V DC, plug-in electrical connection, LED display

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or www.festo.com/catalogue/...	Enter the type code in the search field.
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Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Data sheet – Sub-base valve M5/M7

Size 10 mm

Flow rate
130 ... 300 l/min

Voltage
24 V DC



Technical data	Download CAD data → www.festo.com											
	T32-A			T32-M			M52-R	B52	M52-M	P53		
Valve function	C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾	U ²⁾	E ³⁾
Normal position							–	–	–			
Pneumatic spring reset method	Yes			No			Yes ⁵⁾	–	No	–		
Mechanical spring reset method	No			Yes			Yes ⁵⁾	–	Yes	Yes		
Stable position	Monostable							Bistable	Monostable			
Port 1, 3, 5	On manifold rail											
Port 2, 4	On manifold rail											
Port 12, 14	On manifold rail											
Standard nominal flow rate M5/M7	[l/min]	160		140		300		300	260	260		
Flow rate on manifold rail M5, front	[l/min]	150		130		220		220	220	200		
Flow rate on manifold rail M7, front	[l/min]	160		140		270		270	240	250		
Flow rate on manifold rail M7, underneath	[l/min]	160		140		300		300	260	260		
Vacuum operation at port 1	No			Only with external pilot air supply								
Design	Piston spool											
Type of mounting	On manifold rail											
Electrical connection	Via sub-base											
Manual override	Choice of non-detenting, covered, non-detenting/detenting or detenting											
Degree of protection to EN 60529	Individual valve		IP67/IP65									
	Valve terminal		IP40, IP67/IP65									

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.
- 5) Combined reset method.

Operating conditions			T32-A ⁶⁾	T32-M ⁷⁾	M52-R ⁸⁾	B52	M52-M ⁷⁾	P53
Valve function			Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	Internal pilot air supply	[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External pilot air supply	[bar]	1.5 ... 10	–0.9 ... 10	–0.9 ... 10	–0.9 ... 10	–0.9 ... 8	–0.9 ... 10
Pilot pressure ⁹⁾			1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
Ambient temperature	[°C]		–5 ... +60					
Temperature of medium	[°C]		–5 ... +60					

- 6) Pneumatic spring.
- 7) Mechanical spring.
- 8) Pneumatic/mechanical spring.
- 9) Minimum pilot pressure 50% of operating pressure.

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

09

Valve terminals

Valve terminals VTUG with multi-pin plug and fieldbus connection

Order code – Sub-base valve M5/M7

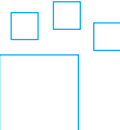
VUVG	-	B	10	-	-	Z	-	F	-	1	T1	L
Valve design												
Sub-base valve												B
Size												
10 mm												10
Valve function												
5/2-way valve, single solenoid												M52
5/2-way valve, double solenoid												B52
5/3-way valve, mid-position closed												P53C
5/3-way valve, mid-position pressurised												P53U
5/3-way valve, mid-position exhausted												P53E
2x 3/2-way valve, normally closed												T32C
2x 3/2-way valve, 1x normally open, 1x normally closed												T32H
2x 3/2-way valve, normally open												T32U
Electrical connection												
T1 Plug-in												L LED
Nominal operating voltage												
1 24 V DC												
Pneumatic connection												
F Flange/sub-base												
Manual override												
H Non-detenting												
S Covered												
T Non-detenting, detenting												
Y Detenting, without accessories												
Pilot air												
Z External												
Reset method												
A Pneumatic spring with T32												
M Mechanical spring with M52 and T32												
R Pneumatic/mechanical spring with M52												
-												With B52 and P53

Order example:

VUVG-B10-T32U-MZT-F-1T1L

Universal solenoid valve VUVG - sub-base valve, size 10 mm - 2x 3/2-way valve, normally open - mechanical spring reset method, external pilot air supply, non-detenting/detenting manual override - pneumatic connection flange/sub-base - nominal operating voltage 24 V DC, plug-in electrical connection, LED display

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or www.festo.com/catalogue/...	Enter the type code in the search field.
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Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Data sheet – Sub-base valve G1/8

Size 14 mm

Flow rate
440 ... 560 l/min

Voltage
24 V DC



Technical data		Download CAD data → www.festo.com											
		T32-A			T32-M			M52-A	B52	M52-M	P53		
Valve function		C ¹⁾	U ²⁾	H ⁴⁾	C ¹⁾	U ²⁾	H ⁴⁾	–	–	–	C ¹⁾	U ²⁾	E ³⁾
Normal position		Yes			No			Yes	–	No	–		
Pneumatic spring reset method		No			Yes			No	–	Yes	Yes		
Mechanical spring reset method		Monostable						Bistable	Monostable				
Stable position		On manifold rail											
Port 1, 3, 5		On manifold rail											
Port 2, 4		On manifold rail											
Port 12, 14		On manifold rail											
Standard nominal flow rate G18	[l/min]	530			470			550	560	550	510		
Flow rate on manifold rail G18, front	[l/min]	490			440			500	510	500	470		
Flow rate on manifold rail G18, underneath	[l/min]	530			470			550	560	550	510		
Vacuum operation at port 1		No			Only with external pilot air supply								
Design		Piston spool											
Type of mounting		On manifold rail											
Electrical connection		Via sub-base											
Manual override		Choice of non-detenting, covered, non-detenting/detenting or detenting											
Degree of protection to EN 60529	Individual valve	IP67/IP65											
	Valve terminal	IP40, IP67/IP65											

- 1) C=Normally closed.
- 2) U=Normally open/mid-position pressurised.
- 3) E=Normally exhausted.
- 4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open.

Operating conditions		Download CAD data → www.festo.com												
		T32-A ⁵⁾		T32-M ⁶⁾		M52-A ⁵⁾	B52	M52-M ⁶⁾	P53					
Valve function		Compressed air to ISO 8573-1:2010 [7:4:4]												
Operating pressure	Internal pilot air supply	[bar]	1.5 ... 8		3.5 ... 8		2.5 ... 8		1.5 ... 8		3 ... 8		3 ... 8	
	External pilot air supply	[bar]	1.5 ... 10		-0.9 ... 10		-0.9 ... 10		-0.9 ... 10		-0.9 ... 8		-0.9 ... 10	
Pilot pressure ⁷⁾			1.5 ... 8		2 ... 8		2.5 ... 8		1.5 ... 8		3 ... 8		3 ... 8	
Ambient temperature		[°C]	-5 ... +60											
Temperature of medium		[°C]	-5 ... +60											

- 5) Pneumatic spring.
- 6) Mechanical spring.
- 7) Minimum pilot pressure 50% of operating pressure.

Materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR

09

Valve terminals

Valve terminals VTUG with multi-pin plug and fieldbus connection

Order code – Sub-base valve G1/8

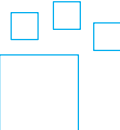
VUVG	-	B	14	-	-	Z	-	F	-	1	T1	L
Valve design												
Sub-base valve												B
Size												
14 mm												14
Valve function												
5/2-way valve, single solenoid												M52
5/2-way valve, double solenoid												B52
5/3-way valve, mid-position closed												P53C
5/3-way valve, mid-position pressurised												P53U
5/3-way valve, mid-position exhausted												P53E
2x 3/2-way valve, normally closed												T32C
2x 3/2-way valve, 1x normally open, 1x normally closed												T32H
2x 3/2-way valve, normally open												T32U
Electrical connection												
T1												Plug-in
Nominal operating voltage												
1												24 V DC
Pneumatic connection												
F												Flange/sub-base
Manual override												
H												Non-detenting
S												Covered
T												Non-detenting, detenting
Y												Detenting, without accessories
Pilot air												
Z												External
Reset method												
A												Pneumatic spring with M52 and T32
M												Mechanical spring with M52 and T32
-												With B52 and P53

Order example:

VUVG-B14-M52-AZT-F-1T1L

Universal solenoid valve VUVG - sub-base valve, size 14 mm - 5/2-way valve, single solenoid - pneumatic spring reset method, external pilot air supply, non-detenting/detenting manual override - pneumatic connection flange/sub-base - nominal operating voltage 24 V DC, plug-in electrical connection, LED display

Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or</p> <p>→ www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Data sheet – Manifold rail VABM

Technical data		Download CAD data → www.festo.com	
Type		VABM-L1-10	VABM-L1-14
Port	12/14	M5	
	82/84	M5	
	2, 4	M5 or M7	G1/8
	1, 3, 5	G1/8	G1/4
Max. no. of valve positions		24	

Materials		Download CAD data → www.festo.com	
Housing		Wrought aluminium alloy	

Data sheet – Multi-pin plug connection VAEM

The following multi-pin plug connections are available for the valve terminal

VTUG:

- Sub-D (25-pin)
- Sub-D (44-pin)
- Ribbon cable (26-pin)
- Ribbon cable (50-pin)



Technical data		Download CAD data → www.festo.com	
Type		VAEM-L1-S-M1-25	VAEM-L1-S-M1-44
Number of pins		25-pin	44-pin
Electrical connection		Sub-D plug	
Max. no. of valve positions		24	

Technical data		Download CAD data → www.festo.com	
Type		VAEM-L1-S-M3-26	VAEM-L1-S-M3-50
Number of pins		26-pin	50-pin
Electrical connection		Ribbon connectors	
Max. no. of valve positions		24	

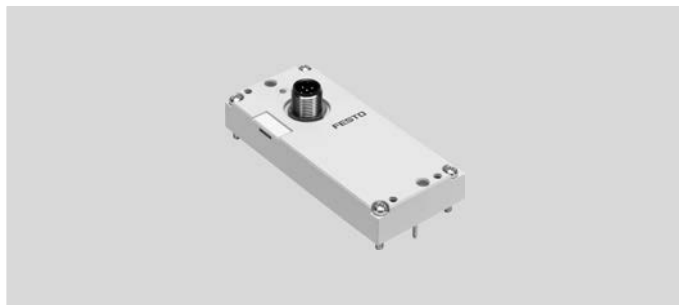
Valve terminals VTUG with multi-pin plug and fieldbus connection

Data sheet – I-Port interface/IO-Link®

Festo-specific, standardised interface for direct connection to the fieldbus by mounting the bus node CTEU or to an IO-Link® master via a cable (in IO-Link® mode).

The following protocols are supported in combination with the associated CTEU node:

- CANopen
- DeviceNet®
- PROFIBUS
- CC-LINK®
- EtherCAT®



Technical data		Download CAD data → www.festo.com
Communication types		IO-Link®
Electrical connection		<ul style="list-style-type: none"> • M12 plug, 5-pin • A-coded • Metal thread for screening
Baud rate	COM3	[kbps] 230.4
	COM2	[kbps] 38.4
Max. no. of solenoid coils	VAEM-L1-S-8-PT	16
	VAEM-L1-S-16-PT	32
	VAEM-L1-S-24-PT	48
Max. no. of valve positions	VAEM-L1-S-8-PT	8
	VAEM-L1-S-16-PT	16
	VAEM-L1-S-24-PT	24
Ambient temperature	[°C]	-5 ... +50

Data sheet – Electrical connection box CAPC

Area of application

- M12 connection technology (two interfaces)
- Enables the installation of valve terminals or other devices over a distance of 20 metres
- Accessory CAFM enables the electrical connection box to be installed on an H-rail

Function

The electrical connection box CAPC enables the decentralised installation of bus nodes CTEU on a valve terminal or input modules with I-Port interface.



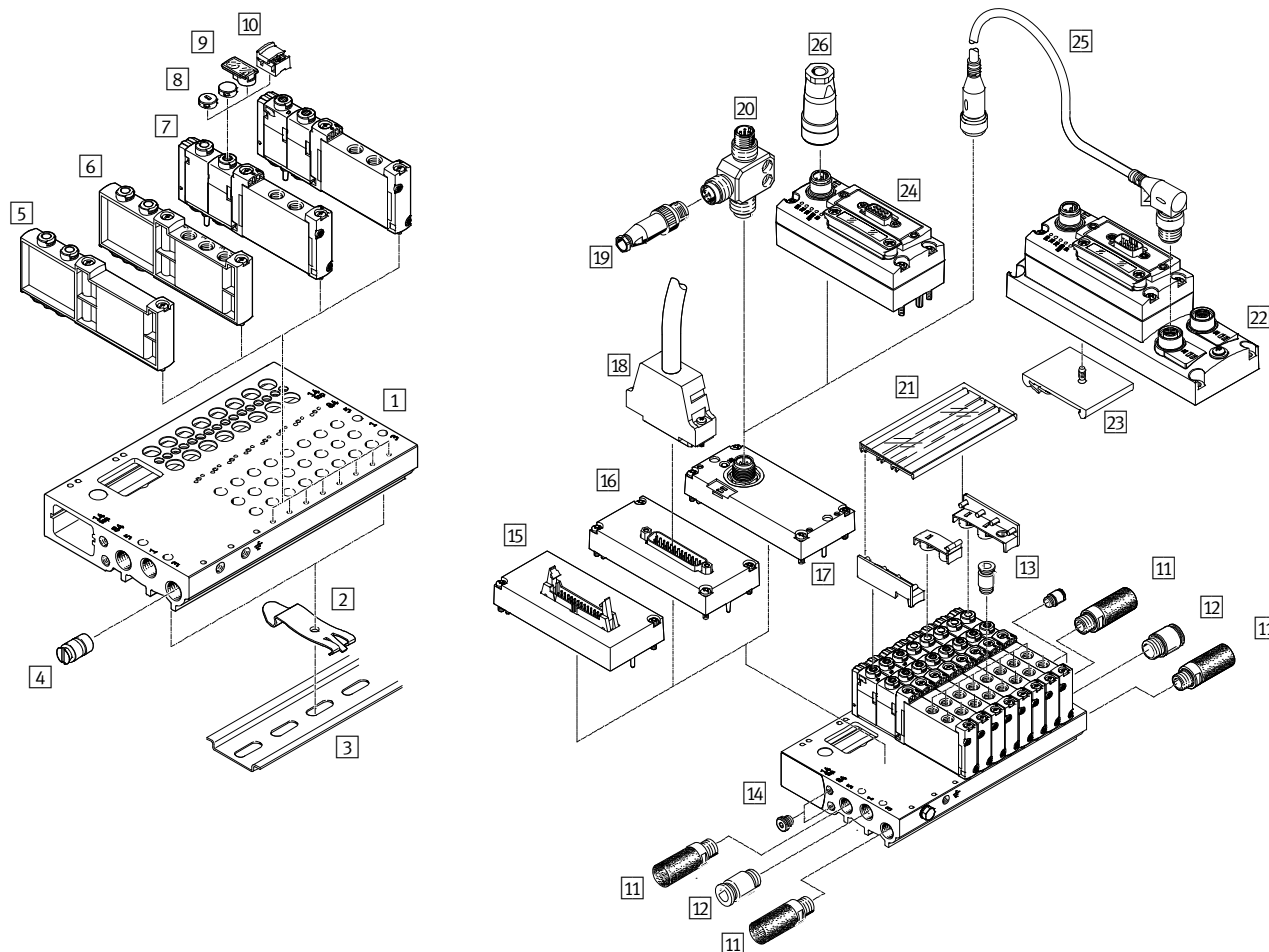
Technical data		
Type		CAPC-F1-E-M12
Dimensions W x L x H	[mm]	50 x 148 x 28
Fieldbus interface		2x socket M12, 5-pin, A-coded
Operating voltage range	[V DC]	18 ... 30
Max. power supply	[A]	2
Nominal operating voltage	[V DC]	24
Cable length	[m]	20

Pin allocation – Power supply/IO-Link® interfaces

	Pin	Designation	Function
	1	24V _{EL} /SEN	Operating voltage supply (electronics, sensors/inputs)
	2	24V _{VAL} /OUT	Load voltage supply (valves/outputs)
	3	0V _{EL} /SEN	Operating voltage supply (electronics, sensors/inputs)
	4	C/Q	Data communication
	5	0V _{VAL} /OUT	Load voltage supply (valves/outputs)
		Housing, FE	Functional earth

Valve terminals VTUG with multi-pin plug and fieldbus connection


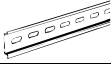










Accessories










Accessories	→ Page/online
1 Manifold rail VABM-L1, for 4 to 10, 12, 14, 16, 20 and 24 valve positions	1086
2 H-rail mounting VAME-T-M4, 2 pieces for mounting the valve terminal on an H-rail	1088
3 H-rail NRH-35-2000, for mounting the valve terminal	1088
4 Separator VABD, for creating pressure zones	1088
5 Blanking plate VABB-L1, for covering a vacant position	1088
6 Supply plate VABF-L1, for air supply port 1 and port 3 and 5	1088
7 Solenoid valve VUVG, semi in-line valve	1076
8 Cover cap VMPA-HB, for manual override	1088
9 Inscription label holder ASLR-D-L1, for inscription label and cover for the mounting screw/manual override	1088
10 Cover VAMC, for manual override	1088
11 Silencer UC, for port 3 and 5	1088
12 Push-in fitting QS, for air supply port 1	1088
13 Push-in fitting QS, for port 2 and 4	1088
14 Blanking plug B, for internal/external pilot air	1088
15 Electrical interface VAEM-L1-S-M3, ribbon cable	1088
16 Electrical interface VAEM-L1-S-M1, Sub-D	1088
17 I-Port interface VAEM-L1-S	1088
18 Connecting cable NEBV, Sub-D plug	1089
19 Plug SEA-M12-5GS-PG7, for T-adaptor FB-TA	1089
20 T-adaptor FB-TA-M12-5POL, for IO-Link® and load voltage supply	1089
21 Inscription label holder ASCF-H-L1, for identifying the valves	1089
22 Electrical connection box CAPC-F1-E-M12, for connecting a second device with I-Port interface	1090
23 H-rail mounting CAFM-F1-H, for electrical connection box CAPC	1090
24 Bus node CTEU	1090
25 Connecting cable NEBU	1090
26 Power supply socket NTSD, power supply for bus node CTEU	ntsd

Valve terminals VTUG with multi-pin plug and fieldbus connection

Accessories – Ordering data

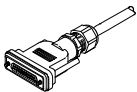
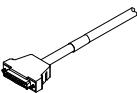
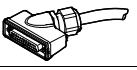
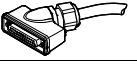


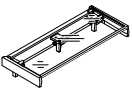
		Part no.	Type
2	H-rail mounting		
	-	★ 569998	VAME-T-M4
3	H-rail		
	-	35430	NRH-35-2000
4	Separator		
	10 mm	569994	VABD-6-B
	10 mm	569995	VABD-8-B
	14 mm	569996	VABD-10-B
5	Cover plate		
	10 mm	573422	VABB-L1-10-T
	14 mm	573488	VABB-L1-14-T
6	Supply plate		
	10 mm	573924	VABF-L1-10-P3A4-M7-T1
	14 mm	573925	VABF-L1-14-P3A4-G18-T1
8	Cover cap for manual override		
	Covered	540898	VMPA-HBV-B
	Non-detenting	540897	VMPA-HBT-B
	Detenting (without accessories)	8002234	VAMC-L1-CD
9	Inscription label holder		
	10 pieces	570818	ASLR-D-L1
11	Silencer		Data sheets → Page 1661
	M5	★ 1205858	AMTE-M-LH-M5
	M7	161418	UC-M7
	G1/8	161419	UC-1/8
	G1/4	165004	UC-1/4
12/13	Push-in fitting, straight		Data sheets → Page 1443
	M5 thread		
	3 mm	★ 153313	QSM-M5-3-I
	4 mm	★ 153315	QSM-M5-4-I
	M7 thread		
	4 mm	★ 153319	QSM-M7-4-I
	G1/8 thread		
	4 mm	★ 186106	QS-G1/8-4-I
	6 mm	★ 186107	QS-G1/8-6-I
	8 mm	★ 186109	QS-G1/8-8-I
	10 mm	★ 190647	QS-1/8-10-I
	G1/4 thread		
	8 mm	★ 153016	QS-1/4-8-I
	10 mm	★ 153018	QS-1/4-8-I
	12 mm	★ 190649	QS-1/4-12-I

		Part no.	Type
12/13	Push-in fitting, angled		Data sheets → Page 1443
	M5 thread		
	∅ 3 mm	★ 153331	QSML-M5-3
	∅ 4 mm	★ 153333	QSML-M5-4
	M7 thread		
	∅ 4 mm	★ 186352	QSML-M7-4
	G1/8 thread		
	∅ 6 mm	★ 186117	QSL-G1/8-6
	∅ 8 mm	★ 186119	QSL-G1/8-8
	Angled, long		
	M5 thread		
	∅ 3 mm	130838	QSMLL-M5-3
	∅ 4 mm	153339	QSMLL-M5-4
	M7 thread		
	∅ 4 mm	186354	QSMLL-M7-4
	G1/8 thread		
	∅ 6 mm	186128	QSLL-G1/8-6
	∅ 8 mm	186130	QSLL-G1/8-8
14	Blanking plug		Data sheets online: → b-1
	M5	★ 174308	B-M5-B
	M7	★ 174309	B-M7
	G1/8	★ 3568	B-1/8
	G1/4	★ 3569	B-1/4
	Electrical interface		
15	Ribbon connector		
	26-pin	573452	VAEM-L1-S-M3-26
	50-pin	573451	VAEM-L1-S-M3-50
16	Sub-D		
	25-pin	573445	VAEM-L1-S-M1-25
		573447	VAEM-L1-S-M1-25V1
		573448	VAEM-L1-S-M1-25V2
		573449	VAEM-L1-S-M1-25V3
		573450	VAEM-L1-S-M1-25V4
	44-pin	573446	VAEM-L1-S-M1-44
17	I-Port interface, outlet on top		
	8 VP ¹⁾	573384	VAEM-L1-S-8-PT
	16 VP ²⁾	573939	VAEM-L1-S-16-PT
	24 VP ³⁾	573940	VAEM-L1-S-24-PT
	I-Port interface, outlet on side		
	8 VP ¹⁾	574207	VAEM-L1-S-8-PTL
	16 VP ²⁾	574208	VAEM-L1-S-16-PTL
	24 VP ³⁾	574209	VAEM-L1-S-24-PTL

- 1) Actuation of up to 8 double solenoid valve positions.
- 2) Actuation of up to 16 double solenoid valve positions.
- 3) Actuation of up to 24 double solenoid valve positions.

Valve terminals VTUG with multi-pin plug and fieldbus connection

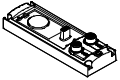
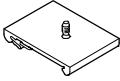
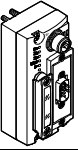
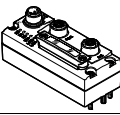

Accessories – Ordering data

	Part no.	Type
18 Connecting cable for multi-pin plug connection, 25-pin, IP40, straight Data sheets online: → nebv		
	2.5 m	575417 NEBV-S1G25-K-2.5-N-LE25-S6
	5 m	575418 NEBV-S1G25-K-5-N-LE25-S6
44-pin, IP40, straight Data sheets online: → nebv		
	2.5 m	575113 NEBV-S1G44-K-2.5-N-LE44-S6
	5 m	575114 NEBV-S1G44-K-5-N-LE44-S6
	10 m	575115 NEBV-S1G44-K-10-N-LE44-S6
25-pin, IP65, angled Data sheets online: → nebv		
	2.5 m	575423 NEBV-S1WA25-K-2.5-N-LE25-S9
	5 m	575424 NEBV-S1WA25-K-5-N-LE25-S9
44-pin, IP65, straight		
	2.5 m	575420 NEBV-S1WA44-K-2.5-N-LE44-S9
	5 m	575421 NEBV-S1WA44-K-5-N-LE44-S9
19 Straight plug, for I-Port/IO-Link®, 5-pin Data sheets online: → sea		
	M12	175487 SEA-M12-5GS-PG7
20 T-adapter, for IO-Link® and load voltage supply		
	M12, 5-pin	171175 FB-TA-M12-5POL
21 Inscription label holder for valve terminal		
	For valve size 10 mm	
	For 4 valve positions	573453 ASCF-H-L1-10-4V
	For 5 valve positions	573454 ASCF-H-L1-10-5V
	For 6 valve positions	573455 ASCF-H-L1-10-6V
	For 7 valve positions	573456 ASCF-H-L1-10-7V
	For 8 valve positions	573457 ASCF-H-L1-10-8V
	For 9 valve positions	573458 ASCF-H-L1-10-9V
	For 10 valve positions	573459 ASCF-H-L1-10-10V
	For 12 valve positions	573460 ASCF-H-L1-10-12V
	For 16 valve positions	573461 ASCF-H-L1-10-16V
	For 20 valve positions	573462 ASCF-H-L1-10-20V
	For 24 valve positions	573463 ASCF-H-L1-10-24V
	For valve size 14 mm	
	For 4 valve positions	573511 ASCF-H-L1-14-4V
	For 5 valve positions	573512 ASCF-H-L1-14-5V
	For 6 valve positions	573513 ASCF-H-L1-14-6V
	For 7 valve positions	573514 ASCF-H-L1-14-7V
	For 8 valve positions	573515 ASCF-H-L1-14-8V
	For 9 valve positions	573516 ASCF-H-L1-14-9V
	For 10 valve positions	573518 ASCF-H-L1-14-10V
	For 12 valve positions	573519 ASCF-H-L1-14-12V
	For 16 valve positions	573520 ASCF-H-L1-14-16V
	For 20 valve positions	573521 ASCF-H-L1-14-20V
	For 24 valve positions	573522 ASCF-H-L1-14-24V

Universal valve terminals >

Valve terminals VTUG with multi-pin plug and fieldbus connection

Accessories – Ordering data

		Part no.	Type
22 Electrical connection box		Data sheets → Page 1085	
	-	570042	CAPC-F1-E-M12
23 H-rail mounting			
	For electrical connection box CAPC	570043	CAF-M-F1-H
24 Bus node		Data sheets online: → cteu	
	CANopen	570038	CTEU-CO
	CC-LINK®	1544198	CTEU-CC
	PROFIBUS	570040	CTEU-PB
	DeviceNet®	570039	CTEU-DN
	EtherCAT®	572556	CTEU-EC
25 Connecting cable for I-Port interface/IO-Link®		Data sheets → Page 1543	
	5 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
	7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
	10 m	574323	NEBU-M12G5-E-10-Q8N-M12G5

09

Valve terminals



Affordable and sturdy

- + Armature tube for maximum flexibility when selecting the supply voltage
- + Universal usability thanks to a wide choice of mounting options
- + For general use thanks to a comprehensive range of valve functions

Universal valve terminals >

Solenoid valves/valve manifolds

VUVS ★ /VTUS

Universal valve terminals >

Solenoid valves/valve manifolds

VUVS ★ /VTUS



Overview, configuration and ordering

→ www.festo.com/catalogue/vuvs



Additional information, support and user documentation

→ www.festo.com/sp/vuvs



Quick ordering of basic designs

→ page 1105



- + Connection G1/8, G1/4, G3/8, 1/8 NPT, 1/4 NPT, 3/8 NPT
- + Flow rates 600 ... 2400 l/min
- + Operating voltage 12, 24 V DC; 24, 110, 120, 230, 240 V AC
- + In-line valves
- + Electrically actuated, piloted
- + Metal manifold rail
- + Metal manifold block

Solenoid valves VUVS  /valve manifold VTUS

Product range overview

Type	Valve function		Version			→ Page/online		
			VUVS-LK	VUVS-LT	VUVS-L	Size		
						20	25	30
VUVS-M32C	3/2-way valve, normally closed	Pneumatic spring	■	–	■	1097	1099	1101
		Mechanical spring	–	■	■			
VUVS-M32U	3/2-way valve, normally open	Pneumatic spring	–	–	■			
		Mechanical spring	–	■	■			
VUVS-T32C	3/2-way valve, normally open	Mechanical spring	–	■	–	vtus	vtus	–
VUVS-T32U	3/2-way valve, normally open	Mechanical spring	–	■	–			
VUVS-T32H	3/2-way valve, normally open	Mechanical spring	–	■	–			
VUVS-M52	5/2-way valve, single solenoid	Pneumatic spring	■	–	■	1097	1099	1101
		Mechanical spring	–	■	■			
VUVS-B52	5/2-way valve, double solenoid	–	■	–	■			
VUVS-P53C	5/3-way valve, mid-position closed	Mechanical spring	–	■	■			
VUVS-P53U	5/3-way valve, mid-position pressurised	Mechanical spring	–	–	■			
VUVS-P53E	5/3-way valve, mid-position exhausted	Mechanical spring	–	–	■			

Type	Version		Version			→ Page/online		
			VUVS-LK	VUVS-LT	VUVS-L	Size		
						20	25	30
VABM-E	Standard manifold block	For 3/2-way valves	–	■	■	1106	1106	1106
		For 5/2- and 5/3-way valves	–	■	■			
VABM-EEE	Manifold block extension module	For 3/2-way valves	–	■	■			
		For 5/2- and 5/3-way valves	–	■	■			
VABM-S	Compact manifold block	For 3/2-way valves	■	■	■			
		For 5/2- and 5/3-way valves	■	■	■			
VABM	Common supply manifold	For mounting on both sides	■	■	■			
		For mounting on one side	■	■	■			

Note

Valve manifolds can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/vtus

Solenoid valves VUVS ★ /valve manifold VTUS

Key features

Innovative

- A reliable, robust valve with a long service life
- Flow rate up to 2300 l/min
- Low-cost universal valve with no performance limitations
- Wide range of valve functions

Versatile

- Operating voltage can be easily altered by changing the solenoid coil
- In-line valves can be used as individual valves or manifold valves
- Variable pressure zones
- Wide range of mounting options

Valve functions

3/2-way valve, normally open, single solenoid:

- Internal/external pilot air supply
- Reset via pneumatic/mechanical spring
- Direction of flow can be reversed in the case of external pilot air supply

3/2-way valve, normally closed, single solenoid:

- Internal/external pilot air supply
- Reset via pneumatic/mechanical spring
- Direction of flow can be reversed in the case of external pilot air supply

5/2-way valve, single solenoid:

- Internal/external pilot air supply
- Reset via pneumatic/mechanical spring
- Direction of flow can be reversed in the case of external pilot air supply

5/2-way valve, double solenoid:

- Internal/external pilot air supply
- Direction of flow can be reversed in the case of external pilot air supply

5/3-way valve, mid-position exhausted, pressurised or closed:

- Internal/external pilot air supply
- Reset via mechanical spring
- Direction of flow can be reversed in the case of external pilot air supply

Design

Each valve is attached to the manifold block using two screws. The appropriate seal is mounted on the valve. This means that the valves can be easily replaced.

Valve positions covered with blanking plates can be replaced with valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged. For the standard manifold block, extension modules with two valve positions are available.

Reliable

- Durable thanks to tried-and-tested piston spools
- Reliable servicing thanks to valves that can be replaced quickly and easily

Easy to install

- Pre-assembled units on rails
- Individual valves assembled ready for installation
- Common supply manifolds for mounting on one or both sides
- Secure mounting on wall or H-rail

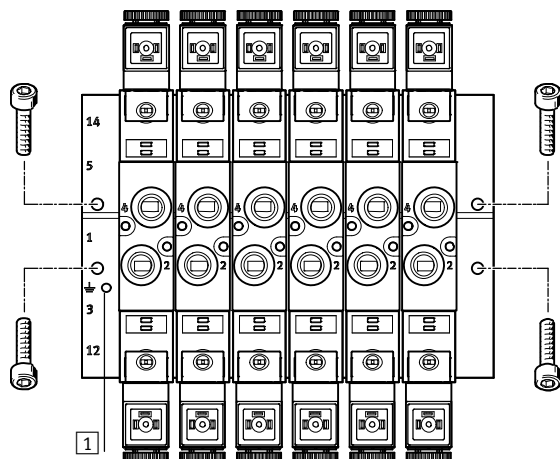
Key features

- A maximum of 16 valve positions can be configured in the standard version
- A maximum of 12 valve positions can be configured in the compact version
- Valve positions 2 ... 10 can be configured in increments of 1, valve positions 10 ... 16 in increments of 2
- Manifold block with a maximum of 10 valve positions
- Extension module with 2 valve positions
- Common supply manifold with a maximum of 10 valve positions
- Creation of pressure zones (maximum 9 pressure zones in the case of a valve manifold with 16 valve positions)

Key features

Mounting valve manifold VTUS

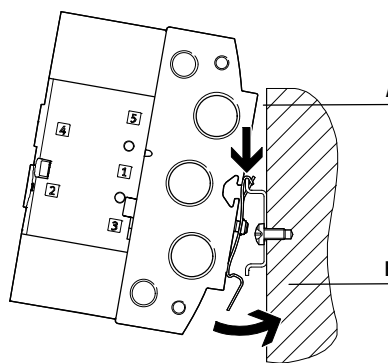
Wall mounting



Sturdy wall mounting of the manifold block using four through-holes.

1 Earth terminal

H-rail mounting



The H-rail mounting VAME-T-M consists of two mounting clips. These are screwed to the manifold block on the left and right.

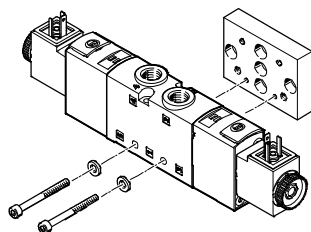
The valve manifold VTUS is then lowered onto the H-rail from above (arrow A) and clipped into the H-rail at the bottom (arrow B).

Note

- Note the max. tightening torque of the screws for H-rail mounting
- Only horizontal H-rail mounting is permissible
- Mounting possible on H-rail to EN 60715
- Vibration/shock loads are not permissible with H-rail mounting
- Further information on assembly
→ Assembly instructions for H-rail mounting VAME-T-M

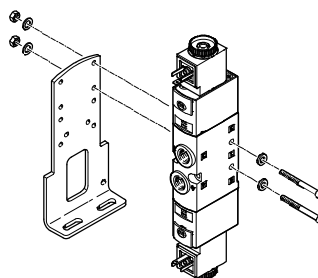
Mounting individual valve VUVS

Wall mounting



For mounting individual valves on a flat surface, e.g. aluminium profile systems. The solenoid valves are provided with two through-holes for attaching to the wall mounting VAME-B10-20-W.

The relevant screw set is included when the wall mounting VAME-B10-20-W is ordered.



For mounting individual valves on a flat surface, e.g. aluminium profile systems. The solenoid valves are provided with two through-holes for attaching to the foot mounting VAME-B10-...-.

The relevant screw set is included when the foot mounting is ordered.

Universal valve terminals >

Solenoid valves VUVS ★ /valve manifold VTUS

Data sheet

Flow rate

Size 20: up to 700 l/min

Size 25: up to 1300 l/min

Size 30: up to 2300 l/min



Technical data		20	25	30
Size		20	25	30
Valve manifold configuration		Fixed grid		
Valve width [mm]		21	26.5	31
Valve design		Piston spool		
Electrical actuation		Individual connection		
Reset method for valves		Pneumatic or mechanical spring		
Pilot air supply		Internal or external		
Flow direction		Reversible with restrictions		
Suitability for vacuum		Yes, with external pilot air supply		
Max. no. of valve positions		16 (a maximum of 18 valve positions with extension for standard manifold block)		
Max. no. of pressure zones		9		
Nominal operating voltage	[V DC]	12, 24		
	[V AC]	24, 110, 120, 230, 240		
Degree of protection		IP65/IP67 with plug socket		
		To IEC 60529		
Permissible voltage fluctuations [%]		±10		

09

Valve terminals

Data sheet – Solenoid valve size 20

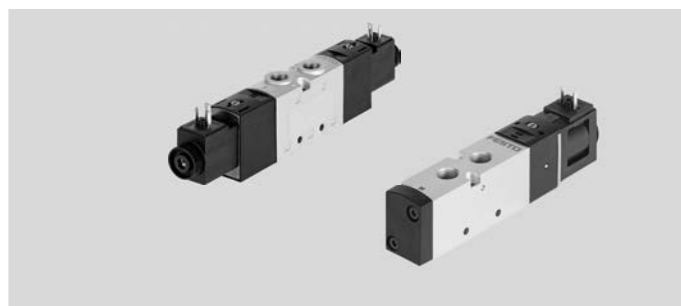
Flow rate

VUVS-LK: up to 550 l/min

VUVS-L: up to 700 l/min (±20%)

Valve width

21 mm



Technical data	VUVS-LK	VUVS-L
Valve width [mm]	21	21
Manual override	Non-detenting, detenting	Non-detenting, detenting
Sealing principle	Soft	Soft
Type of mounting	Optionally via through-hole or on manifold rail	
Pneumatic port 1, 2, 4, 3, 5	G1/8	G1/8
Pilot air port 12/14	–	M5
Pilot exhaust air port 82/84	–	M5

Technical data – 3/2-way valves						
		VUVS-LK		VUVS-L		
Order code for valves		M32C		M32C	M32U	
Valve function		3/2-way valve				
Normal position		Closed		Closed	Open	
Stable position		Monostable		Monostable		Monostable
Reset method		Pneumatic spring		Pneumatic spring	Mechanical spring	Pneumatic spring
Switching time	On	16	–	14	14	15
	Off	20	–	21	32	28

Technical data – 5/2-way valves						
		VUVS-LK		VUVS-L		
Order code for valves		M52	B52	M52	B52	
Valve function		5/2-way valve		5/2-way valve		
Normal position		–	–	–	–	
Stable position		Monostable	Bistable	Monostable		Bistable
Reset method		Pneumatic spring	–	Pneumatic spring	Mechanical spring	–
Switching time	On	17	–	20	12	–
	Off	22	–	29	44	–
	Change-over	–	10	–	–	10

Technical data – 5/3-way valves						
		VUVS-L				
Order code for valves		P53C		P53U	P53E	
Valve function		5/3-way valve				
Normal position/mid-position		Closed		Pressurised	Exhausted	
Stable position		Monostable				
Reset method		Mechanical spring				
Switching time	On	13	–	13	13	
	Off	42	–	42	44	
	Change-over	24	–	21	24	

Solenoid valves VUVS ★

Data sheet – Solenoid valve size 20

Operating conditions							
Order code for valves	VUVS-LK			VUVS-L			
	M32	M52	B52	M32	M52	B52	P53
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure with internal pilot air supply [bar]	1.5 ... 8			2.5 ... 10		1.5 ... 10	2.5 ... 10
Operating pressure with external pilot air supply [bar]	–			–0.9 ... +10			
Pilot pressure [bar]	–			2.5 ... 10		1.5 ... 10	2.5 ... 10
Ambient temperature [°C]	–5 ... +50			–10 ... +60			
Temperature of medium [°C]	–5 ... +50			–10 ... +60			

Electrical data				
	VUVS-LK		VUVS-L	
	Electrical connection	With solenoid coil, plug type C		With solenoid coil, plug type C
Operating voltage [V DC]	24		24	
Permissible voltage fluctuations [%]	±10		±10	
Power [W]	2.6		2.6	
Duty cycle [%]	100		100	
Degree of protection to EN 60529	IP65 with plug socket			
			Without solenoid coil, via solenoid coil → Page 1116	

Materials		
	VUVS-LK	VUVS-L
Housing	Wrought aluminium alloy	Die-cast aluminium
Seals	HNBR, NBR	HNBR, NBR
Piston spool	Wrought aluminium alloy	Wrought aluminium alloy (P53 types: high-alloy stainless steel)
Screws	–	Galvanised steel

09

Valve terminals

Data sheet – Solenoid valve size 25

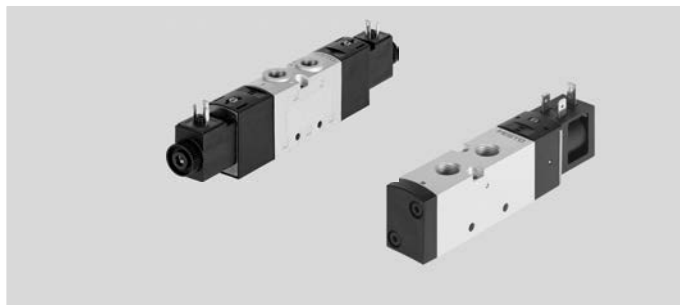
Flow rate

VUVS-LK: up to 1000 l/min

VUVS-L: up to 1300 l/min (±20%)

Valve width

26.5 mm



Technical data		VUVS-LK		VUVS-L	
Valve width	[mm]	26.5			
Manual override		Non-detenting, detenting			
Sealing principle		Soft			
Type of mounting		Optionally via through-hole or on manifold rail			
Pneumatic port		G1/4		G1/4	
1, 2, 4, 3, 5					
Pilot air port 12/14		-		M5	
Pilot exhaust air port 82/84		-		M5	

Download CAD data → www.festo.com

Technical data – 3/2-way valves		VUVS-LK		VUVS-L	
Order code for valves		M32C		M32C	M32U
Valve function		3/2-way valve			
Normal position		Closed		Closed	Open
Stable position		Monostable		Monostable	Monostable
Reset method		Pneumatic spring		Pneumatic spring	Mechanical spring
Switching time	On	16		13	11
	Off	20		26	40
					12
					11
					26
					39

Technical data – 5/2-way valves		VUVS-LK		VUVS-L	
Order code for valves		M52	B52	M52	B52
Valve function		5/2-way valve		5/2-way valve	
Stable position		Monostable	Bistable	Monostable	Bistable
Reset method		Pneumatic spring	-	Pneumatic spring	Mechanical spring
Switching time	On	20	-	19	12
	Off	22	-	35	47
	Change-over	-	12	-	-
					11

Technical data – 5/3-way valves		VUVS-L	
Order code for valves		P53C	P53U
Valve function		5/3-way valve	
Normal position/mid-position		Closed	Pressurised
Stable position		Monostable	
Reset method		Mechanical spring	
Switching time	On	13	14
	Off	42	48
	Change-over	26	25
			14
			48
			25

Data sheet – Solenoid valve size 25

Operating conditions		VUVS-LK			VUVS-L			
Order code for valves		M32	M52	B52	M32	M52	B52	P53
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]						
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]						
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure with internal pilot air supply	[bar]	1.5 ... 8			2.5 ... 10		1.5 ... 10	2.5 ... 10
Operating pressure with external pilot air supply	[bar]	–			–0.9 ... +10			
Pilot pressure	[bar]	–			2.5 ... 10		1.5 ... 10	2.5 ... 10
Ambient temperature	[°C]	–5 ... +50			–10 ... +60			
Temperature of medium	[°C]	–5 ... +50			–10 ... +60			

Electrical data		VUVS-LK		VUVS-L	
Electrical connection		With solenoid coil, plug type B		With solenoid coil, plug type C, plug type B	Without solenoid coil, via solenoid coil → Page 1116
Operating voltage	[V DC]	24		24	
Permissible voltage fluctuations	[%]	±10		±10	
Power	[W]	3.3		3.3	
Duty cycle	[%]	100		100	
Degree of protection to EN 60529		±10		IP65 with plug socket	

Materials		VUVS-LK		VUVS-L	
Housing		Wrought aluminium alloy		Die-cast aluminium	
Seals		HNBR, NBR		HNBR, NBR	
Piston spool		Wrought aluminium alloy		Wrought aluminium alloy	
Screws		–		Galvanised steel	

Data sheet – Solenoid valve size 30

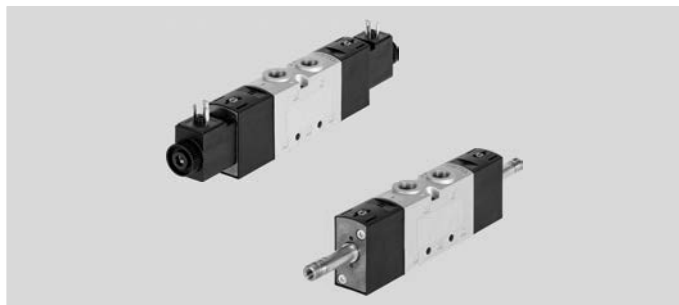
Flow rate

VUVS-LK: up to 1600 l/min

VUVS-L: up to 2300 l/min (±20%)

Valve width

31 mm



Technical data		VUVS-LK	VUVS-L
Valve width	[mm]	31	
Manual override		Non-detenting, detenting	
Type of mounting		Optionally via through-hole or on manifold rail	
Pneumatic port			
1, 2, 4, 3, 5		G3/8	G3/8
Pilot air port 12/14		–	G1/8
Pilot exhaust air port 82/84		–	M5

Technical data – 3/2-way valves		VUVS-LK		VUVS-L	
Order code for valves		M32C		M32C	M32U
Valve function		3/2-way valve			
Normal position		Closed		Open	
Stable position		Monostable		Monostable	
Reset method		Pneumatic spring		Pneumatic spring	Mechanical spring
Switching time	On	16		19	16
	Off	20		36	15
				58	37
					57

Technical data – 5/2-way valves		VUVS-LK		VUVS-L	
Order code for valves		M52	B52	M52	B52
Valve function		5/2-way valve		5/2-way valve	
Stable position		Monostable	Bistable	Monostable	Bistable
Reset method		Pneumatic spring	–	Pneumatic spring	Mechanical spring
Switching time	On	16	–	24	17
	Off	21	–	49	62
	Change-over	–	10	–	–
					13

Technical data – 5/3-way valves		VUVS-L	
Order code for valves		P53C	P53U
Valve function		5/3-way valve	
Normal position/mid-position		Closed	Pressurised
Stable position		Monostable	
Reset method		Mechanical spring	
Switching time	On	17	18
	Off	76	75
	Change-over	39	31
			20
			74
			36

Data sheet – Solenoid valve size 30

Operating conditions						
Order code for valves	VUVS-LK			VUVS-L		
	M32	M52		M32	M52	B52 P53
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)					
Operating pressure with internal pilot air supply [bar]	1.5 ... 8		2.5 ... 10		1.5 ... 10	2.5 ... 10
Operating pressure with external pilot air supply [bar]	–		–0.9 ... +10			
Pilot pressure [bar]	–		2.5 ... 10		1.5 ... 10	2.5 ... 10
Ambient temperature [°C]	–5 ... +50		–10 ... +60			
Temperature of medium [°C]	–5 ... +50		–10 ... +60			

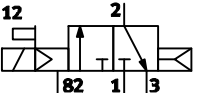
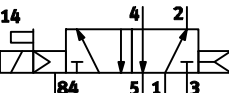
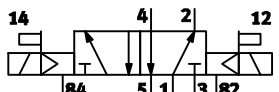
Electrical data					
		VUVS-LK		VUVS-L	
		With solenoid coil, plug type B		With solenoid coil, plug type C, plug type B	Without solenoid coil, via solenoid coil → Page 1116
Electrical connection		With solenoid coil, plug type B		With solenoid coil, plug type C, plug type B	
Operating voltage [V DC]		24		24	
Permissible voltage fluctuations [%]		10		10	
Power [W]		3.3		3.3	
Duty cycle [%]		100		100	
Degree of protection to EN 60529		IP65 with plug socket		IP65 with plug socket	

Materials		
	VUVS-LK	VUVS-L
Housing	Wrought aluminium alloy	Die-cast aluminium
Seals	HNBR, NBR	HNBR, NBR
Piston spool	Wrought aluminium alloy	Wrought aluminium alloy
Piston spool	–	Galvanised steel

Universal valve terminals >

Solenoid valves VUVS /valve manifold VTUS

Order code – Solenoid valve

VUVS	-	L	K	-	-	-
Valve design						
In-line valve		L				
Design principle						
Piston spool with sealing ring			K			
Size						
21 mm					20	
26.5 mm					25	
31 mm					30	
Valve functions						
						M32C
						M52
						B52
Reset method						
Pneumatic spring for M52 and M32						A
For B52						-
Pilot air supply						
Internal						-

- 1) Not in combination with size 20
- 2) Only in combination with size 20

Order example:

VUVS-LK20-M32C-AD-G18-1C1-S

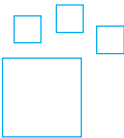
Universal solenoid valve VUVS in-line valve, piston spool with sealing ring, width 20 (valve width 21 mm) - 3/2-way valve, single solenoid, normally closed - pneumatic spring reset method, internal pilot air supply, manual override non-detenting/detenting without accessories - pneumatic connection G1/8 - without fitting - nominal operating voltage 24 V DC, plug pattern type C, to EN 175301, version: core features

D	-	-	-	1	-	S
Version						
S Core features						
Degree of protection for electrics						
- Standard						
Electrical connection						
C1 ²⁾ Plug pattern type C, to EN 175301						
B2 ¹⁾ Plug pattern type B, industry standard						
Nominal operating voltage						
1 24 V DC						
Valve pilot control interface						
- Standard						
Exhausting						
- Without fitting						
Pneumatic connection						
G18 G1/8						
G14 G1/4						
G38 G3/8						
Manual override						
D Non-detenting, detenting without accessories						

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Valve terminals

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Solenoid valves VUVS  /valve manifold VTUS Quick ordering¹⁾

	Part no.	Type
3/2-way valve, single solenoid	8043213	VUVS-LK20-M32C-AD-G18-1C1-S
	8043217	VUVS-LK25-M32C-AD-G14-1B2-S
	8049880	VUVS-LK30-M32C-AD-G38-1B2-S
	575269	VUVS-L20-M32C-AD-G18-F7-1C1
	575274	VUVS-L20-M32C-MD-G18-F7-1C1
	575475	VUVS-L25-M32C-AD-G14-F8-1C1
	575477	VUVS-L25-M32C-MD-G14-F8-1C1
	575568	VUVS-L30-M32C-AD-G38-F8-1C1
	575570	VUVS-L30-M32C-MD-G38-F8-1C1
5/2-way valve, single solenoid	8043214	VUVS-LK20-M52-AD-G18-1C1-S
	8043218	VUVS-LK25-M52-AD-G14-1B2-S
	8049881	VUVS-LK30-M52-AD-G38-1B2-S
	575263	VUVS-L20-M52-AD-G18-F7-1C1
	575264	VUVS-L20-M52-MD-G18-F7-1C1
	575503	VUVS-L25-M52-AD-G14-F8-1C1
	575511	VUVS-L25-M52-MD-G14-F8-1C1
	575596	VUVS-L30-M52-AD-G38-F8-1C1
	575604	VUVS-L30-M52-MD-G38-F8-1C1

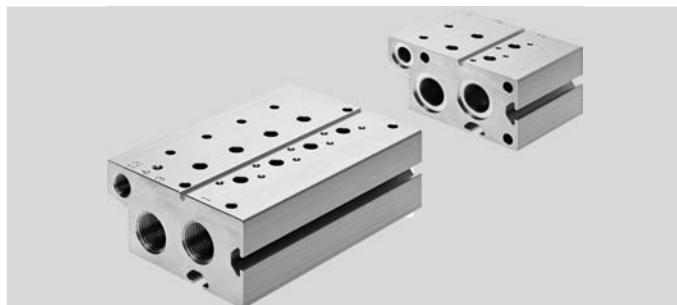
	Part no.	Type
5/2-way valve, double solenoid	8043215	VUVS-LK20-B52-D-G18-1C1-S
	8043219	VUVS-LK25-B52-D-G14-1B2-S
	8049882	VUVS-LK30-B52-D-G38-1B2-S
	575265	VUVS-L20-B52-D-G18-F7-1C1
	575518	VUVS-L25-B52-D-G14-F8-1C1
	575611	VUVS-L30-B52-D-G38-F8-1C1
5/3-way valve, single solenoid	575268	VUVS-L20-P53C-MD-G18-F7-1C1
	575525	VUVS-L25-P53C-MD-G14-F8-1C1
	575618	VUVS-L30-P53C-MD-G38-F8-1C1

1) All products in this table are easy to select and quick to order.

Solenoid valves VUVS ★ /valve manifold VTUS

Data sheet – Manifold block

Flow rate
up to 2300 l/min



Technical data – Size 20

For valve function	Manifold block standard		Extension module for standard manifold block		Manifold block compact		Common supply manifold	
	3/2	5/2, 5/3	3/2	5/2, 5/3	3/2	5/2, 5/3	on both sides	on one side
Grid dimension [mm]	22							
Type of mounting	Via through-hole						Via mounting bracket	
Max. number of valve positions	10	10	2	2	10		10	4
Port 1	G3/8	G3/8	G3/8	G3/8	G1/4	G1/4	G3/8	G3/8
Port 3	G3/8	G3/8	G3/8	G3/8	G1/4	G1/4	–	–
Port 5	–	G3/8	–	G3/8	–	G1/4	–	–
Port 12	G1/8	G1/8	G1/8	G1/8	–	–	–	–
Port 14	–	G1/8	–	G1/8	–	–	–	–

Technical data – Size 25

For valve function	Manifold block standard		Extension module for standard manifold block		Manifold block compact		Common supply manifold	
	3/2	5/2, 5/3	3/2	5/2, 5/3	3/2	5/2, 5/3	on both sides	on one side
Grid dimension [mm]	27.5							
Type of mounting	Via through-hole						Via mounting bracket	
Max. number of valve positions	10	10	2	2	10		10	4
Port 1	G1/2	G1/2	G1/2	G1/2	G3/8	G3/8	G1/2	G1/2
Port 3	G1/2	G1/2	G1/2	G1/2	G3/8	G3/8	–	–
Port 5	–	G1/2	–	G1/2	–	G3/8	–	–
Port 12	G1/8	G1/8	G1/8	G1/8	–	–	–	–
Port 14	–	G1/8	–	G1/8	–	–	–	–

Technical data – Size 30

For valve function	Manifold block standard		Extension module for standard manifold block		Manifold block compact		Common supply manifold	
	3/2	5/2, 5/3	3/2	5/2, 5/3	3/2	5/2, 5/3	on both sides	on one side
Grid dimension [mm]	32							
Type of mounting	Via through-hole						Via mounting bracket	
Max. number of valve positions	10	10	2	2	10		10	4
Port 1	G3/4	G3/4	G3/4	G3/4	G1/2	G1/2	G3/4	G3/4
Port 3	G3/4	G3/4	G3/4	G3/4	G1/2	G1/2	–	–
Port 5	–	G3/4	–	G3/4	–	G1/2	–	–
Port 12	G1/8	G1/8	G1/8	G1/8	–	–	–	–
Port 14	–	G1/8	–	G1/8	–	–	–	–

Materials

Manifold block	Wrought aluminium alloy
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Valve terminals

Solenoid valves VUVS  /valve manifold VTUS

Order code – Manifold block

VABM	-	B10	-	-	-	-	-	-	-
Valve manifold parts									
Manifold block	VABM								
Valve series									
VUVS	B10								
Valve width									
21 mm	20								
26.5 mm	25								
31 mm	30								
Version									
Common supply manifold	-								
Compact manifold block	S								
Standard manifold block	E								
Extension module for standard manifold block	EEE								

Mounting	
E	Common supply manifold for mounting on one side
-	Standard mounting
Connection for valve function	
-	Manifold block for 5/2- and 5/3-way valves
P3	Manifold block for 3/2-way valves
P53	Common supply manifold
Number of valve positions	
2 ... 10	2 to 10
Pneumatic ports 1, 3, 5	
G38	G3/8 thread
G14	G1/4 thread
G12	G1/2 thread
G34	G3/4 thread

Order example:

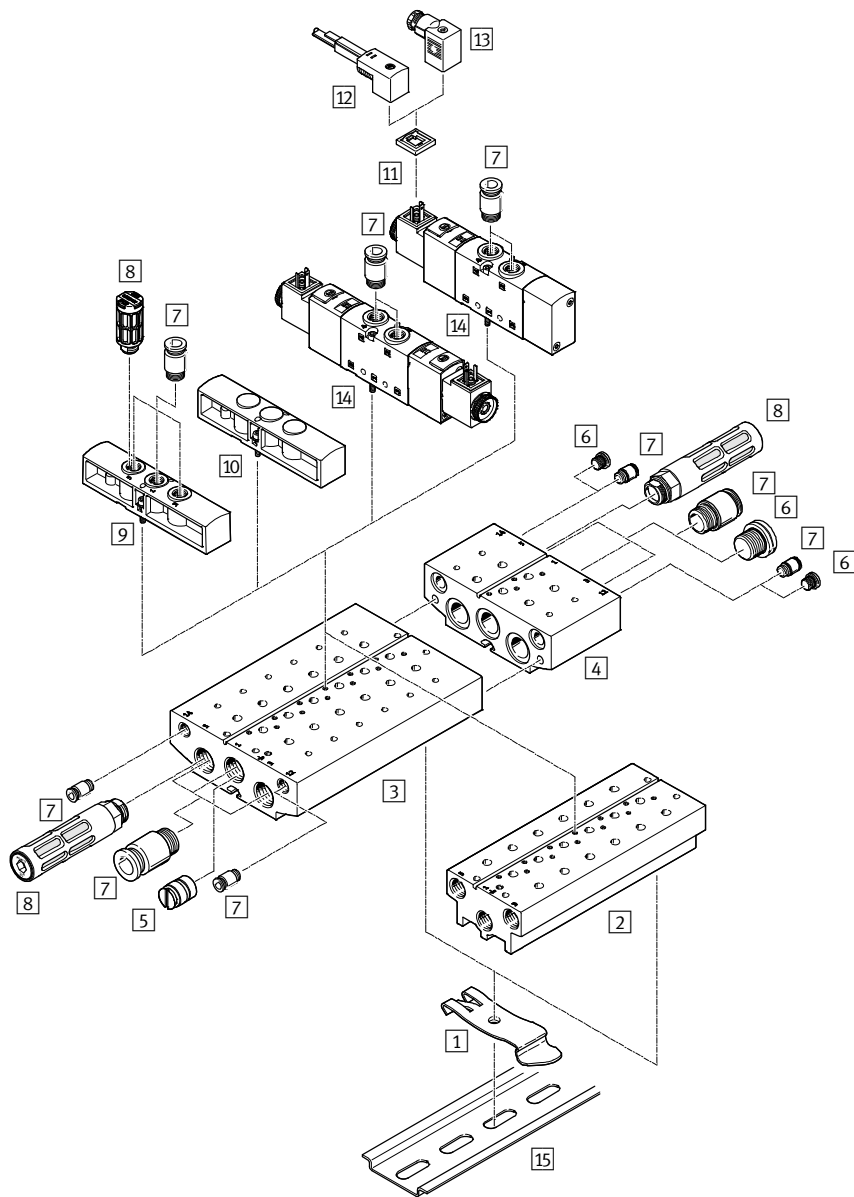
VABM-B10-20E-G38-10

Manifold block for VUVS manifold assembly - valve width 21 mm, standard manifold block - thread G3/8 - 10 valve positions - manifold block for 5/2- and 5/3-way valves - standard mounting

Universal valve terminals >

Solenoid valves VUVS ★ /valve manifold VTUS

Accessories – Manifold assembly solenoid valve on manifold block



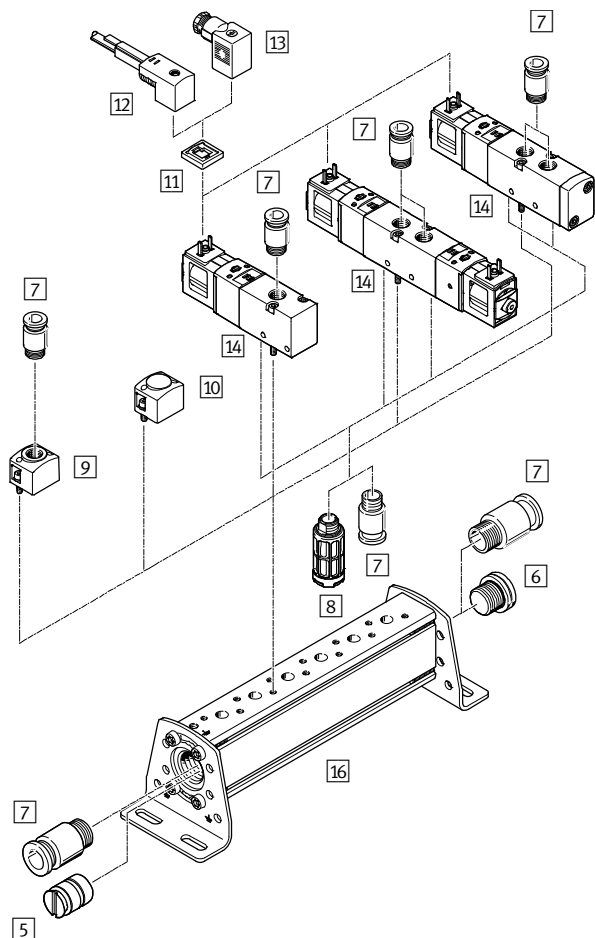
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Valve terminals

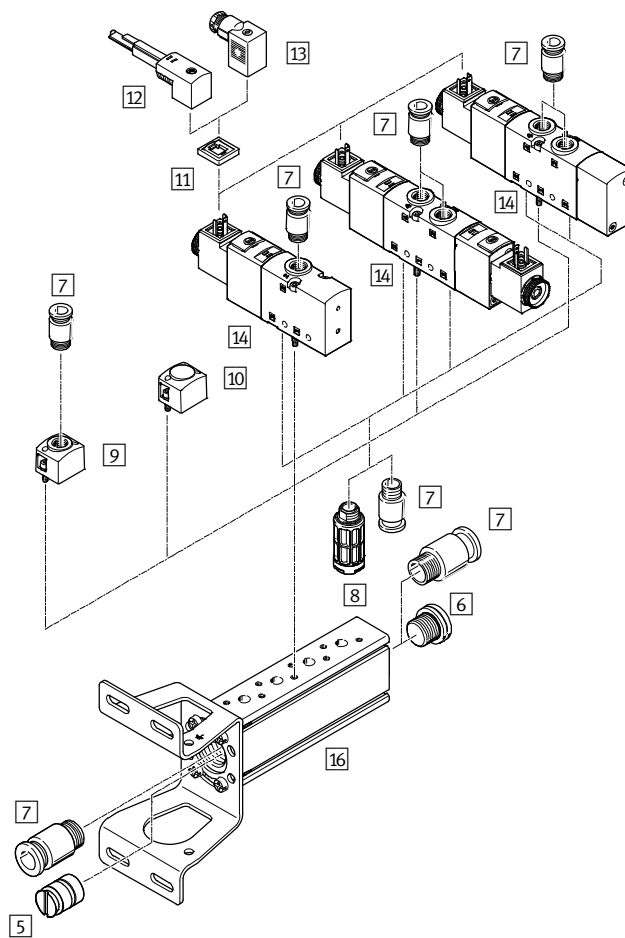
Designation	Brief description	→ Page/online
1 H-rail mounting	For H-rail mounting	1110
2 Compact manifold block	For 5/2- and 5/3-way valves, no port for external pilot air supply	1110, 1111, 1112
3 Standard manifold block	For 5/2- and 5/3-way valves, with ports 12 and 14 for external pilot air supply	1110, 1111, 1112
4 Extension module	For standard manifold block, with ports 12 and 14 for external pilot air supply	1110, 1111, 1112
5 Separator	For creating pressure zones	1113
6 Blanking plug	–	1113
7 Push-in fitting	For connecting compressed air tubing with standard O.D.	1113
8 Silencer	For mounting in exhaust ports	1113
9 Supply plate	For additional air supply and exhaust via a valve position	1113
10 Cover plate	For covering unused valve positions	1114
11 Illuminating seal	For indicating the switching status	1114
12 Plug socket with cable	For solenoid valves VUVS	1114
13 Plug socket	For solenoid valves VUVS	1114
14 Solenoid valve	5/2-way valve, with solenoid coil	1097
15 H-rail	–	–
– Solenoid coil	For solenoid valves VUVS	1116
– Cover cap	For manual override VAMC	1116

Accessories – Manifold assembly solenoid valve on supply manifold

Common supply manifold for mounting on both sides



Common supply manifold for mounting on one side


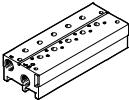
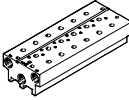
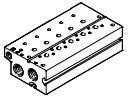
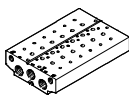




Designation	Brief description	→ Page/online
5 Separator	For creating pressure zones	1113
6 Blanking plug	–	1113
7 Push-in fitting	For connecting compressed air tubing with standard O.D.	1113
8 Silencer	For mounting in exhaust ports	1113
9 Supply plate	For additional air supply via a valve position	1113
10 Cover plate	For covering unused valve positions	1114
11 Illuminating seal	For indicating the switching status	1114
12 Plug socket with cable	For solenoid valves VUVS	1114
13 Plug socket	For solenoid valves VUVS	1114
14 Solenoid valve	With solenoid coil	1097
16 Common supply manifold	–	1115
– Solenoid coil	For solenoid valves VUVS	1116
– Cover cap	For manual override VAMC	1116

Universal valve terminals >

Solenoid valves VUVS ★ /valve manifold VTUS

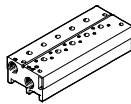





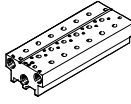





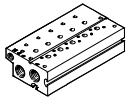
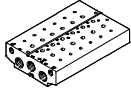


Accessories – Ordering data

Description		Part no.	Type
1 H-rail mounting			
	For mounting the valve manifold on standard H-rail TH 35-7,5 or TH 35-15, to EN 60715	For size 20	★ 569998 VAME-T-M4
		For size 25	2636436 VAME-T-M5
		For size 30	3488412 VAME-T-M6
2 Compact manifold block, size 20, for 3/2-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	★ 576465 VABM-B10-20S-G14-2-P3
		3 valve positions	576466 VABM-B10-20S-G14-3-P3
		4 valve positions	★ 576467 VABM-B10-20S-G14-4-P3
		6 valve positions	★ 576469 VABM-B10-20S-G14-6-P3
		8 valve positions	★ 576471 VABM-B10-20S-G14-8-P3
		10 valve positions	★ 576473 VABM-B10-20S-G14-10-P3
For 5/2- and 5/3-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	★ 576417 VABM-B10-20S-G14-2
		3 valve positions	576418 VABM-B10-20S-G14-3
		4 valve positions	★ 576419 VABM-B10-20S-G14-4
		6 valve positions	★ 576421 VABM-B10-20S-G14-6
		8 valve positions	★ 576423 VABM-B10-20S-G14-8
		10 valve positions	★ 576425 VABM-B10-20S-G14-10
3 Standard manifold block, size 20, for 3/2-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	576441 VABM-B10-20E-G38-2-P3
		3 valve positions	576442 VABM-B10-20E-G38-3-P3
		4 valve positions	576443 VABM-B10-20E-G38-4-P3
		6 valve positions	576445 VABM-B10-20E-G38-6-P3
		8 valve positions	576447 VABM-B10-20E-G38-8-P3
		10 valve positions	576449 VABM-B10-20E-G38-10-P3
For 5/2- and 5/3-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	576339 VABM-B10-20E-G38-2
		3 valve positions	576340 VABM-B10-20E-G38-3
		4 valve positions	576341 VABM-B10-20E-G38-4
		6 valve positions	576343 VABM-B10-20E-G38-6
		8 valve positions	576345 VABM-B10-20E-G38-8
		10 valve positions	576347 VABM-B10-20E-G38-10
4 Manifold block, extension module for standard manifold block, size 20			
	For 3/2-way valves, incl. seals and screws for valve mounting	2 valve positions	576490 VABM-B10-20EEE-G38-2-P3
	For 5/2- and 5/3-way valves, incl. seals and screws for valve mounting	2 valve positions	576489 VABM-B10-20EEE-G38-2

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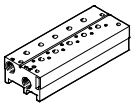
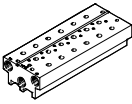
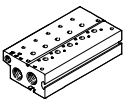
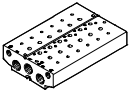


Valve terminals

Accessories – Ordering data







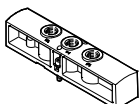
Description		Part no.	Type
2 Compact manifold block, size 25, for 3/2-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	 8026297 VABM-B10-25S-G38-2-P3
		3 valve positions	8026298 VABM-B10-25S-G38-3-P3
		4 valve positions	 8026299 VABM-B10-25S-G38-4-P3
		6 valve positions	 8026301 VABM-B10-25S-G38-6-P3
		8 valve positions	 8026303 VABM-B10-25S-G38-8-P3
		10 valve positions	 8026305 VABM-B10-25S-G38-10-P3
For 5/2- and 5/3-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	 8026261 VABM-B10-25S-G38-2
		3 valve positions	8026262 VABM-B10-25S-G38-3
		4 valve positions	 8026263 VABM-B10-25S-G38-4
		6 valve positions	 8026265 VABM-B10-25S-G38-6
		8 valve positions	 8026267 VABM-B10-25S-G38-8
		10 valve positions	 8026269 VABM-B10-25S-G38-10
3 Standard manifold block, size 25, for 3/2-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	8026279 VABM-B10-25E-G12-2-P3
		3 valve positions	8026280 VABM-B10-25E-G12-3-P3
		4 valve positions	8026281 VABM-B10-25E-G12-4-P3
		6 valve positions	8026283 VABM-B10-25E-G12-6-P3
		8 valve positions	8026285 VABM-B10-25E-G12-8-P3
		10 valve positions	8026287 VABM-B10-25E-G12-10-P3
For 5/2- and 5/3-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	8026243 VABM-B10-25E-G12-2
		3 valve positions	8026244 VABM-B10-25E-G12-3
		4 valve positions	8026245 VABM-B10-25E-G12-4
		6 valve positions	8026247 VABM-B10-25E-G12-6
		8 valve positions	8026249 VABM-B10-25E-G12-8
		10 valve positions	8026251 VABM-B10-25E-G12-10
4 Extension module for standard manifold block, size 25			
	For 3/2-way valves, incl. seals and screws for valve mounting	2 valve positions	8026316 VABM-B10-25EEE-G12-2-P3
	For 5/2- and 5/3-way valves, incl. seals and screws for valve mounting	2 valve positions	8026315 VABM-B10-25EEE-G12-2

Solenoid valves VUVS ★ /valve manifold VTUS

Accessories – Ordering data

Description		Part no.	Type
2 Compact manifold block, size 30, for 3/2-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	★ 8026413 VABM-B10-30S-G12-2-P3
		3 valve positions	8026414 VABM-B10-30S-G12-3-P3
		4 valve positions	★ 8026415 VABM-B10-30S-G12-4-P3
		6 valve positions	★ 8026417 VABM-B10-30S-G12-6-P3
		8 valve positions	★ 8026419 VABM-B10-30S-G12-8-P3
		10 valve positions	★ 8026421 VABM-B10-30S-G12-10-P3
For 5/2- and 5/3-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	★ 8026377 VABM-B10-30S-G12-2
		3 valve positions	8026378 VABM-B10-30S-G12-3
		4 valve positions	★ 8026379 VABM-B10-30S-G12-4
		6 valve positions	★ 8026381 VABM-B10-30S-G12-6
		8 valve positions	★ 8026383 VABM-B10-30S-G12-8
		10 valve positions	★ 8026385 VABM-B10-30S-G12-10
3 Standard manifold block, size 30, for 3/2-way valves			
	Incl. seals and screws for valve assembly	2 valve positions	8026395 VABM-B10-30E-G34-2-P3
		3 valve positions	8026396 VABM-B10-30E-G34-3-P3
		4 valve positions	8026397 VABM-B10-30E-G34-4-P3
		6 valve positions	8026399 VABM-B10-30E-G34-6-P3
		8 valve positions	8026401 VABM-B10-30E-G34-8-P3
		10 valve positions	8026403 VABM-B10-30E-G34-10-P3
For 5/2- and 5/3-way valves			
	Incl. seals and screws for valve mounting	2 valve positions	8026359 VABM-B10-30E-G34-2
		3 valve positions	8026360 VABM-B10-30E-G34-3
		4 valve positions	8026361 VABM-B10-30E-G34-4
		6 valve positions	8026363 VABM-B10-30E-G34-6
		8 valve positions	8026365 VABM-B10-30E-G34-8
		10 valve positions	8026367 VABM-B10-30E-G34-10
4 Extension module for standard manifold block, size 30			
	For 3/2-way valves, incl. seals and screws for valve mounting	2 valve positions	8026432 VABM-B10-30EEE-G34-2-P3
	For 5/2- and 5/3-way valves, incl. seals and screws for valve mounting	2 valve positions	8026431 VABM-B10-30EEE-G34-2


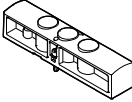










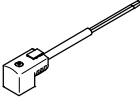





Accessories – Ordering data

Description		Part no.	Type	
5 Separator				
	For creating pressure zones, for threaded connections	G1/8	569995 VABD-8-B	
		G1/4	569996 VABD-10-B	
		G3/8	574483 VABD-14-B	
		G1/2	8022483 VABD-17.5-B	
6 Blanking plug				
	With connecting thread G	G1/8	★ 3568 B-1/8	
		G1/4	★ 3569 B-1/4	
		G3/8	★ 3570 B-3/8	
		G1/2	★ 3571 B-1/2	
		G3/4	★ 3572 B-3/4	
7 Push-in fitting, with internal hexagon				
	Connecting thread M5 for tubing O.D.	4 mm	★ 153315 QSM-M5-4-I	
		Connecting thread G1/8 for tubing O.D.	4 mm	★ 186106 QS-G1/8-4-I
			6 mm	★ 186107 QS-G1/8-6-I
			8 mm	★ 186109 QS-G1/8-8-I
	Connecting thread G1/4 for tubing O.D.	8 mm	★ 186110 QS-G1/4-8-I	
		10 mm	★ 186112 QS-G1/4-10-I	
	Connecting thread G3/8 for tubing O.D.	8 mm	★ 186111 QS-G3/8-8-I	
		10 mm	★ 186113 QS-G3/8-10-I	
		12 mm	★ 186114 QS-G3/8-12-I	
		Angled with external hexagon		
	Connecting thread G1/8 for tubing O.D.	4 mm	★ 186116 QSL-G1/8-4	
		6 mm	★ 186117 QSL-G1/8-6	
		8 mm	★ 186119 QSL-G1/8-8	
	Connecting thread G1/4 for tubing O.D.	8 mm	★ 186120 QSL-G1/4-8	
		10 mm	★ 186122 QSL-G1/4-10	
		12 mm	★ 186351 QSL-G1/4-12	
	Connecting thread G3/8 for tubing O.D.	8 mm	★ 186121 QSL-G3/8-8	
		10 mm	★ 186123 QSL-G3/8-10	
		12 mm	★ 186124 QSL-G3/8-12	
		16 mm	★ 186348 QSL-G3/8-16	
Angled, long, with external hexagon				
	Connecting thread G1/8 for tubing O.D.	4 mm	186127 QSLL-G1/8-4	
		6 mm	186128 QSLL-G1/8-6	
		8 mm	186130 QSLL-G1/8-8	
		10 mm	186134 QSLL-G3/8-10	
8 Silencer				
	With connecting thread G	G1/8	★ 2307 U-1/8	
		G1/4	★ 2316 U-1/4	
		G3/8	★ 6843 U-3/8-B	
		G1/2	★ 6844 U-1/2-B	
9 Supply plate				
	For size 20			
	For valve position on manifold block for 3/2-way valves		576493 VABF-B10-20-P1A4-G18-P3	
	For valve position on manifold block for 5/2-, 5/3-way valves		576492 VABF-B10-20-P1A4-G18	
	For size 25			
	For valve position on manifold block for 3/2-way valves		8026319 VABF-B10-25-P1A4-G14-P3	
	For valve position on manifold block for 5/2-, 5/3-way valves		8026318 VABF-B10-25-P1A4-G14	
	For size 30			
	For valve position on manifold block for 3/2-way valves		8026435 VABF-B10-30-P1A4-G38-P3	
For valve position on manifold block for 5/2-, 5/3-way valves		8026434 VABF-B10-30-P1A4-G38		

Universal valve terminals >

Solenoid valves VUVS /valve manifold VTUS

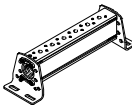
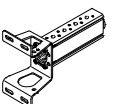
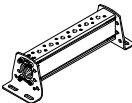
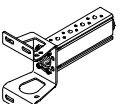
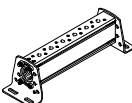
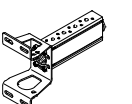
Accessories – Ordering data

Description		Part no.	Type	
9 Supply plate				
	For size 20			
	For valve position on common supply manifold	576491	VABF-B10-20-P1-G18	
	For size 25			
	For valve position on common supply manifold	8026317	VABF-B10-25-P1-G14	
For size 30				
For valve position on common supply manifold	8026433	VABF-B10-30-P1-G38		
10 Blanking plate				
	For size 20			
	For valve position on manifold block for 3/2-way valves		576411 VABB-B10-20-E-P3	
	For valve position on manifold block for 5/2-, 5/3-way valves		576410 VABB-B10-20-E	
	For valve position on common supply manifold		576409 VABB-B10-20-A	
	For size 25			
	For valve position on manifold block for 3/2-way valves		8026210 VABB-B10-25-E-P3	
	For valve position on manifold block for 5/2-, 5/3-way valves		8026209 VABB-B10-25-E	
	For valve position on common supply manifold		8026208 VABB-B10-25-A	
	For size 30			
	For valve position on manifold block for 3/2-way valves		8026336 VABB-B10-30-E-P3	
	For valve position on manifold block for 5/2-, 5/3-way valves		8026335 VABB-B10-30-E	
	For valve position on common supply manifold		8026334 VABB-B10-30-A	
11 Illuminating seal				
	Type C, to EN 175301-803	24 V DC	151717 MEB-LD-12-24DC	
		230 V AC	151718 MEB-LD-230AC	
12 Plug socket with cable				
	Plug pattern type C, to EN 175301-803			
	Angled socket, 3-pin	2.5 m		151688 KMEB-1-24-2,5-LED
	Cable, open end, 3-wire, 24 V DC, LED	5 m		151689 KMEB-1-24-5-LED
		10 m		193457 KMEB-1-24-10-LED
	Angled socket, 3-pin	2.5 m		151690 KMEB-1-230AC-2,5
	Cable, open end, 3-wire, 0 ... 230 V AC	5 m		151691 KMEB-1-230AC-5
	Plug pattern type B, industry standard			
	Angled socket, 3-pin	2.5 m		30935 KMF-1-24DC-2,5-LED
	Cable, open end, 3-wire, 24 V DC, LED	5 m		30937 KMF-1-24DC-5-LED
		10 m		193458 KMF-1-24-10-LED
	Angled socket, 3-pin	2.5 m		30936 KMF-1-230AC-2,5
	Cable, open end, 3-wire, 0 ... 230 V AC	5 m		30938 KMF-1-230AC-5
13 Plug socket				
	Plug pattern type C, to EN 175301-803			
	3-pin, for cable diameter 4 ... 6 mm, IP65	0 ... 230 V AC/DC		539712 MSSD-EB-M12
	3-pin, for cable diameter 6 ... 8 mm, IP65	0 ... 250 V AC/DC		151687 MSSD-EB
	4-pin, for cable diameter 6 ... 8 mm, IP67	0 ... 230 V AC/DC		192745 MSSD-EB-S-M14
	3-pin, straight plug, M12, 2-pin, IP65	12 ... 24 V AC/DC		188024 MSSD-EB-M12-MONO
	Plug pattern type B, industry standard			
	3-pin, for cable diameter 6 ... 8 mm, IP65	0 ... 250 V AC/DC		34431 MSSD-F
	4-pin, for cable diameter 5.5 ... 8 mm, IP67	0 ... 230 V AC/DC		192746 MSSD-F-S-M16

09

Valve terminals



Accessories – Ordering data

Description		Part no.	Type
16 Common supply manifold, size 20			
	For mounting on both sides, incl. seals and screws for mounting valves	2 valve positions	★ 576363 VABM-B10-20-G38-2-P53
		3 valve positions	576364 VABM-B10-20-G38-3-P53
		4 valve positions	★ 576365 VABM-B10-20-G38-4-P53
		6 valve positions	★ 576367 VABM-B10-20-G38-6-P53
		8 valve positions	★ 576369 VABM-B10-20-G38-8-P53
		10 valve positions	★ 576371 VABM-B10-20-G38-10-P53
	For mounting on one side, incl. seals and screws for valve mounting	2 valve positions	576414 VABM-B10-20-G38-2-P53-E
		3 valve positions	576415 VABM-B10-20-G38-3-P53-E
		4 valve positions	576416 VABM-B10-20-G38-4-P53-E
Size 25			
	For mounting on both sides, incl. seals and screws for mounting valves	2 valve positions	★ 8026219 VABM-B10-25-G12-2-P53
		3 valve positions	8026220 VABM-B10-25-G12-3-P53
		4 valve positions	★ 8026221 VABM-B10-25-G12-4-P53
		6 valve positions	★ 8026223 VABM-B10-25-G12-6-P53
		8 valve positions	★ 8026225 VABM-B10-25-G12-8-P53
		10 valve positions	★ 8026227 VABM-B10-25-G12-10-P53
	For mounting on one side, incl. seals and screws for valve mounting	2 valve positions	8026237 VABM-B10-25-G12-2-P53-E
		3 valve positions	8026238 VABM-B10-25-G12-3-P53-E
		4 valve positions	8026239 VABM-B10-25-G12-4-P53-E
Size 30			
	For mounting on both sides, incl. seals and screws for mounting valves	2 valve positions	★ 8026338 VABM-B10-30-G34-2-P53
		3 valve positions	8026339 VABM-B10-30-G34-3-P53
		4 valve positions	★ 8026340 VABM-B10-30-G34-4-P53
		6 valve positions	★ 8026342 VABM-B10-30-G34-6-P53
		8 valve positions	★ 8026344 VABM-B10-30-G34-8-P53
		10 valve positions	★ 8026346 VABM-B10-30-G34-10-P53
	For mounting on one side, incl. seals and screws for valve mounting	2 valve positions	8026356 VABM-B10-30-G34-2-P53-E
		3 valve positions	8026357 VABM-B10-30-G34-3-P53-E
		4 valve positions	8026358 VABM-B10-30-G34-4-P53-E

Universal valve terminals >

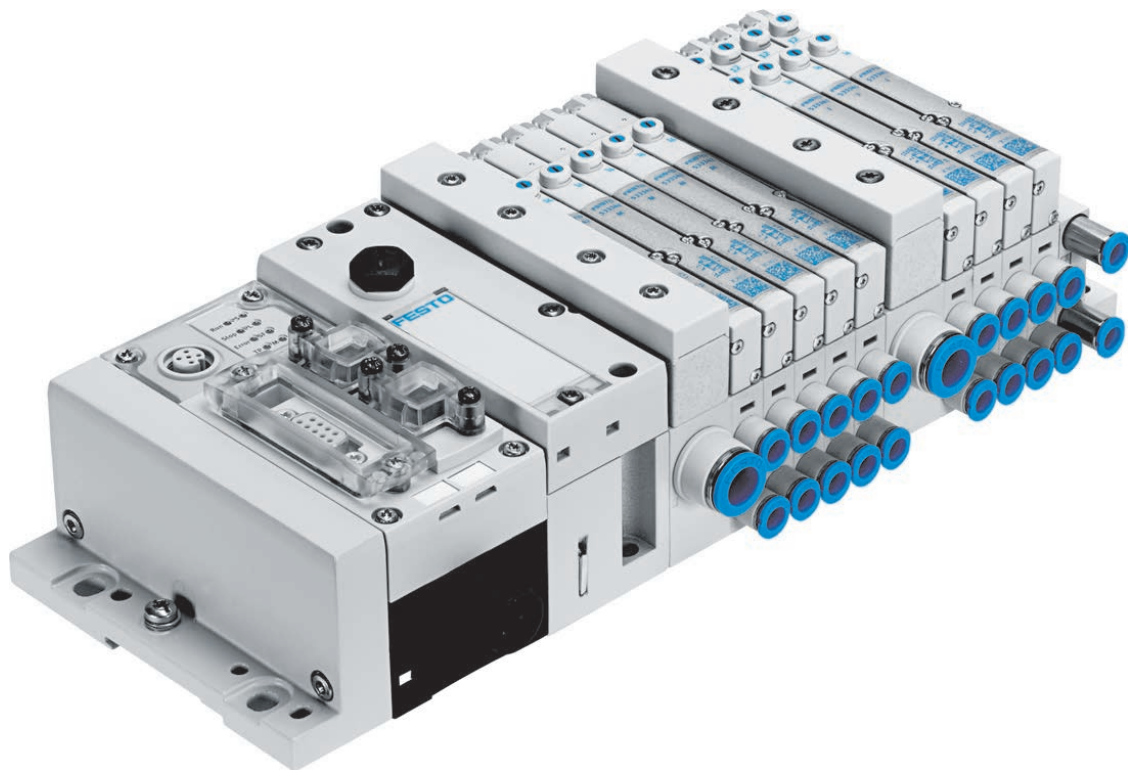
Solenoid valves VUVS ★ /valve manifold VTUS

Accessories – Ordering data

Description		Part no.	Type	
Solenoid coil for valves				
	For size 20			
	Plug pattern type C, to EN 175301-803	12 V DC	8025331	VACS-C-C1-5
		24 V DC	8025330	VACS-C-C1-1
		48 V DC	8025336	VACS-C-C1-7
		24 V AC	8025335	VACS-C-C1-1A
		48 V AC	8025337	VACS-C-C1-7A
		110/120 V AC	8025334	VACS-C-C1-16B
		230/240 V AC	8025338	VACS-C-C1-3W
	For size 25 and size 30			
	Plug pattern type B, industry standard	12 V DC	8030801	VACF-B-B2-5
		24 V DC	8030802	VACF-B-B2-1
		48 V DC	8030803	VACF-B-B2-7
		24 V AC	8030804	VACF-B-B2-1A
		48 V AC	8030805	VACF-B-B2-7A
110/120 V AC		8030806	VACF-B-B2-16B	
230/240 V AC		8030808	VACF-B-B2-3W	
Plug pattern type C, to EN 175301-803	12 V DC	8030810	VACF-B-C1-5	
	24 V DC	8030811	VACF-B-C1-1	
	48 V DC	8030812	VACF-B-C1-7	
	24 V AC	8030813	VACF-B-C1-1A	
	48 V AC	8030814	VACF-B-C1-7A	
	110/120 V AC	8030815	VACF-B-B2-16B	
	230/240 V AC	8030817	VACF-B-C1-3W	
Cover cap				
	For manual override of valves VUVS-LK	Size 20	★ 8049538 VAMC-B10-20-CH2-S	
		Size 25	★ 8049539 VAMC-B10-25-CH2-S	
		Size 30		

09

Valve terminals



Modularity in a lightweight design

- + Three valve sizes can be combined as required
- + Reduced weight thanks to sub-bases in polymer technology
- + Extremely modular

Universal valve terminals >
Valve terminals

MPA-L

Multi-pin plug
Fieldbus
IO-Link
I-Port

Universal valve terminals >

Valve terminals

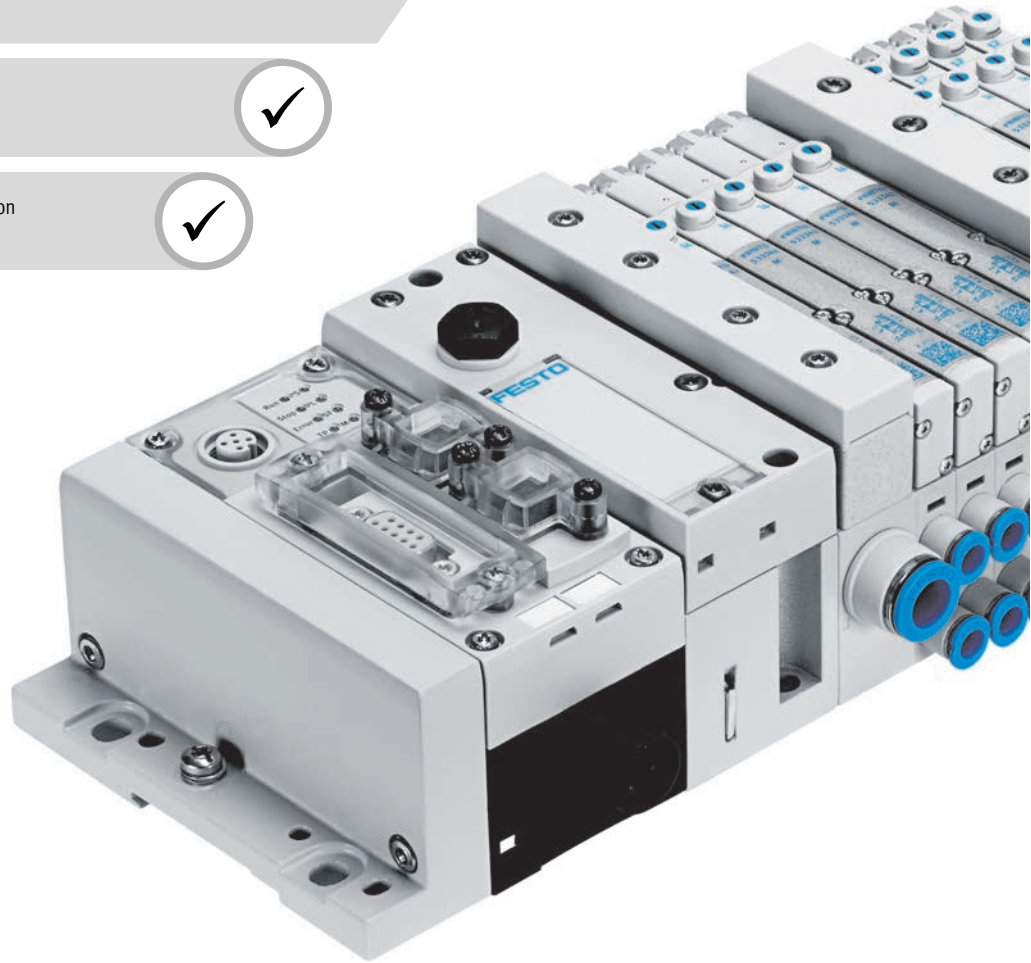
MPA-L



Overview, configuration and ordering
→ www.festo.com/catalogue/mpa-l



Additional information, support and user documentation
→ www.festo.com/sp/mpa-l



- + Sub-base in polymer technology
- + Used in many industries
- + Extremely modular and versatile
- + Three valve sizes available, expandable in individual steps
- + IP65 degree of protection

Product range overview

Function	Version	Code	Size			→ Page/ online
			10 mm (MPA1)	14 mm (MPA14)	20 mm (MPA2)	
Position function 1-32	5/2-way single-solenoid	M	■	■	■	1122
	5/2-way double-solenoid valve	J	■	■	■	1122
	2x 3/2-way valve, normally open	N	■	■	■	1122
	2x 3/2-way valve, normally closed	K	■	■	■	1122
	2x 3/2-way valve, 1x normally closed, 1x normally open	H	■	■	■	1122
	5/3-way valve, mid-position pressurised	B	■	■	■	1122
	5/3-way valve, mid-position closed	G	■	■	■	1122
	5/3-way valve, mid-position exhausted	E	■	■	■	1122
	2x 2/2-way valve, normally closed	D	■	■	■	1122
	3/2-way valve, normally closed, external supply air	X	■	■	■	1122
	3/2-way valve, normally open, external supply air	W	■	■	■	1122
	2x 2/2-way valve, 1x normally closed, 1x normally open, reversible	I	■	■	■	1122
	5/2-way valve, single-solenoid, with spring return	MS	■	–	■	mpal
	2x 3/2-way valve, normally open, with spring return	NS	■	■	■	1122
	2x 3/2-way valve, normally closed, with spring return	KS	■	■	■	1122
	2x 3/2-way valve, 1x normally closed, 1x normally open, with spring return	HS	■	■	■	1122
	2x 2/2-way valve, compatible with low pressure	DS	■	■	■	1122
	5/2-way valve, single-solenoid, polymer poppet valve	MU	■	–	–	1122
	2x 3/2-way valve, normally open, polymer poppet valve	NU	■	–	–	1122
	2x 3/2-way valve, normally closed, polymer poppet valve	KU	■	–	–	1122
	2x 3/2-way valve, 1x normally closed, 1x normally open, polymer poppet valve	HU	■	–	–	1122
	Vacant position	L	■	■	■	mpal

Note

Valve terminals can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/mpal

Valve terminals MPA-L

Key features

Innovative

- Compact high-performance valves in sturdy metal housing
- Flow rates up to 870 l/min
- Wide range of electrical connection options for multi-pin plug: Sub-D, ribbon cable or terminal strip
- Connection to the electrical peripherals CPX with a wide range of communication options
- I-Port/IO-Link® interface
- Freely configurable push-in connectors

Flexible

- Modular system offering a range of configuration options
- Freely extendable system with individual sub-bases and modular tie rods
- Up to 32 solenoid coils
- Conversions and extensions possible at a later date
- Air supply can be extended via additional pressure zones with supply modules
- Wide range of pressures
–0.9 ... 10 bar
- Wide range of valve functions

Reliable

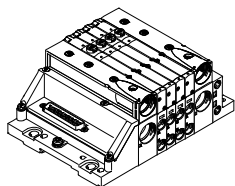
- High output reserves thanks to large pneumatic cross sections and exhausting with high flow rates
- Lightweight and low-cost polymer components
- Fast troubleshooting thanks to LEDs on the valves
- Easy to service thanks to replaceable valves and electrical modules
- Manual override either non-detenting, detenting or secured against unauthorised activation (covered)
- Durable thanks to tried-and-tested piston spool valves

Easy to install

- Fast and reliable in-house assembly using individual components or delivered as a ready-to-install and tested unit
- Reduced selection, ordering, installation and commissioning costs
- Secure mounting on wall or H-rail

Electrical connection options

Multi-pin plug connection



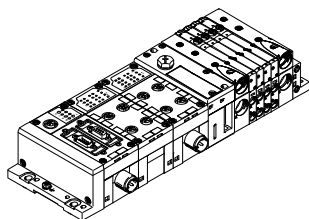
The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-wire cable to the multi-pin plug connection, which substantially reduces installation time.

The valve terminal can be equipped with max. 32 solenoid coils. This corresponds to 2 to 32 valves.

Versions

- Sub-D connection
 - Pre-assembled multi-pin cable
 - Multi-pin cable for self-assembly
- Ribbon cable connection
- Terminal strip connection

Fieldbus connection via the CPX system



An integrated fieldbus node manages communication with a higher-order PLC. This enables a space-saving pneumatic and electronic solution. Valve terminals with fieldbus interfaces can be configured with up to 32 valve positions.

The CPX terminal also enables the integration of digital and analogue electrical inputs and outputs, pressure sensors and controllers for pneumatic or electric positioning axes.

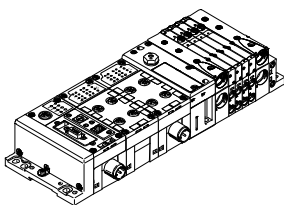
A detailed description of the extensive functionality can be found in the documentation for the CPX terminal

➔ Page 1597

Fieldbus protocols/CPX variants:

- PROFIBUS DP
- PROFINET
- INTERBUS®
- DeviceNet®
- CANopen
- CC-LINK®
- EtherNet/IP
- Front end controller Remote I/O
- Modbus/TCP
- EtherCAT®
- POWERLINK
- Sercos III

Control block connection via the CPX system



Controllers integrated in the Festo valve terminals enable the construction of stand-alone control units to IP65, without control cabinets.

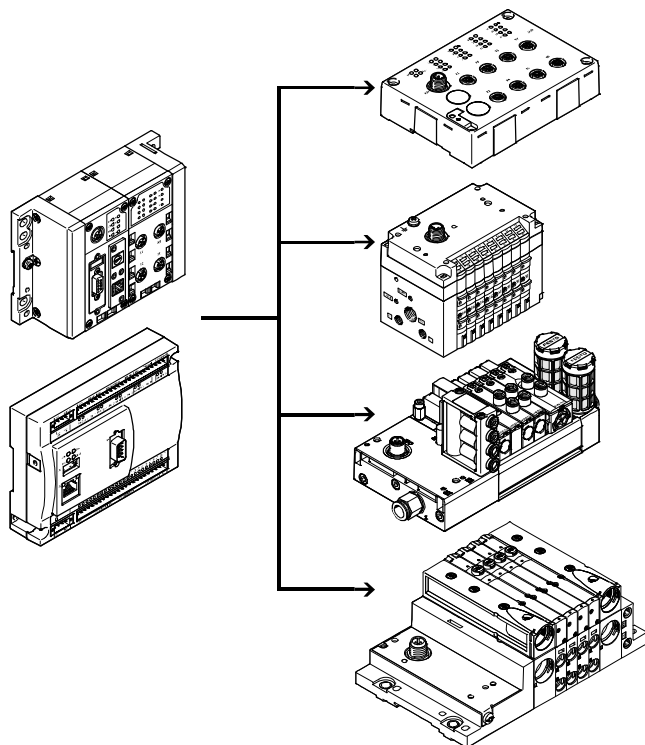
In the slave operating mode, these valve terminals can be used for intelligent pre-processing and are therefore ideal modules for designing decentralised intelligence.

In the master operating mode, terminal groups can be designed with many options and functions that can autonomously control a medium-sized machine/system.

Key features

Electrical connection options

I-Port interface/IO-Link®, CTCL installation system



A CTCL system consists of the CTCL master and the devices with I-Port interface, which are connected using special connecting cables. This permits a decentralised layout of the devices. This means that the valve terminals and I/O modules with I-Port interface (devices) can be mounted very close to the cylinders to be controlled. This reduces the length of the air supply lines used, which minimises flow losses and pressurisation and exhaust times.

The I-Port interface from Festo is based on IO-Link® and is compatible with IO-Link® in certain areas.

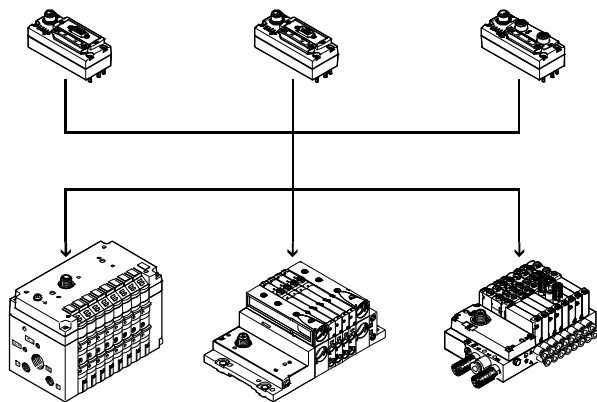
The connection type corresponds to a star topology. In other words, only one module or valve terminal can be connected to each I-Port.

As well as communication, the I-Port interfaces also handle the power supply for the connected devices. The maximum length of a string is 20 m.

The restrictions compared to IO-Link® include:

- Permanently set baud rate of 230.4 kbps
- SIO mode is not supported
- Max. 32 bytes of input data and 32 bytes of output data
- Only one dump of the master commands is used
- Festo plug and work, configuration via IO-DD is not supported.

Fieldbus connection via the CTEU system



CTEU is a system for the compact connection of a valve terminal to different fieldbus standards such as PROFIBUS and DeviceNet®.

The fieldbus node is mounted directly on the I-Port interface of the valve terminal.

This makes it easy to switch between the fieldbus protocols; however, there is no way of connecting I/O modules to the fieldbus nodes.

The following fieldbus protocols are supported:

- DeviceNet®
- PROFIBUS DP
- CANopen
- CC-LINK®
- EtherCAT®
- AS-Interface
- PROFINET
- EtherNet/IP

Universal valve terminals >

Valve terminals MPA-L

Data sheet

Valve terminal with multi-pin plug or fieldbus connection

Flow rate Up to 870 l/min
Voltage 24 V DC

Valve width
10 mm
14 mm
20 mm



Technical data		Download CAD data → www.festo.com
Max. no. of valve positions		32
Max. no. of pressure zones		20
Lubrication		Life-time lubrication, PWIS-free (free of paint-wetting impairment substances)
Type of mounting		Wall mounting On H-rail to EN 60715
Manual override		Non-detenting, detenting
Nominal operating voltage	[V DC]	24

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[bar] -0.9 ... +10
Pilot pressure	[bar] 3 ... 8
Ambient temperature	[°C] -5 ... +50

Current consumption per solenoid coil at nominal voltage		Width		
		10 mm	14 mm	20 mm
Nominal pick-up current	[mA]	50	50	110
Nominal current with current reduction	[mA]	10	10	23
Time until current reduction	[ms]	20	20	20

Electrical data – MPA-L with electrical interface for CPX terminal		
Intrinsic current consumption of the valve terminal (internal electronics, without valves)		
At 24 V U _{EL/SEN} ¹⁾	[mA]	Typ. 13
At 24 V U _{val} ²⁾	[mA]	Typ. 35
Diagnostic message		
Undervoltage U _{OFF} ³⁾	[V]	17.7 ... 17.8

- 1) Power supply for electronics and sensors.
- 2) Load voltage supply for valves.
- 3) Load voltage outside of function range.

Electrical data – MPA-L with I-Port interface/IO-Link®		
Intrinsic current consumption of the valve terminal (internal electronics, without valves)		
From operating voltage supply connection	[mA]	30
From load voltage supply connection	[mA]	30

Data sheet

Technical data – Valve width 10 mm														
Code for position function 1-32		M	J	N	K	H	B	G	E	X	W	D	I	
Switching times	On	[ms]	10	10	10	10	10	10	10	10	10	10	10	8
	Off	[ms]	20	–	20	20	20	35	35	35	20	20	20	20
	Change-over	[ms]	–	15	–	–	–	15	15	15	–	–	–	–
Operating pressure	[bar]	–0.9 ... +10			3 ... 10			–0.9 ... +10					3 ... 10	
Standard nominal flow rate	[l/min]	360	360	300	230	300	300	320	240	255	255	230	260	
Design		Piston spool valve												
Materials		Die-cast aluminium												

Technical data – Valve width 10 mm											
Code for position function 1-32		NS	KS	HS	DS	MU	NU	KU	HU		
Switching times	On	[ms]	14	14	14	14	10	8	8	8	
	Off	[ms]	16	16	16	16	12	8	10	10	
	Change-over	[ms]	–	–	–	–	–	–	–	–	
Operating pressure	[bar]	–0.9 ... +8					–0.9 ... +10				
Standard nominal flow rate	[l/min]	300	230	300	230	190	190	160	190		
Design		Piston spool valve					Poppet valve with spring return				
Materials		Die-cast aluminium					PPA reinforced				

Technical data – Valve width 14 mm																		
Code for position function 1-32		M	J	N	K	H	B	G	E	X	W	D	I	NS	KS	HS	DS	
Switching times	On	[ms]	13	9	12	12	12	16	13	13	12	12	12	10	12	12	12	10
	Off	[ms]	30	–	38	38	38	50	52	50	20	20	30	28	23	23	23	25
	Change-over	[ms]	–	24	–	–	–	26	26	26	–	–	–	–	–	–	–	–
Operating pressure	[bar]	–0.9 ... +10			3 ... 10			–0.9 ... +10					3 ... 10		–0.9 ... +10			
Standard nominal flow rate	[l/min]	670	670	650	600	650	630	610	480	400	400	650	670	520	560	520	570	
Design		Piston spool valve																
Materials		Die-cast aluminium																

Technical data – Valve width 20 mm																		
Code for position function 1-32		M	J	N	K	H	B	G	E	X	W	D	I	NS	KS	HS	DS	
Switching times	On	[ms]	15	9	8	8	8	11	10	11	13	13	7	7	12	12	12	12
	Off	[ms]	28	–	28	28	28	46	40	47	22	22	25	23	25	25	25	25
	Change-over	[ms]	–	22	–	–	–	23	21	23	–	–	–	–	–	–	–	–
Operating pressure	[bar]	–0.9 ... +10			3 ... 10			–0.9 ... +10					3 ... 10		–0.9 ... +8			
Standard nominal flow rate	[l/min]	700	860	610	550	550	550	750	700	480	480	840	680	620	500	550	820	
Design		Piston spool valve																
Materials		Die-cast aluminium																

Valve terminals MPA-L

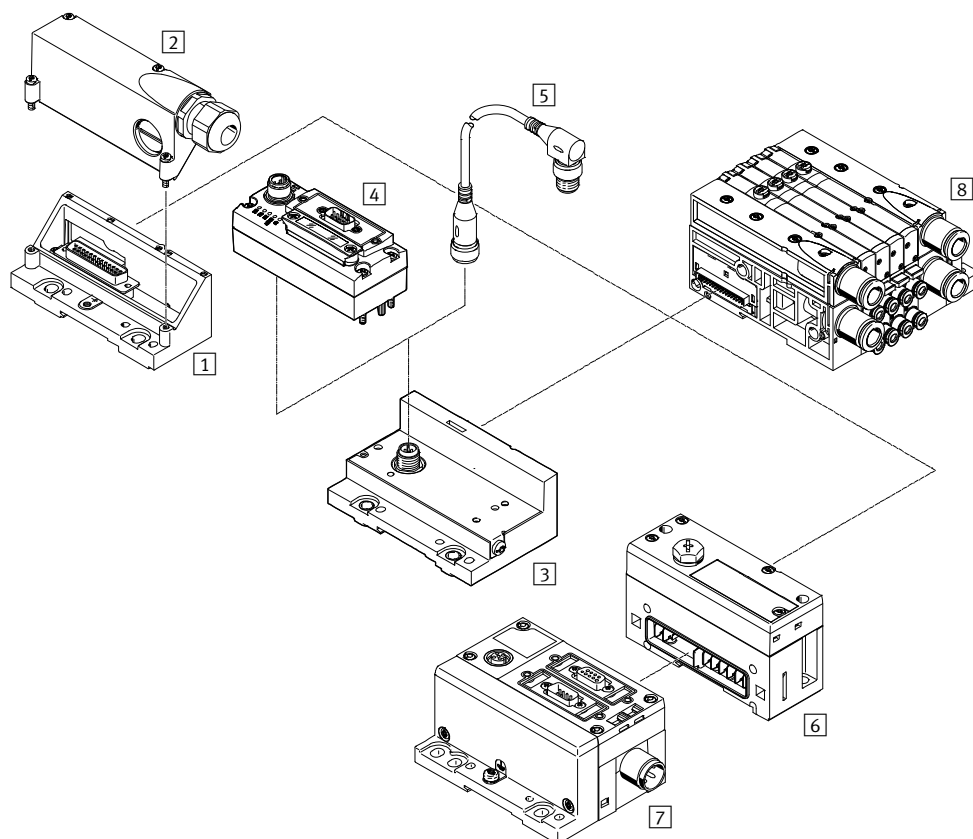
Data sheet

Pneumatic connections		
Right end plate		
Supply	1	Thread G1/4 (straight or angled push-in fitting, for tubing O.D. 6 mm, 8 mm, 10 mm, 12 mm, 5/16", 3/8")
Exhaust port	3	Thread G1/4 (straight or angled push-in fitting, for tubing O.D. 6 mm, 8 mm, 10 mm, 5/16", 3/8")
	5	Thread G1/4 (straight or angled push-in fitting, for tubing O.D. 6 mm, 8 mm, 10 mm, 5/16", 3/8")
Pilot air supply port	12/14	Thread M7 (straight or angled push-in fitting, for tubing O.D. 4 mm, 6 mm; straight push-in fitting, for tubing O.D. 3/16", 1/4")
Pilot exhaust air	82/84	Thread M7 (straight or angled push-in fitting, for tubing O.D. 4 mm, 6 mm; straight push-in fitting, for tubing O.D. 3/16", 1/4")
Power supply module with exhaust plate		
Supply	1	Cartridge fitting 20 mm (straight cartridge fitting, for tubing O.D. 8 mm, 10 mm, 12 mm, 5/16", 3/8", 1/2", adapter for thread G1/4), flat plate silencer
Exhaust port	3/5	Cartridge fitting 20 mm (straight cartridge fitting, for tubing O.D. 8 mm, 10 mm, 12 mm, 5/16", 3/8", 1/2", adapter for thread G1/4), flat plate silencer
Sub-base width 10 mm		
Working ports	2	Cartridge fitting 10 mm (straight or angled cartridge fitting, for tubing O.D. 4 mm, 6 mm, 5/32", 1/4", adapter for thread M7)
	4	Cartridge fitting 10 mm (straight or angled cartridge fitting, for tubing O.D. 4 mm, 6 mm, 5/32", 1/4", adapter for thread M7)
Sub-base width 14 mm		
Working ports	2	Cartridge fitting 14 mm (straight or angled cartridge fitting, for tubing O.D. 6 mm, 8 mm, 1/4", 5/16", adapter for thread G1/8)
	4	Cartridge fitting 14 mm (straight or angled cartridge fitting, for tubing O.D. 6 mm, 8 mm, 1/4", 5/16", adapter for thread G1/8)
Sub-base width 20 mm		
Working ports	2	Cartridge fitting 18 mm (straight or angled cartridge fitting, for tubing O.D. 8 mm, 10 mm, 5/16", 3/8", adapter for thread G1/4)
	4	Cartridge fitting 18 mm (straight or angled cartridge fitting, for tubing O.D. 8 mm, 10 mm, 5/16", 3/8", adapter for thread G1/4)

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Materials	
Sub-base	PA
Supply module	PPA
End plate	Die-cast aluminium, PA, PBT
Seals	NBR
Exhaust plate	PA
Flat plate silencer	PE
Electrical interlinking module	PBT, PA, copper alloy
Tie rod	High-alloy stainless steel

Accessories

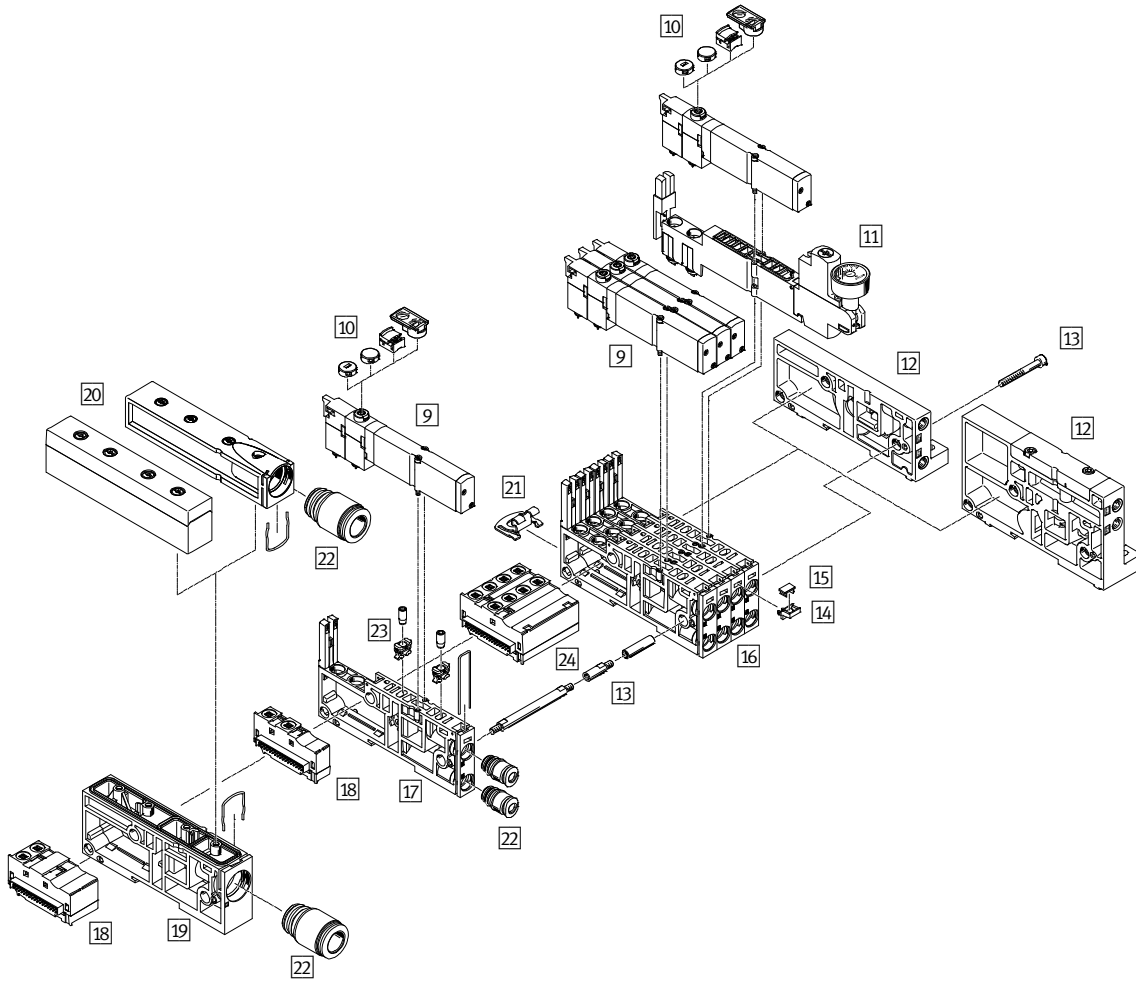


Accessories		→ Page/online
1	End plate with multi-pin plug connection VMPAL-EPL	1122
2	Connecting cable for multi-pin plug connection VMPAL-KM	1122
3	End plate with I-Port interface/IO-Link® VMPAL-EPL-IPO32	1122
4	Fieldbus node CTEU	cteu
5	Connecting cable for I-Port interface/IO-Link® NEBU-M12G5	1127
6	End plate with pneumatic interface for CPX terminal VMPAL-EPL-CPX	1122
7	Module CPX for CPX terminal	1597
8	Valve terminal, pneumatic part	1122

Universal valve terminals >

Valve terminals MPA-L

Accessories











Accessories

→ Page/online

9	Solenoid valve VMPA	1122
10	Cover for manual override VMPA-HB or inscription label holder ASLR-D-L1	mpal
11	Vertical stacking modules VMPA1-B8/VMPA2-B8	mpal
12	Right-hand end plate with pilot air selector for choosing the pilot air supply (internal or external) VMPAL-EPR	mpal
13	Tie rod VMPAL-ZA	mpal
14	Inscription label holder VMPAL-ST-AP	1127
15	Inscription label IBS-6x10	1127
16	Sub-base VMPAL-AP-4X, 4 pieces combined	mpal
17	Sub-base VMPAL-AP	mpal
18	Electrical interlinking module VMPAL-EVAP	mpal
19	Supply module VMPAL-SP	mpal
20	Exhaust plate VMPA2-B8	mpal
21	Mounting VMPAL-BD	1127
22	Cartridge fitting QSPKG	1127
23	Fixed restrictor VMPA1-FT or check valve VMPA1-RV/VMPA14-RV/VMPA2-RV	mpal
24	Electrical interlinking module for four sub-bases VMPAL-EVAP-4	mpal

Accessories – Ordering data

	Code ¹⁾	Description	Part no.	Type code
5 Connecting cable for I-Port interface/IO-Link®				
	-	Connecting cable	5 m	574321 NEBU-M12G5-E-5-Q8N-M12G5
			7.5 m	574322 NEBU-M12G5-E-7.5-Q8N-M12G5
			10 m	574323 NEBU-M12G5-E-10-Q8N-M12G5
14 Inscription label holder				
	TM	For sub-base, 10 pieces	Width 10 mm	561109 VMPAL-ST-AP-10
			Width 14 mm	561112 VMPAL-ST-AP-14
			Width 20 mm	561115 VMPAL-ST-AP-20
15 Inscription label				
	-	6 mm x 10 mm, 64 pieces in frame	18576	IBS-6x10
21 Mounting				
	-	Mounting bracket (should be installed max. every 13 cm), 10 pieces	560949	VMPAL-BD
	H	H-rail mounting for MPA-L with multi-pin plug connection, 3 pieces	526032	CPX-CPA-BG-NRH
	H	H-rail mounting for MPA-L with fieldbus connection, 2 pieces	560798	VMPAF-FB-BG-NRH
22 Cartridge fitting Data sheets online: → qsp				
	-	10 mm cartridge fitting, plastic, for working ports, 10 pieces, connection for tubing O.D.	4 mm	132622 QSPKG10-4
			6 mm	132623 QSPKG10-6
			3/16"	132625 QSPKG10-3/16-U
			1/4"	132626 QSPKG10-1/4-U
		14 mm cartridge fitting, plastic, for supply ports, 10 pieces, connection for tubing O.D.	6 mm	132930 QSPKG14-6
			8 mm	132931 QSPKG14-8
			1/4"	132932 QSPKG14-1/4-U
			5/16"	132933 QSPKG14-5/16-U
		18 mm cartridge fitting, plastic, for supply ports, 10 pieces, connection for tubing O.D.	8 mm	132649 QSPKG18-8
			10 mm	132650 QSPKG18-10
			5/16"	132651 QSPKG18-5/16-U
			3/8"	132652 QSPKG18-3/8-U
20 mm cartridge fitting, plastic, for supply ports, 10 pieces, connection for tubing O.D.	10 mm	132634 QSPKG20-10		
	12 mm	132635 QSPKG20-12		
	3/8"	132637 QSPKG20-3/8U		
	1/2"	132638 QSPKG20-1/2-U		
	AGG	Adapter for 10 mm cartridge connection to thread M7, 10 pieces	572380	VMPAL-F10-M7
	BGG	Adapter for 14 mm cartridge connection to G1/8 thread, 10 pieces	574084	VMPAL-F14-G1/8
	CGG	Adapter for 18 mm cartridge connection to G1/4 thread, 10 pieces	573914	VMPAL-F20-G1/4
	-	Adapter for 20 mm cartridge connection to G1/4 thread, 10 pieces	572381	VMPAL-FSP-G1/4

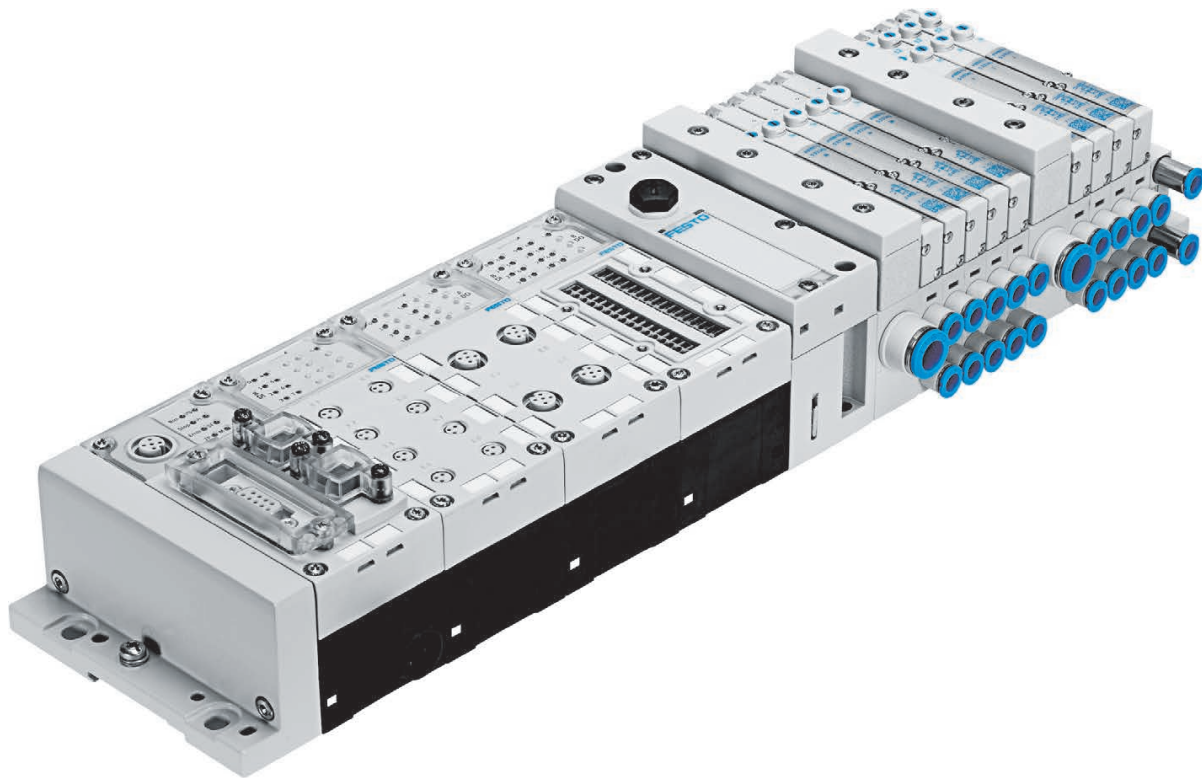
1) Code letter within the order code for a valve terminal configuration.

Universal valve terminals >

Valve terminals MPA-L

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Valve terminals



Automation made easy

- + Maximum function integration thanks to connection to terminal CPX
- + Up to 128 valve functions on one valve terminal
- + Reduced complexity thanks to numerous functions on the valve terminal

Universal valve terminals >
Valve terminals

MPA-S

Multi-pin plug
CPX
AS-Interface
CPI

Universal valve terminals >

Valve terminals

MPA-S

 Overview, configuration and ordering
→ www.festo.com/catalogue/mpa-s



 Additional information, support and user documentation
→ www.festo.com/sp/mpa-s



- + Flow rates 360 ... 700 l/min
- + Pressure range 0.9 ... 10 bar
- + Versatility: flexible pressure supply, variable pressure zones, additional power supply at any position
- + Serial valve actuation – up to 64 valve positions or 128 solenoid coils
- + Electrical I/O, CPI, AS-Interface and fieldbus connections with modular electrical terminal CPX
- + Degree of protection IP65

Product range overview

Electrical connection	Max. no. of valve positions	MPA1 (width 10 mm)	MPA2 (width 20 mm)	→ Page/ online
Solenoid valve on individual sub-base	1	■	■	mpa-s
Multi-pin plug connection	24	■	■	1133
AS-Interface connection	8	■	■	mpa-s
CPI connection	32	■	■	mpa-s
Fieldbus connection (CPX terminal)	64	■	■	1133

Function	Version	Code	Width		→ Page/ online
			10 mm (MPA1)	20 mm (MPA2)	
Position function 1-64	2x 2/2-way valve, 1x normally closed, 1x normally closed, reversible	I	■	■	1134
	2x 2/2-way valve, normally closed	D	■	■	1134
	2x 2/2-way valve, normally closed, operating pressure -0.9 ... +8 bar	DS	■	■	1134
	3/2-way valve, normally closed, external supply air	X	■	■	1134
	3/2-way valve, normally open, external supply air	W	■	■	1134
	2x 3/2-way valve, normally open	N	■	■	1134
	2x 3/2-way valve, normally open, operating pressure -0.9 ... +8 bar	NS	■	■	1134
	2x 3/2-way valve, normally open, polymer poppet valve	NU	■	-	1134
	2x 3/2-way valve, normally closed	K	■	■	1134
	2x 3/2-way valve, normally closed, operating pressure -0.9 ... +8 bar	KS	■	■	1134
	2x 3/2-way valve, normally closed, polymer poppet valve	KU	■	-	1134
	2x 3/2-way valve, 1x normally open, 1x normally closed	H	■	■	1134
	2x 3/2-way valve, 1x normally open, 1x normally closed, operating pressure -0.9 ... +8 bar	HS	■	■	1134
	2x 3/2-way valve, 1x normally open, 1x normally closed, polymer poppet valve	HU	■	-	1134
	5/2-way valve, single solenoid	M	■	■	1134
	5/2-way valve, single solenoid, operating pressure -0.9 ... +8 bar	MS	■	■	1134
	5/2-way valve, single solenoid, polymer poppet valve	MU	■	-	1134
	5/2-way valve, double solenoid	J	■	■	1134
	5/3-way valve, mid-position pressurised	B	■	■	1134
	5/3-way valve, mid-position closed	G	■	■	1134
	5/3-way valve, mid-position exhausted	E	■	■	1134
	Cover plate for vacant position	L	■	■	1134
	Proportional pressure regulator VPPM	Q...	■	■	mpa-s

Note

Valve terminals can be ordered quickly and easily online.

The convenient product configurator can be found at:

→ www.festo.com/catalogue/mpa-s

Valve terminals MPA-S

Key features

Innovative

- Compact high-performance valves in sturdy metal housing
- MPA1: flow rates up to 360 l/min
- MPA2: flow rates up to 700 l/min
- Dream team: fieldbus valve terminal suitable for electrical peripherals CPX. This means:
 - Forward-looking internal communication system for actuating the valves and CPX modules
 - Diagnostics down to the individual valve
 - Valves can be actuated with or without (standard) separate electrical circuits

Flexible

- Modular system offering a range of configuration options
- Expandable with up to 128 solenoid coils
- Conversions and extensions possible at any time
- Sub-bases can be expanded using just three screws, sturdy separating seals on metal separator plates
- Integration of innovative function modules possible
- Proportional pressure regulators
- Pressure sensor
- Supply plates enable a flexible air supply and variable pressure zones
- Wide range of pressures
–0.9 ... 10 bar
- Wide range of valve functions

Reliable

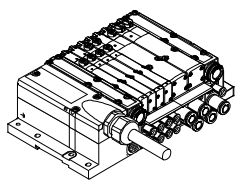
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- High operating voltage tolerance $\pm 25\%$
- Reliable servicing through replaceable valves and electronics modules
- Manual override either non-detenting, detenting or secured against unauthorised activation (covered)
- Durable thanks to tried-and-tested piston spool valves
- Large and durable labelling system, suitable for barcodes

Easy to install

- Ready-to-install and tested unit
- Reduced selection, ordering, installation and commissioning costs
- Secure wall or H-rail mounting

Electrical connection options

Multi-pin plug connection



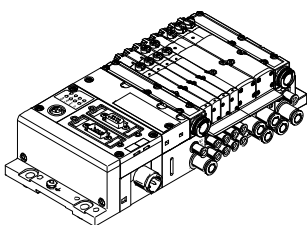
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-wire connecting cable or a self-assembled multi-pin plug connection, which substantially reduces installation time.

The valve terminals can be equipped with max. 24 solenoid coils. This corresponds to 4 to 24 MPA1 or 2 to 24 MPA2 valves, or a combination of both.

Versions

- Sub-D connection
- Connecting cable for multi-pin plug connections, fully assembled
- Multi-pin plug connection, for self-assembly

Fieldbus connection via the CPX system



An integrated fieldbus node manages the communication connection with a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

Valve terminals with fieldbus interfaces can be configured with up to 16 manifold sub-bases. In conjunction with MPA1 and 8 solenoid coils per sub-base, up to 128 solenoid coils can thus be actuated. An MPA2 with 4 solenoid coils per sub-base can actuate 64 solenoid coils.

Versions

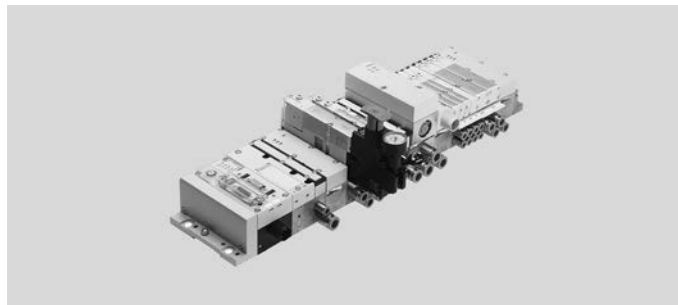
- PROFIBUS DP
- PROFINET
- INTERBUS
- DeviceNet® connection
- CANopen
- CC-LINK
- EtherNet/IP
- Front end controller remote
- Front end controller Remote I/O
- Modbus/TCP
- PROFINET IO
- EtherCAT®
- CPX terminal

Data sheet

Valve terminal with multi-pin plug or fieldbus connection

Flow rate	Voltage
MPA1: up to 360 l/min	24 V DC
MPA2: up to 700 l/min	

Valve width
10 mm
20 mm



Technical data		Download CAD data → www.festo.com
Max. no. of valve positions	Multi-pin plug connection	24
	Fieldbus connection	64
Lubrication	Life-time lubrication, PWIS-free (free of paint-wetting impairment substances)	
Type of mounting	Wall mounting	
	On H-rail to EN 60715	
Manual override	Non-detenting, detenting	
Nominal voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[bar] -0.9 ... +10
Pilot pressure	[bar] 3 ... 8
Ambient temperature	[°C] -5 ... +50

Current consumption per solenoid coil at nominal voltage (multi-pin plug connection)		
	Width	
	10 mm	20 mm
Nominal pick-up current	[mA]	80 100
Nominal current with current reduction	[mA]	25 20
Time until current reduction	[ms]	25 50

Current consumption per solenoid coil at nominal voltage (fieldbus connection)		
	Width	
	10 mm	20 mm
Nominal pick-up current	[mA]	58 99
Nominal current with current reduction	[mA]	9 18
Time until current reduction	[ms]	24 24

Valve terminals MPA-S

Data sheet

Technical data – Valve width 10 mm														
Code for position function		M	J	N	K	H	B	G	E	X	W	D	I	
Switching times	On	[ms]	10	10	10	10	10	10	10	10	10	10	10	
	Off	[ms]	20	–	20	20	20	35	35	35	20	20	20	
	Change-over	[ms]	–	15	–	–	–	15	15	15	–	–	–	
Operating pressure	[bar]	–0.9 ... +10			3 ... 10			–0.9 ... +10				3 ... 10		
Standard nominal flow rate	[l/min]	360	360	300	230	300	300	320	240	255	255	230	260	
Design		Piston spool valve												
Materials		Die-cast aluminium												

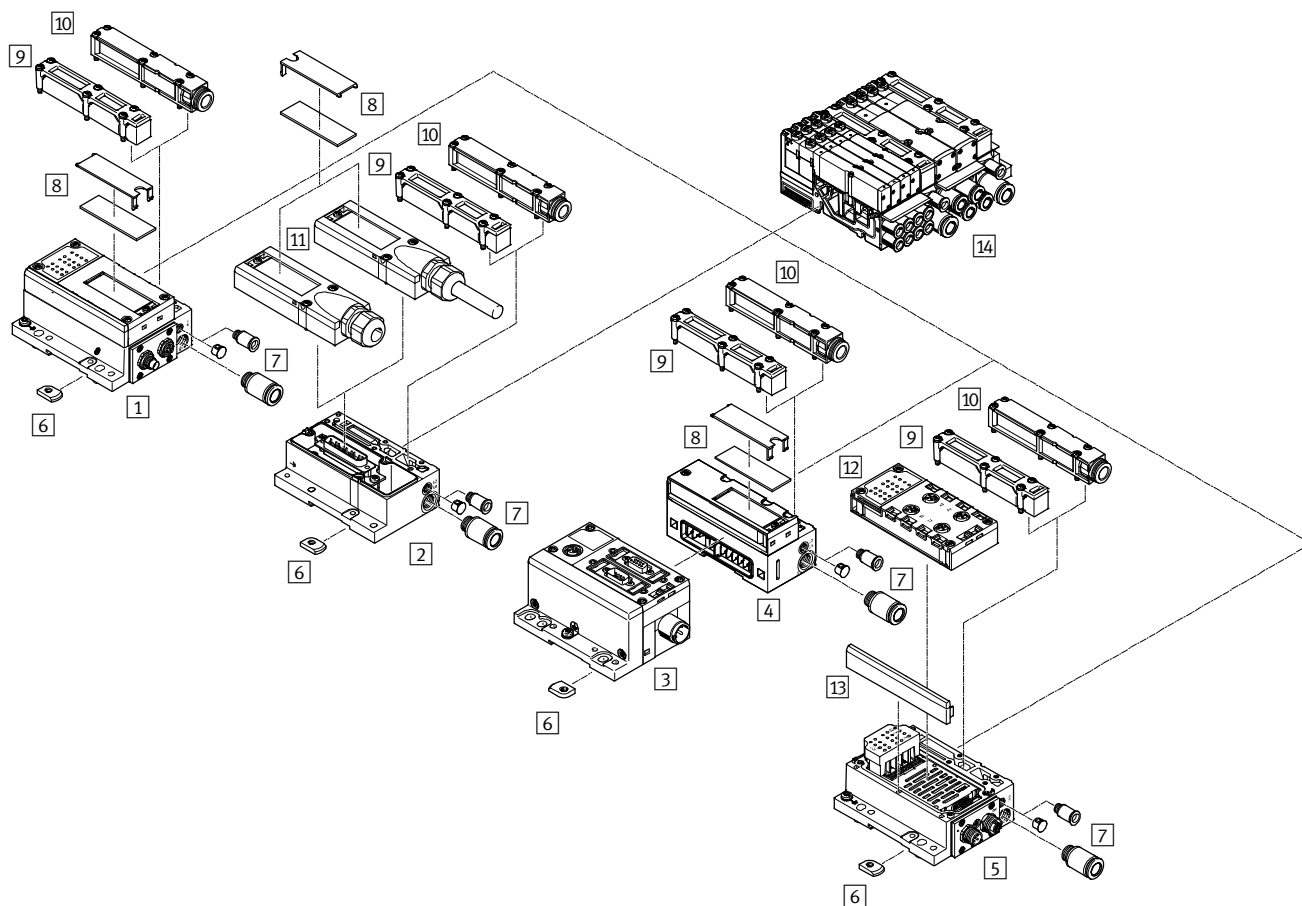
Technical data – Valve width 10 mm												
Code for position function		MS	NS	KS	HS	DS	MU	NU	KU	HU		
Switching times	On	[ms]	10	14	14	14	14	10	8	8	8	
	Off	[ms]	27	16	16	16	16	12	8	10	10	
	Change-over	[ms]	–	–	–	–	–	–	–	–	–	
Operating pressure	[bar]	–0.9 ... +8					–0.9 ... +10					
Standard nominal flow rate	[l/min]	360	300	230	300	230	190	190	160	190		
Design		Piston spool valve					Poppet valve with spring return					
Materials		Die-cast aluminium					PPA reinforced					

Technical data – Valve width 20 mm																			
Code for position function 1-32		M	J	N	K	H	B	G	E	X	W	D	I	MS	NS	KS	HS	DS	
Switching times	On	[ms]	15	9	8	8	8	11	10	11	13	13	7	7	8	12	12	12	12
	Off	[ms]	28	–	28	28	28	46	40	47	22	22	25	25	36	25	25	25	25
	Change-over	[ms]	–	22	–	–	–	23	21	23	–	–	–	–	–	–	–	–	–
Operating pressure	[bar]	–0.9 ... +10			3 ... 10			–0.9 ... +10				3 ... 10		–0.9 ... +8					
Standard nominal flow rate	[l/min]	700	670	550	500	550	510	610	590	470	470	650	680	670	550	500	550	650	
Design		Piston spool valve																	
Materials		Die-cast aluminium																	

Pneumatic connections		
Pneumatic connection		Via manifold block or individual connection
Supply port	1	G1/4 (M7 with individual sub-base)
Exhaust port	3/5	QS-10, QS-3/8" (M7 with individual sub-base)
Working ports	2/4	Depending on the connection type selected MPA1: M7, QS4, QS6, 3/16", 1/4" MPA2: G1/8, QS6, QS8, 1/4", 5/16"
Pilot air port	12/14	M7 (M5 with individual sub-base)
Pilot exhaust air port	82/84	M7 (M5 with individual sub-base and with end plate VMPA-EPR-G)
Pressure compensation port		With ducted exhaust air: via port 82/84 (M5 with individual sub-base and with end plate VMPA-EPR-G) With flat plate silencer: exhausting to atmosphere

Materials		
Manifold block		Die-cast aluminium
Seals		NBR, elastomer
Supply plate		Die-cast aluminium
Right-hand end plate		Die-cast aluminium
Left-hand pneumatic interface		Die-cast aluminium, PA
Exhaust plate		PA
Flat plate silencer		PE
Electrical supply plate		Housing: Die-cast aluminium End cap: PA reinforced
Electronics module		PA
Electrical interlinking module		Bronze/PBT
Regulator plate		Control section, housing: PA; seals: NBR

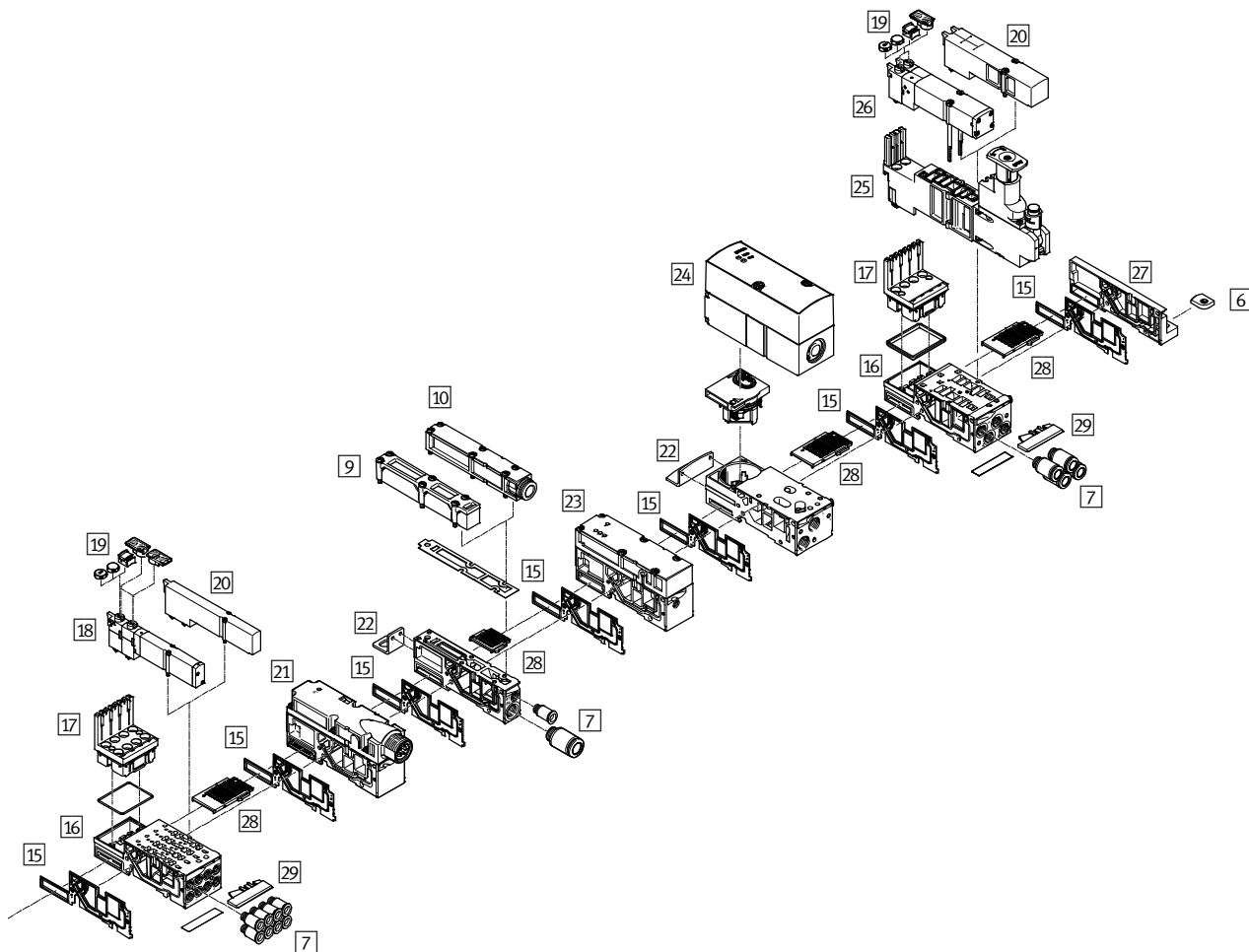
Accessories



Accessories		→ Page/online
1	End plate with CPI connection VMPA-CPI-EPL	cpi
2	End plate with multi-pin plug connection VMPA1-MPM-EPL	mpa-s
3	Electrical terminal CPX	1597
4	End plate with pneumatic interface for CPX terminal VMPA-FB-EPL	1133
5	End plate with AS-Interface connection VMPA-ASI-EPL	as-interface
6	Mounting for H-rail CPX-CPA-BG-NRH	1137
7	Push-in fitting QS	1137
8	Inscription label holder and inscription label	mpa-s
9	Flat plate silencer VMPA-APU	mpa-s
10	Exhaust plate for ducted exhaust air VMPA-AP	mpa-s
11	Connecting cable for multi-pin plug connection VMPAL-KM	1137
12	Manifold block for AS-Interface CPX-AB	as-interface
13	Cover for AS-Interface connection	as-interface
14	Valve terminal, pneumatic part	1133

Valve terminals MPA-S

Accessories


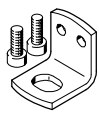

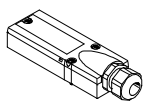




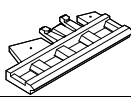



09

Valve terminals

Accessories		→ Page/online
6	Mounting for H-rail CPX-CPA-BG-NRH	1137
7	Push-in fitting QS	1137
9	Flat plate silencer VMPA-APU	mpa-s
10	Exhaust plate for ducted exhaust air VMPA-AP	mpa-s
15	Separating seal for manifold block VMPA-DP	mpa-s
16	Sub-base VMPA-FB, VMPA-AP	mpa-s
17	Electronics module VMPA-FB-EM, VMPA-MPM-EMM	mpa-s
18	Solenoid valve size 10 mm VMPA1-M1H-PI	1134
19	Cover cap for manual override VMPA-HB, VAMC-L1-CD, ASLR-D-L1	1137
20	Cover plate VMPA-RP for valve position	mpa-s
21	Electrical supply plate VMPA-FB-SP	mpa-s
22	Mounting VMPA-BG	1137
23	Pressure sensor VMPA-FB-PS	mpa-s
24	Proportional pressure regulator VPPM-TA-L-1-F-0L	mpa-s
25	Vertical stacking modules (pressure regulator plate, vertical pressure supply plate, vertical pressure shut-off plate, check valve, fixed flow restrictor) VMPA	mpa-s
26	Solenoid valve size 20 mm VMPA2-M1H-PI	1134
27	Right-hand end plate VMPA-EPR	mpa-s
28	Electrical interlinking module VMPA-EV	mpa-s
29	Inscription label holder for manifold block VMPA-ST	1137

Accessories – Ordering data

	Code ¹⁾	Description	Part no.	Type
6 Mounting				
	-	For mounting on H-rail, 3 pieces	526032	CPX-CPA-BG-NRH
	J	Mounting bracket for supply plate	534416	VMPA-BG-RW
7 Push-in fitting Data sheets online: → 1443				
	-	Connecting thread M5 for working ports, 10 pieces, connection for tubing O.D.	3 mm	★ 153313 QSM-M5-3-I
			4 mm	★ 153315 QSM-M5-4-I
			6 mm	★ 153317 QSM-M5-6-I
	-	Connecting thread M7 for working ports, 10 pieces, connection for tubing O.D.	4 mm	★ 153319 QSM-M7-4-I
			6 mm	★ 153321 QSM-M7-6-I
	-	Connecting thread G1/8 for supply ports, 10 pieces, connection for tubing O.D.	6 mm	★ 186107 QS-G1/8-6-I
			8 mm	★ 186109 QS-G1/8-8-I
			10 mm	★ 186112 QS-G1/4-10-I
	11 Connecting cable for multi-pin plug connection			
	K	Cover without connecting cable for self-assembly	533198	VMPA-KMS-H
	GD	PUR interconnecting cable for 24 solenoid coils, suitable for energy chains	2.5 m	533501 VMPA-KMS2-24-2,5-PUR
	GE		5 m	533502 VMPA-KMS2-24-5-PUR
GF	10 m		533503 VMPA-KMS2-24-10-PUR	
19 Cover cap for manual override				
	N	Manual override, non-detenting (10 pieces)	540897	VMPA-HBT-B
	V	Manual override, blocked (10 pieces)	540898	VMPA-HBV-B
	Y	Manual override, detenting, can be used without accessories (10 pieces)	8002234	VAMC-L1-CD
	-	Inscription label holder for inscription label and cover for signal status display and manual override (blocked) (10 pieces)	570818	ASLR-D-L1
29 Inscription label holder				
	T	Inscription label holder for manifold block	For paper foil label	533362 VMPA1-ST-1-4
	-		For inscription labels IBS-6x10	544384 VMPA1-ST-2-4
	-	Inscription labels 6 mm x 10 mm, 64 pieces in frames	18576	IBS-6x10

1) Code letter within the order code for a valve terminal configuration.

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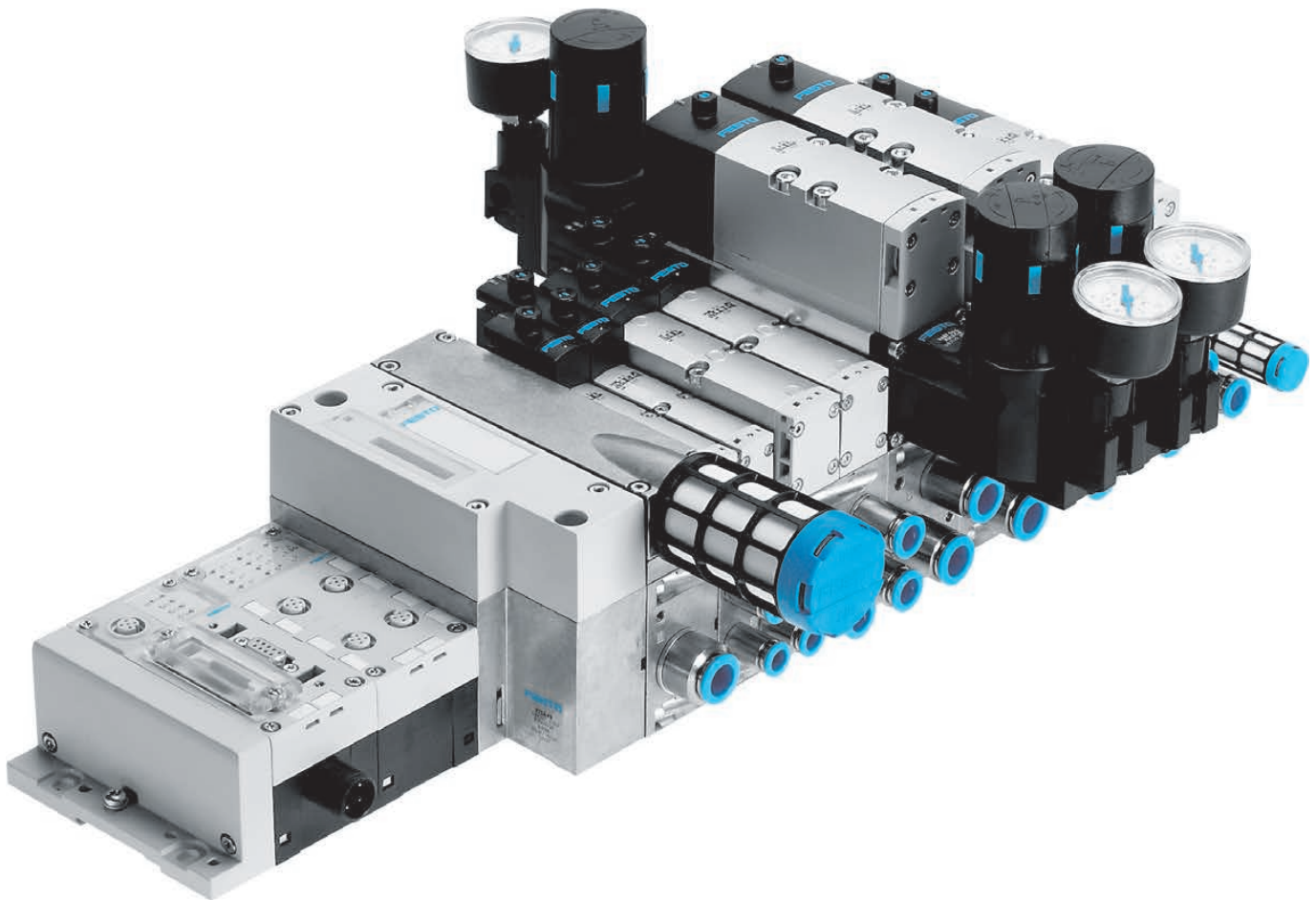
Valve terminals

Universal valve terminals >

Valve terminals MPA-S

09

Valve terminals



Usable worldwide

- + Five valve sizes can be combined on one valve terminal
- + Comprehensive range of additional pneumatic functions
- + Flow rate up to 4000 l/min

Standards-based valve terminals >

Valve terminals, to ISO 15407-2, ISO 5599-2

VTSA

VTSA-CPX

VTSA-MP

VTSA-ASI

Standards-based valve terminals >

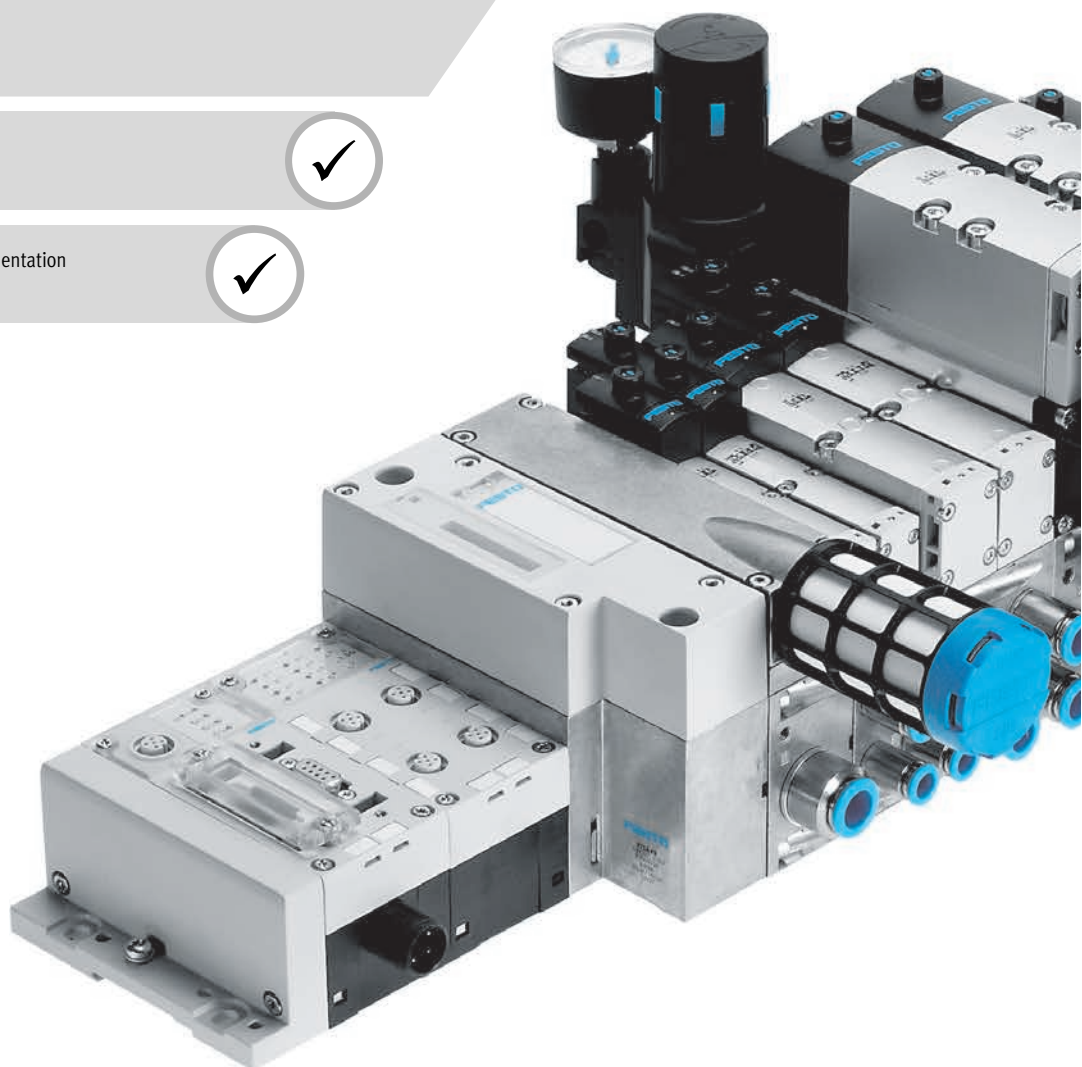
Valve terminals, to ISO 15407-2, ISO 5599-2

VTSA

 Overview, configuration and ordering
→ www.festo.com/catalogue/vtasa



 Additional information, support and user documentation
→ www.festo.com/sp/vtasa



- + Sturdy and flexible valve terminal
- + Valve widths 18 mm, 26 mm, 42 mm, 52 mm and 65 mm can be combined on a single valve terminal
- + Complete and standardised valve range
- + Wide range of vertical stacking modules: pressure regulator, flow control valve, vertical pressure shut-off plate, etc.
- + Safety functions can be integrated

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Product range overview

Function	Version	Code	Size					→ Page/ online
			18 mm (ISO 02)	26 mm (ISO 01)	42 mm (ISO 1)	52 mm (ISO 2)	65 mm (ISO 3)	
Position function 1-32	5/2-way valve, single solenoid, with pneumatic spring return	M	■	■	■	■	■	1145
	5/2-way valve, single solenoid, with spring return	O	■	■	■	■	■	1145
	5/2-way valve, double solenoid	J	■	■	■	■	■	1145
	5/2-way valve, double solenoid, dominant	D	■	■	■	■	■	1145
	2x 3/2-way valve, normally open	N	■	■	■	■	–	1145
	2x 3/2-way valve, normally closed	K	■	■	■	■	–	1145
	2x 3/2-way valve, 1x normally closed, 1x normally open	H	■	■	■	■	–	1145
	5/3-way valve, mid-position pressurised	B	■	■	■	■	■	1145
	5/3-way valve, mid-position closed	G	■	■	■	■	■	1145
	5/3-way valve, mid-position exhausted	E	■	■	■	■	■	1145
	2x 3/2-way valve, normally open, reverse operation	P	■	■	■	■	–	1145
	2x 3/2-way valve, normally closed, reverse operation	Q	■	■	■	■	–	1145
	2x 3/2-way valve, 1x normally closed, 1 x normally open, reverse operation	R	■	■	■	■	–	1145
	2x 2/2-way valve, normally closed	VC	■	■	■	■	–	1145
	2x 2/2-way valve, normally closed, vacuum operation	WV	■	■	■	–	–	1145
	5/2-way control block with individual connection plug type C and switching position sensing via PNP sensor, plug M8	SP	–	■	–	–	–	1145
	5/2-way control block with individual connection plug type C and switching position sensing via NPN sensor, M8 plug	SN	–	■	–	–	–	1145
	5/3-way valve, mid-position flow from 1 to 2, closed in 4	VG	–	–	■	■	–	vtsa
	5/3-way valve, mid-position exhausted, switching position 14 detenting, 12 mechanical spring	SA	■	■	–	–	–	vtsa
	5/3-way valve, mid-position port 2 pressurised, port 4 exhausted, switching position 14 detenting, 12 mechanical spring	SB	■	■	–	–	–	vtsa
	5/3-way valve, mid-position port 4 pressurised, port 2 exhausted, switching position 14 detenting, 12 mechanical spring	SD	■	■	–	–	–	vtsa
	5/3-way valve, mid-position exhausted, switching position 12 detenting, 14 mechanical spring	SE	■	■	–	–	–	vtsa
	5/2-way valve, single solenoid, with spring return and switching position sensing via PNP sensor, M8 plug	SO	■	■	–	–	–	vtsa
	5/2-way valve, single solenoid, with spring return and switching position sensing via NPN sensor, M8 plug	SQ	■	■	–	–	–	vtsa
	5/2-way valve, single solenoid, with spring return and switching position sensing via PNP sensor, 0.5 m cable and M12 plug	SS	■	■	–	–	–	vtsa
	Vacuum generator with ejector pulse and adjustable air saving function (plate for 2 valve positions, sensor SDE3 with display and M12 connection)	VB	–	■	–	–	–	vtsa
	Vacant position	L	■	■	■	■	■	vtsa

Note

Valve terminals can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/vtsa

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Key features

Innovative

- High-performance valves in a sturdy metal housing
- Five valve sizes on one valve terminal (width 65 mm with adapter)
- Standardised from the multi-pin plug to the fieldbus connection and control block
- Dream team: fieldbus valve terminal suitable for electrical peripherals CPX. This means:
 - Forward-looking internal communication system for controlling the valves and CPX modules
 - Four valve sizes on one valve terminal without adapters
- Valve functions for integration in control architectures of higher categories to EN ISO 13849-1

Versatile

- Modular system offering a range of configuration options
- Expandable with up to 32 solenoid coils
- Conversions and extensions are possible at any time
- Manifold sub-bases can be extended using four screws, sturdy duct separation on metal support
- Integration of innovative function modules possible
- Supply plates enable a flexible air supply and variable pressure zones
- Reverse operation
- High pressure range
 - 0.9 ... 10 bar, flow range 550 ... 4000 l/min
- Wide range of valve functions
- Valve supply 24 V DC or 110 V AC

Reliable

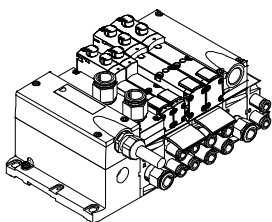
- Sturdy and durable metal components
 - Valves
 - Manifold sub-bases
 - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- Reliable servicing thanks to valves that can be replaced quickly and easily
- Manual override, either non-detenting, non-detenting/detenting or covered
- Durable thanks to tried-and-tested piston spool valves
- Large and durable labelling system
- 100% duty cycle

Easy to install

- Assembled and inspected unit, ready for installation
- Reduced selection, ordering, installation and commissioning costs
- Secure mounting on wall or H-rail

Electrical connection options

Multi-pin plug connection



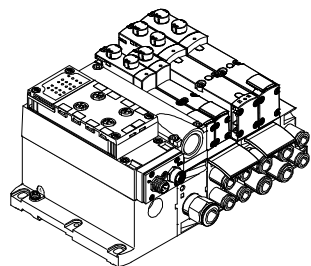
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-wire connecting cable or a self-assembled multi-pin

plug connection, which substantially reduces installation time. The valve terminal can be equipped with max. 32 valves with max. 32 solenoid coils.

Versions

- Multi-pin plug connection with terminal strip (spring-loaded terminal)
- Connecting cable for multi-pin plug connections, fully assembled (Sub-D)
- Sub-D plug connector for assembly by the user, 37-pin
- Round plug connector M23, 19-pin

AS-Interface connection



A special feature of the AS-Interface is the simultaneous transmission of data and supply power via a two-wire cable. The encoded cable profile prevents connection with incorrect polarity. The valve terminal with AS-Interface is available in the following versions:

- With one to eight modular valve positions (max. 8 solenoid coils). This corresponds to 1 to 8 VTSA valves.
- With all available valve functions.

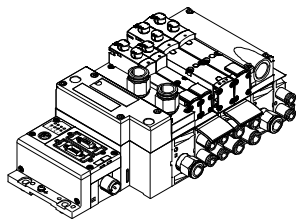
The connection technology used for the inputs can be selected as with CPX: M8, M12, quick connector, Sub-D, spring-loaded terminal (terminals to IP20).

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Key features

Electrical connection options

Fieldbus connection via the CPX system



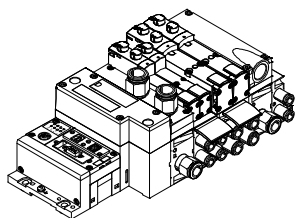
An integrated fieldbus node manages the communication connection with a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

Valve terminals with fieldbus interfaces can be configured with up to 16 manifold sub-bases. With 2 solenoid coils per connection, up to 32 solenoid coils can thus be actuated.

Versions:

- PROFIBUS
- INTERBUS®
- DeviceNet®
- CANopen
- CC-LINK®
- EtherNet/IP
- EtherCAT®
- Modbus TCP®
- PROFINET
- POWERLINK
- Sercos III

Control block connection via the CPX system

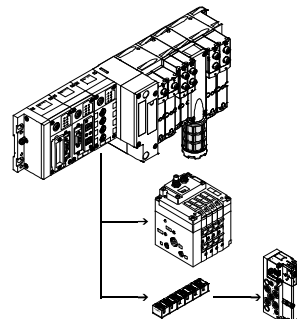


A controller integrated in the Festo valve terminal enables the construction of stand-alone control units with protection to IP65 without a control cabinet thanks to two different operating modes.

In the slave operating mode, these valve terminals can be used for intelligent pre-processing and are therefore ideal modules for designs using decentralised intelligence.

In the master operating mode, terminal groups can be designed with many options and functions that can autonomously control a medium-sized machine/system.

CP string extension



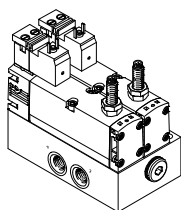
The optional CP string extension enables additional valve terminals and I/O modules to be connected to the fieldbus node of the CPX terminal on up to 4 CP strings. Different input and output modules as well as valve terminals MPA-S and CPV can be connected.

The maximum length of the CP string extension is 10 metres, which means that the extension modules can be mounted directly on-site. All the required electrical signals are transmitted via the CP cable, which in turn means that no further installation is needed on the extension module.

One CP string offers:

- 32 input signals
- 32 output signals for output modules 24 V DC or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve terminals
- Logic supply for the output module

Control block with safety function, width 26 mm



These valves are used for special applications, for example for:

- Protecting against unexpected start-up
- Safe reversing
- Drives in manually loaded devices

This control block is suitable for use as a press safety valve to EN 962.

This valve is a safety device in accordance with the Machinery Directive 2006/42/EC.

Standards-based valve terminals >

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Key features

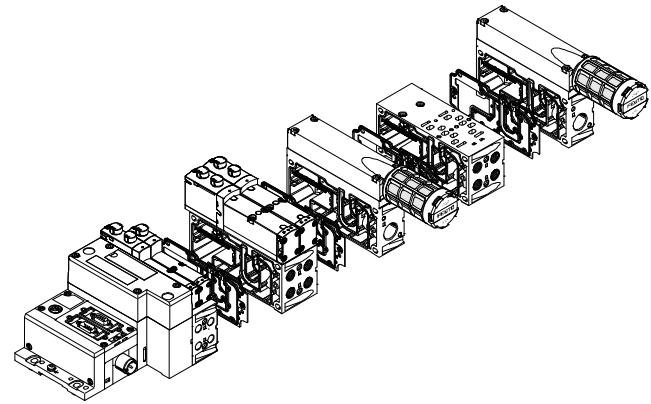
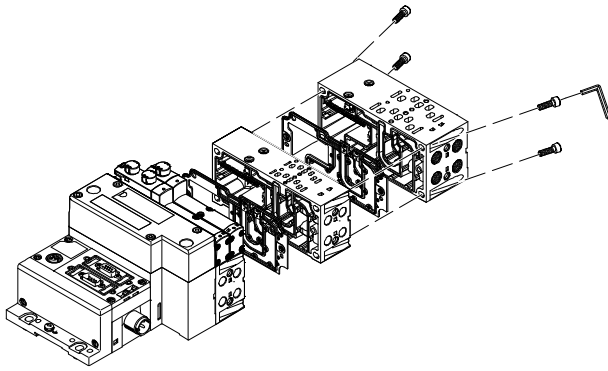
Modular pneumatic components

The modular design of the VTSA/VTSA-F enables maximum flexibility right from the planning stage and offers maximum ease of service in operation. The system consists of manifold sub-bases and valves.

The manifold sub-bases are screwed together and thus form the support system for the valves. Inside the manifold sub-bases are the ducts for supplying compressed air to

and exhausting from the valves on the terminal as well as the working ports for the pneumatic cylinders for each valve. Each manifold sub-base is connected to the next using four screws.

Individual valve terminal sections can be isolated and further blocks easily inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.



09

Modular electrical peripherals

How the valves are actuated differs according to whether you are using a multi-pin terminal or fieldbus terminal.

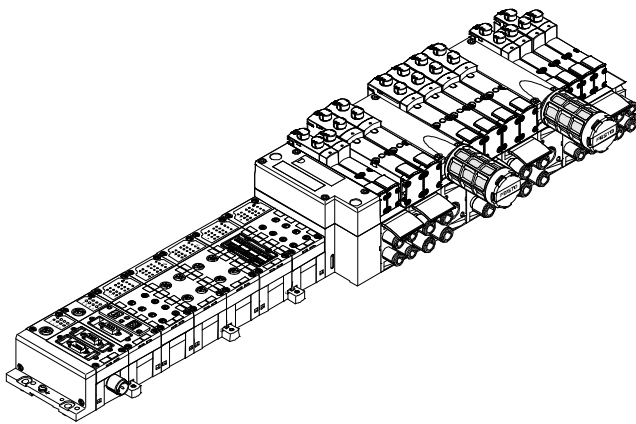
The VTSA/VTSA-F with CPX interface is based on the internal bus system of the CPX terminal and uses this communication system for all solenoid coils and a range of electrical input and output functions.

Parallel linking enables the following:

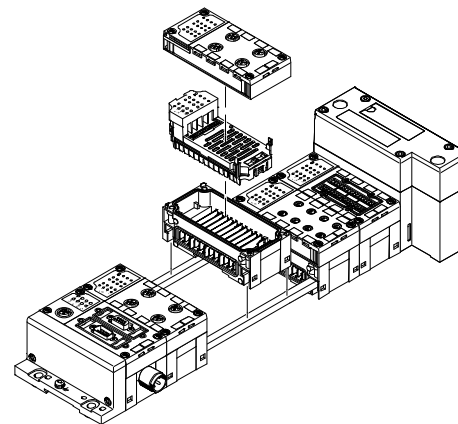
- Transmitting switching information
- Compact design
- Position-based diagnostics

- Separate voltage supply for valves
- Flexible conversion without address shifting
- Transmitting status, parameter and diagnostic data

VTSA with electrical peripherals CPX



Modularity with electrical peripherals CPX



Valve terminals

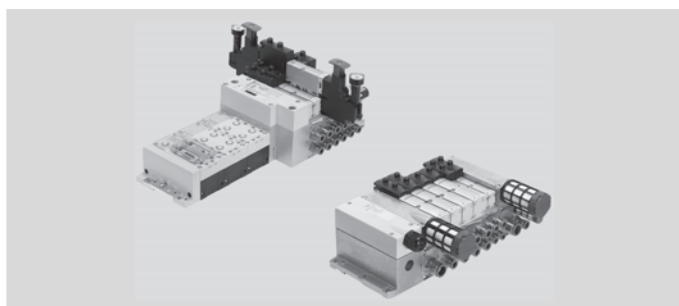
Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Data sheet

Flow rate
Up to 2900 l/min

Valve width
18 mm
26 mm
42 mm
52 mm

Operating voltage
24 V DC
110 V AC



Technical data		Download CAD data → www.festo.com	
Design		Piston spool	
Width	[mm]	18/26/42/52	
Lubrication		Life-time lubrication	
Type of mounting		Wall mounting	
Manual override		On H-rail to EN 60715	
Pneumatic connection		Detenting, non-detenting, covered	
Supply port	1	Via manifold sub-base	
Exhaust port	3.5	Thread G1/2, push-in connector for tubing O.D. 12 mm/16 mm	
Working ports (dependent on the connection type)	Width 18 mm (ISO 02)	2.4	Thread G1/8
	Width 26 mm (ISO 01)	2.4	Thread G1/4
	Width 42 mm (ISO 1)	2.4	Thread G3/8
	Width 52 mm (ISO 2)	2.4	Thread G1/2
External pilot air port	12, 14	Thread G1/4	

Technical data		Download CAD data → www.festo.com															
Valve function/order code		N	K	H	P	Q	R	M	O	J	D	B	G	E	VC	VV	
Valve switching times [ms]																	
Width 18 mm (ISO 02) Nominal operating voltage 24 V DC/110 V AC	On	12	12	12	25	25	25	22	12	–	–	15	15	15	12	12	
	Off	30	30	30	12	12	12	28	38	–	–	44	44	44	30	30	
	Change-over	–	–	–	–	–	–	–	–	11	13	–	–	–	–	–	
Width 26 mm (ISO 01) Nominal operating voltage 24 V DC/110 V AC	On	20	20	20	32	32	32	25	20	–	–	22	22	22	20	20	
	Off	38	38	38	30	30	30	45	65	–	–	65	65	65	38	38	
	Change-over	–	–	–	–	–	–	–	–	18	21	–	–	–	–	–	
Width 42 mm (ISO 1) Nominal operating voltage 24 V DC	On	20	20	20	34	34	34	27	22	–	–	22	22	22	20	20	
	Off	38	38	38	28	28	28	45	60	–	–	65	65	65	38	38	
	Change-over	–	–	–	–	–	–	–	–	16	19	38	38	38	–	–	
Width 42 mm (ISO 1) Nominal operating voltage 110 V AC	On	22	22	22	34	34	34	20	20	–	–	22	22	22	22	22	
	Off	46	46	46	38	38	38	55	55	–	–	68	68	68	46	46	
	Change-over	–	–	–	–	–	–	–	–	16	19	41	41	41	–	–	
Width 52 mm (ISO 2) Nominal operating voltage 24 V DC	On	20	20	20	20	20	20	40	20	–	–	23	23	23	14	–	
	Off	35	35	35	35	35	35	45	60	–	–	60	60	60	35	–	
	Change-over	–	–	–	–	–	–	–	–	18	18	38	38	38	–	–	
Width 52 mm (ISO 2) Nominal operating voltage 110 V AC	On	35	35	35	50	50	50	70	25	–	–	30	30	30	35	–	
	Off	70	70	70	65	65	65	90	110	–	–	100	100	100	70	–	
	Change-over	–	–	–	–	–	–	–	–	35	42	60	60	60	–	–	
Standard nominal flow rate on valve terminal [l/min]																	
Width 18 mm (ISO 02)							400			550			450			500	
Width 26 mm (ISO 01)							900			1100			1000			1000	
Width 42 mm (ISO 1)							1200			1300			1200			1400	
Width 52 mm (ISO 2)							2400			2900			2800			2800	

Standards-based valve terminals >

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Data sheet

Operating conditions		N	K	H	P	Q	R	M	O	J	D	B	G	E	VC	W
Valve function/order code																
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]														
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]														
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)														
Ambient temperature	[°C]	-5 ... +50														
Temperature of medium	[°C]	-5 ... +50														
Operating pressure	[bar]	3 ... 10			-0.9 ... +10									3 ... 10		-0.9 ... +10
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10														
Pilot pressure	[bar]	3 ... 10														

Electrical data – VTSA with CPX terminal		N	K	H	P	Q	R	M	O	J	D	B	G	E	VC	W
Valve function/order code																
Power supply for electronics (U _{EL/SEN})																
Operating voltage	[V DC]	24 ±10%														
Max. intrinsic current consumption at 24 V DC	[mA]	20														
Duty cycle		100%														
Load voltage supply for valves (U _{val})																
Operating voltage	[V DC]	24 ±10%														
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission in mounted state)														

Pneumatic connection sizes		
Right-hand end plate (duct 12, 14)	Code V, X	Thread G1/4
	Code V1, V3, X1, X3	Thread G1/4
Right-hand end plate (duct 1, 3, 5)	Code V, X	Thread G1/2
	Code V1, V3, X1, X3	Thread G3/4
Left-hand supply plate (duct 1, 3, 5)		Thread G1/2
Manifold sub-base (duct 2, 4)	Width 18 mm	Thread G1/8
	Width 26 mm	Thread G1/4
	Width 42 mm	Thread G3/8
	Width 52 mm	Thread G1/2

Materials	
Manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Supply plate	Die-cast aluminium
Right-hand end plate	Die-cast aluminium
Pneumatic interface for CPX	Die-cast aluminium
Flow control plate	Die-cast aluminium
Pressure regulator plate	Die-cast aluminium, PA
Multi-pin connection block	Die-cast aluminium
Cover for the pneumatic interface and multi-pin plug connection	PA
Note on materials	RoHS-compliant

09

Valve terminals

Data sheet – Control block, VOFA

Flow rate

Up to 950 l/min

Operating voltage

24 V DC

Operating pressure

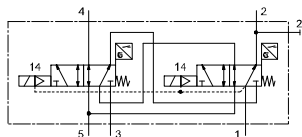
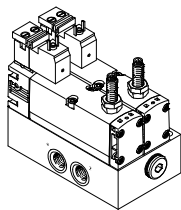
3 ... 10 bar

Description

The control block is designed for two-channel actuation of pneumatic drive components such as double-acting linear cylinders, for example, and can be used to realise the following protective measures:

- Protection against unexpected start-up (EN 1037)
- Reversing hazardous movements, provided the reversing motion will not result in further hazards

Decentralised individual connection variant



Function – Pneumatic/electrical interlinking

The safety function is achieved through two-channel pneumatic linking of two 5/2-way single solenoid valves within the control block: port 4 is only pressurised if both solenoid valves are switched to switching position (14).

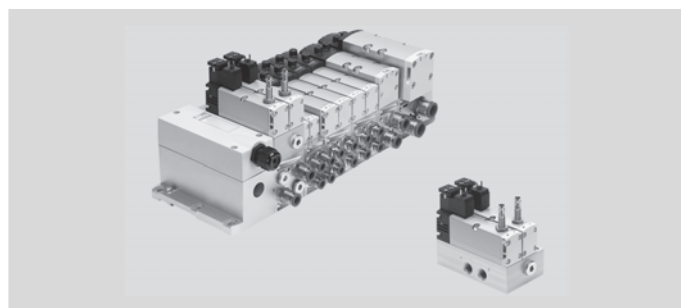
Port 2 is always pressurised if at least one of the two solenoid valves is in normal

position. The valve is reset via a mechanical spring. The control attributes of the control block enable Performance Level e to be achieved for the protective measures. The control block has been developed and manufactured in accordance with the basic and proven safety principles of EN ISO 13849-1 and EN ISO 13849-2.

Two solenoid valves on manifold sub-base with square plugs to EN 175301-803, type C and integrated piston position sensing.

position. The valve is reset via a mechanical spring.

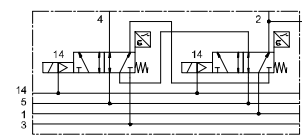
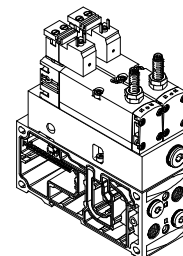
The switching operation of the solenoid valves can be monitored by sensing via the proximity sensors at the solenoid valves (switching position sensing). This is done by means of logic operation



The requirements of EN ISO 13849-1 and EN ISO 13849-2 (e.g. CCF, DC) must be taken into consideration for implementation and operation of the component and for use in higher categories (2 to 4).

When using this product in machines or systems subject to specific C standards, the requirements specified in these standards must be observed.

Version for valve terminal VTSA/VTSA-F



The control block with safety function is designed for installation in machines and automation systems and must only be used in industrial applications (high-demand mode).

The control block with safety function is suitable for use as a press safety valve to EN 962.

More information and technical data
➔ Internet: User documentation

Two solenoid valves on manifold sub-base for valve terminal VTSA/VTSA-F with square plugs and integrated piston position sensing.

Electrical actuation takes place independently of the valve terminal (individual, multi-pin plug or fieldbus/control block connection) via a standardised square plug to EN 175301-803, type C.

of the control signal and the signal change of the proximity sensor to check whether the piston spools of the solenoid valves are reaching or leaving the normal position (expectations).

The piston spools of the solenoid valves are designed so that pneumatic short cir-

cuits between ports 2 and 4 are ruled out (non-overlapping).

The two solenoid valves must be actuated via two separate ducts to achieve the desired category 4 (Performance Level e, to EN ISO 13849-1).

Standards-based valve terminals >

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Data sheet – Control block, VOFA

Technical data		Download CAD data → www.festo.com	
Type		VOFA-L26-T52-M-G14-1C1 (individual sub-base)	VOFA-B26-T52-M-1C1 (on valve terminal)
Design	Piston spool valve		
Sealing principle	Soft		
Type of actuation	Electric		
Type of control	Piloted		
Pilot air supply	Internal	Via valve terminal	
Type of mounting	Via through-hole, on manifold sub-base		
Mounting position	Any		
Manual override	None		
Valve switching status display	Via accessories		
Standard nominal flow rate	[l/min]	950	830
Performance Level (PL)	Protection against manipulation, prevention of unexpected start-up, up to Category 4, Performance Level e		
	Reversing a movement, up to Category 4, Performance Level e		
Switching times [ms]			
Valve switching time	On	22	22
	Off	56	59
Valve sensor switching time ¹⁾	On	60	60
	Off	11	11

1) Valve sensor switching time off: period of time from coil being energised to sensor being switched off when using a PNP sensor.
Valve sensor switching time on: period of time from coil being de-energised to 0-L edge at the sensor when using a PNP sensor.

Operating conditions			
Type		VOFA-L26-T52-M-G14-1C1 (individual sub-base)	VOFA-B26-T52-M-1C1 (on valve terminal)
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Ambient temperature	[°C]	-5 ... +50	
Temperature of medium	[°C]	-5 ... +50	
Operating pressure	[bar]	3 ... 10	0 ... 10
Pilot pressure	[bar]	3 ... 10	
Max. positive test pulse with logic 0	[µs]	1000	
Max. negative test pulse with logic 1	[µs]	800	

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Data sheet – Control block, VOFA

Electrical data – Control block		
Electrical connection		Plug to EN 175301-803, type C, without protective conductor
Nominal operating voltage	[V DC]	24
Power consumption	[W]	1.8
Max. magnetic interference field	[mT]	60
Switching position sensing		Normal position via sensor
Duty cycle	[%]	100
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission in mounted state)

Electrical data – Sensor		
Electrical connection		Cable, 3-wire Plug M8x1, 3-pin
Cable length	[m]	2.5
Switching output		PNP or NPN
Switching element function		N/C contact
Signal status display		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Sensor idle current	[mA]	Max. 10
Max. output current	[mA]	200
Voltage drop	[V]	Max. 2
Max. switching frequency	[Hz]	5000
Measuring principle		Inductive

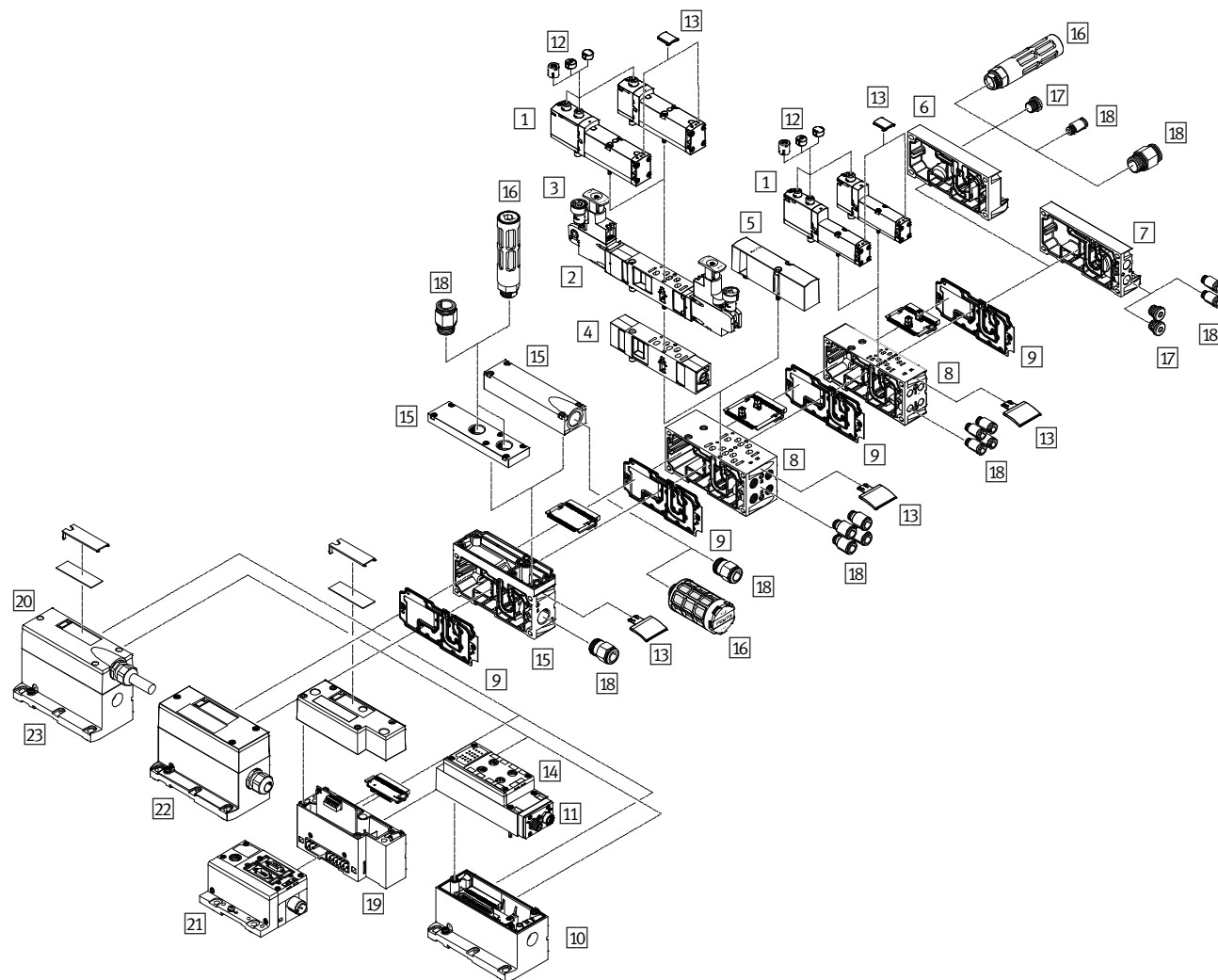
Connection sizes of the pneumatic connections			
Type		VOFA-L26-T52-M-G14-1C1 (individual sub-base)	VOFA-B26-T52-M-1C1 (on valve terminal)
Supply port	1	Thread G1/4	Via the manifold sub-base of the valve terminal
Exhaust port	3/5, 33	Thread G1/4	
Working ports	2/4	Thread G1/4	
Pilot air supply	14	–	
Pressure gauge		Thread G1/4	Thread G1/4

Materials	
Sub-base/manifold sub-base	Wrought aluminium alloy
Valve	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	PUR
Note on materials	RoHS-compliant

Standards-based valve terminals >

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Accessories



09

Valve terminals

Accessories	→ Page/online
1 Solenoid valve VSVA	1145
2 Regulator plate VABF	vtsa
3 Accessories for regulator plate (pressure gauge PAGN, cartridge fitting QSP)	1153
4 Additional vertical stacking modules (flow control plate, vertical supply plate or vertical pressure shut-off plate) VABF	vtsa
5 Blanking plate VABB for vacant position	vtsa
6 Right-hand end plate VABE with ports for supply air/exhaust air	vtsa
7 Right-hand end plate VABE with pilot air selector	vtsa
8 Manifold sub-base VABV	vtsa
9 Duct separator VABD	vtsa
10 Electrical interface VABE for AS-Interface (delivery unit with AS-Interface module VAEM)	vtsa-asi
11 AS-Interface module VAEM	vtsa-asi
12 Cover cap VAMC for non-detenting/covered manual override	1153
13 Inscription label ASCF	1153

Accessories	→ Page/online
14 Connection block for AS-Interface CPX-AB	vtsa-asi
15 Supply plate VABF with ducted exhaust air, ports 3 and 5 separated or combined	vtsa
16 Silencer U	1153
17 Blanking plug B	1153
18 Push-in fitting QS	1153
19 Pneumatic interface VABA	1629
20 Multi-pin plug connection NEBV/NECV with connecting cable or cover for self-assembly	vtsa
21 Fieldbus interface CPX-FB	1597
22 Multi-pin plug connection VABE with terminal strip (spring-loaded terminal)	vtsa
23 Multi-pin plug connection VABE with connecting cable for multi-pin plug connections	vtsa
- Control block VOFA	1154
- Wall mounting VAME	1154
- 90° connection plate VABF	1154
- User documentation P.BE-VTSA	1154

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Accessories for valve with individual connection

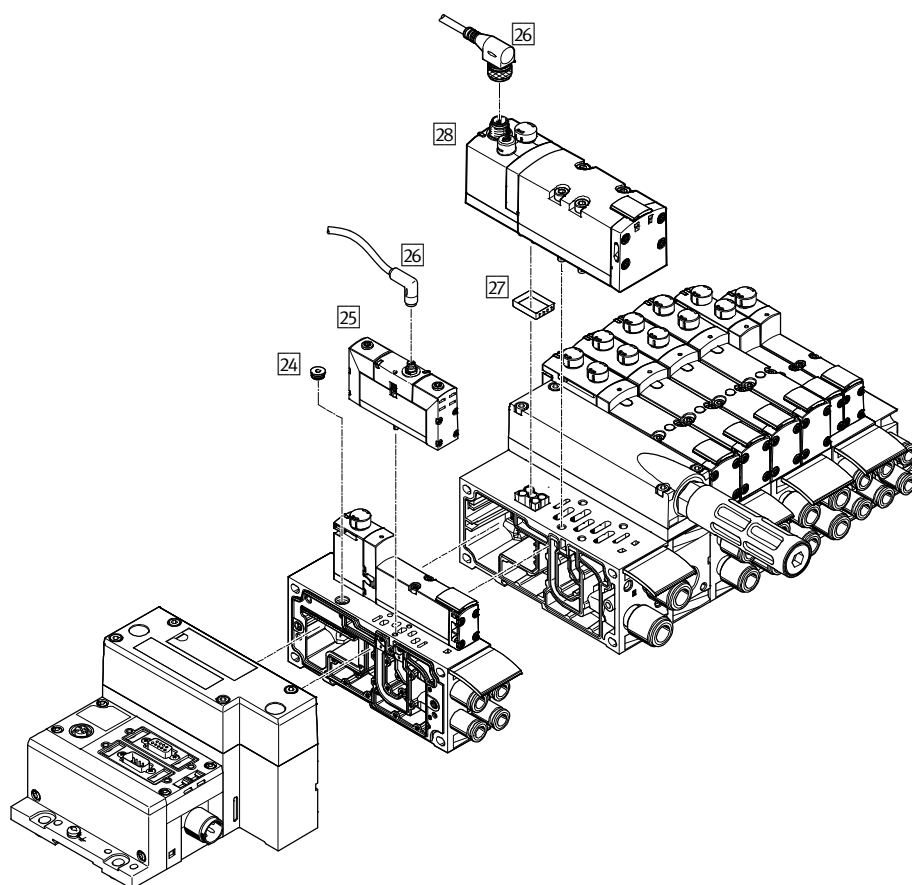
In applications with specific emergency off conditions, it may be necessary to switch one or more valves separately from the valve terminal controller. Standard valves (VSVA) with individual electrical connection (round or square

plug) are therefore mounted on the valve terminal.

In order for protection to IP65 to be achieved, the functionless opening in the sub-base for the electrical connection must be sealed.

A sealing cap is available for width 18 mm and 26 mm. With manifold or individual sub-bases, valves with width 42 mm and 52 mm must be used with a seal to comply with the IP degree of protection.

For central control of the valve terminal via a multi-pin plug or fieldbus connection, the valve position occupied in this way acts like a vacant position, i.e. the assigned address in the fieldbus node or the corresponding connection in the multi-pin plug connection is occupied.

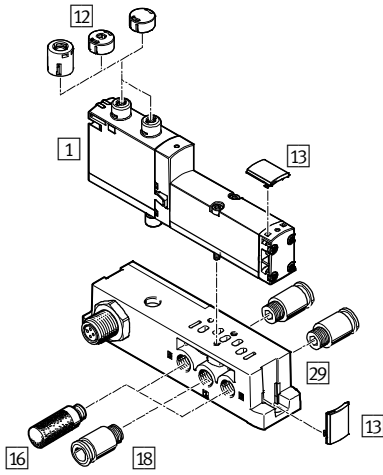


Accessories	→ Page/online
24 Sealing cap VABD	vtsa
25 Solenoid valve VSVA to ISO15407-1	983
26 Connecting cable NEBU	vsva
27 Seal VABD-S2	vtsa
28 Solenoid valve VSVA to ISO5599-1	1001
- Control block VOFA	1154
- Wall mounting VAME	1154
- 90° connection plate VABF	1154
- User documentation P.BE-VTSA	1154

Standards-based valve terminals >

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2









Accessories for valve on individual sub-base



Accessories	→ Page/online
1 Solenoid valve VSVA	1145
12 Cover cap VAMC for manual override	1153
13 Inscription label ASCF	1153
16 Silencer U	1153
18 Push-in fitting QS	1153
29 Individual sub-base VABS	vtsa
- Control block VOFA	1154
- Wall mounting VAME	1154
- 90° connection plate VABF	1154
- User documentation P.BE-VTSA	1154

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Accessories – Ordering data

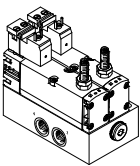


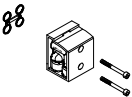

	Code ¹⁾	Description		Part no.	Type	
3 Accessories for regulator plate, pressure gauge for widths 18 mm and 26 mm						
Data sheets online: → pagn						
	U	6 bar, for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	Widths 18 mm and 26 mm	543488	PAGN-26-10-P10	
			Widths 42 mm and 52 mm	548009	PAGN-40-10-P10	
	T	10 bar, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	Widths 18 mm and 26 mm	543487	PAGN-26-16-P10	
			Widths 42 mm and 52 mm	548010	PAGN-40-16-P10	
Cartridge fitting						
Data sheets online: → qsp						
	-	Adapter for pressure gauge (allows products with threaded connection G1/8 to be attached to the cartridge fitting connection)		565811	QSP10-G1/8	
	-	For tubing O.D. 4 mm		172972	QSP10-4	
12 Cover cap for manual override						
	N	Non-detenting	10 pieces	541010	VAMC-S6-CH	
	V	Covered	10 pieces	541011	VAMC-S6-CS	
13 Inscription label						
	B	Clip-on for valve cap	5 pieces	540888	ASCF-T-S6	
	T	For manifold blocks	5 pieces	540889	ASCF-M-S6	
16 Silencer						
Data sheets → Page 1661						
	-	For thread G1/8		★ 2307	U-1/8	
	-	For thread G1/4		★ 2316	U-1/4	
	-	For thread G1/2		★ 6844	U-1/2-B	
17 Blanking plug						
Data sheets online: → b-1						
	-	For thread G1/8	10 pieces	★ 3568	B-1/8	
	-	For thread G1/4	10 pieces	★ 3569	B-1/4	
18 Push-in fitting						
Data sheets → Page 1443						
	-	Connecting thread G1/8	For tubing O.D. 6 mm	10 pieces	★ 186096	QS-G1/8-6
	-		For tubing O.D. 8 mm	10 pieces	★ 186098	QS-G1/8-8
	-	Connecting thread G1/4	For tubing O.D. 8 mm	10 pieces	★ 186099	QS-G1/4-8
	-		For tubing O.D. 10 mm	10 pieces	★ 186101	QS-G1/4-10
	-	Connecting thread G3/8	For tubing O.D. 10 mm	10 pieces	★ 186102	QS-G3/8-10
	-		For tubing O.D. 12 mm	10 pieces	★ 186114	QS-G3/8-12-I
	-	Connecting thread G1/2	For tubing O.D. 12 mm	1 piece	★ 186104	QS-G1/2-12
	-		For tubing O.D. 16 mm	1 piece	★ 186105	QS-G1/2-16

1) Code letter within the order code for a valve terminal configuration.

Standards-based valve terminals >

Valve terminals VTSA, to ISO 15407-2, ISO 5599-2

Accessories – Ordering data

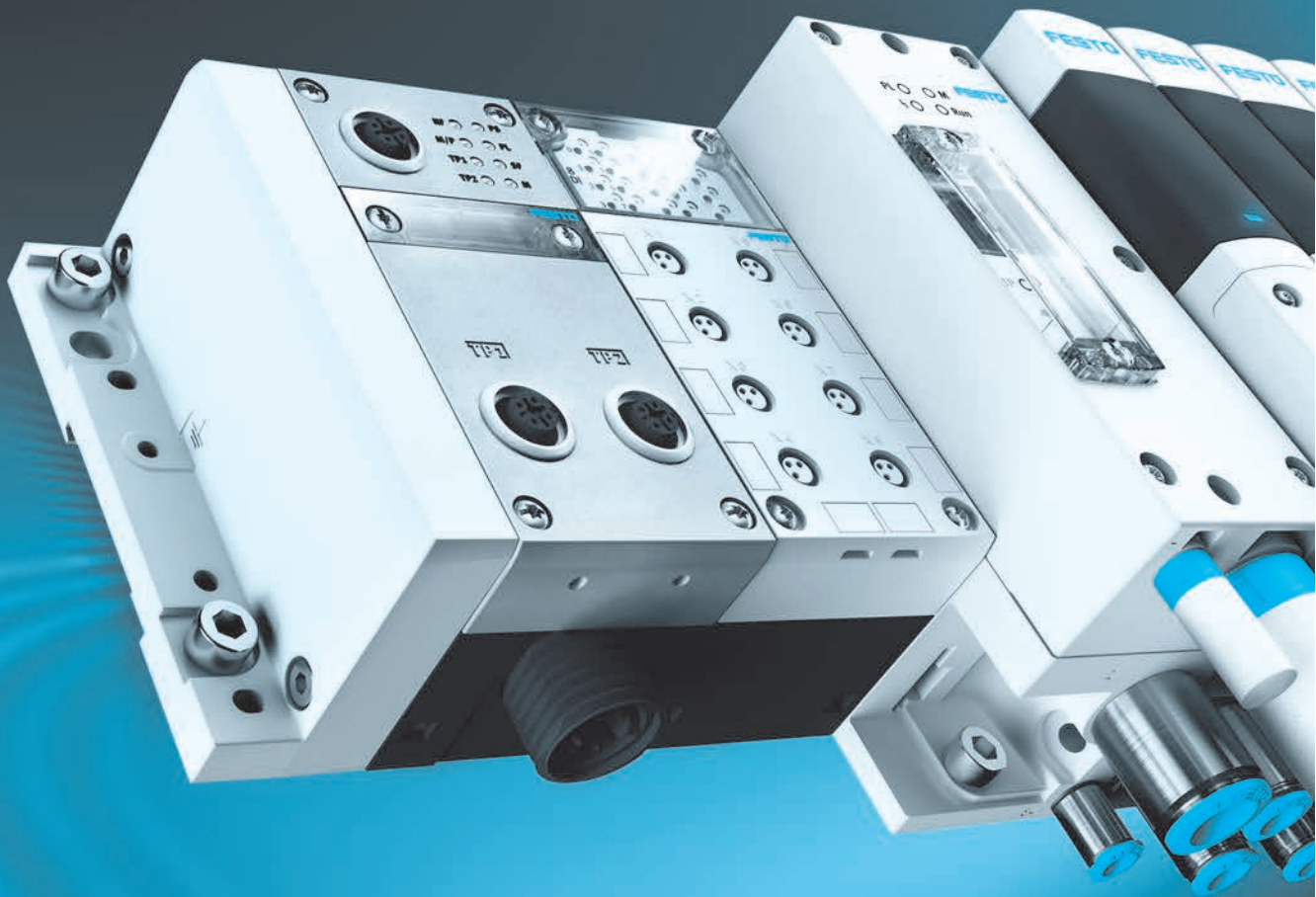
	Code ¹⁾	Description	Part no.	Type
Control block, individual connection variant				
Data sheets online: → vofa				
	-	PNP output	569819	VOFA-L26-T52-M-G14-1C1-APP
	-	NPN output	569820	VOFA-L26-T52-M-G14-1C1-ANP
Wall mounting				
	-	Mounting bracket, with a mounting hole for M5 screw, 5 pieces	539214	VAME-S6-10-W
	U	Mounting bracket with a mounting hole for M4 screw and a mounting hole for M6 screw, 1 piece	567038	VAME-S6-W-M46
90° connection plate				
	P	Width 18 mm, connecting thread G1/8	539719	VABF-S4-2-A2G2-G18
		Width 26 mm, connecting thread G1/4	539721	VABF-S4-1-A2G2-G14
		Width 42 mm, connecting thread G3/8	546097	VABF-S2-1-A1G2-G38
		Width 52 mm, connecting thread G1/2	555702	VABF-S2-2-A1G2-G12
User documentation				
	D	German	538922	P.BE-VTSA-44-DE
	E	English	538923	P.BE-VTSA-44-EN
	S	Spanish	538924	P.BE-VTSA-44-ES
	F	French	538925	P.BE-VTSA-44-FR
	I	Italian	538926	P.BE-VTSA-44-IT


1) Code letter within the order code for a valve terminal configuration.

10 Motion Terminal

Digitised pneumatics

- + Many functions in one component thanks to Motion Apps
- + Combines the benefits of electric and pneumatic components
- + Maximum standardisation
- + Reduced complexity and time to market
- + Increasing profitability and know-how protection
- + Minimal installation
- + Increased energy efficiency





VTEM
Motion Terminal

- + Function combinations with Motion Apps – in one valve!
- + Reliable processes thanks to maximum reproducibility and protection against manipulation

→ page 1169

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Motion Terminal VTEM 1169



Motion Terminal VTEM

A world first: Digitised pneumatics

Digital simplicity:

maximum flexibility combined with maximum standardisation

For the first time ever, the functions of a valve can be controlled and changed by software – without the need to change the hardware. This completely new, intelligent technology consisting of pneumatics, electronics and software control will develop the Festo Motion Terminal into a cyber-physical system. It can be used to realise numerous simple directional control valve functions as well as complex motion tasks, which up to now were the preserve of servo-pneumatics or electrical automation. Diagnostic functions for condition monitoring and reduced energy consumption are also easy to implement. All in all, the Festo Motion Terminal greatly reduces process costs and complexity compared with conventional solutions – including in downstream processes – thanks to its high level of function integration.

Fit for Industry 4.0

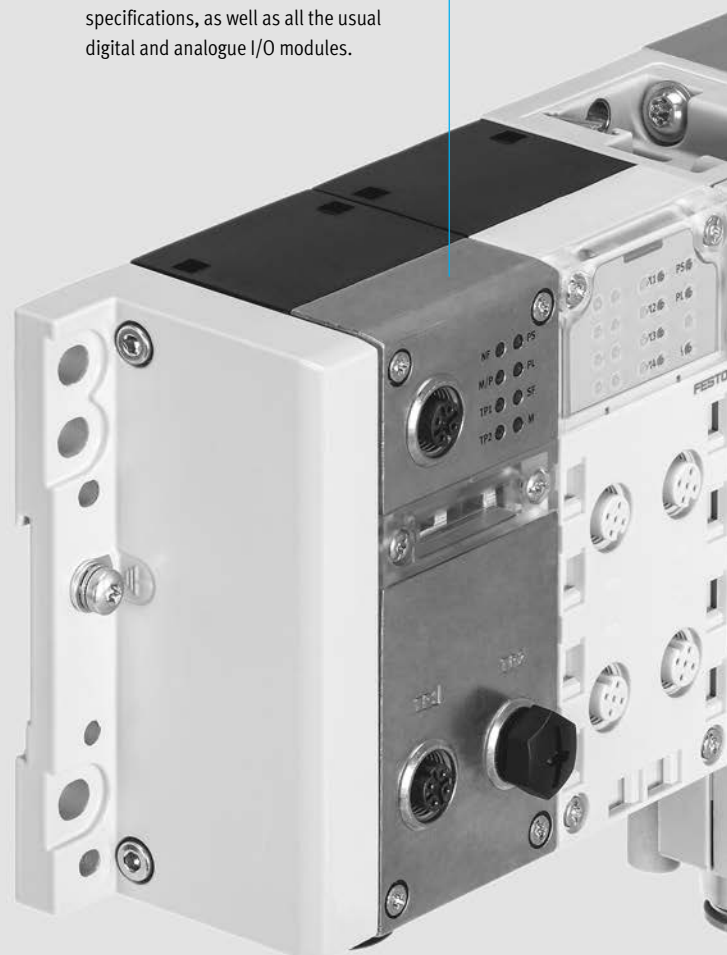
The Festo Motion Terminal makes pneumatics fit for Industry 4.0, for example with integrated sensors for transparent processes, the option of self-optimisation or self-adaptation to external influences, a digital copy in the form of a Product Key or OPC UA as an optional Industry 4.0 interface.

Energy efficiency par excellence

The Festo Motion Terminal uses an integrated concept to ensure energy-efficient operation. In addition to apps for saving energy, low-energy piezo valves have been developed for controlling the valve main stages. These reduce the power consumption for the pilot control by up to 90%, and have a service life of up to 300 million switching cycles.

CPX module

CPX gives you the option of using many different control systems and end user specifications, as well as all the usual digital and analogue I/O modules.



Ethernet WebConfig interface

When it comes to efficient parameterisation the choice is yours: you can either use an intuitive WebConfig user interface via the PC's web browser or easily access the (PLC) machine control system as usual – without the need for additional configuration software.

The Festo Motion Terminal VTEM and its Motion Apps make pneumatics even more versatile and flexible. Using several Motion Apps in succession on a single valve supports new pneumatic motion sequences. This enables you to improve process quality, performance and energy efficiency. And replace many components with a single programmable piece of hardware.



Input module

Up to 16 analogue or digital inputs for direct control applications, such as Soft Stop.

Valve

The app-controlled valve comprises four 2/2-way diaphragm poppet valves, which are controlled by four piezo pilot valves. The integrated stroke and pressure sensors provide optimal control and transparent condition monitoring. The interaction and the design in the form of a bridge circuit, which supports independent pressurisation and exhausting, give the valve its flexibility.

Controller with Motion App

The core of the Motion Terminal is about decentralised intelligence and rapid control. This is where the Motion Apps are assigned to the individual valves.

Motion Apps

- Directional control valve functions
- Proportional directional control valve
- Soft Stop
- Motion profile and positioning
(available Q2/2019 for selected series up to 300 mm stroke)
- Proportional pressure regulation
- Model-based proportional pressure regulation
- ECO drive
- Selectable pressure level
- Leakage diagnostics
- Supply and exhaust air flow control
- Presetting of travel time

Find out more:

→ www.festo.com/motionterminal

Motion Terminal VTEM

Make the most of process advantages along the entire value chain

The digitised pneumatics of the Festo Motion Terminal usually pay off quickly and along the entire value chain. The benefits range from faster planning and design to simpler procurement and logistics, as well as easier commissioning and parameterisation. More productive operation and the ability to quickly and easily convert or modernise your system will also speed up the return on investment.

A standardised platform can also be used for numerous applications, again without needing to change the hardware. As shown below, this streamlines and simplifies all phases of a system's lifecycle.

The Festo Motion Terminal VTEM offers a level of added value that is not so easy to quantify, such as know-how protection, since functions are no longer visible from the outside.

Conceptualise



The Festo Motion Terminal can already replace up to 50 individual components. This speeds up the planning phase, reduces complexity and minimises follow-up costs for subsequent modifications and innovations. The sequential use of various Motion Apps also facilitates completely new approaches that were not possible with previous pneumatic solutions.

Potential for change and savings during conceptualisation:
High

Design and program



Faster design thanks to fewer components. This means that the VTEM has fewer part numbers. The Motion Terminal reduces system complexity and helps with standardisations. Subsequent modifications are quick and easy to realise using apps, and design adjustments are eliminated.

Potential for change and savings during design:
Very high

Procure



Significantly fewer components minimise the process steps involved in logistics and warehousing. And the Motion Terminal reduces data administration and maintenance. New functions can be integrated by simply purchasing Motion App licences.

Potential for change and savings during procurement:
Low to medium (without material savings)

Assemble



A standardised configuration for a wide range of tasks requires less assembly and wiring effort. And prevents incorrect installation. This speeds up assembly and commissioning and lowers costs.

Potential for change and savings during assembly:
High

Commission



Time-consuming, manual setting processes become redundant. Once configured, you can very easily duplicate the settings. The Festo Motion Terminal features self-regulating apps, for example for defining travel times, as well as autonomous intelligence.

Potential for change and savings during commissioning:
High to very high

Operate



The Motion Terminal will make your system very productive, energy efficient and economical. The sequential use of various Motion Apps facilitates completely new approaches that were not possible with previous pneumatic solutions. Process quality and energy efficiency can also be improved, and cycle times can be increased. Reconfiguration and tuning are also performed using software. Diagnostics and intelligent apps prevent downtimes and production faults, and also contribute to a fast return on investment.

Potential for change and savings during operation:
Very high

Modernise



The opportunity for modernising all aspects is significantly increased through simplified conversion and easy tuning of entire series. As a result, your production will always be cutting edge and will be open at all times to whatever new requirements the future brings.

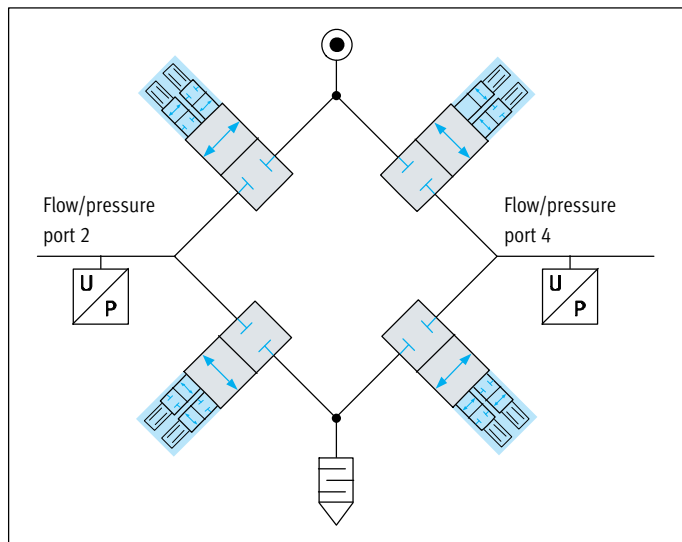
Potential for change and savings during modernisation:
High

Motion Terminal VTEM

Revolutionary: one valve terminal for a huge range of functions

The new valve technology for the Festo Motion Terminal can be used for a wide range of products, functions and complete solution packages. The only prerequisite is a valve design with multiple degrees of freedom for actuation, as well as integrated data acquisition and processing suitable for a cyber-physical system. The reduction to just 1 valve variant provides both machine builders and operators with huge economic benefits.

Bridge circuit in the valve



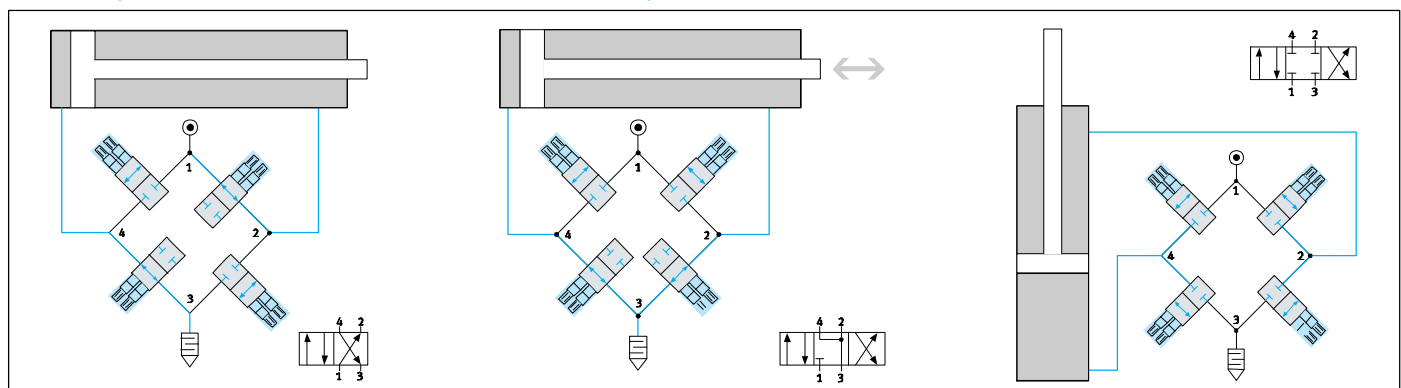
1 valve variant: a single valve replaces over 50 individual components

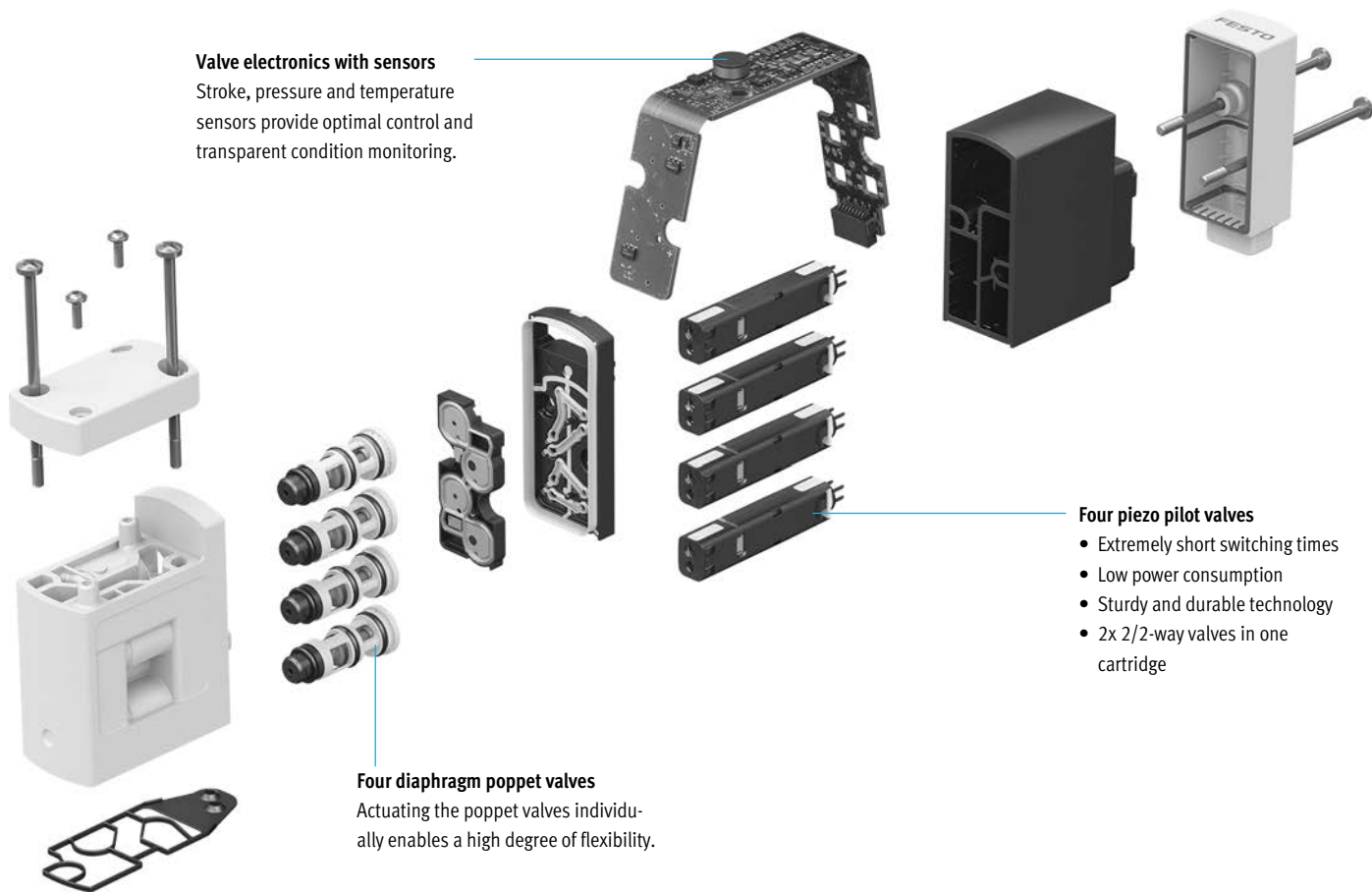
The bridge circuit in the valve of the Festo Motion Terminal is an innovative valve system that is based on the basic elements of pneumatic valve functions. It allows completely different functions to be executed sequentially with a single valve.

- Four 2/2-way valves (diaphragm poppet valves) are connected in series to form a full bridge
- Each diaphragm poppet valve (grey) is proportionally piloted and controlled by two piezo valves (blue)
- Sensors monitor the stroke of each poppet valve, while pressure sensors monitor the pressure at ports 2 and 4

All four pilot cartridges (blue) form a total of eight proportionally controlled 2/2-way valves. Thanks to the integrated sensors and proportional control, which allows the valves to be pressurised and exhausted independently, this single valve technology can now be used to execute a wide range of conventional valve functions and full system solutions, such as Soft Stop.

From simple directional control valve functions to complex motion tasks

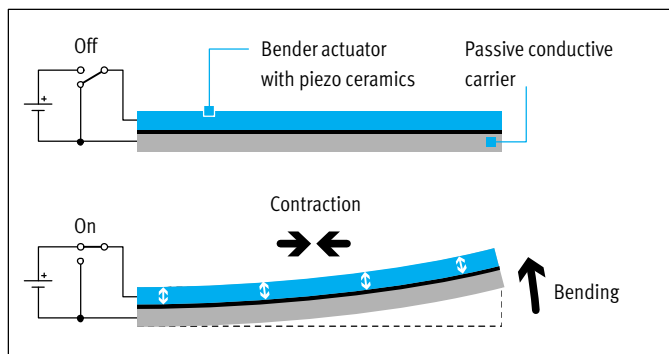




Self-learning and adapts autonomously

Every valve slice in the Festo Motion Terminal has analogue pressure and stroke position sensors that continuously exchange their data with the controller. This enables the system to run its own evaluations and make its own decisions. This means, for example, that external load cells are no longer needed for condition monitoring during pressing procedures. The combination of integrated sensors and software-based models not only saves money, it also simplifies the entire system, from conceptualisation to modernisation.

This is how piezo technology works



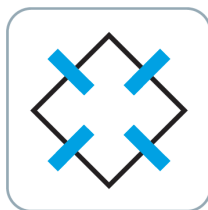
The advantages of piezo valves

- High-precision, continuous, proportional control
- High energy efficiency thanks to incredibly low power consumption
- No operating noise
- No heat build-up
- Extremely long service life with more than 300 million switching cycles

Motion Terminal VTEM

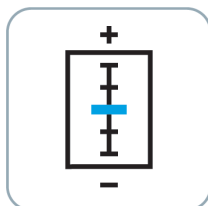
Flexibility and standardisation go hand in hand with our Motion Apps

The Festo Motion Terminal offers benefits along the entire value chain, from the conceptualisation to the modernisation of your machine. The Motion Apps, which control a single piece of hardware, are an integral part. The sequential use of various Motion Apps facilitates completely new approaches that were not possible with previous pneumatic solutions. Changes can also be made to the parameters during operation.



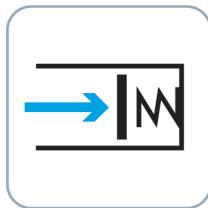
Directional control valve functions

This provides maximum flexibility for special-purpose machines as well as for handling systems in series production. You can modify standard directional control valve functions such as 4/2-way, 4/3-way and 3/2-way, etc. at any time and as often as necessary, even during operation. It also enables you to respond to a large number of requirements at the touch of a button.



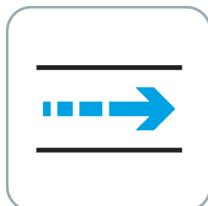
Proportional directional control valve

For the first time at Festo, two proportional flow control functions have been integrated in one valve and on one platform, resulting in an economical and compact solution.



Soft Stop

Shorten your cycle times by up to 70%! With Soft Stop, you can implement highly dynamic yet gentle positioning motion without wear-prone shock absorbers. This reduces maintenance times, increases the service life of your system and thus enhances your productivity.



Motion profile and positioning

Benefit from freely selectable positioning over the entire working stroke and the ability to control cylinder movement. Simply predefine a motion profile with the following parameters: acceleration; speed; travel time and position. (Available Q2/2019 for selected series up to 300 mm stroke)



Proportional pressure regulation

Save space and hardware costs by combining the functions of two individual and independent proportional pressure regulators in just one valve, including with vacuum!



Model-based proportional pressure regulation

With model-based regulation, there's no need for external sensors. By storing fewer boundary parameters for the system, such as tube length, tube diameter and cylinder size, the anticipatory control system ensures maximum accuracy, as the app can compensate for a drop in pressure and volume using the control technology.



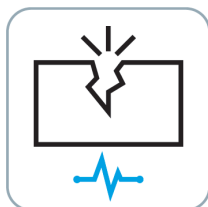
ECO drive

Reduce costs by operating your actuator with the minimum pressure necessary for the load. This eliminates the rise in pressure in the drive chamber at the end of the movement, allowing energy savings of up to 70%. With a single DSBC32-100 with a 2 kg load, this is a saving of approx. €100 a year.



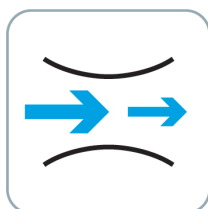
Selectable pressure level

Save energy by setting several pressure levels. Simply set the pressure for selected movements to a reduced level of your choice. Additionally, you can control the speed by adjusting the flow control valve setting.



Leakage diagnostics

Fewer system downtimes due to preventive maintenance and faster fault detection. Separate diagnostic cycles and defined threshold values enable you to detect and localise individual leaks in the application operated by the Festo Motion Terminal.



Supply and exhaust air flow control

Do away with separate flow control valves on the actuator and set tamper-proof travel speeds quickly and conveniently at the touch of a button. There is also an option to implement new motion sequences such as dynamic flow control adjustment.



Presetting of travel time

For quick and easy commissioning and stable operation, all you have to do is enter the travel time for the advancing and retracting motions. The exhaust air flow control function adapts itself to the travel time and then maintains it. The system automatically adjusts the values in the case of influences such as increased friction due to wear.

Motion Terminal VTEM

This is how it works: selecting Motion Apps

You can order the Festo Motion Terminal via the Online Shop, similar to how you would normally order a valve terminal. The familiar configuration interface now has several new features, including the selection and purchase of the necessary Motion App licences, which are saved to the controller before it is shipped out. The Motion App licence for the “Directional control valve function” is always included in the basic configuration.

Motion Apps: available licences

The Motion Apps are offered as licence packages or Multi-valve apps and can be used without any restriction at all valve positions of the Motion Terminal.

Licences for Single-valve apps, on the other hand, need to be bought separately for each valve function used. The valve position can be freely selected and changed. For example, if you need two proportional pressure regulation functions at the same time, you will need to buy two Motion App licences. Alternatively, you can adjust the schedule for your process so that the two proportional pressure regulation functions are used in sequence, one after the other.

All licences are tied to a particular Motion Terminal and cannot be transferred to others.

Basic package

However you configure your Festo Motion Terminal, with four or eight valves, with or without digital/analogue input modules, the “Directional control valve functions” Motion App licence is always included with the hardware for all valve positions – at no extra cost!

- Motion Terminal
- Directional control valve functions



Start package

The Start package includes the licences for the most important basic pneumatic functions **For all valve positions**. It can be used to execute a huge number of tasks. These apps are only available as part of the package.

- Selectable pressure level
- Supply and exhaust air flow control
- Proportional directional control valve

Multi-valve apps

Extend the range of functions **For all valve positions** in specific areas. The Multi-valve apps are available individually.

- Leakage diagnostics
- ECO drive
- Presetting of travel time



Single-valve apps

Extend the range of functions **for one valve position** in specific areas. All apps are available individually.

- Proportional pressure regulation
- Model-based proportional pressure regulation
- Soft Stop
- Motion profile and positioning (available Q2/2019 for selected series up to 300 mm stroke)



Downloading Motion Apps

Do you need another app now that your Festo Motion Terminal has been delivered? Then simply download it using the Product Key in our App World!

Important: For the ECO drive, Presetting of travel time and Soft Stop Motion Apps, you will need the fast input module CTMM and other sensors from the range of accessories for the Festo Motion Terminal.

Save energy: new approaches to energy efficiency

The technology of the Festo Motion Terminal uses an integrated approach to energy-efficient operation of pneumatic automation technology. The terminal includes low-energy piezo valves for the pilot stage, specially developed Motion Apps for energy-efficient operating modes, and a leakage diagnostic function.



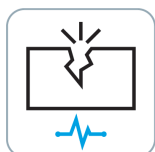
Basic low-energy technology

The low-energy piezo valves reduce the power consumption for the pilot control stage by up to 90% – with a pilot valve service life of up to 300 million switching cycles.



Apps for energy-efficient operation

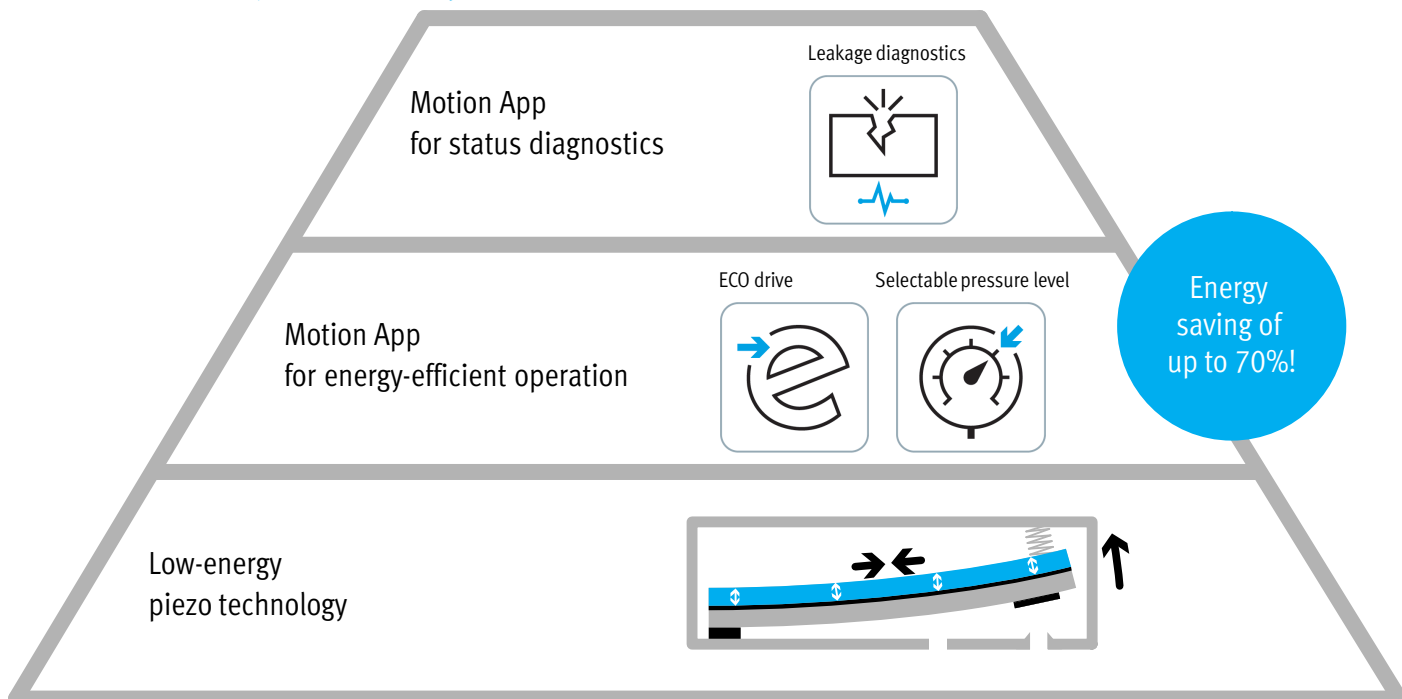
The Motion Apps “ECO drive” and “Selectable pressure level” will allow operators to control power consumption more selectively in the future. The Motion App “ECO drive” alone will generate savings of up to 70%. More apps will follow.



One app for leakage detection

The Motion App “Leakage diagnostics” enables the status of pneumatic systems connected to the Festo Motion Terminal to be continuously monitored, thus ensuring that leakages are detected early.

Integrated and energy-efficient concept



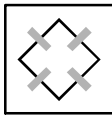
Product overview

Motion Terminal

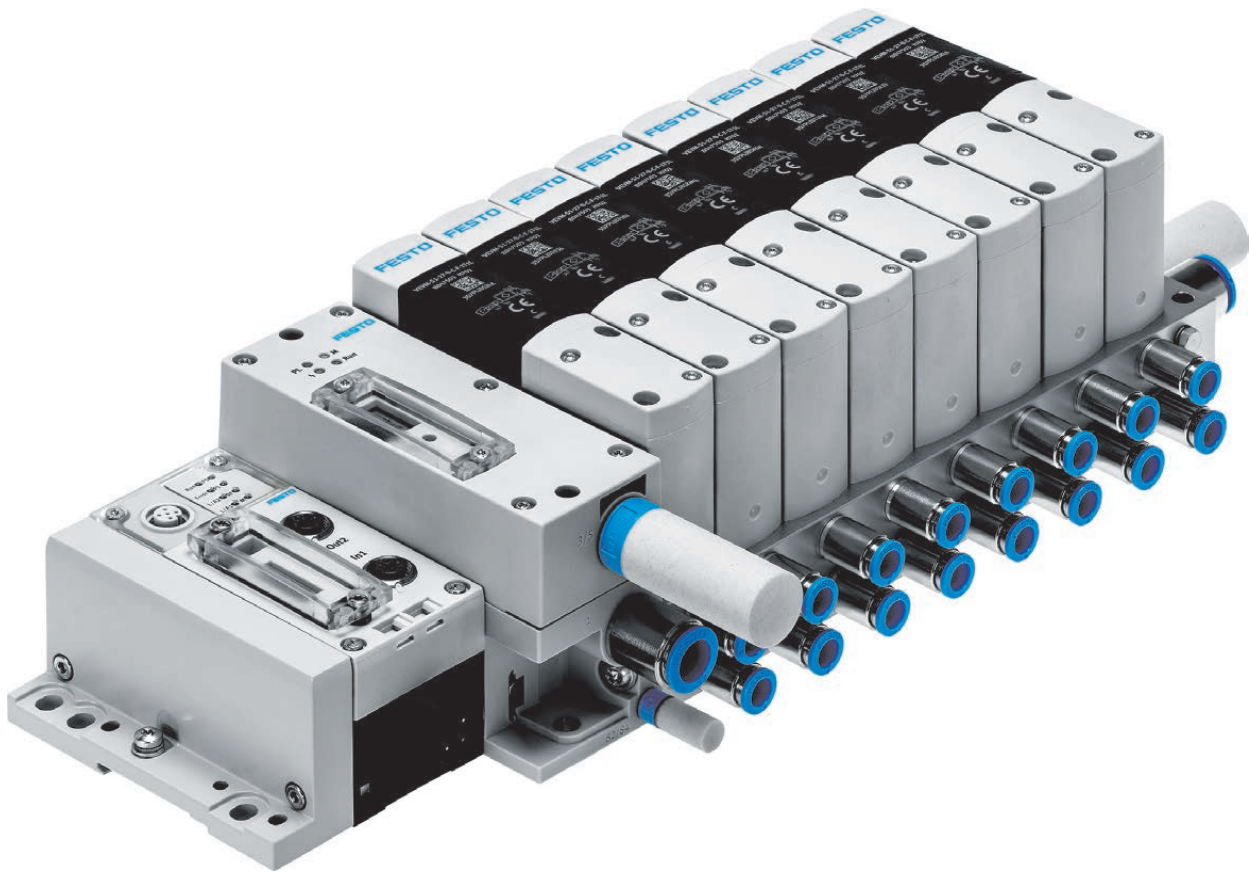


Type	Motion Terminal VTEM
Valve terminal design	Fixed grid
Grid dimension	28 mm
Max. no. of valve positions	8
Standard nominal flow rate	480 l/min
Pneumatic connection 1	G3/8
Operating pressure	3 ... 8 bar
Pilot pressure	3 ... 8 bar
Actuation type	Electric
Nominal operating voltage DC	24 V
Temperature of medium	-5 ... +50 °C
Description	<ul style="list-style-type: none"> • Many functions in one component – thanks to apps • Combines the benefits of electric and pneumatic components • Maximum standardisation • Reduced complexity and time to market • Increasing profitability and know-how protection • Minimal installation • Increased energy efficiency
→ Page/online	1169

Motion Apps



Type	Motion Apps GAMM
Description	<ul style="list-style-type: none"> • A new dimension in flexibility thanks to Motion Apps – delivering a wide range of different functions in a single valve • Faster engineering processes • Short response times without the need to adapt the hardware • Reduced system complexity • Shorter time-to-market for your application • Control programs for VEVN valves
→ Page/online	1169



Digitised pneumatics

- + Many functions in one component thanks to Motion Apps
- + Combines the benefits of electric and pneumatic components
- + Maximum standardisation
- + Reduced complexity
- + Increasing profitability
- + Minimal installation
- + Increased energy efficiency

Motion Terminal

VTEM

Motion Terminal VTEM



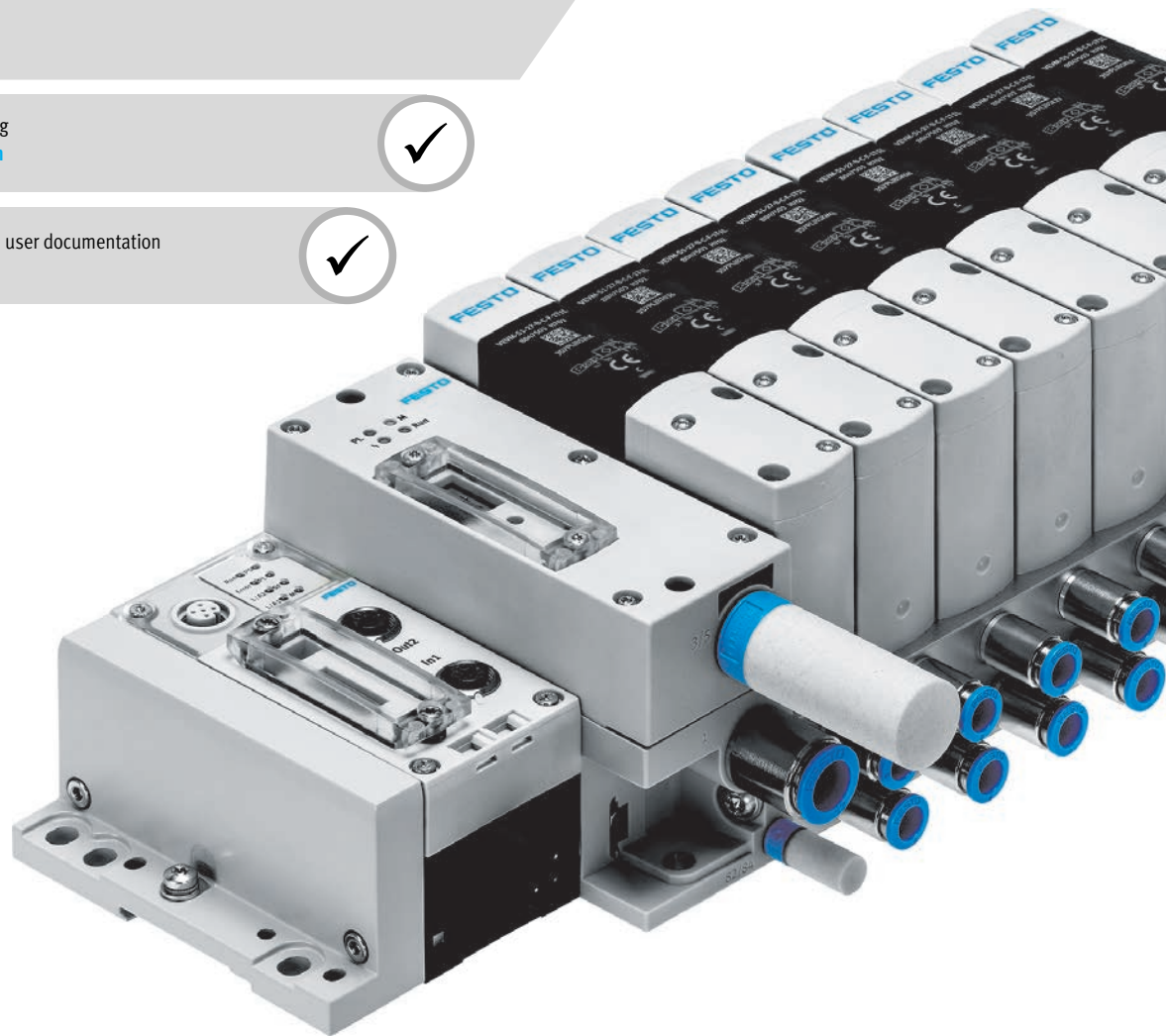
Overview, configuration and ordering

→ www.festo.com/catalogue/vtem



Additional information, support and user documentation

→ www.festo.com/sp/vtem



- + Function combinations thanks to Motion Apps – in a single valve!
- + Reliable processes thanks to maximum reproducibility and protection against manipulation

Product range overview

Function	Version	Description	→ Page/ online	
Pneumatic/mechanical	Pneumatic interlinking	Fixed grid <ul style="list-style-type: none"> • 4 or 8 valve positions • 0 or 2 positions for input modules • With electrical interface for terminal CPX • Supply/exhaust ports and working ports for the mounted valves • Pilot air supply for the mounted valves • Electrical actuation for the mounted valves 	1173	
	Valve	4x 2/2-way valve <ul style="list-style-type: none"> • Position if the power supply/signalling fails – all ducts closed • Connected in series to form a full bridge • Proportional pilot control by piezo valves • Valve opening monitored by sensor • Pressure sensors in ports 2 and 4 	1174	
Electronics	Input module	Analogue <ul style="list-style-type: none"> • 8 analogue inputs • M8, 4-pin • Exclusively for regulating the functions provided via the Motion Apps • Data can be transferred to a higher-order controller by the Motion Apps 	1175	
		Digital <ul style="list-style-type: none"> • 8 digital inputs • M8, 3-pin • Exclusively for controlling the functions provided via the Motion Apps • Data can be transferred to a higher-order controller by the Motion Apps 	1175	
Motion Apps	Basic package	Directional control valve functions	Valve type and switching status can be cyclically assigned to a valve	1176
	Start package	Proportional directional control valve	Valve type, switching status and a continuous valve opening can be cyclically assigned to a valve	1176
		Supply and exhaust air flow control	Flow control function	1177
		Selectable pressure level	Energy-saving cylinder movement using a reduced pressure level	1179
	Additional Motion Apps	Proportional pressure regulation	<ul style="list-style-type: none"> • Independent regulation of the two valve outlet pressures • Equivalent to two proportional pressure regulators at one valve position 	1177
		Model-based proportional pressure regulation	<ul style="list-style-type: none"> • Independent regulation of the two valve outlet pressures • Equivalent to two proportional pressure regulators at one valve position • More dynamic regulation by taking the pressure drop in the tubing into consideration 	vtem
		ECO drive	For applications with low loads or slow positioning motion	1178
		Presetting of travel time	For presetting the travel time for retracting and advancing	1179
Leakage diagnostics	Air consumption monitoring	1180		

Note

The Motion Terminal can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/vtem

Motion Terminal VTEM

Key features

Innovative

Benefits of piezo valves for pilot control:

- Pressure regulation function
- Maximum service life
- Minimum energy requirement
- Low leakage when acting as a proportional pressure regulator

Integrated controller permits:

- Cyclical changes to the valve function
- Function integration via Motion Apps

Licence packages

Each Motion Terminal VTEM is assigned a package of Motion App licences.

This can be extended at any time; however, it is not possible to transfer licences from one Motion Terminal VTEM to another.

The valve functions that are available within the Motion Terminal can be freely assigned to each individual valve wherever and whenever necessary.

With the integrated sensors all valve functions can be comprehensively monitored.

The controller of the Motion Terminal can use this information to perform more complex pressure regulating tasks or for switching connected actuators.

Flexible

The valves connected to form a full bridge within the valve body enable a wide range of directional control valve functions to be realised at one valve position.

These functions are assigned to the valve by the connected controller and can be changed during operation.

The pressure regulator functionality of the valves in combination with the integrated pilot control enables the Motion Terminal VTEM to autonomously perform precision positioning tasks.

Integrated sensors

Integrated sensors monitor:

- Degree of opening of the valve (flow rate for supply air and exhaust air)
- Pressure

Monitoring is performed:

- For each individual valve
- For each individual valve connection

The ability to adapt pressure and flow rate, in combination with the integrated sensors, makes it possible to influence the cylinder movement directly.

This means that a wide range of requirements can be met:

- Independent, proportional regulation of the supply and exhaust air for each cylinder chamber
- Soft start
- Fast start
- Noise reduction
- Reduced vibrations
- No need for exhaust air flow control valves
- No need for shock absorbers

Reliable

Integrated sensors monitor the switching status of the valves and the pressure in duct 1, 3, 2 and 4.

Optional input modules enable the connected actuators to be monitored.

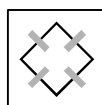
This information is evaluated in the Motion Terminal VTEM itself and also transferred to a higher-order controller.

Basic package

Includes:

Directional control valve functions

The Basic package is included with every Motion Terminal.

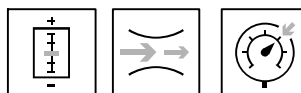


Start package

Includes:

- Proportional directional control valve
- Supply and exhaust air flow control
- Selectable pressure level

The Start package can be ordered as an individual package for the Motion Terminal.



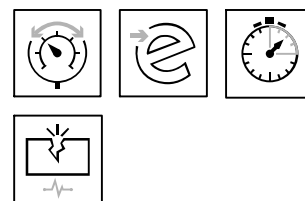
Easy to install

- No need to change the valve, as the directional control valve function is assigned using software
- Less storage space required: one valve for all functions
- Integrated mounting points for wall and H-rail mounting
- Integrated flow control functionality, no manual adjustment required
- Functions of 50 individual components integrated via Motion Apps

Additional Motion Apps

- Proportional pressure regulation
- ECO drive
- Presetting of travel time
- Leakage diagnostics

Additional Motion Apps can be ordered individually for the Motion Terminal.



Data sheet – Motion Terminal VTEM

Flow rate

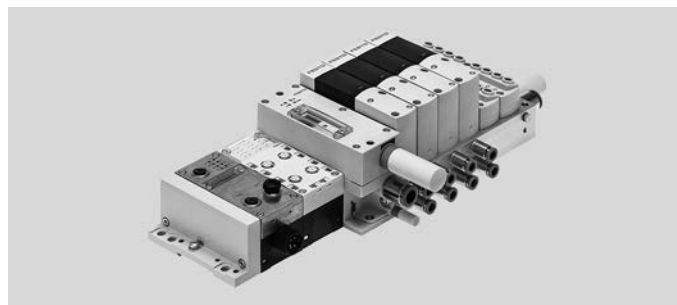
Up to 480 l/min

Valve width

27 mm

Voltage

24 V DC



Technical data		Download CAD data → www.festo.com
Design	Fixed grid	
Electrical control	Fieldbus	
Type of actuation	Electrical	
Nominal operating voltage [V DC]	24 ±25%	
Maximum number of valve positions	8	
Grid dimension [mm]	28	
Suitable for vacuum	Yes	
Pilot air supply	Internal or external	
Degree of protection	IP65	

Operating and environmental conditions	
Operating/pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4], inert gases
Note on the operating/pilot medium	Lubricated operation not possible
Operating/pilot pressure [bar]	3 ... 8
Ambient temperature [°C]	-5 ... +50
Temperature of medium [°C]	-5 ... +50

Pneumatic connections		Thread
Supply	1	G3/8
Exhaust port	3	G3/8
Pilot air supply	14	M5
Pilot exhaust air	84	M7
Venting hole		M7
Working ports	2	G1/8
	4	G1/8

Materials	
Seals	TPE-U(PU), NBR

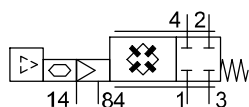
Motion Terminal VTEM

Data sheet – Valves VEVM

Flow rate
Up to 480 l/min

Valve width
27 mm

Voltage
24 V DC



Technical data

Valve function	Can be assigned using Motion App
Motion Apps	Directional control valve functions
	Proportional directional control valve
	Proportional pressure regulation
	Supply and exhaust air flow control
	ECO drive
	Presetting of travel time
	Selectable pressure level
	Leakage diagnostics
Reset method	Mechanical spring
Design	Piston seat
Sealing principle	Soft
Type of actuation	Electrical
Type of control	Piloted
Flow direction	Non-reversible, pressure at 1 and exhaust air or vacuum at 3
Suitable for vacuum	Yes
Nominal width [mm]	4.2
Standard nominal flow rate [l/min]	480
Switching time on/off [ms]	8.5/8.5

Operating and environmental conditions

Operating/pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4], inert gases
Note on the operating/pilot medium	Lubricated operation not possible
Operating/pilot pressure [bar]	3 ... 8
Ambient temperature [°C]	-5 ... +50
Temperature of medium [°C]	-5 ... +50

Electrical data

Electrical connection	Via sub-base
Nominal operating voltage [V DC]	24
Power consumption [W]	1.25
Status indication	LED blue (valve in operation)
	LED red (malfunction)
Duty cycle [%]	100

Materials

Housing	PA
Seals	TPE-U(PU), NBR

Data sheet – Input module

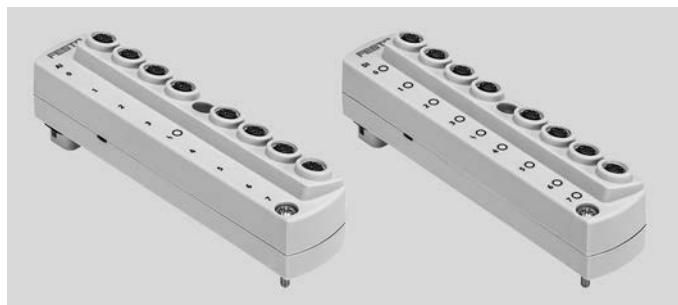
Function

Input modules enable analogue and digital sensors to be connected to the Motion Terminal.

The input signals are used for motion tasks, but can also be looped through from a Motion App to the higher-order controller.

Area of application

- Input modules for 24 V DC sensor supply voltage
- Digital module with PNP logic
- Analogue module for 4 ... 20 mA



Technical data		Digital input module	Analogue input module
Electrical connection		M8x1 socket, 3-pin	M8x1 socket, 4-pin
Number of inputs		8	8
Input characteristics		To IEC 61131-2, type 2	IEC1131-T2
Input signal range		Signal 0: ≤ 5 V Signal 1: ≥ 11 V	4 ... 20 mA
Input switching logic		PNP	–
Fuse protection		Internal electronic fuse	Internal electronic fuse
Diagnostics via LED		Fault per module Status per channel	Fault per module –
Nominal operating voltage	[V DC]	24	24
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 12	Typically 12
Maximum cable length	[m]	30	30

Materials

Housing	PA
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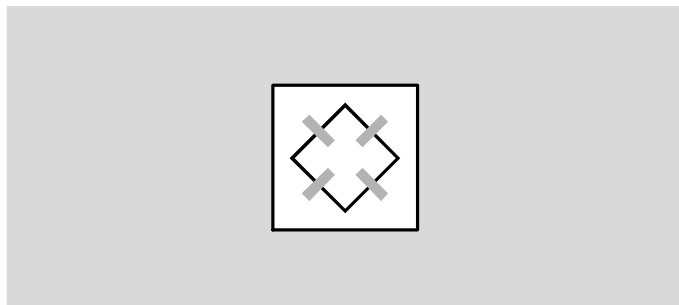
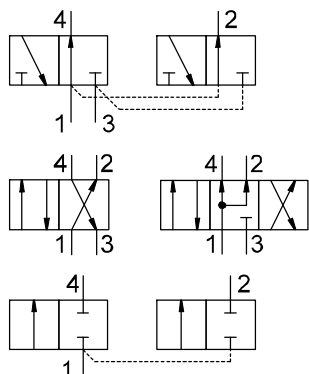
Operating and environmental conditions

Ambient temperature	[°C]	–5 ... +50
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Motion Terminal VTEM

Data sheet – Motion App “Directional control valve functions”

- 2x 2/2-way valve
- 2x 3/2-way valve
- 4/2-way valve
- 4/3-way valve
- Included in the Basic package



Mode of operation

The directional control valve function allows the characteristics of a conventional pneumatic valve to be assigned to a valve position.

The integrated sensors enable the switching position to be monitored. All ducts are shut off if the pilot pressure or power supply is interrupted.

Benefits

The ability to assign the directional control valve function significantly reduces component variety. This in turn reduces the initial design costs.

If a replacement is required, it is no longer necessary to identify the specific valve; the controller assigns the function to the new valve.

Thanks to the cyclical assignment, a series of valve functions can be realised on one valve position at different times.

During maintenance and commissioning, the valves can be stopped as required via the controller and can exhaust the system.

- One valve position with nine valve functions
- No need to change the valve for a different valve function
- Virtual manual override via software, access via Ethernet interface

Scope

- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment

Data

Controller to the valve

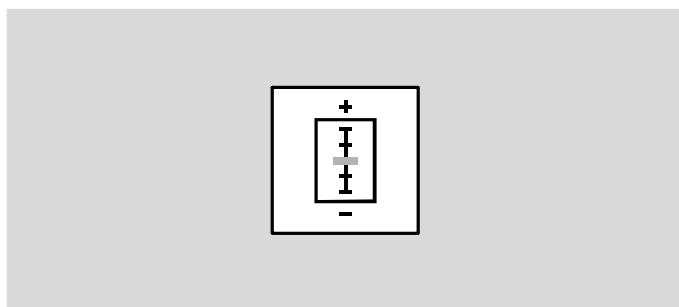
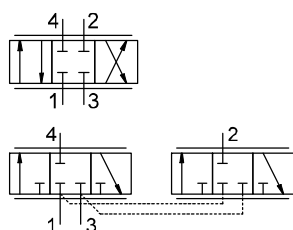
- Directional control valve function
- Switching position to be assumed

Valve to the controller

- Switching position
- Pressure in duct 2
- Pressure in duct 4

Data sheet – Motion App “Proportional directional control valve”

- 4/3-way proportional valve
- 2x 3/3-way proportional valve
- Included in the Start package



Mode of operation

The proportional directional control valve function is assigned to a valve position in the same way as the directional control valve function.

The integrated sensors enable the switching position and opening degree of the valves to be monitored.

Benefits

- Minimal leakage (poppet valves)
- Low current consumption
- Two independently controlled ports at a valve position
- Different control characteristics can be set

Scope

- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment

Data

Controller to the valve

- Directional control valve function
- Switching position to be assumed
- Control characteristics
- Valve position (–100 ... +100%)
- Duct blocking

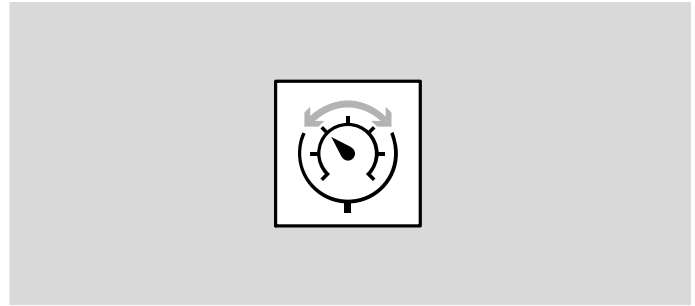
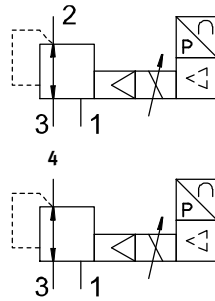
Valve to the controller

- Measured valve position (–100 ... +100%)

Data sheet – Motion App “Proportional pressure regulation”

Pressure –0.9 ... +7 bar

- Pressure regulation in duct 2
- Pressure regulation in duct 4



Mode of operation

The proportional pressure regulation function makes it possible to regulate the pressure at ducts 2 and 4 independently.

Thanks to the integrated sensors, the pressure can be precisely monitored.

The following control characteristics are available:

- Small volume
- Medium volume
- Large volume
- Self-configured setting

Benefits

- Two pressure regulators per valve position
- Easy parameterisation
- Vacuum regulation

Range of applications

- Regulating force with known effective area
- Regulating contact pressure
- Actuating process valves
- Vacuum control with ejector pulse

Scope

- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment

Data

Controller to the valve

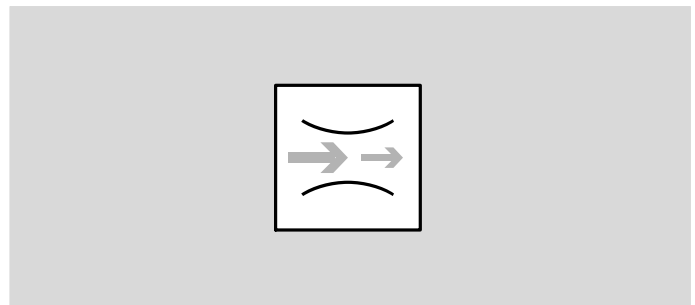
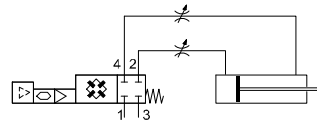
- Pressure at duct 2 (setpoint value)
- Pressure at duct 4 (setpoint value)

Valve to the controller

- Pressure at duct 2 (actual value)
- Pressure at duct 4 (actual value)

Data sheet – Motion App “Supply and exhaust air flow control”

- Supply air flow control
- Exhaust air flow control
- Included in the Start package



Mode of operation

The flow rate can be individually adjusted for each duct, the supply air and exhaust air flow control are independently adjusted.

It is no longer necessary to have a technician on site to change the flow control.

Benefits

- Flow control remotely adjustable during operation (adjustment via controller)
- Reproducible flow control cross sections adjustable via controller
- Reduced component variety since there is no mechanical flow control valve
- Flow control setting can be called up during operation
- Tamper-proof

Scope

- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment
- Control precision $\pm 3\%$

Data

Controller to the valve

- Supply air flow control setting 0 ... 100% (recommended values: 5 ... 100%)
- Exhaust air flow control setting 0 ... 100% (recommended values: 5 ... 100%)
- Increments 0.01%

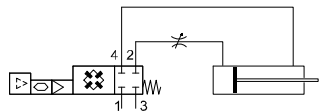
Valve to the controller

- Supply air flow control setting
- Exhaust air flow control setting

Motion Terminal VTEM

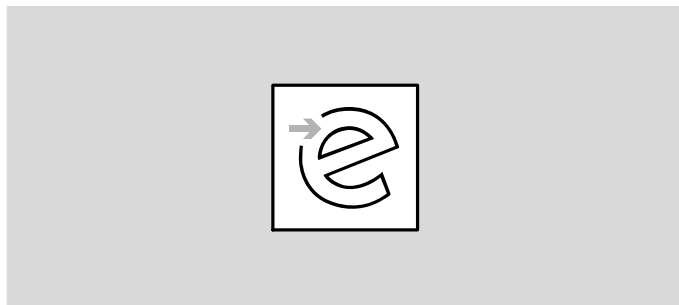
Data sheet – Motion App “ECO drive”

- Supply air flow control with end-position switch-off
- Can be used to save energy when advancing and retracting the cylinder



Also required:

- A digital input module CTMM
- Two digital sensors (PNP, N/O contact) for determining the end position of the drive



Mode of operation

To save energy during cylinder movement, the supply air is restricted when advancing the cylinder while the exhaust air is unthrottled.

The supply air side is shut off when the end position is reached so the pressure level and cylinder position can be maintained.

For this function, the cylinder position is sensed via two end-position switches.

Benefits

- Supply air flow control and pressure switch-off in the end position considerably increase energy efficiency
- Energy/pressure consumption is automatically adapted to the load
- Readjustment in case of deviation from the end position
- Suitable for moving low loads at low speed

Scope

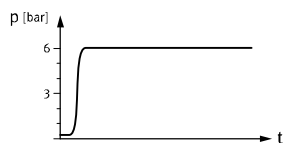
- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment

Data

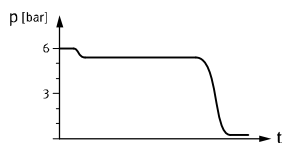
- Controller to the valve
- Supply air flow control setting 5 ... 100%
- Valve to the controller
- Pressure at duct 2
 - Pressure at duct 4
 - End position reached

Pressure curve without ECO drive

Pressure at duct 2



Pressure at duct 4

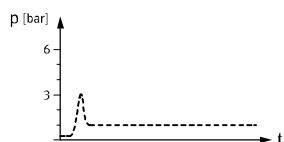


- High pressure at duct 2
- High pressure at duct 4
- Supply air unthrottled
- Exhaust air flow control

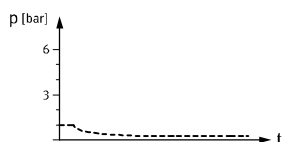
- Differential pressure in line with the amount of force required for the movement
- High force in the end position
- High energy consumption

Pressure curve with ECO drive

Pressure at duct 2



Pressure at duct 4



- Low pressure at duct 2
- Low pressure at duct 4
- Supply air flow control
- Exhaust air unthrottled

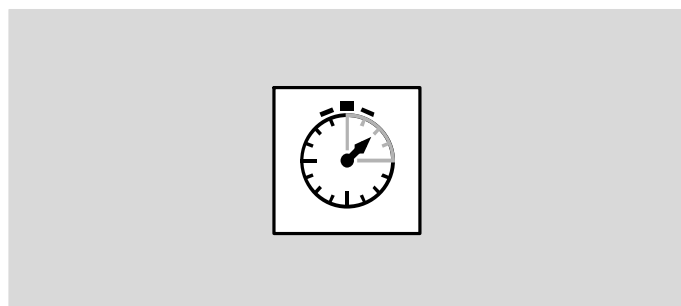
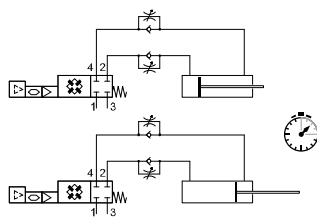
- Differential pressure in line with the amount of force required for the movement
- Low force in the end position
- Low energy consumption

Data sheet – Motion App “Presetting of travel time”

- Self-learning exhaust air flow control for regulating the travel time

Also required:

- A digital input module CTMM
- Two digital sensors (PNP, N/O contact) for determining the end position of the drive



Mode of operation

The travel time for retracting and advancing is preset in the Motion Terminal VTEM. The real travel time is autonomously determined using the sensor data from the end-position switches and the exhaust air flow control is adapted until the specified travel time is achieved. Continuous monitoring and adaptation compensate for changes to the system.

Benefits

- Adaptive and self-adjusting
- Constant cycle times
- Travel time can be changed via the controller
- Variations in the supply or exhaust air pressure are automatically sensed and taken into consideration
- Password-protected access
- A simple proximity sensor is used
- Pressure build-up function to prevent dangerous cylinder movements

Scope

- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment
- In combination with end-position switches

Data

Controller to the valve

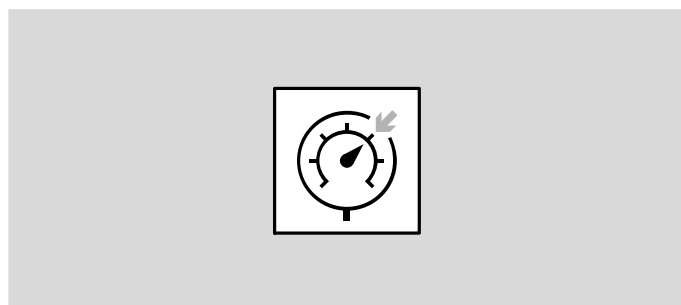
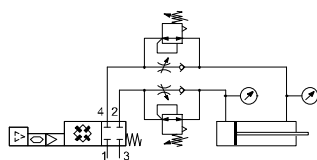
- Advancing
- Retracting
- Exhausting both chambers
- Shutting off both chambers

Valve to the controller

- Measured travel time
- End position reached

Data sheet – Motion App “Selectable pressure level”

- Pressure regulation at duct 2 and flow rate at duct 4
- Pressure regulation at duct 4 and flow rate at duct 2
- Included in the Start package



Mode of operation

The required setpoint value can be independently preset for ducts 2 and 4. The Motion Terminal VTEM autonomously regulates the pressure and signals the actual pressure in ducts 2 and 4 and to the higher-order controller. Pressure regulation takes place in the supply duct, while the preset exhaust air flow control is active in the other duct.

Benefits

- Energy-saving movement with reduced pressure
- Pressure regulation in the end position
- Pressure can be changed remotely and individually preset for each drive and direction of movement
- Variably adjustable pressures in the end position enable a defined force (e.g. press-fitting) to be reproduced in the application

Scope

- For the entire Motion Terminal
- For each individual valve position in a Motion Terminal, depending on the assignment
- Cyclical assignment
- For cylinders with pneumatic cushioning

Data

Controller to the valve

- Pressure at duct 2 and flow control opening at duct 4
- Pressure at duct 4 and flow control opening at duct 2
- Stopping
- Advancing
- Retracting
- Exhausting both chambers

Valve to the controller

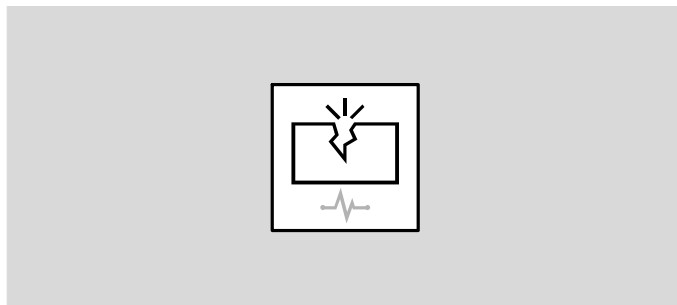
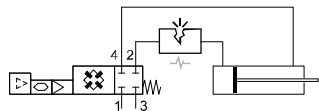
- Pressure at duct 2 and duct 4

Motion Terminal VTEM

Data sheet – Motion App “Leakage diagnostics”

Flow rate

Measuring range 2 ... 50 l/h

**Mode of operation**

To calculate the leakage, the pressure drop at a valve (drive in end position) is determined.

To be able to evaluate this value, a reference value is determined using a measurement taken at the start of the observation period.

The Motion Terminal VTEM compares the value of further measurements against this reference value.

This comparison provides the basis for an evaluation using adjustable limits.

The evaluation and the difference between the measured value and the reference value are fed back.

During the diagnostics, the motion task independently advances and retracts the cylinder.

Leakage testing is not performed during operation; it is started separately as a test cycle.

Benefits

Increased leakage can be caused by a critical fault (damaged tubing) or by wear and aging of the connected components.

Regular leakage testing can therefore:

- Determine a sudden leak
- Detect wear to cylinders and valves in good time

Scope

- For all valve positions of a Motion Terminal
- Requires a measurement run
- Not for vacuum applications
- For all types of pneumatic consumers

Data

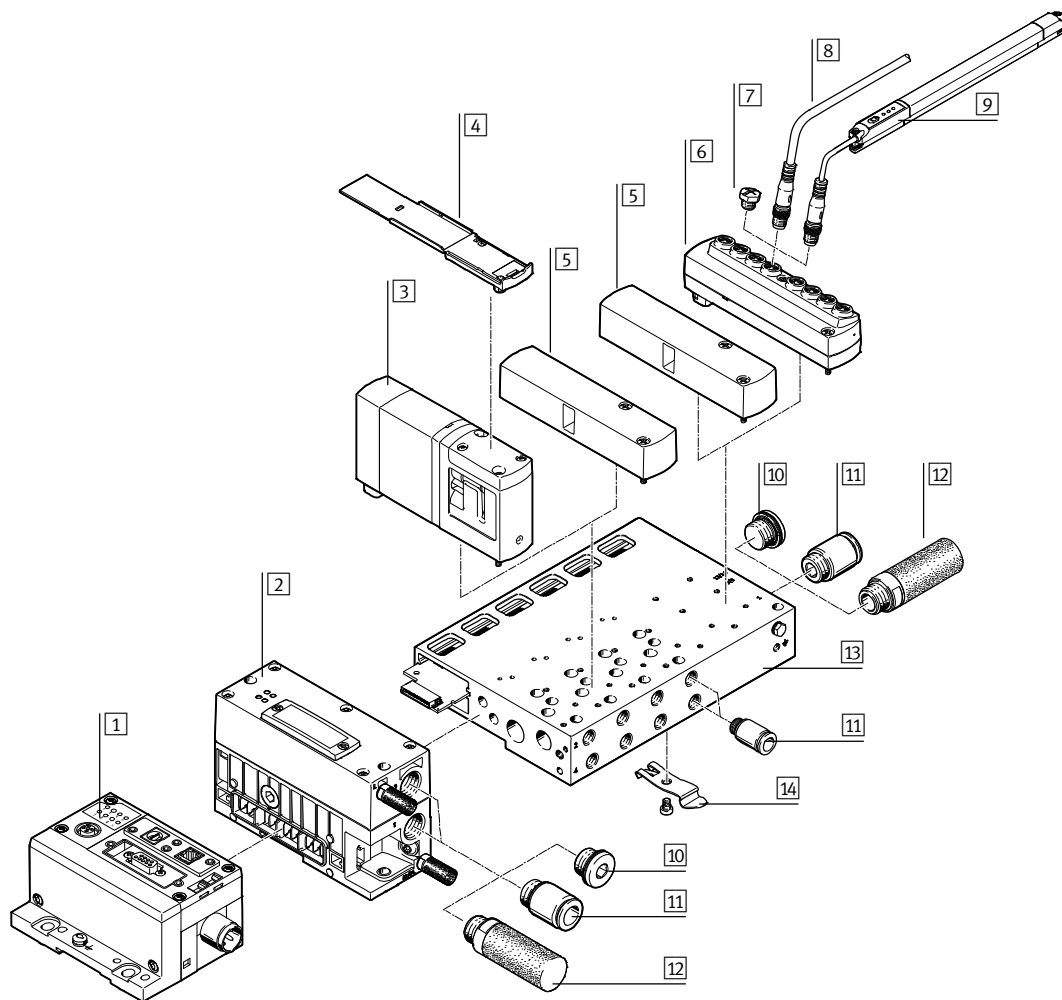
Controller to the valve

- Starting diagnostics
- Terminating diagnostics
- Starting reference measurement
- Terminating reference measurement
- Exhausting

Valve to the controller

- Detecting the status
- Change in leakage for duct 2
- Change in leakage for duct 4
- Evaluation of leakage at duct 2
- Evaluation of leakage at duct 4

Accessories

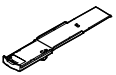
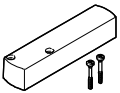


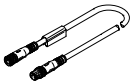
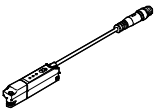






Designation	Description	→ Page/online
1 CPX modules CPX	Bus node, control block, input and output modules	1597
2 Controller CTMM	For VTEM and pneumatic interface to the terminal CPX	vtem
3 Valve body VEVM	Contains 4 interconnected piston poppet valves with piezo pilot control	vtem
4 Inscription label holder ASCF	For a valve	1182
5 Blanking plate VABB	For unoccupied valve position (vacant position) or input module position	1182
6 Input module CTMM	For connecting sensors to the VTEM	1182
7 Cover cap ISK	For sealing unused ports	1182
8 Connecting cable NEBU	For connecting sensors	1182
9 Position sensor SDAP	Analogue position sensor for VTEM input module CTMM	1182
10 Blanking plug B	For sealing unused ports	1182
11 Fittings QS	For connecting compressed air tubing	1182
12 Silencer U	For exhaust ports	1182
13 Manifold rail VABM	Pneumatic and electrical interlinking	vtem
14 H-rail mounting VAME	For CPX and VTEM	1182

10
Motion Terminal

Motion Terminal VTEM

Accessories – Ordering data


			Part no.	Type code	PU ¹⁾	
4 Inscription label holder						
	Inscription label holder for a valve		8047501	ASCF-H-P11	4	
5 Cover plate						
	Cover plate for a valve position or input module position		8047504	VABB-P11-27-T	1	
6 Input module						
	Module with 8 inputs	Digital inputs	8047505	CTMM-S1-D-8E-M8-3	1	
		Analogue inputs	8047506	CTMM-S1-A-8E-A-M8-4	1	
7 Cover cap						
	Cover cap for sealing unused ports	For M8 connections	177672	ISK-M8	10	
8 Connecting cable Technical data online: → nebu						
	Modular system for connecting cables	Cable length 0.1 ... 30 m	539052	NEBU-...	–	
		<ul style="list-style-type: none"> • Straight plug, 4-pin • Straight socket, M8x1, 4-pin 	Cable length 2.5 m	554035	NEBU-M8G4-K-2.5-M8G4	1
9 Position sensor						
	Analogue sensor for VTEM input module	Sensing range 0 ... 50 mm	8050120	SDAP-MHS-M50-1L-A-E-Q3-M8	1	
		Sensing range 0 ... 100 mm	8050121	SDAP-MHS-M100-1L-A-E-Q3-M8	1	
		Sensing range 0 ... 160 mm	8050122	SDAP-MHS-M160-1L-A-E-Q3-M8	1	
10 Blanking plug Technical data online: → b						
	For sealing unused ports	M5 thread	★ 3843	B-M5	10	
		G1/8 thread	★ 3568	B-1/8	10	
		Thread G3/8	★ 3570	B-3/8	10	
12 Silencer Technical data online: → amte						
	For thread M7		161418	UC-M7	1	
	For G3/8 thread		★ 6843	U-3/8-B	1	
14 H-rail mounting						
	H-rail mounting		8047542	VAME-P11-MK	1	
11 Push-in fitting, straight Technical data online: → qsm						
	Connecting thread M5 for tubing O.D.	4 mm	★ 153315	QSM-M5-4-I	10	
		6 mm	★ 153321	QSM-M7-6-I	10	
		Connecting thread G1/8 for tubing O.D.	4 mm	★ 186095	QS-G1/8-4	10
			6 mm	★ 186096	QS-G1/8-6	10
			8 mm	★ 186098	QS-G1/8-8	10
		Connecting thread G3/8 for tubing O.D.	10 mm	★ 132999	QS-G1/8-10-I	10
			8 mm	★ 186111	QS-G3/8-8-I	10
			10 mm	★ 186113	QS-G3/8-10-I	10
			12 mm	★ 186114	QS-G3/8-12-I	10
			16 mm	★ 186347	QS-G3/8-16	1

1) Packaging unit.

11 Sensors

- + Proximity sensors specially adapted for use with Festo drives
- + Inductive sensors for detection and distance measurement of metal objects
- + Position sensors
- + Pressure sensors and vacuum switches
- + Flow sensors for flow and quality inspection
- + Opto-electrical sensors for colour recognition, distance measurement and part recognition
- + Signal converters
- + Air gap sensors for end-position sensing and position control
- + Sensor boxes for the process industry
- + Electrical limit switches





SMT-8★
SME-8★

Proximity sensors, for T-slot

- + Short design
- + Variants suitable for use with energy chains and robots

→ page 1197




SIEN★

Proximity sensors, inductive

- + PNP, NPN
- + Flush or non-flush mounting
- + Standard switching distance

→ page 1227



SDE5★

Pressure sensors

- + Pressure switches
- + Vacuum switches
- + Switching status indicated by an LED visible from all sides

→ page 1245



SPAN★

Pressure sensors

- + Pressure and vacuum
- + 13 pressure measuring ranges
- + All standard pressure units

→ page 1251

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NEW Additional versions

Flow sensors SFAH 1192

NEW New series

Sensor boxes SRBC 1196

Proximity sensors SME-8, for T-slot 1197

Proximity sensors SMT-8, for T-slot 1197

Proximity sensors SME-10, for C-slot 1215

Proximity sensors SMT-10, for C-slot 1215

Proximity sensors SIEN, inductive 1227

Proximity sensors SIES-8M, inductive, for T-slot 1227

Position sensors SRBS 1239



Pressure switches SDE5 1245

Pressure sensors SPAN 1251





Pressure sensors SPAU 1259

Product overview





Software tool

<p>Configurator</p> 	<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
<p>Festo Design Tool 3D</p> 	<p>The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo. The configurator makes your search for the right accessory easier, more reliable and faster. You can then order the module that has been created with a single order item – either completely pre-assembled or as individual parts in a single box. As a result, your bill of materials is considerably shortened and downstream processes such as product ordering, order picking and assembly are significantly simplified.</p>	<p>All ordering options are available in the following countries: AT, BE, CH, CZ, DE, DK, ES, EST, FI, FR, GB, GR, HU, IE, IT, NL, NO, PL, PT, RU, SE, SI, SK, TR, ZA. This tool can be found</p> <ul style="list-style-type: none"> via the address: www.festo.com/fdt-3d-online in the above listed countries.



Proximity sensors, for T-slot

Type	 Proximity sensors SMT-8M-A	 Proximity sensors SME-8, SME-8M	 Proximity sensors SDBT	 Proximity sensors SMT-8F, SMT-8G, SMT-8-SL
Electrical connection	2-wire, 3-wire, 2-pin, 3-pin, cable, cable with plug, M8x1, M12x1, rotatable thread	2-wire, 3-wire, 3-pin, cable, cable with plug, M8x1, plug	2-wire, 3-wire, 2-pin, 3-pin, cable, cable with plug, M12x1, rotatable thread	2-wire, 3-wire, 3-pin, cable, cable with plug, M8x1, plug, rotatable thread
Operating voltage range DC	5 ... 30 V	0 ... 230 V	10 ... 30 V	10 ... 30 V
Switching element function	N/C contact, N/C contact or N/O contact switchable, N/O contact	N/O contact, N/C contact	N/O contact	NAMUR, N/O contact
Switching output	Non-contacting, 2-wire, NPN, PNP, PNP/NPN switchable	Contacting, bipolar, without LED function	Non-contacting, 2-wire, NPN, PNP	PNP, NAMUR
NEW				<ul style="list-style-type: none"> Additional versions
Description	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Short design Variant Ex2 for use in potentially explosive areas Insertable in the slot from above, flush with the cylinder profile LED switching status indication LED operating reserve indication Cable length 0.1 ... 30 m 	<ul style="list-style-type: none"> Measuring principle: magnetic reed SME-8-...-S6: heat-resistant design Variants suitable for use with energy chains and robots Screw-clamped or clamped in the slot, insertable in the slot from above or lengthwise LED switching status indication Cable length 0.3, 2.5, 5, 7.5, 0.2 ... 10 m 	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Oil resistant, welding field resistant, resistant to welding spatter Screw-clamped in slot, insertable from above LED switching status indication Cable length 0.3 ... 5 m SDBT-EX6: to EU Explosion Protection Directive (ATEX) 	<ul style="list-style-type: none"> Measuring principle: magneto-resistive SMT-8-F: in accordance with the ATEX Directive for explosive atmospheres SMT-8-G: design ideally matched to gripper sensing SMT-8-SL: sturdy thanks to long guides and plug directly at the sensor Variants suitable for use with energy chains and robots Insertable in the slot lengthwise or from above LED switching status indication Cable length 0.3, 2.5, 5 m
→ Page/online	1197	1197	sdbt	smt-8



Proximity sensors, for T-slot

Type	 Proximity sensors CRSMT-8	 Proximity sensors CRSMT-8M	 Proximity sensors SMEO-8E	 Proximity sensors SMT0-8E
Electrical connection	3-wire, cable	3-wire, 3-pin, rotatable thread, cable, cable with plug, M12x1, M8x1	2-wire, 3-pin, cable, M8x1, M12x1, plug	3-pin, M12x1, M8x1, plug
Operating voltage range DC	10 ... 30 V	5 ... 30 V	0 ... 250 V	10 ... 30 V
Switching element function	N/O contact	N/O contact	N/O contact	N/O contact
Switching output	PNP	PNP	Contacting, contacting bipolar, without LED function	NPN, PNP
Description	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Corrosion-resistant design Suitable for use in the food industry (see www.festo.com/sp/crsmt-8 > "Certificates" tab), resistant to acids, lye and cooling lubricants Insertable in the slot lengthwise, flush with the cylinder profile LED switching status indication Cable length 2.5, 5 m 	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Corrosion-resistant design Suitable for use in the food industry (see www.festo.com/sp/crsmt-8m > "Certificates" tab), resistant to acids and cooling lubricants Insertable in the slot from above, flush with the cylinder profile LED switching status indication Cable length 0.3, 5, 10 m 	<ul style="list-style-type: none"> Measuring principle: magnetic reed Sturdy sensor in block design Plug integrated in housing LED switching status indication Cable length 2.5 m 	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Sturdy sensor in block design Plug integrated in housing LED switching status indication
→ Page/online	crsmt-8	1197	smeo	smt0

Proximity sensors, for T-slot




Type	 Proximity sensors SMTSO-8E	 Proximity sensors SMP0-8E
Electrical connection	3-pin, M12x1, plug	
Operating voltage range DC	10 ... 30 V	
Switching element function	N/O contact	
Switching output	NPN, PNP	
Description	<ul style="list-style-type: none"> Measuring principle: magneto-inductive Welding field-resistant design Sturdy sensor in block design Plug integrated in housing LED switching status indication 	<ul style="list-style-type: none"> Pneumatic proximity sensor Measuring principle: magnetic Function: 3/2-way valve, normally closed Pneumatic connection via female thread M5 Visual switching status indication
→ Page/online	smtso	smpo

Proximity sensors, for C-slot




Type	 Proximity sensors SME-10, SME-10M	 Proximity sensors SMT-10M, SMT-10G
Electrical connection	2-pin, 3-pin, 3-wire, cable, cable with plug, M12, M8x1, snap collar, plug, rotatable thread, open end	2-pin, 3-pin, 3-wire, cable, cable with plug, M12, M8x1, snap collar, rotatable thread, open end
Operating voltage range DC	5 ... 30 V	5 ... 30 V
Switching element function	N/O contact	N/O contact
Switching output	Contacting, bipolar	NPN, PNP, non-contacting, 2-wire
Description	<ul style="list-style-type: none"> Measuring principle: magnetic reed Clamped in C-slot, insertable in the slot from above or lengthwise LED switching status indication Cable length 0.3, 2.5 m 	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Clamped in C-slot, insertable in the slot from above or lengthwise, secured with screw LED switching status indication Cable length 0.3, 2.5 m
→ Page/online	1215	1215

Product overview


Proximity sensors, block design

			
Type	Proximity sensors SME-1	Proximity sensors SMT-C1	Proximity sensors SMEO-1
Electrical connection	2-wire, 3-wire, 3-pin, cable, M8x1, plug	3-wire, 3-pin, cable, cable with plug, M8x1, M12x1, rotatable thread	2-wire, 3-wire, 3-pin, cable, M8x1, plug
Operating voltage range DC	0 ... 200 V	10 ... 30 V	0 ... 200 V
Switching element function	N/O contact	N/O contact	N/O contact
Switching output	Contacting, bipolar	PNP	Contacting, bipolar
Description	<ul style="list-style-type: none"> Measuring principle: magneto-inductive For mounting kit With or without LED switching status indication 	<ul style="list-style-type: none"> Measuring principle: magneto-inductive For Clean Design standards-based cylinder DSBF with mounting rail for sensors LED switching status indication 	<ul style="list-style-type: none"> Measuring principle: magnetic reed SMEO-1-S6: heat-resistant design With or without LED switching status indication Cable length 2.5, 5 m
→ Page/online	sme-1	smt-c1	smeo-1





Proximity sensors, block design

			
Type	Proximity sensors SMT0-1	Proximity sensors SMTSO-1	Proximity sensors SMPO-1
Electrical connection	3-wire, 3-pin, cable, M8x1, plug	3-pin, M12x1, plug	
Operating voltage range DC	10 ... 30 V	10 ... 30 V	
Switching element function	N/O contact	N/O contact	
Switching output	NPN, PNP	PNP	
Description	<ul style="list-style-type: none"> Measuring principle: magneto-resistive LED switching status indication Cable length 2.5 m 	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Welding field-resistant design LED switching status indication 	<ul style="list-style-type: none"> Measuring principle: magnetic Pneumatic proximity sensor Function: 3/2-way valve, normally closed Pneumatic connection via barbed connector for tubing I.D. 3 mm Visual switching status indication
→ Page/online	smt0-1	smtso-1	smpo




Cylinder signal generators

	
Type	Cylinder signal generators PPL
Standard nominal flow rate	48 l/min
Operating pressure	1 ... 8 bar
Pneumatic connection	Barbed connector for 3 mm I.D. plastic tubing
Type of mounting	Hollow bolt G1/8, G1/4
Description	<ul style="list-style-type: none"> For contactless pneumatic signal generation at the end of cylinder strokes Function: 3/2-way valve, normally closed Can be screwed directly into the supply port of the cylinder using a hollow bolt
→ Page/online	ppl

Inductive sensors


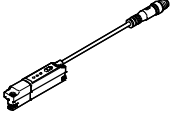

				
Type	Proximity sensors SIEN	Proximity sensors SIEA	Proximity sensors SIED	Proximity sensors SIEF
Size	4 mm, 6.5 mm, M5x0.5, M8x1, M12, M12x1, M18, M18x1, M30, M30x1.5	M8, M12, M18, M30	M12, M18, M30	40x40x65 mm, M8, M12, M18, M30
Switching output	NPN, PNP		Non-contacting, 2-wire	NPN, PNP
Switching element function	N/O contact, N/C contact		N/O contact, N/C contact	Antivalent, N/O contact
Electrical connection	3-wire, 3-pin, cable, M8x1, M12x1, plug	3-pin, 4-pin, M8x1, M12x1, plug	2-wire, 2-pin, cable, M12x1, plug	3-wire, 3-pin, 4-pin, Fixcon, cable, M8x1, M12x1, plug
Operating voltage range DC	10 ... 30 V	15 ... 30 V	10 ... 320 V	10 ... 65 V
Description	<ul style="list-style-type: none"> • With standard switching distance • For DC voltage • Round design • Metric thread • Flush or non-flush mounting • LED switching status indication • Design with metal or polyamide housing 	<ul style="list-style-type: none"> • With analogue output • Flush installation • Metric thread 	<ul style="list-style-type: none"> • With standard switching distance • For DC and AC voltage • Metric thread • Flush or non-flush mounting • LED switching status indication • Design with metal or polyamide housing 	<ul style="list-style-type: none"> • Reduction factor 1 for all metals • Welding field resistant • Design with housing resistant to welding spatter • Flush, partially flush or non-flush mounting • LED switching status indication
→ Page/online	1227	siea	sied	sief

Inductive sensors




			
Type	Proximity sensors SIEH	Proximity sensors SIES-Q	Proximity sensors SIES-8M
Size	3 mm, M12, M18	12x26x40 mm, 40x40x120 mm, 5x5x25 mm, 8x8x40 mm, 8x8x59 mm	T-slot
Switching output	NPN, PNP	NPN, PNP	NPN, PNP
Switching element function	N/O contact, N/C contact	Antivalent, N/O contact, N/C contact	N/O contact, N/C contact
Electrical connection	3-wire, 3-pin, cable, cable with plug, M8x1, M12x1, plug	3-wire, 3-pin, cable, M8x1, screw terminal, plug	3-wire, 3-pin, cable, cable with plug, M8x1, rotatable thread
Operating voltage range DC	10 ... 30 V	10 ... 30 V	10 ... 30 V
Description	<ul style="list-style-type: none"> • With increased switching distance • Flush installation • Metric thread • LED switching status indication • Design with stainless steel housing 	<ul style="list-style-type: none"> • Block design • Flush installation • LED switching status indication 	<ul style="list-style-type: none"> • Suitable for position sensing for electric axes and grippers with T-slot • Flush installation • Switching status indication with 2 LEDs for better visibility regardless of the direction from which it is approached • Only inductive sensor for 8 slot with patented LED status indicator
→ Page/online	sieh	sies	1227

Product overview




Position sensors

			
Type	Position sensors SRBS	★ Position sensors SDAP-MHS	Position sensors SDAT-MHS
Design	Round	For T-slot	For T-slot
Position measuring range	>270°	0 ... 160 mm	0 ... 160 mm
Analogue output	50 mA	4 ... 20 mA	4 ... 20 mA
Electrical connection	4-pin, cable with plug, M8, rotatable thread	4-pin, cable with plug, M8, rotatable thread	4-pin, cable with plug, M8, rotatable thread
Description	<ul style="list-style-type: none"> Used to detect rotation of the shaft on rotary drives DRVS and DSM The sensor can be quickly assembled without having to manually search for switching points Simple and reliable operation using just one push-button directly on the device 	<ul style="list-style-type: none"> Only for use with Festo Motion Terminal VTEM Measuring principle: magnetic Hall Insertable in the slot from above, secured with screw Suitable for use with energy chain and robot lines LED status indications Cable length 0.3 m 	<ul style="list-style-type: none"> Measuring principle: magnetic Hall Insertable in the slot from above, secured with screw Suitable for use with energy chain and robot lines LED status indications Cable length 0.3 m Programmable IO-Link/switching output
→ Page/online	1239	sdap	sdat





Position sensors

			
Type	Position transmitters SMAT-8E	Position transmitters SMAT-8M	Position sensors SMH
Design	For T-slot	For T-slot	For grippers
Position measuring range	48 ... 52 mm	40 mm	
Analogue output	0 ... 10 V, 4 ... 20 mA	0 ... 10 V	
Electrical connection	4-pin, M8x1, plug	4-pin, cable with plug, M8x1, rotatable thread	M8x1, cable with plug, 4-pin
Description	<ul style="list-style-type: none"> Measuring principle: magnetic Hall Current and voltage signal at the analogue output Insertable in the slot lengthwise Suitable for use with energy chain and robot lines LED status indications Cable length 2.5 m, 5 m 	<ul style="list-style-type: none"> Measuring principle: magnetic Hall Displacement-proportional analogue output signal Insertable in the slot from above, central clamping Suitable for use with energy chain and robot lines LED status indications Cable length 0.3 m 	<ul style="list-style-type: none"> Measuring principle: magnetic Hall 3 gripper positions can be recorded via the evaluation unit Freely selectable switching points
→ Page/online	smat-8e	smat-8m	smh-h1





Displacement encoders

			
Type	Displacement encoders MME-MTS-TLF	Displacement encoders MLO-POT-TLF	Displacement encoders MLO-POT-LWG
Stroke	225 ... 2000 mm	225 ... 2000 mm	100 ... 750 mm
Measuring principle of displacement encoder	Digital	Analogue	Analogue
Output signal	CAN protocol type SPC-AIF	Analogue	Analogue
Path resolution	0 ... 0.01 mm	0.01 mm	0.01 mm
Description	<ul style="list-style-type: none"> Measuring principle: magnetostrictive Contactless with absolute measurement High travel speed System product for servo-pneumatic positioning technology and Soft Stop IP65 degree of protection 	<ul style="list-style-type: none"> Conductive plastic potentiometer Absolute measurement with high resolution High travel speed and long service life Plug-in connections 	<ul style="list-style-type: none"> Connecting rod potentiometer Absolute measurement with high resolution Long service life High degree of protection Plug-in connections
→ Page/online	mme	mlo	mlo

Pressure and vacuum sensors

Type	 Pressure sensors SDE5	 Pressure sensors SPAN	 Pressure sensors SPAЕ	 Pressure sensors SPAU
Pressure measuring range	-1 ... 10 bar	-1 ... 16 bar	-1 ... 10 bar	-1 ... 16 bar
Switching element function	N/O contact, switchable, N/C contact	N/C or N/O contact, switchable	N/O contact, switchable, N/C contact	N/C or N/O contact, switchable
Pneumatic connection	QS-5/32, QS-1/4, QS-4, QS-6	Male thread G1/8, NPT1/8-27, R1/8, female thread M5, G1/8, push-in connector QS4	Flange, QS-3, QS-4, push-in sleeve QS-4, push-in sleeve QS-6	G1/8, M5, M7, NPT1/8-27, QS-4, QS-5/32, QS-6, R1/4, R1/8
Electrical connection	3-wire, 3-pin, cable, M8x1, plug, to EN 60947-5-2, round design	Plug connector, square design, 4-pin	3-wire, cable, open end	4-pin, M12x1, M8x1, plug, to EN 60947-5-2, round design
Display type		Illuminated LCD	LED display, 2-digit	LED, illuminated LCD
Description	<ul style="list-style-type: none"> Programmable and configurable pressure switch for simple pressure sensing tasks Threshold/window comparator Switching point adjustment by teach-in function Integrated microprocessor Switching status indicated by an LED visible from all sides Certification: c UL us Listed (OL), C-Tick 	<ul style="list-style-type: none"> For monitoring compressed air and non-corrosive gases For network monitoring, regulator monitoring, leak test, object detection Relative method of measurement based on a piezoresistive measuring cell Serial communication integrated using IO-Link 1.1 Compact design High-contrast, blue backlit display 	<ul style="list-style-type: none"> Electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal processing, numeric pressure indicator in percent, operating key and a switching output, PNP/NPN switchable Display of minimum and maximum readings All parameters entered can be transferred to other SPAEs (replicator function) Communication interface IO-Link® 	<ul style="list-style-type: none"> For monitoring compressed air and non-corrosive gases With and without display Transfer of the pressure value as switching signal, analogue signal or via IO-Link® to the connected control system Maximum flexibility through various pneumatic adaptation options and switchable electric outputs
→ Page/online	1245	1251	spae	1259

Pressure and vacuum sensors




Type	 Pressure sensors SPAУ	 Pressure switches SPBA	 Pressure transmitters SPTE	 Pressure transmitters SPTW
Pressure measuring range	-1 ... 100 bar	-1 ... 10 bar	-1 ... 10 bar	-1 ... 10 bar
Switching element function	Switchable	Antivalent, changeover switch		
Pneumatic connection	Male thread G1/2, female thread G1/4	G1/8	Flange, QS-4, push-in sleeve QS-3, QS-4, QS-6	G1/4
Electrical connection	Plug, to EN 60947-5-2, M12x1, 4-pin, 5-pin, round design	Plug, to EN 60947-5-2, M12x1, 4-pin, round	3-wire, cable, open end	4-pin, M12x1, plug, to EN 60947-5-2, round design
Display type	4-character alphanumeric, LED indicator			
Description	<ul style="list-style-type: none"> Highly robust For liquid and gaseous media Quick and easy setting of the switching outputs using three pushbuttons Optimum legibility: display housing rotatable 320°, display at an angle of 45° 	<ul style="list-style-type: none"> Pressure sensor with permanently set switching point For solenoid valve VSVA Mounting: screw-in 	<ul style="list-style-type: none"> Piezoresistive pressure sensor Measured variable: relative pressure Cable length 2.5 m Compact: 8-way wall bracket for manifold assembly 	<ul style="list-style-type: none"> Sensor versions: piezoresistive pressure sensor or metal thin-film pressure sensor Measured variable: relative pressure Operating medium: liquid and gaseous media No seal: pressure measuring cell and stainless steel interfaces IP67 degree of protection
→ Page/online	spaw	spba	spte	sptw

Product overview



Pressure and vacuum sensors

Type	 Pressure switches, vacuum switches PEV, VPEV	 PE-converters PEN, PE, VPE	 Pressure sensors SDE1	 Pressure sensors SDE3
Pressure measuring range	-1 ... 10 bar	-1 ... 0 bar	-1 ... 10 bar	-1 ... 10 bar
Switching element function	Changeover switch	N/O contact, changeover switch	Switchable	Switchable
Pneumatic connection	G1/8, G1/4, M5	G1/8, M5, PK-4	G1/8, QS-4, R1/4, R1/8	QS-5/32, QS-4
Electrical connection	4-pin, type A, M8x1, M12x1, screw terminal, plug, to DIN 43650, to EN 60947-5-2, round design, square design	3 flying leads, 3-wire, 4-wire, cable, open end	M8x1, M12x1, cable with plug, plug, round design, to EN 60947-5-2, 3-pin, 4-pin	4-pin, 5-pin, cable, cable with plug, M8x1, M12x1, plug, to EN 60947-5-2, round design
Display type			Illuminated LCD, backlit LCD	Illuminated LCD
Description	<ul style="list-style-type: none"> Mechanical pressure and vacuum switch Adjustable switching point Mounting: screw-in, via through-holes or via H-rail Visual scale for pressure adjustment Certification: CCC 	<ul style="list-style-type: none"> Pneumatic/electric differential pressure switch Pneumatic/electric pressure transducer Design for vacuum Mounting on mounting frame 2N Splash-proof design Certification: CCC 	<ul style="list-style-type: none"> Five pressure measuring ranges Measurement of relative or differential pressure Switching output PNP, NPN and with analogue power or voltage output Display with LCD or illuminated LCD Mounting: via H-rail, via wall/surface bracket, front panel mounting Certification: c UL us Listed (OL), C-Tick 	<ul style="list-style-type: none"> Five pressure measuring ranges Measurement of relative or differential pressure or two independent pressure inputs Switching output 2x PNP or 2x NPN Numerical and graphical pressure indication Mounting: via H-rail, via wall/surface bracket, front panel mounting, via through-holes Certification: C-Tick, ATEX, c UL us Listed (OL)
→ Page/online	pev	pen	sde1	sde3


Flow sensors

Type	 Flow sensors SFAH	 Flow sensors SFAW	 Flow sensors SFAB
Flow measuring range	0.1 ... 200 l/min	1.8 ... 100 l/min	10 ... 1000 l/min
Operating medium	Compressed air ISO 8573-1:2010 [6:4:4], nitrogen	Liquid media, water, neutral liquids	Compressed air to ISO 8573-1:2010 [6:4:4], compressed air to ISO 8573-1:2010 [7:4:4], nitrogen
Operating pressure	-0.9 ... 10 bar	0 ... 12 bar	0 ... 10 bar
Pneumatic connection	Female thread G1/4, G1/8, for tubing O.D. 4, 6, 8		QS-5/16, QS-1/4, QS-3/8, QS-6, QS-8, QS-10, QS-12
Electrical connection		Straight plug, M12x1, 5-pin, A-coded	5-pin, M12x1, straight plug
NEW	<ul style="list-style-type: none"> New series 		
Description	<ul style="list-style-type: none"> Process monitoring, compressed air monitoring, forming gas monitoring, pneumatic object monitoring, parts handling of ultra-small parts, leak test Compact design 20x58 mm Clear 2-line display Mounting: H-rail mounting, wall or surface mounting, front panel mounting Serial communication integrated using IO-Link 1.1 	<ul style="list-style-type: none"> Cooling circuit monitoring, leakage or line break monitoring, process water monitoring, fill level monitoring Input connection: clamped terminal connection DN15, DN20, barbed hose fitting 13 mm, female thread G1/2, G3/4, G1, user-specific connection With optional integrated temperature sensor Connection to higher-level systems is provided by two switching outputs, an analogue output and/or an IO-Link® interface Certification: RCM, c UL us Listed (OL) Display is rotatable 90° anti-clockwise and 180° clockwise 	<ul style="list-style-type: none"> Flow sensor with integrated digital display With unidirectional flow input Mounting: H-rail mounting, wall or surface mounting Certification: C-Tick
→ Page/online	sfah	sfaw	sfab

Flow sensors





Type	 Flow sensors SFAM	 Flow sensors SFET
Flow measuring range	1000 ... 15000 l/min	0.05 ... 50 l/min
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], nitrogen	Compressed air to ISO 8573-1:2010 [1:4:2], nitrogen
Operating pressure	0 ... 16 bar	-0.9 ... 7 bar
Pneumatic connection	Battery module, G1/2, G1, G1 1/2, NPT1 1/2-11 1/2, NPT1-1 11/2, NPT1/2-14	Female thread G1/8, QS-4, QS-6
Electrical connection	5-pin, M12x1, straight plug	Cable
Description	<ul style="list-style-type: none"> Stand-alone device or combined with MS series service units Supplies absolute flow information and accumulated air consumption measurements Covers large measuring range with great precision thanks to high dynamic response Large, illuminated LCD display 	<ul style="list-style-type: none"> With bidirectional flow input Mounting: through-holes Electrical connection via open cable end Cable length 3 m Certification: C-Tick
→ Page/online	sfam	sfet

Force sensors





Type	 Sensors SKDA
Electrical connection	M12x1, socket, 4-pin, A-coded
Operating voltage range DC	10 ... 30 V
Degree of protection	IP67
Force measuring range	0 ... 17 kN
Description	<ul style="list-style-type: none"> Robust metal housing Thin film sensor
→ Page/online	skda

Product overview


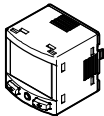
Opto-electrical sensors

				
Type	Diffuse sensors SOEG-RT, retro-reflective sensors SOEG-RS	Through-beam sensors SOEG-E (receiver), SOEG-S (transmitter)	Fibre-optic units SOEG-L	Laser diffuse sensors SOEL-RT, laser retro-reflective sensors SOEL-RS
Method of measurement	Diffuse sensor, retro-reflective sensor, diffuse sensor with background suppression, distance sensor, for transparent objects	Through-beam sensor, receiver, transmitter	Fibre-optic unit	Distance sensor, diffuse sensor, retro-reflective sensor, diffuse sensor with background suppression
Working range	0 ... 5500 mm	0 ... 20000 mm	0 ... 250 mm	0 ... 20000 mm
Size	20x32x12 mm, 30x30x15 mm, 50x50x17 mm, M5x0.5, M12x1, M18x1, M12, M18, 4 mm	M18x1, 20x32x12 mm, 30x30x15 mm, 50x50x17 mm	20x32x12 mm, 30x30x15 mm	20x32x12 mm, 50x50x17 mm
Setting options	Teach-in, teach-in via electrical connection, potentiometer	Teach-in, teach-in via electrical connection, potentiometer	Teach-in, teach-in via electrical connection, potentiometer	Teach-in, teach-in via electrical connection, potentiometer
Type of light	Infrared, red, red polarised	Infrared, red	Red	Laser, pulsed laser, red, red 650 nm, red polarised
Switching output	NPN, PNP	NPN, PNP	NPN, PNP	NPN, PNP
Description	<ul style="list-style-type: none"> Round design, block design Electrical connection via open cable end or plug 	<ul style="list-style-type: none"> Round design, block design Electrical connection via open cable end or plug 	<ul style="list-style-type: none"> Block design Electrical connection via open cable end or plug 	<ul style="list-style-type: none"> Electrical connection via open cable end or plug
→ Page/online	soeg	soeg	soeg	soel





Opto-electrical sensors

				
Type	Colour sensors SOEC	Fibre-optic units SOE4	Fork light barriers SOOF	Fibre-optic cables SOOC, SOEZ
Method of measurement	Colour sensor	Fibre-optic unit	Fork light barrier	Through-beam sensor, fixed focus, fork light barrier, diffuse sensor, fibre-optic cable
Working range	12 ... 32 mm	2 ... 2000 mm		2 ... 650 mm
Size	50x50x17 mm		Fork 120x60 mm, fork 30x35 mm, fork 50x55 mm, fork, 80x55 mm	M4, M6
Setting options	Teach-in, teach-in via electrical connection	Teach-in, teach-in via electrical connection	Teach-in, potentiometer	
Type of light	White	Red	Red	
Switching output	PNP	NPN, PNP	NPN, PNP	
Description	<ul style="list-style-type: none"> Diffuse sensor Block design Electrical connection via M12x1 plug, 8-pin Display via 7 LEDs 	<ul style="list-style-type: none"> Use for precise and space-saving position sensing in electronics and light assembly Switching frequencies up to 8000 Hz Operational with fibre-optic cable SOOC as accessory Variants: LED or LED display, timer function Mounting: H-rail mounting or via through-holes With protection against mutual interference 	<ul style="list-style-type: none"> Through-beam sensor with minimal installation effort Design: polymer or metal Sturdy housing: high shock and vibration resistance IP67 degree of protection Electrical connection via M8x1 plug, 3-pin LED displays 	<ul style="list-style-type: none"> Cable connection, push-in connector
→ Page/online	soec	soe4	soof	sooc

Signal converters



		
Type	Signal converters SVE4	Signal converters SCDN
Signal range	0 ... 10 V +/-0.3 V, 0 ... 20 mA +/-0.6 mA, adapted for position sensors SMH-S1-HG	0 ... 20 mA, 0 ... 10 V
Switching output	2x NPN, 2x PNP	2 x PNP or 2 x NPN, switchable
Switching function	Freely programmable	Freely programmable
Electrical connection Output	4-pin, M8x1, plug, to EN 60947-5-2	Plug, plug pattern L1J, 4-pin
Electrical connection Input	4-pin, socket, M8x1, to EN 60947-5-2	4-pin, analogue input, power supply, 2x socket, plug pattern EC
Description	<ul style="list-style-type: none"> Converts analogue signals into switching points Switching function freely programmable with teach-in Threshold value, hysteresis or window comparator Mounting: H-rail mounting or via adapter plate LED switching status indication Certification: c UL us Listed (OL), C-Tick 	<ul style="list-style-type: none"> Converts analogue signals into IO-Link® Switching function freely programmable with teach-in Large, high-contrast display Mounting: wall or surface mounting, front panel mounting, manifold mounting using mounting brackets
→ Page/online	sve4	scdn

Air gap sensors



				
Type	Air gap sensors SOPA	Micro reflex sensors, reflex sensors RML, RFL	Back pressure end stops SD-2, SD-3, SD-3-N	Air barriers SFL, SML
Sensing range	20 ... 200 µm	Distance between nozzles 4.8 ... 5.1 mm, 4.5 ... 15.5 mm	Distance between nozzles 0 ... 0.5 mm	Distance between nozzles 5 ... 50 mm, to 100 mm
Operating pressure	4 ... 7 bar	0.075 ... 0.5 bar, 0.1 ... 1.5 bar	0 ... 8 bar	0.1 ... 0.4 bar, 0.1 ... 4 bar, 0 ... 8 bar
Display type	Illuminated LCD, multi-colour	Signal pressure ≥0.5 mbar	Pressure signal 0 ... 8 bar	Pressure signal
Operating medium	Compressed air to ISO 8573--1:2010 [7:4:4]	Filtered, unlubricated compressed air	Compressed air, filtered, lubricated or unlubricated	Filtered, unlubricated compressed air
Description	<ul style="list-style-type: none"> Convenient solution for high-precision contact and distance monitoring Setting option: teach-in or numerical setting using three-button operation Integrated air jet function Multi-coloured LCD display Mounting: H-rail mounting, wall mounting, through-hole Certification: C-Tick 	<ul style="list-style-type: none"> Back pressure actuated valve For contactless sensing of indicating instruments, checking pressing and stamping tools, edge control, magazine control, for measuring and counting Can be used even in very dirty environments, in complete darkness, with translucent or magnetic objects 	<ul style="list-style-type: none"> Can be used for stroke-dependent signal generation as a limit switch and fixed stop Ideal for end-position sensing and position control with high accuracy requirements and small actuating forces SD-3-N for sensing fluid levels and heavily foaming liquids For use in inaccessible places 	<ul style="list-style-type: none"> Sender nozzle, receiver nozzle, gap sensor Back pressure actuated valve Operational reliability even in very dirty environments Reliable even with high ambient temperatures Insensitive to mechanical influences and sound waves Reliable even in complete darkness and when sensing translucent objects
→ Page/online	sopa	rfl	sd	sml

Product overview


Sensor boxes

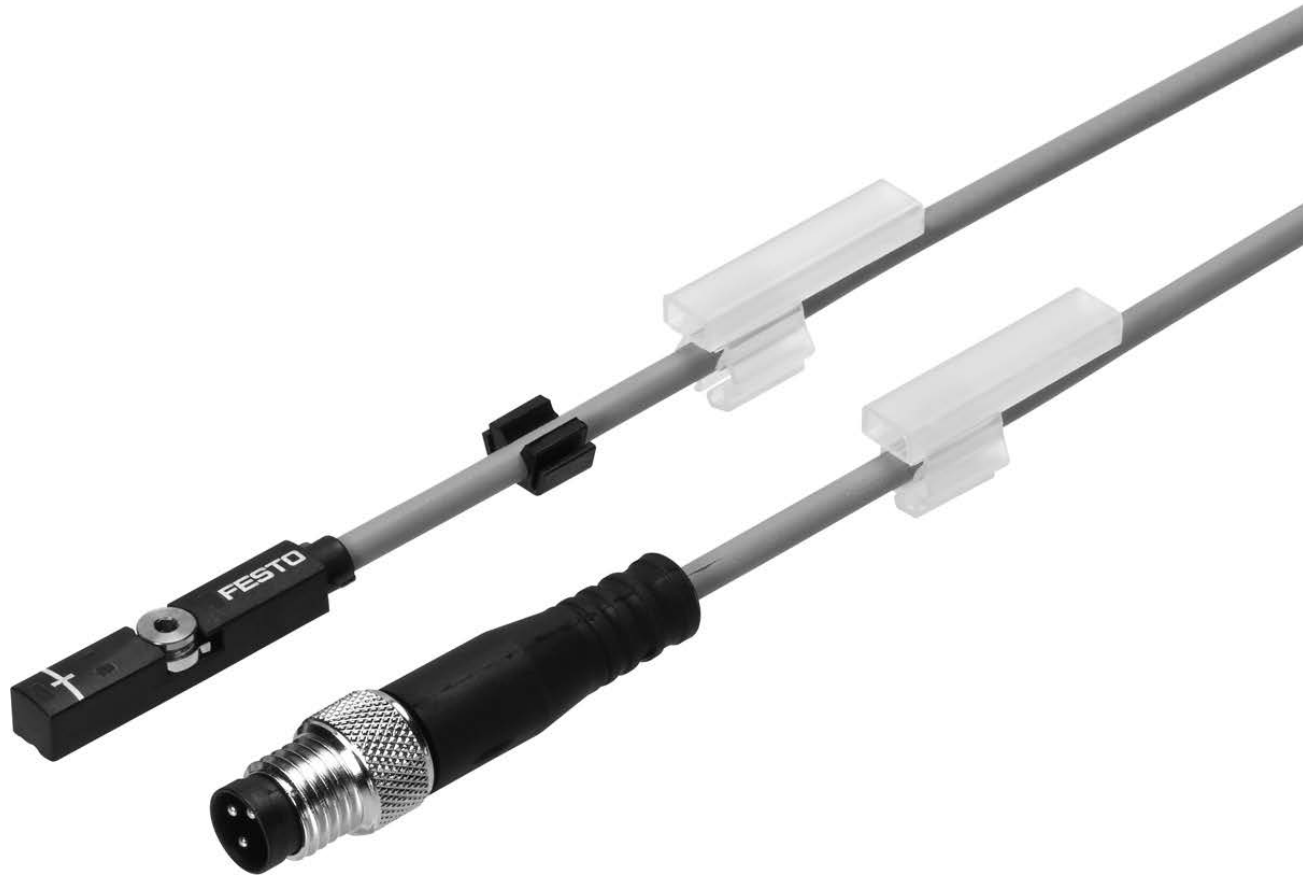
Type	 Sensor boxes SRBC	★ Sensor boxes SRBG	 Sensor boxes SRBE
Measured variable			
Operating voltage range AC	0 ... 250 V		0 ... 250 V
Operating voltage range DC	0 ... 175 V	6 ... 60 V	0 ... 60 V
Electrical connection	Screw terminal, 10-pin		Screw terminal, 10-pin, 14-pin
Type of mounting	On flange ISO 5211, via mounting bracket		On flange ISO 5211, via mounting bracket
Description	<ul style="list-style-type: none"> Pre-assembled mounting adapter for ease of installation Trip cams can be set easily without additional tools Sturdy, corrosion-resistant design, ideal for use in harsh operating conditions Clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator 	<ul style="list-style-type: none"> Compact housing with M12 plug connection Direct mounting on quarter turn actuators to VDI/VDE 3845 AS-Interface version with extended addressing Intrinsically safe version to ATEX and SIL 2 to IEC 61508 	<ul style="list-style-type: none"> Trip cams can be set easily without additional tools Sturdy, corrosion-resistant design, ideal for use in harsh operating conditions Clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator
→ Page/online	srbc	srbg	srbe

Sensor boxes

Type	 Limit switch attachments SRAP	 Limit switch attachments DAPZ-AR
Measured variable	Rotation angle	
Operating voltage range AC		4 ... 250 V
Operating voltage range DC	15 ... 30 V	4 ... 250 V
Electrical connection		
Type of mounting	Screw terminal, 9-pin, plug-in	Screw terminal
Description	<ul style="list-style-type: none"> Based on standard VDI/VDE 3845 (NAMUR) Analogue For monitoring the position of quarter turn actuators Sensors based on 2D Hall technology 	<ul style="list-style-type: none"> Round design Drive interface to standard VDI/VDE 3845 (NAMUR) With display
→ Page/online	srp	dapz

Electromechanical switches

Type	 Micro switch S-3
Operating voltage range AC	12 ... 250 V
Operating voltage range DC	12 ... 250 V
Electrical connection	Screw connector
Degree of protection	IP00
Type of mounting	Two through-holes in housing, mounting plate
Description	<ul style="list-style-type: none"> Electric limit switch N/C contact, N/O contact, changeover switch Actuator attachments: roller lever type AR, roller lever with idle return type AL, whisker actuator type AF
→ Page/online	s-3



Enjoy the benefits of truly reliable cylinder sensing

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- + The right variant for your application
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Proximity sensors > For T-slot >

Proximity sensors, for T-slot

SME-8 ★

SMT-8 ★


Proximity sensors > For T-slot >

Proximity sensors, for T-slot

SME-8★ / SMT-8★

 Overview, configuration and ordering
→ www.festo.com/catalogue/sme-8




 Additional information, support and user documentation
→ www.festo.com/sp/sme-8



★ Quick ordering of basic designs
→ page 1202, 1209



 Selected types in accordance with the ATEX Directive for explosive atmospheres
→ www.festo.com/catalogue/ex



- + SME-8: magnetic reed measuring principle
- + SMT-8: magneto-resistive measuring principle
- + Screw-clamped or clamped in the slot, insertable in the slot from above or lengthwise
- + Cable length 0.1 ... 30 m
- + Variant suitable for use with energy chains and robots
- + SME8...S6: heat-resistant design
- + SMT-8-...-Ex2: variant for use in potentially explosive areas

Product range overview

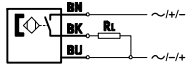
Measuring principle	Type	Electrical connection	Operating voltage range	Switching output	Switching element function	→ Page/ online
Magnetic reed	Standard					
	SME-8M	Cable – 2-wire – 3-wire Cable with plug, 2-pin Cable with plug, 3-pin – M8x1, rotatable thread – M8x1, snap-on flange – M12x1, rotatable thread	5 ... 30 V AC 5 ... 30 V DC	Contacting, bipolar	N/O contact N/C contact	1201
	SME-8	Cable – 2-wire – 3-wire Cable with plug, 3-pin – M8x1	3 ... 230 V AC 3 ... 230 V DC	Contacting, bipolar	N/O contact N/C contact	1203
	SME-8-SL	Plug, 3-pin – M8x1	10 ... 30 V AC 10 ... 30 V DC	Contacting, bipolar	N/O contact	sme
	SME-8-FM	Cable – 2-wire – 3-wire	10 ... 30 V AC 10 ... 30 V DC	Contacting, bipolar	N/O contact	sme
	Block design					
	SMEO-8E	Plug, 3-pin – M8x1 – M12x1	3 ... 230 V AC 3 ... 250 V DC	Contacting, bipolar	N/O contact	smeo
	Heat-resistant up to 120°C					
	SME-8-...-S6	Cable – 2-wire	0 ... 30 V AC 0 ... 30 V DC	Contacting, bipolar	N/O contact	1203
	SMEO-8E-...-S6	Cable – 2-wire	0 ... 30 V AC 0 ... 30 V DC	Contacting	N/O contact	smeo

Proximity sensors SME/SMT-8 ★ for T-slot

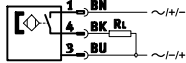
Product range overview

Measuring principle	Type	Electrical connection	Operating voltage range	Switching output	Switching element function	→ Page/online
Magneto-resistive	Short design					
	SMT-8M-A	Cable, 3-wire	5 ... 30 V DC	PNP	N/O contact	1206
		Cable with plug, 3-pin – M8x1, rotatable thread – M12x1, rotatable thread		NPN Non-contacting, 2-wire	N/C contact	
	Standard					
	SMT-8	Cable, 3-wire	10 ... 30 V DC	PNP	N/O contact	smt
		Cable with plug, 3-wire – M8x1		NPN		
	SMT-8-SL	Plug, 3-pin – M8x1	10 ... 30 V DC	PNP	N/O contact	smt
	SMT-8G	Cable, 3-wire	10 ... 30 V DC	PNP	N/O contact	smt
		Cable with plug, rotatable thread – M8x1, 3-pin		NPN		
	Corrosion resistant					
	CRSMT-8M	Cable, 3-wire	5 ... 30 V DC	PNP	N/O contact	1210
		Cable with plug, rotatable thread				
	CRSMT-8	Cable, 3-wire	10 ... 30 V DC	PNP	N/O contact	crsmt
Block design						
SMT0-8E	Plug, 3-pin	10 ... 30 V DC	PNP	N/O contact	smt0	
	– M8x1 – M12x1		NPN			
Welding field resistant						
SDBT-BSW	Cable with plug, 3-pin, rotatable thread	10 ... 30 V DC	PNP	N/O contact	sdbt	
	– Cable, 3-wire		NPN			
	– Cable, 2-wire		Non-contacting, 2-wire			
To EU Explosion Protection Directive (ATEX)						
SDBT-MS-...-EX6	– Cable, 2-wire, open end	8.2 V DC	NAMUR	NAMUR	sdbt	
Magneto-inductive	SMTSO-8E	Plug, 3-pin	10 ... 30 V DC	PNP	N/O contact	smtso
		– M12x1		NPN		

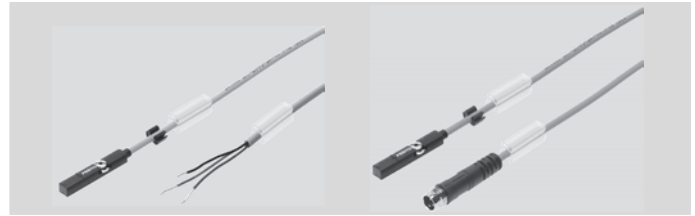
Data sheet



E.g. N/O contact, 3-wire, with cable



E.g. N/O contact, 3-wire, with plug



Technical data		DS		ZS		DO	
SME-8M-							
Measuring principle		Magnetic reed					
Switching output		Contacting, bipolar					
Switching element function		N/O contact		N/O contact		N/C contact	
Operating voltage range	[V DC]	5 ... 30					
Operating voltage range	[V AC]	5 ... 30					
Max. output current	[mA]	500		80		80	
Type of mounting		Screw-clamped, insertable in the slot from above					
Special features		Oil resistant					
Cable length	[m]	0.2 ... 10					
Max. connecting cable length	[m]	10					
Length/width/height	[mm]	32/5/5					

Download CAD data → www.festo.com

Pin allocation to EN 60947-5-2

DS			
Plug, 3-pin			
M12x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

DS			
Plug, 3-pin			
M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

ZS			
Plug, 2-pin			
M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	4	Blue	-

ZS			
Plug, 2-pin			
M12x1	Pin	Wire colour	Allocation
	1	Brown	+
	4	Blue	-

DO			
Plug, 3-pin			
M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

DO			
Plug, 3-pin			
M12x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	2	White	Output

Operating conditions

Ambient temperature	[°C]	-40 ... +70
Ambient temperature with flexible cable installation	[°C]	-5 ... +70

Materials

Housing	PA, TPE-(PU), high-alloy stainless steel, nickel-plated brass
Cable sheath	TPE-U (PU), oil resistant

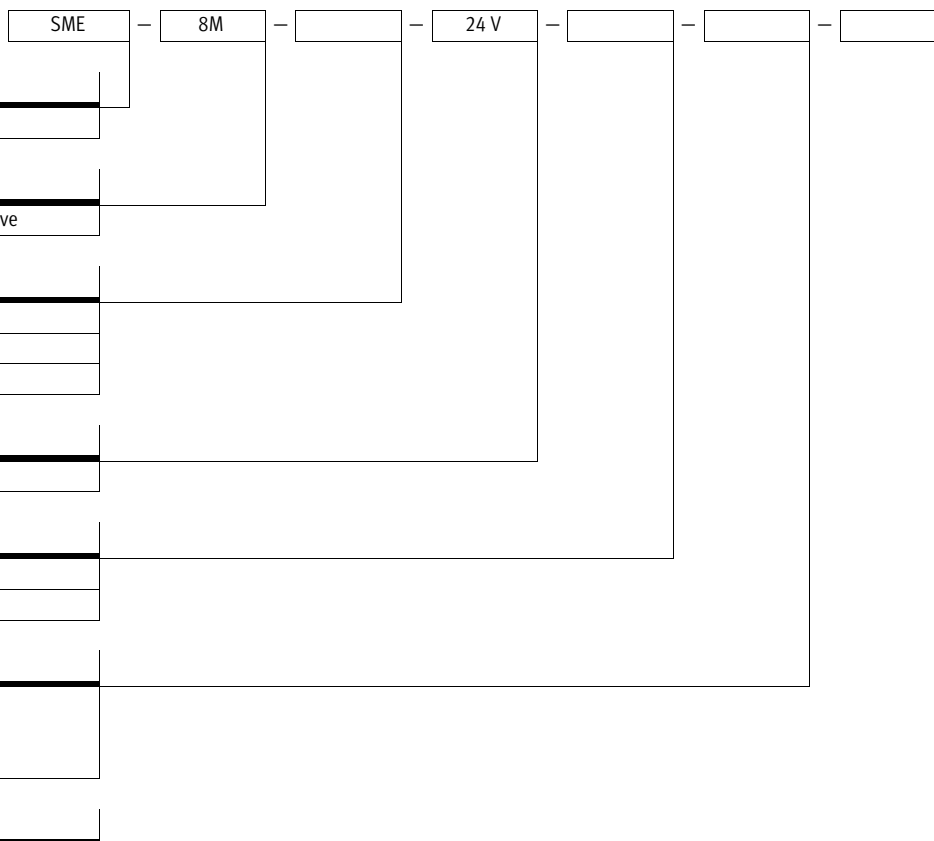
Mechanics

Electrical connection	OE	M...
Type of mounting	Screw-clamped, insertable in the slot from above	
Housing	PA	PA
	High-alloy stainless steel	High-alloy stainless steel
	-	Nickel-plated brass
	-	TPE-U(PUR)

Proximity sensors > For T-slot >

Proximity sensors SME-8M★ for T-slot

Order code



Type	
SME	Proximity sensor, magnetic reed

Design	
8M	For T-slot, insertable in the slot from above

Switching output, switching element function	
ZS	N/O contact, 2-wire
DS	N/O contact, 3-wire
DO	N/C contact, 3-wire

Rated operating voltage	
24 V	24 V DC

Cable characteristic	
K	Standard + energy chain
E	Energy chain + robot

Cable length	
...	0.2 m ... 10 m (0.2 ... 5.0 m in 0.1 m increments, 5.0 ... 10 m in 0.5 m increments)

Connection technology	
OE	Open end
M8	Cable with plug M8x1, snap-on flange
M8D	Cable with plug M8x1, rotatable thread
M12	Cable with plug M12x1, rotatable thread

Order example:

SME-8M-DS-24 V-K-2,5-OE

Proximity sensor, magnetic reed - for T-slot, insertable in the slot from above - N/O contact, 3-wire - 24 V DC - standard + energy chain - cable 2.5 m - open end

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

N/O contact, contacting, bipolar

Part no.	Type
Electrical connection – Cable, 3-wire	
543862	SME-8M-DS-24 V-K-2,5-OE
543863	SME-8M-DS-24 V-K-5,0-OE
Cable with plug, M8x1, rotatable thread, 3-pin	
543861	SME-8M-DS-24 V-K-0,3-M8D
Cable, 2-wire	
543872	SME-8M-ZS-24 V-K-2,5-OE

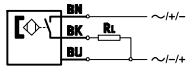
N/C contact, contacting, bipolar

Part no.	Type
Cable, 3-wire	
546799	SME-8M-DO-24 V-K-7,5-OE

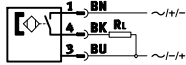
1) All products in this table are easy to select and quick to order.

Proximity sensors SME-8, for T-slot

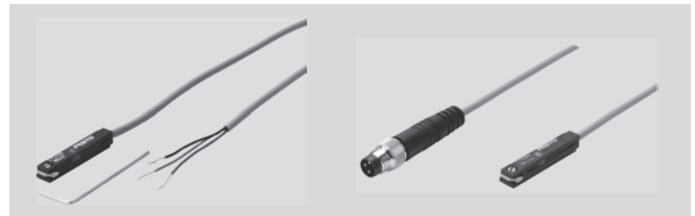
Data sheet



E.g. N/O contact, 3-wire, with cable



E.g. N/O contact, 3-wire, with plug



Technical data		Download CAD data → www.festo.com					
Electrical connection	3-wire			2-wire			
Outlet direction of connection	In-line			In-line			
Variant	Standard			Heat resistant	Standard		
SME-8-	K	S	O	K-24-S6	K-LED-230	ZS	
Measuring principle	Magnetic reed						
Switching output	Contacting, bipolar						
	-			Without LED function			
Switching element function	N/O contact	N/O contact	N/C contact	N/O contact	N/O contact	N/O contact	
Operating voltage range [V DC]	12 ... 30	12 ... 30	12 ... 30	0 ... 30	3 ... 230	12 ... 27	
Operating voltage range [V AC]	12 ... 30	12 ... 30	12 ... 30	0 ... 30	3 ... 230	-	
Max. output current [mA]	500	500	50	500	120	80	
Type of mounting	Clamped in T-slot, insertable in the slot lengthwise						
Cable length [m]	2.5	0.3	7.5	2.5	2.5	2.5	
	5						
	7.5						
Length/width/height [mm]	29/7/5	29/7/5	31/7/5	29/7/5	27/7/10	31/7/5	

Pin allocation to EN 60947-5-2

Plug, 3-pin, M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

Operating conditions

Electrical connection	K	K5	K-7,5	S	O	K-24-S6	K-LED-230	ZS
Ambient temperature [°C]	-40 ... +60	-40 ... +70	-40 ... +70	-40 ... +70	-40 ... +60	-40 ... +120	-30 ... +60	-40 ... +60
Ambient temperature with flexible cable installation [°C]	-5 ... +60	-5 ... +70	-5 ... +70	-5 ... +70	-5 ... +60	-5 ... +120	-5 ... +60	-5 ... +60

Materials	SME-8	SME-8-...-S6
Housing	Epoxy resin, PC, PET, high-alloy stainless steel	
Cable sheath	TPE-U(PUR)	TPE-S

Proximity sensors > For T-slot >

Proximity sensors SME-8, for T-slot

Order code – 3-wire

SME		8						LED		24	
Type											
SME		Proximity sensor, magnetic reed									
Design											
8		For T-slot, insertable in the slot lengthwise									
Switching element function											
-		N/O contact, 3-wire									
0		N/C contact, 3-wire									
Electrical connection, cable length											
K		Cable, 2.5 m (N/O contact)									
		Cable, 7.5 m (N/C contact)									
K5		Cable, 5 m								1	
K-7,5		Cable, 7.5 m								1	
S		Cable with plug M8x1, 0.3 m									
Switching status indication											
LED		Yellow LED									
Rated operating voltage											
24		24 V DC									

1 Not with switching element function 0.

Order example:

SME-8-K-LED-24

Proximity sensor, magnetic reed - for T-slot, insertable in the slot lengthwise - N/O contact, 3-wire - cable 2.5 m - yellow LED - 24 V DC

Order code – 2-wire, heat resistant

SME		8				K		24		S6	
Type											
SME		Proximity sensor, magnetic reed									
Design											
8		For T-slot, insertable in the slot lengthwise									
Switching element function											
-		N/O contact, 2-wire									
Electrical connection, cable length											
K		Cable, 2.5 m									
Rated operating voltage											
24		24 V DC									
Variant											
S6		Heat resistant									

Order example:

SME-8-K-24-S6

Proximity sensor, magnetic reed - for T-slot, insertable in the slot lengthwise - N/O contact, 2-wire - cable 2.5 m - 24 V DC - heat resistant

Proximity sensors SME-8, for T-slot

Order code – 2-wire, in-line connection

		SME	–	8	–		–		–	LED	–	
Type												
SME	Proximity sensor, magnetic reed											
Design												
8	For T-slot, insertable in the slot lengthwise											
Switching element function												
–	N/O contact, 2-wire											
ZS	N/O contact, without LED function, 2-wire											
Electrical connection, cable length												
K	Cable, 2.5 m											¹
KL	Cable, 2.5 m											²
Switching status indication												
LED	Yellow LED											
Rated operating voltage												
24	24 V DC											²
230	230 V AC											¹

¹ Not with switching element function ZS.

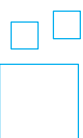
² Only with switching element function ZS.

Order example:

SME-8-K-LED-230

Proximity sensor, magnetic reed - for T-slot, insertable in the slot lengthwise - N/O contact, 2-wire - cable 2.5 m - yellow LED - 230 V DC

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

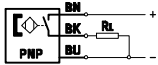
The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

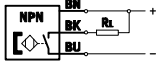
Proximity sensors > For T-slot >

Proximity sensors SMT-8M-A★ for T-slot

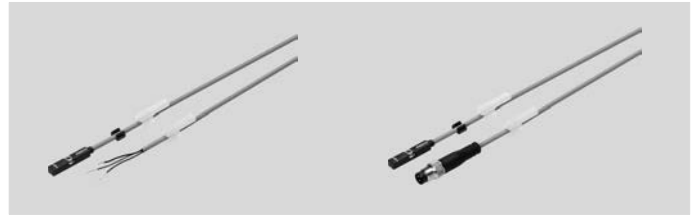
Data sheet



E.g. N/O contact, PNP, with cable



E.g. N/O contact, NPN, with cable



Technical data		Download CAD data → www.festo.com						
SMT-8M-A		PS	NS	PO	ZS	PNS	PSO	
Measuring principle		Magneto-resistive						
Switching output		PNP	NPN	PNP	Non-contacting, 2-wire	PNP, NPN switchable	PNP	
Switching element function		N/O contact	N/O contact	N/C contact	N/O contact	N/O contact	N/C contact, N/O contact switchable	
Operating voltage range	[V DC]	5 ... 30					7 ... 30	
Max. output current	[mA]	100 ¹⁾	100 ¹⁾	100 ¹⁾	80 ¹⁾	100	100	
Max. output current in mounting kits	[mA]	100	100	100	80 ¹⁾	100	100	
Max. switching capacity DC	[W]	2.8	2.8	2.8	1.9	2.7	2.7	
Max. switching capacity DC in mounting kits	[W]	2.8 ²⁾	2.8 ²⁾	2.8 ²⁾	1.5 ²⁾	2.7	2.7	
Type of mounting		Screw-clamped, insertable in the slot from above						
Cable length	[m]	0.1 ... 30						
Max. connecting cable length	[m]	30						
Length/width/height	[mm]	29/5/5					35/5/5	

- 1) Variant ...PS/NS/PO-...-Ex2: max. output current in mounting kits 80 mA, T_a 70°C.
 Variant ...ZS-...-Ex2: max. output current in mounting kits 50 mA, T_a 70°C.
 2) Variant ...PS/NS/PO-...-Ex2: max. switching capacity 2.2 W.
 Variant ...ZS-...-Ex2: max. switching capacity 1.2 W.

Pin allocation to EN 60947-5-2

ZS			
M8x1, 2-pin			
M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	4	Blue	-

ZS			
M12x1, 2-pin			
M12x1	Pin	Wire colour	Allocation
	1	Brown	+
	4	Blue	-

Pin allocation to EN 60947-5-2

PS/NS/PO			
Plug, 3-pin			
M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

PS/NS			
Plug, 3-pin			
M12x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

PO			
Plug, 3-pin			
M12x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	2	White	Output

Data sheet

Operating conditions		
Ambient temperature	[°C]	-40 ... +85
Ambient temperature with flexible cable installation	[°C]	-20 ... +85
ATEX		
SMT-8M-A-...-		Ex2
ATEX category for gas		II 3G
Type of ignition protection for gas		Ex nA IIC T4 X Gc
ATEX category for dust		II 3D
Type of ignition protection for dust		Ex tc IIIC T120°C X Dc IP65
Explosion-proof temperature rating		-40°C ≤ Ta ≤ +70°C
ATEX certification		For zone 2/22
CE marking (see declaration of conformity)		To EU Explosion Protection Directive (ATEX)
Materials		
Housing		PA reinforced, high-alloy stainless steel, nickel-plated brass
Cable sheath		TPE-U(PUR)

Proximity sensors > For T-slot >

Proximity sensors SMT-8M-A★ for T-slot

Order code

SMT-8M - A - [] - 24V - E - [] - [] - [] - []

Type	
SMT-8M	Proximity sensor, magneto-resistive, for T-slot, insertable in the slot from above

Design	
A	Short design

Switching output	
PS	PNP, N/O contact, 3-wire
PO	PNP, N/C contact, 3-wire
NS	NPN, N/O contact, 3-wire
ZS	N/O contact, 2-wire
PNS	PNP, NPN switchable
PSO	PNP, N/C contact, N/O contact switchable

Rated operating voltage	
24 V	24 V DC

Cable characteristic	
E	Energy chain + robot

Cable length	
...	0.1 m ... 30 m (0.1 ... 5.0 m in 0.1 m increments, 5.0 ... 30 m in 0.5 m increments)

Cable designation	
-	With inscription label holder
N	Without inscription label holder

Electrical connection	
OE	Open end
M8	Cable with plug M8x1, snap-on flange
M8D	Cable with plug M8x1, rotatable thread
M12	Cable with plug M12x1, rotatable thread

EU certification	
EX2	II 3GD to EU Explosion Protection Directive (ATEX) 1

1 Not with switching output PNS, PSO.
Minimum cable length 0.2 m.

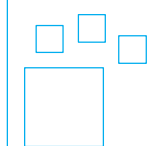
Order example:

SMT-8M-A-PS-24 V-E-0,3-M8D

Proximity sensor, magneto-resistive, for T-slot, insertable in the slot from above - short design - PNP, N/O contact, 3-wire - 24 V DC - energy chain + robot - cable 0.3 m - with inscription label holder - cable with plug M8x1, rotatable thread

Proximity sensors SMT-8M-A★ for T-slot

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

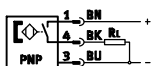
★ Quick ordering¹⁾

Switching output	Electrical connection		Cable length [m]	Part no.	Type
	Cable	Cable with plug, rotatable thread			
		M8x1	M12x1		
N/O contact					
PNP	–	3-pin	–	574334	SMT-8M-A-PS-24 V-E-0,3-M8D
PNP	3-wire	–	–	574335	SMT-8M-A-PS-24 V-E-2,5-OE
PNP	3-wire	–	–	574336	SMT-8M-A-PS-24 V-E-5,0-OE
PNP	–	–	3-pin	574337	SMT-8M-A-PS-24 V-E-0,3-M12
NPN	3-wire	–	–	574338	SMT-8M-A-NS-24 V-E-2,5-OE
PNP	–	–	3-pin	574339	SMT-8M-A-NS-24 V-E-0,3-M8D
Contactless	2-wire	–	–	574341	SMT-8M-A-ZS-24 V-E-5,0-OE-EX2
N/C contact					
PNP	3-wire	–	–	574340	SMT-8M-A-PO-24 V-E-7,5-OE

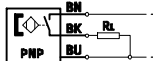
1) All products in this table are easy to select and quick to order.

Proximity sensors CRSMT-8M, for T-slot

Data sheet



E.g. N/O contact, PNP, with cable



- Suitable for use in the food industry
- Acid resistant
- Alkali resistant
- Resistant to cooling lubricants



Technical data

Download CAD data → www.festo.com

CRSMT-8M	
Measuring principle	Magneto-resistive
Switching output	PNP
Switching element function	N/O contact
Operating voltage range [V DC]	5 ... 30
Max. output current [mA]	100
Max. switching capacity DC [W]	2.8
Type of mounting	Screw-clamped, insertable in the slot from above
Cable length [m]	0.3 ... 10
Max. connecting cable length [m]	10
Length/width/height [mm]	29/5/5

Pin allocation to EN 60947-5-2

M8x1, 3-pin

N/O contact

	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

M12x1, 3-pin

N/O contact

	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

Data sheet

Operating conditions

Ambient temperature [°C]	-40 ... +85
--------------------------	-------------

Materials

Housing	High-alloy stainless steel, PA, PP
Cable sheath	TPE-O

Proximity sensors CRSMT-8M, for T-slot

Order code

		CRSMT	-	8M	-	PS	-	24 V	-	K	-		-	
Type														
CRSMT	Proximity sensor, magneto-resistive, suitable for use in the food industry, resistant to acids and cooling lubricants													
Design														
8M	For T-slot, insertable in the slot from above													
Switching output														
PS	PNP, N/O contact, 3-wire													
Rated operating voltage														
24 V	24 V DC													
Cable characteristic														
K	Standard and energy chain													
Cable length														
0.3	Cable, 0.3 m													<input type="checkbox"/>
5.0	Cable, 5 m, open end													<input type="checkbox"/>
10.0	Cable, 10 m, open end													<input type="checkbox"/>
Connection														
OE	Open end													
M8D	M8x1, rotatable thread													
M12	M12													

Only with M8D or M12 connection.


Only with OE connection.

Order example:

CRSMT-8M-PS-24 V-K-5,0-OE

Proximity sensor, magneto-resistive, suitable for the food industry, resistant to acids and cooling lubricants - for T-slot, insertable in the slot from above - PNP, N/O contact, 3-wire - 24 V DC - standard and energy chain - cable 5 m - open end

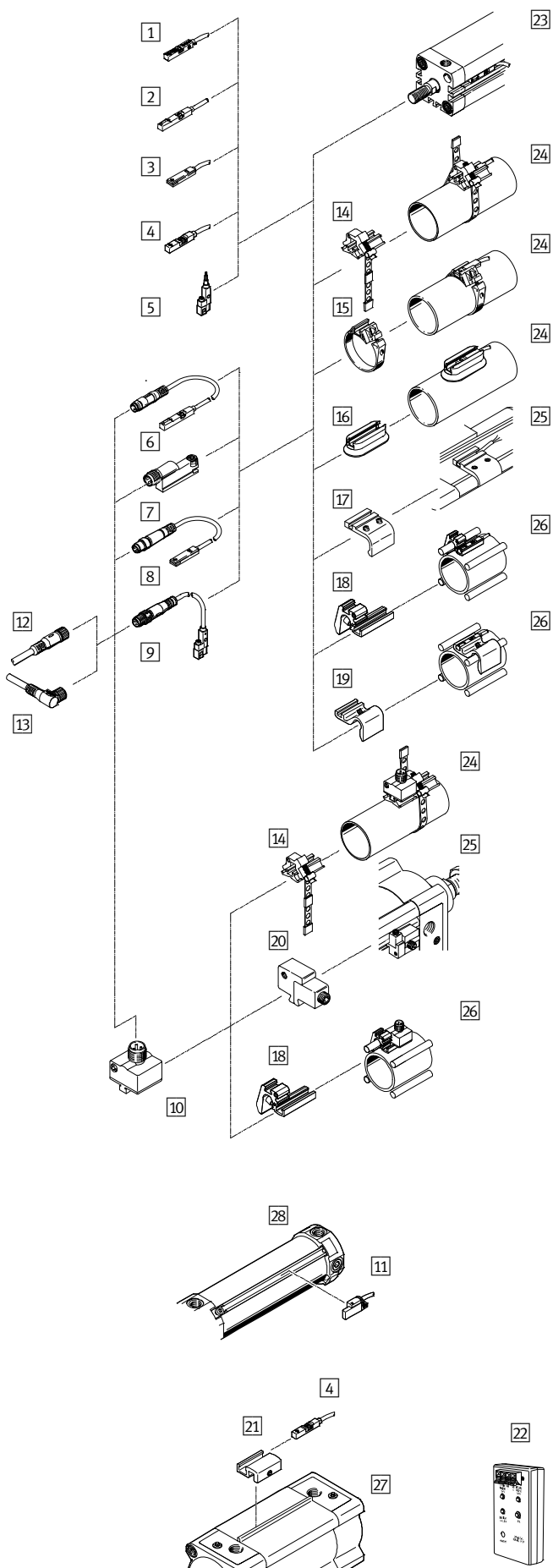
Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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Proximity sensors > For T-slot >

Proximity sensors SME/SMT-8, for T-slot





Accessories












		→ Page/ online
Proximity sensor		
1	SMT-8M-A, with cable	1206
2	SME-8M-...-OE, with cable SDBT-MS-...-EX6, with explosion protection	1201 sdbt
3	SME-8-FM-...-K, with cable CRSMT-8-K, with cable, corrosion resistant	sme crsmt
4	CRSMT-8-M, with cable	1210
5	SMT-8G-...-OE, with cable	smt
6	SME-8M-...-M, with cable and plug	1201
7	SME-8-SL, with plug SMT-8-SL, with plug	sme smt
8	SME-8, with cable and plug	1203
9	SMT-8G-...-M, with cable and plug	smt
10	SME0-8E, with plug, block design SMT0-8E, with plug, block design SMTS0-8E, with plug, welding field resistant	smeo smt0 smts0
11	SDBT-BSW, welding field resistant	sdbt
Accessories		
12	Connecting cable NEBU-M...G	1213
13	Connecting cable NEBU-M...W	1213
14	Mounting kit SMBR-8-8/100-S6, heat resistant	1213
15	Mounting kit SMBR	1213
16	Mounting kit CRSMB, corrosion resistant	1213
17	Mounting kit SMB-8-FENG	1213
18	Mounting SMBZ-8	1213
19	Sensor bracket DASP-M4	1213
20	Mounting kit SMB-8E	1213
21	Mounting kit SMB-8-C	1213
22	Sensor tester SM-TEST-1	sm-test-1
-	Positioning element SMM-8	1213
-	Inscription label ASLR	1213
-	Clip SMBK-8	1213
-	Safety clip NEAU	neau
Drives		
23	Drives with T-slot	-
24	Round cylinders	-
25	Standards-based cylinders DSBC	-
26	Drives with tie or mounting rod	-
27	Standards-based cylinders DSBF	-
28	Hinge cylinders DFAW	-




Proximity sensors SME/SMT-8, for T-slot

Accessories – Ordering data

	Cable length [m]		Part no.	Type
12 Connecting cable, straight socket M8x1 Data sheets → Page 1543				
	2.5	★	541333	NEBU-M8G3-K-2.5-LE3
	5	★	541334	NEBU-M8G3-K-5-LE3
13 Angled socket M8x1 Data sheets → Page 1543				
	2.5	★	541338	NEBU-M8W3-K-2.5-LE3
	5	★	541341	NEBU-M8W3-K-5-LE3
12 Straight socket M12x1 Data sheets → Page 1543				
	2.5	★	541363	NEBU-M12G5-K-2.5-LE3
	5	★	541364	NEBU-M12G5-K-5-LE3
13 Angled socket M8x1 Data sheets → Page 1543				
	2.5		541367	NEBU-M12W5-K-2.5-LE3
	5		541370	NEBU-M12W5-K-5-LE3

	For Ø		Part no.	Type
14 Mounting kit, max. ambient temperature 120°C				
	8 ... 100	★	538937	SMBR-8-8/100-S6
15 Max. ambient temperature 70°C				
	8		175091	SMBR-8-8
	10		175092	SMBR-8-10
	12	★	175093	SMBR-8-12
	16	★	175094	SMBR-8-16
	20	★	175095	SMBR-8-20
	25	★	175096	SMBR-8-25
	32		175097	SMBR-8-32
	40		175098	SMBR-8-40
	50		175099	SMBR-8-50
63		175100	SMBR-8-63	

	For Ø		Part no.	Type
16 ... 21 Mounting kit				
	32 ... 100		525565	CRSMB-8-32/100
	32/40		175705	SMB-8-FENG-32/40
	50/63		175706	SMB-8-FENG-50/63
	80/100		175707	SMB-8-FENG-80/100
	32 ... 100		537806	SMBZ-8-32/100
	125 ... 320		537808	SMBZ-8-125/320
	125		1451483	DASP-M4-125-A
	160		1553813	DASP-M4-160-A
	250		1456781	DASP-M4-250-A
	320		3015256	DASP-M4-320-A
	–		178230	SMB-8E
	–		1806790	SMB-8-C

	Size		Part no.	Type	PU ¹⁾
Positioning element					
	10		547941	SMM-8	10
Inscription label					
	23x4 mm		541598	ASLR-L-423	34
Clip					
	–		534254	SMBK-8	1

1) Packaging unit quantity.

Proximity sensors > For T-slot >



For reliable cylinder position detection

- + Optimised for drives from Festo
- + Safe stop thanks to patented mounting

Proximity sensors > For C-slot >

Proximity sensors, for C-slot

SME-10 ★

SMT-10 ★

Proximity sensors > For C-slot >

Proximity sensors, for C-slot

SME-10★ / SMT-10★

Overview, configuration and ordering
 → www.festo.com/catalogue/sme-10

Additional information, support and user documentation
 → www.festo.com/sp/sme-10

★ Quick ordering of basic designs
 → page 1219, 1224

Selected types in accordance with the ATEX Directive for explosive atmospheres
 → www.festo.com/catalogue/ex



- + SME-10: magnetic reed measuring principle
- + SMT-10: magneto-resistive measuring principle
- + Clamped in C-slot, insertable in the slot from above or lengthwise
- + Cable length 0.2 ... 10 m

Proximity sensors SME/SMT-10 ★ for C-slot

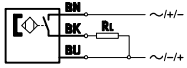
Product range overview

Measuring principle	Type	Electrical connection	Operating voltage range	Switching output	Switching element function	→ Page/ online
Magnetic reed	SME-10M	Cable – 2-wire – 3-wire Cable with plug, 2-pin Cable with plug, 3-pin – M8x1, rotatable thread – M8x1, snap-on flange – M12x1, rotatable thread	5 ... 30 V AC 5 ... 30 V DC	Contacting, bipolar	N/O contact	1218
	SME-10	Cable – 3-wire Cable with plug, 3-pin – M8x1	12 ... 27 V AC 12 ... 27 V DC	Contacting, bipolar	N/O contact	1220
Magneto-resistive	SMT-10M	Cable – 2-wire – 3-wire Cable with plug, 2-pin Cable with plug, 3-pin – M8x1, rotatable thread – M8x1, snap-on flange – M12x1, rotatable thread	10 ... 30 V DC	PNP NPN Non-contacting, 2-wire	N/O contact	1222
	SMT-10G	Cable – 3-wire Cable with plug, 3-pin – M8x1, rotatable thread	10 ... 30 V DC	PNP, NPN	N/O contact	smt-10

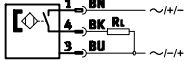
Proximity sensors > For C-slot >

Proximity sensors SME-10M ★ for C-slot

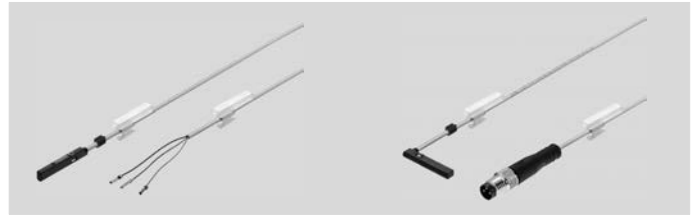
Data sheet



E.g. N/O contact, 3-wire, with cable



E.g. N/O contact, 3-wire, with plug



Technical data		Download CAD data → www.festo.com	
SME-10M-		DS	ZS
Measuring principle	Magnetic reed		
Switching output	Contacting, bipolar		
Switching element function	N/O contact		
Operating voltage range [V DC]	5 ... 30		
Operating voltage range [V AC]	5 ... 30		
Max. output current [mA]	300	100	
Type of mounting	Screw-clamped, insertable in the slot from above		
Outlet direction of connection	In-line		
	Lateral		
Special features	Oil resistant		
Cable length [m]	0.2 ... 10		
Max. connecting cable length [m]	10		
Length/width/height [mm]	27/3/5 (25/3/6) ¹⁾		

1) Value in brackets for lateral connection.

Pin allocation to EN 60947-5-2

M8x1				3-pin			
2-pin	Pin	Wire colour	Allocation	3-pin	Pin	Wire colour	Allocation
	1	Brown	+		1	Brown	+
	4	Black	Output		3	Blue	-
					4	Black	Output

M12x1				3-pin			
2-pin	Pin	Wire colour	Allocation	3-pin	Pin	Wire colour	Allocation
	1	Brown	+		1	Brown	+
	4	Black	Output		3	Blue	-
					4	Black	Output

Operating conditions		
Ambient temperature [°C]	-40 ... +70	
Ambient temperature with flexible cable installation [°C]	-20 ... +70	

Materials	
Housing	PA reinforced, high-alloy stainless steel
Cable sheath	TPE-U (PUR)

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Order code

SME		-	10M	-		-	24 V	-	E	-		-		-	
Type															
SME	Proximity sensor, magnetic reed														
Design															
10M	For C-slot, insertable in the slot from above														
Switching output, switching element function															
DS	N/O contact, 3-wire														
ZS	N/O contact, 2-wire														
Rated operating voltage															
24 V	24 V DC														
Cable characteristic															
E	Energy chain + robot														
Cable length															
...	0.2 m ... 10 m (0.2 ... 5.0 m in 0.1 m increments, 5.0 ... 10 m in 0.5 m increments)														
Connection direction															
L	In-line														
Q	Lateral														
Cable designation															
-	With inscription label holder														
N	Without inscription label holder														
Connection technology															
OE	Open end														
M8	Cable with plug M8x1, snap-on flange														
M8D	Cable with plug M8x1, rotatable thread														
M12	Cable with plug M12x1, rotatable thread														

Order example:

SME-10M-DS-24 V-E-2,5-L-OE

Proximity sensor, magnetic reed - for C-slot, insertable in the slot from above - N/O contact, 3-wire - 24 V DC - energy chain + robot - cable 2.5 m - in-line - with inscription label holder - open end

★ Quick ordering¹⁾

N/O contact, contacting, bipolar

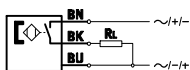
Part no.	Type
Electrical connection – Cable, 3-wire	
551365	SME-10M-DS-24 V-E-2,5-L-OE
Cable, 2-wire with plug, rotatable thread	
551367	SME-10M-DS-24 V-E-0,3-L-M8D

Part no.	Type
Electrical connection – Cable, 2-wire	
551369	SME-10M-ZS-24 V-E-2,5-L-OE

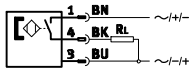
1) All products in this table are easy to select and quick to order.

Proximity sensors SME-10, for C-slot

Data sheet



N/O contact, 3-wire, with cable



N/O contact, 3-wire, with plug



Technical data		Download CAD data → www.festo.com	
SME-10-...-	K	S	
Measuring principle	Magnetic reed		
Switching output	Contacting, bipolar		
Switching element function	N/O contact		
Operating voltage range [V DC]	12 ... 27		
Operating voltage range [V AC]	12 ... 27		
Max. output current [mA]	100		
Type of mounting	Clamped in C-slot, insertable in the slot lengthwise		
Outlet direction of connection	In-line		
	Lateral		
Cable length [m]	2.5	0.3	
Length/width/height [mm]	22/4/6 (19/6/9) ¹⁾		

1) Value in brackets for lateral connection.

Pin allocation to EN 60947-5-2

Plug, 3-pin

M8x1	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	-
	4	Black	Output

Operating conditions

Ambient temperature [°C]	-20 ... +70
Ambient temperature with flexible cable installation [°C]	-5 ... +70

Materials	K	S
Housing	High-alloy stainless steel, PPS	High-alloy stainless steel, nickel-plated brass, PPS, TPE-U (PU)
Cable sheath	TPE-U (PUR)	

Proximity sensors SME-10, for C-slot

Order code

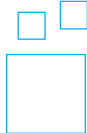
		SME	–	10	–		–	LED	–	24
Type										
SME	Proximity sensor, magnetic reed									
Design										
10	For C-slot, insertable in the slot lengthwise									
Electrical connection, cable length, outlet direction of connection										
KL	Cable, 2.5 m, in-line									
KQ	Cable, 2.5 m, lateral									
SL	Cable with plug M8x1, 0.3 m, in-line									
SQ	Cable with plug M8x1, 0.3 m, lateral									
Switching status indication										
LED	Yellow LED									
Rated operating voltage										
24	24 V DC									

Order example:

SME-10-KL-LED-24

Proximity sensor, magnetic reed - for C-slot, insertable in the slot lengthwise - cable 2.5 m, in-line - yellow LED - 24 V DC

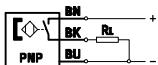
Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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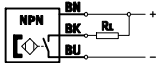
Proximity sensors > For C-slot >

Proximity sensors SMT-10M★ for C-slot

Data sheet



E.g. PNP, N/O contact, with cable



E.g. NPN, N/O contact, with cable



Technical data		Download CAD data → www.festo.com	
SMT-10M-	PS	NS	ZS
Measuring principle	Magneto-resistive		
Switching output	PNP	NPN	Non-contacting, 2-wire
Switching element function	N/O contact		
Operating voltage range [V DC]	10 ... 30		
Max. output current [mA]	100		
Type of mounting	Screw-clamped, insertable in the slot from above		
Outlet direction of connection	In-line		
	Lateral		
Cable length [m]	0.2 ... 30		
Max. connecting cable length [m]	30		
Length/width/height [mm]	23/3/5 (21/3/6) ¹⁾		

1) Value in brackets for lateral connection.

Pin allocation to EN 60947-5-2

M8x1							
2-pin	Pin	Wire colour	Allocation	3-pin	Pin	Wire colour	Allocation
	1	Brown	+		1	Brown	+
	4	Black	Output		3	Blue	-
					4	Black	Output

M12x1							
2-pin	Pin	Wire colour	Allocation	3-pin	Pin	Wire colour	Allocation
	1	Brown	+		1	Brown	+
	4	Black	Output		3	Blue	-
					4	Black	Output

Operating conditions

Ambient temperature [°C]	-40 ... +70
--------------------------	-------------

Materials

Housing	High-alloy stainless steel, PA reinforced
Cable sheath	TPE-U(PUR)

Proximity sensors SMT-10M★ for C-slot

Order code

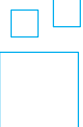
Type	
SMT	Proximity sensor, magneto-resistive
Design	
10M	For C-slot, insertable in the slot from above
Switching output, switching element function	
PS	PNP, N/O contact, 3-wire
NS	NPN, N/O contact, 3-wire
ZS	N/O contact, 2-wire
Rated operating voltage	
24 V	24 V DC
Cable characteristic	
E	Energy chain + robot
Cable length	
...	0.2 m ... 30 m (0.2 ... 5.0 m in 0.1 m increments, 5.0 ... 30 m in 0.5 m increments)
Connection direction	
L	In-line
Q	Lateral
Cable designation	
-	With inscription label holder
N	Without inscription label holder
Connection technology	
OE	Open end
M8	Cable with plug M8x1, snap-on flange
M8D	Cable with plug M8x1, rotatable thread
M12	Cable with plug M12x1, rotatable thread

Order example:

SMT-10M-PS-24V-E-2,5-L-OE

Proximity sensor, magneto-resistive - for C-slot, insertable in the slot from above - PNP, N/O contact, 3-wire - 24 V DC - energy chain + robot - cable 2.5 m - in-line - with inscription label holder - open end

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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Proximity sensors > For C-slot >

Proximity sensors SMT-10M★ for C-slot

★ Quick ordering¹⁾

N/O contact

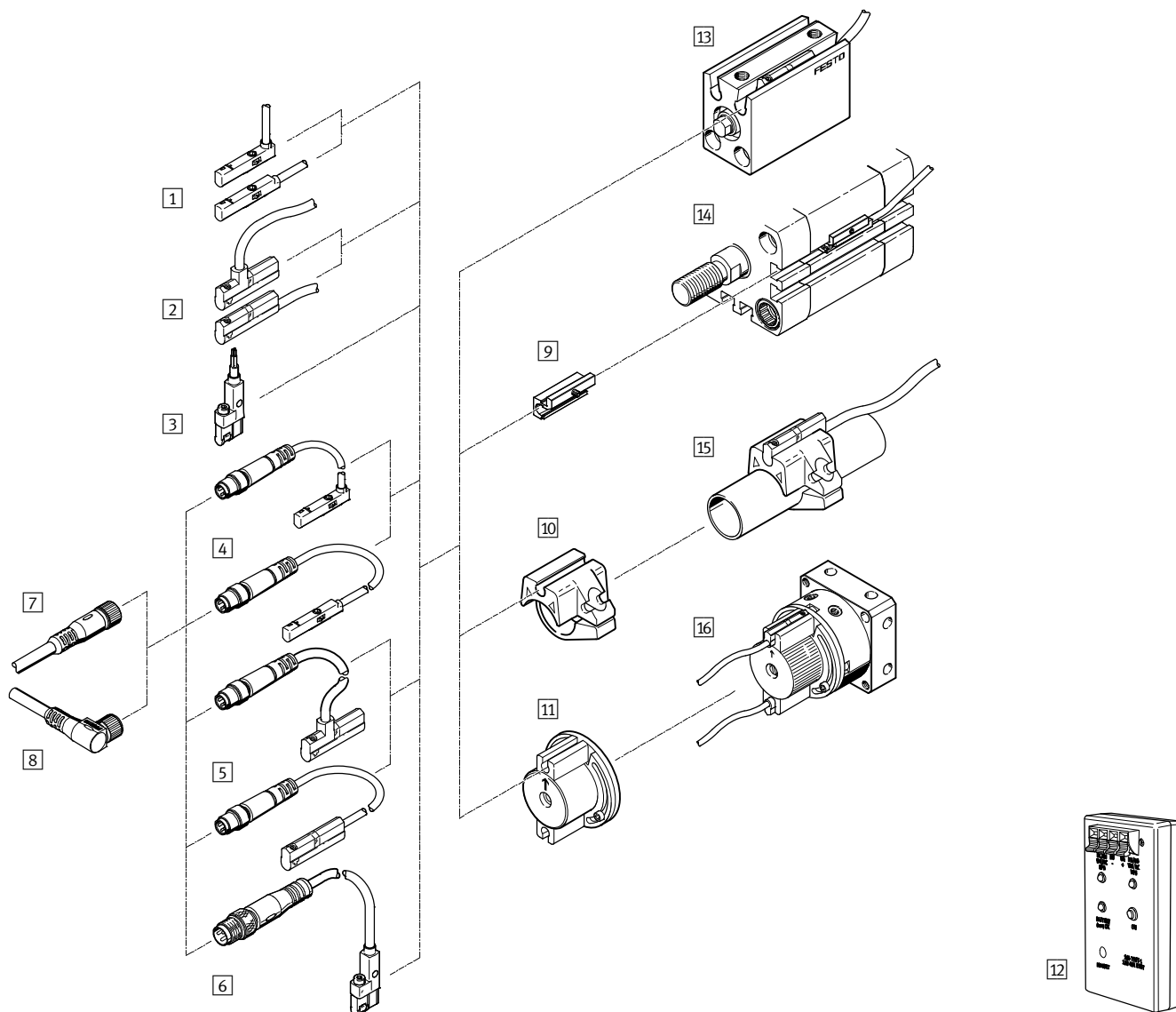
Part no.	Type
Electrical connection – Cable, 3-wire, PNP	
551373	SMT-10M-PS-24 V-E-2,5-L-OE
Cable with plug, M8x1, rotatable thread, 3-pin, PNP	
551375	SMT-10M-PS-24 V-E-0,3-L-M8D
Electrical connection – Cable, 3-wire, NPN	
551377	SMT-10M-NS-24 V-E-2,5-L-OE
Cable with plug, M8x1, rotatable thread, 3-pin, NPN	
551379	SMT-10M-NS-24 V-E-0,3-L-M8D

Part no.	Type
Cable, 2-wire, non-contacting	
551382	SMT-10M-ZS-24 V-E-2,5-L-OE

1) All products in this table are easy to select and quick to order.

Proximity sensors SME/SMT-10, for C-slot

Accessories



Proximity sensor		→ Page/ online
1	SME-10M-...-OE, with cable	1218
	SMT-10M-...-OE, with cable	1222
2	SME-10-...-K, with cable	1220
3	SMT-10G-...-OE, with cable	smt-10
4	SME-10M-...-M..., with cable with plug	1218
	SMT-10M-...-M..., with cable with plug	1222
5	SME-10-...-S..., with cable with plug	1220
6	SMT-10G-...-M..., with cable with plug	smt-10



Accessories		→ Page/ online
7	Connecting cable NEBU-M8G3	1226
8	Connecting cable NEBU-M8W3	1226
9	Mounting SMBN-10	1226
10	Mounting kit SMBR-10	1226
11	Mounting kit WSM-...-SME-10	1226
12	Sensor tester SM-TEST-1	sm-test-1
-	Positioning element SMM-10	1226
	Inscription label ASLR	1226
	Safety clip NEAU	neau
	Clip SMBK-8	smbk
Drives		
13	Drives with C-slot	-
14	Drives with T-slot	
15	Round cylinders	
16	Swivel module DSM	




11
Sensors



Proximity sensors > For C-slot >

Proximity sensors SME/SMT-10, for C-slot

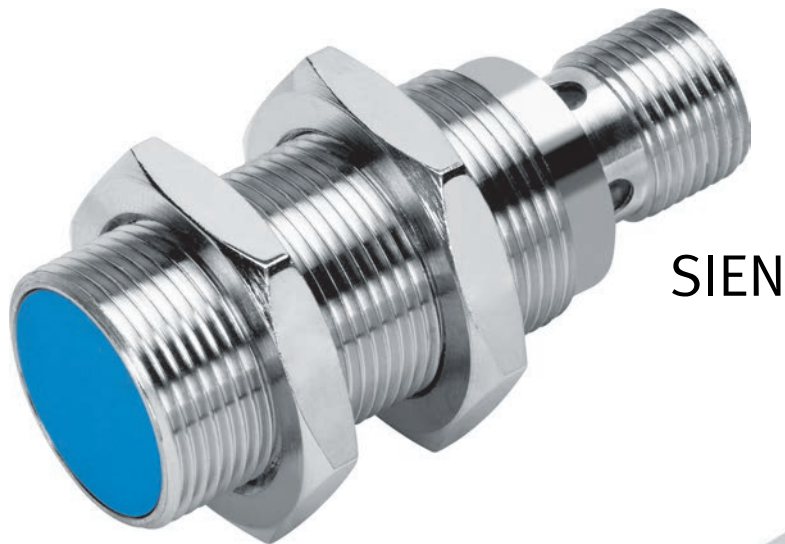
Accessories – Ordering data

	Cable length [m]		Part no.	Type
7 Connecting cable, straight socket M8x1 Data sheets → Page 1543				
	2.5	★	541333	NEBU-M8G3-K-2.5-LE3
	5	★	541334	NEBU-M8G3-K-5-LE3
8 Angled socket M8x1				
	2.5	★	541338	NEBU-M8W3-K-2.5-LE3
	5	★	541341	NEBU-M8W3-K-5-LE3

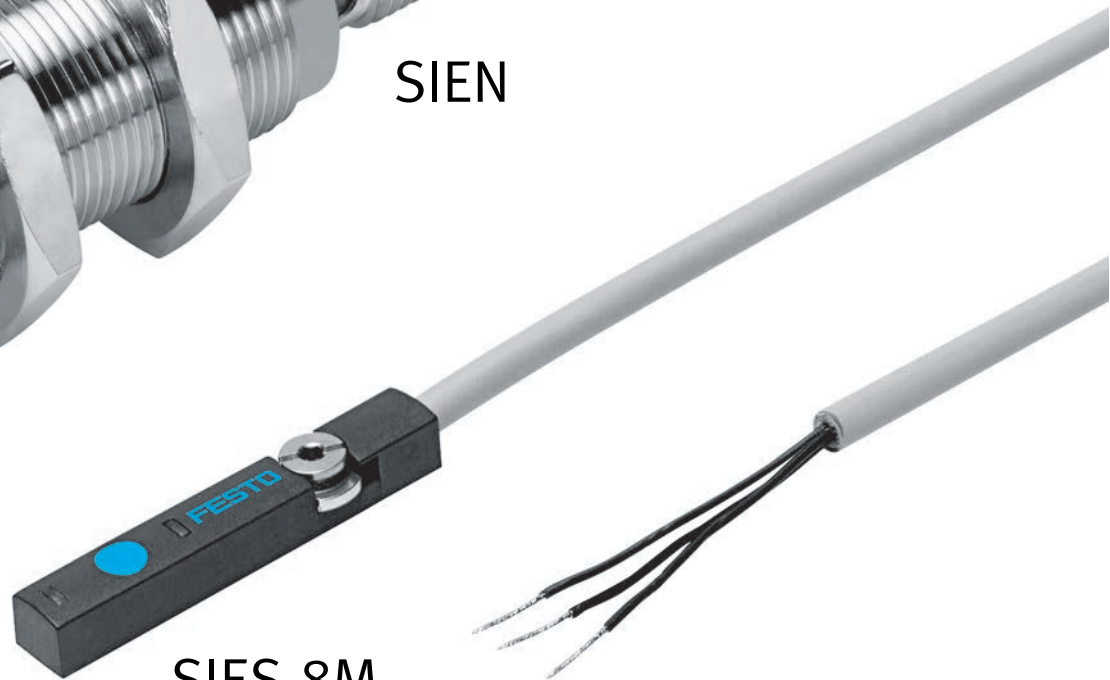
	For Ø		Part no.	Type
9 Mounting				
	125 ... 320		537809	SMBN-10
10 Mounting kit for round cylinders				
	8		175101	SMBR-10-8
	10		173227	SMBR-10-10
	12		175102	SMBR-10-12
	16		173228	SMBR-10-16
	20		175103	SMBR-10-20
	25		175104	SMBR-10-25
	32		175105	SMBR-10-32
	40		175106	SMBR-10-40
	50		175107	SMBR-10-50
	63		175108	SMBR-10-63
11 For swivel module				
	6		173205	WSM-6-SME-10
	8		173206	WSM-8-SME-10
	10		173207	WSM-10-SME-10

	Size		Part no.	Type	PU ¹⁾
Positioning element					
	10		547942	SMM-10	10
Inscription label					
	23x4 mm		541598	ASLR-L-423	34

1) Packaging unit quantity.



SIEN



SIES-8M

Detect metal objects in your system safely and reliably

- + Wide range of designs
- + Optional variants and materials depending on the application

Inductive sensors >

Proximity sensors, inductive


SIEN 
SIES-8M

Inductive sensors >

Proximity sensors, inductive

SIEN★ / SIES-8M

 Overview, configuration and ordering
→ www.festo.com/catalogue/sie

 Additional information, support and user documentation
→ www.festo.com/sp/sie

★ Quick ordering of basic designs
→ page 1233



- + With standard switching distance
- + Round design, metric thread, for T-slot
- + Flush or non-flush mounting
- + With switching status indication
- + Design with metal housing
- + Design with polyamide housing

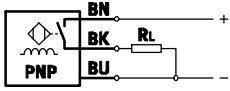
Product range overview

Version	Type	Operating voltage	Switching output/ analogue output	Type of mounting	Size	→ Page/ online
Reduction factor, material-specific						
Standard switching distance	SIEN Basic design	10 ... 30 V DC 15 ... 34 V DC	PNP NPN	Flush Not flush	∅ 4 mm, M5, ∅ 6.5 mm, M8, M12, M18, M30	1230
	SIEN-...-PA Polyamide housing	10 ... 30 V DC	PNP NPN	Flush Not flush	M12, M18, M30	1231
	SIED Basic design	20 ... 265 V AC 20 ... 320 V DC	Non-contacting, 2-wire	Flush Not flush	M12, M18, M30	sied
	SIED-...-PA Polyamide housing	20 ... 250 V AC 10 ... 300 V DC	Non-contacting, 2-wire	Flush Not flush	M12, M18, M30	sied
	SIES Special design	10 ... 30 V DC	PNP NPN	Flush	5x5x25 mm ... 40x40x120 mm	sies
	Increased sensing distance	SIEH Basic design	10 ... 30 V DC 15 ... 34 V DC	PNP NPN	Flush	∅ 3 mm, M12, M18
SIEH-...-CR Stainless steel housing		10 ... 30 V DC	PNP NPN	Flush	M12, M18	sieh
Analogue output	SIEA	15 ... 30 V DC	0 ... 10 V and 4 ... 20 mA	Flush	M8, M12, M18, M30	siea
Reduction factor 1 for all metals, welding field resistant						
Increased sensing distance	SIEF Basic design	10 ... 65 V DC	PNP NPN	Flush Partially flush	M8, M12, M18, M30, 40x40x65 mm	sief
	SIEF-...-WA Housing resistant to welding spatter	10 ... 30 V DC	PNP NPN	Flush Partially flush	M12, M18, M30	sief

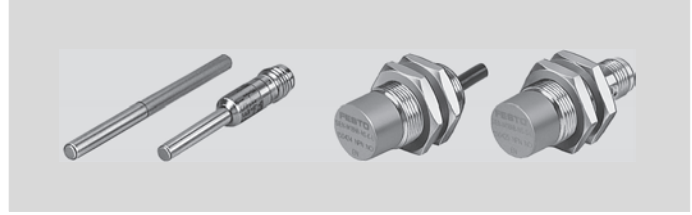
Sensors > Inductive sensors >

Proximity sensors SIEN ★ inductive

Data sheet – With standard switching distance



E.g. N/O contact, PNP, with cable



Technical data			Download CAD data → www.festo.com						
Size			4 mm	6.5 mm	M5	M8	M12	M18	M30
Rated operating distance	Flush	[mm]	0.8	1.5	0.8	1.5	2	5	10
	Not flush	[mm]	–	–	–	2.5	4	8	15
Switching output	PNP NPN								
Switching element function	N/O contact N/C contact								
Type of mounting	Flush – Not flush								
Type of mounting	Clamped				Via lock nut				
Electrical connection	Cable, 3-wire						Plug connector M12x1, 3-pin		
Operating voltage range	[V DC]	10 ... 30							
Max. output current	[mA]	200							
∅/length	[mm]	8/42 (4/25) ¹⁾	8/45 (6.5/35) ¹⁾	8/42 (5/25) ¹⁾	8/45 (8/35) ¹⁾	12/45 (12/35) ¹⁾	18/48.5 (18/35) ¹⁾	30/48.5 (30/35) ¹⁾	
Max. connecting cable length	[m]	2.5							

1) Value in brackets for electrical connection via cable.

Pin allocation to EN 60947-5-2

M8x1, 3-pin

N/O contact and N/C contact			
	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	–
	4	Black	Output

M12x1, 3-pin

N/O contact			
	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	–
	4	Black	Output

M12x1, 3-pin

N/C contact			
	Pin	Wire colour	Allocation
	1	Brown	+
	3	Blue	–
	2	White	Output

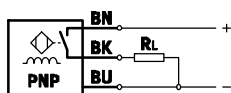
Operating conditions

Size			4 mm	6.5 mm	M5	M8	M12	M18	M30
Ambient temperature	[°C]	–25 ... +70							
Ambient temperature with flexible cable installation	[°C]	–		–5 ... +70					

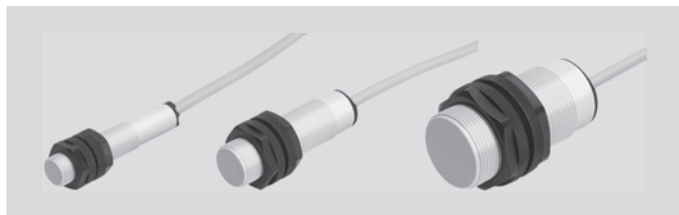
Materials

			4 mm	6.5 mm	M5	M8	M12	M18	M30
Housing	High-alloy stainless steel						Nickel-plated brass		Chrome-plated brass
	–		PA				PBTP		
Cable sheath	TPE-U (PUR)								

Data sheet – With standard switching distance, polyamide housing



E.g. N/O contact, PNP, with cable



Technical data			Download CAD data → www.festo.com		
Size			M12	M18	M30
Rated operating distance	Flush	[mm]	2	5	10
	Not flush	[mm]	4	8	15
Switching output			PNP NPN		
Switching element function			N/O contact		
Type of mounting			Flush Not flush		
Type of mounting			Via lock nut		
Electrical connection			Cable, 3-wire		
Operating voltage range	[V DC]		10 ... 30		
Max. output current	[mA]		200		
∅/length	[mm]		12/60	18/60	30/60
Max. connecting cable length	[m]		2.5		

Operating conditions		
Ambient temperature	[°C]	-25 ... +70
Ambient temperature with flexible cable installation	[°C]	0 ... +70

Materials	
Housing	PA reinforced
Cable sheath	PVC

Proximity sensors SIEN/SIEN-...-PA ★ inductive

Order code – With standard switching distance

SIEN		-		-		-		-		-	L	-	
Type													
SIEN	Proximity sensor with standard switching distance												
Design/size													
4, 6.5	Round O.D. 4 or 6.5 mm												
M5, M8, M12, M18, M30	Metric thread M5, M8, M12, M18, M30												
Type of mounting													
B	Flush												
NB	Not flush 1												
Switching output													
P	PNP												
N	NPN												
Switching element function													
S	N/O contact												
O	N/C contact												
Electrical connection													
K	Cable												
S	Plug												
Display													
L	Switching status												
Version													
-	Basic design												
PA	Polyamide housing 2												

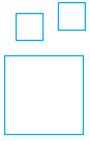
- 1 Only with design/size M8 ... M30,
- 2 Only with design/size M12 ... M30, and switching element function S, and electrical connection K.

Order example:

SIEN-M5B-PS-K-L

Proximity sensor with standard switching distance - metric thread M5 - flush fitting - switching output PNP - switching element function N/O contact - electrical cable connection - switching status display - basic design

Ordering – Product options



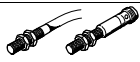
Configurable product

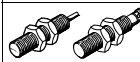
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

Size	Electrical connection	Part no.	Type
M5			
	Cable	150368	SIEN-M5B-NS-K-L
		150370	SIEN-M5B-PS-K-L
	Plug	150369	SIEN-M5B-NS-S-L
		150371	SIEN-M5B-PS-S-L

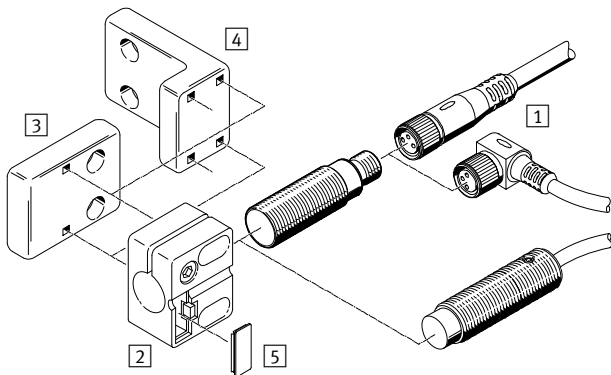
Size	Electrical connection	Part no.	Type
M8			
	Cable	150384	SIEN-M8B-NS-K-L
		150386	SIEN-M8B-PS-K-L
	Plug	150385	SIEN-M8B-NS-S-L
		150387	SIEN-M8B-PS-S-L

1) All products in this table are easy to select and quick to order.

Proximity sensors SIE ★ inductive

Accessories

SIE



		→ Page/online
1	Connecting cable NEBU	1234
2	Sensor bracket SIEZ-...B	1234
3	Sensor bracket SIEZ-UV	1234

		→ Page/online
4	Sensor bracket SIEZ-UH	1234
5	Inscription label SIEZ-LB	1234

Accessories – Ordering data

	Cable length [m]		Part no.	Type
1 Connecting cable, straight socket Data sheets → Page 1543				
	2.5	★	541333	NEBU-M8G3-K-2.5-LE3
	5	★	541334	NEBU-M8G3-K-5-LE3
	2.5	★	541363	NEBU-M12G5-K-2.5-LE3
	5	★	541364	NEBU-M12G5-K-5-LE3
	2.5	★	550326	NEBU-M12G5-K-2.5-LE4 ¹⁾
	5	★	541328	NEBU-M12G5-K-5-LE4 ¹⁾
Angled socket				
	2.5	★	541338	NEBU-M8W3-K-2.5-LE3
	5	★	541341	NEBU-M8W3-K-5-LE3
	2.5	★	541367	NEBU-M12W5-K-2.5-LE3
	5	★	541370	NEBU-M12W5-K-5-LE3
	2.5	★	550325	NEBU-M12W5-K-2.5-LE4 ¹⁾
	5	★	541329	NEBU-M12W5-K-5-LE4 ¹⁾

1) For connecting proximity sensor SIE...M12/M18/M30 in N/C contact version with plug.

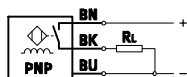
	For design	Part no.	Type
2 Sensor bracket, with stop for flush fitting			
	M8	538346	SIEZ-B-8
	M12	538348	SIEZ-B-12
	M18	538350	SIEZ-B-18
	M30	538352	SIEZ-B-30
3 Without stop			
	4	538343	SIEZ-NB-4
	6.5	538344	SIEZ-NB-6,5
	M8	538345	SIEZ-NB-8
	M12	538347	SIEZ-NB-12
	M18	538349	SIEZ-NB-18
	M30	538351	SIEZ-NB-30
	M12, M18	538355	SIEZ-UV
4 Without stop			
	M12, M18	538354	SIEZ-UH
5 Inscription label			
	M12 ... M30	538353	SIEZ-LB

Proximity sensors SIES-8M, inductive for T-slot

Product range overview

Version	Type code	Operating voltage	Switching output	Design type
Standard switching distance	SIES Special design	10 ... 30 V DC	PNP NPN	For T-slot

Data sheet



E.g. N/O, PNP, with cable

Technical data		Download CAD data → www.festo.com
Rated operating distance S_n	[mm]	1.5
Switching output		PNP or NPN
Switching element function		N/O or N/C
Type of mounting		Screw-clamped, insertable from above, flush with T-slot
Electrical connection		Cable, 3-wire
		Cable with plug M8x1, 3-pin, rotatable thread
Operating voltage range	[V DC]	10 ... 30
Max. output current	[mA]	150
Length/width/height	[mm]	5/5/32

Operating conditions	
Ambient temperature	[°C] -25 ... +70
Ambient temperature with flexible cable installation	[°C] -5 ... +70

Materials	SIES-8M-...-OE	SIES-8M-...-M8D
Housing	PA, PUR, high-alloy stainless steel	PA, PUR, nickel-plated brass, high-alloy stainless steel
Cable sheath	TPE-U (PU)	

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

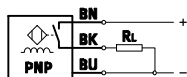
Enter the type code in the search field.

Data sheet

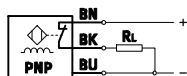
Pin allocation

Cable

PNP, N/O



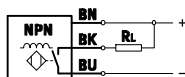
PNP, N/C



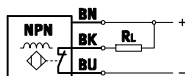
Wire colours

BN = Brown

NPN, N/O



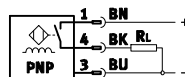
NPN, N/C



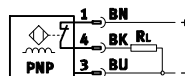
BK = Black

Plug

PNP, N/O

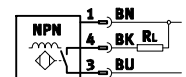


PNP, N/C

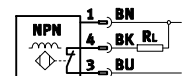


BU = Blue

NPN, N/O



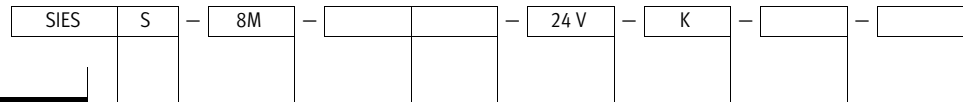
NPN, N/C



Sensors > Inductive sensors >

Proximity sensors SIES-8M, inductive for T-slot

Order code – Special design



Type code

SIE	Proximity sensor, inductive
-----	-----------------------------

Design

S	Special design
---	----------------

Design type

8M	For T-slot
----	------------

Switching output

P	PNP
---	-----

N	NPN
---	-----

Switching element function

S	N/O contact
---	-------------

O	N/C contact
---	-------------

Rated operating voltage

24 V	24 V DC
------	---------

Cable property

K	Standard + energy chain
---	-------------------------

Cable length

0.3	0.3 m	<input type="checkbox"/>
-----	-------	--------------------------

2.5	2.5 m	<input type="checkbox"/>
-----	-------	--------------------------

5	5 m	<input type="checkbox"/>
---	-----	--------------------------

7.5	7.5 m	<input type="checkbox"/>
-----	-------	--------------------------

10	10 m	<input type="checkbox"/>
----	------	--------------------------

Electrical connection

OE	Cable, 3-wire, open end
----	-------------------------

M8D	Cable with plug M8x1, 3-pin, rotatable thread
-----	---

Only with electrical connection OE

Only with electrical connection M8D

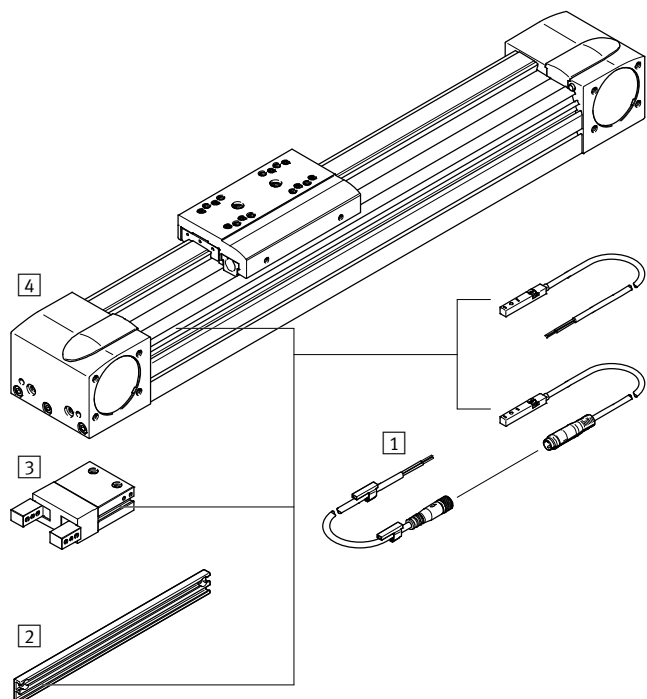
Order example:

SIES-8M-PS-24 V-K-0,3-M8D

Sensor, special design for T-slot - switching output PNP - switching element function N/O - rated operating voltage 24 V DC - cable characteristic standard + energy chain - cable length 0.3 m - cable with plug M8x1, 3-pin, rotatable thread

Proximity sensors SIEZ-8M, inductive for T-slot

Accessories



	→ Page/online
1 Connecting cable NEBU-M8...3	1237
2 Sensor bracket SIEZ-8M	1237
3 Gripper with T-slot, e.g. parallel gripper DHPS	gripper
4 Electric axes, e.g. toothed belt axis EGC-...-TB	egc egsk egsp
- Slot cover	1237

Accessories – Ordering data

	Cable length [m]	Part no.	Type code
1 Connecting cable, straight socket Data sheets → Page 1543			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
	10	★ 541332	NEBU-M8G3-K-10-LE3
Angled socket			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3
	10	★ 541335	NEBU-M8W3-K-10-LE3

	Length [m]	Part no.	Type code
2 Sensor bracket			
	0.2	551406	SIEZ-8M-200
	0.4	551407	SIEZ-8M-400
Slot cover for T-slot			
	2x 0.5	563360	ABP-5-S1



Innovative sensing for semi-rotary drives

- + Quick and easy installation
- + Encapsulated design for reliable operation
- + Fast adjustment with just a press of a button

Position sensors >

Position sensors

SRBS 


Position sensors >

Position sensors


SRBS

 Overview, configuration and ordering
→ www.festo.com/catalogue/srbs



 Additional information, support and user documentation
→ www.festo.com/sp/srbs



 Quick ordering of basic designs
→ page 1243

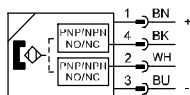


- + Switching output 2x PNP or 2x NPN (programmable)
- + Sensing range 0 ... 270 °
- + Cable length 0.3 m
- + Electrical connection, 4-pin, M8x1 plug
- + Design for semi-rotary drives DSM and DRVS

Product range overview

Version	Type	Suitable for rotary drives	Special features	Sensing range [deg]	Switching output	→ Page/online
Position sensor	SRBS-Q12-6-E270-EP-1-S-M8	DSM 6, DRVS 6	Oil resistant	> 270	2x PNP or 2x NPN Switchable	1241
	SRBS-Q12-8-E270-EP-1-S-M8	DSM 8, DRVS 8				
	SRBS-Q1-10-E270-EP-1-S-M8	DSM 10				
	SRBS-Q12-12-E270-EP-1-S-M8	DRVS 12				
	SRBS-Q12-16-E270-EP-1-S-M8	DRVS 16				
	SRBS-Q12-25-E270-EP-1-S-M8	DRVS 25				
	SRBS-Q12-32-E270-EP-1-S-M8	DRVS 32				
	SRBS-Q12-40-E270-EP-1-S-M8	DRVS 40				

Data sheet – With standard switching distance



Technical data

Download CAD data → www.festo.com

Size

Design	Round
Type of mounting	Screw-clamped
Mounting position	Any
Special features	Oil resistant
∅/length	[mm] 29.4 ... 98.3/25.4 ... 40.4

Input signal/measuring element

Measuring principle	Magnetic Hall
Measured variable	Rotation angle
Sensing range	[deg] > 270
Ambient temperature	[°C] -20 ... +70
Ambient temperature with flexible cable installation	[°C] -20 ... +70

Electronic components

Operating voltage range	[V DC] 10 ... 30
Rated operating voltage	[V DC] 24
Switch-on time	[ms] < 4
Switch-off time	[ms] < 4
Switching output	2 x PNP or 2 x NPN, switchable
Switching element function	N/C or N/O contact, switchable

Electromechanical components

Electrical connection	4-pin, cable with plug, rotatable thread M8
Cable length	[m] 0.3

Materials

Housing	Nickel-plated brass, PA reinforced, polyester
Union nut	Nickel-plated brass
Cable sheath, grey	TPE-U(PUR)
Foil	Polyester
Pin contacts	Gold-plated copper alloy

Position sensors SRBS★

Order code – With standard switching distance

SRBS – – – E – 270 – EP – 1 – S – M8

Type

SRBS	Position sensor
------	-----------------

Allocation

Q1	Version Q1	1
Q12	Version Q12	

Size

6	6
8	8
10	10
12	12
16	16
25	25
32	32
40	40
63	63

Display type

E	LED
---	-----

Measuring range

270	0 ... 270
-----	-----------

Sensor principle

EP	Non-contacting, programmable switching function
----	---

Nominal operating voltage

1	24 V DC
---	---------

Electrical output

S	PNP or NPN
---	------------

Electrical connection

M8	M8 plug
----	---------

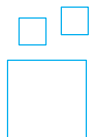
1 Version Q1 only with size 10

Order example:

SRBS-Q12-6-E270-EP-1-S-M8

Position sensor - version Q12 - size 6 - display type - measuring range - sensor principle - nominal operating voltage - electrical output - electrical connection

Ordering – Product options




Configurable product


This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.




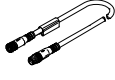

 Quick ordering¹⁾

	For rotary drives	Part no.	Type
	DSM 6, DRVS 6	2619969	SRBS-Q12-6-E270-EP-1-S-M8
	DSM 8, DRVS 8	2619972	SRBS-Q12-8-E270-EP-1-S-M8
	DSM 10	2412001	SRBS-Q1-10-E270-EP-1-S-M8
	DRVS 12	2393546	SRBS-Q12-12-E270-EP-1-S-M8

	For rotary drives	Part no.	Type
	DRVS 16	2393547	SRBS-Q12-16-E270-EP-1-S-M8
	DRVS 25	2393548	SRBS-Q12-25-E270-EP-1-S-M8
	DRVS-32	2393549	SRBS-Q12-32-E270-EP-1-S-M8
	DRVS 40	2393550	SRBS-Q12-40-E270-EP-1-S-M8

1) All products in this table are easy to select and quick to order.

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, open cable end Data sheets → Page 1543			
	2.5	 541342	NEBU-M8G4-K-2.5-LE4
	5	 541343	NEBU-M8G4-K-5-LE4
Connecting cable, plug connector, M8 Data sheets → Page 1543			
	2.5	 554035	NEBU-M8G4-K-2.5-M8G4



For compact and simple pressure monitoring

- + Quick and easy parameterisation at the touch of a button thanks to teach-in
- + Reliable operation with contactless sensor technology

Pressure and vacuum sensors >
Pressure sensors

SDE5 


Pressure and vacuum sensors >

Pressure sensors


SDE5

 Overview, configuration and ordering
→ www.festo.com/catalogue/sde5



 Additional information, support and user documentation
→ www.festo.com/sp/sde5



 Quick ordering of basic designs
→ page 1250



- + PNP, NPN
- + Pressure switches
- + Vacuum switches
- + Switching status indicated by an LED visible from all sides
- + Pneumatic push-in connector
- + Can be freely parameterised
- + Adjustable switching point

Product range overview

Method of measurement	Pressure measuring range [bar]	Switching element function	Switching function	Pneumatic connection	Electrical output	Electrical connection
Piezoresistive	-1 ... 0 -1 ... 1 0 ... 2 0 ... 6 0 ... 10	N/O contact, N/C contact, switchable	Threshold value, window comparator	QS-4 QS-6 QS-1/4 QS-5/32	Switching output PNP, switching output NPN, analogue output	Plug M8x1, 3-pin; cable, 3-wire

Product options

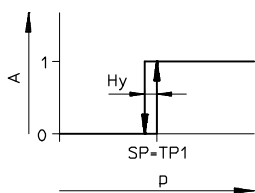
- Threshold value with fixed hysteresis
- Threshold value with variable hysteresis
- Window comparator with fixed hysteresis
- Connecting cable
- Teach-in points permanently set

Switching functions

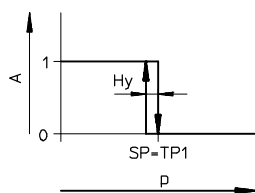
Operating mode 0

Threshold value with fixed hysteresis, 1 teach-in pressure

N/O switching element



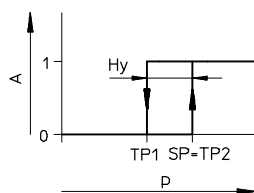
N/C switching element



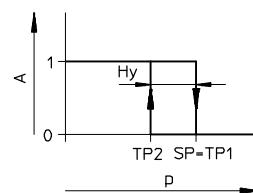
Operating mode 2

Threshold value with variable hysteresis, 2 teach-in pressures

N/O switching element



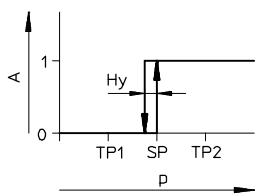
N/C switching element



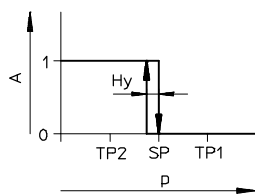
Operating mode 1

Threshold value with fixed hysteresis, 2 teach-in pressures

N/O switching element



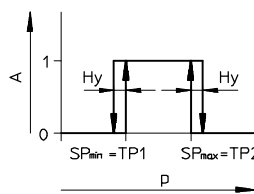
N/C switching element



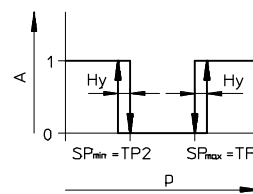
Operating mode 3

Window comparator with fixed hysteresis, 2 teach-in pressures

N/O switching element



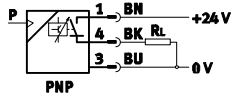
N/C switching element



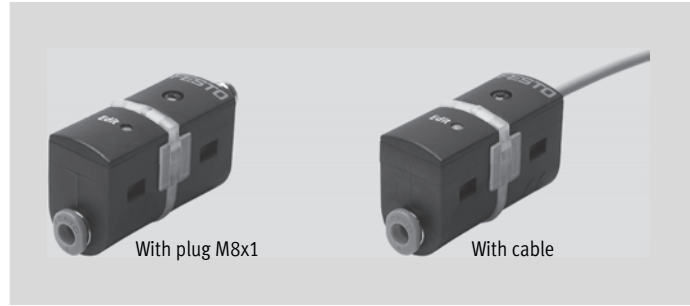
- A Binary output signal
- p Pressure
- SP Switching point
- TP Teach-in pressure
- Hy Hysteresis

Pressure sensors SDE5 ★

Data sheet



E.g. N/O contact, PNP, with plug



Technical data		Download CAD data → www.festo.com	
Electrical connection		Plug M8x1, 3-pin	Cable
Pneumatic connection		QS-4	
		QS-6	
		QS-1/4	
Operating voltage range	[V DC]	15 ... 30	
Max. output current	[mA]	100	
Switching output		PNP	
		NPN	
Switching function		Freely programmable (switching/teach-in function, N/O contact, N/C contact)	
		Threshold value with fixed hysteresis	
		Threshold value with variable hysteresis	
		Window comparator with fixed hysteresis	
Switching element function		N/C contact	
		N/O contact	
		Switchable	
Output characteristic	[V]	0 ... 10	
Length/width/height	[mm]	56/16/25	45/16/25

Operating conditions		SDE5-	
SDE5-		V1	D10
Pressure measuring range	[bar]	-1 ... 0	0 ... +10
Threshold value setting range	[%]	0 ... 100	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature	[°C]	0 ... +50	
Temperature of medium	[°C]	0 ... +50	

Materials	
Housing	PA, POM

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...

Enter the type code in the search field.

Order code

Sensor function	
SDE5	Pressure sensor
Pressure measuring range	
V1	-1 ... 0 bar
D10	0 ... 10 bar
Supply port	
-	Relative pressure
Z	Differential pressure
Output function	
FP	Freely programmable, N/O contact, N/C contact
O	Threshold value with fixed hysteresis, 1 teach-in pressure, N/O contact
C	Threshold value with fixed hysteresis, 1 teach-in pressure, N/C contact
O1	Threshold value with fixed hysteresis, 2 teach-in pressures, N/O contact
O2	Threshold value with variable hysteresis, 2 teach-in pressures, N/O contact
O3	Window comparator with fixed hysteresis, 2 teach-in pressures, N/O contact
C3	Window comparator with fixed hysteresis, 2 teach-in pressures, N/C contact
NF	No binary switching function (analogue output)
Pneumatic connection	
Push-in connector at both ends	
Q4	For tubing O.D. 4 mm
Q6	For tubing O.D. 6 mm
Push-in connector at one end	
Q4E	For tubing O.D. 4 mm 1
Q6E	For tubing O.D. 6 mm 1
T14E	For tubing O.D. 1/4 1
Electrical output	
P	1 switching output PNP 2
N	1 switching output NPN 2
V	1 analogue output 0 ... 10 V 3
Electrical connection	
K	Cable, 2.5 m
M8	Plug M8, 3 pin
Electrical accessories	
-	Without electrical accessories
G	Connecting cable, straight socket, 2.5 m 4

1 Not in combination with supply port Z.

2 Not in combination with output function NF.

3 Only in combination with output function NF.

4 Only in combination with M8.

Order example:

SDE5-D10Z-FP-Q6-P-M8

Pressure sensor - 0 ... 10 bar - differential pressure - freely programmable N/O contact, N/C contact - for tubing O.D. 6 mm - 1 switching output PNP - plug M8 - 3-pin

Pressure sensors SDE5 ★

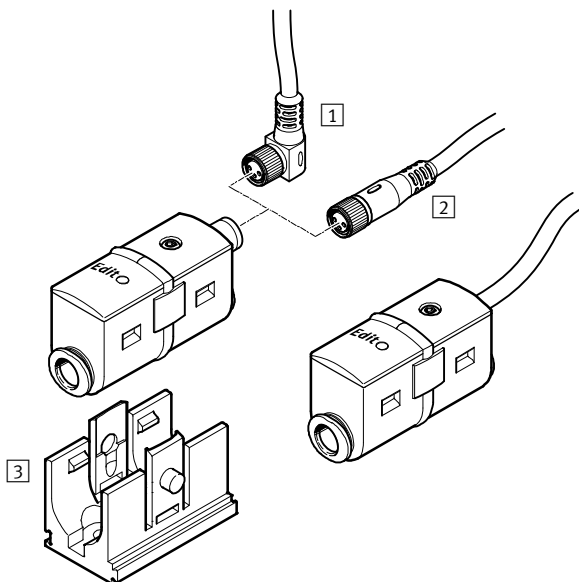
★ Quick ordering¹⁾

Pressure measuring range [bar]	Electrical output	Part no.	Type
Freely programmable (switching/teach-in function, N/O contact, N/C contact)			
0 ... -1	Plug M8x1, 3-pin	542887	SDE5-V1-FP-Q6-P-M8
0 ... +10	Plug M8x1, 3-pin	542900	SDE5-D10-FP-Q4E-P-M8
		542897	SDE5-D10-FP-Q6E-P-M8
		542898	SDE5-D10-FP-Q6-P-M8
	Cable, 3-wire	542901	SDE5-D10-FP-Q4E-P-K
		542899	SDE5-D10-FP-Q6-P-K
Threshold value with fixed hysteresis, 1 teach-in pressure, N/O contact			
0 ... -1	Plug M8x1, 3-pin	527460	SDE5-V1-O-Q4E-P-M8
		527461	SDE5-V1-O-Q6E-P-M8
		527457	SDE5-V1-O-Q4-P-M8
		527458	SDE5-V1-O-Q6-P-M8
0 ... +2	Cable, 3-wire	542888	SDE5-D2-O-Q6E-P-K
0 ... +10	Plug M8x1, 3-pin	527466	SDE5-D10-O-Q4E-P-M8
		527467	SDE5-D10-O-Q6E-P-M8
		527463	SDE5-D10-O-Q4-P-M8
		527464	SDE5-D10-O-Q6-P-M8
	Cable, 3-wire	542890	SDE5-D10-O-Q6E-P-K
N/C contact			
0 ... +10	Plug M8x1, 3-pin	542889	SDE5-D10-C-Q4E-P-M8
		542894	SDE5-D10-C-Q6E-P-M8
		Cable, 3-wire	542895

Pressure measuring range [bar]	Electrical output	Part no.	Type
Threshold value with fixed hysteresis, 2 teach-in pressures with mean value calculation, N/O contact			
0 ... -1	Plug M8x1, 3-pin	542886	SDE5-V1-O1-Q6-P-M8
Threshold value with variable hysteresis, 2 teach-in pressures, N/O contact			
0 ... +10	Plug M8x1, 3-pin	542891	SDE5-D10-O2-Q6E-P-M8
		542892	SDE5-D10-O2-Q6-P-M8
Window comparator with fixed hysteresis, 2 teach-in pressures, N/O contact			
0 ... +10	Cable, 3-wire	542893	SDE5-D10-O3-Q6E-P-K
N/C contact			
0 ... +10	Cable, 3-wire	542896	SDE5-D10-C3-Q6E-P-K

1) All products in this table are easy to select and quick to order.

Accessories and ordering data



	Cable length [m]	Part no.	Type
1 Connecting cable, angled socket M8x1			
Data sheets → Page 1543			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3
	10	★ 541335	NEBU-M8W3-K-10-LE3
2 Straight socket M8x1			
Data sheets → Page 1543			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
	10	★ 541332	NEBU-M8G3-K-10-LE3

	→ Page/online
1 Connecting cable NEBU-M8W3, angled socket	1250
2 Connecting cable NEBU-M8G3, straight socket	1250
3 Wall bracket (included in the scope of delivery)	-



Can be used universally

- + For network monitoring, regulator monitoring, leak test and object detection
- + Relative method of measurement, based on a piezoresistive measuring cell
- + Serial communication integrated using IO-Link® 1.1

Pressure and vacuum sensors >
Pressure sensors

SPAN 

Pressure and vacuum sensors >

Pressure sensors


SPAN

 Overview, configuration and ordering
→ www.festo.com/catalogue/span



 Additional information, support and user documentation
→ www.festo.com/sp/span



 Quick ordering of basic designs
→ page 1256



- + For monitoring compressed air and non-corrosive gases
- + Compact design
- + High-contrast display with colour change
- + Data exchange and parameterisation using IO-Link®

Product range overview

Communication interface



Universal pressure measurement

- Pressure and vacuum
- 13 pressure measuring ranges
- All standard pressure units
- Optional inspection report

Quick installation

- L1 plug for fast commissioning
- M8 electrical adapters allow maximum flexibility
- Wide range of mounting options
- QS4 quick connector



Practical design

- Compact design 30x30 mm
- IP40 degree of protection
- Weight reduction with QS4

Single-start operation

- Clear 2-line display
- Configurable red surround for the entire display
- Intuitive menu navigation

Switchable electrical outputs

- Various switching functions
- Switching outputs (PNP/NPN, NO/NC)
- Analogue outputs (0...10 V, 1...5 V, 4...20 mA)

Product options

Product description

The pressure sensor SPAN is suitable for monitoring compressed air and non-corrosive gases. The sensor can be used in many industries thanks to its compact design. The measuring method is based on a piezoresistive measuring cell for relative pressure measurement.

The pressure value is transmitted to the connected control system as a switching signal, as an analogue signal or via IO-Link® depending on the sensor variant and selected parameters.

Area of application

- Network monitoring (pressure present)
- Regulator monitoring (pressure in desired range)
- Vacuum (part picked up)
- Leak test (pressure drop over time)
- Object detection (back pressure present)

Functions

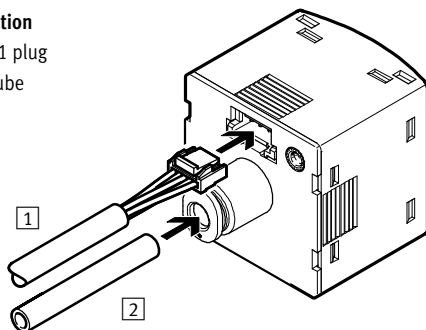
- Monitoring and setting a pressure threshold, a pressure range or differential pressure monitoring with teach-in function or by entering values
- ECO function with option to switch off the display
- Optional security code can be freely chosen (4-digit code)
- Adjustable low-pass filter to smooth the pressure signal
- Scaling the analogue output to increase the signal dynamics
- Offset compensation possible
- Min./max. value memory for monitoring compressed air
- All settings that have been carried out on one sensor (master) can be transferred (replication) to identical sensors (device)

Variants with IO-Link®

- Serial communication integrated using IO-Link® 1.1
- Cyclical transfer of two operating statuses and the measured pressure value
- The sensor can be parameterised remotely using an IO-Link® master
- Sensor can be changed easily using automatic parameterisation (hot-swap)
- Sensor identification, diagnostics and teach-in via IO-Link® possible

2-step connection

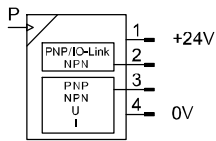
- 1 Push in L1 plug
- 2 Push in tube



Pressure sensors SPAN★

Data sheet

Variant with IO-Link® and analogue outputs ... -PNLK-PNVBA

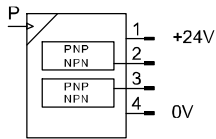


- Compact design 30x30
- 13 pressure measuring ranges
-1 ... +16 bar to choose from
- Voltage 15 ... 30 V DC
- Temperature range 0 ... +50 °C
- IP40 degree of protection



Variant with 2 switching outputs ...

-PN-PN



Technical data

Download CAD data → www.festo.com

Type of mounting	
Operating voltage range	[V DC] 15 ... 30
Electrical connection	Plug, 4-pin, square design
Length/width/height	[mm] Max. 52/24.5/30

Input signal, measuring element

SPAN	-B2	-B11	-V025	-V05	-V1	-P025	-P05	-P1	-P2	-P6	-P10	-P12	-P16
Pressure measuring range	-1		0										
start value													
Pressure measuring range	1	10	-0.25	-0.5	-1	0.25	0.5	1	2	6	10	12	16
end value													
Max. overload pressure	5	15	1	2	5	1	2	5	6	15	15	15	20
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases												
Note on the operating/pilot medium	Operation with lubricated medium possible												
Ambient temperature	[°C] 0 ... +50												
Temperature of medium	[°C] 0 ... +50												

Switching output

Switching output	2 x PNP or 2 x NPN, switchable
Switching function	Window comparator Threshold value comparator Auto difference monitoring
Switching element function	N/C or N/O contact, switchable

Analogue output

		-PNLK, -PNVBA	PN-PN
Analogue output	[V]	0 ... 10	-
	[V]	1 ... 5	-
	[mA]	4 ... 20	-

Ordering – Product options

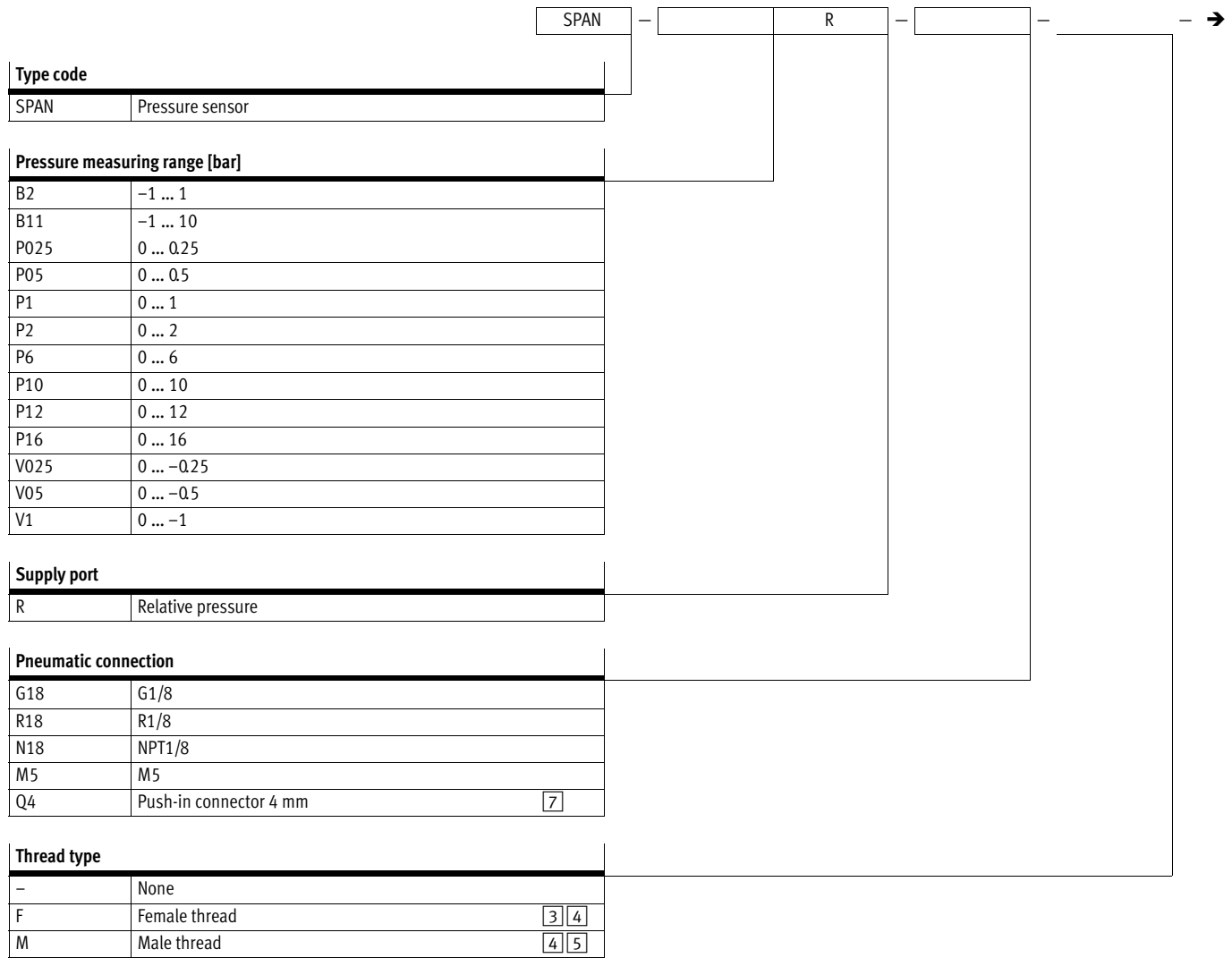
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Order code



- 1 Not with PNP or NPN or IO-Link® (-PNLK)
- 2 Not with PNP or NPN
- 3 Only with pneumatic connection M5
Not with push-in connector NPT1/8 (-N18), R1/8 (-R18)
- 4 Only with pneumatic connection G1/8 (-G18)
Not with push-in connector 4 mm (-Q4)
- 5 Only with NPT1/8 (-N18), R1/8 (-R18)
Not with pneumatic connection M5
- 7 Not with pressure measuring range P16

Pressure sensors SPAN★

Order code

Electrical output 1	
PN	PNP or NPN 6
PNLK	PNP, NPN or IO-Link®
Electrical output 2	
PN	PNP or NPN 1
PNVBA	PNP, NPN 2
	0 ... 10 V
	1 ... 5 V
	40 ... 20 mA
Electrical connection	
L1	Plug, design L1
Certificate	
–	None
T	Test report

1 Not with PNP or NPN or IO-Link® (-PNLK)

2 Not with PNP or NPN

6 Not with pressure measuring range 0 ... 2 bar, 0 ... 6 bar, -1 ... 10 bar, 0 ... 0.5 bar, 0 ... 12 bar, 0 ... 16 bar, 0 ... -0.5 bar, 0 ... 0.25 bar, 0 ... -0.25 bar, 0 ... 1 bar

Order example:

SPAN-V1R-G18M-PN-PN-L1

Pressure sensor with display - pressure measuring range 0... -1 bar - supply port relative pressure - pneumatic connection G1/8 - thread type male thread - electrical output 1 PNP or NPN - electrical output 2 PNP or NPN - electrical connection plug, design L1

11

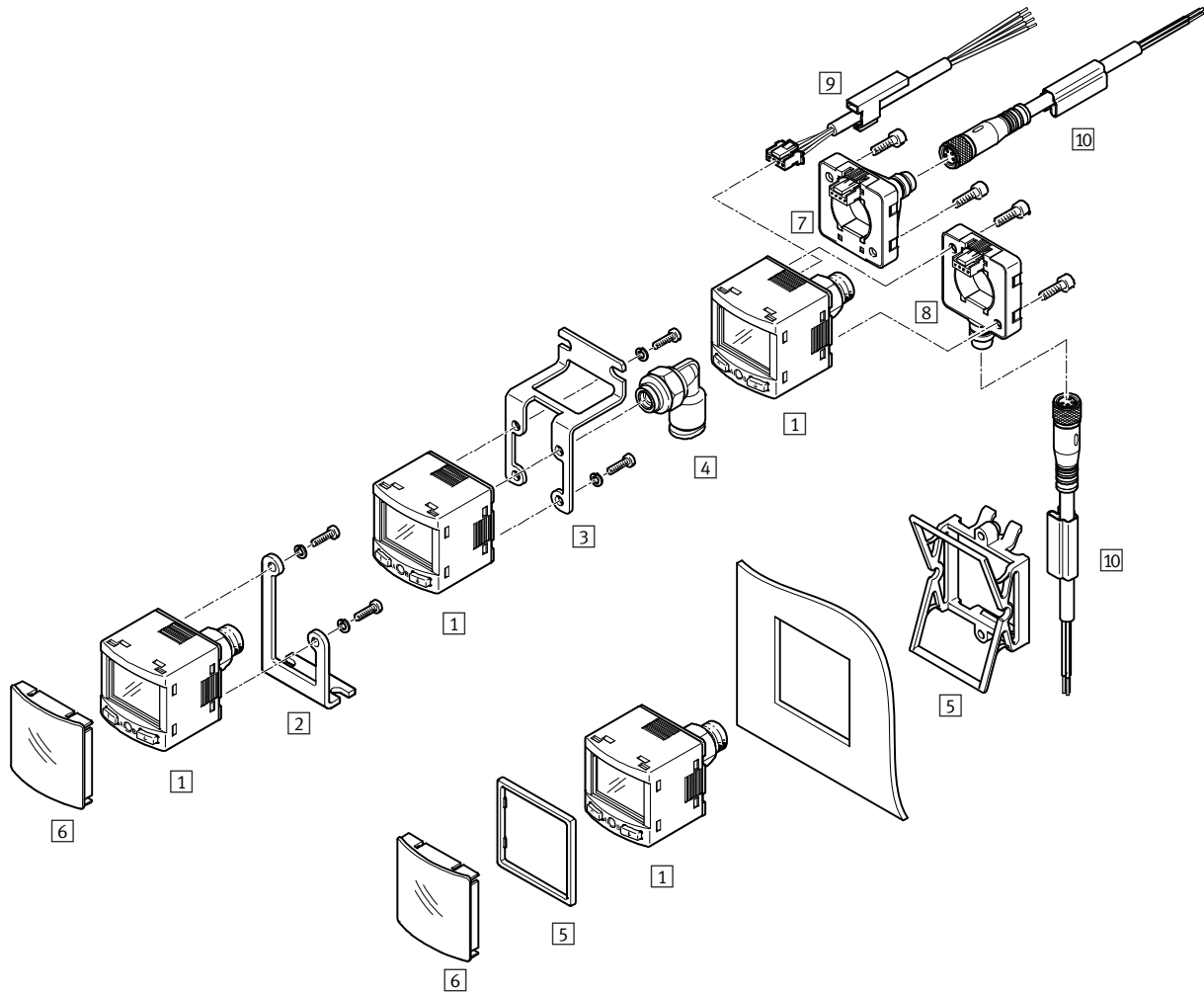
★ Quick ordering¹⁾

	Part no.	Type code
Pressure measuring range -1 ... +1 bar		
2 x PNP/NPN	8035545	SPAN-B2R-G18M-PN-PN-L1
switchable	8035551	SPAN-B2R-M5F-PN-PN-L1
	8035548	SPAN-B2R-R18M-PN-PN-L1

	Part no.	Type code
Pressure measuring range 0 ... +10 bar		
2 x PNP/NPN	8035544	SPAN-P10R-G18M-PN-PN-L1
switchable	8035547	SPAN-P10R-R18M-PN-PN-L1

1) All products in this table are easy to select and quick to order.

Accessories










	→ Page/ online
1 Pressure sensors SPAN	span
2 Mounting bracket SAMH-PU-A	1258
3 Wall mounting SAMH-PN-W	1258
4 Push-in fitting QSML-M5	1258
5 Front panel mounting kit SAMH-PN-F	1258





	→ Page/ online
6 Safety guard SACC-PN-G	1258
7 Electric adapter SASC-P4-A-M8-S	1258
8 Electric adapter SASC-P4-A-M8-A	1258
9 Connecting cable NEBS-L1G4	1258
10 Connecting cable NEBU-M8	1258




Pressure sensors SPAN★

Accessories – Ordering data

		Part no.	Type code
2 Mounting bracket			
		8003354	SAMH-PU-A
3 Wall mounting			
		★ 8035563	SAMH-PN-W

		O.D.	Tubing O.D.	Part no.	Type code
4 Push-in fittings					
Straight connection					
	M5	4 mm		★ 153304	QSM-M5-4
		6 mm		★ 153306	QSM-M5-6
	G1/8	4 mm		★ 186264	QSM-G1/8-4
		6 mm		★ 186265	QSM-G1/8-6
90° connection					
	M5	4 mm		★ 153333	QSML-5-4
		6 mm		★ 153335	QSML-5-6
	G1/8	4 mm		★ 186268	QSML-G1/8-4
		6 mm		★ 186269	QSML-G1/8-6
90° connection					
	G1/8	G1/8 internal to G1/8 internal		8030209	NPFC-L-2G18-F
	R1/8	R1/8 external to R1/8 external		8030223	NPFC-L-2R18-M
	M5	M5 internal to M5 external		8030215	NPFC-L-2M5-MF

		Part no.	Type code
5 Front panel mounting kit			
		★ 8035561	SAMH-PN-F
6 Safety guard			
		★ 8035560	SACC-PN-G
7 Electric adapter			
		8000326	SASC-P4-A-M8-A
8 Electric adapter			
		8000327	SASC-P4-A-M8-S

		Wires	Cable length [m]	Part no.	Type code
9 Connecting cables					
Socket, rectangular design L1					
	4	2.5		572576	NEBS-L1G4-K-2,5-LE4
		5		572577	NEBS-L1G4-K-5-LE4
10 Connecting cables					
M8x1, straight socket					
	4	2.5		★ 541342	NEBU-M8G4-K-2.5-LE4
		5		★ 541343	NEBU-M8G4-K-5-LE4
M8x1, angled socket					
	4	2.5		★ 541344	NEBU-M8W4-K-2.5-LE4
		5		★ 541345	NEBU-M8W4-K-5-LE4



Monitor pressure intelligently

- + IO-Link® for future security
- + Easy-to-read display
with colour change

Pressure and vacuum sensors >
Pressure sensors

SPAU

Pressure and vacuum sensors >

Pressure sensors

SPAU

 Overview, configuration and ordering
→ www.festo.com/catalogue/spau



 Additional information, support and user documentation
→ www.festo.com/sp/spau



- + Switching output 2x PNP or 2x NPN, switchable
- + Electrical output 0.1 ... 10 V, 1 ... 5 V, 4 ... 20 mA
- + Pneumatic connection G1/8, R1/8, R1/4, 1/8 NPT, M5, M7, push-in connector 4 mm, 6 mm, 5/32"
- + Pressure switches
- + Vacuum switches

Product range overview

Method of measurement	Pressure measuring range [bar]	Measured variable	Switching element function	Switching function	Pneumatic connection	Electrical connection	Electrical output	
							1	2
Piezoresistive pressure sensor with display	-1... 1 bar -1... 10 bar 0... -0.25 bar 0... -0.5 bar 0... -1 bar 0... 0.25 bar 0... 0.5 bar 0... 1 bar 0... 2 bar 0... 6 bar 0... 10 bar 0... 12 bar 0... 16 bar	Relative pressure	Switchable	Freely programmable	G1/8 M5 M7 NPT1/8 Plug connector 4 mm Plug connector 6 mm R1/4 R1/8 Push-in connector 5/32	Plug M8x1 Plug M12x1	IO-Link PNP or NPN or IO-Link	4 ... 20 mA 1 ... 5 V PNP or NPN or 0 ... 10 V or 1 ... 5 V 4 ... 20 mA

Product options

Variants with display

- Pressure display, pressure switching outputs and readout of analogue value from a device can be set on site
- Quick commissioning of the pressure sensor thanks to straightforward menu navigation
- Display colour blue/red as visual feedback about the pressure of the medium
- Min./max. value memory for monitoring compressed air (display of rapid pressure peaks that are not visible to the human eye)
- Adjustable filter attenuates the sensor signal generated by pressure peaks
- Scaling the analogue output to increase the signal dynamics
- Choice of pressure units: bar, MPa, PSI and more
- Offset compensation possible
- ECO function "Switch off display" available
- Optional security code can be freely chosen (4-digit code)
- All settings that have been carried out on one sensor (master) can be transferred (replication) to other, identical sensors (device). This enables the commissioning time to be significantly shortened

Variants without display

- Analogue value output and pressure switching outputs proportional to the pressure
- Switching output behaviour can be set on the machine display using IO-Link
- Other functions can be set using IO-Link

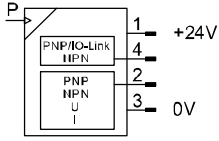
Variants with IO-Link:

- With and without display
- Serial communication integrated using IO-Link 1.1
- Analogue process value is provided digitally
- The sensor can be parameterised and maintained remotely at control level using an IO-Link master
- Automatic parameterisation following sensor change: no need to repeat parameterisation and sensor settings after changing the sensor

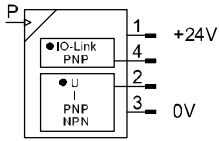
Pressure sensors SPAU

Data sheet

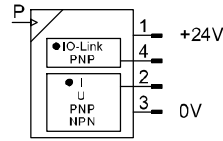
Display ... -L



Variant without display
Output preset to voltage ... -LK-V



Variant without display
Output preset to current ... -LK-A



Technical data		Download CAD data → www.festo.com		
Type of mounting	Display variant	Display variant for front panel mounting	Variant without display	
Operating voltage range [V DC]	20 ... 30	20 ... 30	20 ... 30	
Electrical connection	Plug M8, plug M12, A-coded	Plug M8, plug M12, A-coded	Plug M12, A-coded	
Length/width/height [mm]	64/32/83	67/40/55	83/32/57	

Input signal, measuring element

SPAU	-B2	-B11	-V025	-V05	-V1	-P025	-P05	-P1	-P2	-P6	-P10	-P12	-P16
Pressure measuring range [bar]	-1		0										
Pressure measuring range starting value [bar]	-1		0										
Pressure measuring range final value [bar]	1	10	-0.25	-0.5	-1	0.25	0.5	1	2	6	10	12	16
Overload range [bar]	5	15	1	2	5	1	2	5	6	15	15	15	20
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], inert gases												
Note on operating/pilot medium	Operation with lubricated medium possible												
Ambient temperature [°C]	0 ... +50												
Temperature of medium [°C]	0 ... +50												

Switching output

	-PNLK, -PNVBA	-LK
Switching output	2 x PNP or 2 x NPN, switchable	2 x PNP ¹⁾
Switching function	Freely programmable	
Switching element function	N/C or N/O contact, switchable	

1) Second PNP output can only be activated via IO-Link

Analogue output

	-PNLK, -PNVBA	-LK-A	-LK-V	-LK-B
Analogue output [V]	0 ... 10	— ¹⁾	0 ... 10	— ¹⁾
[V]	1 ... 5	— ²⁾	— ²⁾	1 ... 5
[mA]	4 ... 20	4 ... 20	— ³⁾	— ³⁾

- 1) 0 ... 10 V analogue output can only be activated using IO-Link
- 2) 1 ... 5 V analogue output can only be activated using IO-Link
- 3) 4 ... 20 mA analogue output can only be activated using IO-Link

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Sensors > Pressure and vacuum sensors >

Pressure sensors SPAU

Order code

Display		
-	None	
L	LCD, backlit	8
Electrical output 1		
PNLK	PNP, NPN, IO-Link	10
LK	IO-Link	9
Electrical output 2		
PNVBA	PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	10
V	0 ... 10 V	9
B	1 ... 5 V	9
A	4 ... 20 mA	9
Electrical connection		
M8	M8 plug	
M12	M12 plug, A-coded	
Electrical outlet direction		
-	At rear	11
D	Underneath	12
U	Top	13
Electrical accessories		
-	None	
2.5 A	Angled socket, cable 2.5 m	
2.5S	Straight socket, cable 2.5 m	
5A	Angled socket, cable 5 m	
5S	Straight socket, cable 5 m	
Protective devices		
-	None	
G	Safety guard	14
Certificate		
-	None	
T	Test report	

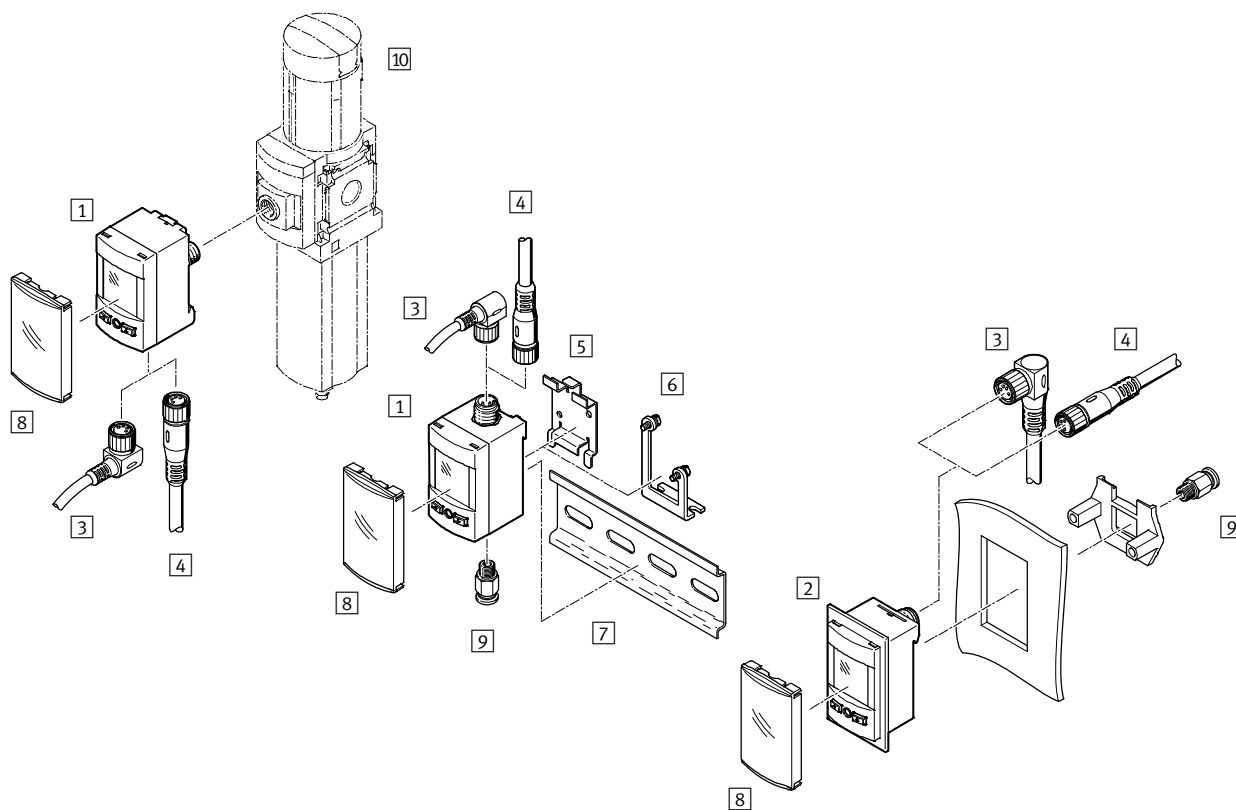
- 8 Only in combination with type of mounting F
- 9 Not with display L
- 10 Not without display
- 11 Only with type of mounting A, F, not with pneumatic connection G18, N18, R18, M7, M5, not with outlet direction D, U, only with thread type "none"
- 12 Only with outlet direction D if pneumatic connection QS4, or T532 selected, not with outlet direction at rear if pneumatic connection QS4, QS6, T532
- 13 Only with outlet direction U if pneumatic connection QS4, or T532 selected, not with outlet direction at rear if pneumatic connection QS4, QS6, T532
- 14 Only with display L

Order example:

SPAU-B2R-T-R18M-L-PNLK-PNVBA-M8D

Pressure sensor with display - pressure measuring range 0 ... 0.25 bar - supply port relative pressure - type of mounting thread mounting - pneumatic connection R $\frac{1}{4}$ - thread type male - display LCD, backlit - electrical output 1 PNLK - electrical output 2 PNVBA - electrical connection M8 - electrical outlet direction on top

Accessories



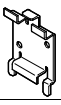

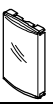


	→ Page/ online
1 Pressure sensors SPAU, display variants for threaded mounting	spau
2 Pressure sensors SPAU, display variants for front panel mounting	spau
3 Connecting cable, angled socket M8x1	1266
4 Connecting cable, straight socket M8x1	1266
3 Connecting cable, angled socket M12x1	1266
4 Connecting cable, straight socket M12x1	1266

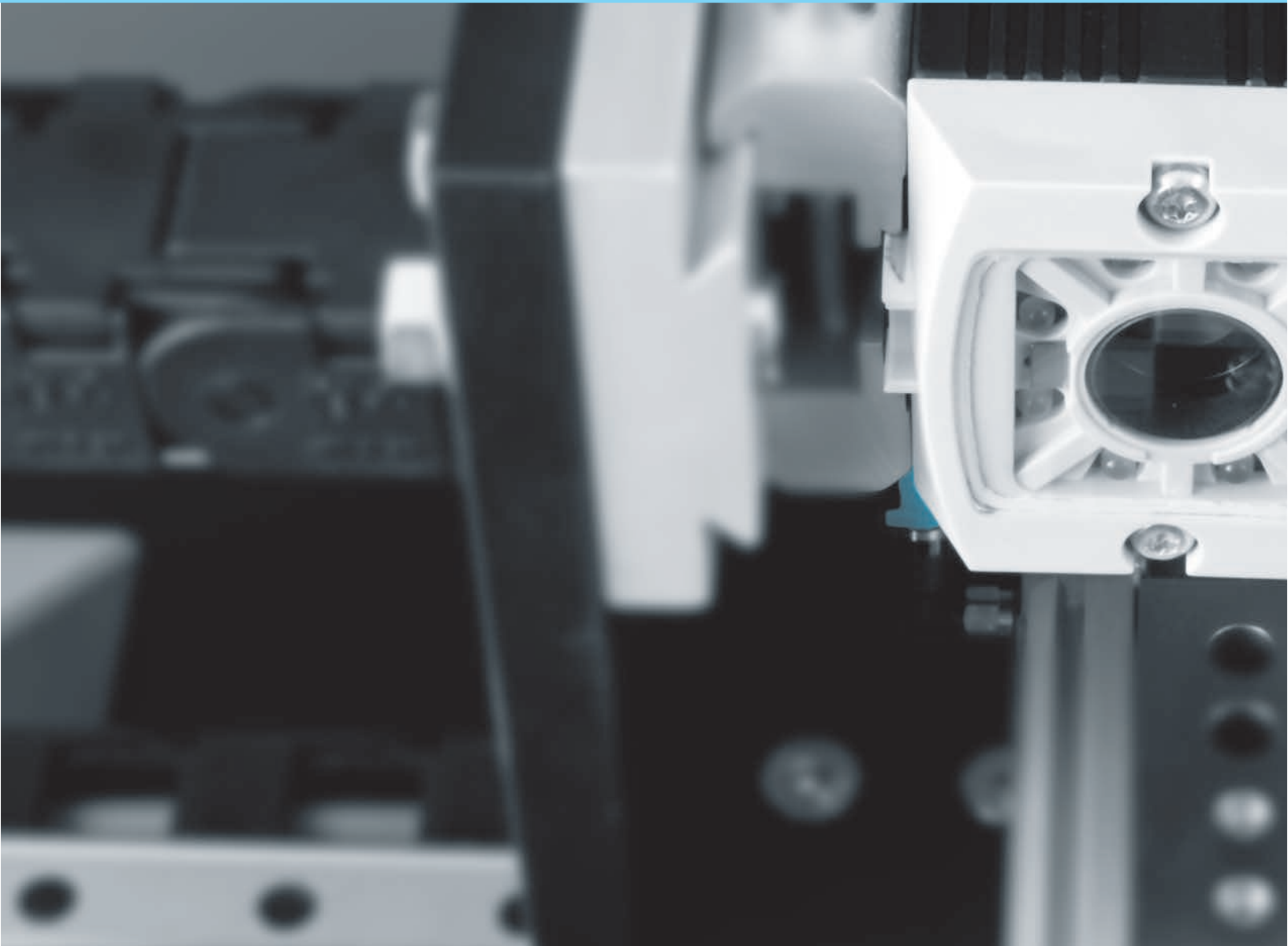
	→ Page/ online
5 Wall mounting SAMH-PU-W	1266
6 Mounting bracket SAMH-PU-A	1266
7 H-rail to DIN EN 60715	nrh
8 Safety guard SACC-PU-G	1266
9 Pressure supply port	qs
10 Service unit	ms4

Pressure sensors SPAU

Accessories – Ordering data

	Electrical connection	Number of wires	Cable length [m]	Part no.	Type
Connecting cables M12x1,					
4 Straight socket Data sheets → Page 1543					
	M8x1, 4-pin	4	2.5	★ 541342	NEBU-M8G4-K-2.5-LE4
			5	★ 541343	NEBU-M8G4-K-5-LE4
	M12x1, 5-pin	4	2.5	★ 550326	NEBU-M12G5-K-2.5-LE4
			5	★ 541328	NEBU-M12G5-K-5-LE4
3 Angled socket Data sheets → Page 1543					
	M8x1, 4-pin	4	2.5	★ 541344	NEBU-M8W4-K-2.5-LE4
			5	★ 541345	NEBU-M8W4-K-5-LE4
	M12x1, 5-pin	4	2.5	★ 550325	NEBU-M12W5-K-2.5-LE4
			5	★ 541329	NEBU-M12W5-K-5-LE4
Wall mounting					
	-			8003355	SAMH-PU-W
Mounting bracket					
	-			8003354	SAMH-PU-A
Safety guard					
	-			8003353	SACC-PU-G

12 Image processing systems




Keeping an eye on productivity and quality!

- + The vision sensors SBSx are the easy way to get started with image processing and, depending on the model, enable reading of 1D/2D codes or quality inspection of parts
- + Compact vision systems SBOx-M: intelligent compact vision systems for diagnostics and function monitoring of fast motion sequences
- + Compact vision systems SBOx-Q: intelligent cameras for precise positioning of axes, type identification, position detection and 2D quality inspection of moving and stationary parts

Contents

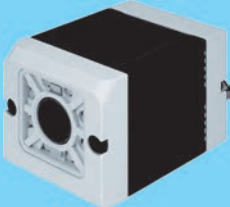
Product overview 1270
 Camera heads SBPB 1270
NEW New series



SBPB
 Camera head

- + High speed and high resolution
- + High-quality robust housing


→ page 1270



SBSI
 Code reader/object sensor

- + Vision sensor with integrated lighting/lens
- + Enables reading of 1D/2D codes or quality inspection of parts

→ page 1270



SBSC
 Colour sensor/
 universal sensor

- + Vision sensor with C mount
- + Enables reading of 1D/2D codes or quality inspection of parts

→ page 1271




CHB-C-N
 Vision system

- + Intelligent line-scan camera
- + For orientation recognition and quality inspection of small moving parts
- + Encoder connection

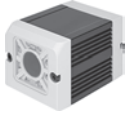

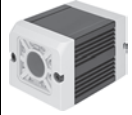

→ page 1271

Product overview

Camera heads





		NEW
Type	Camera heads SBPB	
Sensor resolution	1280 x 1024 pixels (SXGA), 1600 x 1200 pixels (UXGA), 2456 x 2054 pixels (5MPix)	
Lens mounting	C mount	
Sensor type	Colour, monochrome	
Frame rate (full image)	36, 60	
Exposure time	9 ... 10,000,000 µs	
NEW	<ul style="list-style-type: none"> New series 	
Description	<ul style="list-style-type: none"> High-speed and high-resolution USB camera High-quality, robust housing 	
→ Page/online	sbpb	

Vision sensors

				
Type	Code readers SBBSI-B, SBBS-C	Object sensors SBBSI-Q, SBBS-C-Q	Colour sensors SBBSI-F, SBBS-C-F	Universal sensors SBBS-C-U
Sensor resolution	1280x1024 pixels (SXGA), 736x480 pixels (Wide VGA)	1280x1024 pixels (SXGA), 736x480 pixels (Wide VGA)	736x480 pixels (Wide VGA)	1280x1024 pixels (SXGA), 736x480 pixels (Wide VGA)
Working distance	6 mm ... infinite	6 mm ... infinite	6 mm ... infinite	
Field of view	Depends on the lens chosen, min. 5x4 mm, min. 8x6 mm, min. 16x13 mm	Depends on the lens chosen, min. 5x4 mm, min. 8x6 mm, min. 16x13 mm	Depends on the lens chosen, min. 5x4 mm, min. 8x6 mm	Depends on the lens chosen
Frame rate (full image)	40 ... 50 fps	40 ... 50 fps	40 fps	50 fps
Max. number of inspection programs/jobs	255	255	255	255
Description	<ul style="list-style-type: none"> Reading 1D barcodes, 2D matrix codes and directly marked codes Equipped with position tracking and additional inspection algorithms High resolution of 1.3 megapixels Vision sensor with integrated lighting/lens or with CS mount 	<ul style="list-style-type: none"> Easy quality inspection 360° position tracking Quick and powerful recognition algorithms BLOB function for position sensing, quality inspection or for counting multiple parts in the image Calliper function for measuring products (distance, edge position) Vision sensor with integrated lighting/lens or with CS mount 	<ul style="list-style-type: none"> With detectors for contrast, position tracking based on contour, colour field, grey threshold, brightness, contour matching, pattern matching, edge detection, BLOB, colour value and list Vision sensor with integrated lighting/lens or with CS mount 	<ul style="list-style-type: none"> Field of view can be individually determined using a suitable lens OCR function (Optical Character Recognition) BLOB function for position sensing, quality inspection or for counting multiple parts in the image Calliper function for measuring products (distance, edge position) Calibration function Vision sensor with CS mount
→ Page/online	sbsi	sbsi	sbsi	sbsi

Product overview

Compact vision systems

Type	 Compact vision system SBOA-M	 Compact vision system SBOC-M	 Compact vision system SBOC-Q	 Compact vision system SBOI-Q
Sensor resolution	640x480 pixels (VGA)	640 x 480 pixels (VGA)	752x480 pixels (Wide VGA)	752x480 pixels (Wide VGA)
Working distance	Depends on the lens chosen	Depends on the lens chosen	Depends on the lens chosen	20 ... 550 mm
Field of view	Depends on the lens chosen	Depends on the lens chosen	Depends on the lens chosen	7.9x5.5 mm ... 195x125 mm
Frame rate (full image)	27 ... 241 fps	241 fps	60 fps	60 fps
Exposure time	1 ... 1,000,000 µs	1 ... 1,000,000 µs	18 ... 200,000 µs	18 ... 200,000 µs
Description	<ul style="list-style-type: none"> Systainer with compact vision system SBOC-M and accessories, e.g. lens 4-48 mm, LED lights 84 W/9000 lumen, two tripods, cable 	<ul style="list-style-type: none"> High-speed camera for diagnostics and commissioning as well as for function monitoring of fast motion sequences Recording and storage electronics integrated in the camera For standard lens with C mount connection Can be networked via Ethernet Compact dimensions, low weight 	<ul style="list-style-type: none"> Intelligent field-based camera For 2D quality inspection, position and rotary orientation detection, reading 1D and 2D codes, reading optical characters (OCR) Integrated full PLC (CODESYS) Ethernet and CAN for communicating with higher-order controllers For standard lens with C mount connection 	<ul style="list-style-type: none"> Intelligent field-based camera For 2D quality inspection, position and rotary orientation detection, reading 1D and 2D codes, reading optical characters (OCR) Integrated full PLC (CODESYS) Ethernet and CAN for communicating with higher-order controllers
→ Page/online	sbox	sbox	sbox	sbox

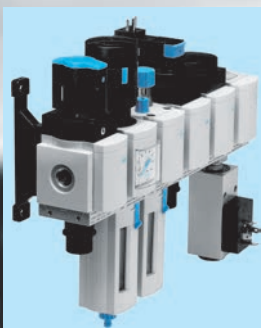
Checkbox Compact

Type	 Vision system CHB-C-N
Sensor resolution	2048 pixels/line
Sensor type	CMOS line scan
Max. Number of inspection programs	256
Min. part length	1 mm
Max. part length	Depends on belt speed and resolution required
Description	<ul style="list-style-type: none"> Intelligent line-scan camera For orientation recognition and quality inspection of small moving parts Encoder connection Teach-in function
→ Page/online	chb-c

13 Compressed air preparation

- + Service units for preparing compressed air, consisting of different combinations of units in two series
- + Filter regulators: space-saving design with filter and regulator integrated in a single unit
- + Filters for purifying the compressed air for various quality classes
- + Pressure regulators for air preparation
- + Lubricators for improving the compressed air as lubricant for pneumatic components
- + On-off valves for switching on and exhausting systems
- + Soft-start valves for gradual pressure build-up
- + Adsorption dryers with a defined pressure dew point
- + Branching modules and distributor blocks





MSB ★

Service unit combinations, MS series

- + Combinations of filter regulator, filter, lubricator, on-off valve and soft-start valve
- + Sizes 4, 6

→ page 1293



MS-LR ★

Pressure regulators, MS series

- + Sizes 4, 6, 9, 12
- + Flow rate 1000 ... 22,000 l/min
- + Pressure gauge with bar, psi, MPa

→ page 1321



MS-EE ★

Solenoid actuated on-off valves, MS series

- + Sizes 4, 6, 9, 12
- + Flow rate 1000 ... 32,000 l/min
- + 24 V DC, 110, 230 V AC
- + Solenoid actuated 3/2-way valve, normally closed

→ page 1371



MS-FRM ★

Branching modules, MS series

- + Sizes 4, 6, 9, 12
- + Flow rate 1200 ... 42,000 l/min



→ page 1387

Contents



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Precision pressure regulators MS-LRP	1341
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Product overview

Software tool

<p>Air consumption</p>		<p>Calculate your system's air consumption quickly and conveniently. Simply enter all the drives and tubing, set the cycle times and working pressure and the air consumption per minute and per day will be calculated for you. It includes a feature for exporting the input table together with the result directly to Excel.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button • or on the DVD under "Engineering Tools"
<p>Configurator</p>		<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection. A dynamic graphic generated on the basis of the configuration provides visual assistance in selecting the correct product features.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>

Service unit combinations: MS series

	 <p>Service unit combinations MSB4, MSB6, MSB9</p>	 <p>Service unit combinations MSE6</p>
<p>Type</p>	★	
<p>Pneumatic connection 1</p>	<p>G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4</p>	<p>G1/2</p>
<p>Standard nominal flow rate</p>	<p>750 ... 18,000 l/min</p>	<p>4500 l/min</p>
<p>Pressure regulation range</p>	<p>0.5 ... 16 bar</p>	
<p>Flow measuring range</p>		<p>50 ... 5000 l/min</p>
<p>Operating pressure</p>	<p>0 ... 20 bar</p>	<p>4 ... 10 bar</p>
<p>Grade of filtration</p>	<p>0.01 ... 40 µm</p>	
<p>Fieldbus interface</p>		<p>Sub-D socket, 9-pin; 2x M12x1 socket, 4-pin, D-coded; 2x RJ45 push-pull socket, AIDA; 2x SCRJ push-pull socket, AIDA</p>
<p>Description</p>	<ul style="list-style-type: none"> • Combination of filter regulator MS-LFR, lubricator MS-LOE, on-off valve MS-EM, MS-EE, soft-start valve MS-DL, branching module MS-FRM • Sizes: 4, 6, 9 	<ul style="list-style-type: none"> • Intelligent pneumatic service unit for optimising the use of compressed air as an energy source • Function: energy saving (2/2-way function DE, V24) • Equipped with measuring, control and diagnostic functions • Identification of production downtime and leakages • Use as process monitoring module • Electrical actuation via bus node • Size: 6
<p>→ Page/online</p>	<p>1293, msb9</p>	<p>mse6</p>

Service unit combinations: D series, polymer

Type	Service unit combinations FRC-K	Service unit combinations LFR-DB
Pneumatic connection 1	G1/4	G1/4
Standard nominal flow rate	400 ... 700 l/min	1900 l/min
Pressure regulation range	0.5 ... 7 bar	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar	1.5 ... 10 bar
Grade of filtration	40 µm	40 µm
Description	<ul style="list-style-type: none"> • Combination of on-off valve, filter regulator, distributor module and lubricator • Size: mini 	<ul style="list-style-type: none"> • Combination of on-off valve, filter regulator and distributor module • Size: mini
→ Page/online	frc	lfr

Filter regulators/lubricators: MS series


Type	Service unit combinations MSB4-FRC, MSB6-FRC	★
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2	
Standard nominal flow rate	850 ... 4800 l/min	
Pressure regulation range	0.3 ... 12 bar	
Operating pressure	0.8 ... 20 bar	
Grade of filtration	5 ... 40 µm	
Description	<ul style="list-style-type: none"> • Filter, regulator and lubricator functions in a single unit • High flow rate and highly efficient in removing contaminants • Good regulation characteristics with minimal pressure hysteresis • Sizes: 4, 6 	
→ Page/online	1305	

Filter regulators/lubricators: D series, polymer


Type	Service units FRC-DB
Pneumatic connection 1	G1/4
Standard nominal flow rate	≥550 l/min
Pressure regulation range	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> • Filter, regulator and lubricator functions in a single unit • With manual or semi-automatic condensate drain • Size: mini
→ Page/online	frc

Product overview





Filter regulators: MS series

	
Type	Filter regulators MS4-LFR, MS6-LFR, MS9-LFR, MS12-LFR
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, internal
Standard nominal flow rate	850 ... 24,000 l/min
Pressure regulation range	0.3 ... 16 bar
Operating pressure	0.8 ... 20 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> MS4-LFR, MS6-LFR: directly actuated diaphragm regulator, MS9-LFR: piloted or directly actuated filter-diaphragm regulator, MS12-LFR: piloted diaphragm regulator without internal air consumption Good regulation characteristics with primary pressure compensation and minimal hysteresis Good particle and condensate separation With or without secondary exhausting High flow rate Lockable rotary knob Return flow option for exhausting from output 2 to input 1 already integrated Sizes: 4, 6, 9, 12
→ Page/online	1309, ms12-lfr

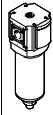

Filter regulators: D series, polymer

	
Type	Filter regulators LFR-DB
Pneumatic connection 1	G1/4
Standard nominal flow rate	≥1000 l/min
Pressure regulation range	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> With manual or semi-automatic condensate drain Size: mini
→ Page/online	lfr




Filters: MS series

							
Type	Filters MS4-LF, MS6-LF, MS9-LF, MS12-LF	Fine filters MS4-LFM-B, MS6-LFM-B, MS9-LFM-B, MS12-LFM-B	Micro filters MS4-LFM-A, MS6-LFM-A, MS9-LFM-A, MS12-LFM-A	Activated carbon filters MS4-LFX, MS6-LFX, MS9-LFX, MS12-LFX			
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, internal	G1/8, G1/4, G3/8, G1/2, G3/4, G1, manifold module	G1/8, G1/4, G3/8, G1/2, G3/4, G1, manifold module	G1/2, G1/4, G1/8, G3/8			
Standard nominal flow rate	1000 ... 16,000 l/min	54 ... 23,300 l/min	54 ... 23,300 l/min	360 ... 7090 l/min			
Operating pressure	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar			
Grade of filtration	5 ... 40 µm	1 µm	0.01 µm				
Description	<ul style="list-style-type: none"> Good particle and condensate separation High flow rate with minimal pressure drop Optionally with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> High-efficiency filter for exceptionally clean compressed air Removal of oil aerosols from compressed air Optionally with differential pressure indicator for indication of contamination Optionally with electronic filter pollution indicator Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> High-efficiency filter for exceptionally clean compressed air Removal of oil aerosols from compressed air Optionally with differential pressure indicator for indication of contamination Optionally with electronic filter pollution indicator Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> Removal of gaseous oil particles from compressed air using activated carbon Air quality class at the output [1.4.1] to ISO 8573-1 Elimination of odours and vapours Residual oil content ≤ 0.003 mg/m³ Sizes: 4, 6, 9, 12 			
→ Page/online	ms4-lf	ms4-lfm-b	ms4-lfm-a	ms4-lfx			

Filters: individual devices



Type	 Micro filters PFML	 Filter silencers LFU
Size	90 mm, 186 mm	G1/4, G3/8
Grade of filtration	0.01 µm	1 µm
Operating pressure	0 ... 50 bar	0 ... 16 bar
Flow rate with respect to atmosphere	3406 ... 138,233 l/min	4000 ... 12,500 l/min
Noise reduction		Reduction by 40 dB
Description	<ul style="list-style-type: none"> For high-pressure applications For use with food see www.festo.com/sp/pfml > tab "Certificates" 	<ul style="list-style-type: none"> Removes up to 99.99% of oil and other contaminants from exhaust air Manual rotary condensate drain Reduced exhaust noise regardless of frequency
→ Page/online	pfml	lfu

Regulators: MS series



Type	 Pressure regulators MS4-LR, MS6-LR, MS9-LR	 Pressure regulators MS12-LR	 Pressure regulators MS4-LRB, MS6-LRB
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2	Connecting plate	G1/4, G1/2
Standard nominal flow rate	1000 ... 26,000 l/min	12000 ... 22,000 l/min	300 ... 7300 l/min
Pressure regulation range	0.3 ... 16 bar	0.15 ... 16 bar	0.3 ... 16 bar
Operating pressure	0.8 ... 20 bar	0.8 ... 21 bar	0.8 ... 20 bar
Max. pressure hysteresis	0.25 ... 0.4 bar	0.04 ... 0.4 bar	0.25 bar
Description	<ul style="list-style-type: none"> High flow rate with minimal pressure drop Good regulation characteristics with minimal hysteresis and primary pressure compensation Available with or without secondary exhausting Lockable rotary knob Optional pressure sensor and rotary knob pressure gauge Sizes: 4, 6, 9 	<ul style="list-style-type: none"> High flow rate with minimal pressure drop Good regulation characteristics with minimal hysteresis and primary pressure compensation With secondary exhausting Lockable rotary knob MS12-LR-...-PO: pneumatically actuated (pressure range determined by means of pilot regulator) MS12-LR-...-PE6: solenoid actuated (pilot control by proportional pressure regulator) Size: 12 	<ul style="list-style-type: none"> To build up a regulator manifold with through air supply for pressure ranges that can be adjusted independently of another Good regulation characteristics with minimal hysteresis and primary pressure compensation Lockable rotary knob With and without secondary exhausting Integrated return flow option for exhausting from output 2 to input 1 Optional pressure sensor and rotary knob pressure gauge Sizes: 4, 6
→ Page/online	1321	ms12-lr	1333

Product overview


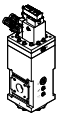
Regulators: MS series

		
Type	Precision pressure regulators MS6-LRP, MS6-LRPB	Electrical pressure regulators MS6-LRE
Pneumatic connection 1	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2
Standard nominal flow rate	800 ... 5000 l/min	2200 ... 7500 l/min
Pressure regulation range	0.05 ... 12 bar	0.3 ... 16 bar
Operating pressure	1 ... 14 bar	0.8 ... 20 bar
Max. pressure hysteresis	0.02 bar	0.25 bar
Description	<ul style="list-style-type: none"> As individual device and for manifold assembly Manifold assembly with through air supply Good regulation characteristics with minimal hysteresis and primary pressure compensation High secondary exhausting Lockable rotary knob Optionally with pressure sensor with display Size: 6 	<ul style="list-style-type: none"> With integrated electric drive unit for remotely setting the output pressure Constant output pressure even in the event of a power failure thanks to the fail-safe function Optionally with operator unit with display Optional pressure sensor With or without secondary exhausting Size: 6
→ Page/online	1341	ms6-lre


Regulators: D series, polymer

		
Type	Pressure regulators LR-DB	Pressure regulator combinations LRB-DB
Pneumatic connection 1	G1/4	G1/2
Standard nominal flow rate	≥1300 l/min	≥1000 l/min
Pressure regulation range	0.5 ... 7 bar	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar	1.5 ... 10 bar
Max. pressure hysteresis	0.5 bar	0.5 bar
Description	<ul style="list-style-type: none"> Set values are secured by the detent on the rotary knob Optionally with pressure gauge Size: mini 	<ul style="list-style-type: none"> Regulator manifold with through air supply for pressure ranges that can be adjusted independently of another Set values are secured by the detent on the rotary knob Without pressure gauge Size: mini
→ Page/online	lr-db	lrb-db




Regulators: individual devices

		
Type	Precision pressure regulators LRP, LRPS	Electrical pressure regulators PREL
Pneumatic connection 1	G1/8, G1/4, for connecting plate Ø 7 mm	G1
Standard nominal flow rate	240 ... 2300 l/min	
Pressure regulation range	0.05 ... 10 bar	0.2 ... 40 bar
Operating pressure	1 ... 12 bar	0 ... 50 bar
Max. pressure hysteresis	0.02 bar	0.1 bar
Description	<ul style="list-style-type: none"> Lockable design Good regulation characteristics with minimal hysteresis and primary pressure compensation High secondary exhausting 	<ul style="list-style-type: none"> For high-pressure applications For use with food see www.festo.com/sp/prel > tab "Certificates" Size: 186 mm
→ Page/online	1411	prel

Lubricators: MS series




	
Type	Lubricators MS4-LOE, MS6-LOE, MS9-LOE, MS12-LOE
Pneumatic connection 1	G1/4, G1/8, G3/8, G1/2, internal
Standard nominal flow rate	1100 ... 27,000 l/min
Operating pressure	1 ... 16 bar
Minimum flow rate for lubricator function	40 ... 400 l/min
Description	<ul style="list-style-type: none"> • Proportional lubricator with precision oil metering • Quick and easy top-up even under pressure • Oil capacity 30 ... 1500 cm³ • Sizes: 4, 6, 9, 12
→ Page/online	ms4-loe

On-off and soft-start valves: MS series


			
Type	Soft-start/quick exhaust valves MS6-SV-E, MS6-SV-D	Soft-start/quick exhaust valves MS6-SV-C, MS9-SV-C	On-off valves MS4-EM1, MS6-EM1, MS9-EM, MS12-EM
Pneumatic connection 1	G1/2	G1/2	Manifold module, G1/8, G1/4, G3/8, G1/2
Standard nominal flow rate	4300 l/min	5700 ... 16,550 l/min	1200 ... 32,000 l/min
Operating pressure	3.5 ... 10 bar	3 ... 16 bar	0 ... 20 bar
Type of actuation	Electric	Electric	Manual
Description	<ul style="list-style-type: none"> • Reliable 2-channel exhausting with self-monitoring up to Performance Level e and category 4 to EN ISO 13849-1 • SIL 3 • For reducing pressure quickly and reliably and for building up pressure gradually • Adjustable pressure build-up time • Optionally with silencer • Supply voltage 24 V DC • Size: 6 	<ul style="list-style-type: none"> • Single-channel exhausting up to Performance Level c and category 1 to EN ISO 13849-1 • For reducing pressure quickly and reliably and for building up pressure gradually • Adjustable pressure build-up time • Adjustable switch-through pressure • Supply voltage 24 V DC • Sizes: 6, 9 	<ul style="list-style-type: none"> • Manual 3/2-way valve for pressurising and exhausting pneumatic systems • A silencer can be attached or the exhaust air can be ducted at port 3 • Switching position is immediately recognisable • Optionally with pressure gauge and pressure sensor • Sizes: 4, 6, 9, 12
→ Page/online	ms6-sv-e , 1349	1349	1363

Product overview



On-off and soft-start valves: MS series

Type	 On-off valves MS4-EE, MS6-EE, MS9-EE, MS12-EE	 Soft-start valves MS4-DL, MS6-DL, MS12-DL	 Soft-start valves MS4-DE, MS6-DE, MS12-DE
Pneumatic connection 1	Manifold module, G1/8, G1/4, G3/8, G1/2	Manifold module, G1/8, G1/4, G3/8, G1/2	Manifold module, G1/8, G1/4, G3/8, G1/2
Standard nominal flow rate	1000 ... 32,000 l/min	1000 ... 42,000 l/min	1000 ... 42,000 l/min
Operating pressure	3 ... 18 bar	2 ... 20 bar	3 ... 18 bar
Type of actuation	Electric	Pneumatic	Electric
Description	<ul style="list-style-type: none"> • Electrical 3/2-way valve for pressurising and exhausting pneumatic systems • A silencer can be attached or the exhaust air can be ducted at port 3 • Supply voltage 24 V DC, 110, 230 V AC • Optionally with pressure gauge and pressure sensor • With solenoid coil, without plug socket • Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> • 2/2-way valve for slowly pressurising pneumatic systems (for use with on-off valves EM1 and EE) • For building up pressure gradually • Adjustable pressure build-up time • Sizes: 4, 6, 12 	<ul style="list-style-type: none"> • 2/2-way valve for slowly pressurising pneumatic systems with electrically switchable pressure switchover point • Supply voltage 24 V DC, 110, 230 V AC • Switchable pressure switching point • For advancing the drives slowly and reliably into the initial position • For avoiding sudden and unexpected movements • Adjustable pressure build-up time • Sizes: 4, 6, 12
→ Page/online	1371	1381	ms4-de

On-off and soft-start valves: D series, polymer

Type	 On-off valves HE-DB
Pneumatic connection 1	G1/4
Standard nominal flow rate	2300 l/min
Operating pressure	0 ... 10 bar
Type of actuation	Manual
Description	<ul style="list-style-type: none"> • 3/2-way manual on-off valve • The switching position is recognisable • Commercially available padlock for security
→ Page/online	he-db


On-off and soft-start valves: individual devices

Type	 On-off valves PVEL	 Shut-off valves HE-LO
Pneumatic connection 1	SAE flange	G3/8, G1/2, G3/4, G1
Standard nominal flow rate		5200 ... 10,000 l/min
Operating pressure	0 ... 50 bar	1 ... 10 bar
Nominal size DN		54
Type of actuation	Manual, pneumatic	Manual
Description	<ul style="list-style-type: none"> • For use with food see www.festo.com/sp/pvel > tab "Certificates" • For high-pressure applications • Size: 124 mm 	<ul style="list-style-type: none"> • For shutting off the compressed air supply whilst simultaneously exhausting systems powered by compressed air • Can be locked in the closed position • Screwed into piping, through-holes for wall mounting • To OSHA 29 CFR 147
→ Page/online	pvel	he-lo


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Compressed air preparation



Air dryers: MS series

	
Type	Membrane air dryers MS4-LDM1, MS6-LDM1
Pneumatic connection 1	G1/4, G1/2
Standard nominal flow rate	50 ... 400 l/min
Operating pressure	3 ... 12.5 bar
Pressure dew point reduction	20 K
Description	<ul style="list-style-type: none"> Final dryer with excellent operational reliability Suitable for use as an individual device or for integration into existing service unit combinations Flow rate-dependent dew point reduction Wear-free function requiring no external energy Sizes: 4, 6
→ Page/online	ms4-ldm1

Air dryers: individual devices


	
Type	Adsorption dryers PDAD
Pneumatic connection 1	G3/8, G1/2
Input pressure 1	4 ... 16 bar
Pressure dew point	-40°C
Description	<ul style="list-style-type: none"> Ideal for decentralised compressed air drying Integrated filtering of oil and particulates Defined pressure dew point Low purge air consumption
→ Page/online	pdad

Compressed air distributors: MS series




		
Type	Branching modules MS4-FRM, MS6-FRM, MS9-FRM, MS12-FRM	★ Distributor blocks MS4-FRM-FRZ, MS6-FRM-FRZ ★
Pneumatic connection 1	G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, G3/8, manifold module	G1/4, G1/2
Standard nominal flow rate in main flow direction 1->2	1200 ... 50,000 l/min	4050 ... 14,600 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar
Description	<ul style="list-style-type: none"> Optionally with integrated non-return function and pressure switch Outlet at top and bottom Can be used as an intermediate distributor for varying air qualities Optionally with pressure sensor Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> Slim pneumatic distributor Outlet at top and bottom Can be used as an intermediate distributor for varying air qualities Can be used as an adapter between two pressure regulators with large rotary knob with pressure gauge on size MS4 Sizes: 4, 6
→ Page/online	1387	1395

Product overview

Compressed air distributors: individual devices


	
Type	Branching modules PMBL
Pneumatic connection 3	G1
Pneumatic connection 3	G1
Operating pressure	0 ... 50 bar
Description	<ul style="list-style-type: none"> For high-pressure applications For use with food see www.festo.com/sp/pmbL > tab "Certificates" Sizes: 90 mm, 186 mm
→ Page/online	pmbL

Condensate drain

			
Type	Water separators MS6-LWS, MS9-LWS, MS12-LWS	Condensate drain PWEA	Condensate drain WA
Pneumatic connection		G1/2	M9
Pneumatic connection 1	G1/4, G3/8, G1/2		
Operating pressure	0.8 ... 16 bar	0.8 ... 16 bar	1.5 ... 16 bar
Description	<ul style="list-style-type: none"> Replacement of filter cartridges not required Constantly high condensate separation (99%) up to the maximum flow rate Optionally with fully automatic or fully automatic, electrically actuated condensate drain Sizes: 6, 9, 12 	<ul style="list-style-type: none"> Fully automatic condensate drain with independent electrical controller Interface for communicating with higher-order control device Reliable thanks to non-contacting capacitive sensor Can be used with service units or simply in piping systems Ready status and switching status indicated via LEDs and electrical interface 	<ul style="list-style-type: none"> For attachment to service units and compressed air networks/systems Automatic emptying after the max. fill level has been reached Automatic emptying after the operating pressure $p < 0.5$ bar is switched off Manual actuation during operation is possible
→ Page/online	1399	pwea	wa

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Pressure boosters



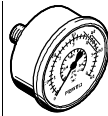
	
Type	Pressure boosters DPA
Pneumatic connection 1	G1/4, G3/8, G1/2, QS-10, QS-12, QS-16
Output pressure 2	4 ... 16 bar
Input pressure 1	2 ... 10 bar
Description	<ul style="list-style-type: none"> Pneumatic pressure increase up to the double input pressure Optionally as pressure booster/air pressure reservoir combinations Any mounting position Short filling times Long service life Compact design Optionally with sensing option
→ Page/online	dpa

Compressed air preparation

Pressure indicators

				
Type	Pressure gauges PAGN	Pressure gauges MA	Flanged pressure gauges FMA	Flanged precision pressure gauges, precision pressure gauges FMAP, MAP
Type of mounting	In-line installation	In-line installation	Front panel mounting	Front panel mounting, in-line installation
Indicating range	0 ... 16 bar	0 ... 25 bar	0 ... 16 bar	0 ... 16 bar
Pneumatic connection	Cartridge 10 mm, R1/8	G1/8, G1/4, M5, QS-4, QS-6, QS-8, R1/8, R1/4	G1/4	G1/4, R1/8
Operating pressure	0 ... 16 bar	0 ... 25 bar	0 ... 16 bar	0 ... 16 bar
Measurement accuracy class	1.6, 2.5, 4	1.6, 2.5, 4, 5	1.6, 2.5	1, 1.6
Description	<ul style="list-style-type: none"> Pneumatic connection via QSP-10 Mounting via retaining clamp Display units bar, psi 	<ul style="list-style-type: none"> Designs based on DIN EN 837-1, available with red-green range Pneumatic connection via R, metric or G thread, push-in connector Display units bar, psi, MPa 	<ul style="list-style-type: none"> Designs based on EN 837-1 Pneumatic connection via G thread Display units bar, psi 	<ul style="list-style-type: none"> Designs based on EN 837-1 Pneumatic connection via R or G thread Display units bar, psi
→ Page/online	pagn	ma	fma	fmap

Pressure indicators

			
Type	Pressure gauge kits DPA-MA-SET	Vacuum gauges VAM, FVAM	Pressure gauges PAGL
Type of mounting	Via male thread	Front panel mounting, screw-in	Front panel mounting, screw-in
Indicating range		-1 ... 9 bar	0 ... 60 bar
Pneumatic connection	G1/8, G1/4, R1/8	G1/8, G1/4, R1/8, R1/4	G1/4
Operating pressure	10 ... 16 bar	-1 ... 9 bar	0 ... 60 bar
Measurement accuracy class	2.5, 4	2.5	1.6
Description	<ul style="list-style-type: none"> For pressure booster DPA For monitoring the input and output pressure Pneumatic connection via R or G thread 	<ul style="list-style-type: none"> Designs based on DIN EN 837-1, available with red-green range Screw-in or front panel mounting Pneumatic connection via R or G thread Double or single scale Display units bar, in Hg, psi 	<ul style="list-style-type: none"> For high-pressure applications Display units bar, psi, MPa
→ Page/online	dpa	vam	pagl

Product overview

Customised components – for your specific requirements



Components for compressed air preparation with customised designs

Can't find the compressed air preparation components you need in our catalogue?

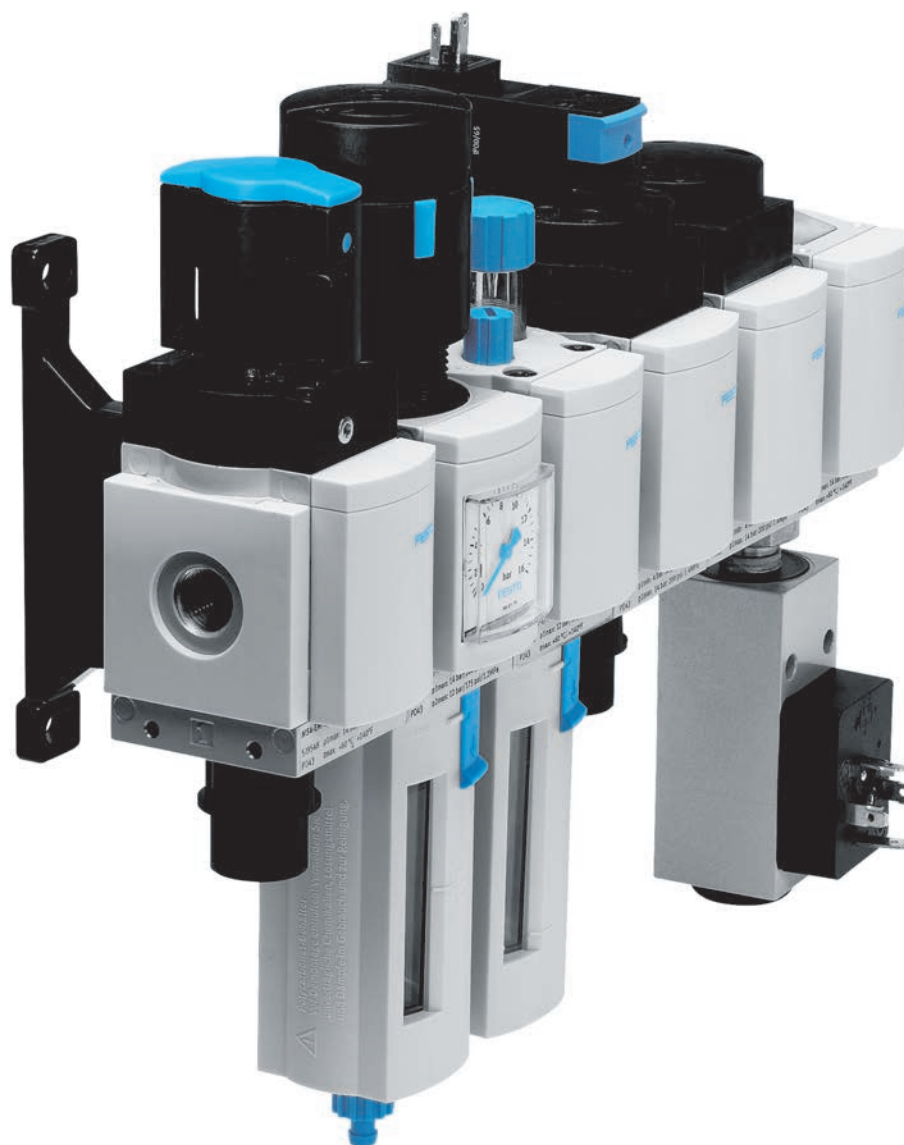
We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Modified pressure range
- Rotary knob: in a special colour, with protection against rotation
- Fitting: integrated throttling port, special thread
- Tubing with special printing
- Pressure gauge with red-green range

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help.

→ www.festo.com/contact



MS series >

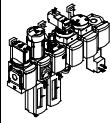
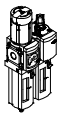



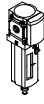

Selection aid

Service unit combinations
and individual devices, MS series

MS series >

MS series service units

Product range overview

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Grade of filtration [µm]				
				0.05	0.05	0.1	0.3	0.1	0.5	0.01	1	5	40	
Code			AG...	0.7	2.5	4	7	12	16	D8	A	B	C	E
Service unit combinations (additional variants can be ordered using the configurator → online: msb4, msb6 or msb9)														
MSB		4	G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	■	■
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	■	■
		9	-	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-	-
Service unit combinations														
MSB-FRC		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	■	■
		9	-	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-	-
Individual devices														
Filter regulators MS-LFR		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	■	■
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	■	■	-	-	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	■	■
Filters MS-LF		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	■	■
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	■	■
Fine and micro filters MS-LFM		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	■	■	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	■	■	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	■	■	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	■	■	-	-	-
Activated carbon filters MS-LFX		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-
Water separators MS-LWS		4	-	-	-	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-

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Compressed air preparation











Product range overview

Type	Size	Bowl guard		Condensate drain				Pressure indicator					Security		Options		→ Page/ online
		Plastic bowl guard	Metal bowl guard	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electric	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter for EN pressure gauge G1/8	Adapter for EN pressure gauge G1/4	Pressure sensor	Rotary knob with detent, can be locked using accessories	Rotary knob with integrated lock	Silencers	Direction of flow from right to left	
Code		R	U	M	H	V	E...	VS	AG	A8	A4	AD...	AS	E11	S	Z	
Service unit combinations																	
MSB	4	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	1295
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Service unit combinations																	
MSB-FRC	4	■	-	■	-	■	-	-	■	-	-	-	■	-	-	■	1307
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Individual devices																	
Filter regulators MS-LFR	4	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	1311
	6	■	■	■	■	■	■	■	■	-	■	■	■	■	-	■	
	9	-	■	■	■	■	■	■	■	-	■	■	■	■	-	■	
	12	-	■	■	-	■	■	■	■	-	■	-	■	■	-	■	
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms*-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms*-lfm
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms*-lfx
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1401
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	

MS series >

MS series service units

Product range overview

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Supply voltage			
				0.05	0.05	0.1	0.3	0.1	0.5	24 VDC, connection pattern to EN 175301	24 V DC, connection M12 to IEC 61076-2-101	110 VAC, pin allocation to EN 175301	230 VAC, connection pattern to EN 175301
Code		AG...		D2	D4	D5	D6	D7	D8	V24	V24P	V110	V230
Individual devices													
Pressure regulators MS-LR		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	■	■	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	-
Pressure regulators MS-LRB		4	G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRP		4	-	-	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRPB		4	-	-	-	-	-	-	-	-	-	-	-
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Electric pressure regulators MS-LRE		4	-	-	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Lubricators MS-LOE		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
On-off valves MS-EM(1)		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
On-off valves MS-EE		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	■	-	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	■	-	■	■
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	■	■	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	■	■	■	■
Soft-start valves MS-DL		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
Soft-start valves MS-DE		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	■	-	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	■	-	■	■
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■

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Compressed air preparation

Product range overview




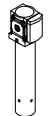



Type	Size	Bowl guard		Pressure indicator				Security			Options		→ Page/ online
		Plastic bowl guard	Meta bowl guard	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter for EN pressure gauge G1/8	Adapter for EN pressure gauge G1/4	Pressure sensor	Rotary knob with detent, can be locked using accessories	Rotary knob with integrated lock	Silencers	Direction of flow from right to left	
Code		R	U	VS	AG	A8	A4	AD...	AS	E11	S	Z	
Individual devices													
Pressure regulators MS-LR	4	-	-	■	■	■	■	■	■	■	-	■	1323
	6	-	-	■	■	-	■	■	■	■	-	■	
	9	-	-	■	■	-	■	■	■	■	-	■	
	12	-	-	■	■	-	■	-	■	■	-	■	
Pressure regulators MS-LRB	4	-	-	■	■	■	■	■	■	■	-	■	1335
	6	-	-	■	■	-	■	■	■	■	-	■	
	9	-	-	■	■	-	■	■	■	■	-	■	
	12	-	-	■	■	-	■	■	■	■	-	■	
Precision pressure regulators MS-LRP	4	-	-	■	-	■	■	■	■	■	-	■	1343
	6	-	-	■	-	■	■	■	■	■	-	■	
	9	-	-	■	-	■	■	■	■	■	-	■	
	12	-	-	■	-	■	■	■	■	■	-	■	
Precision pressure regulators MS-LRPB	4	-	-	■	-	■	■	■	■	■	-	■	ms6-lrpb
	6	-	-	■	-	■	■	■	■	■	-	■	
	9	-	-	■	-	■	■	■	■	■	-	■	
	12	-	-	■	-	■	■	■	■	■	-	■	
Electric pressure regulators MS-LRE	4	-	-	■	■	-	■	-	-	-	-	■	ms6-lre
	6	-	-	■	■	-	■	-	-	-	-	■	
	9	-	-	■	■	-	■	-	-	-	-	■	
	12	-	-	■	■	-	■	-	-	-	-	■	
Lubricators MS-LOE	4	■	■	-	-	-	-	-	-	-	-	■	ms*-loe
	6	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	■	
On-off valves MS-EM(1)	4	-	-	■	■	■	■	■	-	-	■	■	1365
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-	-	■	■	-	■	■	-	-	■	■	
	12	-	-	■	■	-	■	■	-	-	■	■	
On-off valves MS-EE	4	-	-	■	■	■	■	■	-	-	■	■	1373
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-	-	■	■	-	■	■	-	-	■	■	
	12	-	-	■	■	-	■	■	-	-	■	■	
Soft-start valves MS-DL	4	-	-	■	■	■	■	■	-	-	-	■	1383
	6	-	-	■	■	-	■	■	-	-	-	■	
	9	-	-	■	■	-	■	■	-	-	-	■	
	12	-	-	■	■	-	■	■	-	-	-	■	
Soft-start valves MS-DE	4	-	-	■	■	■	■	■	-	-	-	■	ms*-de
	6	-	-	■	■	-	■	■	-	-	-	■	
	9	-	-	■	■	-	■	■	-	-	-	■	
	12	-	-	■	■	-	■	■	-	-	-	■	

13
Compressed air preparation

MS series >

MS series service units

Product range overview

Type	Size	Pneumatic connection in housing	Connecting plate	Performance Level			Supply voltage					
				Category 1, 1-channel	Category 3, 2-channel	Category 4, 2-channel with self-monitoring	24 V DC, Sub-D, 9-pin	24 V DC, connection pattern to EN 175301	24 V DC, connection M12 to IEC61076-2-101	110/230 V AC, connection pattern to EN 175301	22 ... 31.6 V DC, connection M12, AS-i Safety at Work	
Code		AG...		C	D	E	10V24	10V24/V24	10V24P	V110/V230	ASIS	
Individual devices												
Soft-start/quick exhaust valves MS-SV-C		4	–									
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	–	–	–	■	■	–	–
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	■	–	–	–	■	■	■	–
		12	–									
Soft-start/quick exhaust valves MS-SV-D		4	–									
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	■	–	–	■	■	–	–
		9	–									
		12	–									
Soft-start/quick exhaust valves MS-SV-E		4	–									
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	–	■	■	–	–	–	■
		9	–									
		12	–									
Membrane air dryers MS-LDM1		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–	–
		9	–									
		12	–									
Branching modules MS-FRM		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–	–
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	–	–	–	–	–	–	–	–
		12	–	G1, G1 1/4, G1 1/2, G2	–	–	–	–	–	–	–	–
Distributor blocks MS-FRM-FRZ		4	–	–	–	–	–	–	–	–	–	–
		6	–	–	–	–	–	–	–	–	–	–
		9	–									
		12	–									
Flow sensors SFAM		4	–									
		6	G1/2	G1/2	–	–	–	–	–	–	–	–
		9	–	G1, G1 1/2	–	–	–	–	–	–	–	–
		12	–									

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Compressed air preparation

Product range overview

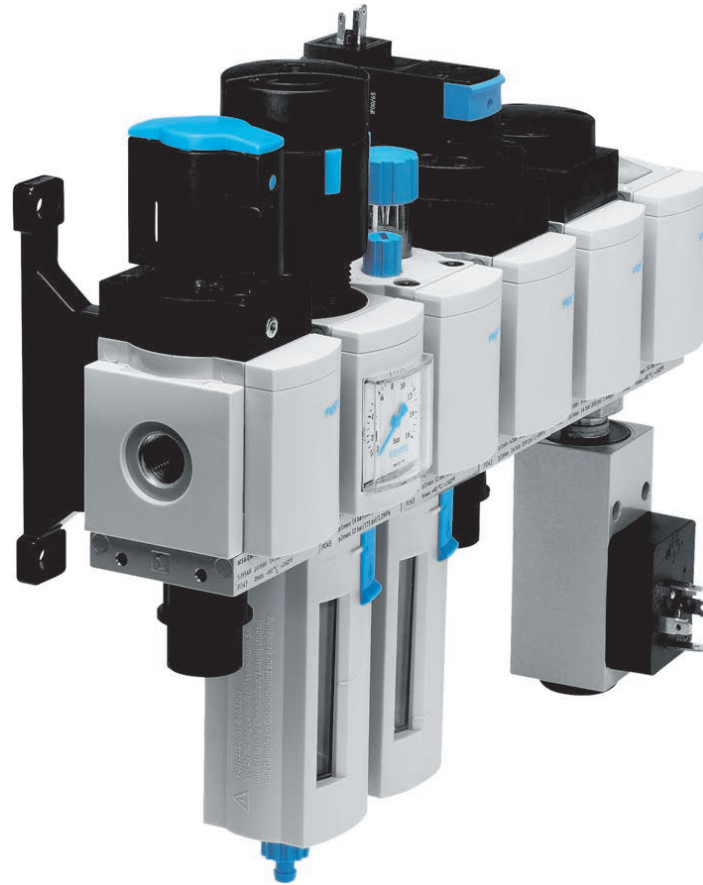
Type	Size	Bowl guard		Pressure indicator					Switching output		Options		→ Page/ online
		Plastic bowl guard	Metal bowl guard	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter for EN pressure gauge G1/8	Adapter for EN pressure gauge G1/4	Pressure sensor	2x PNP or NPN, 1 analogue output 4 ... 20 mA	2x PNP or NPN, 1 analogue output 0 ... 10 V	Silencers	Direction of flow from right to left	
Code		R	U	VS	AG	A8	A4	AD...	2SA	2SV	S	Z/R	
Individual devices													
Soft-start/quick exhaust valves MS-SV-C	4	-											1351
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-	-	■	■	-	■	■	-	-	■	■	
	12	-											
Soft-start/quick exhaust valves MS-SV-D	4	-											1358
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-											
	12	-											
Soft-start/quick exhaust valves MS-SV-E	4	-											ms6-sv
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-											
	12	-											
Membrane air dryers MS-LDM1	4	-	■	-	-	-	-	-	-	-	-	■	ms*-ldm1
	6	-	■	-	-	-	-	-	-	-	-	■	
	9	-											
	12	-											
Branching modules MS-FRM	4	-	-	■	■	■	■	■	-	-	-	■	1389
	6	-	-	■	■	-	■	■	-	-	-	■	
	9	-	-	■	■	-	■	■	-	-	-	■	
	12	-	-	■	-	-	-	-	-	-	-	-	
Distributor blocks MS-FRM-FRZ	4	-	-	-	-	-	-	-	-	-	-	■	1397
	6	-	-	-	-	-	-	-	-	-	-	■	
	9	-											
	12	-											
Flow sensors SFAM	4	-											sfam
	6	-	-	-	-	-	-	-	■	■	-	■	
	9	-	-	-	-	-	-	-	■	■	-	■	
	12	-											

MS series >

MS series service units

Key features

- Solutions for every application from individual components through pre-assembled combinations ex-stock and application-specific combinations to complete turnkey solutions.
- Wealth of options ensures the right solution for every task.
- Reliable compressed air supply thanks to ultra-modern function modules with integrated sensors and remote adjustment function.
- Maximum flow rates with minimum space requirement.
- Flow rates up to 22000 l/min with size MS12.
- CAD models and configurator for easy selection of application-specific individual devices and MSB4, MSB6 and MSB9 combinations
→ www.festo.com/catalogue
- Simple connection system saves time when replacing individual modules without dismantling the entire unit.
- Locking filter bowls and lockable valves fitted as standard for maximum control of the operating pressure and maximum safety.
- With soft-start valves, filter contamination indicator and fully automatic condensate drain for reliable operation of your system.



Select your optimum service combination

- + Individually configurable
- + Reliable thanks to integrated pressure and flow sensors
- + Ready-to-install complete solutions with high flow rates

Service unit combinations > MS series >
Service unit combinations

MSB4 ★

MSB6 ★

MS series

Service unit combinations > MS series >

Service unit combinations

MSB4★ / MSB6★

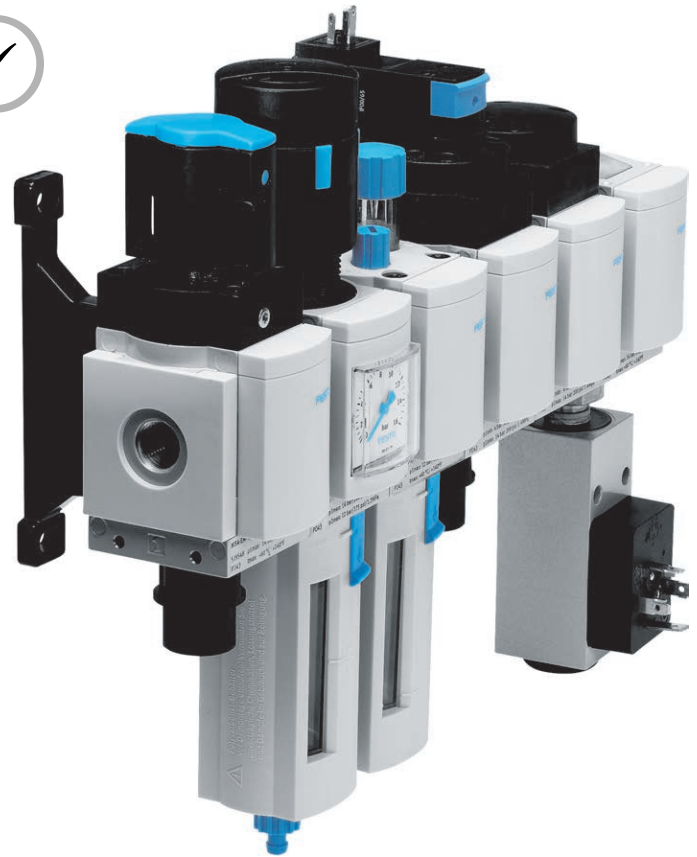
 Overview, configuration and ordering
→ www.festo.com/catalogue/msb



 Additional information, support and user documentation
→ www.festo.com/sp/msb

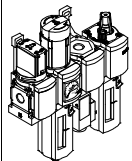
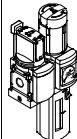
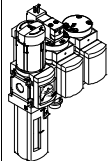
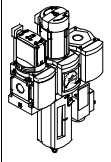
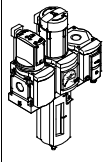
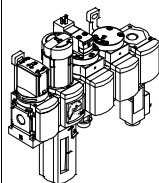
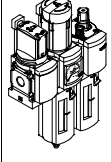
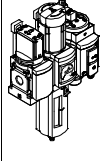
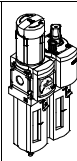


★ Quick ordering of basic designs
→ page 1297, 1300, 1303



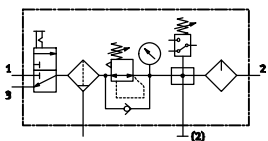
- + Service unit combinations in sizes 4 and 6
- + Versatile combinations of filter, regulator and on-off valves in a single unit
- + High flow rate and highly efficient in removing contaminants
- + Good regulation characteristics with minimal pressure hysteresis

Product range overview

Combination	Version		Size	Pneumatic connection	Flow rate [l/min]	→ Page/online
Service unit combination						
1		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge Branching module MS-FRM-Y with pressure switch Lubricator MS-LOE Mounting bracket MS-WP 	4	G1/4	950	1296
2		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge Mounting bracket MS-WP 	4	G1/4	950 ... 1700	1297
			6	G1/2	4800 ... 5500	
3		<ul style="list-style-type: none"> Filter regulator MS-LFR with pressure gauge On-off valve MS-EE-V24, solenoid actuated (24 V DC) Soft-start valve MS-DL, pneumatically actuated Mounting bracket MS-WP 	4	G1/4	750	1298
			6	G1/2	3100	
4		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge Branching module MS-FRM-Y with pressure switch Mounting bracket MS-WP 	4	G1/4	1300	1299
			6	G1/2	4500	
		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge Branching module MS-FRM-AD7 with pressure sensor for operational status indicator Mounting bracket MS-WP 	4	G1/4	1600 ... 1750	1299
			6	G1/2	4500 ... 5300	
5		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge On-off valve MS-EE-V24, solenoid actuated (24 V DC) Soft-start valve MS-DL, pneumatically actuated Branching module MS-FRM-Y with pressure switch Mounting bracket MS-WP 	4	G1/4	750	1301
			6	G1/2	3000 ... 3100	
6		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge Lubricator MS-LOE Mounting bracket MS-WP 	4	G1/4	750	1302
			6	G1/2	3100	
7		<ul style="list-style-type: none"> On-off valve MS-EM1, manually operated Filter regulator MS-LFR with pressure gauge On-off valve MS-EE-10V24P-AD7, solenoid actuated (24 V DC), with pressure sensor for operational status indicator Mounting bracket MS-WP 	4	G1/4	1400 ... 1600	1303
			6	G1/2	4000 ... 4400	
Filter regulator/lubricator						
MSB-FRC		<ul style="list-style-type: none"> Filter regulator MS-LFR with pressure gauge Lubricator MS-LOE 	4	G1/8, G1/4	850 ... 1400	1307
			6	G1/4, G3/8, G1/2	1900 ... 4800	

Service unit combinations MSB ★

Data sheet – Service unit combination 1



- Manual on-off valve
- Filter regulator with pressure gauge
- Branching module with pressure switch
- Lubricator
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure switch PEV-1/4-B-OD	With adjustable pressure switching point, plug socket, EN 175301, type A, square	pev

Technical data		Download CAD data → www.festo.com
Size	MSB4	
Pneumatic connection	G1/4	
Regulating function	With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant	
Type of mounting	Via accessories	
Mounting position	Vertical ±5°	
Grade of filtration [µm]	40	
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
Actuator lock	Rotary knob with detent, can be locked using accessories	
Pressure regulation range [bar]	1 ... 12	
Pressure indication	Via pressure gauge for indicating the outlet pressure	
Length/width/height [mm]	80/160/219	

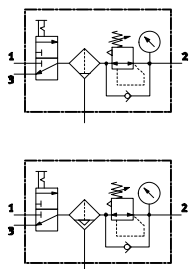
Standard nominal flow rate q _{nN}	
Size	MSB4
Grade of filtration 40 µm [l/min]	950

Operating conditions	
Condensate drain	Manual rotary
Size	MSB4
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	1.5 ... 14
Ambient temperature [°C]	-10 ... +60
Oil viscosity	ISO VG 32

Ordering data

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
MSB4	Manual rotary	G1/4	40	542295	MSB4-1/4:C3J1F3M1-WP

Data sheet – Service unit combination 2



- Manual on-off valve
- Filter regulator with pressure gauge
- Mounting bracket



Technical data		Download CAD data → www.festo.com			
Size	MSB4		MSB6		
Pneumatic connection	G $\frac{1}{4}$		G $\frac{1}{2}$		
Regulating function	With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant				
Type of mounting	Via accessories				
Mounting position	Vertical $\pm 5^\circ$				
Grade of filtration	[μm]	40	5	40	5
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [6:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [6:4:4]
Bowl guard	Plastic bowl guard				
Condensate drain	Manual rotary Fully automatic				
Actuator lock	Rotary knob with detent, can be locked using accessories				
Pressure regulation range	[bar]	0.5 ... 7		0.5 ... 12	
Pressure indication	Via pressure gauge for indicating the outlet pressure				
Length/width/height	[mm]	80/80/219 (222) ²⁾		100/124/301 (304) ¹⁾	

1) Value in brackets with fully automatic condensate drain.

Standard nominal flow rate q_{nN}		Manual rotary		Fully automatic		
Condensate drain		MSB4		MSB6		
Size		MSB4		MSB6		
Pressure regulation range	[bar]	0.5 ... 7	0.5 ... 12	0.5 ... 7	0.5 ... 12	0.5 ... 12
Grade of filtration 40 μm	[l/min]	1150	1700	5500	5100	1000
Grade of filtration 5 μm	[l/min]	–	950	–	4800	950

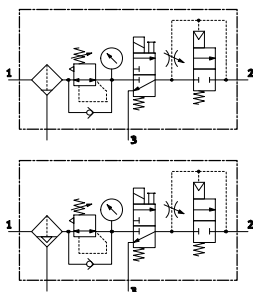
Operating conditions		Manual rotary		Fully automatic	
Condensate drain		MSB4		MSB6	
Size		MSB4		MSB6	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases			
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure	[bar]	0.8 ... 14	0.8 ... 18	2 ... 12	2 ... 12
Ambient temperature	[°C]	–10 ... +60	–10 ... +60	+5 ... +60	+5 ... +60

Ordering data

Size	Condensate drain	Connection	Grade of filtration [μm]	Part no.	Type code
Pressure regulation range 0.5 ... 7 bar, pressure gauge with outer scale in MPa					
MSB4	Manual rotary	G $\frac{1}{4}$	40	8042668	MSB4-1/4:C3:J120-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	8042672	MSB6-1/2:C3:J120-WP
Pressure regulation range 0.5 ... 12 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	Manual rotary	G $\frac{1}{4}$	40	★ 8025354	MSB4-1/4:C3:J1-WP
		G $\frac{1}{4}$	5	542304	MSB4-1/4:C3J3-WP
	Fully automatic	G $\frac{1}{4}$	40	542298	MSB4-1/4:C3J2-WP
		G $\frac{1}{4}$	5	542310	MSB4-1/4:C3J4-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	★ 8025355	MSB6-1/2:C3:J1-WP
		G $\frac{1}{2}$	5	542280	MSB6-1/2:C3J3-WP
	Fully automatic	G $\frac{1}{2}$	40	542274	MSB6-1/2:C3J2-WP
		G $\frac{1}{2}$	5	542286	MSB6-1/2:C3J4-WP

Service unit combinations MSB ★

Data sheet – Service unit combination 3



- Filter regulator with pressure gauge
- Electric on-off valve (24 V DC)
- Pneumatic soft-start valve
- Mounting bracket



Technical data		Download CAD data → www.festo.com	
Size	MSB4	MSB6	
Pneumatic connection	G1/4	G1/2	
Regulating function	With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant		
Type of mounting	Via accessories		
Mounting position	Vertical ±5°		
Grade of filtration [µm]	40		
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]		
Bowl guard	Plastic bowl guard		
Condensate drain	Manual rotary		Fully automatic
	–		
Actuator lock	Rotary knob with detent, can be locked using accessories		
Pressure regulation range [bar]	4 ... 12		
Pressure indication	Via pressure gauge for indicating the outlet pressure		
Length/width/height [mm]	80/120/219	100/186/301 (304) ¹⁾	

1) Value in brackets with fully automatic condensate drain.

Standard nominal flow rate q _{NN}		MSB4	MSB6
Grade of filtration 40 µm	[l/min]	750	3100

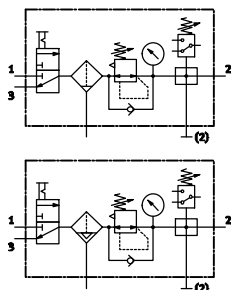
Electrical data – Electric on-off valve	
Coil characteristics	24 V DC: 1.5 W; perm. voltage fluctuations –25%/+10%
Electrical connection	Plug, square design to EN 175301-803, type C

Operating conditions			
Condensate drain	Manual rotary	Fully automatic	
Size	MSB4	MSB6	MSB6
Operating medium	Compressed air to ISO 8573-1:2010 [–:4:–]		Compressed air to ISO 8573-1:2010 [7:4:–]
	Inert gases		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	4.5 ... 14	4.5 ... 18	4.5 ... 12
Ambient temperature [°C]	–10 ... +60	–10 ... +60	+5 ... +60

Ordering data

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
MSB4	Manual rotary	G1/4	40	531101	MSB4-1/4;1D1A1-WP
MSB6	Manual rotary	G1/2	40	530222	MSB6-1/2;1D1A1-WP
	Fully automatic	G1/2	40	530224	MSB6-1/2;2D1A1-WP

Data sheet – Service unit combination 4



- Manual on-off valve
- Filter regulator with pressure gauge
- Branching module with pressure switch or with pressure sensor
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure switch PEV-1/4-B-OD	With adjustable pressure switching point, plug socket, EN 175301, type A, square	pev
Pressure sensor SDE5-D10-O-...-P-M8	With 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact	1247


Technical data	Download CAD data → www.festo.com			
	MSB4		MSB6	
Size	MSB4		MSB6	
Branching module with	Pressure switch	Pressure sensor	Pressure switch	Pressure sensor
Pneumatic connection	G $\frac{1}{4}$		G $\frac{1}{2}$	
Regulating function	With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant			
Type of mounting	Via accessories			
Mounting position	Vertical $\pm 5^\circ$			
Grade of filtration	40 μm			
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]			
Bowl guard	Plastic bowl guard			
Condensate drain	Manual rotary	Manual rotary	Manual rotary	Manual rotary
	Fully automatic	–	Fully automatic	–
Actuator lock	Rotary knob with detent, can be locked using accessories			
Pressure regulation range	–	0.5 ... 7	–	0.5 ... 7
	0.5 ... 12	0.5 ... 10	0.5 ... 12	0.5 ... 10
Pressure indication	Via pressure gauge for indicating the outlet pressure			
Length/width/height	80/120/219 (222) ¹⁾	82/120/219	100/186/301 (304) ¹⁾	102/186/301

1) Value in brackets with fully automatic condensate drain.



Standard nominal flow rate q_{nN}	MSB4				MSB6		
	Pressure switch	Pressure sensor		Pressure switch	Pressure sensor		
Pressure regulation range	0.5 ... 12 [bar]	0.5 ... 7	0.5 ... 10	0.5 ... 12	0.5 ... 7	0.5 ... 10	
Grade of filtration 40 μm	1300 [l/min]	1750	1600	4500	5300	4500	

Operating conditions	Manual rotary		Fully automatic	
	MSB4	MSB6	MSB4	MSB6
Condensate drain	Manual rotary		Fully automatic	
Size	MSB4		MSB6	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]			
	Inert gases			
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure	0.8 ... 14 [bar]	0.8 ... 18	2 ... 12	2 ... 12
Ambient temperature	–10 ... +60 (0 ... +50) ²⁾ [°C]	–10 ... +60 (0 ... +50) ²⁾	+5 ... +60	+5 ... +60

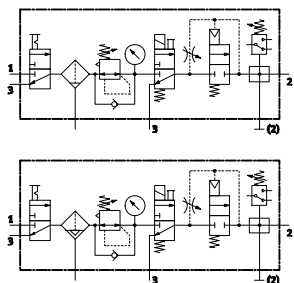
2) Value in brackets applies to branching module with pressure sensor.

Service unit combinations MSB 

Ordering data

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type code
Branching module with pressure switch					
MSB4	Manual rotary	G $\frac{1}{4}$	40	542294	MSB4-1/4:C3J1F3-WP
	Fully automatic	G $\frac{1}{4}$	40	542300	MSB4-1/4:C3J2F3-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	542270	MSB6-1/2:C3J1F3-WP
	Fully automatic	G $\frac{1}{2}$	40	542276	MSB6-1/2:C3J2F3-WP
Branching module with pressure sensor					
Pressure regulation range 0.5 ... 7 bar, pressure gauge with outer scale in MPa					
MSB4	Manual rotary	G $\frac{1}{4}$	40	8042667	MSB4-1/4:C3J120:F12-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	8042671	MSB6-1/2:C3J120:F12-WP
Pressure regulation range 0.5 ... 10 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	Manual rotary	G $\frac{1}{4}$	40	 8025356	MSB4-1/4:C3J1:F12-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	 8025357	MSB6-1/2:C3J1:F12-WP

Data sheet – Service unit combination 5



- Manual on-off valve
- Filter regulator with pressure gauge
- Electric on-off valve (24 V DC)
- Pneumatic soft-start valve
- Branching module with pressure switch
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure switch PEV-1/4-B-OD	With adjustable pressure switching point, plug socket, EN 175301, type A, square	pev

Technical data		Download CAD data → www.festo.com	
Size	MSB4	MSB6	
Pneumatic connection	G $\frac{1}{4}$	G $\frac{1}{2}$	
Regulating function	With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant		
Type of mounting	Via accessories		
Mounting position	Vertical $\pm 5^\circ$		
Grade of filtration $[\mu\text{m}]$	40	40	5
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [6:4:4]
Bowl guard	Plastic bowl guard		
Condensate drain	Manual rotary		
	Fully automatic		
Actuator lock	Rotary knob with detent, can be locked using accessories		
Pressure regulation range [bar]	4 ... 12		
Pressure indication	Via pressure gauge for indicating the outlet pressure		
Length/width/height [mm]	80/200/219 (222) ¹⁾	100/310/301 (304) ¹⁾	

1) Value in brackets with fully automatic condensate drain.

Standard nominal flow rate q_{nN}		MSB4	MSB6
Grade of filtration 40 μm	[l/min]	750	3100
Grade of filtration 5 μm	[l/min]	–	3000

Electrical data – Electric on-off valve	
Coil characteristics	24 V DC: 1.5 W; perm. voltage fluctuations $-25\%/+10\%$
Electrical connection	Plug, square design to EN 175301-803, type C

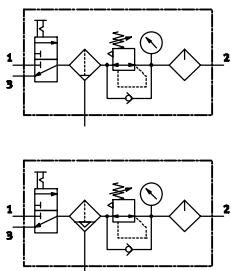
Operating conditions			
Condensate drain	Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB4 MSB6
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	4.5 ... 14	4.5 ... 18	4.5 ... 12 4.5 ... 12
Ambient temperature [°C]	-10 ... +60	-10 ... +60	+5 ... +60 +5 ... +60

Ordering data

Size	Condensate drain	Connection	Grade of filtration $[\mu\text{m}]$	Part no.	Type
MSB4	Manual rotary	G $\frac{1}{4}$	40	542293	MSB4-1/4:C3J1D1A1F3-WP
	Fully automatic	G $\frac{1}{4}$	40	542299	MSB4-1/4:C3J2D1A1F3-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	542269	MSB6-1/2:C3J1D1A1F3-WP
		G $\frac{1}{2}$	5	542281	MSB6-1/2:C3J3D1A1F3-WP
	Fully automatic	G $\frac{1}{2}$	40	542275	MSB6-1/2:C3J2D1A1F3-WP
		G $\frac{1}{2}$	5	542287	MSB6-1/2:C3J4D1A1F3-WP

Service unit combinations MSB ★

Data sheet – Service unit combination 6



- Manual on-off valve
- Filter regulator with pressure gauge
- Lubricator
- Mounting bracket



Technical data		Download CAD data → www.festo.com	
Size		MSB4	MSB6
Pneumatic connection		G $\frac{1}{4}$	G $\frac{1}{2}$
Regulating function		With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant	
Type of mounting		Via accessories	
Mounting position		Vertical $\pm 5^\circ$	
Grade of filtration	[μm]	40	
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4:4]	
Bowl guard		Plastic bowl guard	
Condensate drain		Manual rotary	
		–	Fully automatic
Actuator lock		Rotary knob with detent, can be locked using accessories	
Pressure regulation range	[bar]	1 ... 12	
Pressure indication		Via pressure gauge for indicating the outlet pressure	
Length/width/height	[mm]	80/120/219	100/186/301 (304) ¹⁾

1) Value in brackets with fully automatic condensate drain.

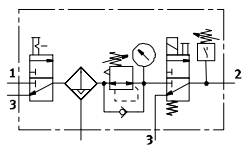
Standard nominal flow rate q_{nN}			
Size		MSB4	MSB6
Grade of filtration 40 μm	[l/min]	750	3100

Operating conditions			
Condensate drain		Manual rotary	Fully automatic
Size		MSB4	MSB6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	1.5 ... 14	1.5 ... 18
Ambient temperature	[°C]	-10 ... +60	-10 ... +60
Oil viscosity		ISO VG 32	

Ordering data

Size	Condensate drain	Connection	Grade of filtration [μm]	Part no.	Type
MSB4	Manual rotary	G $\frac{1}{4}$	40	542296	MSB4-1/4:C3J1M1-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	542272	MSB6-1/2:C3J1M1-WP
	Fully automatic	G $\frac{1}{2}$	40	542278	MSB6-1/2:C3J2M1-WP

Data sheet – Service unit combination 7



- Manual on-off valve
- Filter regulator with pressure gauge
- Electric on-off valve (24 V DC) with pressure sensor
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure sensor SDE5-D10-O-...-P-M8	With 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact	1247



Technical data		Download CAD data → www.festo.com	
Size	MSB4	MSB6	
Pneumatic connection	G $\frac{1}{4}$	G $\frac{1}{2}$	
Regulating function	With primary pressure compensation, with return flow action, with secondary exhausting, outlet pressure constant		
Type of mounting	Via accessories		
Mounting position	Vertical $\pm 5^\circ$		
Grade of filtration $[\mu\text{m}]$	40		
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]		
Bowl guard	Plastic bowl guard		
Condensate drain	Manual rotary		
Actuator lock	Rotary knob with detent, can be locked using accessories		
Pressure regulation range [bar]	0.5 ... 7 0.5 ... 10		
Pressure indication	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output Via pressure gauge for indicating the outlet pressure		
Length/width/height [mm]	82/120/219	102/186/301	

Standard nominal flow rate q_{nN}				
Size	MSB4		MSB6	
Pressure regulation range [bar]	0.5 ... 7	0.5 ... 10	0.5 ... 7	0.5 ... 10
Grade of filtration 40 μm [l/min]	1600	1400	4400	4000

Electrical data – Electric on-off valve	
Coil characteristics	24 V DC: 1.8 W; perm. voltage fluctuations $-15\%/+10\%$
Electrical connection	Plug M12x1 to IEC 61076-2-101

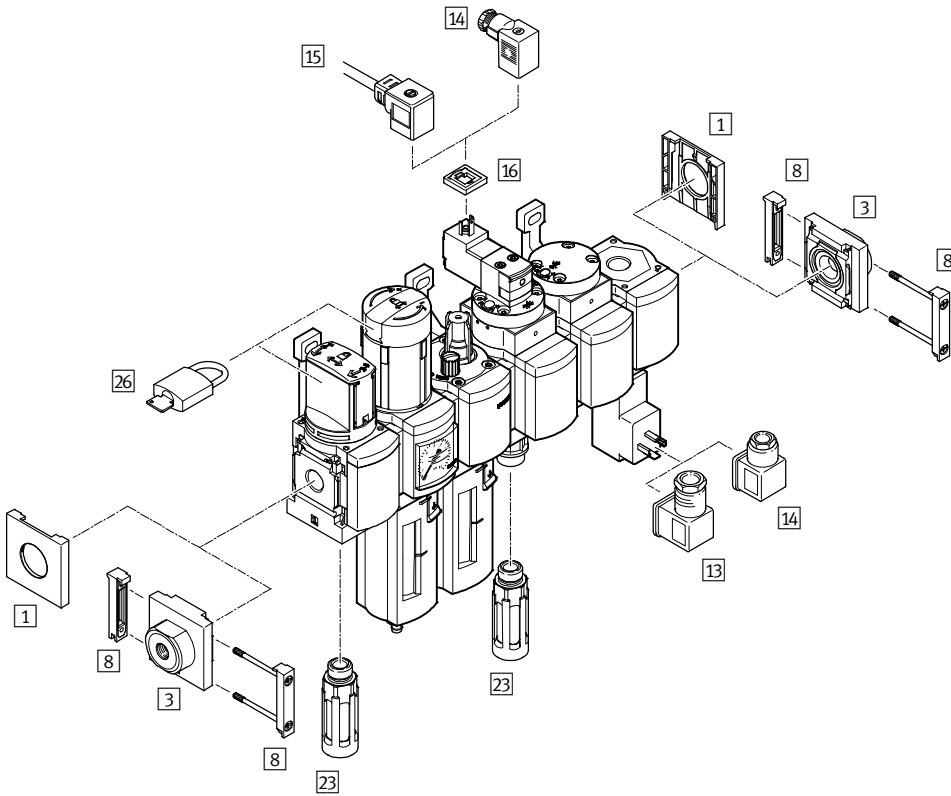
Operating conditions		
Condensate drain	Manual rotary	
Size	MSB4	MSB6
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases	
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure [bar]	0.8 ... 14	0.8 ... 18
Ambient temperature $[\text{°C}]$	0 ... +50	0 ... +50

Ordering data

Size	Condensate drain	Connection	Grade of filtration $[\mu\text{m}]$	Part no.	Type
Pressure regulation range 0.5 ... 7 bar, pressure gauge with outer scale in MPa					
MSB4	Manual rotary	G $\frac{1}{4}$	40	8042666	MSB4-1/4:C3:J120:D14-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	8042670	MSB6-1/2:C3:J120:D14-WP
Pressure regulation range 0.5 ... 10 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	Manual rotary	G $\frac{1}{4}$	40	 8025358	MSB4-1/4:C3:J1:D14-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	 8025359	MSB6-1/2:C3:J1:D14-WP

Service unit combinations MSB ★

Accessories



Note

The range of accessories depends on the service unit combination selected.

Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connection plate kit MS4/6-AG...	1406
8 Module connector MS4/6-MV	1406
13 Angled plug socket PEV-1/4-WD-LED	1407
14 Plug socket MSSD-C-4P for pressure switch PEV Plug socket MSSD-EB for on-off valve MS4/6-EE	1407
15 Plug socket with cable KMEB	1407

Accessories	→ Page/online
16 Illuminating seal MEB-LD	1407
23 Silencer U	1409
26 Padlock LRVS-D	1409
- Connecting cable NEBU-M8...-LE3 for pressure sensor SDE5	1407
- Special oil OFSW	1409
- Filter cartridge MS4/6-LFP	1409



For when you need lubricated compressed air

- + High flow rate
- + Efficient condensate and particle separation
- + Flow rate-dependent oil metering

Filter regulators/lubricators > MS series >
Filter regulators/lubricators

MSB-FRC 
MS series


Filter regulators/lubricators > MS series >

Filter regulators/lubricators


MSB-FRC

 Overview, configuration and ordering
→ www.festo.com/catalogue/msb-frc



 Additional information, support and user documentation
→ www.festo.com/sp/msb-frc

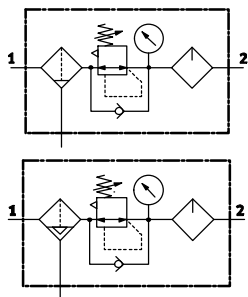


 Quick ordering of basic designs
→ page 1308



- + Size 4 and 6
- + Flow rate 800 ... 4800 l/min
- + Pressure gauge with indication in bar, psi, MPa
- + Grade of filtration 40 µm, 5 µm
- + Manual or fully automatic condensate drain
- + Plastic bowl with plastic bowl guard
- + Metal bowl guard

Data sheet



- Filter regulator with pressure gauge
- Lubricator



Technical data		Download CAD data → www.festo.com			
Size	MSB4		MSB6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Design	Filter regulator with pressure gauge and proportional standard mist lubricator				
Regulating function	With primary pressure compensation, with secondary exhausting, with return flow action, outlet pressure constant				
Type of mounting	Via accessories				
Mounting position	Vertical $\pm 5^\circ$				
Grade of filtration	[μm]	40			
		–	5	–	5
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:–] (grade of filtration 40 μm)				
	Compressed air to ISO 8573-1:2010 [6:4:–] (grade of filtration 5 μm)				
Bowl guard	Plastic bowl guard		Plastic bowl guard		
	–		Integrated as metal bowl guard		
Condensate drain	Manual rotary				
	–	Fully automatic	–	Fully automatic	
Actuator lock	Rotary knob with detent, can be locked using accessories				
Pressure regulation range	[bar]	–	0.3 ... 7	–	0.3 ... 7
		0.5 ... 12			
Pressure indication	Via pressure gauge for indicating the outlet pressure				
Length/width/height	[mm]	57/80/222	77/124/303		

Standard nominal flow rate $q_{nN}^{1)}$					
Size	MSB4		MSB6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pressure regulation range 0.3 ... 7 bar					
Grade of filtration 40 μm	[l/min]	–	1400	–	4800
Pressure regulation range 0.5 ... 12 bar					
Grade of filtration 40 μm	[l/min]	850	900	1900	3700
Grade of filtration 5 μm	[l/min]	–	850	–	3600

1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar.

Operating conditions				
Condensate drain	Manual rotary		Fully automatic	
Size	MSB4	MSB6	MSB4	MSB6
Operating medium	Compressed air to ISO 8573-1:2010 [–:4:–]		Compressed air to ISO 8573-1:2010 [7:4:–]	
	Inert gases			
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure	[bar]	1.5 ... 14	1.5 ... 20	2 ... 12
Ambient temperature	[°C]	–10 ... +60	–10 ... +60	+5 ... +60
Oil viscosity		ISO VG 32		

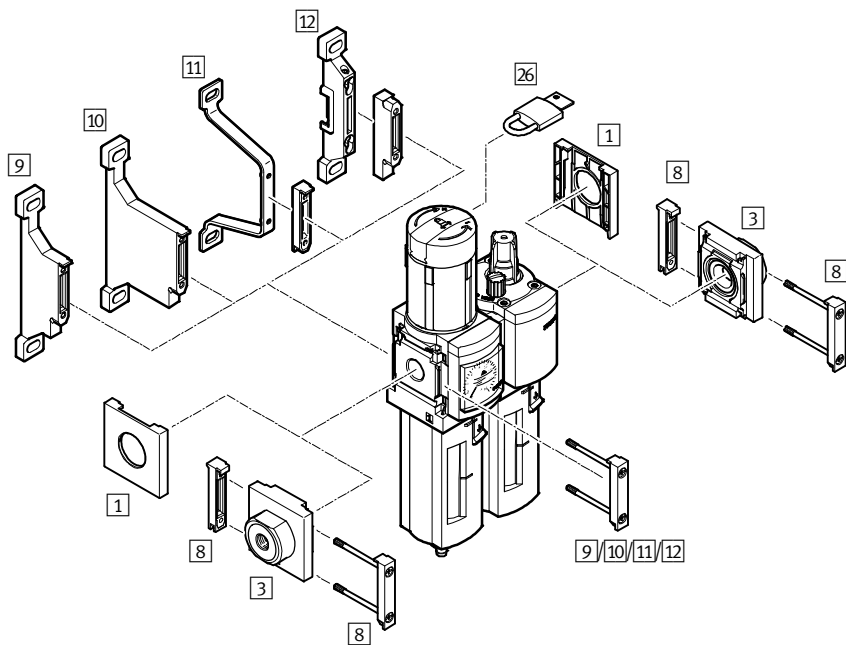
Materials		
Housing	Die-cast aluminium	
Rotary knob	PA, POM	
Bowl	Plastic bowl guard	PC
	Metal bowl guard	Wrought aluminium alloy
Seals	NBR	

Service unit combinations MSB-FRC ★

Ordering data

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
Pressure regulation range 0.3 ... 7 bar					
Plastic bowl guard, pressure gauge with outer scale in MPa					
MSB4	Manual rotary	G $\frac{1}{4}$	40	8042669	MSB4-1/4-FRC13;J120M1
MSB6	Manual rotary	G $\frac{1}{2}$	40	8042673	MSB6-1/2-FRC13;J120M1
Plastic bowl guard, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	Manual rotary	G $\frac{1}{4}$	40	531109	MSB4-1/4-FRC1;J5M1
MSB6	Manual rotary	G $\frac{1}{2}$	40	530230	MSB6-1/2-FRC1;J5M1
Pressure regulation range 0.5 ... 12 bar					
Plastic bowl guard					
MSB4	Manual rotary	G $\frac{1}{8}$	40	531133	MSB4-1/8-FRC5;J1M1
			40	★ 531117	MSB4-1/4-FRC5;J1M1
			5	531121	MSB4-1/4-FRC7;J3M1
	Fully automatic	G $\frac{1}{4}$	40	531119	MSB4-1/4-FRC6;J2M1
MSB6	Manual rotary	G $\frac{1}{4}$	40	530268	MSB6-1/4-FRC5;J1M1
			40	530292	MSB6-3/8-FRC5;J1M1
			40	★ 530244	MSB6-1/2-FRC5;J1M1
			5	530248	MSB6-1/2-FRC7;J3M1
	Fully automatic	G $\frac{1}{2}$	40	530246	MSB6-1/2-FRC6;J2M1
Metal bowl guard					
MSB6	Manual rotary	G $\frac{1}{2}$	40	530252	MSB6-1/2-FRC9;J11M2
			5	530234	MSB6-1/2-FRC11;J9M2
	Fully automatic	G $\frac{1}{2}$	40	530232	MSB6-1/2-FRC10;J12M2
			5	530236	MSB6-1/2-FRC12;J10M2

Accessories – MS4/MS6



13

Compressed air preparation

Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connection plate kit MS4/6-AG...	1406
8 Module connector MS4/6-MV	1406
9 Mounting bracket MS4/6-WP	1406
10 Mounting bracket MS4/6-WPB	1406

Accessories	→ Page/online
11 Mounting bracket MS4/6-WPE	1406
12 Mounting bracket MS4/6-WPM	1406
26 Padlock LRVS-D	1409
- Special oil OFSW	1409
- Filter cartridge MS4/6-LFP	1409



Filtration and pressure control in one module

- + High flow rate
- + Efficient condensate and particle separation

Filter regulators > MS series >




Filter regulators

MS-LFR

MS series

Filter regulators > MS series >

Filter regulators

MS-LFR  Overview, configuration and ordering
→ www.festo.com/catalogue/ms-lfr Additional information, support and user documentation
→ www.festo.com/sp/ms-lfr Quick ordering of basic designs
→ page 1317 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex

- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + Good particle and condensate separation
- + Available with or without secondary exhausting
- + MS4-LFR, MS6-LFR: directly actuated diaphragm regulator
- + MS9-LFR: piloted or directly actuated diaphragm regulator
- + MS12-LFR: piloted diaphragm regulator
- + Lockable rotary knob

Product range overview

Size	Pneumatic connection	Product options																		
		D5	D6	D7	E	C	R	U	M	H	V	DI	VS	AG	A8	A4	AD...	BAR	AS	Z
4	1/8, 1/4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
6	1/4, 3/8, 1/2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
9	3/4, 1, G	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
12	G	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

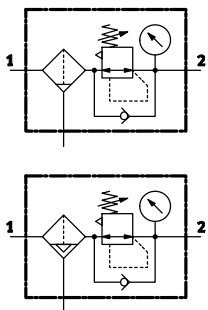
1) MS pressure gauge with indicating range in bar included in the basic configuration by default.

Product options

1/8	Female thread G1/8	D5	Pressure regulation range 0.3 ... 4 bar	RG	Integrated pressure gauge, red/green scale	LD	Long rotary knob
1/4	Female thread G1/4	D6	Pressure regulation range 0.3 ... 7 bar	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AS	Rotary knob with detent, can be locked using accessories
3/8	Female thread G3/8	D7	Pressure regulation range 0.5 ... 12 bar	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	E11	Rotary knob with integrated lock
1/2	Female thread G1/2	D8	Pressure regulation range 0.5 ... 16 bar	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	WR	Mounting bracket with knurled nut for regulator head
3/4	Female thread G3/4	E	Grade of filtration 40 µm	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	WP	Mounting bracket standard design
1	Female thread G1	C	Grade of filtration 5 µm	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	WPM	Mounting bracket for hooking in service units
AGA	Connecting plate G1/8	R	Plastic bowl with plastic bowl guard	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	WPB	Mounting bracket for large wall gap
AGB	Connecting plate G1/4	U	Metal bowl guard	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
AGC	Connecting plate G3/8	M	Manual condensate drain	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C	WBM	Mounting bracket centrally at rear (wall mounting top), connecting plates not required
AGD	Connecting plate G1/2	H	Semi-automatic condensate drain	BAR	Pressure gauge scale in bar	EX4	EU certification (II 2GD to EU Explosion Protection Directive (ATEX))
AGE	Connecting plate G3/4	V	Fully automatic condensate drain	PSI	Pressure gauge scale in psi	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGF	Connecting plate G1	E2	External condensate drain, fully automatic, electric, 110 V AC, terminals	MPA	Pressure gauge scale in MPa	Z	Direction of flow from right to left
AGG	Connecting plate G1 1/4	E3	External condensate drain, fully automatic, electric, 230 V AC, terminals	OS	Without secondary exhausting		
AGH	Connecting plate G1 1/2	E4	External condensate drain, fully automatic, electric, 24 V DC, terminals				
AGI	Connecting plate G2	DI	Directly actuated regulator				
N3/4	Female thread NPT3/4	VS	Cover plate				
N1	Female thread NPT1	AG	MS pressure gauge				
AQK	Connecting plate NPT1/8	A8	Adapter for EN pressure gauge 1/8, without pressure gauge				
AQN	Connecting plate NPT1/4	A4	Adapter for EN pressure gauge 1/4, without pressure gauge				
AQP	Connecting plate NPT3/8						
AQR	Connecting plate NPT1/2						
AQS	Connecting plate NPT3/4						
AQT	Connecting plate NPT1						
AQU	Connecting plate NPT1 1/4						
AQV	Connecting plate NPT1 1/2						
G	Module without connecting thread, without connecting plate						
NG	Module without connecting thread, without connecting plate (inch)						

Filter regulators MS-LFR ★

Data sheet



Technical data		Download CAD data → www.festo.com							
Size		MS4			MS6		MS9		
Pneumatic connection 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	- ¹⁾
Design		Filter regulator with/without pressure indication					Pilot-operated diaphragm regulator		
		–					Directly actuated diaphragm regulator		
Regulating function		With return flow action, with secondary exhausting, with primary pressure compensation							
Type of mounting		Via accessories							
		In-line installation							
Assembly position		Vertical ±5°							
Grade of filtration [µm]		40							
		5							
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4:4] (grade of filtration 40 µm)							
		Compressed air to ISO 8573-1:2010 [6:4:4] (grade of filtration 5 µm)							
Bowl guard		Plastic bowl guard					–		
		Integrated as metal bowl guard							
Condensate drain		Manual rotary							
		Semi-automatic							
		Fully automatic							
Actuator lock		Rotary knob with detent, can be locked using accessories							
Pressure regulation range [bar]		D5	0.5 ... 4						
		D6	0.5 ... 7						
		D7	0.5 ... 12 (0.5 ... 10 bar with pressure sensor AD...)						
Pressure indication		Via pressure gauge for indicating the outlet pressure							
		AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output				–		
		AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output						
Length [mm]	Standard	57			77		109		
	With cover plate VS	54			76		109		
	With adapter A8/A4	59			79		110		
	With pressure sensor AD1/AD3	83			103		–		
	With pressure sensor AD7/AD9	59			79		112		
Width [mm]		40			62		104		90
Height [mm]	Plastic bowl guard	219 ... 223 ²⁾ + 25 ³⁾			301 ... 306 ²⁾ + 68 ³⁾		–		
	Metal bowl guard	237 ... 240 ²⁾ + 25 ³⁾			313 + 68 ³⁾		450 + 150 ³⁾		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.
 2) Value is dependent on the condensate drain.
 3) Installation dimension for removing the filter bowl.

Data sheet

Standard nominal flow rate q_{nN}								
Size	MS4			MS6			MS9	
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	
Pressure regulation range D5 ¹⁾								
Grade of filtration 40 μ m	[l/min]	1100	1900	2200	6000	7200	18000 \pm 15% (16000 \pm 15%) ³⁾	23000 \pm 15% (20000 \pm 15%) ³⁾
Grade of filtration 5 μ m	[l/min]	900	1800	2000	5500	6900	17000 \pm 15% (16000 \pm 15%) ³⁾	20000 \pm 15% (18000 \pm 15%) ³⁾
Pressure regulation range D6 ²⁾								
Grade of filtration 40 μ m	[l/min]	1000	1700	2800	5700	6200	16000 \pm 15% (12000 \pm 15%) ³⁾	20000 \pm 15% (10000 \pm 15%) ³⁾
Grade of filtration 5 μ m	[l/min]	900	1500	2700	5000	5600	15000 \pm 15% (12000 \pm 15%) ³⁾	18000 \pm 15% (10000 \pm 15%) ³⁾
Pressure regulation range D7 ²⁾								
Grade of filtration 40 μ m	[l/min]	900	1500	2500	4000	4500	16000 \pm 15%	20000 \pm 15%
Grade of filtration 5 μ m	[l/min]	850	1200	2200	3500	4000	15000 \pm 15%	18000 \pm 15%

1) MS4/MS6: Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar.MS9: Measured at $p_1 = 10$ bar and $p_2 = 4$ bar, $\Delta p = 1$ bar.2) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar.

3) Value in brackets applies to the directly actuated filter regulator MS9-LFR...DI.

Operating conditions						
Condensate drain	Manual rotary			Semi-automatic	Fully automatic	
Size	MS4	MS6	MS9	MS4/MS6/MS9	MS4/MS6/MS9	
Operating medium	Compressed air to ISO 8573-1:2010 [-:4:-]				Compressed air to ISO 8573-1:2010 [7:4:-]	
	Inert gases					
Operating pressure	[bar]	0.8 ... 14	0.8 ... 20	1 ... 20	1.5 ... 12	2 ... 12
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) ⁴⁾			+5 ... +60 (+5 ... +50) ⁴⁾	

4) Value in brackets applies to MS4/MS6/MS9-LFR with pressure sensor AD...

Materials		
Housing	Die-cast aluminium	
Rotary knob	PA, POM	
Bowl	Plastic bowl guard	PC
	Metal bowl guard	Wrought aluminium alloy, die-cast aluminium
Seals	NBR	

Filter regulators > MS series >

Filter regulators MS-LFR ★

Order code – MS4

MS 4 – LFR – – – – – – – AS –

Series

MS	Standard service unit
----	-----------------------

Size

4	Grid dimension 40 mm
---	----------------------

Type code

LFR	Filter regulator
-----	------------------

Pneumatic connection

1/8	Female thread G $\frac{1}{8}$
1/4	Female thread G $\frac{1}{4}$

Pressure regulation range

D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar

Grade of filtration

E	40 μ m
C	5 μ m

Bowl guard

R	Plastic bowl guard
U	Integrated as metal bowl guard

Condensate drain

M	Manual rotary
H	Semi-automatic
V	Fully automatic

Pressure gauge alternatives

–	With MS pressure gauge, bar	
VS	Cover plate	
A8	Adapter for EN pressure gauge $\frac{1}{8}$	
A4	Adapter for EN pressure gauge $\frac{1}{4}$	
AD1	Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin	1
AD3	Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	1
AD7	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O	1
AD9	Pressure sensor without display, plug M8, window comparator, PNP, N/O	1

Security

AS	Rotary knob with detent, can be locked using accessories
----	--

Flow direction

–	From left to right
Z	From right to left

13

Compressed air preparation

1 Measuring range max. 10 bar.

Order example:

MS4-LFR-1/4-D7-ERM-AS

Standard service unit, grid dimension 40 mm - filter regulator - female thread G $\frac{1}{4}$ - pressure regulation range 0.5 ... 12 bar - grade of filtration 40 μ m - plastic bowl guard - manual rotary condensate drain - with MS pressure gauge, bar - rotary knob with detent, can be locked using accessories - flow direction from left to right

Order code – MS6

MS		6	-	LFR	-		-		-		-		-		-		-	AS	-
Series																			
MS	Standard service unit																		
Size																			
6	Grid dimension 62 mm																		
Type code																			
LFR	Filter regulator																		
Pneumatic connection																			
1/4	Female thread G $\frac{1}{4}$																		
3/8	Female thread G $\frac{3}{8}$																		
1/2	Female thread G $\frac{1}{2}$																		
Pressure regulation range																			
D5	0.3 ... 4 bar																		
D6	0.3 ... 7 bar																		
D7	0.5 ... 12 bar																		
Grade of filtration																			
E	40 μ m																		
C	5 μ m																		
Bowl guard																			
R	Plastic bowl guard																		
U	Integrated as metal bowl guard																		
Condensate drain																			
M	Manual rotary																		
H	Semi-automatic																		
V	Fully automatic																		
Pressure gauge alternatives																			
-	With MS pressure gauge, bar																		
VS	Cover plate																		
A4	Adapter for EN pressure gauge $\frac{1}{4}$																		
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 1																		
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 1																		
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1																		
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 1																		
Security																			
AS	Rotary knob with detent, can be locked using accessories																		
Flow direction																			
-	From left to right																		
Z	From right to left																		

1 Measuring range max. 10 bar.

Order example:

MS6-LFR-1/2-D7-CRM-AS

Standard service unit, grid dimension 62 mm - filter regulator - female thread G $\frac{1}{2}$ - pressure regulation range 0.5 ... 12 bar - grade of filtration 5 μ m - plastic bowl guard - manual rotary condensate drain - with MS pressure gauge, bar - rotary knob with detent, can be locked using accessories - flow direction from left to right

Filter regulators > MS series >

Filter regulators MS-LFR

Order code – MS9

MS 9 – LFR – – – U – – – AS –

Series

MS	Standard service unit
----	-----------------------

Size

9	Grid dimension 90 mm
---	----------------------

Type code

LFR	Filter regulator
-----	------------------

Pneumatic connection

3/4	Female thread G3/4
1	Female thread G1
G	Module without connecting thread, without connecting plate Connecting plates → page 1406

Pressure regulation range

D5	0.5 ... 4 bar
D6	0.5 ... 7 bar
D7	0.5 ... 12 bar

Grade of filtration

E	40 µm
C	5 µm

Bowl guard

U	Integrated as metal bowl guard
---	--------------------------------

Condensate drain

M	Manual rotary
H	Semi-automatic
V	Fully automatic

Regulator type

–	Piloted
DI	Directly actuated 1

Pressure gauge/pressure gauge alternatives

VS	Cover plate
AG	With MS pressure gauge
A4	Adapter for EN pressure gauge 1/4
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 2
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 2

Alternative pressure gauge scale

–	No pressure gauge scale 3
BAR	Bar 4

Security

AS	Rotary knob with detent, can be locked using accessories
----	--

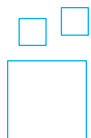
Flow direction

–	From left to right
Z	From right to left

1 Only with pressure regulation range D5, D6.
2 Measuring range max. 10 bar.

3 Not with MS pressure gauge AG.
4 Only with MS pressure gauge AG.

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

★ Quick ordering¹⁾

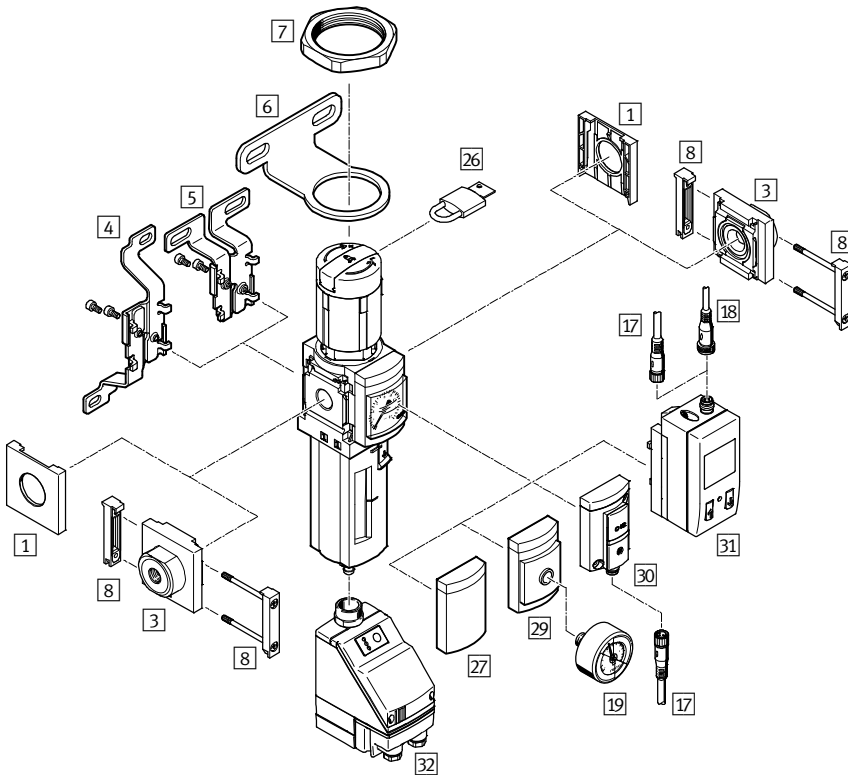
Part no.	Type code
MS4	
529144	MS4-LFR-1/4-D6-CRM-AS
529146	MS4-LFR-1/4-D6-CRV-AS
529148	MS4-LFR-1/4-D6-ERM-AS
529150	MS4-LFR-1/4-D6-ERV-AS
529152	MS4-LFR-1/4-D7-CRM-AS
529154	MS4-LFR-1/4-D7-CRV-AS
–	–
535720	MS4-LFR-1/4-D7-CUV-AS
529156	MS4-LFR-1/4-D7-ERM-AS
529158	MS4-LFR-1/4-D7-ERV-AS
535724	MS4-LFR-1/4-D7-EUM-AS
535722	MS4-LFR-1/4-D7-EUV-AS

Part no.	Type code
MS6	
529176	MS6-LFR-1/2-D6-CRM-AS
529178	MS6-LFR-1/2-D6-CRV-AS
529180	MS6-LFR-1/2-D6-ERM-AS
529182	MS6-LFR-1/2-D6-ERV-AS
529184	MS6-LFR-1/2-D7-CRM-AS
529186	MS6-LFR-1/2-D7-CRV-AS
530338	MS6-LFR-1/2-D7-CUM-AS
530340	MS6-LFR-1/2-D7-CUV-AS
529188	MS6-LFR-1/2-D7-ERM-AS
529190	MS6-LFR-1/2-D7-ERV-AS
529192	MS6-LFR-1/2-D7-EUM-AS
529194	MS6-LFR-1/2-D7-EUV-AS

1) All products in this table are easy to select and quick to order.

Filter regulators MS-LFR ★

Accessories – MS4/MS6



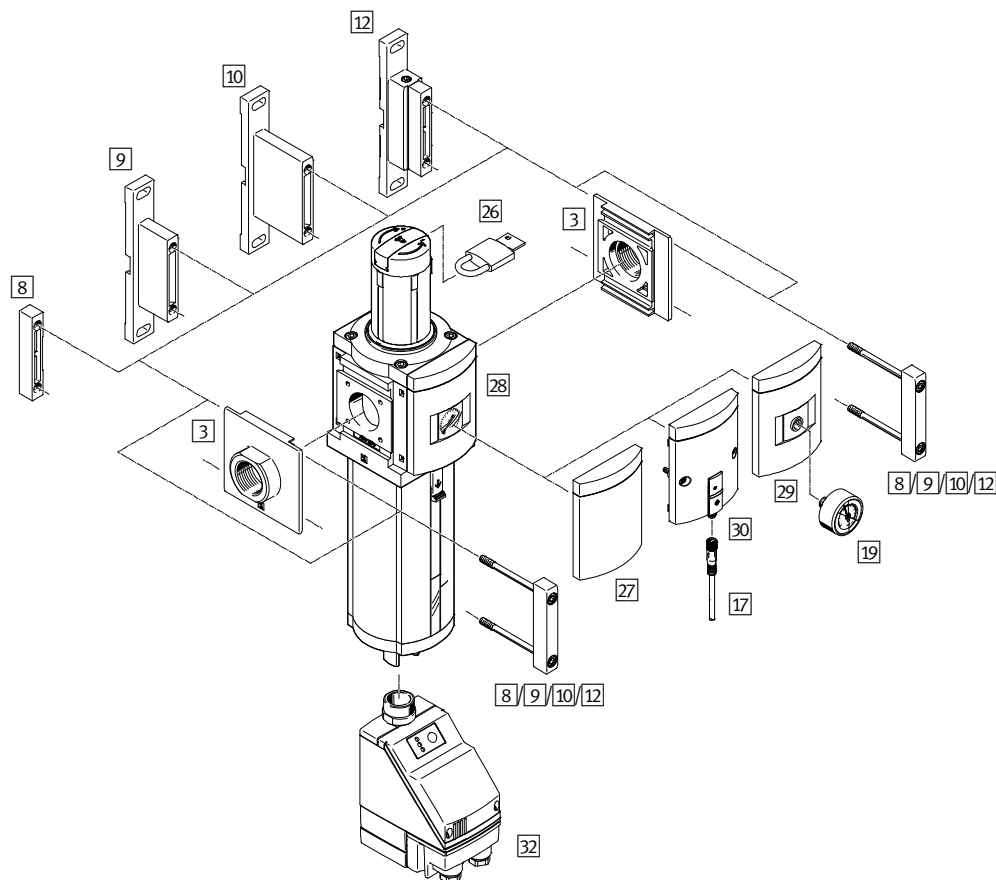
Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4-WBM ¹⁾	1406
6 Mounting bracket MS4/6-WR ¹⁾	1406
7 Hex nut MS4/6-WRS ¹⁾	1406
8 Module connector MS4/6-MV	1406
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
26 Padlock LRVS-D	1409
27 Cover plate VS	1314
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1314
30 Pressure sensor with operational status indicator AD7/AD9	1314
31 Pressure sensor with LCD display AD1/AD3	1314

1) Mounting component for individual device.

Accessories	→ Page/online
32 Fully automatic condensate drain, electrically actuated (for MS6 only)	ms6-lfr
- Mounting plate MS4/6-AEND	1406
- Mounting bracket MS4/6-WP ²⁾	1406
- Mounting bracket MS4/6-WPB ²⁾	1406
- Mounting bracket MS4/6-WPE ²⁾	1406
- Mounting bracket MS4/6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Filter cartridge MS4/6-LFP	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... 3/with mounting plate MS4/6-AEND.

Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406
17 Connecting cable NEBU-M8...-LE3	1407
19 Pressure gauge MA	1408
26 Padlock LRVS-D	1409
27 Cover plate VS	1316

Accessories	→ Page/online
28 MS pressure gauge AG	1316
29 Adapter A4 for EN pressure gauge 1/4	1316
30 Pressure sensor with operational status indicator AD7/AD9	1316
32 Fully automatic condensate drain, electrically actuated	ms9-lfr
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Filter cartridge MS9-LFP	1409

1) Not suitable for individual devices with connecting thread G3/4 or G1.



Low pressure fluctuations for high system safety

- + High flow rate
- + Good pressure control characteristics
- + Lockable pressure setting

Regulators > MS series >




Pressure regulators

MS-LR 

MS series

Regulators > MS series >

Pressure regulators

MS-LR  Overview, configuration and ordering
→ www.festo.com/catalogue/ms-lr Additional information, support and user documentation
→ www.festo.com/sp/ms-lr Quick ordering of basic designs
→ page 1329 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex

- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + High flow rate with minimal pressure drop
- + Optionally available without secondary exhausting
- + Lockable rotary knob
- + With pressure sensor with display and rotary knob pressure gauge
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm

Product range overview

Size	Pneumatic connection	Product options															
		D5	D6	D7	PO	DI	VS	AG	A8	A4	AD...	BAR	DM1	DM2	AS	Z	
4	1/8, 1/4	■	■	■	–	–	■	–1)	■	■	■	–1)	■	■	■	■	
6	1/4, 3/8, 1/2	■	■	■	–	–	■	–1)	–	■	■	–1)	–	■	■	■	
9	3/4, 1, G	■	■	■	■	■	■	■	–	■	■	■	–	–	■	■	
12	G	–	■	■	■	–	■	–1)	–	■	–	–1)	–	–	■	■	

1) MS pressure gauge with indicating range in bar included in the basic configuration by default.

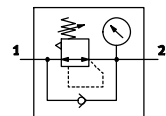
Product options

1/8	Female thread G1/8	D5	Pressure regulation range 0.3 ... 4 bar, manually operated	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	WR	Mounting bracket with knurled nut for regulator head
1/4	Female thread G1/4	D6	Pressure regulation range 0.3 ... 7 bar, manually operated	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	WP	Mounting bracket standard design
3/8	Female thread G3/8	D7	Pressure regulation range 0.5 ... 12 bar, manually operated	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	WPM	Mounting bracket for hooking in service units
1/2	Female thread G1/2	D8	Pressure regulation range 0.5 ... 16 bar, manually operated	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	WPB	Mounting bracket for large wall gap
3/4	Female thread G3/4	PO	Pressure regulation range 0.5 ... 16 bar, pneumatically actuated	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
1	Female thread G1	PE6	Pressure regulation range 0.15 ... 6 bar, solenoid actuated	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C	WBM	Mounting bracket centrally at rear (wall mounting top), connecting plates not required
AGA	Connecting plate G1/8	DI	Directly actuated regulator	BAR	Pressure gauge scale in bar	EX4	EU certification (II 2GD to EU Explosion Protection Directive (ATEX))
AGB	Connecting plate G1/4	VS	Cover plate	PSI	Pressure gauge scale in psi	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGC	Connecting plate G3/8	AG	MS pressure gauge	MPA	Pressure gauge scale in MPa	Z	Direction of flow from right to left
AGD	Connecting plate G1/2	A8	Adapter for EN pressure gauge 1/8, without pressure gauge	OS	Without secondary exhausting		
AGE	Connecting plate G3/4	A4	Adapter for EN pressure gauge 1/4, without pressure gauge	LD	Long rotary knob		
AGF	Connecting plate G1	RG	Integrated pressure gauge, red/green scale	DM1	Rotary knob pressure gauge, small		
AGG	Connecting plate G1 1/4	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	DM2	Rotary knob pressure gauge, large		
AGH	Connecting plate G1 1/2	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	KD	Rotary knob underneath		
AGI	Connecting plate G2			AS	Rotary knob with detent, can be locked using accessories		
N3/4	Female thread NPT3/4			E11	Rotary knob with integrated lock		
N1	Female thread NPT1						
AQK	Connecting plate NPT1/8						
AQN	Connecting plate NPT1/4						
AQP	Connecting plate NPT3/8						
AQR	Connecting plate NPT1/2						
AQS	Connecting plate NPT3/4						
AQT	Connecting plate NPT1						
AQU	Connecting plate NPT1 1/4						
AQV	Connecting plate NPT1 1/2						
G	Module without connecting thread, without connecting plate						
NG	Module without connecting thread, without connecting plate (inch)						

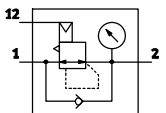
Pressure regulators MS-LR ★

Data sheet

Manually operated D5/D6/D7



Pneumatically actuated PO



Technical data		Download CAD data → www.festo.com							
Size		MS4		MS6			MS9		
Pneumatic connection 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	– ¹⁾
Pilot air connection 12 with pressure regulation range PO		–						G1/4	
Design		–						Piloted diaphragm regulator	
Regulating function		Directly actuated diaphragm regulator							
Type of mounting		With return flow action, with secondary exhausting, with primary pressure compensation							
Assembly position		Via accessories							
Actuator lock		In-line installation							
Pressure regulation range/operation [bar]		Front panel mounting							
D5		Optional							
D6		Rotary knob with detent, can be locked using accessories							
D7		Rotary knob with detent, can be locked using accessories							
PO ³⁾		0.5 ... 4, manually operated ²⁾						0.5 ... 16, pneumatically actuated	
DM1/DM2		0.5 ... 7, manually operated ²⁾						–	
AD1/AD3		0.5 ... 12, manually operated (0.5 ... 10 bar with pressure sensor AD... ²⁾						–	
AD7/AD9		–						–	
Pressure indication		Via pressure gauge for indicating the outlet pressure							
DM1/DM2		Via pressure gauge in rotary knob for indicating the outlet pressure						–	
AD1/AD3		Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output						–	
AD7/AD9		Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output						–	
Length [mm]	With MS pressure gauge	57		77			109		
	With cover plate VS	54		76			109		
	With adapter A8/A4	59		79			110		
	With pressure sensor AD1/AD3	83		103			–		
	With pressure sensor AD7/AD9	59		79			112		
Width [mm]	Standard	40		62			104		90
	With rotary knob pressure gauge DM2	52		62			–		
Height [mm]	With rotary knob with detent, can be locked using accessories AS	119		189			225 (218) ⁴⁾		
	With rotary knob pressure gauge DM1	113		–			–		
	With rotary knob pressure gauge DM2	115		178			–		
	With pressure regulation range PO	–		–			120		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.

2) MS4: The pressure regulation range for pressure regulators with rotary knob pressure gauge DM... starts at 0.8 bar.

3) Outlet pressure p2 corresponds roughly to the applied pilot pressure p12.

4) Value in brackets applies to the directly actuated pressure regulator MS9-LR-...-DI.

Data sheet

Standard nominal flow rate q_{nN}								
Size	MS4			MS6			MS9	
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	
Pressure regulation range D5 ¹⁾	[l/min]	1200	2100	2400	5500	7500	19000 ±15% (14000 ±15%) ³⁾	26000 ±15% (20000 ±15%) ³⁾
Pressure regulation range D6 ²⁾	[l/min]	1150	1800	3000	5800	6500	17000 ±15% (14000 ±15%) ³⁾	20000 ±15% (11000 ±15%) ³⁾
Pressure regulation range D7 ²⁾	[l/min]	1000	1700 ⁴⁾	2700	4500	5500	17000 ±15%	20000 ±15%
Pressure regulation range PO ²⁾	[l/min]	–	–	–	–	–	21000 ±15%	25000 ±15%

1) MS4/MS6: Measured at p₁ = 10 bar and p₂ = 3 bar, Δp = 1 bar.MS9: Measured at p₁ = 10 bar and p₂ = 4 bar, Δp = 1 bar.2) Measured at p₁ = 10 bar and p₂ = 6 bar, Δp = 1 bar.

3) Value in brackets applies to the directly actuated pressure regulator MS9-LR-...-DI.

4) $q_{nN} = 800$ l/min, $q_{n \max} = 2200$ l/min with rotary knob pressure gauge DM1/DM2.

Operating conditions				
Size	MS4	MS6	MS9	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]			
	Inert gases		–	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure	[bar]	0.8 ... 14	0.8 ... 20	1 ... 20
Ambient temperature	[°C]	–10 ... +60 (0 ... +50) ⁵⁾	–10 ... +60 (0 ... +50) ⁵⁾	–10 ... +60 (0 ... +50) ⁵⁾

5) Value in brackets applies to MS4/MS6/MS9-LR with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Rotary knob	PA/POM
Seals	NBR

Regulators > MS series >

Pressure regulators MS-LR ★

Order code – MS4

MS 4 – LR – – – – – – – –

Series	
MS	Standard service unit
Size	
4	Grid dimension 40 mm
Type code	
LR	Pressure regulator
Pneumatic connection	
1/8	Female thread G $\frac{1}{8}$
1/4	Female thread G $\frac{1}{4}$
Pressure regulation range/operation	
D5	0.3 ... 4 bar, manually operated
D6	0.3 ... 7 bar, manually operated
D7	0.5 ... 12 bar, manually operated
Pressure gauge alternatives	
–	With MS pressure gauge, bar
VS	Cover plate
A8	Adapter for EN pressure gauge $\frac{1}{8}$
A4	Adapter for EN pressure gauge $\frac{1}{4}$
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 1
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 1
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 1
Rotary knob alternative	
–	Standard rotary knob
DM1	Rotary knob pressure gauge, small 2
DM2	Rotary knob pressure gauge, large 3
Security	
–	None 4
AS	Rotary knob with detent, can be locked using accessories 5
Flow direction	
–	From left to right
Z	From right to left

1 Measuring range max. 10 bar.

2 Only with pressure gauge alternatives VS, A8, A4, AD1, AD3, AD7 or AD9.

3 Only with pressure gauge alternatives VS, A8 or A4

4 Only with rotary knob alternative DM1 or DM2.

5 Not with rotary knob alternative DM1 or DM2.

Order example:

MS4-LR-1/4-D6-A4-DM2

Standard service unit, grid dimension 40 mm - pressure regulator - female thread G $\frac{1}{4}$ - pressure regulation range 0.3 ... 7 bar, manually operated - with adapter for EN pressure gauge $\frac{1}{4}$ - rotary knob pressure gauge, large - no integrated lock - flow direction from left to right

Order code – MS6

		MS	6	–	LR	–		–		–		–		–		–		–		
Series																				
MS	Standard service unit																			
Size																				
6	Grid dimension 62 mm																			
Type code																				
LR	Pressure regulator																			
Pneumatic connection																				
1/4	Female thread G $\frac{1}{4}$																			
3/8	Female thread G $\frac{3}{8}$																			
1/2	Female thread G $\frac{1}{2}$																			
Pressure regulation range/operation																				
D5	0.3 ... 4 bar, manually operated																			
D6	0.3 ... 7 bar, manually operated																			
D7	0.5 ... 12 bar, manually operated																			
Pressure gauge alternatives																				
–	With MS pressure gauge, bar																			
VS	Cover plate																			
A4	Adapter for EN pressure gauge $\frac{1}{4}$																			
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 1																			
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 1																			
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1																			
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 1																			
Rotary knob alternative																				
–	Standard rotary knob																			
DM2	Rotary knob pressure gauge, large 2																			
Security																				
–	None 3																			
AS	Rotary knob with detent, can be locked using accessories 4																			
Flow direction																				
–	From left to right																			
Z	From right to left																			

1 Measuring range max. 10 bar.

2 Only with pressure gauge alternatives VS, A4, AD1, AD3, AD7 or AD9.

3 Only with rotary knob alternative DM2.

4 Not with rotary knob alternative DM2.

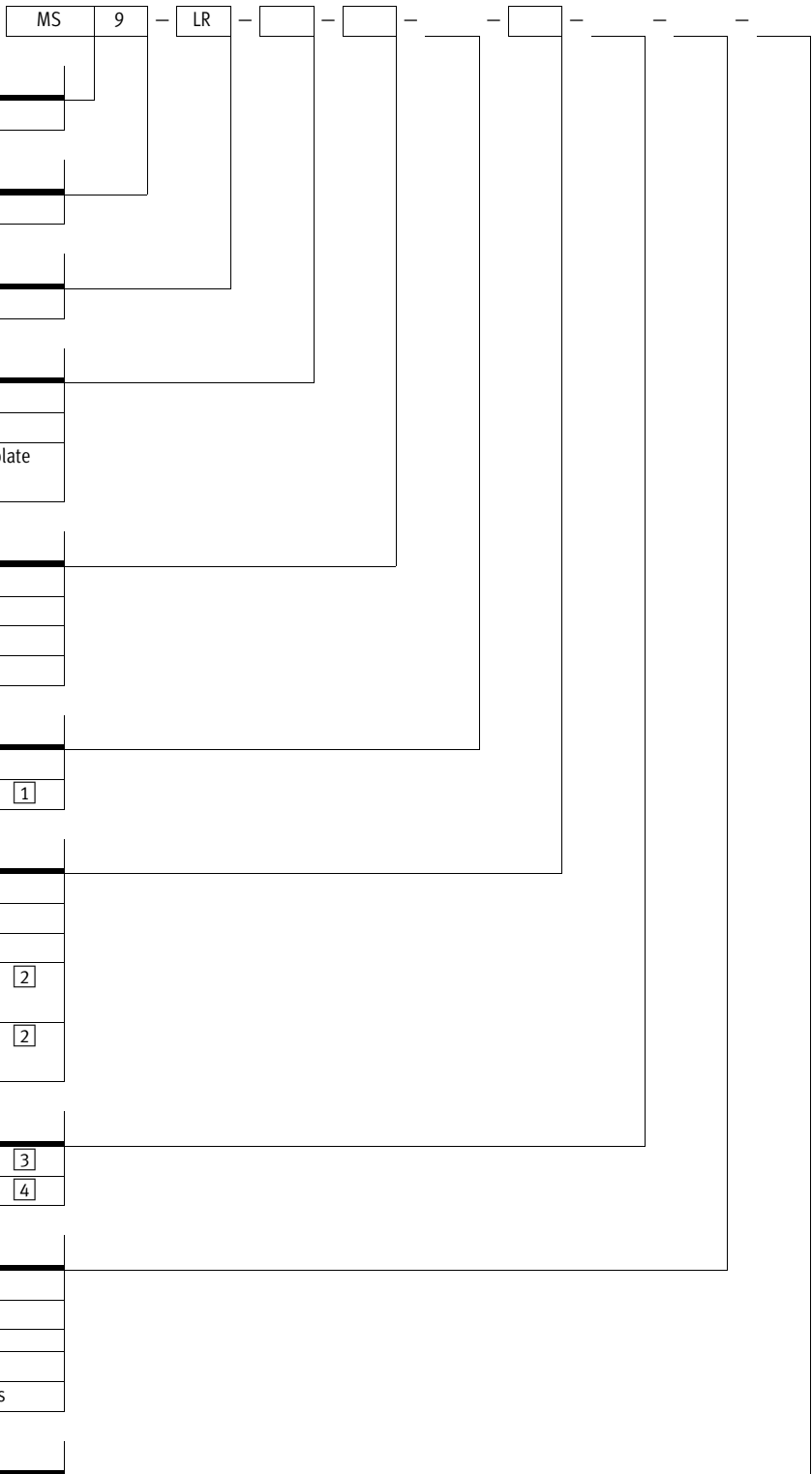
Order example:

MS6-LR-1/2-D6-AS

Standard service unit, grid dimension 62 mm - pressure regulator - female thread G $\frac{1}{2}$ - pressure regulation range 0.3 ... 7 bar, manually operated - with MS pressure gauge, bar - standard rotary knob - rotary knob with detent, can be locked using accessories - flow direction from left to right

Pressure regulators MS-LR

Order code – MS9



Series	
MS	Standard service unit

Size	
9	Grid dimension 90 mm

Type code	
LR	Pressure regulator

Pneumatic connection	
3/4	Female thread G3/4
1	Female thread G1
G	Module without connecting thread, without connecting plate Connecting plates → page 1406

Pressure regulation range/operation	
D5	0.5 ... 4 bar, manually operated
D6	0.5 ... 7 bar, manually operated
D7	0.5 ... 12 bar, manually operated
PO	0.5 ... 16 bar, pneumatically actuated

Regulator type	
-	Piloted
DI	Directly actuated 1

Pressure gauge/pressure gauge alternatives	
AG	With MS pressure gauge
VS	Cover plate
A4	Adapter for EN pressure gauge 1/4
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 2
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 2

Alternative pressure gauge scale	
-	No pressure gauge scale 3
BAR	bar 4

Security	
Pressure regulation range/operation PO	
-	None
Pressure regulation range/operation D5/D6/D7	
AS	Rotary knob with detent, can be locked using accessories

Flow direction	
-	From left to right
Z	From right to left

1 Only with pressure regulation range/operation D5, D6.
2 Measuring range max. 10 bar.

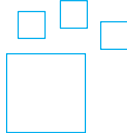
3 Not with MS pressure gauge AG.
4 Only with MS pressure gauge AG.

Order example:

MS9-LR-G-D6-DI-AG-BAR-AS

Standard service unit, grid dimension 90 mm - pressure regulator - module without connecting thread, without connecting plate - pressure regulation range 0.5 ... 7 bar, manually operated - directly actuated regulator - with MS pressure gauge - pressure gauge scale in bar - rotary knob with detent, can be locked using accessories - flow direction from left to right

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Quick ordering¹⁾

Part no.	Type code
MS4	
529415	MS4-LR-1/4-D5-AS
529417	MS4-LR-1/4-D6-AS
529419	MS4-LR-1/4-D7-AS

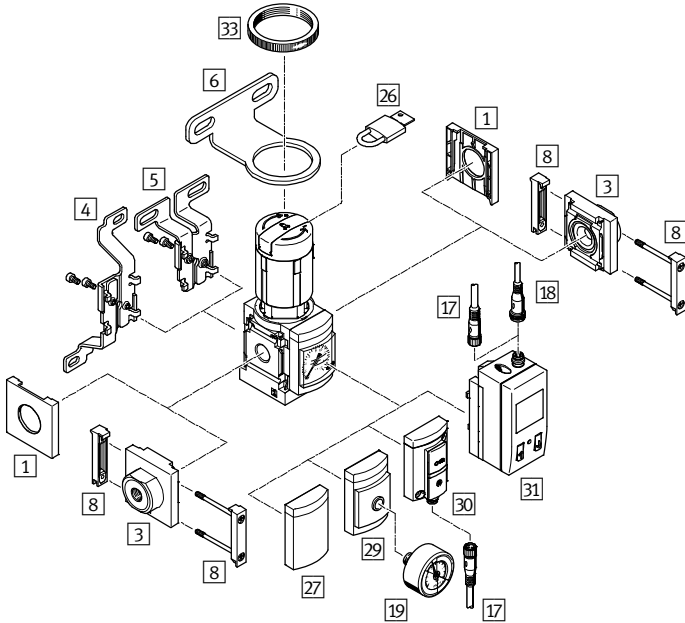
Part no.	Type code
MS6	
529989	MS6-LR-1/2-D5-AS
529991	MS6-LR-1/2-D6-AS
529993	MS6-LR-1/2-D7-AS

1) All products in this table are easy to select and quick to order.

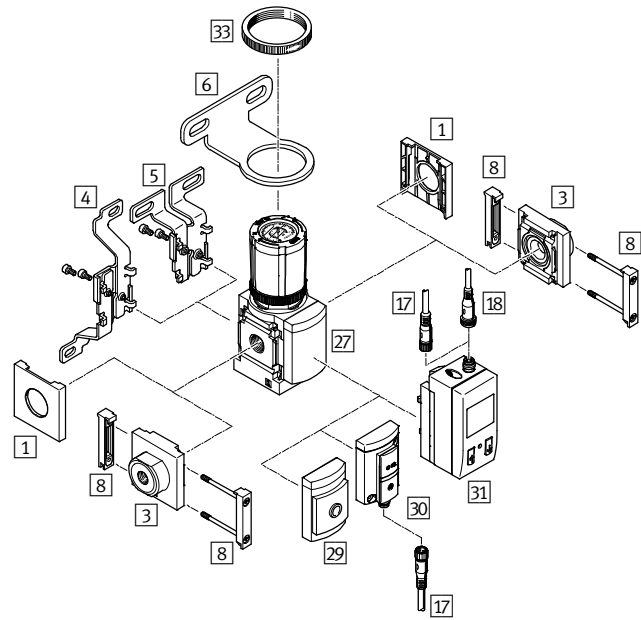
Pressure regulators MS-LR ★

Accessories – MS4/MS6

With standard rotary knob



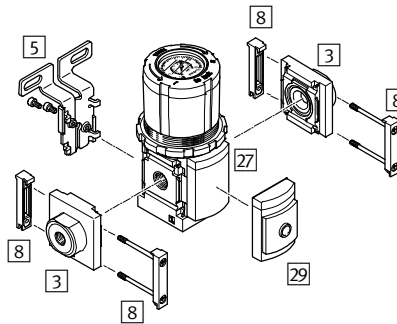
With rotary knob pressure gauge DM1 (MS4 only) or DM2 (MS6 only)



With rotary knob pressure gauge DM2 (MS4 only)

Note

Due to the protruding rotary knob, only a distributor block MS4-FRM-FRZ or a branching module MS4-FRM can be connected as a directly adjacent service unit component.



13

Compressed air preparation

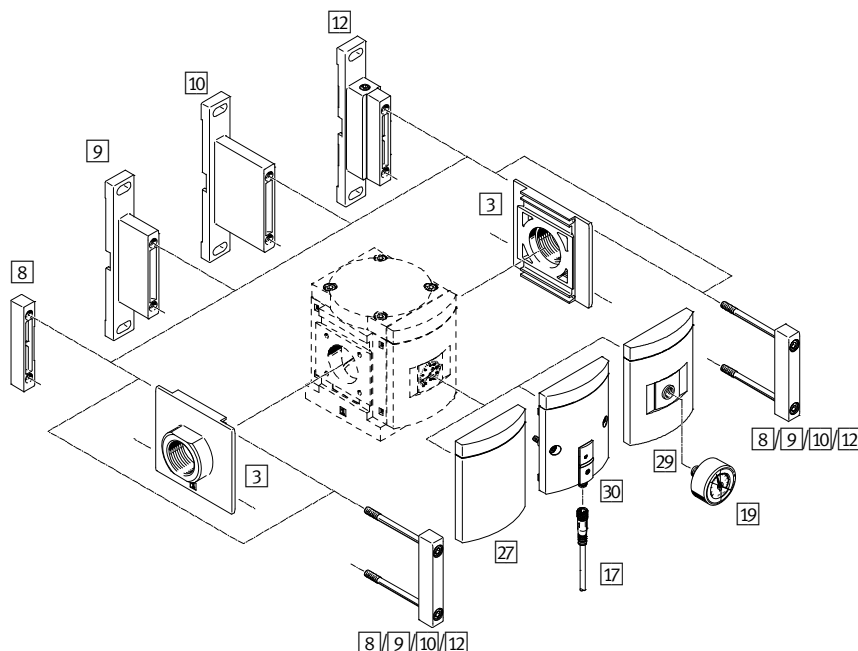
Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4-WBM ¹⁾	1406
6 Mounting bracket MS4/6-WR ¹⁾	1406
8 Module connector MS4/6-MV	1406
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
26 Padlock LRV5-D	1409
27 Cover plate VS	1326
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1326
30 Pressure sensor with operational status indicator AD7/AD9	1326

1) Mounting component for individual device.

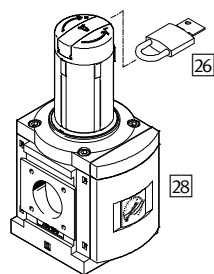
Accessories	→ Page/online
31 Pressure sensor with LCD display AD1/AD3	1326
33 Knurled nut MS-LR (included in the scope of delivery)	-
- Mounting plate MS4/6-AEND	1406
- Mounting bracket MS4/6-WP ²⁾	1406
- Mounting bracket MS4/6-WPB ²⁾	1406
- Mounting bracket MS4/6-WPE ²⁾	1406
- Mounting bracket MS4/6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... 3/with mounting plate MS4/6-AEND.

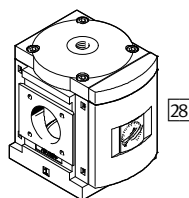
Accessories – MS9



Manually operated D5/D6/D7



Pneumatically actuated PO



Accessories	→ Page/online
3 Connecting plate-SET MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406
17 Connecting cable NEBU-M8...-LE3	1407
19 Pressure gauge MA	1408

1) Not suitable for individual devices with connecting thread G3/4 or G1.

Accessories	→ Page/online
26 Padlock LRVS-D	1409
27 Cover plate VS	1328
28 MS pressure gauge AG	1328
29 Adapter A4 for EN pressure gauge 1/4	1328
30 Pressure sensor with operational status indicator AD7/AD9	1328
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409



Create compact solutions for different pressure ranges

- + High flow rate
- + Internal compressed air supply
- + Flexible pressure output

Regulators > MS series >

Pressure regulators for manifold assembly

MS-LRB

MS series


Regulators > MS series >

Pressure regulators for manifold assembly

MS-LRB

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-lrb



 Additional information, support and user documentation
→ www.festo.com/sp/ms-lrb



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



- + For manifold assembly with through air supply
- + For configuring a regulator manifold with independent pressure regulation ranges
- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + Actuator lock to protect set values against adjustment
- + Integrated return flow option for exhausting from output 2 to output 1
- + Optionally without secondary exhausting
- + Optional pressure sensor
- + Optional rotary knob pressure gauge

Pressure regulators MS-LRB, for manifold assembly

Product range overview

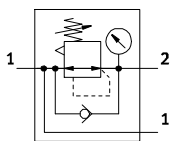
Size	Pneumatic connection	Product options														
		D5	D6	D7	VS	A8	A4	AD...	DM1	DM2	AS	BC	BD	BE	Z	
4	1/4	■	■	■	■	■	■	■	■	■	-	■	■	■	-	■
6	1/2	■	■	■	■	-	■	■	-	■	■	-	■	■	■	■

Product options

1/4	Female thread G1/4	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O	WR	Mounting bracket with knurled nut for regulator head
1/2	Female thread G1/2	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C	WP	Mounting bracket standard design
AGA	Connecting plate G1/8	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output	PSI	Pressure gauge scale in psi	WPM	Mounting bracket for hooking in service units
AGB	Connecting plate G1/4	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output	MPA	Pressure gauge scale in MPa	WPB	Mounting bracket for large wall gap
AGC	Connecting plate G3/8	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	OS	Without secondary exhausting	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
AGD	Connecting plate G1/2	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	LD	Long rotary knob	WBM	Mounting bracket centrally at rear (wall mounting top), connecting plates not required
AGE	Connecting plate G3/4			DM1	Rotary knob pressure gauge, small	EX4	EU certification (II 2GD to EU Explosion Protection Directive (ATEX))
D5	Pressure regulation range 0.3 ... 4 bar, manually operated			DM2	Rotary knob pressure gauge, large	UL1	UL certification (cULus, ordinary locations for Canada and USA)
D6	Pressure regulation range 0.3 ... 7 bar, manually operated			KD	Rotary knob underneath	Z	Pressure output to the front
D7	Pressure regulation range 0.5 ... 12 bar, manually operated			AS	Rotary knob with detent, can be locked using accessories		
D8	Pressure regulation range 0.5 ... 16 bar, manually operated			E11	Rotary knob with integrated lock		
VS	Cover plate			BC	Angled outlet block QS-6		
A8	Adapter for EN pressure gauge 1/8, without pressure gauge			BD	Angled outlet block QS-8		
A4	Adapter for EN pressure gauge 1/4, without pressure gauge			BE	Angled outlet block QS-10		
RG	Integrated pressure gauge, red/green scale						

Pressure regulators MS-LRB, for manifold assembly

Data sheet



Technical data		MS4		MS6	
Size		MS4		MS6	
Pneumatic connection 1		G $\frac{1}{4}$		G $\frac{1}{2}$	
Pneumatic connection 2		G $\frac{1}{4}$		G $\frac{1}{2}$	
		QS-6 (angled outlet block)		QS-8 (angled outlet block)	
		QS-8 (angled outlet block)		QS-10 (angled outlet block)	
Design		Directly actuated diaphragm regulator with through compressed air supply			
Regulating function		With return flow action, with secondary exhausting, with primary pressure compensation			
Type of mounting		Via accessories In-line installation Front panel mounting			
Assembly position		Optional			
Actuator lock		Rotary knob with detent, can be locked using accessories			
Pressure regulation range/operation [bar]		D5		0.3 ... 4, manually operated ¹⁾	
		D6		0.3 ... 7, manually operated ¹⁾	
		D7		0.5 ... 12, manually operated (0.5 ... 10 bar with pressure sensor AD...) ¹⁾	
Pressure indicator		Via pressure gauge for indicating the outlet pressure			
		DM1/DM2		Via pressure gauge in the rotary knob for indicating the outlet pressure	
		AD1/AD3		Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output	
		AD7/AD9		Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output	
Length [mm]	With MS pressure gauge	57 (78) ²⁾		77 (100) ²⁾	
	With cover plate VS	54 (75) ²⁾		76 (99) ²⁾	
	With adapter A8/A4	59 (80) ²⁾		79 (102) ²⁾	
	With pressure sensor AD1/AD3	83 (104) ²⁾		103 (126) ²⁾	
	With pressure sensor AD7/AD9	59 (80) ²⁾		79 (102) ²⁾	
Width [mm]		40		62	
Height [mm]	With rotary knob with detent, can be locked using accessories AS	119		189	
	With rotary knob pressure gauge DM1	113		-	
	With rotary knob pressure gauge DM2	-		178	

1) MS4: The pressure regulation range for pressure regulators with rotary knob pressure gauge DM1 starts at 0.8 bar.
2) Value in brackets with angled outlet block.

Standard nominal flow rate q_{nN}		MS4			MS6		
Size		Standard	Angled outlet block		Standard	Angled outlet block	
			QS-6	QS-8		QS-8	QS-10
Pressure regulation range D5 ³⁾	[l/min]	1900	300	650	7300	600	750
Pressure regulation range D6 ⁴⁾	[l/min]	1700	350	840	6300	880	1000
Pressure regulation range D7 ⁴⁾	[l/min]	1500 ⁵⁾	350	640	5500	800	950

3) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar.
4) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar.
5) $q_{nN} = 800$ l/min, $q_{nmax} = 2200$ l/min with rotary knob pressure gauge DM1.

Download CAD data → www.festo.com

Pressure regulators MS-LRB, for manifold assembly

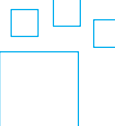
Data sheet

Operating conditions		MS4	MS6
Size			
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	0.8 ... 14	0.8 ... 20
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) ¹⁾	-10 ... +60 (0 ... +50) ¹⁾

1) Value in brackets applies to MS4/MS6-LRB with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Rotary knob	PA/POM
Seals	NBR

Ordering – Product options



**Configurable
product**

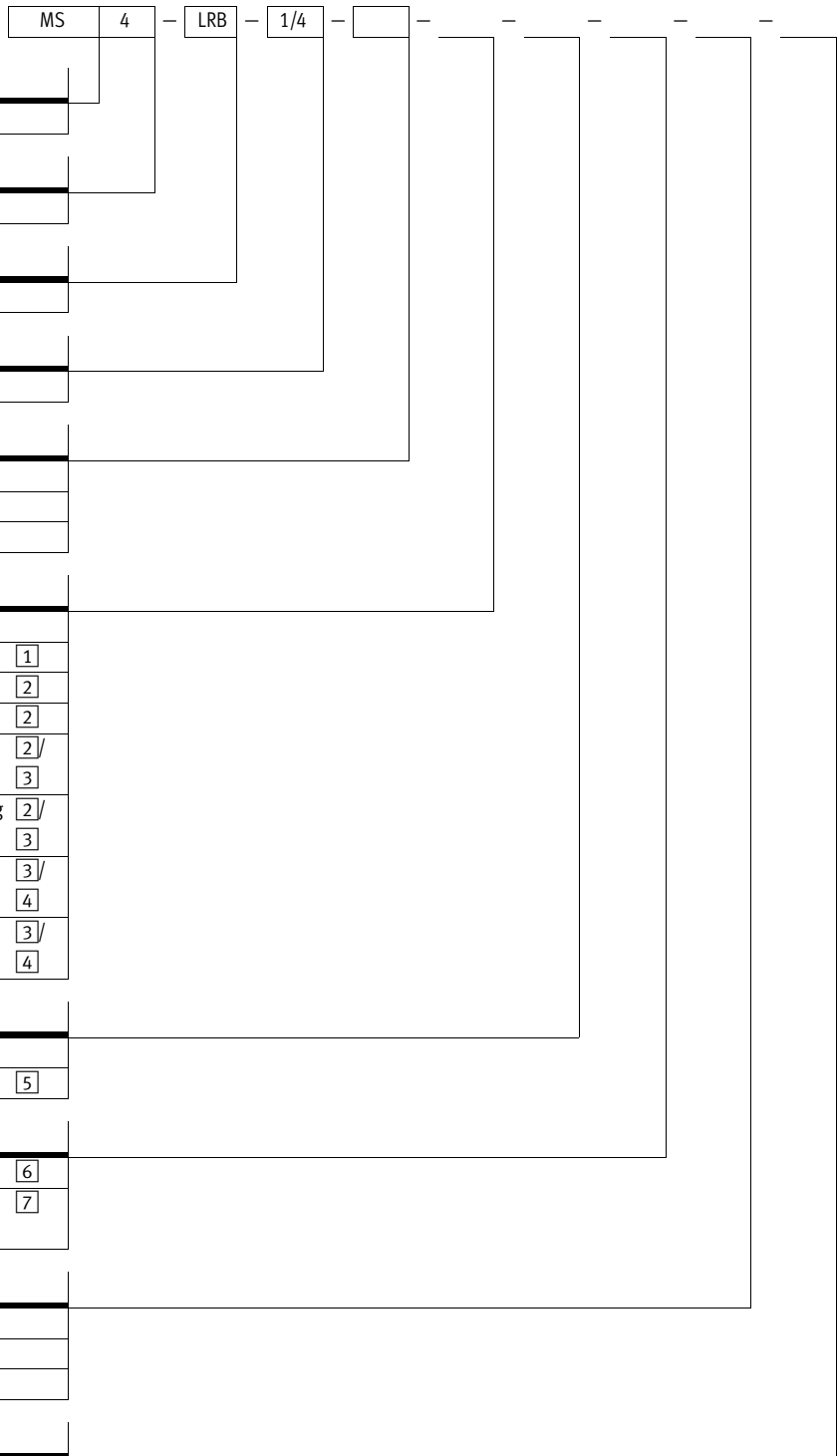
**This product and all its options can
be ordered using the configurator.**

The configurator can be found under
Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Pressure regulators MS-LRB, for manifold assembly

Order code – MS4



Series	
MS	Standard service unit

Size	
4	Grid dimension 40 mm

Type code	
LRB	Pressure regulator

Pneumatic connection	
1/4	Female thread G $\frac{1}{4}$

Pressure regulation range/operation	
D5	0.3 ... 4 bar, manually operated
D6	0.3 ... 7 bar, manually operated
D7	0.5 ... 12 bar, manually operated

Pressure gauge alternatives	
–	With MS pressure gauge, bar
VS	Cover plate 1
A8	Adapter for EN pressure gauge $\frac{1}{8}$ 2
A4	Adapter for EN pressure gauge $\frac{1}{4}$ 2
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 2/3
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 2/3
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 3/4
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 3/4

Rotary knob alternative	
–	Standard rotary knob
DM1	Rotary knob pressure gauge, small 5

Security	
–	None 6
AS	Rotary knob with detent, can be locked using accessories 7

Pressure output	
–	No angled outlet block
BC	Angled outlet block QS-6
BD	Angled outlet block QS-8

Alternative flow direction	
–	Pressure output to the rear
Z	Pressure output to the front

- 1 Must be selected if alternative flow direction Z is selected without pressure output BC, BD.
- 2 Not in combination with alternative flow direction Z.
- 3 Measuring range max. 10 bar.
- 4 In combination with alternative flow direction Z only with pressure output BC, BD.
- 5 Only with pressure gauge alternatives VS, A8, A4, AD1, AD3, AD7 or AD9.
- 6 Only with rotary knob alternative DM1.
- 7 Not with rotary knob alternative DM1.

Order example:

MS4-LRB-1/4-D6-VS-DM1-BD

Standard service unit, grid dimension 40 mm - pressure regulator - female thread G $\frac{1}{4}$ - pressure regulation range 0.3 ... 7 bar, manually operated - with cover plate - rotary knob pressure gauge, small - no integrated lock - angled outlet block QS-8 - pressure output to the rear

Pressure regulators MS-LRB, for manifold assembly

Order code – MS6

	MS	6	-	LRB	-	1/2	-	-	-	-	-	-	-	-
Series														
MS	Standard service unit													
Size														
6	Grid dimension 62 mm													
Type code														
LRB	Pressure regulator													
Pneumatic connection														
1/2	Female thread G $\frac{1}{2}$													
Pressure regulation range/operation														
D5	0.3 ... 4 bar, manually operated													
D6	0.3 ... 7 bar, manually operated													
D7	0.5 ... 12 bar, manually operated													
Pressure gauge alternatives														
-	With MS pressure gauge, bar													
VS	Cover plate												1	
A4	Adapter for EN pressure gauge $\frac{1}{4}$												2	
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin												2/3	
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA												2/3	
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O												3/4	
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O												3/4	
Rotary knob alternative														
-	Standard rotary knob													
DM2	Rotary knob pressure gauge, large												5	
Security														
-	None													6
AS	Rotary knob with detent, can be locked using accessories												7	
Pressure output														
-	No angled outlet block													
BD	Angled outlet block QS-8													
BE	Angled outlet block QS-10													
Alternative flow direction														
-	Pressure output to the rear													
Z	Pressure output to the front													

- 1 Must be selected if alternative flow direction Z is selected without pressure output BD, BE.
- 2 Not in combination with alternative flow direction Z.
- 3 Measuring range max. 10 bar.
- 4 In combination with alternative flow direction Z only with pressure output BD, BE.
- 5 Only with pressure gauge alternatives VS, A4, AD1, AD3, AD7 or AD9.
- 6 Only with rotary knob alternative DM2.
- 7 Not with rotary knob alternative DM2.

Order example:

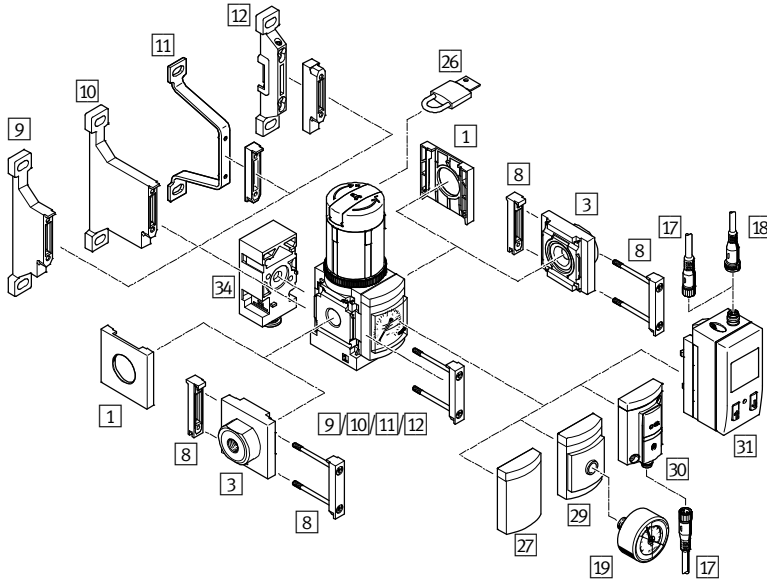
MS6-LRB-1/2-D6-AD9-AS-BD

Standard service unit, grid dimension 62 mm - pressure regulator - female thread G $\frac{1}{2}$ - pressure regulation range 0.3 ... 7 bar, manually operated - with pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O - standard rotary knob - rotary knob with detent, can be locked using accessories - angled outlet block QS-8 - pressure output to the rear

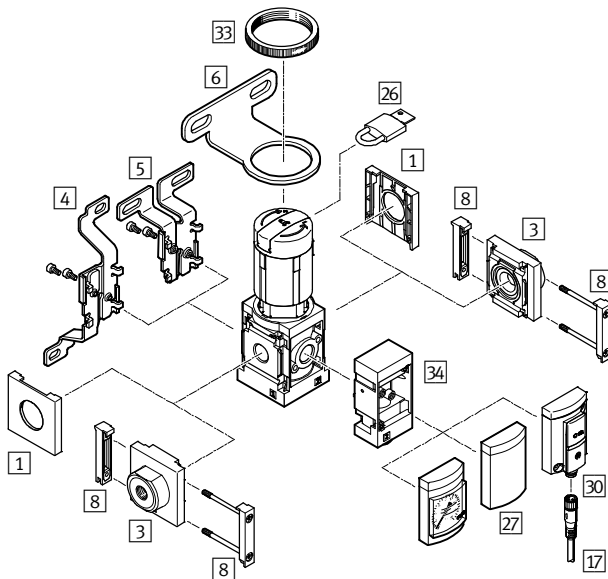
Pressure regulators MS-LRB, for manifold assembly

Accessories – MS4/MS6

Pressure output to the rear



Pressure output to the front (alternative flow direction Z)



Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4-WBM ¹⁾	1406
6 Mounting bracket MS4/6-WR ¹⁾	1406
8 Module connector MS4/6-MV	1406
9 Mounting bracket MS4/6-WP2 ⁴⁾	1406
10 Mounting bracket MS4/6-WPB3 ⁴⁾	1406
11 Mounting bracket MS4/6-WPE3 ⁴⁾	1406
12 Mounting bracket MS4/6-WPM ⁴⁾	1406
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
26 Padlock LRVS-D	1409

Accessories	→ Page/online
27 Cover plate VS	1338
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1338
30 Pressure sensor with operational status indicator AD7/AD9	1338
31 Pressure sensor with LCD display AD1/AD3	1338
33 Knurled nut MS-LR (included in the scope of delivery)	–
34 Angled outlet block B...	1338
– Mounting plate MS4/6-AEND	1406
– Module connector MS4/6-RMV	1409
– Module connector MS4-6-AMV	1409
– Module connector MS6-9-AMV	1409
– Module connector MS6-9-ARMV	1409
– Power supply module MS4/6-E-IPM	ms*-e-ipm*
– Branching module MS4/6-A-IPM	ms*-a*ipm*

1) Mounting component for individual device.
 2) Only with alternative flow direction Z and/or only with pressure output BC, BD, BE.

3) Not in combination with alternative flow direction Z and pressure output BC, BD, BE.
 4) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... 3/with mounting plate MS4/6-AEND.



For precision pressure levels

- + Excellent pressure control characteristics
- + High secondary exhausting

Regulators > MS series >

Precision pressure regulators



MS-LRP

MS series

Regulators > MS series >

Precision pressure regulators

MS-LRP

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-lrp Additional information, support and user documentation
→ www.festo.com/sp/ms-lrp Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex

- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + Actuator lock to protect set values against adjustment
- + Optionally with pressure sensor with display
- + Size 6
- + Grid dimension 62 mm

Precision pressure regulators MS-LRP

Product range overview

Size	Pneumatic connection	Product options											
		D2	D4	D5	D7	PO	VS	A8	A8M	A4	AD...	AS	Z
6	1/4, 3/8, 1/2	■	■	■	■	■	■	■	■	■	■	■	■

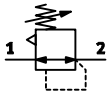
Product options

1/4	Female thread G1/4	PO	Pressure regulation range 0.1 ... 12 bar, pneumatically actuated	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	E11	Rotary knob with integrated lock
3/8	Female thread G3/8	VS	Cover plate	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	WR	Mounting bracket with knurled nut for regulator head
1/2	Female thread G1/2	A8	Adapter for EN pressure gauge 1/8, without pressure gauge	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	WP	Mounting bracket standard design
AGB	Connecting plate G1/4	A8M	Adapter for EN pressure gauge 1/8, with precision pressure gauge	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O	WPM	Mounting bracket for hooking in service units
AGC	Connecting plate G3/8	A4	Adapter for EN pressure gauge 1/4, without pressure gauge	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
AGD	Connecting plate G1/2	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	LD	Long rotary knob	EX4	EU certification (II 2GD to EU Explosion Protection Directive (ATEX))
AGE	Connecting plate G3/4	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	KD	Rotary knob underneath	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AQN	Connecting plate NPT1/4	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	AS	Rotary knob with detent, can be locked using accessories	Z	Direction of flow from right to left
AQP	Connecting plate NPT3/8						
AQR	Connecting plate NPT1/2						
AQS	Connecting plate NPT3/4						
D2	Pressure regulation range 0.05 ... 0.7 bar, manually operated						
D4	Pressure regulation range 0.05 ... 2.5 bar, manually operated						
D5	Pressure regulation range 0.1 ... 4 bar, manually operated						
D7	Pressure regulation range 0.1 ... 12 bar, manually operated						

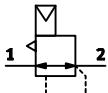
Precision pressure regulators MS-LRP

Data sheet

Manually operated D2/D4/D5/D7



Pneumatically actuated PO



Technical data		Download CAD data → www.festo.com		
Size		MS6		
Pneumatic connection 1, 2		G¼	G¾	G½
Pneumatic connection 3		G¼		
Pilot air connection 12 with pressure regulation range PO		G¼		
Design		Piloted precision diaphragm regulator		
Regulating function		With secondary exhausting		
Type of mounting		Via accessories In-line installation Front panel mounting		
Mounting position		Optional		
Actuator lock		Rotary knob with detent, can be locked using accessories		
Pressure regulation range/operation [bar]		D2 ¹⁾	0.05 ... 0.7, manually operated	
		D4 ¹⁾	0.05 ... 2.5, manually operated	
		D5 ¹⁾	0.1 ... 4, manually operated	
		D7 ¹⁾	0.1 ... 12, manually operated (0.1 ... 10 bar with pressure sensor AD...)	
		PO ²⁾	0.1 ... 12, pneumatically actuated (0.1 ... 10 bar with pressure sensor AD...)	
Pressure indication		A8M	Via precision pressure gauge for indicating the outlet pressure	
		AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output	
		AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output	
Length [mm]	With cover plate VS	76		
	With adapter A8/A4	79		
	With adapter and precision pressure gauge A8M	116		
	With pressure sensor AD1/AD3	103		
	With pressure sensor AD7/AD9	79		
Width [mm]	62			
Height [mm]	With rotary knob with detent, can be locked using accessories AS	228		
	With pressure regulation range PO	136		

- 1) Inlet pressure $p_1 \geq$ outlet pressure $p_2 + 1$ bar.
- 2) Outlet pressure $p_{12} =$ pilot pressure $p_2 + \max. 0.5$ bar.

Standard nominal flow rate q_{nN}		Download CAD data → www.festo.com		
Pneumatic connection 1, 2		G¼	G¾	G½
Pressure regulation range D2 ³⁾	[l/min]	800	1100	1600
Pressure regulation range D4 ⁴⁾	[l/min]	1100	1400	2300
Pressure regulation range D5 ⁵⁾	[l/min]	1400	1700	3000
Pressure regulation range D7/PO ⁶⁾	[l/min]	3000	3300	5000

- 3) Measured at $p_1 = 10$ bar and $p_2 = 0.5$ bar, $\Delta p = 0.1$ bar.
- 4) Measured at $p_1 = 10$ bar and $p_2 = 1.5$ bar, $\Delta p = 0.1$ bar.
- 5) Measured at $p_1 = 10$ bar and $p_2 = 2.5$ bar, $\Delta p = 0.1$ bar.
- 6) Measured at $p_1 = 10$ bar and $p_2 = 6.0$ bar, $\Delta p = 0.1$ bar.

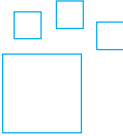
Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on the operating/pilot medium	Lubricated operation not possible
Operating pressure [bar]	1 ... 14
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ¹⁾

1) Value in brackets applies to MS6-LRP with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Rotary knob	PA/POM
Seals	NBR

Ordering – Product options



**Configurable
product**

**This product and all its options can
be ordered using the configurator.**

The configurator can be found under
Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Precision pressure regulators MS-LRP

Order code – MS6

MS 6 – LRP – – – – –

Series

MS	Standard service unit
----	-----------------------

Size

6	Grid dimension 62 mm
---	----------------------

Type code

LRP	Precision pressure regulator
-----	------------------------------

Pneumatic connection

1/4	Female thread G $\frac{1}{4}$
3/8	Female thread G $\frac{3}{8}$
1/2	Female thread G $\frac{1}{2}$

Pressure regulation range/operation

D2	0.05 ... 0.7 bar, manually operated
D4	0.05 ... 2.5 bar, manually operated
D5	0.1 ... 4 bar, manually operated
D7	0.1 ... 12 bar, manually operated
PO	0.1 ... 12 bar, pneumatically actuated

Pressure gauge alternatives

VS	Cover plate
A8	Adapter for EN pressure gauge $\frac{1}{8}$, without pressure gauge
A8M	Adapter for EN pressure gauge $\frac{1}{8}$, with precision pressure gauge
A4	Adapter for EN pressure gauge $\frac{1}{4}$, without pressure gauge
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin ¹
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA ¹
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O ²
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O ²

Security

Pressure regulation range/operation PO	
–	None
Pressure regulation range/operation D2/D4/D5/D7	
AS	Rotary knob with detent, can be locked using accessories

Flow direction

–	From left to right
Z	From right to left

¹ Measuring range max. 10 bar.
Not with pressure regulation range/operation D2, D4

² Measuring range max. 10 bar.
Not with pressure regulation range/operation D2

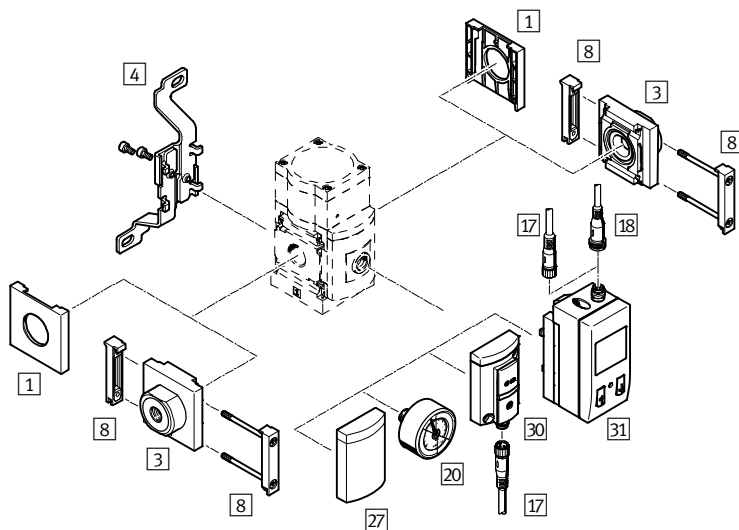
Order example:

MS6-LRP-1/2-D5-A8M-AS

Standard service unit, grid dimension 62 mm - precision pressure regulator - female thread G $\frac{1}{2}$ - pressure regulation range 0.1 ... 4 bar, manually operated - with adapter for EN pressure gauge $\frac{1}{8}$, with precision pressure gauge - rotary knob with detent, can be locked using accessories - flow direction from left to right

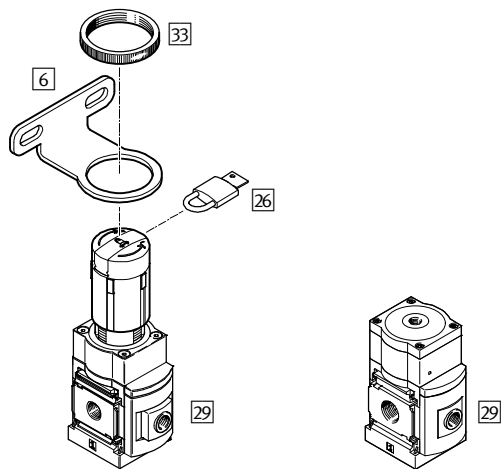
Precision pressure regulators MS-LRP

Accessories – MS6



Manually operated D2/D4/D5/D7

Pneumatically actuated P0



Accessories	→ Page/online
1 Cover cap MS6-END	1406
3 Connecting plate kit MS6-AG...	1406
4 Mounting bracket MS6-WB ¹⁾	1406
6 Mounting bracket MS6-WR ¹⁾	1406
8 Module connector MS6-MV	1406
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
20 Precision pressure gauge A8M/MAP	1346, 1408
26 Padlock LRVS-D	1409
27 Cover plate VS	1346
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1346
30 Pressure sensor with operational status indicator AD7/AD9	1346
31 Pressure sensor with LCD display AD1/AD3	1346

1) Mounting component for individual device.

Accessories	→ Page/online
33 Knurled nut MS-LR (included in the scope of delivery)	–
– Mounting plate MS6-AEND	1406
– Mounting bracket MS6-WP ²⁾	1406
– Mounting bracket MS6-WPB ²⁾	1406
– Mounting bracket MS6-WPE ²⁾	1406
– Mounting bracket MS6-WPM ²⁾	1406
– Module connector MS6-RMV	1409
– Module connector MS4-6-AMV	1409
– Module connector MS6-9-AMV	1409
– Module connector MS6-9-ARMV	1409
– Power supply module MS4/6-E-IPM	ms*-e-ipm*
– Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND.



For exhausting systems quickly and safely

- + 1 or 2-channel exhausting up to Performance Level e to EN ISO 13849-1
- + Variable pressure build-up prevents critical movements
- + Optional: integrated monitoring and testing

On-off valves and soft-start valves > MS series >
Soft-start/quick exhaust valves


MS-SV ★
MS series

On-off valves and soft-start valves > MS series >
Soft-start/quick exhaust valves


MS-SV

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-sv



 Additional information, support and user documentation
→ www.festo.com/sp/ms-sv



 Quick ordering of basic designs
→ page 1355



- + Performance Level c, d or e to EN ISO 13849-1
- + For reducing pressure quickly and reliably and for building up pressure gradually
- + Switching time delay adjustable via a flow control valve for gradual pressure build-up
- + Supply voltage 24 V DC
- + Sizes 6, 9
- + Grid dimension 62, 90 mm

Product range overview

Size	Pneumatic connection	Product options											
		C	V24	10V24	S	VS	AG	A4	AD...	BAR	MH	MK	Z
6	1/2	■	–	■	■	– ¹⁾	■	■	■	–	–	■	■
9	3/4, 1, G	■	■	–	■	■	■	■	■	■	■	■	■

1) Cover plate included in the basic configuration by default.

Product options

1/2 Female thread G1/2

3/4 Female thread G3/4

1 Female thread G1

AGB Connecting plate G1/4

AGC Connecting plate G3/8

AGD Connecting plate G1/2

AGE Connecting plate G3/4

AGF Connecting plate G1

AGG Connecting plate G1 1/4

AGH Connecting plate G1 1/2

N3/4 Female thread NPT3/4

N1 Female thread NPT1

AQN Connecting plate NPT1/4

AQP Connecting plate NPT3/8

AQR Connecting plate NPT1/2

AQS Connecting plate NPT3/4

AQT Connecting plate NPT1

AQU Connecting plate NPT1 1/4

AQV Connecting plate NPT1 1/2

G Module without connecting thread, without connecting plate

NG Module without connecting thread, without connecting plate (inch)

C Performance Level "c"

V24 Supply voltage 24 V DC (pin allocation to EN 175301), 3.5 ... 16 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: non-detenting

10V24

Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 10 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: non-detenting

10V24C

Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 10 bar, no manual override

10V24D

Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 3 ... 10 bar, no manual override

10V24E

Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 3 ... 10 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: none

10V24F

Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 3 ... 10 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: non-detenting

10V24P

Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 3 ... 10 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: non-detenting/detenting

V110 Supply voltage 110 V AC (pin allocation to EN 175301), 3.5 ... 16 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: non-detenting

V230 Supply voltage 230 V AC (pin allocation to EN 175301), 3.5 ... 16 bar, manual override

- at the soft-start/quick exhaust valve: detenting, self-resetting
- at the pilot solenoid valve: non-detenting

S Silencer

VS Cover plate

AG MS pressure gauge

A4 Adapter for EN pressure gauge 1/4, without pressure gauge

RG Integrated pressure gauge, red/green scale

AD1 Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin

AD2 Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin

AD3 Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA

AD4 Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA

AD7 Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O

AD8 Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C

AD9 Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O

AD10 Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C

BAR Pressure gauge scale in bar

PSI Pressure gauge scale in psi

MPA Pressure gauge scale in MPA

WP Mounting bracket standard design

WPM Mounting bracket for hooking in service units

WPB Mounting bracket for large wall gap

WB Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required

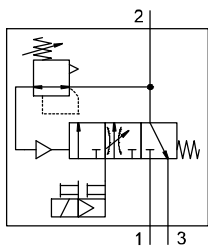
MH Tamper protection, cover for manual override only

MK Tamper protection, full cover for manual override and adjusting screws

Z Flow direction from right to left

Soft-start/quick exhaust valves MS-SV-C ★

Data sheet



Electropneumatic soft-start/quick exhaust valve for gradual pressurisation and quick exhausting

of system components (single channel). The main flow control valve in the end cap permits a slower build-up of outlet

pressure p2. Once the outlet pressure p2 has reached the set pressure switchover point (switching pressure), the valve

opens and the full operating pressure p1 is present at the output.

Safety data		MS6	MS9
Size		MS6	MS9
Conforms to standard		EN ISO 13849-1	
Safety function		Exhausting	
		Avoidance of unexpected start-up (pressurisation)	
Performance Level (PL)		Exhausting: up to category 1, PL c	
		Avoidance of unexpected start-up (pressurisation): up to category 1, PL c	
Note on forced switch on/off		Switching frequency min. 1/month	
CE marking (see declaration of conformity) ¹⁾		To the EU Machinery Directive	
Shock resistance		Shock test with severity level 2 according to FN 942017-5 and EN 60068-2-27	Shock test with severity level 1 according to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity class 2 according to FN 942017-4 and EN 60068-2-6	Transport application test with severity class 1 according to FN 942017-4 and EN 60068-2-6

1) Additional information www.festo.com/sp → Certificates.

Note on forced switch on/off: switching frequency min. 1/month
 The mechanical system is not tested frequency (safe exhausting) is less than once a month, the machine's operator in the controlled (i.e. pressurised) state. If the process-related switching has to carry out a forced switch off.

Technical data		MS6	MS9	Download CAD data → www.festo.com	
Size		MS6	MS9		
Pneumatic connection 1, 2		G1/2	G3/4	G1	– ²⁾
Pneumatic connection 3		G3/4	G1		
Design		Piston spool			
Type of mounting		Via accessories			
		In-line installation			
Mounting position		Any			
Valve function		3/2-way valve, closed, bistable			
		Soft-start function			
Exhaust air function		No flow control			
Manual override	At the pilot solenoid valve	Non-detenting			
	At the soft-start/quick exhaust valve	Detenting, self-resetting			
Reset method		Mechanical spring			
Type of control		Piloted			
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure			
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output		–	
	AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output			

2) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.

13

Compressed air preparation

Data sheet

Download CAD data → www.festo.com

Technical data		MS6	MS9	
Size		MS6	MS9	
Pneumatic connection 1, 2		G½	G¾	G1 ⁻¹⁾
Length [mm]	With cover plate VS	76	109	
	With MS pressure gauge AG	77	109	
	With adapter A4	79	110	
	With pressure sensor AD1/AD3	103	-	
	With pressure sensor AD7/AD9	79	112	
Width [mm]		62	104	90
Height [mm]	Without silencer	177	271	
	With silencer	305	437	

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.

Flow rate characteristics		MS6	MS9	
Size		MS6	MS9	
Pneumatic connection 1, 2		G½	G¾	G1 ⁻²⁾
Standard nominal flow rate				
In main flow direction $q_{nN1 \rightarrow 2}$ ³⁾	[l/min]	5700	14,150	16,460 8300 ... 16,550
Standard flow rate				
In exhaust direction $q_{n2 \rightarrow 3}$ ⁴⁾	[l/min]	7600	21,450	20,870 19,730 ... 21,720

2) Dependent on the connecting plate selected, must be ordered separately as an accessory → page 1406.

3) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar.4) $p_2 = 6$ bar, measured with respect to atmosphere with silencer S.

Electrical data		MS6	MS9	
Size		MS6	MS9	
Supply voltage		10V24	V24	
Coil characteristics		24 V DC: 1.8 W	24 V DC: 8.4 W	
Electrical connection		Plug, 2-pin, to EN 175301-803, type C	Plug, square design to EN 175301-803, type A	
Degree of protection		IP65 with plug socket		
Duty cycle	[%]	100		

Operating conditions		MS6	MS9	
Size		MS6	MS9	
Supply voltage		10V24	V24	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	3 ... 10	3.5 ... 16 (3.5 ... 10) ⁵⁾	
Ambient temperature	[°C]	0 ... +60 (0 ... +50) ⁵⁾		
Noise level	[dB (A)]	-	93	

5) Value in brackets applies to MS6/MS9-SV-C with pressure sensor AD...

Materials		MS6	MS9	
Size		MS6	MS9	
Housing		Die-cast aluminium		
Piston spool		High-alloy stainless steel	Brass	
Seals		NBR		

On-off valves and soft-start valves > MS series >

Soft-start/quick exhaust valves MS-SV-C ★

Order code – MS6

MS 6 – SV – 1/2 – C – 10V24 – – – –

Series

MS	Standard service unit
----	-----------------------

Size

6	Grid dimension 62 mm
---	----------------------

Type

SV	Soft-start/quick exhaust valve
----	--------------------------------

Pneumatic connection

1/2	Female thread G½
-----	------------------

Performance Level

C	Category 1, 1-channel, to EN ISO 13849-1
---	--

Supply voltage

10V24	24 V DC (pin allocation to EN 175301), 3 ... 10 bar
-------	---

Silencer

–	None
S	Silencer

Pressure gauge/pressure gauge alternatives

–	Cover plate
AG	MS pressure gauge, bar
A4	Adapter for EN pressure gauge ¼
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 1
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 1
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 1

Tamper protection

–	No tamper protection
MK	Full cover

Flow direction

–	From left to right
Z	From right to left

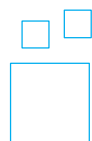
1 Measuring range max. 10 bar.

Order example:

MS6-SV-1/2-C-10V24-S-AG-MK

Standard service unit, grid dimension 62 mm - soft-start/quick exhaust valve - female thread G½ - Performance Level "c"/category 1, 1 channel, to EN ISO 13849-1 - supply voltage 24 V DC, operating pressure 3 ... 10 bar - with silencer - with MS pressure gauge, bar - with tamper protection, full cover - flow direction from left to right

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or www.festo.com/catalogue/...

Enter the type code in the search field.

Order code – MS9

	MS	9	–	SV	–		–	C	–	V24	–	S	–		–		–		–
Series																			
MS	Standard service unit																		
Size																			
9	Grid dimension 90 mm																		
Type																			
SV	Soft-start/quick exhaust valve																		
Pneumatic connection																			
3/4	Female thread G3/4																		
1	Female thread G1																		
G	Module without connecting thread, without connecting plate Connecting plates → page 1406																		
Performance Level																			
C	Category 1, 1-channel, to EN ISO 13849-1																		
Supply voltage																			
V24	24 V DC (pin allocation to EN 175301), 16 bar																		
Silencer																			
S	Silencer																		
Pressure gauge/pressure gauge alternatives																			
VS	Cover plate																		
AG	MS pressure gauge																		
A4	Adapter for EN pressure gauge 1/4																		
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O																		1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O																		1
Alternative pressure gauge scale																			
–	No pressure gauge scale																		2
BAR	Bar																		3
Tamper protection																			
–	No tamper protection																		
MH	Cover for manual override only																		
MK	Full cover																		
Flow direction																			
–	From left to right																		
Z	From right to left																		

1 Measuring range max. 10 bar.

2 Not with MS pressure gauge AG.

3 Only with MS pressure gauge AG.

Order example:

MS9-SV-G-C-V24-S-VS-MK

Standard service unit, grid dimension 90 mm - soft-start/quick exhaust valve - module without connecting thread, without connecting plate - Performance Level "c"/category 1, 1 channel, to EN ISO 13849-1 - supply voltage 24 V DC, operating pressure 3.5 ... 16 bar - with silencer - with cover plate - with tamper protection, full cover - flow direction from left to right

★ Quick ordering ¹⁾

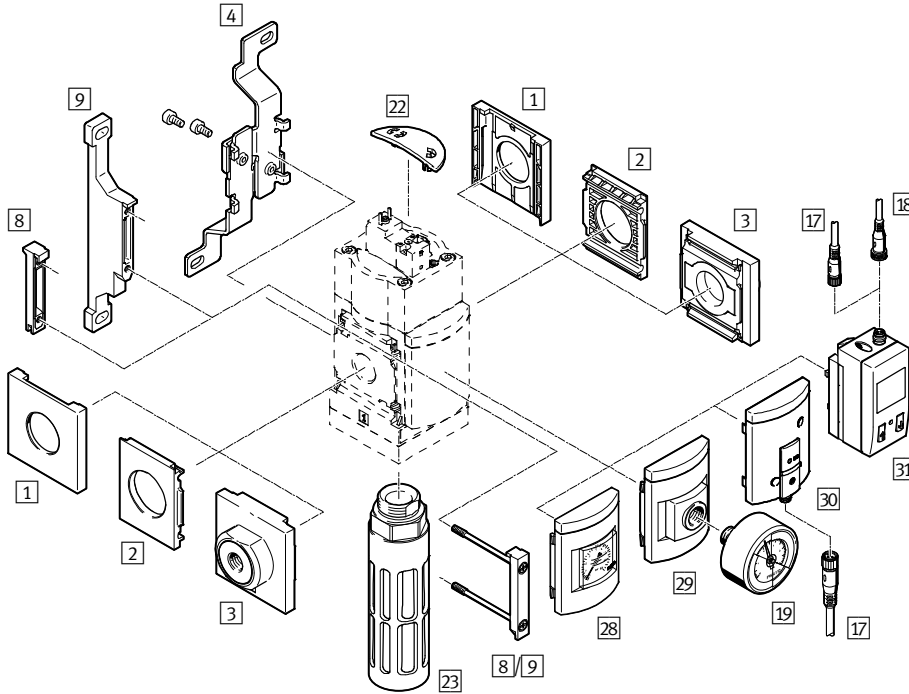
Part no.	Type
MS6	
8001469	MS6-SV-1/2-C-10V24-S

1) All products in this table are easy to select and quick to order.

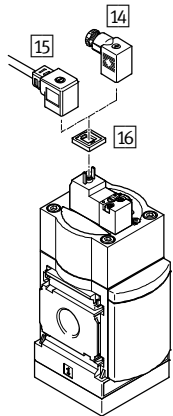
On-off valves and soft-start valves > MS series >

Soft-start/quick exhaust valves MS-SV-C ★

Accessories – MS6



Supply voltage 10V24



13

Compressed air preparation

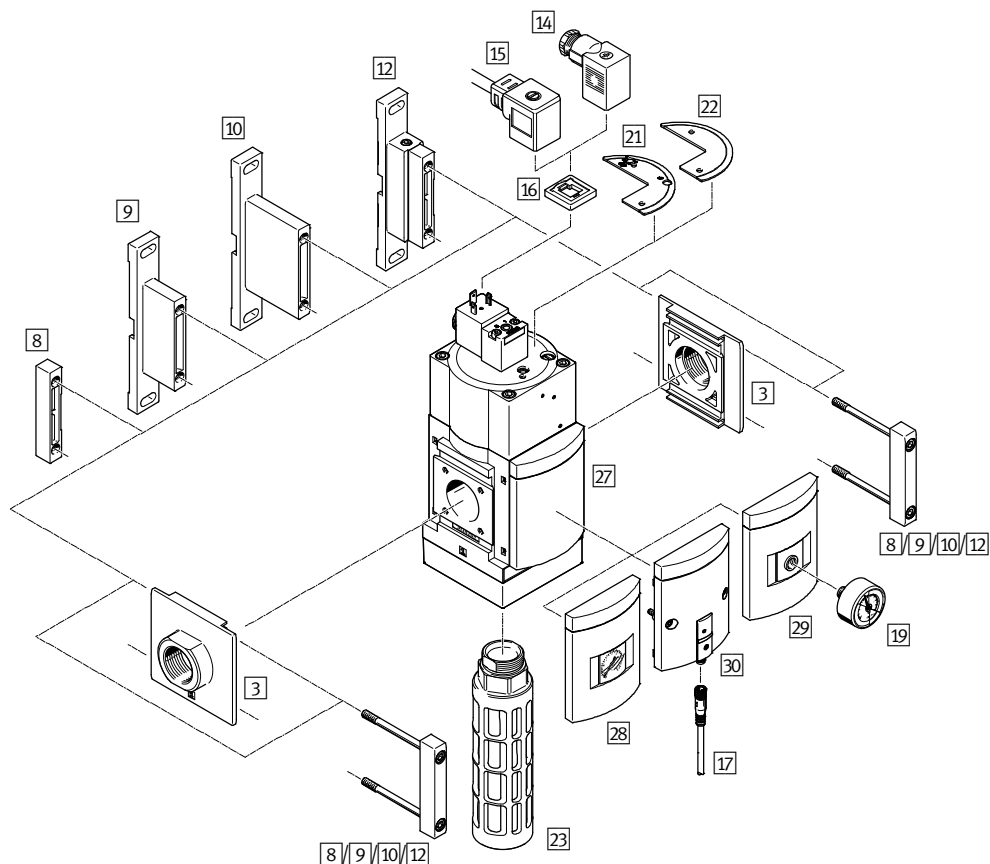
Accessories	→ Page/online
1 Cover cap MS6-END	1406
2 Mounting plate MS6-AEND	1406
3 Connecting plate kit MS6-AG...	1406
4 Mounting bracket MS6-WB ¹⁾	1406
8 Module connector MS6-MV	1406
9 Mounting bracket MS6-WP ²⁾	1406
14 Plug socket MSSD-EB	1407
15 Plug socket with cable KMEB	1407
16 Illuminating seal MEB-LD	1407
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
22 Cover MS6-SV-C-MK	1408
23 Silencer U	1409

1) Mounting component for individual device.

Accessories	→ Page/online
28 MS pressure gauge AG	1354
29 Adapter A4 for EN pressure gauge 1/4	1354
30 Pressure sensor with operational status indicator AD7/AD9	1354
31 Pressure sensor with LCD display AD1/AD3	1354
- Mounting bracket MS6-WPB ²⁾	1406
- Mounting bracket MS6-WPE ²⁾	1406
- Mounting bracket MS6-WPM ²⁾	1406
- Module connector MS6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS6-E-IPM	ms*-e-ipm*
- Branching module MS6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND [2].

Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406
14 Plug socket MSSD-C	1407
15 Connecting cable KMC	1407
16 Illuminating seal MC-LD	1407
17 Connecting cable NEBU-M8...-LE3	1407
19 Pressure gauge MA	1408

1) Not suitable for individual devices with connecting thread G¾ or G1.

Accessories	→ Page/online
21 Cover MS9-SV-MH	1408
22 Cover MS9-SV-MK	1408
23 Silencer U	1409
27 Cover plate VS	1355
28 MS pressure gauge AG	1355
29 Adapter A4 for EN pressure gauge ¼	1355
30 Pressure sensor with operational status indicator AD7/AD9	1355
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409

Soft-start/quick exhaust valves MS-SV-D

Product range overview

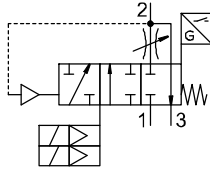
Size	Pneumatic connection	Product options										
		D	10V24	2M8	2M12	20E	S3	S0	AG	A4	AD...	Z
6	1/2	■	■	■	■	■	■	■	■	■	■	■

Product options

1/2	Female thread G1/2	2M8	2 proximity sensors SMT with cable (plug M8x1, 3-pin, rotatable thread, cable length 0.3 m)	S0	Silencer open	AD4	Pressure sensor with LCD display, plug M12, 1 switching output
AGB	Connecting plate G1/4			AG	MS pressure gauge		plug M12, 1 switching output
AGC	Connecting plate G3/8			A4	Adapter for EN pressure gauge 1/4, without pressure gauge		NPN, 4-pin, analogue output
AGD	Connecting plate G1/2	2M12	2 proximity sensors SMT with cable (plug M12x1, 3-pin, rotatable thread, cable length 0.3 m)	RG	Integrated pressure gauge, red/green scale		4 ... 20 mA
AGE	Connecting plate G3/4					PSI	Pressure gauge scale in psi
AQN	Connecting plate NPT1/4			AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	MPA	Pressure gauge scale in MPa
AQP	Connecting plate NPT3/8	20E	2 proximity sensors SMT with cable (open end, 3-wire, cable length 5 m)			WP	Mounting bracket standard design
AQR	Connecting plate NPT1/2			AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	WPM	Mounting bracket for hooking in service units
AQS	Connecting plate NPT3/4			AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output	WPB	Mounting bracket for large wall gap
D	Performance Level "d"	S3	Additional proximity sensor SMT; required to achieve Performance Level "e"; connection depends on connection technology chosen			WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
10V24	Supply voltage 24 V DC (pin allocation to EN 175301), 3.5 ... 10 bar					UL1	UL certification (cULus, ordinary locations for Canada and USA)
10V24P	Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 3.5 ... 10 bar					Z	Flow direction from right to left

Soft-start/quick exhaust valves MS-SV-D

Data sheet



The electropneumatic soft-start/quick exhaust valve is used to reduce pressure quickly and safely and to build up pressure gradually in industrial pneumatic piping systems and terminal equipment. The MS6-SV-D has two safety functions:

- Safe exhausting
- Protection against unexpected start-up

The MS6-SV-D has a 2-channel structure, i.e. it has two internal 2-way valves which can be controlled separately by pilot valves (V1 and V2) situated on the cover.

These valves are actuated when both coils are energised simultaneously; this changes the MS6-SV-D from the normal position to the switching position. The outlet pressure p2 rises slowly in accordance with the throttle setting. The main seat opens when the through pressure is reached. The normal position is achieved by switching off both coils. Two proximity sensors (S1 and S2) secured on the housing monitor the

directional control valves. A further proximity sensor (S3) can optionally be added to monitor the soft-start valve. The MS6-SV-D can achieve various categories and safety levels to EN ISO 13849-1 depending on whether the directional control valves are monitored. Where there is appropriate integration into the control chain as well as appropriate linking of the signals for initial

position sensing with the signals for activation (plausibility checking):

- Performance Level d/category 3 to EN ISO 13849-1 and EN ISO 13849-2 can be achieved when using sensors S1 and S2
- Performance Level e/category 4 to EN ISO 13849-1 and EN ISO 13849-2 can be achieved when using sensors S1, S2 and S3

Note

To avoid back pressures, it is recommended that the device be operated together with the silencer UOS-1. The silencer can be ordered via the order code (SO → page 1361) or as an accessory (UOS-1 → page 1409).

Note

Only devices that do not impair the pneumatic protective measure – safe exhausting – may be placed downstream of the MS6-SV-...-D. The MS6-SV-...-D is not permitted for use as a press safety valve.

- Conforms to standard IEC 61508
- Switching time delay adjustable via a flow control valve for gradual pressure build-up; main seat opens at approx. 50% of operating pressure
- Optional pressure sensor

Safety data

Size	MS6
Conforms to standard	EN ISO 13849-1 and EN ISO 13849-2
Safety function	Exhausting Avoidance of unexpected start-up (pressurisation)
Performance Level (PL)	With sensing by S1 and S2 Exhausting: category 3, PL d or category 3, PL e ¹⁾ Avoidance of unexpected start-up (pressurisation): category 3, PL d or category 3, PL e ¹⁾
	With sensing by S1, S2 and S3 Exhausting: category 4, PL e Avoidance of unexpected start-up (pressurisation): category 4, PL e
Safety integrity level (SIL)	Exhausting: SIL 3 Avoidance of unexpected start-up (pressurisation): SIL 3
	Note on forced switch on/off Switching frequency min. 1/month
CE marking (see declaration of conformity) ²⁾	To the EU Machinery Directive
Shock resistance	Shock test with severity level 2 according to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity class 2 according to FN 942017-4 and EN 60068-2-6

1) Dependent on the average number of annual actuations (n_{op}).
2) Additional information www.festo.com/sp → Certificates.

Note on forced switch on/off: switching frequency min. 1/month

The mechanical system is not tested in the controlled (i.e. pressurised) state. If the process-related switching frequency (safe exhausting) is less than once a month, the machine's operator has to carry out a forced switch off.

Soft-start/quick exhaust valves MS-SV-D

Data sheet

Download CAD data → www.festo.com

Technical data		
Size	MS6	
Pneumatic connection 1, 2	G $\frac{1}{2}$	
Pneumatic connection 3	G1	
Design	Piston seat	
Type of mounting	Via accessories In-line installation	
Mounting position	Any	
Valve function	3/2-way valve, closed, bistable Soft-start function	
Exhaust air function	No flow control	
Manual override	None	
Reset method	Mechanical spring	
Type of control	Piloted	
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output
Length [mm]	With cover plate VS	90
	With MS pressure gauge AG	90
	With adapter A4	92
	With pressure sensor AD1/AD3	116
Width [mm]	62	
Height [mm]	Without silencer	257
	With silencer	404

Flow rate characteristics		
Size	MS6	
Pneumatic connection 1, 2	G $\frac{1}{2}$	
Standard nominal flow rate		
In main flow direction $q_{nN1 \rightarrow 2}^{1)}$	[l/min]	4300
Standard flow rate		
In exhaust direction $q_{n2 \rightarrow 3}^{2)}$	[l/min]	9000

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar.

2) $p_2 = 6$ bar, measured with respect to atmosphere with silencer UOS-1.

Electrical data		
Size	MS6	
Supply voltage	10V24	
Coil characteristics	24 V DC: 1.8 W	
Electrical connection	2x plug, 2-pin, to EN 175301-803, type C	
Degree of protection	IP65 with plug socket	
Duty cycle	[%]	100

Operating conditions		
Size	MS6	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	3.5 ... 10
Ambient temperature	[°C]	-10 ... +50 (0 ... +50) ³⁾
Noise level	[dB (A)]	75 (with silencer UOS-1)

3) Value in brackets applies to MS6-SV-D with pressure sensor AD...

Materials		
Size	MS6	
Housing	Die-cast aluminium	
Piston rod	High-alloy stainless steel	
Seals	NBR	

Soft-start/quick exhaust valves MS-SV-D

Order code – MS6

MS 6 – SV – 1/2 – D – 10V24 – – – –

Series	
MS	Standard service unit
Size	
6	Grid dimension 62 mm
Type	
SV	Soft-start/quick exhaust valve
Pneumatic connection	
1/2	Female thread G $\frac{1}{2}$
Performance Level	
D	Category 3, 2-channel to EN ISO 13849-1
Supply voltage	
10V24	24 V DC (pin allocation to EN 175301)
Connection technology	
2M8	2 proximity sensors SMT with cable (plug M8x1, 3-pin, rotatable thread, cable length 0.3 m)
2M12	2 proximity sensors SMT with cable (plug M12x1, 3-pin, rotatable thread, cable length 0.3 m)
20E	2 proximity sensors SMT with cable (open end, 3-wire, cable length 5 m)
Extended sensing	
–	None
S3	Additional proximity sensor SMT; required to achieve Performance Level e; connection depends on connection technology chosen
Silencer	
–	None
SO	Silencer open
Pressure gauge/pressure gauge alternatives	
–	Cover plate
AG	MS pressure gauge, bar
A4	Adapter for EN pressure gauge $\frac{1}{4}$
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin ¹
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA ¹
Flow direction	
–	From left to right
Z	From right to left

¹ Measuring range max. 10 bar.

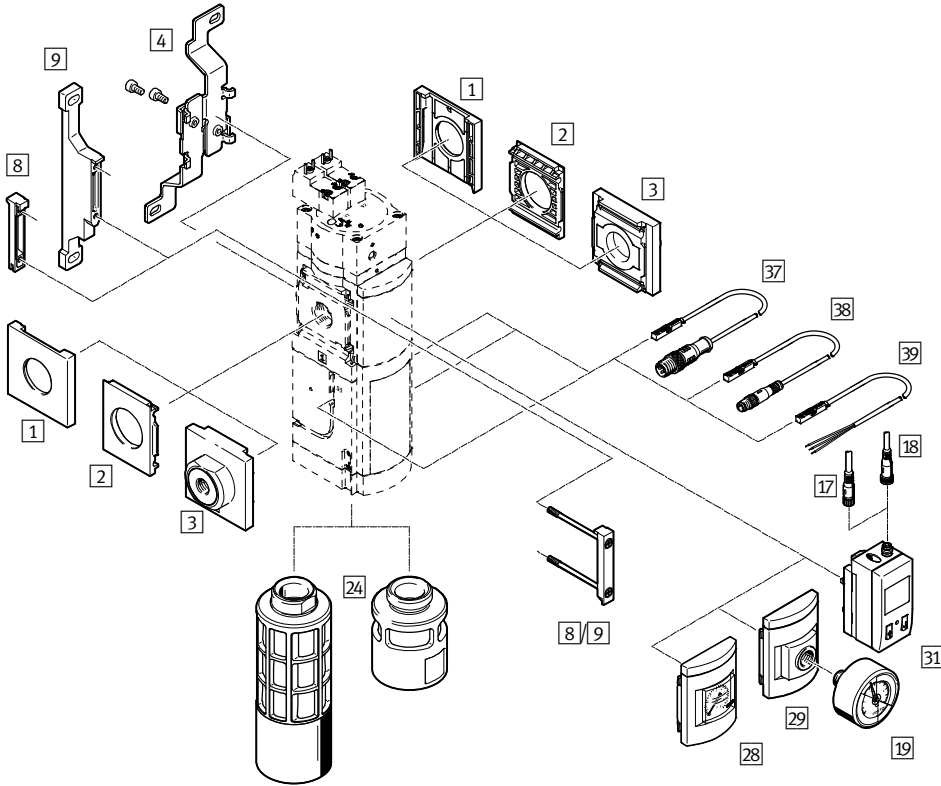
Ordering – Product options

	<p>Configurable product</p>	<p>This product and all its options can be ordered using the configurator.</p>	<p>The configurator can be found under Products on the DVD or www.festo.com/catalogue/...</p>	<p>Enter the type code in the search field.</p>
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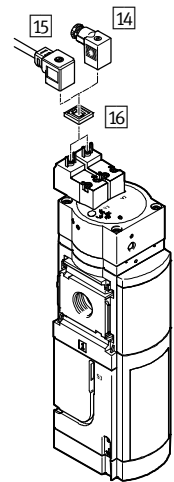
On-off valves and soft-start valves > MS series >

Soft-start/quick exhaust valves MS-SV-D

Accessories – MS6



Supply voltage 10V24



Compressed air preparation

Accessories	→ Page/online
1 Cover cap MS6-END	1406
2 Mounting plate MS6-AEND	1406
3 Connecting plate kit MS6-AG...	1406
4 Mounting bracket MS6-WB ¹⁾	1406
8 Module connector MS6-MV	1406
9 Mounting bracket MS6-WP ²⁾	1406
14 Plug socket MSSD-EB	1407
15 Plug socket with cable KMEB	1407
16 Illuminating seal MEB-LD	1407
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
24 Silencer UOS	1409
28 MS pressure gauge AG	1361

1) Mounting component for individual device.

Accessories	→ Page/online
29 Adapter A4 for EN pressure gauge 1/4	1361
31 Pressure sensor with LCD display AD1/AD3	1361
37 Proximity sensor 2M12	1361
38 Proximity sensor 2M8	1361
39 Proximity sensor 20E	1361
- Mounting bracket MS6-WPB ²⁾	1406
- Mounting bracket MS6-WPE ²⁾	1406
- Mounting bracket MS6-WPM ²⁾	1406
- Module connector MS6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS6-E-IPM	ms*-e-ipm*
- Branching module MS6-A-IPM	ms*-a-ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND [2].



For pressurising and exhausting systems manually

- + High flow rate
- + Lockable exhaust position

On-off valves and soft-start valves > MS series >
Manually operated on-off valves

MS-EM

MS series


On-off valves and soft-start valves > MS series >

Manually operated on-off valves


MS-EM

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-em




 Additional information, support and user documentation
→ www.festo.com/sp/ms-em



 Quick ordering of basic designs
→ page 1368



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



- + Manually operated
- + A silencer can be attached or the exhaust air can be ducted at port 3
- + Optionally with pressure gauge and pressure sensor with display
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm

Product range overview

Size	Pneumatic connection	Product options								
		S	VS	AG	A8	A4	AD...	BAR	2	Z
4	1/8, 1/4	■	– ¹⁾	■	■	■	■	–	–	■
6	1/4, 3/8, 1/2	■	– ¹⁾	■	–	■	■	–	–	■
9	3/4, 1, G	■	■	■	–	■	–	■	■	■
12	G	■	– ¹⁾	■	–	■	–	–	–	■

1) Cover plate included in the basic configuration by default.

Product options

1/8 Female thread G1/8

1/4 Female thread G1/4

3/8 Female thread G3/8

1/2 Female thread G1/2

3/4 Female thread G3/4

1 Female thread G1

AGA Connecting plate G1/8

AGB Connecting plate G1/4

AGC Connecting plate G3/8

AGD Connecting plate G1/2

AGE Connecting plate G3/4

AGF Connecting plate G1

AGG Connecting plate G1 1/4

AGH Connecting plate G1 1/2

AGI Connecting plate G2

N3/4 Female thread NPT3/4

N1 Female thread NPT1

AQK Connecting plate NPT1/8

AQN Connecting plate NPT1/4

AQP Connecting plate NPT3/8

AQR Connecting plate NPT1/2

AQS Connecting plate NPT3/4

AQT Connecting plate NPT1

AQU Connecting plate NPT1 1/4

AQV Connecting plate NPT1 1/2

G Module without connecting

thread, without connecting plate

NG Module without connecting

thread, without connecting plate

(inch)

S Silencer

VS Cover plate

AG MS pressure gauge

A8 Adapter for EN pressure gauge

1/8, without pressure gauge

A4 Adapter for EN pressure gauge 1/4,

without pressure gauge

RG Integrated pressure gauge, red/

green scale

AD1 Pressure sensor with LCD display,

plug M8, 1 switching output PNP,

3-pin

AD2 Pressure sensor with LCD display,

plug M8, 1 switching output NPN,

3-pin

AD3 Pressure sensor with LCD display,

plug M12, 1 switching output

PNP, 4-pin, analogue output

4 ... 20 mA

AD4 Pressure sensor with LCD display,

plug M12, 1 switching output

NPN, 4-pin, analogue output

4 ... 20 mA

AD7 Pressure sensor with operational

status indicator, plug M8,

threshold value comparator, PNP,

N/O

AD8 Pressure sensor with operational

status indicator, plug M8,

threshold value comparator, PNP,

N/C

AD9 Pressure sensor with operational

status indicator, plug M8, window

comparator, PNP, N/O

AD10 Pressure sensor with operational

status indicator, plug M8, window

comparator, PNP, N/C

BAR Pressure gauge scale in bar

PSI Pressure gauge scale in psi

MPA Pressure gauge scale in MPa

2 2/2-way valve

WP Mounting bracket standard

design

WPM Mounting bracket for hooking in

service units

WPB Mounting bracket for large wall

gap

WB Mounting bracket centrally at rear

(wall mounting top and bottom),

connecting plates not required

WBM Mounting bracket centrally at rear

(wall mounting top), connecting

plates not required

EX4 EU certification (II 2GD to

EU Explosion Protection Directive

(ATEX))

UL1 UL certification (cULus, ordinary

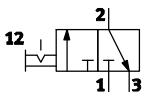
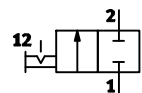
locations for Canada and USA)

Z Flow direction from right to left

On-off valves and soft-start valves > MS series >

On-off valves MS-EM manually operated

Data sheet



Technical data		Download CAD data → www.festo.com								
Size		MS4		MS6			MS9			
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	– ¹⁾	
Pneumatic connection 3		G $\frac{1}{4}$		G $\frac{1}{2}$			G1			
Design		Rotary slide					Piston spool			
Type of mounting		Via accessories In-line installation								
Mounting position		Any								
Type of actuation		Manual								
Valve function		–					2/2-way valve, bistable			
		3/2-way valve, bistable								
Exhaust air function		No flow control								
Type of control		Direct								
Flow direction		Non-reversible								
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure								
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output					–			
	AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output					–			
Length [mm]	With cover plate	54		76			109			
	With MS pressure gauge AG	57		77			109			
	With adapter A8/A4	59		79			110			
	With pressure sensor AD1/AD3	83		103			–			
	With pressure sensor AD7/AD9	59		79			–			
Width [mm]		40		62			104		90	
Height [mm]	Without silencer	104		151			272			
	With silencer	153		260			431			

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.

Standard nominal flow rate $q_{nN}^{2)}$		MS4		MS6			MS9		
Size		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	– ³⁾
In main flow direction $q_{nN1 \rightarrow 2}$	[l/min]	1200	2200	3000	5500	8700	14,500	18,000	8000 ... 18,000
In relief direction $q_{nN2 \rightarrow 3}$	[l/min]	1900	1700	6800	6600	6200	14,900	14,100	13,200 ... 16,500

2) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar.

3) Dependent on the connecting plate selected, must be ordered separately as an accessory → page 1406.

Operating conditions		MS4		MS6			MS9		
Size									
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					Inert gases		
							–		
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)							
Operating pressure	[bar]	0 ... 14 (0 ... 10) ⁴⁾		0 ... 18 (0 ... 10) ⁴⁾			0 ... 20		
Ambient temperature	[°C]	–10 ... +60 (0 ... +50) ⁴⁾		–10 ... +60 (0 ... +50) ⁴⁾			–10 ... +60		

4) Value in brackets applies to MS4/MS6-EM1 with pressure sensor AD...

Data sheet

Materials	
Housing	Die-cast aluminium
Seals	NBR

Order code – MS4/MS6

		MS	–	EM1	–		–		–		–	
Series												
MS	Standard service unit											
Size												
4	Grid dimension 40 mm											
6	Grid dimension 62 mm											
Type												
EM1	Manually operated on-off valve											
Pneumatic connection												
MS4												
1/8	Female thread G $\frac{1}{8}$											
1/4	Female thread G $\frac{1}{4}$											
MS6												
1/4	Female thread G $\frac{1}{4}$											
3/8	Female thread G $\frac{3}{8}$											
1/2	Female thread G $\frac{1}{2}$											
Silencer												
–	Without silencer											
S	Silencer											
Pressure gauge/pressure gauge alternatives												
–	Cover plate											
AG	MS pressure gauge, bar											
A8	Adapter for EN pressure gauge 1/8 (MS4 only)											
A4	Adapter for EN pressure gauge 1/4											
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 1											
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 1											
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1											
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 1											
Flow direction												
–	From left to right											
Z	From right to left											

1 Measuring range max. 10 bar.

Order example:

MS6-EM1-1/2-S-AD1

Standard service unit, grid dimension 62 mm - manually operated on-off valve - female thread G $\frac{1}{2}$ - with silencer - with pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin - flow direction from left to right

On-off valves and soft-start valves > MS series >

On-off valves MS-EM ★ manually operated

Order code – MS9

MS	9	EM						
Series								
MS	Standard service unit							
Size								
9	Grid dimension 90 mm							
Type								
EM	Manually operated on-off valve							
Pneumatic connection								
3/4	Female thread G3/4							
1	Female thread G1							
G	Module without connecting thread, without connecting plate Connecting plates → page 1406							
Silencer								
-	Without silencer							1
S	Silencer							
Pressure gauge/pressure gauge alternatives								
VS	Cover plate							
AG	MS pressure gauge							
A4	Adapter for EN pressure gauge 1/4							
Alternative pressure gauge scale								
-	No pressure gauge scale							2
BAR	Bar							
Valve function								
-	3/2-way valve							
2	2/2-way valve							4
Flow direction								
-	From left to right							
Z	From right to left							

- 1 Only with 2/2-way valve function.
- 2 Not with MS pressure gauge AG.

- 3 Only with MS pressure gauge AG.
- 4 Not with silencer S.

Order example:

MS9-EM-1-S-AG-BAR

Standard service unit, grid dimension 90 mm - manually operated on-off valve - female thread G1 - with silencer - with MS pressure gauge - pressure gauge scale in bar - 3/2-way valve - flow direction from left to right

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

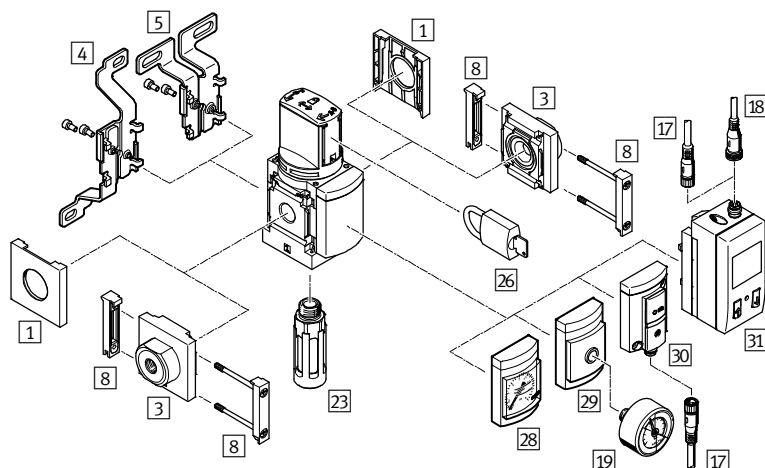
★ Quick ordering ¹⁾

Part no.	Type
MS4	
541258	MS4-EM1-1/4
541259	MS4-EM1-1/4-S

Part no.	Type
MS6	
541267	MS6-EM1-1/2
541268	MS6-EM1-1/2-S

1) All products in this table are easy to select and quick to order.

Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4-WBM ¹⁾	1406
8 Module connector MS4/6-MV	1406
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
23 Silencer U	1409
26 Padlock LRVS-D	1409
28 MS pressure gauge AG	1367
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1367
30 Pressure sensor with operational status indicator AD7/AD9	1367

1) Mounting component for individual device.

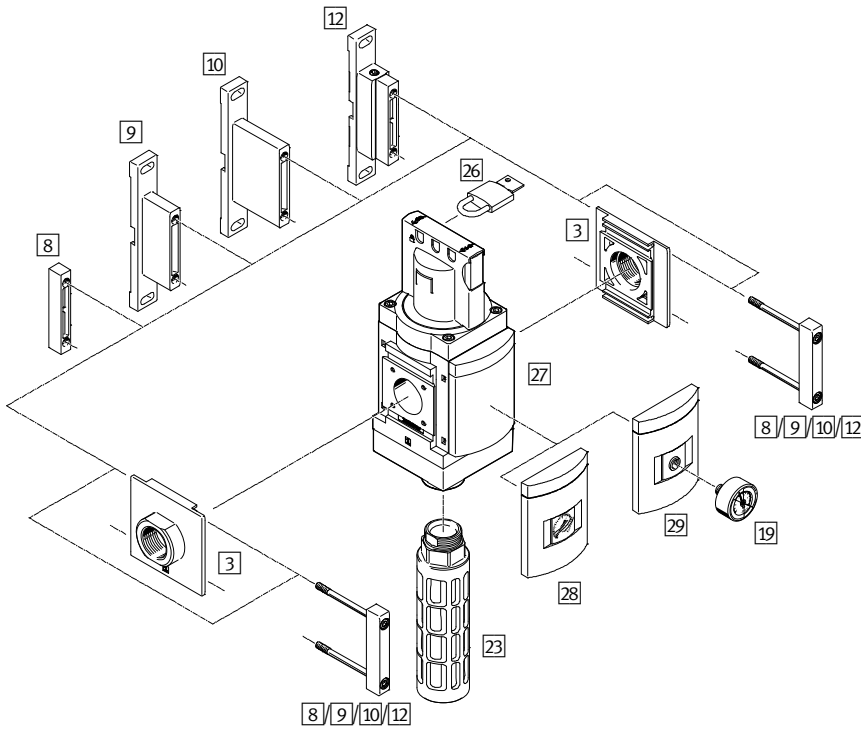
Accessories	→ Page/online
31 Pressure sensor with LCD display AD1/AD3	1367
- Mounting plate MS4/6-AEND	1406
- Mounting bracket MS4/6-WP ²⁾	1406
- Mounting bracket MS4/6-WPB ²⁾	1406
- Mounting bracket MS4/6-WPE ²⁾	1406
- Mounting bracket MS4/6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4/6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND.

On-off valves and soft-start valves > MS series >

On-off valves MS-EM ★ manually operated

Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406
19 Pressure gauge MA	1408
23 Silencer U	1409

Accessories	→ Page/online
26 Padlock LRVS-D	1409
27 Cover plate VS	1368
28 MS pressure gauge AG	1368
29 Adapter A4 for EN pressure gauge 1/4	1368
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409

1) Not suitable for individual devices with connecting thread G3/4 or G1.



For the easy control of system pressurisation and exhausting

- + High flow rate
- + Optionally with silencer

On-off valves and soft-start valves > MS series >
Solenoid actuated on-off valves


MS-EE

MS series


On-off valves and soft-start valves > MS series >
Solenoid actuated on-off valves

MS-EE ★

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-ee

 Additional information, support and user documentation
→ www.festo.com/sp/ms-ee

★ Quick ordering of basic designs
→ page 1378

 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



- + Solenoid actuated
- + Supply voltage 24 V DC, 110, 230 V AC
- + Optionally with pressure sensor with display
- + With solenoid coil, without plug socket
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm

Product range overview

Size	Pneumatic connection	Product options											
		V24	10V24	S	VS	AG	A8	A4	AD...	BAR	2	Z	
4	1/8, 1/4	■	■	■	–1)	■	■	■	■	■	–	–	■
6	1/4, 3/8, 1/2	■	■	■	–1)	■	–	■	■	■	–	–	■
9	3/4, 1, G	■	–	■	■	■	–	■	■	■	■	■	■
12	G	■	–	■	–1)	■	–	■	–	–	–	–	■

1) Cover plate included in the basic configuration by default.

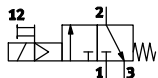
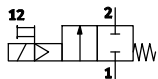
Product options

1/8	Female thread G1/8	10V24	S	Silencer	BAR	Pressure gauge scale in bar
1/4	Female thread G1/4	Supply voltage 24 V DC (pin allocation to EN 175301), 4 ... 10 bar, non-detenting manual override	VS	Cover plate	PSI	Pressure gauge scale in psi
3/8	Female thread G3/8	10V24C	AG	MS pressure gauge	MPA	Pressure gauge scale in MPa
1/2	Female thread G1/2	Supply voltage 24 V DC (pin allocation to EN 175301), 4 ... 10 bar, no manual override	A8	Adapter for EN pressure gauge 1/8, without pressure gauge	2	2/2-way valve
3/4	Female thread G3/4	10V24D	A4	Adapter for EN pressure gauge 1/4, without pressure gauge	WP	Mounting bracket standard design
1	Female thread G1	Supply voltage 24 V DC (pin allocation to EN 175301), 4 ... 10 bar, no manual override	RG	Integrated pressure gauge, red/green scale	WPM	Mounting bracket for hooking in service units
AGA	Connecting plate G1/8	10V24F	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	WPB	Mounting bracket for large wall gap
AGB	Connecting plate G1/4	Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 4 ... 10 bar, no manual override	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
AGC	Connecting plate G3/8	10V24P	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	WBM	Mounting bracket centrally at rear (wall mounting top), connecting plates not required
AGD	Connecting plate G1/2	Supply voltage 24 V DC, M12x1 to ISO 20401 compliant with EN 61076-2-101, 4 ... 10 bar, non-detenting/detenting manual override	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	EX2	EU certification (II 3GD to EU Explosion Protection Directive (ATEX))
AGE	Connecting plate G3/4	V110	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGF	Connecting plate G1	Supply voltage 110 V AC (pin allocation to EN 175301), 3 ... 18 bar, non-detenting/detenting manual override	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	Z	Flow direction from right to left
AGG	Connecting plate G1 1/4	V230	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O		
AGH	Connecting plate G1 1/2	Supply voltage 230 V AC (pin allocation to EN 175301), 3 ... 18 bar, non-detenting/detenting manual override	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C		
AGI	Connecting plate G2					
N3/4	Female thread NPT3/4					
N1	Female thread NPT1					
AQK	Connecting plate NPT1/8					
AQN	Connecting plate NPT1/4					
AQP	Connecting plate NPT3/8					
AQR	Connecting plate NPT1/2					
AQS	Connecting plate NPT3/4					
AQT	Connecting plate NPT1					
AQU	Connecting plate NPT1 1/4					
AQV	Connecting plate NPT1 1/2					
G	Module without connecting thread, without connecting plate					
NG	Module without connecting thread, without connecting plate (inch)					
V24	Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 18 bar, non-detenting/detenting manual override					
V24P	Supply voltage 24 V DC (pin allocation for plug M12 to DESINA), 3 ... 16 bar, non-detenting/detenting manual override					

On-off valves and soft-start valves > MS series >

On-off valves MS-EE ★ solenoid actuated

Data sheet



Technical data		Download CAD data → www.festo.com							
Size		MS4		MS6			MS9		
Pneumatic connection 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	- ¹⁾
Pneumatic connection 3		G1/4		G1/2			G1		
Design		Piston spool							
Type of mounting		Via accessories							
		In-line installation							
Mounting position		Any							
Type of actuation		Electric							
Valve function		-						2/2-way valve, closed, single solenoid	
		3/2-way valve, closed, single solenoid							
Exhaust air function		No flow control							
Manual override		Non-detenting/detenting (supply voltage V24)							
		Non-detenting (supply voltage 10V24)						-	
Reset method		Mechanical spring							
Switching position indication		Via accessories							
Type of control		Piloted							
Pilot air supply		Internal							
Flow direction		Non-reversible							
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure							
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output						-	
	AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output							
Length [mm]	With cover plate	75 (63) ²⁾		97 (83) ²⁾			109		
	With MS pressure gauge AG	86 (65) ²⁾		98 (83) ²⁾			109		
	With adapter A8/A4	80 (63) ²⁾		100 (83) ²⁾			110		
	With pressure sensor AD1/AD3	104		124			-		
	With pressure sensor AD7/AD9	80		100			112		
Width [mm]		40		62			104		90
Height [mm]	Without silencer	143		186			239		
	With silencer	192		294			398		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.

2) Value in brackets with repositioned solenoid actuator (180°), i.e. solenoid points to the front.

Standard nominal flow rate $q_{nN}^{3)}$		MS4		MS6			MS9		
Pneumatic connection 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	- ⁴⁾
In main flow direction $q_{nN1 \rightarrow 2}$	[l/min]	1000	2000	2600	5500	7000	14,500	18,000	8000 ... 18,000
In relief direction $q_{nN2 \rightarrow 3}$	[l/min]	1600	1600	7000	6200	5500	14,900	14,100	13,200 ... 16,500

3) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar.

4) Dependent on the connecting plate selected, must be ordered separately as an accessory → page 1406.

Compressed air preparation

Data sheet

Electrical data					
Size	MS4		MS6		MS9
Supply voltage	V24	10V24	V24	10V24	V24
Coil characteristics	24 V DC: 1.5 W	24 V DC: 1.8 W	24 V DC: 1.5 W	24 V DC: 1.8 W	24 V DC: 4.5 W
Electrical connection	Plug, square design to EN 175301-803, type C				Plug, square design to EN 175301-803, type A
Degree of protection for solenoid coil	IP65				
Duty cycle [%]	100				

Operating conditions					
Size	MS4		MS6		MS9
Supply voltage	V24	10V24	V24	10V24	V24
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
	Inert gases				–
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure [bar]	4 ... 14 (4 ... 10) ¹⁾	4 ... 10	4 ... 18 (4 ... 10) ¹⁾	4 ... 10	3.5 ... 16
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ¹⁾	–10 ... +50 (0 ... +50) ¹⁾	–10 ... +60 (0 ... +50) ¹⁾	–10 ... +50 (0 ... +50) ¹⁾	–10 ... +60

1) Value in brackets applies to MS4/MS6-EE with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Seals	NBR

On-off valves and soft-start valves > MS series >

On-off valves MS-EE ★ solenoid actuated

Order code – MS4/MS6

MS		–	EE	–	–	–	–	–	–
Series									
MS	Standard service unit								
Size									
4	Grid dimension 40 mm								
6	Grid dimension 62 mm								
Type									
EE	Solenoid actuated on-off valve								
Pneumatic connection									
MS4									
1/8	Female thread G ¹ / ₈								
1/4	Female thread G ¹ / ₄								
MS6									
1/4	Female thread G ¹ / ₄								
3/8	Female thread G ³ / ₈								
1/2	Female thread G ¹ / ₂								
Supply voltage									
V24	24 V DC (pin allocation to EN 175301), max. 18 bar								
10V24	24 V DC (pin allocation to EN 175301), max. 10 bar								
Silencer									
–	Without silencer								
S	Silencer								
Pressure gauge/pressure gauge alternatives									
–	Cover plate								
AG	MS pressure gauge, bar								
A8	Adapter for EN pressure gauge 1/8 (MS4 only)								
A4	Adapter for EN pressure gauge 1/4								
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin ¹								
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA ¹								
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O ¹								
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O ¹								
Flow direction									
–	From left to right								
Z	From right to left								

¹ Measuring range max. 10 bar.

Order example:

MS4-EE-1/8-10V24-S

Standard service unit, grid dimension 40 mm - solenoid actuated on-off valve - female thread G¹/₈ - supply voltage 24 V DC, operating pressure 4 ... 10 bar - with silencer - with cover plate - flow direction from left to right

Order code – MS9

	MS	9	-	EE	-		-	V24	-		-		-		-		-		-
Series																			
MS	Standard service unit																		
Size																			
9	Grid dimension 90 mm																		
Type																			
EE	Solenoid actuated on-off valve																		
Pneumatic connection																			
3/4	Female thread G3/4																		
1	Female thread G1																		
G	Module without connecting thread, without connecting plate Connecting plates → page 1406																		
Supply voltage																			
V24	24 V DC (pin allocation to EN 175301), max. 16 bar																		
Silencer																			
-	Without silencer																		
S	Silencer																		
Pressure gauge/pressure gauge alternatives																			
VS	Cover plate																		
AG	MS pressure gauge																		
A4	Adapter for EN pressure gauge 1/4																		
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1																		
Alternative pressure gauge scale																			
-	No pressure gauge scale 2																		
BAR	Bar 3																		
Valve function																			
-	3/2-way valve																		
2	2/2-way valve 4																		
Flow direction																			
-	From left to right																		
Z	From right to left																		

1 Measuring range max. 10 bar.

2 Not with MS pressure gauge AG.

3 Only with MS pressure gauge AG.

4 Not with silencer S.

Order example:

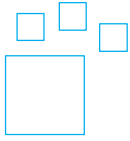
MS9-EE-G-V24-S

Standard service unit, grid dimension 90 mm - solenoid actuated on-off valve - module without connecting thread, without connecting plate - supply voltage 24 V DC, operating pressure 3.5 ... 16 bar - with silencer - with cover plate - no pressure gauge scale - 3/2-way valve - flow direction from left to right

On-off valves and soft-start valves > MS series >

On-off valves MS-EE ★ solenoid actuated

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
 → www.festo.com/catalogue/...

Enter the type code in the search field.

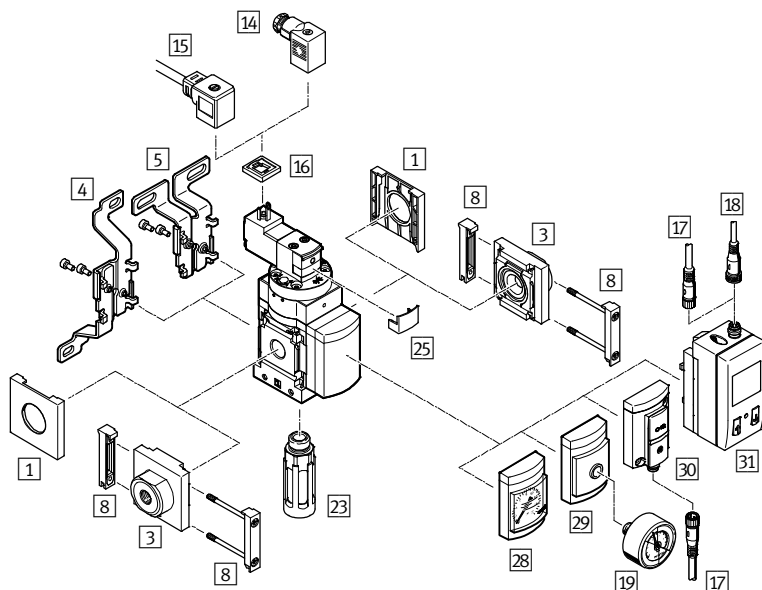
★ Quick ordering ¹⁾

Part no.	Type
MS4	
542578	MS4-EE-1/4-10V24
542598	MS4-EE-1/4-10V24-S

Part no.	Type
MS6	
542582	MS6-EE-1/2-10V24
542602	MS6-EE-1/2-10V24-S

1) All products in this table are easy to select and quick to order.

Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4-WBM ¹⁾	1406
8 Module connector MS4/6-MV	1406
14 Plug socket MSSD-EB	1407
15 Plug socket with cable KMEB	1407
16 Illuminating seal MEB-LD	1407
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
23 Silencer U	1409
25 Locking clip CPV18-HV	1409
28 MS pressure gauge AG	1376

1) Mounting component for individual device.

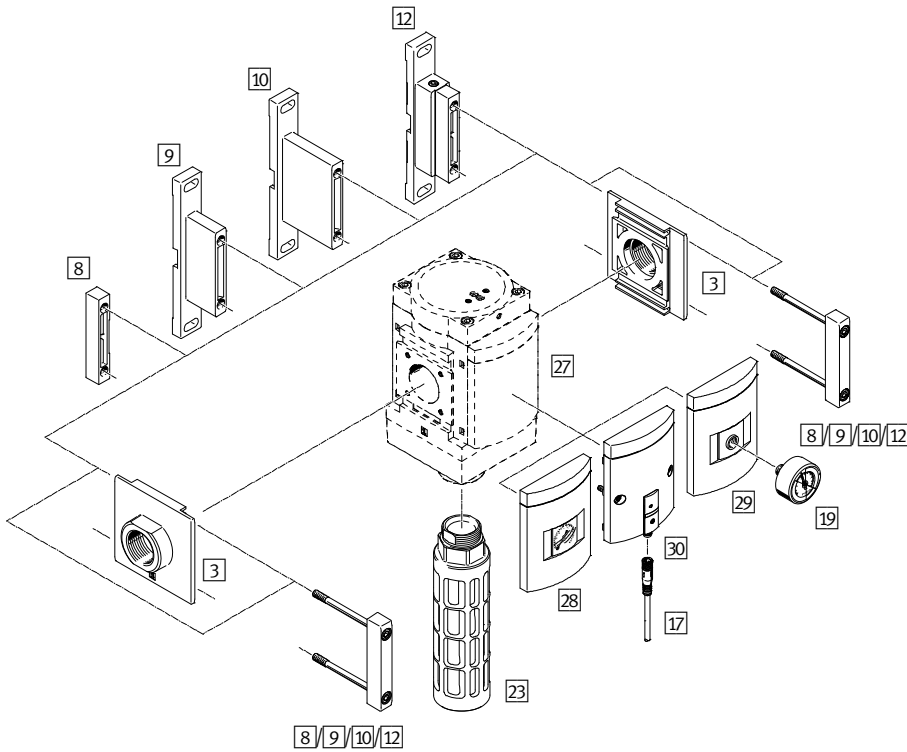
Accessories	→ Page/online
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1376
30 Pressure sensor with operational status indicator AD7/AD9	1376
31 Pressure sensor with LCD display AD1/AD3	1376
- Mounting plate MS4/6-AEND	1406
- Mounting bracket MS4/6-WP ²⁾	1406
- Mounting bracket MS4/6-WPB ²⁾	1406
- Mounting bracket MS4/6-WPE ²⁾	1406
- Mounting bracket MS4/6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4/6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG...[3]/with mounting plate MS4/6-AEND.

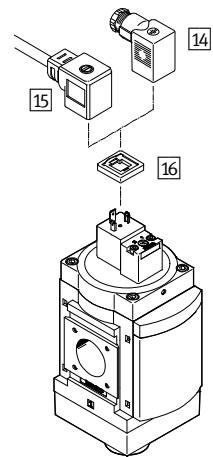
On-off valves and soft-start valves > MS series >

On-off valves MS-EE ★ solenoid actuated

Accessories – MS9



Supply voltage V24



13

Compressed air preparation

Accessories	→ Page/online
3 Connecting plate kit MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406
14 Plug socket MSSD-C	1407
15 Connecting cable KMC	1407
16 Illuminating seal MC-LD	1407
17 Connecting cable NEBU-M8...-LE3	1407

Accessories	→ Page/online
19 Pressure gauge MA	1408
23 Silencer U	1409
27 Cover plate VS	1377
28 MS pressure gauge AG	1377
29 Adapter A4 for EN pressure gauge 1/4	1377
30 Pressure sensor with operational status indicator AD7	1377
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409

1) Not suitable for individual devices with connecting thread G3/4 or G1.



For targeted system pressurisation

- + Variable pressure build-up prevents critical movements
- + Easily combined with on-off valves

On-off valves and soft-start valves > MS series >

Pneumatically actuated soft-start valves

MS-DL ★

MS series


On-off valves and soft-start valves > MS series >

Pneumatically actuated soft-start valves

MS-DL ★

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-dl



 Additional information, support and user documentation
→ www.festo.com/sp/ms-dl



★ Quick ordering of basic designs
→ page 1385



 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex



- + For slowly pressurising pneumatic systems
(for use with on-off valves EM1 and EE)
- + For advancing the drives slowly and reliably into the initial position
- + For avoiding sudden and unexpected movements
- + Adjustable switching time delay
- + Sizes 4, 6, 12
- + Grid dimension 40, 62, 124 mm

Soft-start valves MS-DL ★ pneumatically actuated

Product range overview

Size	Pneumatic connection	Product options				
		AG	A8	A4	AD...	Z
4	1/8, 1/4	■	■	■	■	■
6	1/4, 3/8, 1/2	■	–	■	■	■
12	G	■	–	■	–	■

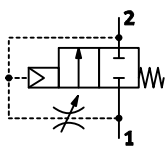
Product options

1/8	Female thread G1/8	AG	MS pressure gauge	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
1/4	Female thread G1/4	A8	Adapter for EN pressure gauge 1/8, without pressure gauge	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	WBM	Mounting bracket centrally at rear (wall mounting top), connecting plates not required
3/8	Female thread G3/8	A4	Adapter for EN pressure gauge 1/4, without pressure gauge	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O	EX4	EU certification (II 2GD to EU Explosion Protection Directive (ATEX))
1/2	Female thread G1/2	RG	Integrated pressure gauge, red/green scale	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGA	Connecting plate G1/8	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	PSI	Pressure gauge scale in psi	Z	Flow direction from right to left
AGB	Connecting plate G1/4	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	MPA	Pressure gauge scale in MPa		
AGC	Connecting plate G3/8	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	WP	Mounting bracket standard design		
AGD	Connecting plate G1/2	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	WPM	Mounting bracket for hooking in service units		
AGE	Connecting plate G3/4						
AGF	Connecting plate G1						
AGG	Connecting plate G1 1/4						
AGH	Connecting plate G1 1/2						
AGI	Connecting plate G2						
AQK	Connecting plate NPT1/8						
AQN	Connecting plate NPT1/4						
AQP	Connecting plate NPT3/8						
AQR	Connecting plate NPT1/2						
AQS	Connecting plate NPT3/4						
G	Module without connecting thread, without connecting plate						

On-off valves and soft-start valves > MS series >

Soft-start valves MS-DL ★ pneumatically actuated

Data sheet



Technical data		Download CAD data → www.festo.com				
Size		MS4		MS6		
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Design		Piston seat				
Type of mounting		Via accessories In-line installation				
Mounting position		Any				
Type of actuation		Pneumatic				
Valve function		2/2-way valve				
Exhaust air function		With flow control option				
Reset method		Mechanical spring				
Type of control		Direct				
Pilot air supply		External				
Flow direction		Non-reversible				
Pressure indication		AG	Via pressure gauge for indicating the outlet pressure			
		AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output			
		AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output			
Length [mm]	With cover plate	54		76		
	With MS pressure gauge AG	57		77		
	With adapter A8/A4	59		79		
	With pressure sensor AD1/AD3	83		103		
	With pressure sensor AD7/AD9	59		79		
Width [mm]		40		62		
Height [mm]		83		108		

Standard nominal flow rate $q_{nN}^{1)}$		MS4		MS6		
Size		MS4		MS6		
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
In main flow direction $q_{nN1 \rightarrow 2}$	[l/min]	1000	2000	2800	5050	6450
In relief direction $q_{nN2 \rightarrow 1}$	[l/min]	1000	2000	2800	5050	6400

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar.

Operating conditions		MS4		MS6		
Size		MS4		MS6		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases				
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure	[bar]	4 ... 14 (4 ... 10) ²⁾		4 ... 18 (4 ... 10) ²⁾		
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) ²⁾		-10 ... +60 (0 ... +50) ²⁾		

2) Value in brackets applies to MS4/MS6-DL with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Seals	NBR

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Compressed air preparation

Soft-start valves MS-DL ★ pneumatically actuated

Order code – MS4/MS6

MS		–	DL	–	–	–	–
Series							
MS	Standard service unit						
Size							
4	Grid dimension 40 mm						
6	Grid dimension 62 mm						
Type							
DL	Pneumatically actuated soft-start valve						
Pneumatic connection							
MS4							
1/8	Female thread G $\frac{1}{8}$						
1/4	Female thread G $\frac{1}{4}$						
MS6							
1/4	Female thread G $\frac{1}{4}$						
3/8	Female thread G $\frac{3}{8}$						
1/2	Female thread G $\frac{1}{2}$						
Pressure gauge/pressure gauge alternatives							
–	Cover plate						
AG	MS pressure gauge, bar						
A8	Adapter for EN pressure gauge 1/8 (MS4 only)						
A4	Adapter for EN pressure gauge 1/4						
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin						1
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA						1
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O						1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O						1
Flow direction							
–	From left to right						
Z	From right to left						

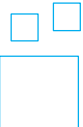
1 Measuring range max. 10 bar.

Order example:

MS6-DL-3/8-A4

Standard service unit, grid dimension 62 mm - pneumatically actuated soft-start valve - female thread G $\frac{3}{8}$ - with adapter for EN pressure gauge 1/4 - flow direction from left to right

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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★ Quick ordering ¹⁾

Part no.	Type
MS4	
529531	MS4-DL-1/4

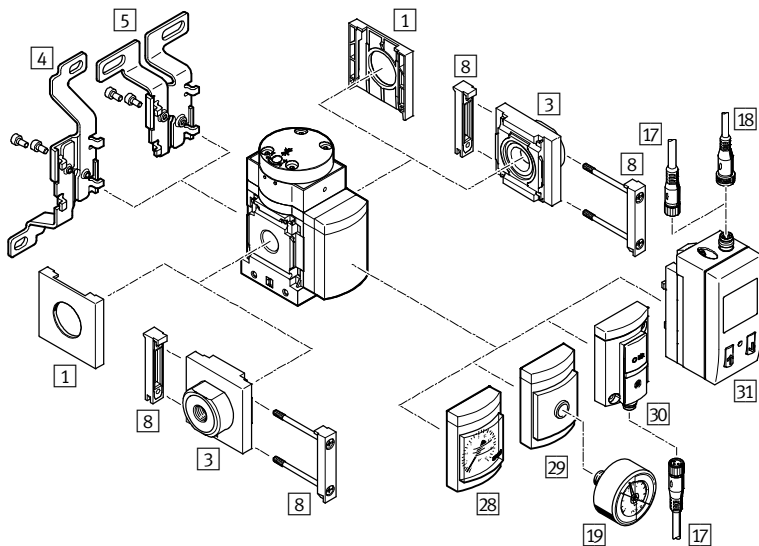
Part no.	Type
MS6	
529817	MS6-DL-1/2

1) All products in this table are easy to select and quick to order.

On-off valves and soft-start valves > MS series >

Soft-start valves MS-DL ★ pneumatically actuated

Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4-WBM ¹⁾	1406
8 Module connector MS4/6-MV	1406
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
28 MS pressure gauge AG	1385
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1385
30 Pressure sensor with operational status indicator AD7/AD9	1385
31 Pressure sensor with LCD display AD1/AD3	1385

Accessories	→ Page/online
- Mounting plate MS4/6-AEND	1406
- Mounting bracket MS4/6-WP ²⁾	1406
- Mounting bracket MS4/6-WPB ²⁾	1406
- Mounting bracket MS4/6-WPE ²⁾	1406
- Mounting bracket MS4/6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a-ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND.

1) Mounting component for individual device.



For the easy implementation of additional connection options

- + As an intermediate distributor for varying air qualities
- + Optional non-return valve prevents return of lubricated compressed air




Compressed air distributors > MS series >
Branching modules

MS-FRM

MS series

Compressed air distributors > MS series >

Branching modules

MS-FRM  Overview, configuration and ordering
→ www.festo.com/catalogue/ms-frm Additional information, support and user documentation
→ www.festo.com/sp/ms-frm Quick ordering of basic designs
→ page 1392 Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/catalogue/ex

- + Designs with integrated non-return function, with pressure switch
- + Pneumatic distributor with 4 connections
- + Can be used as an intermediate distributor for varying air qualities
- + Outlet at top and bottom
- + Optionally with pressure sensor with display
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm

Product range overview

Size	Pneumatic connection	Product options									
		VS	AG	A8	A4	AD...	BAR	X	Y	M12	Z
4	1/8, 1/4	- ¹⁾	■	■	■	■	-	■	■	■	■
6	1/4, 3/8, 1/2	- ¹⁾	■	-	■	■	-	■	■	■	■
9	3/4, 1, G	■	■	-	■	■	■	■	■	■	■
12	G	- ¹⁾	-	-	-	-	-	-	-	-	-

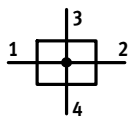
1) Cover plate included in the basic configuration by default.

Product options

1/8	Female thread G1/8	I	Integrated non-return function	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O	WP	Mounting bracket standard design
1/4	Female thread G1/4	VS	Cover plate			WPM	Mounting bracket for hooking in service units
3/8	Female thread G3/8	AG	MS pressure gauge			WPB	Mounting bracket for large wall gap
1/2	Female thread G1/2	A8	Adapter for EN pressure gauge 1/8, without pressure gauge	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C	WB	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required
3/4	Female thread G3/4	A4	Adapter for EN pressure gauge 1/4, without pressure gauge	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O	WBM	Mounting bracket centrally at rear (wall mounting top), connecting plates not required
1	Female thread G1	RG	Integrated pressure gauge, red/green scale	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C	EX4	EU certification (II 2GD to EU Explosion Protection Directive (ATEX))
AGA	Connecting plate G1/8	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	BAR	Pressure gauge scale in bar	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGB	Connecting plate G1/4	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	PSI	Pressure gauge scale in psi	Z	Direction of flow from right to left
AGC	Connecting plate G3/8	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	MPA	Pressure gauge scale in MPa		
AGD	Connecting plate G1/2	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	X	Pressure switch with display, plug socket, EN 175301, type A, square		
AGE	Connecting plate G3/4			Y	Pressure switch without display, plug socket, EN 175301, type A, square		
AGF	Connecting plate G1			M12	Pressure switch without display, plug socket, round, M12, 4-pin		
AGG	Connecting plate G1 1/4						
AGH	Connecting plate G1 1/2						
AGI	Connecting plate G2						
N3/4	Female thread NPT3/4						
N1	Female thread NPT1						
AQR	Connecting plate NPT1/2						
AQS	Connecting plate NPT3/4						
AQT	Connecting plate NPT1						
AQU	Connecting plate NPT1 1/4						
AQV	Connecting plate NPT1 1/2						
G	Module without connecting thread, without connecting plate						
NG	Module without connecting thread, without connecting plate (inch)						

Branching modules MS-FRM

Data sheet



Technical data		Download CAD data → www.festo.com						
Size		MS4		MS6			MS9	
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1 ⁻¹⁾
Pneumatic connection 3		G $\frac{1}{4}$		G $\frac{1}{2}$			G1	
Pneumatic connection 4		G $\frac{1}{4}$		G $\frac{1}{2}$			G1	
Design		Branching module						
Type of mounting		Via accessories						
		In-line installation						
Mounting position		Any						
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure						
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output						-
	AD7/AD9	Via pressure sensor with operational status indicator for indicating the outlet pressure and with electrical output						
Length [mm]	Standard	54		76			109	
	With MS pressure gauge AG	65		77			109	
	With adapter A8/A4	59		79			110	
	With pressure sensor AD1/AD3	83		103			-	
	With pressure sensor AD7/AD9	59		79			112	
	With pressure switch X/Y	63		76			109	
	With pressure switch M12	61		76			109	
Width [mm]		40		62			104 90	
Height [mm]	Standard	60		87			122	
	With pressure switch X/Y/M12	153		186			227	

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.

Standard nominal flow rate $q_{nN}^{2)}$		MS4		MS6			MS9	
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1 ⁻³⁾
In main flow direction $q_{nN1 \rightarrow 2}$	[l/min]	1800	4600	4200	9200	14700	25000	45000 10000 ... 50000
Outlet at top $q_{nN1 \rightarrow 3}$	[l/min]	1600	1500	6000	4700	4400	13000	
Outlet at bottom $q_{nN1 \rightarrow 4}$	[l/min]	1700	1500	6400	4800	4600	13000	

2) Measured at $p_1 = 6 \text{ bar}$ and $p_2 = 5 \text{ bar}$, $\Delta p = 1 \text{ bar}$.

3) Dependent on the connecting plate selected, must be ordered separately as an accessory → page 1406.

Operating conditions		MS4		MS6			MS9	
Pressure switch		-	X/Y/M12	-	X/Y/M12	-	X/Y/M12	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]						
		Inert gases						
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure	[bar]	0 ... 14 (0 ... 10) ⁴⁾	0 ... 12 (0 ... 10) ⁴⁾	0 ... 20 (0 ... 10) ⁴⁾	0 ... 12 (0 ... 10) ⁴⁾	0 ... 20 (0 ... 10) ⁴⁾	0 ... 12 (0 ... 10) ⁴⁾	
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) ⁴⁾						

4) Value in brackets applies to MS4/MS6/MS9-FRM with pressure sensor AD...

Data sheet

Materials	
Housing	Die-cast aluminium
Seals	NBR

Order code – MS4/MS6

Series	
MS	Standard service unit

Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm

Type	
FRM	Branching module

Pneumatic connection	
MS4	
1/8	Female thread G $\frac{1}{8}$
1/4	Female thread G $\frac{1}{4}$
MS6	
1/4	Female thread G $\frac{1}{4}$
3/8	Female thread G $\frac{3}{8}$
1/2	Female thread G $\frac{1}{2}$

Pressure gauge/pressure gauge alternatives	
–	Cover plate
AG	MS pressure gauge, bar
A8	Adapter for EN pressure gauge $\frac{1}{8}$ (MS4 only)
A4	Adapter for EN pressure gauge $\frac{1}{4}$
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin 1
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA 1
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O 1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O 1

Pressure switch	
–	Without pressure switch
X	Pressure switch with display, plug socket, EN 175301, type A, square 2
Y	Pressure switch without display, plug socket, EN 175301, type A, square 2
M12	Pressure switch without display, plug socket, round, M12, 4-pin 2

Direction of flow	
–	From left to right
Z	From right to left

1 Measuring range max. 10 bar.

2 Max. permissible operating pressure p1 = 12 bar.

Order example:

MS6-FRM-1/2

Standard service unit, grid dimension 62 mm - branching module - female thread G $\frac{1}{2}$ - with cover plate - without pressure switch PEV - direction of flow from left to right

Branching modules MS-FRM

Order code – MS9

	MS	9	-	FRM	-		-		-		-		-	
Series														
MS	Standard service unit													
Size														
9	Grid dimension 90 mm													
Type														
FRM	Branching module													
Pneumatic connection														
3/4	Female thread G3/4													
1	Female thread G1													
G	Module without connecting thread, without connecting plate Connecting plates → page 1406													
Pressure gauge/pressure gauge alternatives														
VS	Cover plate													
AG	MS pressure gauge													
A4	Adapter for EN pressure gauge 1/4													
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O													1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O													1
Alternative pressure gauge scale														
-	No pressure gauge scale													2
BAR	Bar													3
Pressure switch														
-	Without pressure switch													
X	Pressure switch with display, plug socket, EN 175301, type A, square													4
Y	Pressure switch without display, plug socket, EN 175301, type A, square													4
M12	Pressure switch without display, plug socket, round, M12, 4-pin													4
Direction of flow														
-	From left to right													
Z	From right to left													

- 1 Measuring range max. 10 bar.
- 2 Not with MS pressure gauge AG.

- 3 Only with MS pressure gauge AG.
- 4 Max. permissible operating pressure p1 = 12 bar.

Ordering – Product options

Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or

→ www.festo.com/catalogue/...

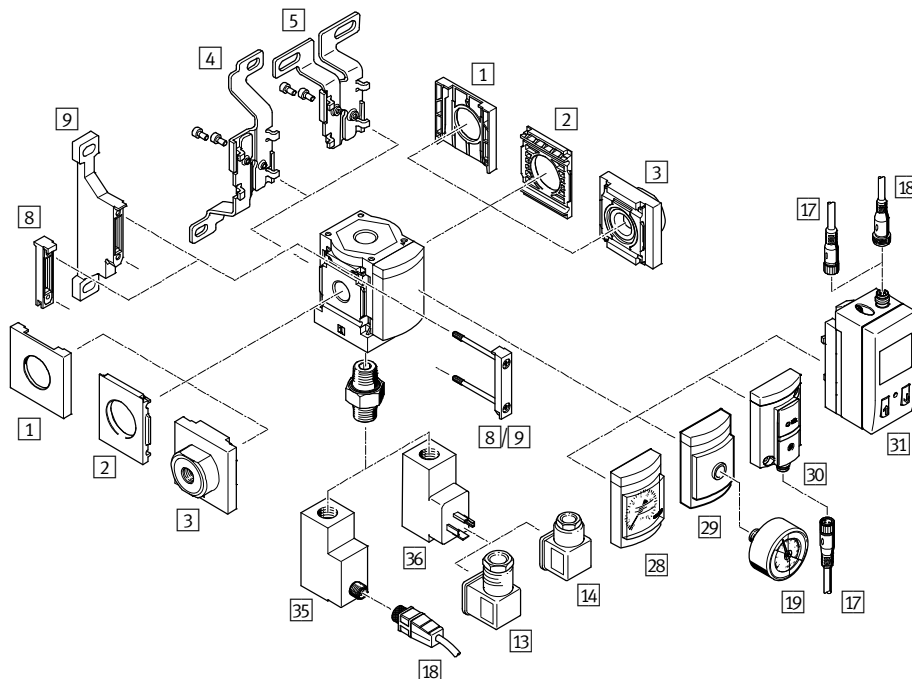
Enter the type code in the search field.

Quick ordering ¹⁾

Part no.	Type
MS6	
529857	MS6-FRM-1/4
529853	MS6-FRM-1/2

1) All products in this table are easy to select and quick to order.

Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1406
2 Mounting plate MS4/6-AEND	1406
3 Connecting plate kit MS4/6-AG...	1406
4 Mounting bracket MS4/6-WB ¹⁾	1406
5 Mounting bracket MS4/6-WBM ¹⁾	1406
8 Module connector MS4/6-MV	1406
9 Mounting bracket MS4/6-WP ²⁾	1406
13 Angled plug socket PEV-1/4-WD-LED	1407
14 Plug socket MSSD-C-4P	1407
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408
28 MS pressure gauge AG	1391
29 Adapter A8/A4 for EN pressure gauge 1/8/1/4	1391

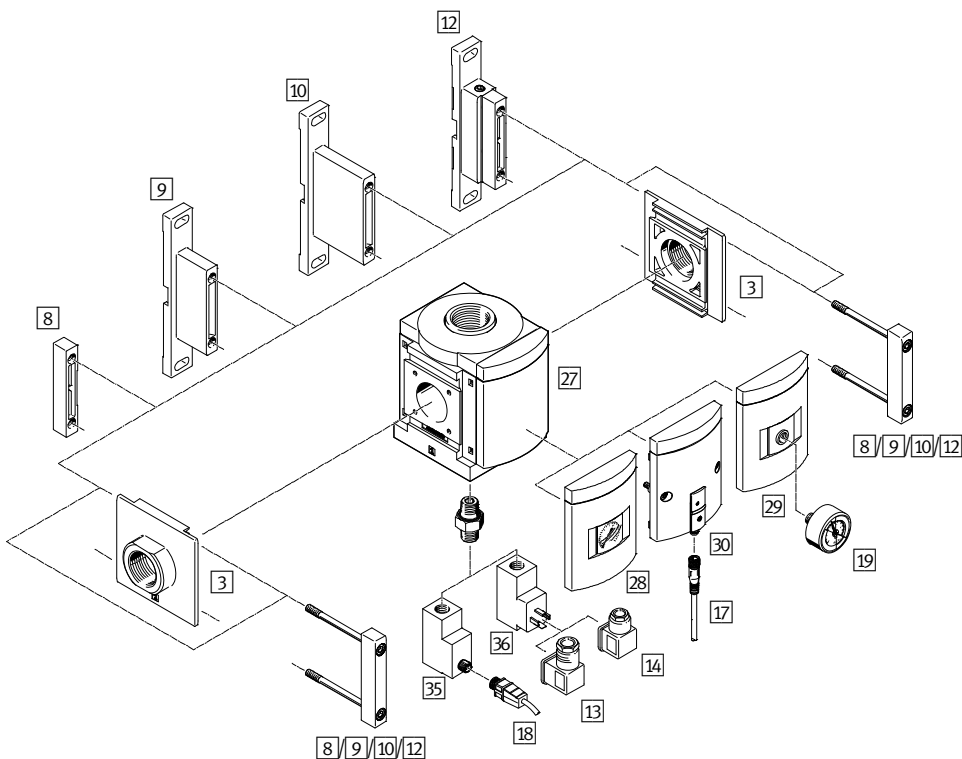
1) Mounting component for individual device.

Accessories	→ Page/online
30 Pressure sensor without display AD7/AD9	1391
31 Pressure sensor with display AD1/AD3	1391
35 Pressure switch M12	1391
36 Pressure switch X/Y	1391
- Mounting bracket MS4/6-WPB ²⁾	1406
- Mounting bracket MS4/6-WPE ²⁾	1406
- Mounting bracket MS4/6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4/6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3]/with mounting plate MS4/6-AEND [2].

Branching modules MS-FRM ★

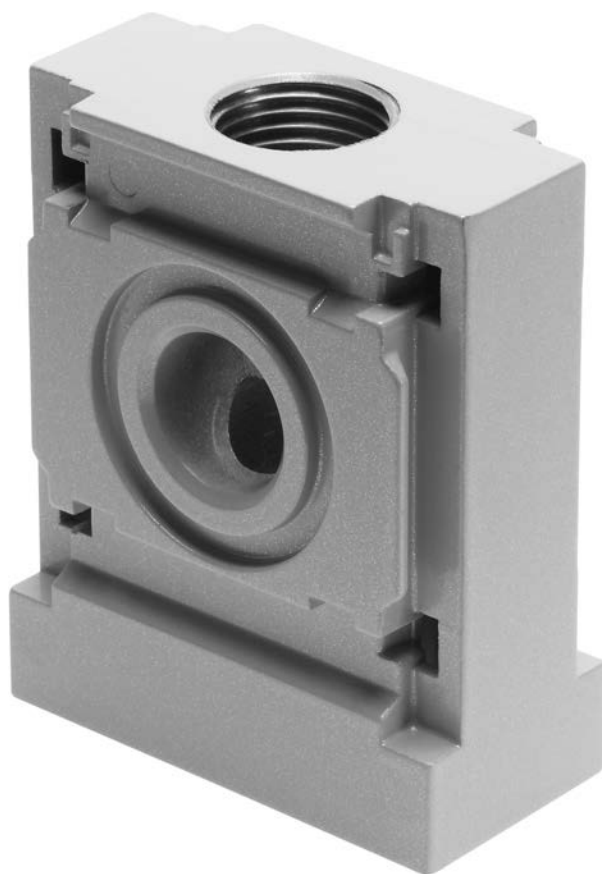
Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406
13 Angled plug socket PEV-1/4-WD-LED	1407
14 Plug socket MSSD-C-4P	1407
17 Connecting cable NEBU-M8...-LE3	1407
18 Connecting cable NEBU-M12...-LE4	1407
19 Pressure gauge MA	1408

Accessories	→ Page/online
27 Cover plate VS	1392
28 MS pressure gauge AG	1392
29 Adapter A4 for EN pressure gauge 1/4	1392
30 Pressure sensor without display AD7/AD9	1392
35 Pressure switch M12	1392
36 Pressure switch X/Y	1392
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409

1) Not suitable for individual devices with connecting thread G3/4 or G1.



Compact compressed air distributor

- + As a compact intermediate distributor for varying air qualities

Compressed air distributors > MS series >
Distributor blocks

MS-FRM-FRZ 
MS series


Compressed air distributors > MS series >

Distributor blocks


MS-FRM-FRZ

 Overview, configuration and ordering
→ www.festo.com/catalogue/ms-frm-frz



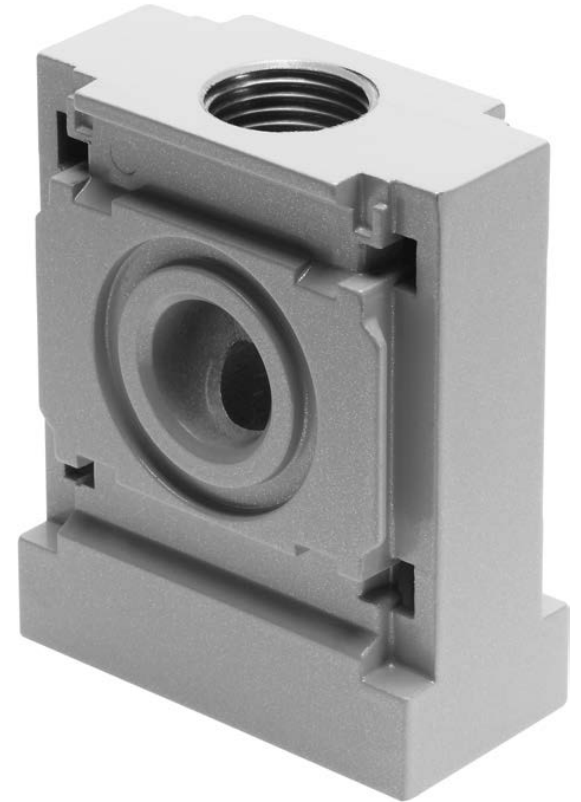
 Additional information, support and user documentation
→ www.festo.com/sp/ms-frm-frz



 Quick ordering of basic designs
→ page 1397

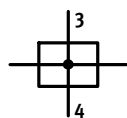


 Selected types in accordance with the ATEX Directive for explosive atmospheres
→ www.festo.com/catalogue/ex



- + Sizes 4, 6
- + Connection G1/4, G1/2
- + Pressure 0 ... 20 bar
- + Flow rate 4050 ... 14,600 l/min

Data sheet



Technical data		Download CAD data → www.festo.com	
Size		MS4	MS6
Pneumatic connection 3, 4		G1/4	G1/2
Design		Branching module	
Type of mounting		Via accessories	
		In-line installation	
Mounting position		Any	
Length	[mm]	42	62
Width	[mm]	20	31
Height	[mm]	53	77

Standard nominal flow rate $q_{nN}^{1)}$			
Size		MS4	MS6
In main flow direction $q_{nN1 \rightarrow 2}$	[l/min]	4050	14600
Outlet at top $q_{nN1 \rightarrow 3}$	[l/min]	3250	10400
Outlet at bottom $q_{nN1 \rightarrow 4}$	[l/min]	2900	9850

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar.

Operating conditions			
Size		MS4	MS6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	0 ... 14	0 ... 20
Ambient temperature	[°C]	-10 ... +60	

Materials	
Housing	Die-cast aluminium

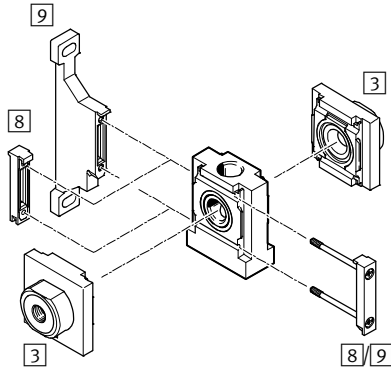
★ Quick ordering ²⁾

Part no.	Type	Part no.	Type
MS4		MS6	
549336	MS4-FRM-FRZ	549337	MS6-FRM-FRZ

2) All products in this table are easy to select and quick to order.

Distributor blocks MS-FRM-FRZ ★

Accessories – MS4/MS6



Accessories	→ Page/online
3 Connecting plate kit MS4/6-AG...	1406
8 Module connector MS4/6-MV	1406
9 Mounting bracket MS4/6-WP ¹⁾	1406
- Mounting bracket MS4/6-WPB ¹⁾	1406
- Mounting bracket MS4/6-WPE ¹⁾	1406
- Mounting bracket MS4/6-WPM ¹⁾	1406

Accessories	→ Page/online
- Module connector MS4/6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a-ipm*

1) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3].



Remove unwanted condensed water from the compressed air

- + Constantly high condensate separation (99%)
- + Eliminates problems due to condensed water

Condensate drain > MS series >
Water separators

MS-LWS

MS series

Condensate drain > MS series >

Water separators

MS-LWS



Overview, configuration and ordering

→ www.festo.com/catalogue/ms-lws



Additional information, support and user documentation

→ www.festo.com/sp/ms-lws



Selected types in accordance with the ATEX Directive for explosive atmospheres

→ www.festo.com/catalogue/ex



- + Size 6 and 9
- + Connection G1/4, G3/8, G1/2, G3/4
- + Pressure 0.8 ... 16 bar
- + Fully automatic condensate drain

Product range overview

Size	Pneumatic connection	Product options		
		U	V	Z
6	1/4, 3/8, 1/2	■	■	■
9	3/4, 1, G	■	■	■
12	G	■	■	■

Product options

1/4 Female thread G1/4

3/8 Female thread G3/8

1/2 Female thread G1/2

3/4 Female thread G3/4

1 Female thread G1

AGB Connecting plate G1/4

AGC Connecting plate G3/8

AGD Connecting plate G1/2

AGE Connecting plate G3/4

AGF Connecting plate G1

AGG Connecting plate G1 1/4

AGH Connecting plate G1 1/2

AGI Connecting plate G2

N3/4 Female thread NPT3/4

N1 Female thread NPT1

AQN Connecting plate NPT1/4

AQP Connecting plate NPT3/8

AQR Connecting plate NPT1/2

AQS Connecting plate NPT3/4

AQT Connecting plate NPT1

AQU Connecting plate NPT1 1/4

AQV Connecting plate NPT1 1/2

G Module without connecting thread, without connecting plate

U Metal bowl guard

V Fully automatic condensate drain

E2 External condensate drain, fully automatic, electric, 110 V AC, terminals

E3 External condensate drain, fully automatic, electric, 230 V AC, terminals

E4 External condensate drain, fully automatic, electric, 24 V DC, terminals

WP Mounting bracket standard design

WPM Mounting bracket for hooking in service units

WPB Mounting bracket for large wall gap

WB Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required

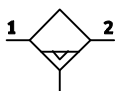
EX4 EU certification (II 2GD to EU Explosion Protection Directive (ATEX))

UL1 UL certification (cULus, ordinary locations for Canada and USA)

Z Direction of flow from right to left

Water separators MS-LWS

Data sheet



Technical data		Download CAD data → www.festo.com				
Size	MS6			MS9		
Pneumatic connection 1, 2	G1/4	G3/8	G1/2	G3/4	G1	- ¹⁾
Design	Centrifugal separator					
Type of mounting	Via accessories In-line installation					
Mounting position	Vertical ±5°					
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:7:4]			Compressed air to ISO 8573-1:2010 [-:7:4]		
Bowl guard	Integrated as metal bowl guard					
Condensate drain	Fully automatic					
Degree of condensate separation [%]	99					
Max. condensate volume [ml]	38			220		
Length [mm]	76			109		
Width [mm]	62			104		90
Height [mm]	220 + 64 ²⁾			346 + 50 ²⁾		

- 1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → page 1406.
 2) Installation dimension for removing the filter bowl.

Standard nominal flow rate q_{nN} ³⁾		MS6			MS9	
Size	MS6			MS9		
Pneumatic connection 1, 2	G1/4	G3/8	G1/2	G3/4	G1	- ⁴⁾
q_{nN} [l/min]	2400	3500	3800	12000 ±15%	15000 ±15%	

- 3) Measured at $p_1 = 6$ bar and $\Delta p = 1$ bar.
 4) Dependent on the connecting plate selected, must be ordered separately as an accessory → page 1406.

Operating conditions		Fully automatic		
Size	MS6			MS9
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]			Compressed air to ISO 8573-1:2010 [-:-:-]
	Inert gases			-
Operating pressure [bar]	2 ... 12			
Ambient temperature [°C]	+5 ... +60			

Materials	
Housing	Die-cast aluminium
Bowl	Wrought aluminium alloy
Inspection window	PA
Seals	NBR

Order code – MS6/MS9

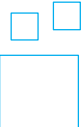
	MS	–	LWS	–		–	U	–	V	–	
Series											
MS	Standard service unit										
Size											
6	Grid dimension 62 mm										
9	Grid dimension 90 mm										
Type											
LWS	Water separator										
Pneumatic connection											
MS6											
1/4	Female thread G $\frac{1}{4}$										
3/8	Female thread G $\frac{3}{8}$										
1/2	Female thread G $\frac{1}{2}$										
MS9											
3/4	Female thread G $\frac{3}{4}$										
1	Female thread G1										
G	Module without connecting thread, without connecting plate Connecting plates → page 1406										
Bowl guard											
U	Integrated as metal bowl guard										
Condensate drain											
V	Fully automatic										
Direction of flow											
–	From left to right										
Z	From right to left										

Order example:

MS6-LWS-1/2-U-V

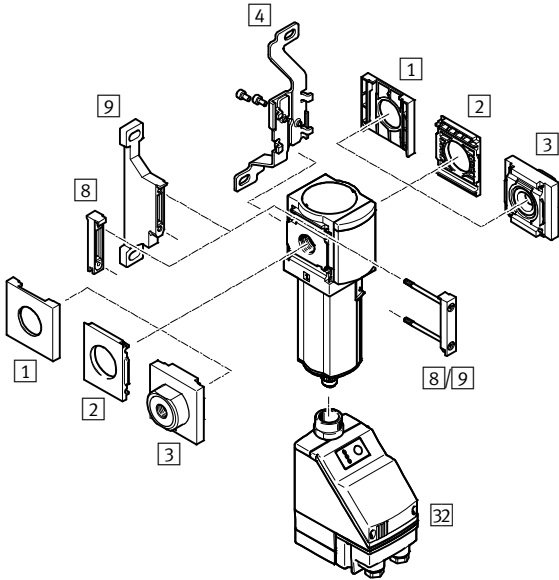
Standard service unit, grid dimension 62 mm - water separator - female thread G $\frac{1}{2}$ - metal bowl guard - fully automatic condensate drain - flow direction from left to right

Ordering – Product options

	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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Water separators MS-LWS

Accessories – MS6



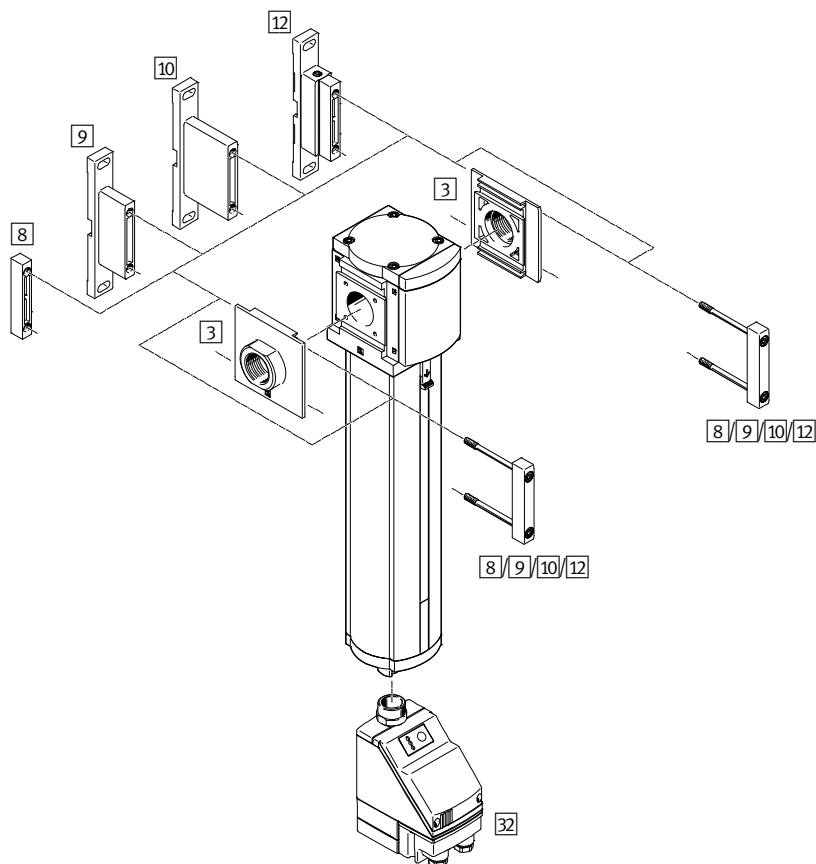
Accessories	→ Page/online
1 Cover cap MS6-END	1406
2 Mounting plate MS6-AEND	1406
3 Connecting plate kit MS6-AG...	1406
4 Mounting bracket MS6-WB ¹⁾	1406
8 Module connector MS6-MV	1406
9 Mounting bracket MS6-WP ²⁾	1406
32 Fully automatic condensate drain, electrically actuated	ms6-lws
- Mounting bracket MS6-WPB ²⁾	1406

1) Mounting component for individual device.

Accessories	→ Page/online
- Mounting bracket MS6-WPE ²⁾	1406
- Mounting bracket MS6-WPM ²⁾	1406
- Module connector MS4/6-RMV	1409
- Module connector MS4-6-AMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting component and connector for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND [2].

Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... ¹⁾	1406
8 Module connector MS9-MV ¹⁾	1406
9 Mounting bracket MS9-WP	1406
10 Mounting bracket MS9-WPB	1406
12 Mounting bracket MS9-WPM ¹⁾	1406

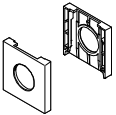

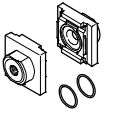
Accessories	→ Page/online
32 Fully automatic condensate drain, electrically actuated	ms9-lws
- Module connector MS9-RMV	1409
- Module connector MS6-9-AMV	1409
- Module connector MS6-9-ARMV	1409


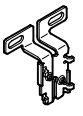


1) Not suitable for individual devices with connecting thread G¾ or G1.


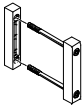

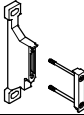
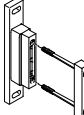
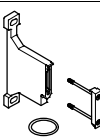
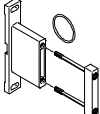
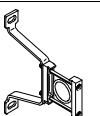
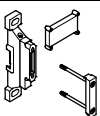
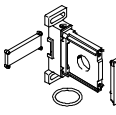
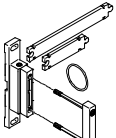
MS series >

Accessories

Accessories – Ordering data

	Size	Part no.	Type
1 Cover cap MS-END Dimensions online: → ms*-end			
	MS4	538779	MS4-END
	MS6	538780	MS6-END
2 Mounting plate MS-AEND Dimensions online: → ms*-aend			
	MS4	542966	MS4-AEND
	MS6	535408	MS6-AEND
3 Connecting plate kit MS-AG Dimensions online: → ms*-ag*			
	MS4	G1/8	526068 MS4-AGA
		G1/4	★ 526069 MS4-AGB
		G3/8	★ 526070 MS4-AGC
	MS6	G1/4	526080 MS6-AGB
		G3/8	526081 MS6-AGC
		G1/2	★ 526082 MS6-AGD
		G3/4	★ 526083 MS6-AGE
MS9	G1/2	552954 MS9-AGD	
	G3/4	552955 MS9-AGE	
	G1	552956 MS9-AGF	
	G1 1/4	552957 MS9-AGG	
	G1 1/2	552958 MS9-AGH	



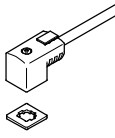
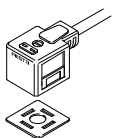


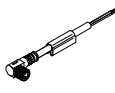

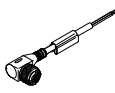
	Size	Part no.	Type
4 Mounting bracket MS-WB Dimensions online: → ms*-wb			
	MS4	★ 532185	MS4-WB
	MS6	★ 532196	MS6-WB
5 Mounting bracket MS-WBM Dimensions online: → ms*-wbm			
	MS4	526062	MS4-WBM
6 Mounting bracket MS-WR Dimensions online: → ms*-wr			
	MS4	★ 526064	MS4-WR
	MS6	★ 526075	MS6-WR
7 Hex nut MS-WRS			
	MS4	532187	MS4-WRS
	MS6	532188	MS6-WRS

	Size	Part no.	Type
8 Module connector MS-MV			
For connecting modules			
	MS4	★ 532798	MS4-MV
	MS6	★ 532799	MS6-MV
	MS9	552950	MS9-MV
Module connector MS-MVM			
For connecting the modules with rotary knob downwards			
	MS4	★ 532800	MS4-MVM
	MS6	★ 532801	MS6-MVM
9 Mounting bracket MS-WP Dimensions online: → ms*-wp			
	MS4	★ 532184	MS4-WP
	MS6	★ 532195	MS6-WP
	MS9	552947	MS9-WP
10 Mounting bracket MS-WPB Dimensions online: → ms*-wbp			
	MS4	For large wall gap	★ 526063 MS4-WPB
	MS6	For large wall gap	★ 526074 MS6-WPB
	MS9	For large wall gap	552949 MS9-WPB
11 Mounting bracket MS-WPE Dimensions online: → ms*-wpe			
	MS4	For large wall gap	558869 MS4-WPE
	MS6	For large wall gap	1025936 MS6-WPE
12 Mounting bracket MS-WPM Dimensions online: → ms*-wpm			
	MS4	For clearance 40 mm	★ 526060 MS4-WPM-D
		For clearance 80 mm	526061 MS4-WPM-2D
	MS6	For clearance 62 mm	★ 526073 MS6-WPM-D
		For clearance 124 mm	532186 MS6-WPM-2D
	MS9	For clearance 90 mm or 180 mm	552948 MS9-WPM

13

Compressed air preparation




Accessories – Ordering data




Description		Part no.	Type			
13 Angled plug socket PEV-1/4-WD-LED		Data sheets online: → pev				
	For pressure switch PEV	4-pin, 15 ... 30 V DC	Yellow LED			
		4-pin, ≤ 230 V AC ≤ 180 V DC	Yellow LED			
		164274	PEV-1/4-WD-LED-24			
		164275	PEV-1/4-WD-LED-230			
14 Plug socket MSSD		Data sheets online: → mssd				
	For pressure switch PEV		171157 MSSD-C-4P			
	For MS4/6-EE and MS6-SV-C	3-pin	Screw terminal			
		4-pin	Insulation displacement connector			
	For MS9-EE and MS9-SV-C	3-pin	Screw terminal			
4-pin		Insulation displacement connector				
		★ 151687	MSSD-EB			
		192745	MSSD-EB-S-M14			
		34583	MSSD-C			
		192748	MSSD-C-S-M16			
15 Plug socket with cable KMEB/connecting cable KMC		Data sheets online: → km				
	For MS4/6-EE and MS6-SV-C	2-pin, 24 V DC	LED	2.5 m	547268	KMEB-3-24-2,5-LED
			–	5 m	547269	KMEB-3-24-5-LED
		3-pin, 24 V DC	LED	2.5 m	547270	KMEB-3-24-2,5
			–	5 m	547271	KMEB-3-24-5
	3-pin, 230 V AC	LED	2.5 m	★ 151688	KMEB-1-24-2,5-LED	
			5 m	151689	KMEB-1-24-5-LED	
			10 m	193457	KMEB-1-24-10-LED	
		–	2.5 m	151690	KMEB-1-230AC-2,5	
			5 m	151691	KMEB-1-230AC-5	
			10 m	193459	KMC-1-24-10-LED	
	For MS9-EE and MS9-SV-C	3-pin, 24 V DC	LED	2.5 m	30931	KMC-1-24DC-2,5-LED
			–	5 m	30933	KMC-1-24DC-5-LED
			–	10 m	193459	KMC-1-24-10-LED
	3-pin, 230 V AC	–	2.5 m	30932	KMC-1-230AC-2,5	
		–	5 m	30934	KMC-1-230AC-5	
		–	10 m	193459	KMC-1-24-10-LED	
16 Illuminating seal MEB-LD/MC-LD		Data sheets online: → meb				
	For plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	151717	MEB-LD-12-24DC		
		230 V DC/AC ±10%	151718	MEB-LD-230AC		
	For connecting cable KMC and plug socket MSSD-C	12 ... 24 V DC	19145	MC-LD-12-24DC		
		230 V DC/AC ±10%	19146	MC-LD-230AC		
17 Connecting cable NEBU-M8		Data sheets → Page 1544				
	M8x1, 3-pin	2.5 m	★ 541333	NEBU-M8G3-K-2.5-LE3		
		5 m	★ 541334	NEBU-M8G3-K-5-LE3		
	M8x1, 4-pin	2.5 m	541342	NEBU-M8G4-K-2.5-LE4		
		5 m	541343	NEBU-M8G4-K-5-LE4		
	M8x1, 3-pin	2.5 m	★ 541338	NEBU-M8W3-K-2.5-LE3		
		5 m	★ 541341	NEBU-M8W3-K-5-LE3		
	M8x1, 4-pin	2.5 m	541344	NEBU-M8W4-K-2.5-LE4		
		5 m	541345	NEBU-M8W4-K-5-LE4		
18 Connecting cable NEBU-M12		Data sheets → Page 1544				
	M12x1, 3-pin	2.5 m	★ 541363	NEBU-M12G5-K-2.5-LE3		
		5 m	★ 541364	NEBU-M12G5-K-5-LE3		
	M12x1, 4-pin	2.5 m	★ 550326	NEBU-M12G5-K-2.5-LE4		
		5 m	★ 541328	NEBU-M12G5-K-5-LE4		
	M12x1, 3-pin	2.5 m	541367	NEBU-M12W5-K-2.5-LE3		
		5 m	541370	NEBU-M12W5-K-5-LE3		
	M12x1, 4-pin	2.5 m	550325	NEBU-M12W5-K-2.5-LE4		
		5 m	541329	NEBU-M12W5-K-5-LE4		

MS series >


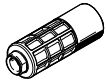



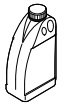
Accessories

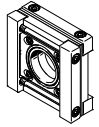
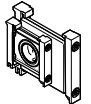
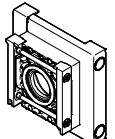
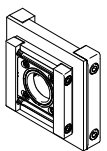
Accessories – Ordering data


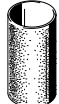

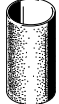
	Connection	Indicating range	Part no.	Type
19 Pressure gauge MA Data sheets online: → ma				
EN 837-1				
	R1/8	0 ... 25 bar	526167	MA-40-25-1/8-EN
	R1/4	0 ... 16 bar	187080	MA-40-16-R1/4-EN
	G1/4	0 ... 16 bar	183901	MA-40-16-G1/4-EN
EN 837-1, with red/green range				
	R1/8	0 ... 16 bar	525726	MA-40-16-R1/8-E-RG
	R1/4	0 ... 16 bar	525729	MA-50-16-R1/4-E-RG
20 Precision pressure gauge MAP Data sheets online: → map				
EN 837-1				
	R1/8	0 ... 1 bar	161126	MAP-40-1-1/8-EN
		0 ... 4 bar	162842	MAP-40-4-1/8-EN
		0 ... 6 bar	161127	MAP-40-6-1/8-EN
		0 ... 16 bar	161128	MAP-40-16-1/8-EN

	Size	Description	Part no.	Type
21 Cover MS-SV-MH				
	For MS9-SV-C	Tamper protection for manual override at the soft-start/quick exhaust valve and manual override at the pilot solenoid valve	1457670	MS9-SV-MH
22 Cover MS-SV-MK				
	For MS6-SV-C	Tamper protection for manual override at the soft-start/quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve (MS6-SV-...-C-10V24 only)	8001479	MS6-SV-C-MK
	For MS9-SV-C	Tamper protection for manual override at the soft-start/quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve	1457669	MS9-SV-MK

Accessories – Ordering data

	Description	Part no.	Type
	23 Silencer U Data sheets → Page 1662		
	G1/4	★ 6842	U-1/4-B
	G1/2	★ 6844	U-1/2-B
	G3/4	6845	U-3/4-B
	G1	151990	U-1-B
	24 Silencer UOS		
	G1, for high exhaust rate	552252	UOS-1
	G1, for low exhaust rate	1901207	UOS-1-LF
	25 Locking clip CPV18-HV		
	For MS4/6-EE-...-V24	530056	CPV18-HV
	26 Padlock LRVS-D		
	-	193786	LRVS-D
	Special oil OFSW		
	Packaging unit 1 litre	152811	OFSW-32

	Size	Part no.	Type
	Module connector MS-RMV Dimensions online: → ms*-rmv		
	For connecting service units turned 90° to the connection axis		
	MS4	543490	MS4-RMV
	MS6	543491	MS6-RMV
	MS9	552952	MS9-RMV
	Module connector MS-AMV Dimensions online: → ms*-amv		
	For combining MS4 and MS6 service units into one unit		
	MS4/MS6	543489	MS4-6-AMV
	For connecting MS6 and MS9 service units into one unit		
	MS6/MS9	3426895	MS6-9-AMV
	Module connector MS-ARMV Dimensions online: → ms*-armv		
	For combining MS6 and MS9 into one unit, for turning a service unit 90° to the connection axis as an option		
	MS6/MS9	552951	MS6-9-ARMV

	Size	Part no.	Type
Filter cartridge MS-LFP-C, grade of filtration 5 µm			
	MS4	Colour: blue	534501 MS4-LFP-C
	MS6	Colour: blue	534499 MS6-LFP-C
	MS9		570309 MS9-LFP-C
Filter cartridge MS-LFP-E, grade of filtration 40 µm			
	MS4	Colour: white	534502 MS4-LFP-E
	MS6	Colour: white	534500 MS6-LFP-E
	MS9		570310 MS9-LFP-E



For precision pressure levels

- + Very good pressure control characteristics
- + Compact individual device

Regulators > Individual devices >

Precision pressure regulators

LRP★

LRPS

with integrated lock

Regulators > Individual devices >

Precision pressure regulators

LRP★ / LRPS

Overview, configuration and ordering
→ www.festo.com/catalogue/lrp

Additional information, support and user documentation
→ www.festo.com/sp/lrp

★ Quick ordering of basic designs
→ page 1414

Selected types in accordance with the ATEX Directive for explosive atmospheres
→ www.festo.com/catalogue/ex



- + Lockable design
- + Precision pressure adjustment possible both in static and dynamic applications
- + Good response characteristics during rapid modification of input pressure and flow rate
- + Input pressure fluctuations are almost entirely compensated

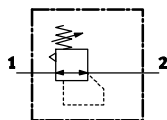
Product range overview

Type	Size	Pneumatic connection	Standard nominal flow rate [l/min]	Pressure regulation range [bar]	Operating pressure [bar]	Max. pressure hysteresis [bar]	Product options EX4	→ Page/ online
Rotary knob with detent								
LRP	40	G1/8	240 ... 300	0.1 ... 6	1 ... 8	0.02	–	1413
	50	G1/4	800 ... 2300	0.05 ... 10	1 ... 12	0.02	■	1415
Rotary knob with integrated lock								
LRPS	50	G1/4	800 ... 2300	0.05 ... 10	1 ... 12	0.02	–	1415

Product options

EX4 II 2GD to EU Explosion Protection Directive (ATEX)

Data sheet – Size 40



Note

A manifold block MRS is required to connect the precision pressure regulator LRP-7.0-6 to the compressed air supply. The mounting kit with screws and sealing rings is included with the device.



LRP-1/8-6

LRP-7.0-6

Technical data		Download CAD data → www.festo.com	
Type		LRP-1/8-6	LRP-7.0-6
Pneumatic connection 1, 2		G1/8	For connecting plate Ø 7 mm
Design		Piloted precision diaphragm regulator	
Regulating function		Outlet pressure constant, with secondary exhausting	
Type of mounting		Via accessories In-line installation Front panel mounting	
Mounting position		Any	
Actuator lock		Rotary knob with detent	
Pressure regulation range	[bar]	0.1 ... 6	
Pressure indication		G1/8 prepared	
Length/width/height	[mm]	40/40/92	

Standard nominal flow rate q_{nN}		LRP-1/8-6	LRP-7.0-6
Type			
$q_{nN}^{2)}$	[l/min]	300 ¹⁾	240 ²⁾

1) Measured at $p_1 = 8$ bar and $p_2 = 6$ bar, $\Delta p_2 = 100$ mbar

2) Measured on manifold block MRS-4 at $p_1 = 8$ bar and $p_2 = 6$ bar, $\Delta p_2 = 100$ mbar

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on the operating/pilot medium	Lubricated operation not possible
Operating pressure	[bar] 1 ... 8
Ambient temperature	[°C] -10 ... +60

Precision pressure regulators LRP/LRPS ★

Data sheet – Size 40

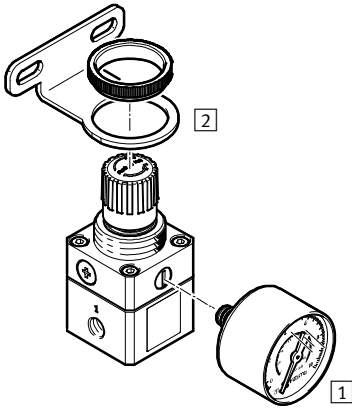
Materials	
Housing	Aluminium
Rotary knob	PA
Knurled nut	Aluminium
Seals	NBR

Ordering data – Size 40

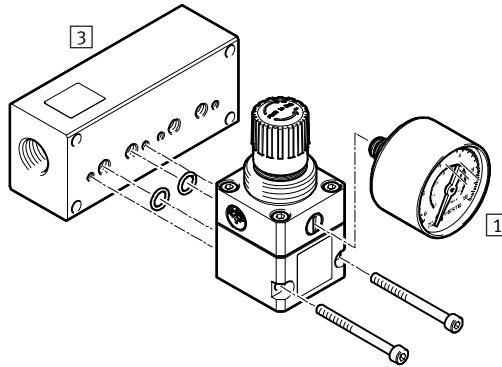
Pressure regulation range [bar]	Pneumatic connection 1, 2	Part no.	Type
0.1 ... 6	G $\frac{3}{8}$	★ 2416371	LRP-1/8-6
	For connecting plate \varnothing 7 mm	2418761	LRP-7.0-6

Accessories – Size 40

Precision pressure regulator LRP-1/8-6



Precision pressure regulator LRP-7.0-6



Accessories	→ Page/online
1 Precision pressure gauge PAGN	1414
2 Mounting bracket MS-WR	1414

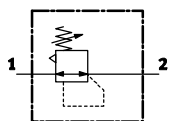
Accessories	→ Page/online
3 Manifold block MRS, for manifold assembly of 2 or 4 valves	1414

Accessories – Ordering data

	Indicating range	Part no.	Type
1 Precision pressure gauge PAGN		Data sheets online: → pagn	
	0 ... 10 bar	2849914	PAGN-40-10-R18-1.6
	0 ... 1 MPa	2849916	PAGN-40-1M-R18-1.6
2 Mounting bracket MS-WR		Dimensions online: → ms*-wr	
	-	★ 526064	MS4-WR

	Pneumatic connection	Part no.	Type
3 Manifold block MRS		Dimensions online: → mrs	
	For manifold assembly of 2 valves		
	G $\frac{3}{8}$	2844247	MRS-2
For manifold assembly of 4 valves			
	G $\frac{3}{8}$	2844348	MRS-4

Data sheet – Size 50



Technical data		Download CAD data → www.festo.com			
Type		LRP	LRPS		
Pneumatic connection 1, 2		G $\frac{1}{4}$			
Design		Piloted precision diaphragm regulator			
Regulating function		Outlet pressure constant, with secondary exhausting			
Type of mounting		Via accessories			
		In-line installation			
		Front panel mounting			
Mounting position		Any			
Actuator lock		Rotary knob with detent	Rotary knob with integrated lock		
Pressure regulation range	[bar]	0.05 ... 0.7			
		0.05 ... 2.5			
		0.05 ... 4			
		0.1 ... 10			
Pressure indication		G $\frac{1}{8}$ prepared			
Length/width/height	[mm]	50/50/108	50/50/138 + min. 60 ¹⁾		

1) Clearance for removing the key.

Standard nominal flow rate q_{nN}					
Pressure regulation range	[bar]	0.05 ... 0.7	0.05 ... 2.5	0.05 ... 4	0.1 ... 10
q_{nN} ²⁾	[l/min]	800	1800	2000	2300

2) Measured at $p_1 = 12$ bar and $\Delta p_2 = 100$ mbar.

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on operating/pilot medium	Lubricated operation not possible
Operating pressure	[bar] 1 ... 12
Ambient temperature	[°C] -10 ... +60

Materials	
Housing	Die-cast aluminium
Rotary knob	PA
Knurled nut	Aluminium
Seals	NBR

Regulators > Individual devices >

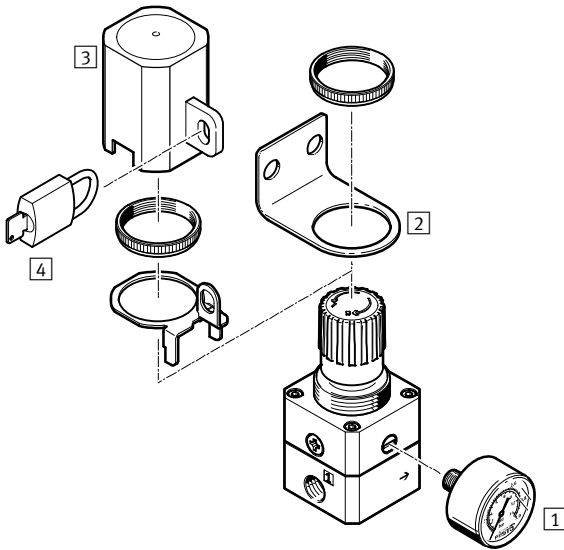
Precision pressure regulators LRP/LRPS ★

Ordering data – Size 50

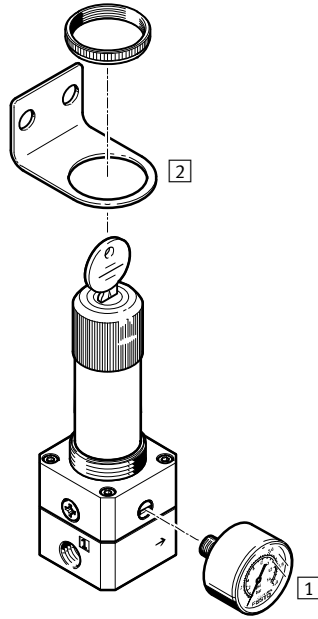
Pressure regulation range [bar]	Pneumatic connection 1, 2	Part no.	Type
Rotary knob with detent			
0.05 ... 0.7	Female thread G $\frac{1}{4}$	★ 159500	LRP-1/4-0,7
0.05 ... 2.5	Female thread G $\frac{1}{4}$	★ 162834	LRP-1/4-2,5
0.05 ... 4	Female thread G $\frac{1}{4}$	★ 159501	LRP-1/4-4
0.1 ... 10	Female thread G $\frac{1}{4}$	★ 159502	LRP-1/4-10
Rotary knob with integrated lock			
0.05 ... 0.7	Female thread G $\frac{1}{4}$	194690	LRPS-1/4-0,7
0.05 ... 2.5	Female thread G $\frac{1}{4}$	194691	LRPS-1/4-2,5
0.05 ... 4	Female thread G $\frac{1}{4}$	194692	LRPS-1/4-4
0.1 ... 10	Female thread G $\frac{1}{4}$	194693	LRPS-1/4-10

Accessories – Size 50

Precision pressure regulator LRP



Precision pressure regulator LRPS



Accessories	→ Page/online
1 Precision pressure gauge MAP	1416
2 Mounting bracket HR	1416

Accessories	→ Page/online
3 Regulator lock LRVS	1416
4 Padlock LRVS-D	1416

Accessories – Ordering data

	Indicating range	Part no.	Type
	1 Precision pressure gauge MAP Data sheets online: → map		
	0 ... 1 bar	161126	MAP-40-1-1/8-EN
	0 ... 4 bar	162842	MAP-40-4-1/8-EN
	0 ... 6 bar	161127	MAP-40-6-1/8-EN
	0 ... 16 bar	161128	MAP-40-16-1/8-EN
	2 Mounting bracket HR		
	-	159503	HR-1/4-P


	Part no.	Type
	3 Regulator lock LRVS	
	193785	LRVS-LRP-1/4
	4 Padlock LRVS-D	
	193786	LRVS-D

14 Pneumatic fittings system

- + Tubing for a wide range of working environments
- + Fittings and connectors with push-in or barbed fitting connection
- + Tubes made of polyamide, polyurethane or polyethylene
- + Self-locking couplings
- + Multiple distributors
- + Protective tubing systems

Contents

- Product overview 1420
- Standard O.D. plastic tubing PEN, PUN, PUN-H, PUN-DUO 1431
- Push-in fittings QS, QSM 1441
- Push-in fittings NPQH, metal 1467
- Push-in fittings NPQM, metal 1477
- Push-in fittings CRQS, stainless steel 1485
- Self-sealing/rotary push-in fittings QSK/QSR 1491
- Quick connectors NPCK 1497
- Threaded fittings NPFC, blanking plugs B 1501
- Quick coupling sockets/plugs NPHS 1511
- Quick coupling sockets/plugs KD, KS 1511
- Multiple distributors QSLV, QSQ 1519
- Accessories 1525



PUN★
PUN-H★

Plastic tubing

- + PUN: large selection of variants and highly resistant to stress cracks
- + PUN-H: high resistance to microbes and hydrolysis and approved for use in the food industry

→ page 1431



NPQH

Push-in fittings

- + All-metal push-in fittings made of chemically nickel-plated brass
- + High corrosion and chemical resistance

→ page 1477



QS★
QSM★

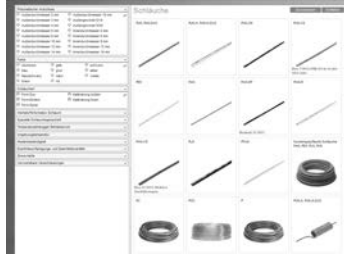

Push-in fittings

- + QS: standard series for maximum flexibility in standard applications
- + QSM: mini series for maximum component density in confined installation spaces



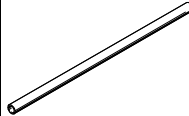

→ page 1441

Product overview




Software tool

<p>Product Finder for tubing</p> 	<p>Simply enter parameters such as working pressure, chemicals and required resistance to cleaning agents and have the program calculate the right tubing for your application.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> • on the Internet at www.festo.com/catalogue by clicking on the blue "Product Finder" button • or on the DVD under "Product Finder"
<p>Festo Design Tool 3D</p> 	<p>The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo. The configurator makes your search for the right accessory easier, more reliable and faster.</p> <p>You can then order the module that has been created with a single order item – either completely pre-assembled or as individual parts in a single box. As a result, your bill of materials is considerably shortened and downstream processes such as product ordering, order picking and assembly are significantly simplified.</p>	<p>All ordering options are available in the following countries: AT, BE, CH, CZ, DE, DK, ES, EST, FI, FR, GB, GR, HU, IE, IT, NL, NO, PL, PT, RU, SE, SI, SK, TR, ZA.</p> <p>This tool can be found</p> <ul style="list-style-type: none"> • via the address: www.festo.com/fdt-3d-online in the above listed countries




Standard O.D. tubing

Type	 Plastic tubing, DUO plastic tubing PUN, PUN-DUO ★	 Plastic tubing, DUO plastic tubing PUN-H, PUN-H-DUO ★	 Plastic tubing PTFEN	 Plastic tubing PUN-CM
O.D.	3 ... 16 mm	2 ... 16 mm	4 ... 16 mm	4 ... 12 mm
I.D.	2.1 ... 11 mm	1.2 ... 11 mm	2.9 ... 11 mm	2.5 ... 8 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar	-0.95 ... 10 bar	-0.95 ... 15 bar	-0.95 ... 10 bar
Ambient temperature	-35 ... 60°C	-35 ... 60°C	-20 ... 150°C	-35 ... 60°C
Description	<ul style="list-style-type: none"> • Polyurethane • High resistance to stress cracks • Suitable for energy chains • Also available as DUO plastic tubing • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Polyurethane • High resistance to microbes and hydrolysis • For use with food see www.festo.com/sp/pun-h > tab "Certificates" • Suitable for energy chains • Also available as DUO plastic tubing • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Polytetrafluoroethylene • For use with food see www.festo.com/sp/ptfen > tab "Certificates" • High resistance to chemicals • High temperature resistance • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Polyurethane • Plastic tubing, antistatic, electrically conductive • Suitable for energy chains • Operating media compressed air, vacuum
→ Page/online	1431	1431	ptfen	pun-cm

Standard O.D. tubing




Type	 Plastic tubing PUN-V0	 Plastic tubing PEN	 Plastic tubing PAN
O.D.	4 ... 16 mm	4 ... 16 mm	4 ... 16 mm
I.D.	2 ... 11.8 mm	2.7 ... 10.8 mm	2.5 ... 12 mm
Temperature-dependent operating pressure	-0.95 ... 30 bar	-0.95 ... 10 bar	-0.95 ... 19 bar
Ambient temperature	-35 ... 60°C	-30 ... 60°C	-30 ... 80°C
Description	<ul style="list-style-type: none"> • Polyurethane • Flame retardant to UL 94 V0 ... V2 • For use in the immediate vicinity of welding applications • High resistance to microbes and hydrolysis • Suitable for energy chains • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Polyethylene • High resistance to chemicals and very high resistance to hydrolysis • Resistant to most cleaning agents and lubricants • Suitable for energy chains • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Polyamide • High thermal and mechanical load capacities • High resistance to microbes • Operating media compressed air, vacuum
→ Page/online	pun-v0	1431	pan

Standard O.D. tubing


Type	 Plastic tubing PAN-MF	 Heavy-duty tubing PAN-R	 Plastic tubing PAN-V0
O.D.	4 ... 16 mm	4 ... 28 mm	6 ... 14 mm
I.D.	2.5 ... 12 mm	2.5 ... 23 mm	2.5 ... 9 mm
Temperature-dependent operating pressure	-0.95 ... 31 bar	-0.95 ... 35 bar	-0.95 ... 12 bar
Ambient temperature	-60 ... 100°C	-30 ... 80°C	-30 ... 90°C
Description	<ul style="list-style-type: none"> • Polyamide • High thermal and mechanical load capacities • Meets the requirements to DIN 73378 "Polyamide tubing for use in motor vehicles" • Operating media compressed air, mineral oil 	<ul style="list-style-type: none"> • Polyamide • For applications with a high pressure range • High resistance to microbes • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • PVC, polyamide • Flame retardant to UL 94 V0 • High resistance to microbes and UV radiation • Double-sheath tubing • Operating media compressed air, vacuum, water, mineral oil • Resistant to welding spatter
→ Page/online	pan	pan-r	pan-v0

Product overview




Standard O.D. tubing

Type	 Plastic tubing PLN	 Plastic tubing PFAN	 Customised tubing PAN, PEN, PLN, PUN
O.D.	4 ... 16 mm	3 ... 12 mm	3 ... 16 mm
I.D.	2.9 ... 12 mm	2.3 ... 8.4 mm	2.1 ... 12 mm
Temperature-dependent operating pressure	-0.95 ... 14 bar	-0.95 ... 16 bar	-0.95 ... 16 bar
Ambient temperature	-30 ... 80°C	-20 ... 150°C	-35 ... 80°C
Description	<ul style="list-style-type: none"> • Polyethylene • High resistance to chemicals, microbes and hydrolysis • For use with food see www.festo.com/sp/pln > tab "Certificates" • Resistant to most cleaning agents and lubricants • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Perfluoroalkoxy alkane • Pneumatic tubing with resistance to high temperatures and chemicals • For use with food see www.festo.com/sp/pfan > tab "Certificates" • High resistance to chemicals, microbes, UV radiation, hydrolysis and stress cracks • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Individual lengths: delivered in units of 25, 50, 100, 200 ... 500 m • Minimum quantity: 3000 m • Individual design: labelled with your company name and/or your part number • Easy to recognise and handle: individual colour selection • Choose from 9 basic colours; further colours available on request • Simple to order with the configurator
→ Page/online	pln	pfan	tubing





Standard I.D. tubing

Type	 Plastic tubing PU
O.D.	11.6 ... 17,6 mm
I.D.	9 ... 13.1 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar
Ambient temperature	-35 ... 60°C
Description	<ul style="list-style-type: none"> • Polyurethane with reinforcing fabric • High resistance to abrasion and kinks • Operating media compressed air, vacuum (PU-13)
→ Page/online	pu

Spiral tubing


Type	 Spiral plastic tubing, DUO spiral plastic tubing PUN-S, PUN-S-DUO	 Spiral plastic tubing PUN-SG	 Spiral plastic tubing PPS
O.D.	4 ... 12 mm	9.5 ... 11.7 mm	6.3 ... 7.8 mm
I.D.	2.6 ... 8 mm	6.4 ... 7.9 mm	4.7 ... 6.2 mm
Working length	0.5 ... 6 m	2.4 ... 6 m	7.5 ... 15 m
Temperature-dependent operating pressure	-0.95 ... 10 bar	-0.95 ... 15 bar	-0.95 ... 21.2 bar
Ambient temperature	-35 ... 60°C	-40 ... 60°C	-30 ... 80°C
Description	<ul style="list-style-type: none"> • Polyurethane • Also available as DUO plastic tubing • Operating media compressed air, vacuum • High resistance to UV radiation and stress cracks 	<ul style="list-style-type: none"> • Polyurethane, nickel-plated brass, polyacetal • Pre-assembled with captive rotatable fittings • High resistance to microbes and hydrolysis • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Polyamide, brass, galvanised steel • Pre-assembled with 2 rotatable connectors and captive sealing rings OL • High resistance to microbes • Operating media compressed air, vacuum
→ Page/online	spiral	spiral	pps

Push-in fittings





Type	 Push-in fittings, mini series QSM, QSMC, QSMF, QSML, QSMS, QSML, QSMP, QSMS, QSMT, QSMX, QSMY	 Push-in fittings, standard series QS, QSF, QSS, QSC, QSH, QSL, QST, QSW, QSX, QSY	 Push-in fittings NPQH	 Push-in fittings/connectors, metal, standard series NPQM
Pneumatic connection 1	Male thread G1/8, M3, M5, M6, M6x0.75, M7, M8x0.75, R1/8, M8x1.25, female thread M3, M5, push-in sleeve QS-3, QS-4, QS-6, for tubing O.D. 2, 3, 4, 6 mm	Male thread G1/8, G1/4, G3/8, G1/2, G3/4, M5, R1/8, R1/4, R3/8, R1/2, female thread G1/8, G1/4, G3/8, G1/2, push-in sleeve QS-4, QS-6, QS-8, QS-10, QS-12, QS-16, for tubing O.D. 4, 6, 8, 10, 12, 16 mm	Male thread M5, M7, G1/8, G1/4, G3/8, G1/2, for tubing O.D. 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, female thread G1/8, G1/4, push-in sleeve QS-10, QS-12, QS-14, QS-4, QS-6, QS-8	G1/8, G1/4, G3/8, G1/2, M5, M7, push-in sleeve QS-4, QS-6, QS-8, QS-10, QS-12, for tubing O.D. 4, 6, 8, 10, 12 mm
Pneumatic connection 2	For tubing O.D. 2, 3, 4, 6 mm	Female thread G1/8, G1/4, G3/8, G1/2, for tubing O.D. 4, 6, 8, 10, 12, 16 mm	For tubing O.D. 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, push-in sleeve QS-10, QS-12, QS-14, QS-4, QS-6, QS-8	For tubing O.D. 3, 4, 6, 8, 10, 12 mm
Temperature-dependent operating pressure	-0.95 ... 14 bar	-0.95 ... 14 bar		
Operating pressure for entire temperature range	-0.95 ... 6 bar	-0.95 ... 6 bar	-0.95 ... 20 bar	-0.95 ... 16 bar
Ambient temperature	-10 ... 80°C	-10 ... 80°C	0 ... 150°C	-20 ... 70°C
Description	<ul style="list-style-type: none"> • Mini series • Compact for maximum component density in confined spaces • PBT and nickel-plated brass • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Standard series • Wide range of variants: large selection for maximum flexibility in standard applications • PBT and nickel-plated brass • Operating media compressed air, vacuum, (water) 	<ul style="list-style-type: none"> • All-metal brass, chemically nickel-plated • High corrosion and chemical resistance • High resistance to temperatures and pressure • For use with food see www.festo.com/sp/npqh > tab "Certificates" • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • All-metal brass, nickel-plated • Attractively priced metal push-in fitting • Sturdy • Operating media compressed air, vacuum
→ Page/online	1441	1441	1467	1477

Product overview





Push-in fittings

				
Type	Push-in fittings/connectors, resistant to media NPQP	Cartridges, polymer, black QSPK, QSPLK	Cartridges, polymer, grey QSPKG, QSPLKG	Push-in fittings, stainless steel CRQS, CRQSL, CRQSS, CRQST, CRQSY
Pneumatic connection 1	Male thread R1/8, R1/4, R3/8, R1/2, push-in sleeve QS-4, QS-6, QS-8, QS-10, QS-12, for tubing O.D. 4, 6, 8, 10, 12 mm	Cartridge 10 mm, 18 mm	Cartridge 10 mm, 14 mm, 18 mm, 20 mm	Male thread M5, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 4, 6, 8, 10, 12, 16 mm
Pneumatic connection 2	For tubing O.D. 4, 6, 8, 10, 12 mm	For tubing O.D. 3, 4, 6, 8, 10 mm	For tubing O.D. 3, 4, 6, 8, 10, 12 mm	For tubing O.D. 4, 6, 8, 10, 12, 16 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar			
Operating pressure for entire temperature range		-0.95 ... 10 bar	-0.95 ... 10 bar	-0.95 ... 10 bar
Ambient temperature	-20 ... 60°C	-5 ... 60°C	-5 ... 60°C	-15 ... 120°C
Description	<ul style="list-style-type: none"> • Polypropylene • Low-cost alternative to stainless steel: resistant to most cleaning agents in combination with tubing PLN • For use with extreme media influences • For use with food see www.festo.com/sp/npqp > tab "Certificates" • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Compact fitting space • Threadless assembly 	<ul style="list-style-type: none"> • Compact fitting space • Threadless assembly 	<ul style="list-style-type: none"> • Maximum corrosion resistance (corrosion resistance class 4 to Festo standard 940 070) and chemical resistance • For use with food see www.festo.com/sp/crqs > tab "Certificates" • Operating media compressed air, vacuum, (water) • Stainless steel
→ Page/online	npqp	qsp	qsp	1485




Push-in fittings

				
Type	Push-in fittings, resistant to welding spatter QS-V0, QSL-V0, QST-V0	Self-sealing push-in fittings and connectors QSK, QSSK, QSKL	Rotary push-in fittings QSR, QSRL	Fluid separators CQA
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 4, 6, 8, 10, 12 mm	Male thread M5, G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 4, 6, 8, 10, 12 mm	Male thread M5, G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2	Push-in sleeve CQ-28, for pipe/tubing O.D. 22 mm
Pneumatic connection 2	For tubing O.D. 4, 6, 8, 10, 12 mm	For tubing O.D. 4, 6, 8, 10, 12 mm	For tubing O.D. 4, 6, 8, 10, 12 mm	Push-in sleeve CQ-28, for pipe/tubing O.D. 22 mm
Temperature-dependent operating pressure		-0.95 ... 14 bar	-0.95 ... 14 bar	-0.95 ... 15 bar
Operating pressure for entire temperature range	-0.95 ... 10 bar	-0.95 ... 6 bar	-0.95 ... 6 bar	-0.95 ... 7 bar
Ambient temperature	0 ... 60°C	-10 ... 80°C	0 ... 60°C	-25 ... 70°C
Description	<ul style="list-style-type: none"> • PBT-reinforced • Resistant to welding spatter • For use in all areas where there is a risk of fire • Reliable even for applications in close proximity to welding spatter • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Standard series • Self-sealing push-in fitting blocks the air flow after the tubing is disconnected • PBT and nickel-plated brass • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Rotatable push-in fitting with swivel connection: rotatable by 360° with max. 500 rpm • Compact fitting space 	<ul style="list-style-type: none"> • Assembly and disassembly without tools • Sturdy and leakproof connection
→ Page/online	qs-v0	1491	1491	cqa

Barbed fittings



				
Type	Fittings NPCK	Barbed fittings CN, CRCN, FCN, L-PK, LCN, N, RTU, SCN, LCNH, T-PK, TCN, Y-PK	Barbed hose fittings C-P, N-P, N-MS	Quick connectors ACK, CK, QCK, SCK, CV-PK, GCK-KU, LCK, TCK, FCK-KU, MCK
Nominal width	2 ... 6.2 mm	1.3 ... 5.3 mm	4 ... 16.5 mm	2 ... 11.7 mm
Pneumatic connection 1	Male thread M5, G1/8, G1/4, G3/8	Male thread G1/4, G1/8, G3/8, M3, M5, for tubing O.D. 3 mm, 4 mm, 6 mm, 8 mm	Male thread G1, G1/2, G1/4, G1/8, G3/4, G3/8, female thread G1/2, G1/4, G1/8, G3/8, NPT1-11 1/2, NPT3/4-14	Male thread G1/2, G1/4, G1/8, G3/8, M5, R1/4, R1/8, R3/8, female thread G1/2, G1/4, G1/8, G3/8, M5, for barbed connector I.D. 3 mm with union nut, 4 mm, 6 mm, 9 mm with union nut
Pneumatic connection 2	For tubing O.D. 10 mm, 4 mm, 6 mm, 8 mm	For tubing O.D. 3 mm, 4 mm, 6 mm, 8 mm	For tubing O.D. 8 mm, for tubing I.D. 6 mm, 9 mm, 19 mm, 13 mm	For tubing O.D. 4 mm, 6 mm, 8 mm, for tubing I.D. 13 mm, 9 mm, for barbed fitting I.D. 13 mm with union nut, 3 mm, 4 mm, 6 mm, 9 mm with union nut
Operating pressure	-0.95 ... 12 bar	-0.95 ... 10 bar	-0.95 ... 16 bar	-0 ... 16 bar
Ambient temperature	-20 ... 120°C	0 ... 60°C		-10 ... 80°C
Description	<ul style="list-style-type: none"> Stainless steel design For use with food see www.festo.com/sp/npck > tab "Certificates" Fulfills all Clean Design requirements Straight shape Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> Straight shape, T-shape, L-shape, Y-shape Operating media compressed air, vacuum Brass, POM, aluminium or stainless steel 	<ul style="list-style-type: none"> Female hose connector with or without sealing ring Tubing clip to DIN 3017 Operating media compressed air, vacuum Brass or aluminium, steel 	<ul style="list-style-type: none"> Bulkhead quick connector Sealing cap for plastic tube fittings and barbed connectors Multiple distributor Union nut for CK tube fitting Operating media compressed air, vacuum, (water) Aluminium, steel, POM or zinc
→ Page/online	1497	n_070302f	n_cnp	ck

Threaded fittings


			
Type	Threaded fittings NPFC	Blanking plugs B	Adapters NPFV
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, R1/8, R1/4, R3/8, R1/2, R3/4, R1	Male thread G1, G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, M7	G1/4, NPT1/4-18
Pneumatic connection 2	G1/8, G1/4, G3/8, G1/2, G3/4, M5, R1/8, R1/4, R3/8, R1/2, R3/4, R1		G1/4, NPT1/4-18
Operating pressure	-0.95 ... 50 bar		2 ... 8 bar
Operating pressure for entire temperature range			
Ambient temperature	-20 ... 150°C		
Nominal width			6 mm
Description	<ul style="list-style-type: none"> Nickel-plated brass Sleeve Reducing sleeve Extension Double nipple Reducing nipple L-, T-, Y- or X-fitting Operating media compressed air, vacuum 	<ul style="list-style-type: none"> Aluminium, stainless steel With sealing ring 	<ul style="list-style-type: none"> Aluminium Adapter with filter From G1/4 to NPT1/4 or G1/4 Operating media compressed air, vacuum
→ Page/online	1501	1501	npfv

Product overview




Threaded fittings

		
Type	Reducers, sleeves, double nipples D, ESK, FR, G, LJK, QM, QSP10, TJK	Ring pieces, hollow bolts LK, TK, VT
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M3, M5, M7, R1/8, R1/4, R3/8, R1/2	Male thread G1/4, G1/8, G3/8, M5
Pneumatic connection 2	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M3, M5, M7, R1/8, R1/4, R3/8, R1/2	For barbed connector I.D. 3 mm with union nut, 4 mm with union nut, 6 mm with union nut
Operating pressure		
Operating pressure for entire temperature range		0 ... 10 bar
Nominal width		
Ambient temperature	2.6 ... 10.7 mm	
Description	<ul style="list-style-type: none"> • Brass or aluminium • Reducing nipple • Double nipple • Distributor block • Sleeve • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Multiple distributor consisting of hollow bolt VT and ring piece LK or TK • With two to six outlets and one common air feed • Operating media compressed air, vacuum • Galvanised steel
→ Page/online	esk	lk


Click fittings

	
Type	Click fittings NPKA
Pneumatic connection 1	Male thread G1/8
Pneumatic connection 2	For tubing O.D. 6 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar
Nominal width	4 mm
Ambient temperature	-10 ... 60°C
Description	<ul style="list-style-type: none"> • POM, polyamide 66 • Quick and simple tube installation using one hand • Completely plastic • For use with food see www.festo.com/sp/npka -> tab "Certificates" • Operating media compressed air, vacuum, water • Free from copper, fluorine and silicone • Cleanroom-compatible • Easy-to-clean design with few corners and edges
→ Page/online	npka

Pipes





Type	 Plastic pipes PQ-PA	 Pipes PQ-AL	 Plastic-coated metal tubes PM
O.D.	12 ... 28 mm	12 ... 28 mm	6 ... 8 mm
Information on materials - tubing	PA	Wrought aluminium alloy	Wrought aluminium alloy, PE
Temperature-dependent operating pressure	-0.95 ... 15 bar	-0.95 ... 15 bar	-0.95 ... 30 bar
Ambient temperature	-25 ... 75°C	-30 ... 75°C	-29 ... 65°C
Description	<ul style="list-style-type: none"> • Rigid pipe made from high-quality polyamide • Smooth inside wall ensures optimum flow conditions • Operating media compressed air, vacuum, liquid media 	<ul style="list-style-type: none"> • Rigid aluminium pipe • Smooth inside wall ensures optimum flow conditions • Operating media compressed air, vacuum, liquid media 	<ul style="list-style-type: none"> • Polyethylene, aluminium • Can be bent straight and reshaped several times without a pipe-bending device and without being damaged • Resistant to deformation • Operating media compressed air, vacuum
→ Page/online	pq-pa	pq-al	pm

Push-in fittings for piping PQ

Type	 Push-in fittings CQ, CQC, CQH, CQL, CQT
Pneumatic connection 1	Male thread G3/8, G1/2, G3/4, G1, female thread G1/2, push-in sleeve CQ-12, CQ-15, CQ-18, CQ-22, CQ-28, push-in sleeve QS-16, for pipe/tube O.D. 12, 15, 18, 22, 28 mm
Pneumatic connection 2	Female thread G1/2, push-in sleeve CQ-12, CQ-15, CQ-18, CQ-22, CQ-28, QS-12, QS-16, for pipe/tubing O.D. 12 mm, 15 mm, 18 mm, 22 mm, 28 mm
Nominal width	8 ... 24.9 mm
Temperature-dependent operating pressure	-0.95 ... 15 bar
Ambient temperature	-25 ... 75°C
Description	<ul style="list-style-type: none"> • For pipes PQ-PA, PQ-AL and tubing PAN and PUN • Operating media compressed air, vacuum, liquid media • POM
→ Page/online	cq

Product overview



Couplings

				
Type	Quick coupling sockets, quick coupling plugs NPHS-D6, NPHS-S6	Quick coupling sockets, quick coupling plugs KD1, KD2, KD3, KD4, KS1, KS2, KS3, KS4	Multiple connectors KSV, KDVF, KDV	Multi-tube connectors KM
Pneumatic connection			PK-2, PK-3, PK-4, PK-6, for tubing O.D. 3 mm, 4 mm, 6 mm	PK-2, PK-3, PK-4
Pneumatic connection 1	Male thread G1/2, G1/4, G3/8, female thread G1/2, G1/4, G3/8, for plug-in nipple I.D. 9 mm	Male thread M3, M5, G1/8, G1/4, G1/2, G3/8, female thread G1/4, G3/8, G1/2, CK-3, CK-4, CK-6, CK-9, CK13, N6, N-9		
Standard nominal flow rate	875 ... 2083 l/min	44 ... 1350 l/min		
Operating pressure			-0.95 ... 16 bar	-0.95 ... 8 bar
Ambient temperature	-20 ... 80°C	-10 ... 80°C	-10 ... 60°C	-10 ... 60°C
Description	<ul style="list-style-type: none"> Safety coupling Shut-off on one side Metal or plastic releasing sleeve Exhausting of the air on the plug side without having to undo the coupling Combination of coupling and hand slide valve Can be used as an on-off valve 	<ul style="list-style-type: none"> Quick connection coupling for standard applications without safety function Shut off at one or both ends With male or female thread or with barbed fitting or quick connector Nickel-plated brass Operating media compressed air, vacuum 	<ul style="list-style-type: none"> POM, aluminium, brass Multi-plug, multi-socket Terminal plug and terminal socket Operating media compressed air, vacuum 	<ul style="list-style-type: none"> Polymer, brass For max. 22 lines Used as control cabinet outlets Operating media compressed air, vacuum
→ Page/online	1511	1511	ksv	km

Distributors

			
Type	Multiple distributors QSLV, QSQ, QST3	Multiple distributors QSYTF	Distributor blocks FR
Pneumatic connection 1	Male thread G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 6, 8, 10 mm	Male thread G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2	Female thread G1/4, G3/8, G1/2, G3/4
Pneumatic connection 2	For tubing O.D. 4, 6, 8, 10, 12 mm	Female thread G1/8, G1/4, G3/8, G1/2, for tubing O.D. 6, 8, 10, 12 mm	Female thread M3, M5, G1/8, G3/8, G1/2, for tubing O.D. 4 mm, 6 mm
No. of supply lines	1	1	1
No. of outlets	2, 3, 4, 6	3	3, 8, 9, 12
Max. rotational speed			
Description	<ul style="list-style-type: none"> PBT and nickel-plated brass L-shape, T-shape Rotatable 360° Reducing design Operating media compressed air, vacuum, (water) 	<ul style="list-style-type: none"> PBT and nickel-plated brass Y-shape Rotatable 360° Operating media compressed air, vacuum, (water) 	<ul style="list-style-type: none"> Aluminium 4, 8, 9 or 12 connections Operating media compressed air, vacuum
→ Page/online	1519, qst3	qsytf	fr





Distributors

		
Type	Distributors CQD	Rotary distributors GF
Pneumatic connection 1	Female thread G1/2	Male thread G1/8, G1/4, G3/8, G1/2
Pneumatic connection 2	Female thread G1/2	Female thread M5, G1/8, G1/4, G3/8, G1/2
No. of supply lines	1	1
No. of outlets	4	2, 4
Max. rotational speed		300 ... 3000 rpm
Description	<ul style="list-style-type: none"> • POM • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • 4 outlets or 2 axial and radial outlets • Single or multiple rotary distributor • Operating media compressed air, vacuum • Brass, hardened steel
→ Page/online	cq	gf

Protective conduit systems

		
Type	Protective conduits MK, MKG, MKR, MKV	Protective conduit fittings HMZAS, HMZV, MKA, MKGV, MKM, MKRL, MKRS, MKRT, MKRV, MKVM, MKVV, MKY
I.D.	7.5 ... 48 mm	
O.D.	10 ... 56 mm	
Connecting thread		Pg 9, Pg 11, Pg 13.5, Pg 16, Pg 21, Pg 29, Pg 36, Pg 48
Design	Strip-wound metal conduit, internally and externally corrugated all-plastic conduit, separable	
Ambient temperature	-20 ... 100°C	-40 ... 200°C
Description	<ul style="list-style-type: none"> • For protecting pneumatic tubing and electrical cables • Galvanised steel, PA, PP, PVC spring steel • Metal or plastic design • High alternate bending strength 	<ul style="list-style-type: none"> • Installation kit • Junction box • Reducing connector • Protective conduit fitting • Lock nut • Protective conduit connector • Y-distributor • Polymer, polyamide, nickel-plated brass
→ Page/online	mkg	mka

Accessories

				
Type	Sealing material CRO, GWB, O, OK, OL	Pipe and tubing cutters PAN-VOS, ZDS, ZMS, ZR, ZRS	Pipe clamps PQ	Tubing accessories KK, NPAW, PB, PKB, PKS, QSO, SK
Description	<ul style="list-style-type: none"> • Sealing ring • Sealing ring assortment • Thread sealing tape 	<ul style="list-style-type: none"> • Tubing cutter • Disconnecting pliers • Connecting pliers • Pipe cutter • Pipe and tubing cutter 	<ul style="list-style-type: none"> • For pipes with an O.D. of 12 ... 28 mm 	<ul style="list-style-type: none"> • Tubing strap • Spiral wrap for tubing • Tubing support • Multi-tube holder
→ Page/online	1525	Zds, 1525	pq	npaw



Use our reliable and economical tubing series

- + High resistance and long service life
- + Highly flexible and easy to install
- + Colour selection for easier recognition

Tubing > Standard O.D. tubing >
Standard O.D. plastic tubing

PEN
PUN★, PUN-H★
PUN-DUO


Tubing > Standard O.D. tubing >

Standard O.D. plastic tubing

PEN/PUN★ / PUN-H★

 Overview, configuration and ordering
→ www.festo.com/catalogue/pun



 Additional information, support and user documentation
→ www.festo.com/sp/pun



★ Quick ordering of basic designs
→ page 1436, 1438



- + PUN: extremely flexible polyurethane tubing
- + High resistance to stress cracks
- + RoHS-compliant
- + Operating media: compressed air, vacuum
- + Suitable for energy chains

- + PUN-H: extremely flexible polyurethane tubing
- + Suitable for use with food and FDA compliant
- + High resistance to microbes and hydrolysis
- + Operating media: compressed air, vacuum, water
- + Suitable for energy chains

Key features



PUN-DUO/PUN-H-DUO:
Two lengths of plastic tubing are fused together into a tubing pair. To fit it, the paired tubing is separated as required at both ends.

Type	O.D. [mm]	Material	Food-safe	Halogen free	Suitable for energy chains	Approved by the German Technical Control Board (TÜV)	Resistance				Flexibility	Shore hardness
							Hydrolysis	Chemicals	Microbes	UV radiation		
PEN	4, 6, 8, 10, 12, 14, 16	PE	-	■	+++	■	+++	++	++	++ ¹⁾	++	D 52 ±3
PUN	3, 4, 6, 8, 10, 12, 14, 16	TPE-U(PU)	-	■	++	■	+	-	-	++ ¹⁾	+++	D 52 ±3
PUN-DUO	4, 6, 8, 10	TPE-U(PU)	-	■	++	■	+	-	-	+	++	D 52 ±3
PUN-H	2	TPE-U(PU)	-	■	++	-	++	+	++	++ ¹⁾	+++	D 52 ±3
	3, 4, 6, 8, 10, 12, 14, 16	TPE-U(PU)	■	■	++	■	++	+	++	++ ¹⁾	+++	D 52 ±3
PUN-H-DUO	4, 6, 8, 10	TPE-U(PU)	■	■	++	■	++	+	++	+	++	D 52 ±3

+++ Highly suitable
 ++ Suitable
 + Limited suitability (on request)
 - Not suitable

1) Applies to the colour black.

Product range overview

Type	O.D. [mm]	Packaging unit [m]	Product options																	→ Page/ online		
			Colour															TXT	CB		HA	
			SI	TBL	BL	TSW	SW	TGE	GE	TGN	GN	TRT	RT	BR	WS	NT	BS					
PEN	4, 6, 8, 10, 12, 14, 16	50, 100, 200, 300, 400, 500	■	-	■	-	■	-	■	-	■	-	■	-	■	-	■	-	■	■	■	1434
PUN	3, 4, 6, 8, 10, 12, 14, 16	50, 100, 200, 300, 400, 500	■	-	■	-	■	-	■	-	■	-	■	-	■	-	■	-	■	■	■	1435
PUN-DUO	4, 6, 8, 10	50	■	-	-	-	-	-	-	-	-	-	-	-	-	-	■	-	-	-	-	1439
PUN-H	2	50	-	-	-	-	■	-	-	-	-	-	■	-	-	■	-	-	-	-	-	1437
	3, 4, 6, 8, 10, 12, 14, 16	50, 100, 200, 300, 400, 500	■	■	■	■	■	■	■	■	■	■	■	■	■	■	-	■	■	■	-	-
PUN-H-DUO	4, 6, 8, 10	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	■	-	-	-	-	1439

Product options

SI Silver	TGE Translucent yellow	RT Red	TXT Customer-specific tubing inscription (on request)
TBL Translucent blue	GE Yellow	BR Brown	25 Packaging unit 25 m
BL Blue	TGN Translucent green	WS White	CB Cardboard box
TSW Translucent black	GN Green	NT Natural	HA Reel
SW Black	TRT Translucent red	BS Blue/black	

Plastic tubing PEN

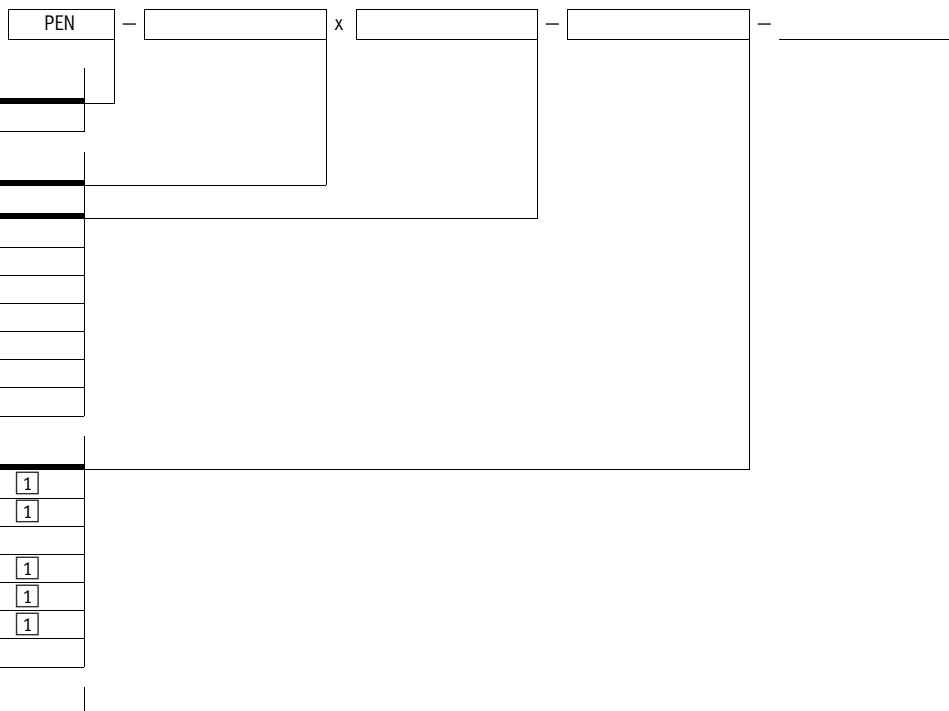
Data sheet

Technical data		Download CAD data → www.festo.com						
O.D.	[mm]	4	6	8	10	12	14	16
I.D.	[mm]	2.7	4	5.7	7	8.4	9.5	10.8
Min. bending radius	[mm]	10	13.5	22.5	23.5	33	45	57.5
Bending radius relevant for flow rate	[mm]	20	26	35	40	58	80	122

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-] Water as per manufacturer's declaration ¹⁾
Temperature-dependent operating pressure	[bar] -0.95 ... +10
Ambient temperature	[°C] -30 ... +60

1) Additional information www.festo.com/sp → Certificates.

Order code



Type	
PEN	Plastic tubing

O.D. [mm]	
	Wall thickness [mm]
4	0.75
6	1
8	1.25
10	1.5
12	1.75
14	2
16	2.5

Colour		
SI	Silver	<input type="checkbox"/>
BL	Blue	<input type="checkbox"/>
SW	Black	<input type="checkbox"/>
GE	Yellow	<input type="checkbox"/>
GN	Green	<input type="checkbox"/>
RT	Red	<input type="checkbox"/>
NT	Natural	<input type="checkbox"/>

Packaging unit [m]		
-	50	<input type="checkbox"/>
100	100	<input type="checkbox"/>
200	200	<input type="checkbox"/>
300	300	<input type="checkbox"/>
400	400	<input type="checkbox"/>
500	500	<input type="checkbox"/>

- 1) Not with O.D. 14
- 2) Only with O.D. 16 and colours SI, BL, SW
- 3) Only with O.D. 12 and colours SI, BL, SW
- 4) Only with O.D. 10 and colours SI, BL, SW
- 5) Only with O.D. 8 and colours SI, BL, SW
- 6) Only with O.D. 4, 6 and colours SI, BL, SW

Order example:

PEN-8x1,25-BL-400
Plastic tubing PEN - O.D. 8 mm - wall thickness 1.25 mm - colour blue - packaging unit 400 m

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or [→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Data sheet

Technical data		Download CAD data → www.festo.com							
O.D.	[mm]	3	4	6	8	10	12	14	16
I.D.	[mm]	2.1	2.6	4	5.7	7	8	9.8	11
Min. bending radius	[mm]	9	8	16	24	28	33	45	45
Bending radius relevant for flow rate	[mm]	12	17	26.5	37	54	62	84	88

Operating conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]	
Temperature-dependent operating pressure	[bar]	-0.95 ... +10
Ambient temperature	[°C]	-35 ... +60

Order code

PUN - x - -

Type		
PUN	Plastic tubing	

O.D. [mm]	Wall thickness [mm]	
3	0.5	
4	0.75	
6	1	
8	1.25	
10	1.5	
12	2	
14	2	
16	2.5	

Colour		
SI	Silver	
BL	Blue	
SW	Black	
GE	Yellow	<input type="checkbox"/>
GN	Green	<input type="checkbox"/>
RT	Red	<input type="checkbox"/>

Packaging unit [m]		
-	50	
100	100	<input type="checkbox"/>
200	200	<input type="checkbox"/>
300	300	<input type="checkbox"/>
400	400	<input type="checkbox"/>
500	500	<input type="checkbox"/>

Not with O.D. 14

Only with O.D. 16 and colours SI, BL, SW

Only with O.D. 12 and colours SI, BL, SW

Only with O.D. 10 and colours SI, BL, SW

Only with O.D. 8 and colours SI, BL, SW

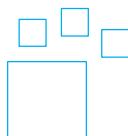
Only with O.D. 3, 4, 6 and colours SI, BL, SW

Order example:

PUN-14X2-SI

Plastic tubing PUN - O.D. 14 mm - wall thickness 2 mm - colour silver - packaging unit 50 m

Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

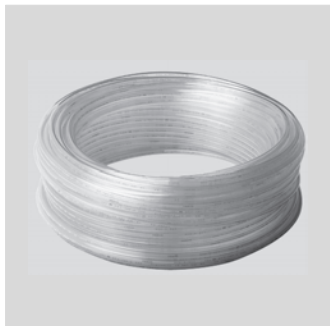
Enter the type code in the search field.

Tubing > Standard O.D. tubing >

Plastic tubing PUN ★

★ Quick ordering ¹⁾

PUN



O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Bending radius relevant for flow rate [mm]	Colour	Part no.	Type	PU ²⁾
3	2.1	9	21	Silver	152583	PUN-3x0,5-SI	50
				Blue	159660	PUN-3x0,5-BL	50
				Black	159661	PUN-3x0,5-SW	50
4	2.6	8	17	Silver	152584	PUN-4x0,75-SI	50
				Blue	159662	PUN-4x0,75-BL	50
				Black	159663	PUN-4x0,75-SW	50
6	4	16	26.5	Silver	152586	PUN-6x1-SI	50
				Blue	159664	PUN-6x1-BL	50
				Black	159665	PUN-6x1-SW	50
8	5.7	24	37	Silver	152587	PUN-8x1,25-SI	50
				Blue	159666	PUN-8x1,25-BL	50
				Black	159667	PUN-8x1,25-SW	50
10	7	28	54	Silver	152588	PUN-10x1,5-SI	50
				Blue	159668	PUN-10x1,5-BL	50
				Black	159669	PUN-10x1,5-SW	50
12	8	33	62	Silver	152589	PUN-12x2-SI	50
				Blue	159670	PUN-12x2-BL	50
				Black	159671	PUN-12x2-SW	50
14	9.8	45	84	Silver	570389	PUN-14x2-SI	50
				Blue	570390	PUN-14x2-BL	50
				Black	570391	PUN-14x2-SW	50
16	11	45	88	Silver	152590	PUN-16x2,5-SI	50
				Blue	159672	PUN-16x2,5-BL	50
				Black	159673	PUN-16x2,5-SW	50

1) All products in this table are easy to select and quick to order.

2) Packaging unit in metres

Data sheet

Technical data		Download CAD data → www.festo.com								
O.D.	[mm]	2	3	4	6	8	10	12	14	16
I.D.	[mm]	1.2	2.1	2.6	4	5.7	7	8	9.8	11
Min. bending radius	[mm]	5	6	8	10	21	28	33	38	38
Bending radius relevant for flow rate	[mm]	8	12	16	26	37	52	62	78	88

Operating conditions										
O.D.	[mm]	2	3	4	6	8	10	12	14	16
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-] – Water as per manufacturer's declaration ¹⁾								
Temperature-dependent operating pressure	[bar]	–0.95 ... +10								
Ambient temperature	[°C]	–35 ... +60								
Food-safe ¹⁾		– See supplementary material information								

1) Additional information www.festo.com/sp → Certificates.

Order code

		PUN	–	H	–		x		–		–	
Type												
PUN	Plastic tubing											
Alternative material properties												
H	Hydrolysis-resistant											
O.D. [mm]												
	Wall thickness [mm]											
2	0.4											
3	0.5											
4	0.75											
6	1											
8	1.25											
10	1.5											
12	2											
14	2											
16	2.5											
Colour												
SI	Silver	<input type="checkbox"/>	<input type="checkbox"/>									
TBL	Translucent blue	<input type="checkbox"/>										
BL	Blue	<input type="checkbox"/>										
TSW	Translucent black	<input type="checkbox"/>										
SW	Black											
TGE	Translucent yellow	<input type="checkbox"/>										
GE	Yellow	<input type="checkbox"/>	<input type="checkbox"/>									
TGN	Translucent green	<input type="checkbox"/>										
GN	Green	<input type="checkbox"/>	<input type="checkbox"/>									
TRT	Translucent red	<input type="checkbox"/>										
RT	Red	<input type="checkbox"/>										
NT	Natural											
Packaging unit [m]												
–	50											
100	100	<input type="checkbox"/>										
200	200	<input type="checkbox"/>										
300	300	<input type="checkbox"/>										
400	400	<input type="checkbox"/>										
500	500	<input type="checkbox"/>										

1 Not with O.D. 2

2 Not with O.D. 14

3 Not with O.D. 2, 3, 14, 16

4 Only with O.D. 16 and colours SI, BL, SW, NT

5 Only with O.D. 12 and colours SI, TBL, BL, TSW, SW, TGE, TGN, TRT, NT

6 Only with O.D. 10 and colours SI, TBL, BL, TSW, SW, TGE, TGN, TRT, NT

7 Only with O.D. 8 and colours SI, TBL, BL, TSW, SW, TGE, TGN, TRT, NT

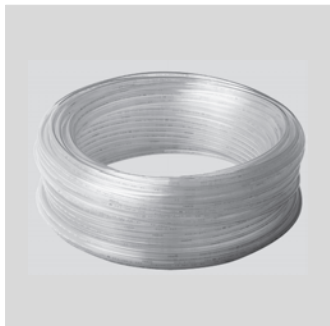
8 Only with O.D. 3, 4, 6 and colours SI, TBL, BL, TSW, SW, TGE, TGN, TRT, NT

Tubing > Standard O.D. tubing >

Plastic tubing PUN-H ★

★ Quick ordering ¹⁾

PUN-H



O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Bending radius relevant for flow rate [mm]	Colour	Part no.	Type	PU ²⁾
2	1.2	5	8	Natural	133038	PUN-H-2x0,4-NT	50
				Black	133039	PUN-H-2x0,4-SW	50
3	2.1	6	12	Natural	197375	PUN-H-3x0,5-NT	50
				Blue	197382	PUN-H-3x0,5-BL	50
				Black	197389	PUN-H-3x0,5-SW	50
				Silver	558277	PUN-H-3x0,5-SI	50
4	2.6	8	16	Natural	197376	PUN-H-4x0,75-NT	50
				Translucent blue	8048671	PUN-H-4x0,75-TBL	50
				Blue	197383	PUN-H-4x0,75-BL	50
				Black	197390	PUN-H-4x0,75-SW	50
				Silver	558278	PUN-H-4x0,75-SI	50
6	4	10	26	Natural	197377	PUN-H-6x1-NT	50
				Translucent blue	8048681	PUN-H-6x1-TBL	50
				Blue	197384	PUN-H-6x1-BL	50
				Black	197391	PUN-H-6x1-SW	50
				Silver	558279	PUN-H-6x1-SI	50
8	5.7	21	37	Natural	197378	PUN-H-8x1,25-NT	50
				Translucent blue	8048691	PUN-H-8x1,25-TBL	50
				Blue	197385	PUN-H-8x1,25-BL	50
				Black	197392	PUN-H-8x1,25-SW	50
				Silver	558280	PUN-H-8x1,25-SI	50
10	7	28	52	Natural	197379	PUN-H-10x1,5-NT	50
				Translucent blue	8048701	PUN-H-10x1,5-TBL	50
				Blue	197386	PUN-H-10x1,5-BL	50
				Black	197393	PUN-H-10x1,5-SW	50
				Silver	558281	PUN-H-10x1,5-SI	50
12	8	33	62	Natural	197380	PUN-H-12x2-NT	50
				Translucent blue	8048711	PUN-H-12x2-TBL	50
				Blue	197387	PUN-H-12x2-BL	50
				Black	197394	PUN-H-12x2-SW	50
				Silver	558282	PUN-H-12x2-SI	50
14	9.8	38	78	Blue	570386	PUN-H-14x2-BL	50
				Black	570387	PUN-H-14x2-SW	50
16	11	38	88	Natural	197381	PUN-H-16x2,5-NT	50
				Blue	197388	PUN-H-16x2,5-BL	50
				Black	197395	PUN-H-16x2,5-SW	50
				Silver	558283	PUN-H-16x2,5-SI	50

1) All products in this table are easy to select and quick to order.

2) Packaging unit in metres

Data sheet

Technical data		Download CAD data → www.festo.com							
Type		PUN-DUO				PUN-H-DUO			
O.D.	[mm]	4	6	8	10	4	6	8	10
I.D.	[mm]	2.6	4	5.7	7	2.6	4	5.7	7
Min. bending radius	[mm]	8	16	24	28	8	10	21	28
Bending radius relevant for flow rate	[mm]	17	26.5	37	54	16	26	37	52

Operating conditions		PUN-DUO				PUN-H-DUO			
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]							
		-				Water as per manufacturer's declaration ¹⁾			
Temperature-dependent operating pressure	[bar]	-0.95 ... +10							
Ambient temperature	[°C]	-35 ... +60							
Food-safe ¹⁾		-				See supplementary material information			

1) Additional information www.festo.com/sp → Certificates.

Order code

		PUN	-		x		-	DUO	-	
Type										
PUN	Plastic tubing									
Alternative material properties										
-	Standard									
H	Hydrolysis-resistant									
O.D. [mm]										
	Wall thickness [mm]									
4	0.75									
6	1									
8	1.25									
10	1.5									
Tubing type										
DUO	DUO tubing									
Colour										
PUN										
SI	Silver									
BS	Blue/black									
PUN-H										
-	Blue/black									

Order example:

PUN-H-6x1-DUO

Plastic tubing PUN, hydrolysis-resistant - O.D. 6 mm - wall thickness 1 mm - duo tubing - colour blue/black

Ordering – Product options

<input type="checkbox"/>	Configurable product	This product and all its options can be ordered using the configurator.	The configurator can be found under Products on the DVD or → www.festo.com/catalogue/...	Enter the type code in the search field.
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QSM, mini



QS, standard

The versatile standard fitting for maximum flexibility

- + Extremely easy assembly
- + Extremely wide choice of variants
- + Minimum leakage

Fittings > Push-in fittings >

Push-in fittings

QS ★ / QSM ★

QS, standard

QSM, mini


Fittings > Push-in fittings >

Push-in fittings

QS ★ / QSM ★

 Overview, configuration and ordering
→ www.festo.com/catalogue/qs



 Additional information, support and user documentation
→ www.festo.com/sp/qs



★ Quick ordering of basic designs
→ page QSM: 1445 ff., QS: 1452 ff.



- + QSM, mini: compact for maximum component density in confined spaces
- + QS, standard: wide selection for maximum flexibility in standard applications
- + Male or female thread with external or internal hex
- + Resistant to pressure: economical for pneumatic installations up to 14 bar
- + Suitable for use with water as an operating medium

Key features

QSM, mini series



Miniature push-in fittings for maximum component density in confined spaces. Tubing O.D. of 2, 3, 4 and 6 mm with connecting threads M3, M5, M6, M7, R1/8 and G1/8.

QS, standard series



Wide selection of push-in fittings. Tubing O.D. of 4, 6, 8, 10, 12, 16 and 22 mm with connecting threads R1/8 ... R1/2 and G1/8 ... G3/4.

Product range overview

Type	Version	Design	Pneumatic connection 1					Pneumatic connection 2		→ Page/online
			M thread	R thread	G thread	Tubing O.D.	Push-in sleeve	Tubing O.D.		
QSM, mini series										
QSM	Push-in fitting	Straight	■	■	■	-	-	■	1445	
	Push-in connector		-	-	-	■	■	■	1446	
QSMS	Push-in bulkhead connector		-	-	-	■	-	■		
QSMF	Push-in fitting		■	-	-	-	-	■	1447	
QSMF	Push-in fitting	■	-	-	-	-	■	qsmp		
QSMC	Push-in cap	Straight	-	-	-	■	-	-	1447	
QSMC	Blanking plug		-	-	-	-	■	-		
QSMC	Push-in fitting	L-shape	■	■	■	-	-	■	1448	
	Push-in connector		-	-	-	■	■	■	1449	
QSMC	Push-in fitting	L-shape	■	-	-	-	-	■		
QSMC	Push-in connector		-	-	-	■	■	■	1449	
QSMC	Push-in fitting	T-shape	■	■	■	-	-	■	1450	
	Push-in connector		-	-	-	■	-	■		
QSMC	Push-in fitting	T-shape	■	■	■	-	-	■		
QSMC	Push-in connector		-	-	-	■	-	■	1450	
QSMC	Push-in fitting	X-shape	-	-	-	■	-	■	qsmx	
QSMC	Push-in connector		-	-	-	-	-	■		
QSMC	Push-in connector	Y-shape	-	-	-	■	-	■	1451	
QS, standard series										
QS	Push-in fitting	Straight	-	■	■	-	-	■	1452	
	Push-in connector		-	-	-	■	-	■	1453	
	Push-in connector		-	-	-	-	■	■	1454	
QSS	Push-in bulkhead connector	Straight	-	-	-	■	-	■		
QSF	Push-in fitting		-	-	■	-	-	■	1455	
QSSF	Push-in bulkhead fitting		-	-	■	-	-	■	qssf	
QSC	Push-in cap	Straight	-	-	-	■	-	-	1455	
	Blanking plug		-	-	-	-	■	-		
QSH	Push-in sleeve	Straight	-	-	-	-	■	-	qsh	
QSL	Push-in fitting		-	■	■	-	-	■	1456	
QSL	Push-in connector	L-shape	-	-	-	■	■	■	1458	
	Push-in fitting		-	-	■	-	-	■		
QSLV	Push-in fitting	L-shape	■	■	■	-	-	■	1459	
QST	Push-in fitting		T-shape	-	■	■	-	-	■	1461
QST	Push-in connector	-		-	-	■	-	■	1462	
QSTF	Push-in fitting	T-shape	-	■	■	-	-	■		
QSTL	Push-in fitting		-	■	■	-	-	■	1463	
QSW	Push-in fitting	W-shape	-	■	-	-	-	■		
	Push-in connector		-	-	-	-	■	■	1464	
QSX	Push-in connector	X-shape	-	-	-	■	-	■	qsx	
QSY	Push-in fitting	Y-shape	■	■	■	-	-	■	1464	
	Push-in connector		-	-	-	■	■	■	1465	
QSYL	Push-in fitting	Y-shape	-	■	■	-	-	■	1466	
QSYLV	Push-in fitting		-	■	■	-	-	■	qsyvlv	

Push-in fittings QS

Data sheet

Operating conditions		QSM	QS
Type			
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]	
		-	Water as per manufacturer's declaration ¹⁾
Note on operating/pilot medium		Operation with lubricated medium possible	
Operating pressure [bar] for entire temperature range		-0.95 ... +6	
Temperature-dependent operating pressure [bar]		-0.95 ... +14	
Ambient temperature [°C]		-10 ... +80	

1) Additional information www.festo.com/sp → Certificates.

Materials			
Type	QSM	QSM...-M3	QS
Housing	Nickel-plated brass		
	PBT		
Threaded coupling	Nickel-plated brass	Nickel-plated steel	Nickel-plated brass
Releasing ring	POM		
Tube retaining claw	High-alloy stainless steel		
Tubing seal	NBR		

Ordering data

Push-in fitting QSM

Male thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M3	2	0.9	133027	QSM-M3-2	10
	3	0.9	★ 153301	QSM-M3-3	10
	4	1.1	★ 153303	QSM-M3-4	10
M5	2	1.1	133028	QSM-M5-2	10
	3	2	★ 153302	QSM-M5-3	10
	4	2.2	★ 153304	QSM-M5-4	10
	6	2.1	★ 153306	QSM-M5-6	10
M6	6	2.8	★ 132600	QSM-M6-6	10
R thread					
R $\frac{3}{8}$	4	2.9	★ 153305	QSM-1/8-4	10
	6	4.5	★ 153307	QSM-1/8-6	10
G thread with sealing ring					
G $\frac{3}{8}$	4	2.9	★ 186264	QSM-G1/8-4	10
	6	2.8	★ 186265	QSM-G1/8-6	10

Push-in fitting QSM-...-I

Male thread with internal hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M3	2	1.1	133026	QSM-M3-2-I	10
	3	1.6	★ 153312	QSM-M3-3-I	10
	4	1.5	★ 153314	QSM-M3-4-I	10
M5	3	1.9	★ 153313	QSM-M5-3-I	10
	4	2.5	★ 153315	QSM-M5-4-I	10
	6	2.6	★ 153317	QSM-M5-6-I	10
M7	4	3.1	★ 153319	QSM-M7-4-I	10
	6	4.1	★ 153321	QSM-M7-6-I	10
R thread					
R $\frac{3}{8}$	4	3.1	★ 153316	QSM-1/8-4-I	10
	6	4.1	★ 153318	QSM-1/8-6-I	10
G thread with sealing ring					
G $\frac{3}{8}$	4	3.1	★ 186266	QSM-G1/8-4-I	10
	6	4.1	★ 186267	QSM-G1/8-6-I	10

1) Packaging unit per part

Fittings > Push-in fittings >

Push-in fittings QSM ★ mini series

Ordering data

Push-in connector QSM



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
3	3	1.9	★ 153323	QSM-3	10
4	4	2.6	★ 153324	QSM-4	10
6	6	3.7	★ 153325	QSM-6	10
Reducing					
3	2	1.1	133029	QSM-3-2	10
4	3	1.7	★ 153326	QSM-4-3	10
6	4	2.7	★ 153327	QSM-6-4	10

Push-in connector QSM-...H

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2 Tubing O.D. [mm]				
QS-3	2	1.1	133035	QSM-3H-2	10
QS-4	3	1.7	★ 153328	QSM-4H-3	10
QS-6	4	2.6	★ 153329	QSM-6H-4	10

Push-in bulkhead connector QSMS



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
3	3	1.7	★ 153375	QSMS-3	10
4	4	2.2	★ 153376	QSMS-4	10
6	6	3.7	★ 153377	QSMS-6	10

1) Packaging unit per part

Ordering data

Push-in fitting QSMF

Female thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Female thread	2 Tubing O.D. [mm]				
M3	3	1.3	153308	QSMF-M3-3	10
	4	2.1	153310	QSMF-M3-4	10
M5	3	1.9	153309	QSMF-M5-3	10
	4	1.8	153311	QSMF-M5-4	10

Push-in cap QSMC



Pneumatic connection		Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]				
3		153381	QSMC-3	10

Blanking plug QSMC-...H



Pneumatic connection		Part no.	Type	PU ¹⁾
1 Push-in sleeve				
QS-2		133036	QSMC-2H	10
QS-3		153382	QSMC-3H	10

1) Packaging unit per part

Fittings > Push-in fittings >

Push-in fittings QSM ★ mini series

Ordering data

Push-in L-fitting QSML

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M3	2	0.8	133030	QSML-M3-2	10
	3	0.8	★ 153330	QSML-M3-3	10
	4	1.3	★ 153332	QSML-M3-4	10
M5	2	0.9	133031	QSML-M5-2	10
	3	1.5	★ 153331	QSML-M5-3	10
	4	1.7	★ 153333	QSML-M5-4	10
	6	2.1	★ 153335	QSML-M5-6	10
M7	4	2	★ 186352	QSML-M7-4	10
	6	2.4	★ 186353	QSML-M7-6	10
R thread					
R1/8	4	2.5	★ 153334	QSML-1/8-4	10
	6	3.3	★ 153336	QSML-1/8-6	10
G thread with sealing ring					
G1/8	4	2.5	★ 186268	QSML-G1/8-4	10
	6	3.3	★ 186269	QSML-G1/8-6	10

Push-in L-fitting, long QSMLL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M3	2	0.8	133032	QSMLL-M3-2	10
	3	0.9	153337	QSMLL-M3-3	10
	4	1.1	153338	QSMLL-M3-4	10
M5	2	0.9	133033	QSMLL-M5-2	10
	3	1.5	130838	QSMLL-M5-3	10
	4	2	153339	QSMLL-M5-4	10
	6	2	153341	QSMLL-M5-6	10
M7	4	2	186354	QSMLL-M7-4	10
	6	2.4	186355	QSMLL-M7-6	10
R thread					
R1/8	4	2.3	153340	QSMLL-1/8-4	10
	6	3.1	153342	QSMLL-1/8-6	10
G thread with sealing ring					
G1/8	4	2.3	186270	QSMLL-G1/8-4	10
	6	3.1	186271	QSMLL-G1/8-6	10

1) Packaging unit per part

Ordering data

Push-in L-connector QSML



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
3	3	1.7	★ 153343	QSML-3	10
4	4	2.5	★ 153344	QSML-4	10
6	6	3.4	★ 153345	QSML-6	10

Push-in L-connector QSML-...H with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2 Tubing O.D. [mm]				
QS-3	3	1.2	★ 153346	QSML-3H	10
QS-4	4	1.9	★ 153347	QSML-4H	10
QS-6	6	3.2	★ 153348	QSML-6H	10
Reducing					
QS-4	3	1.7	★ 153349	QSML-4H-3	10
QS-6	4	1.9	★ 153350	QSML-6H-4	10

Push-in L-fitting QSMLV-...-I

Male thread with internal hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	3	1.7	130830	QSMLV-M5-3-I	10
	4	1.8	130831	QSMLV-M5-4-I	10
M7	4	1.9	130832	QSMLV-M7-4-I	10
	6	1.8	130833	QSMLV-M7-6-I	10

1) Packaging unit per part

Push-in fittings QSM ★ mini series

Ordering data

Push-in T-fitting QSMT

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M3	3	0.9	153351	QSMT-M3-3	10
	4	1.3	153353	QSMT-M3-4	10
M5	3	1.6	153352	QSMT-M5-3	10
	4	2.2	153354	QSMT-M5-4	10
	6	2.1	153356	QSMT-M5-6	10
R thread					
R1/8	4	2.4	153355	QSMT-1/8-4	10
	6	3.3	153357	QSMT-1/8-6	10
G thread with sealing ring					
G1/8	4	2.4	186272	QSMT-G1/8-4	10
	6	3.3	186273	QSMT-G1/8-6	10

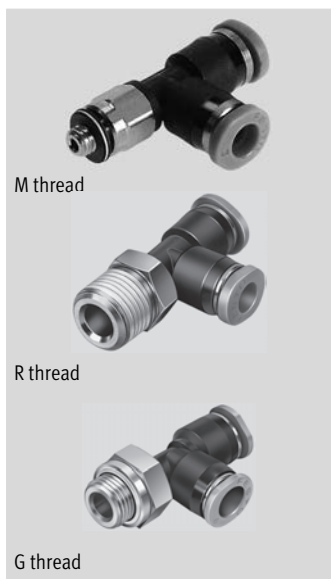
Push-in T-connector QSMT



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
2	2	0.9	133034	QSMT-2	10
3	3	1.6	★ 153365	QSMT-3	10
4	4	2.4	★ 153366	QSMT-4	10
6	6	3.4	★ 153367	QSMT-6	10
Reducing					
4	3	1.7	★ 153368	QSMT-4-3	10
6	4	2.6	★ 153369	QSMT-6-4	10

Push-in T-fitting QSMTL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M3	3	0.9	153358	QSMTL-M3-3	10
	4	1.1	153360	QSMTL-M3-4	10
M5	3	1.7	153359	QSMTL-M5-3	10
	4	1.6	153361	QSMTL-M5-4	10
	6	1.7	153363	QSMTL-M5-6	10
R thread					
R1/8	4	2.4	153362	QSMTL-1/8-4	10
	6	3.3	153364	QSMTL-1/8-6	10
G thread with sealing ring					
G1/8	4	2.4	186274	QSMTL-G1/8-4	10
	6	3.3	186275	QSMTL-G1/8-6	10

1) Packaging unit per part

Ordering data

Push-in Y-connector QSMY



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
2	2	0.9	133037	QSMY-2	10
3	3	1.6	★ 153370	QSMY-3	10
4	4	1.7	★ 153371	QSMY-4	10
6	6	2.9	★ 153372	QSMY-6	10
2 reducing outlets					
4	3	1.6	★ 153373	QSMY-4-3	10
6	4	2.3	★ 153374	QSMY-6-4	10

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in fitting QS

Male thread with external hex



Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]					
R thread						
R ¹ / ₈	4	3	★	153001	QS-1/8-4	10
	6	5	★	153002	QS-1/8-6	10
	8	6	★	153004	QS-1/8-8	10
	10	6	★	190643	QS-1/8-10	10
R ¹ / ₄	4	3	★	190644	QS-1/4-4	10
	6	5	★	153003	QS-1/4-6	10
	8	7	★	153005	QS-1/4-8	10
	10	8.5	★	153007	QS-1/4-10	10
	12	8.5	★	164980	QS-1/4-12	10
R ³ / ₈	6	5	★	190645	QS-3/8-6	10
	8	7	★	153006	QS-3/8-8	10
	10	9	★	153008	QS-3/8-10	10
	12	11	★	153009	QS-3/8-12	10
	16	11	★	164957	QS-3/8-16	1
R ¹ / ₂	10	9	★	190646	QS-1/2-10	1
	12	11	★	153010	QS-1/2-12	1
	16	13	★	153011	QS-1/2-16	1
G thread with sealing ring						
G ¹ / ₈	4	3	★	186095	QS-G1/8-4	10
	6	5	★	186096	QS-G1/8-6	10
	8	6	★	186098	QS-G1/8-8	10
G ¹ / ₄	6	5	★	186097	QS-G1/4-6	10
	8	7	★	186099	QS-G1/4-8	10
	10	8.5	★	186101	QS-G1/4-10	10
	12	8.5	★	186350	QS-G1/4-12	10
G ³ / ₈	8	7	★	186100	QS-G3/8-8	10
	10	9	★	186102	QS-G3/8-10	10
	12	11	★	186103	QS-G3/8-12	10
	16	11	★	186347	QS-G3/8-16	1
G ¹ / ₂	12	11	★	186104	QS-G1/2-12	1
	16	13	★	186105	QS-G1/2-16	1

1) Packaging unit per part

Ordering data

Push-in fitting QS-...-I

Male thread with internal hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R $\frac{1}{8}$	4	2.6	★ 153012	QS-1/8-4-I	10
	6	4.2	★ 153013	QS-1/8-6-I	10
	8	5.3	★ 153015	QS-1/8-8-I	10
	10	5.3	★ 190647	QS-1/8-10-I	10
R $\frac{1}{4}$	6	4.2	★ 153014	QS-1/4-6-I	10
	8	6.3	★ 153016	QS-1/4-8-I	10
	10	6.3	★ 153018	QS-1/4-10-I	10
	12	6.3	★ 190649	QS-1/4-12-I	10
R $\frac{3}{8}$	8	6.3	★ 153017	QS-3/8-8-I	10
	10	6.3	★ 153019	QS-3/8-10-I	10
	12	8.4	★ 153020	QS-3/8-12-I	10
R $\frac{1}{2}$	10	6.3	★ 190648	QS-1/2-10-I	1
	12	8.4	★ 153021	QS-1/2-12-I	1
G thread with sealing ring					
G $\frac{1}{8}$	4	2.6	★ 186106	QS-G1/8-4-I	10
	6	4.2	★ 186107	QS-G1/8-6-I	10
	8	5.3	★ 186109	QS-G1/8-8-I	10
	10	5.3	★ 132999	QS-G1/8-10-I	10
G $\frac{1}{4}$	6	4.2	★ 186108	QS-G1/4-6-I	10
	8	6.3	★ 186110	QS-G1/4-8-I	10
	10	7.3	★ 186112	QS-G1/4-10-I	10
G $\frac{3}{8}$	8	6.3	★ 186111	QS-G3/8-8-I	10
	10	7.3	★ 186113	QS-G3/8-10-I	10
	12	8.4	★ 186114	QS-G3/8-12-I	10
G $\frac{1}{2}$	12	8.4	★ 186115	QS-G1/2-12-I	1

Push-in connector QS



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2.6	★ 153031	QS-4	10
6	6	4	★ 153032	QS-6	10
8	8	5	★ 153033	QS-8	10
10	10	6.7	★ 153034	QS-10	10
12	12	8.7	★ 153035	QS-12	10
16	16	13.7	★ 153036	QS-16	1
Reducing					
6	4	2.6	★ 153037	QS-6-4	10
8	4	2.3	★ 130606	QS-8-4	10
	6	4	★ 153038	QS-8-6	10
10	6	3.7	★ 130607	QS-10-6	10
	8	5	★ 153039	QS-10-8	10
12	8	5.2	★ 130608	QS-12-8	10
	10	6.7	★ 153040	QS-12-10	10

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in connector QS-...H

with push-in sleeve



Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2 Tubing O.D. [mm]					
QS-6	4	2.5	★	153041	QS-6H-4	10
QS-8	4	2.4	★	130622	QS-8H-4	10
	6	3.8	★	153042	QS-8H-6	10
QS-10	6	3.8	★	130623	QS-10H-6	10
	8	5.4	★	153043	QS-10H-8	10
QS-12	6	3.8	★	132981	QS-12H-6	10
	8	5.4	★	130624	QS-12H-8	10
	10	6.3	★	153044	QS-12H-10	10

Push-in bulkhead connector QSS



With fixed collar

Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]					
4	4	3	★	153157	QSS-4	10
6	6	5	★	153158	QSS-6	10
8	8	7	★	153159	QSS-8	10
10	10	9	★	153160	QSS-10	10
12	12	11	★	153161	QSS-12	10
With fixed collar						
4	4	2.6		193950	QSS-4-F	10
6	6	4		193951	QSS-6-F	10
8	8	5.5	★	130642	QSS-8-F	10
10	10	6.5	★	130643	QSS-10-F	10
12	12	7.5	★	130644	QSS-12-F	10

1) Packaging unit per part

Ordering data

Push-in fitting QSF

Female thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Female thread	2 Tubing O.D. [mm]				
G ¹ / ₈	4	3	★ 153022	QSF-1/8-4-B	10
	6	5	★ 153023	QSF-1/8-6-B	10
	8	7	★ 153025	QSF-1/8-8-B	10
G ¹ / ₄	4	3	★ 190650	QSF-1/4-4-B	10
	6	5	★ 153024	QSF-1/4-6-B	10
	8	7	★ 153026	QSF-1/4-8-B	10
	10	9	★ 153028	QSF-1/4-10-B	10
	12	11	★ 190651	QSF-1/4-12-B	10
G ³ / ₈	6	5	★ 190652	QSF-3/8-6-B	10
	8	7	★ 153027	QSF-3/8-8-B	10
	10	9	★ 153029	QSF-3/8-10-B	10
	12	11	★ 153030	QSF-3/8-12-B	10
G ¹ / ₂	12	11	★ 190653	QSF-1/2-12-B	1
	16	15	★ 190654	QSF-1/2-16-B	1

Push-in cap QSC



Pneumatic connection		Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2			
4		★ 153262	QSC-4	10
6		★ 153263	QSC-6	10
8		★ 153264	QSC-8	10
10		★ 153265	QSC-10	10
12		★ 153266	QSC-12	10

Blanking plug QSC-...H



Pneumatic connection		Part no.	Type	PU ¹⁾
1 Push-in sleeve	2			
QS-4		★ 153267	QSC-4H	10
QS-6		★ 153268	QSC-6H	10
QS-8		★ 153269	QSC-8H	10
QS-10		★ 153270	QSC-10H	10
QS-12		★ 153271	QSC-12H	10
QS-16		★ 153272	QSC-16H	1

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in L-fitting QSL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]					
R thread						
R ³ / ₈	4	2.8	★	153045	QSL-1/8-4	10
	6	4.2	★	153046	QSL-1/8-6	10
	8	6	★	153048	QSL-1/8-8	10
	10	6	★	190658	QSL-1/8-10	10
R ¹ / ₄	4	2.8	★	190659	QSL-1/4-4	10
	6	4.3	★	153047	QSL-1/4-6	10
	8	6.7	★	153049	QSL-1/4-8	10
	10	8	★	153051	QSL-1/4-10	10
	12	8	★	164981	QSL-1/4-12	10
R ³ / ₈	6	4.3	★	190660	QSL-3/8-6	10
	8	6.7	★	153050	QSL-3/8-8	10
	10	8.3	★	153052	QSL-3/8-10	10
	12	10	★	153053	QSL-3/8-12	10
	16	11	★	164958	QSL-3/8-16	1
R ¹ / ₂	10	8.3	★	190661	QSL-1/2-10	1
	12	10.3	★	153054	QSL-1/2-12	1
	16	13	★	153055	QSL-1/2-16	1
G thread with sealing ring						
G ¹ / ₈	4	2.8	★	186116	QSL-G1/8-4	10
	6	4.2	★	186117	QSL-G1/8-6	10
	8	6	★	186119	QSL-G1/8-8	10
G ¹ / ₄	6	4.3	★	186118	QSL-G1/4-6	10
	8	6.7	★	186120	QSL-G1/4-8	10
	10	8	★	186122	QSL-G1/4-10	10
	12	8	★	186351	QSL-G1/4-12	10
G ³ / ₈	8	6.7	★	186121	QSL-G3/8-8	10
	10	8.3	★	186123	QSL-G3/8-10	10
	12	10	★	186124	QSL-G3/8-12	10
	16	11	★	186348	QSL-G3/8-16	1
G ¹ / ₂	12	10.3	★	186125	QSL-G1/2-12	1
	16	13	★	186126	QSL-G1/2-16	1

1) Packaging unit per part

Ordering data

Push-in L-fitting, long QSLL

Male thread with external hex, rotatable



R thread

Pneumatic connection		Nominal width	Part no.	Type	PU ¹⁾
1	2	[mm]			
Male thread	Tubing O.D. [mm]				
R thread					
R $\frac{1}{8}$	4	2.8	★ 153076	QSLL-1/8-4	10
	6	4.3	★ 153077	QSLL-1/8-6	10
	8	6	★ 153079	QSLL-1/8-8	10
R $\frac{1}{4}$	4	2.8	★ 190662	QSLL-1/4-4	10
	6	4.3	★ 153078	QSLL-1/4-6	10
	8	6.7	★ 153080	QSLL-1/4-8	10
	10	8	★ 153082	QSLL-1/4-10	10
R $\frac{3}{8}$	6	4.3	★ 190663	QSLL-3/8-6	10
	8	6.7	★ 153081	QSLL-3/8-8	10
	10	8.3	★ 153083	QSLL-3/8-10	10
	12	10	★ 153084	QSLL-3/8-12	10
R $\frac{1}{2}$	10	8.3	★ 190664	QSLL-1/2-10	1
	12	10.3	★ 153085	QSLL-1/2-12	1
G thread with sealing ring					
G $\frac{1}{8}$	4	2.8	186127	QSLL-G1/8-4	10
	6	4.3	186128	QSLL-G1/8-6	10
	8	6	186130	QSLL-G1/8-8	10
G $\frac{1}{4}$	6	4.3	186129	QSLL-G1/4-6	10
	8	6.7	186131	QSLL-G1/4-8	10
	10	8	186133	QSLL-G1/4-10	10
	12	8	132596	QSLL-G1/4-12	1
G $\frac{3}{8}$	8	6.7	186132	QSLL-G3/8-8	10
	10	8.3	186134	QSLL-G3/8-10	10
	12	10	186135	QSLL-G3/8-12	10
G $\frac{1}{2}$	12	10.3	186136	QSLL-G1/2-12	1
	16	13	190665	QSLL-G1/2-16	1

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in L-connector QSL



Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]					
4	4	2.3	★	153070	QSL-4	10
6	6	3.6	★	153071	QSL-6	10
8	8	4.6	★	153072	QSL-8	10
10	10	6.2	★	153073	QSL-10	10
12	12	7.7	★	153074	QSL-12	10
16	16	10.8	★	153075	QSL-16	1

Push-in L-connector QSL-...H with push-in sleeve



Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2 Tubing O.D. [mm]					
QS-4	4	2	★	153056	QSL-4H	10
QS-6	6	3.2	★	153057	QSL-6H	10
QS-8	8	4.7	★	153058	QSL-8H	10
QS-10	10	5.7	★	153059	QSL-10H	10
QS-12	12	6.8	★	153060	QSL-12H	10
Reducing						
QS-6	4	2.4	★	153061	QSL-6H-4	10
QS-8	6	3.5	★	153062	QSL-8H-6	10
QS-10	8	4.9	★	153063	QSL-10H-8	10
QS-12	10	6.1	★	153064	QSL-12H-10	10
Long push-in sleeve						
QS-4	4	2	★	153065	QSL-4HL	10
QS-6	6	3.1	★	153066	QSL-6HL	10
QS-8	8	4.5	★	153067	QSL-8HL	10
QS-10	10	5.6	★	153068	QSL-10HL	10
QS-12	12	6.7	★	153069	QSL-12HL	10

Push-in L-fitting QSLF

Female thread with external hex



Pneumatic connection		Nominal width [mm]	★	Part no.	Type	PU ¹⁾
1 Female thread	2 Tubing O.D. [mm]					
G thread						
G ³ / ₈	4	2.8	★	153273	QSLF-1/8-4-B	10
	6	4.2	★	153274	QSLF-1/8-6-B	10
	8	6	★	153276	QSLF-1/8-8-B	10
G ¹ / ₄	6	4.3	★	153275	QSLF-1/4-6-B	10
	8	6.7	★	153277	QSLF-1/4-8-B	10
	10	8	★	153279	QSLF-1/4-10-B	10
G ³ / ₈	8	6.7	★	153278	QSLF-3/8-8-B	10
	10	8.3	★	153280	QSLF-3/8-10-B	10

1) Packaging unit per part

Ordering data

Push-in L-fitting QSLV

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	6	1.6	★ 190666	QSLV-M5-6	10
R thread					
R ¹ / ₈	4	2.4	★ 153086	QSLV-1/8-4	10
	6	3.7	★ 153087	QSLV-1/8-6	10
	8	4.4	★ 153089	QSLV-1/8-8	10
R ¹ / ₄	6	3.8	★ 153088	QSLV-1/4-6	10
	8	5	★ 153090	QSLV-1/4-8	10
	10	5.4	★ 153092	QSLV-1/4-10	10
R ³ / ₈	8	5.2	★ 153091	QSLV-3/8-8	10
	10	6.3	★ 153093	QSLV-3/8-10	10
	12	7.1	★ 153094	QSLV-3/8-12	10
R ¹ / ₂	12	8	★ 153095	QSLV-1/2-12	1
	16	8.9	★ 153096	QSLV-1/2-16	1
G thread with sealing ring					
G ¹ / ₈	4	2.3	★ 186137	QSLV-G1/8-4	10
	6	3.5	★ 186138	QSLV-G1/8-6	10
	8	4	★ 186140	QSLV-G1/8-8	10
G ¹ / ₄	6	3.7	★ 186139	QSLV-G1/4-6	10
	8	4.9	★ 186141	QSLV-G1/4-8	10
	10	5.3	★ 186143	QSLV-G1/4-10	10
G ³ / ₈	8	5.4	★ 186142	QSLV-G3/8-8	10
	10	6.4	★ 186144	QSLV-G3/8-10	10
	12	6.4	★ 186145	QSLV-G3/8-12	10
G ¹ / ₂	12	7	★ 186146	QSLV-G1/2-12	1
	16	8.1	★ 186147	QSLV-G1/2-16	1

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in L-fitting QSLV-...-I

Male thread with internal hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R ¹ / ₈	6	3	153097	QSLV-1/8-6-I	10
	8	4.2	153099	QSLV-1/8-8-I	10
R ¹ / ₄	6	3.1	153098	QSLV-1/4-6-I	10
	8	4	153100	QSLV-1/4-8-I	10
	10	5.4	153102	QSLV-1/4-10-I	10
R ³ / ₈	8	4.2	153101	QSLV-3/8-8-I	10
	10	5.4	153103	QSLV-3/8-10-I	10
	12	6.9	153104	QSLV-3/8-12-I	10
R ¹ / ₂	12	6.4	153105	QSLV-1/2-12-I	1
G thread with sealing ring					
G ¹ / ₈	6	3	186148	QSLV-G1/8-6-I	10
	8	4.2	186150	QSLV-G1/8-8-I	10
G ¹ / ₄	6	3.1	186149	QSLV-G1/4-6-I	10
	8	4	186151	QSLV-G1/4-8-I	10
	10	5.4	186153	QSLV-G1/4-10-I	10
G ³ / ₈	8	4.2	186152	QSLV-G3/8-8-I	10
	10	5.4	186154	QSLV-G3/8-10-I	10
	12	6.9	186155	QSLV-G3/8-12-I	10
G ¹ / ₂	12	6.4	186156	QSLV-G1/2-12-I	1

1) Packaging unit per part

Ordering data

Push-in T-fitting QST

Male thread with external hex, rotatable



Pneumatic connection		Nominal width	Part no.	Type	PU ¹⁾
1	2	[mm]			
Male thread	Tubing O.D. [mm]				
R thread					
R ¹ / ₈	4	2.8	★ 153106	QST-1/8-4	10
	6	4.2	★ 153107	QST-1/8-6	10
	8	6	★ 153109	QST-1/8-8	10
	10	6	★ 190667	QST-1/8-10	10
R ¹ / ₄	4	2.8	★ 190668	QST-1/4-4	10
	6	4.3	★ 153108	QST-1/4-6	10
	8	6.7	★ 153110	QST-1/4-8	10
	10	8	★ 153112	QST-1/4-10	10
	12	8	★ 190669	QST-1/4-12	10
R ³ / ₈	6	4.3	★ 190670	QST-3/8-6	10
	8	6.7	★ 153111	QST-3/8-8	10
	10	8.3	★ 153113	QST-3/8-10	10
	12	10	★ 153114	QST-3/8-12	10
	16	11	★ 164959	QST-3/8-16	1
R ¹ / ₂	10	8.3	★ 190672	QST-1/2-10	1
	12	10.3	★ 153115	QST-1/2-12	1
	16	13	★ 153116	QST-1/2-16	1
G thread with sealing ring					
G ¹ / ₈	4	2.8	186157	QST-G1/8-4	10
	6	4.2	186158	QST-G1/8-6	10
	8	6	186160	QST-G1/8-8	10
G ¹ / ₄	6	4.3	186159	QST-G1/4-6	10
	8	6.7	186161	QST-G1/4-8	10
	10	8	186163	QST-G1/4-10	10
	12	8	132597	QST-G1/4-12	1
G ³ / ₈	8	6.7	186162	QST-G3/8-8	10
	10	8.3	186164	QST-G3/8-10	10
	12	10	186165	QST-G3/8-12	10
	16	11	186349	QST-G3/8-16	1
G ¹ / ₂	12	10.3	186166	QST-G1/2-12	1
	16	13	186167	QST-G1/2-16	1

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in T-connector QST



Pneumatic connection			Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]					
4	4		2.6	★ 153128	QST-4	10
6	6		4	★ 153129	QST-6	10
8	8		5	★ 153130	QST-8	10
10	10		6.7	★ 153131	QST-10	10
12	12		8.7	★ 153132	QST-12	10
16	16		10.7	★ 153133	QST-16	1
Reducing						
6	4		2.3	★ 153134	QST-6-4	10
8	4		2.3	★ 130613	QST-8-4	10
8	6		3.5	★ 153135	QST-8-6	10
10	6		3.7	★ 130614	QST-10-6	10
10	8		4.9	★ 153136	QST-10-8	10
12	8		5.1	★ 130615	QST-12-8	10
12	10		6.1	★ 153137	QST-12-10	10
16	12		7.6	★ 130616	QST-16-12	1

Push-in T-fitting QSTF

Female and male thread with external hex, rotatable



R thread

G thread

Pneumatic connection			Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Female thread	Tubing O.D. [mm]				
R thread						
R1/8	G1/8	4	2.5	153182	QSTF-1/8-4-B	1
		6	3.3	153183	QSTF-1/8-6-B	1
		8	3.6	153185	QSTF-1/8-8-B	1
R1/4	G1/4	6	3.6	153184	QSTF-1/4-6-B	1
		8	4.4	153186	QSTF-1/4-8-B	1
		10	4.4	153188	QSTF-1/4-10-B	1
R3/8	G3/8	8	4.9	153187	QSTF-3/8-8-B	1
		10	5.6	153189	QSTF-3/8-10-B	1
		12	6	153190	QSTF-3/8-12-B	1
R1/2	G1/2	12	7.4	153191	QSTF-1/2-12-B	1
G thread with sealing ring						
G1/8	G1/8	4	2.4	186199	QSTF-G1/8-4	1
		6	3.2	186200	QSTF-G1/8-6	1
		8	3.7	186202	QSTF-G1/8-8	1
G1/4	G1/4	6	3.7	186201	QSTF-G1/4-6	1
		8	4.4	186203	QSTF-G1/4-8	1
		10	4.9	186205	QSTF-G1/4-10	1
G3/8	G3/8	8	4.9	186204	QSTF-G3/8-8	1
		10	5.8	186206	QSTF-G3/8-10	1
		12	6	186207	QSTF-G3/8-12	1
G1/2	G1/2	12	7	186208	QSTF-G1/2-12	1

1) Packaging unit per part

Ordering data

Push-in T-fitting QSTL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R $\frac{1}{8}$	4	2.8	★ 153117	QSTL-1/8-4	10
	6	4.3	★ 153118	QSTL-1/8-6	10
	8	6	★ 153120	QSTL-1/8-8	10
R $\frac{1}{4}$	6	4.3	★ 153119	QSTL-1/4-6	10
	8	6.7	★ 153121	QSTL-1/4-8	10
	10	8	★ 153123	QSTL-1/4-10	10
R $\frac{3}{8}$	8	6.7	★ 153122	QSTL-3/8-8	10
	10	8.3	★ 153124	QSTL-3/8-10	10
	12	10	★ 153125	QSTL-3/8-12	10
R $\frac{1}{2}$	12	10.3	★ 153126	QSTL-1/2-12	1
	16	13	★ 153127	QSTL-1/2-16	1
G thread with sealing ring					
G $\frac{1}{8}$	4	2.8	186168	QSTL-G1/8-4	10
	6	4.3	186169	QSTL-G1/8-6	10
	8	6	186171	QSTL-G1/8-8	10
G $\frac{1}{4}$	6	4.3	186170	QSTL-G1/4-6	10
	8	6.7	186172	QSTL-G1/4-8	10
	10	8	186174	QSTL-G1/4-10	10
G $\frac{3}{8}$	8	6.7	186173	QSTL-G3/8-8	10
	10	8.3	186175	QSTL-G3/8-10	10
	12	10	186176	QSTL-G3/8-12	10
G $\frac{1}{2}$	12	10.3	186177	QSTL-G1/2-12	1
	16	13	186178	QSTL-G1/2-16	1

Push-in fitting QSW

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R $\frac{1}{8}$	4	2.5	130596	QSW-1/8-4	10
	6	3.3	130597	QSW-1/8-6	10
	8	6	130598	QSW-1/8-8	10
R $\frac{1}{4}$	6	3.3	130599	QSW-1/4-6	10
	8	6.7	130600	QSW-1/4-8	10
	10	8	130601	QSW-1/4-10	10
R $\frac{3}{8}$	10	8.3	130602	QSW-3/8-10	10
	12	9.5	130603	QSW-3/8-12	10
R $\frac{1}{2}$	12	10.3	130604	QSW-1/2-12	1
	16	13	130605	QSW-1/2-16	1

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in connector QSW-...HL

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2 Tubing O.D. [mm]				
QS-4	4	2	130617	QSW-4HL	10
QS-6	6	2.7	130618	QSW-6HL	10
QS-8	8	5	130619	QSW-8HL	10
QS-10	10	6.3	130620	QSW-10HL	10
QS-12	12	6.9	130621	QSW-12HL	10

Push-in Y-fitting QSY

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2.4	★ 190673	QSY-M5-4	10
	6	2.4	★ 190674	QSY-M5-6	10
R thread					
R ¹ / ₈	4	3.1	★ 153138	QSY-1/8-4	10
	6	4.2	★ 153139	QSY-1/8-6	10
	8	5.9	★ 153141	QSY-1/8-8	10
R ¹ / ₄	4	3.3	★ 190675	QSY-1/4-4	10
	6	4.8	★ 153140	QSY-1/4-6	10
	8	6.2	★ 153142	QSY-1/4-8	10
	10	7.2	★ 153144	QSY-1/4-10	10
R ³ / ₈	8	6.6	★ 153143	QSY-3/8-8	10
	10	7.4	★ 153145	QSY-3/8-10	10
	12	8.4	★ 153146	QSY-3/8-12	10
R ¹ / ₂	10	7.8	133196	QSY-1/2-10	1
	12	8.3	★ 153147	QSY-1/2-12	1
G thread with sealing ring					
G ¹ / ₈	4	3.1	186179	QSY-G1/8-4	10
	6	4.2	186180	QSY-G1/8-6	10
	8	5.9	186182	QSY-G1/8-8	10
G ¹ / ₄	6	4.8	186181	QSY-G1/4-6	10
	8	6.2	186183	QSY-G1/4-8	10
	10	7.2	186185	QSY-G1/4-10	10
G ³ / ₈	8	6.6	186184	QSY-G3/8-8	10
	10	7.4	186186	QSY-G3/8-10	10
	12	8.4	186187	QSY-G3/8-12	10
G ¹ / ₂	12	8.3	186188	QSY-G1/2-12	1

1) Packaging unit per part

Ordering data

Push-in Y-connector QSY



Reducing

Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2.3	★ 153148	QSY-4	10
6	6	3.6	★ 153149	QSY-6	10
8	8	4.6	★ 153150	QSY-8	10
10	10	5.9	★ 153151	QSY-10	10
12	12	7	★ 153152	QSY-12	10
16	16	8.5	★ 130609	QSY-16	1
2 reducing outlets					
6	4	2.3	★ 153153	QSY-6-4	10
8	4	1.7	★ 130610	QSY-8-4	10
8	6	3.2	★ 153154	QSY-8-6	10
10	6	3.3	★ 130611	QSY-10-6	10
10	8	4.5	★ 153155	QSY-10-8	10
12	8	4.5	★ 130612	QSY-12-8	10
12	10	5.8	★ 153156	QSY-12-10	10
16	12	7	★ 190708	QSY-16-12	1

Push-in Y-connector QSY...H

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2 Tubing O.D. [mm]				
QS-4	4	1.6	130628	QSY-4H	10
QS-6	6	3.1	133145	QSY-6H-B	10
QS-8	8	4.6	133146	QSY-8H-B	10
QS-10	10	5.9	133148	QSY-10H-B	10
QS-12	12	7.3	133150	QSY-12H-B	10
Reducing					
QS-6	4	2.3	130633	QSY-6H-4	10
QS-8	6	3.6	133147	QSY-8H-6-B	10
QS-10	8	4.6	133149	QSY-10H-8-B	10
QS-12	10	5.9	133151	QSY-12H-10-B	10

1) Packaging unit per part

Push-in fittings QS ★ standard series

Ordering data

Push-in Y-fitting QSYL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R ³ / ₈	4	3.9	★ 153172	QSYL-1/8-4	1
	6	4.2	★ 153173	QSYL-1/8-6	1
	8	5.7	★ 153175	QSYL-1/8-8	1
R ¹ / ₄	6	5.3	★ 153174	QSYL-1/4-6	1
	8	7.3	★ 153176	QSYL-1/4-8	1
	10	8	★ 153178	QSYL-1/4-10	1
R ³ / ₈	8	7.3	★ 153177	QSYL-3/8-8	1
	10	9.2	★ 153179	QSYL-3/8-10	1
	12	9.7	★ 153180	QSYL-3/8-12	1
R ¹ / ₂	12	10.6	★ 153181	QSYL-1/2-12	1
G thread with sealing ring					
G ¹ / ₈	4	3.9	186189	QSYL-G1/8-4	1
	6	4.2	186190	QSYL-G1/8-6	1
	8	5.7	186192	QSYL-G1/8-8	1
G ¹ / ₄	6	5.3	186191	QSYL-G1/4-6	1
	8	7.3	186193	QSYL-G1/4-8	1
	10	8	186195	QSYL-G1/4-10	1
G ³ / ₈	8	7.3	186194	QSYL-G3/8-8	1
	10	9.2	186196	QSYL-G3/8-10	1
	12	9.7	186197	QSYL-G3/8-12	1
G ¹ / ₂	12	10.6	186198	QSYL-G1/2-12	1

1) Packaging unit per part



The multi-talented robust metal fitting

- + High temperature resistance
- + Suitable for use with food and FDA compliant
- + Resistance to cleaning agents makes hygiene easier

Fittings > Push-in fittings >
Push-in fittings

NPQH

Fittings > Push-in fittings >

Push-in fittings

NPQH

 Overview, configuration and ordering
→ www.festo.com/catalogue/npqh



 Additional information, support and user documentation
→ www.festo.com/sp/npqh



- + All metal push-in fitting made of chemically nickel-plated brass
- + High corrosion and chemical resistance
- + FDA compliant for the food and packaging industry
- + For pneumatic applications with a temperature range up to 150°C and a pressure range up to 20 bar

Product range overview

Type	Version	Design	Pneumatic connection 1				Pneumatic connection 2		→ Page/ online
			M thread	G thread	Tubing O.D.	Push-in sleeve	Tubing O.D.	Push-in sleeve	
NPQH-D	Push-in fitting	Straight	■	■	-	-	■	-	1470
	Push-in fitting		■	■	-	-	-	■	1471
	Push-in connector		-	-	■	-	■	-	
	Push-in connector		-	-	■	-	-	■	
	Push-in sleeve		-	-	-	■	-	■	1472
NPQH-DK	Push-in fitting		■	■	-	-	■	-	
NPQH-H	Push-in bulkhead fitting		-	■	-	-	■	-	1473
	Push-in bulkhead connector		-	-	■	-	■	-	
NPQH-P	Blanking plug		-	-	-	■	-	-	
NPQH-BK	Plug screw		■	■	-	-	-	-	
NPQH-L	Push-in fitting	L-shape	■	■	-	-	■	-	1474
	Push-in connector		-	-	■	-	■	-	
NPQH-T	Push-in fitting	T-shape	■	■	-	-	■	-	1475
	Push-in connector		-	-	■	-	■	-	
NPQH-Y	Push-in connector	Y-shape	-	-	■	-	■	-	

Note

When using a push-in sleeve as a quick coupling plug, the only way to guarantee an optimal and secure connection is by using products from the same series.

In other words, a push-in sleeve NPQH may only be used with a push-in connector NPQH. The groove of the push-in sleeve must engage securely in the counterpart.

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-] Water as per manufacturer's declaration ¹⁾
Note on operating/pilot medium	Operation with lubricated medium possible
Operating pressure for entire temperature range [bar]	-0.95 ... +20
Ambient temperature [°C]	0 ... +150
Food-safe ¹⁾	See supplementary material information

1) Additional information www.festo.com/sp → Certificates.

Materials	
Housing	Nickel-plated brass
Releasing ring	Nickel-plated brass
Tube retaining claw	High-alloy stainless steel
Nut	Nickel-plated brass
Tubing seal	FPM
Threaded seal	FPM

Push-in fittings NPQH

Ordering data

Push-in fitting NPQH-D

Male thread with internal/external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2.5	578334	NPQH-D-M5-Q4-P10	10
	6	2.5	578335	NPQH-D-M5-Q6-P10	10
M7	4	3	578336	NPQH-D-M7-Q4-P10	10
	6	3	578337	NPQH-D-M7-Q6-P10	10
G thread with sealing ring					
G1/8	4	3	578338	NPQH-D-G18-Q4-P10	10
	6	4	578339	NPQH-D-G18-Q6-P10	10
	8	6	578340	NPQH-D-G18-Q8-P10	10
G1/4	6	4	578341	NPQH-D-G14-Q6-P10	10
	8	6	578342	NPQH-D-G14-Q8-P10	10
	10	8	578343	NPQH-D-G14-Q10-P10	10
	12	8	578344	NPQH-D-G14-Q12-P10	10
G3/8	8	6	578345	NPQH-D-G38-Q8-P10	10
	10	8	578346	NPQH-D-G38-Q10-P10	10
	12	10	578347	NPQH-D-G38-Q12-P10	10
	14	10	578348	NPQH-D-G38-Q14-P10	10
G1/2	10	8	578349	NPQH-D-G12-Q10	1
	12	10	578350	NPQH-D-G12-Q12	1
	14	12	578351	NPQH-D-G12-Q14	1

Push-in fitting NPQH-D

Female thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Female thread	2 Tubing O.D. [mm]				
G1/8	4	3	578352	NPQH-D-G18F-Q4-P10	10
	6	5	578353	NPQH-D-G18F-Q6-P10	10
	8	7	578354	NPQH-D-G18F-Q8-P10	10
G1/4	4	3	578355	NPQH-D-G14F-Q4-P10	10
	6	5	578356	NPQH-D-G14F-Q6-P10	10
	8	7	578357	NPQH-D-G14F-Q8-P10	10

1) Packaging unit per part

Ordering data

Push-in fitting NPQH-D

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Male thread	Push-in sleeve				
Metric thread with sealing ring					
M5	QS-4	2.5	578358	NPQH-D-M5-S4-P10	10
	QS-6	2.5	578359	NPQH-D-M5-S6-P10	10
G thread with sealing ring					
G ¹ / ₈	QS-4	2.5	578360	NPQH-D-G18-S4-P10	10
	QS-6	4	578361	NPQH-D-G18-S6-P10	10
	QS-8	6	578362	NPQH-D-G18-S8-P10	10
G ¹ / ₄	QS-6	4	578363	NPQH-D-G14-S6-P10	10
	QS-8	6	578364	NPQH-D-G14-S8-P10	10
	QS-10	8	578365	NPQH-D-G14-S10-P10	10
	QS-12	8.5	578366	NPQH-D-G14-S12-P10	10
G ³ / ₈	QS-10	8	578367	NPQH-D-G38-S10-P10	10
	QS-12	10	578368	NPQH-D-G38-S12-P10	10
G ¹ / ₂	QS-12	10	578369	NPQH-D-G12-S12	1

Push-in connector NPQH-D



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Tubing O.D. [mm]	Tubing O.D. [mm]				
4	4	3	578323	NPQH-D-Q4-E-P10	10
6	6	5	578324	NPQH-D-Q6-E-P10	10
8	8	7	578325	NPQH-D-Q8-E-P10	10
10	10	9	578326	NPQH-D-Q10-E-P10	10
12	12	11	578327	NPQH-D-Q12-E-P10	10
14	14	13	578328	NPQH-D-Q14-E-P10	10
Reducing					
6	4	3	578329	NPQH-D-Q6-Q4-P10	10
8	6	5	578330	NPQH-D-Q8-Q6-P10	10
12	8	7	578331	NPQH-D-Q12-Q8-P10	10
14	10	9	578332	NPQH-D-Q14-Q10-P10	10
14	12	11	578333	NPQH-D-Q14-Q12-P10	10

Push-in connector NPQH-D

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Tubing O.D. [mm]	Push-in sleeve				
4	QS-6	3	578304	NPQH-D-S6-Q4-P10	10
	QS-8	3.5	578305	NPQH-D-S8-Q4-P10	10
	QS-10	3.5	578307	NPQH-D-S10-Q4-P10	10
6	QS-8	5	578306	NPQH-D-S8-Q6-P10	10
	QS-10	5.5	578308	NPQH-D-S10-Q6-P10	10
	QS-12	5.5	578310	NPQH-D-S12-Q6-P10	10
	QS-14	5	578313	NPQH-D-S14-Q6-P10	10
8	QS-10	7	578309	NPQH-D-S10-Q8-P10	10
	QS-12	7	578311	NPQH-D-S12-Q8-P10	10
	QS-14	7	578314	NPQH-D-S14-Q8-P10	10
10	QS-12	9	578312	NPQH-D-S12-Q10-P10	10
	QS-14	9	578315	NPQH-D-S14-Q10-P10	10
12	QS-14	11	578316	NPQH-D-S14-Q12-P10	10

1) Packaging unit per part

Push-in fittings NPQH

Ordering data

Push-in sleeve NPQH-D



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Push-in sleeve					
QS-4		2	578317	NPQH-D-S4-E-P10	10
QS-6		4	578318	NPQH-D-S6-E-P10	10
QS-8		6	578319	NPQH-D-S8-E-P10	10
QS-10		8	578320	NPQH-D-S10-E-P10	10
QS-12		10	578321	NPQH-D-S12-E-P10	10
QS-14		12	578322	NPQH-D-S14-E-P10	10

Push-in fitting NPQH-DK

Male thread with internal hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Male thread	Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2.5	578370	NPQH-DK-M5-Q4-P10	10
	6	2.5	578371	NPQH-DK-M5-Q6-P10	10
M7	4	3	578372	NPQH-DK-M7-Q4-P10	10
	6	3	578373	NPQH-DK-M7-Q6-P10	10
G thread with sealing ring					
G ¹ / ₈	4	3	578374	NPQH-DK-G18-Q4-P10	10
	6	4	578375	NPQH-DK-G18-Q6-P10	10
	8	6	578376	NPQH-DK-G18-Q8-P10	10
G ¹ / ₄	8	6	578377	NPQH-DK-G14-Q8-P10	10
	10	8.2	578378	NPQH-DK-G14-Q10-P10	10
G ³ / ₈	12	10.2	578379	NPQH-DK-G38-Q12-P10	10

1) Packaging unit per part

Ordering data

Push-in bulkhead fitting NPQH-H

Female thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Female thread	2 Tubing O.D. [mm]				
G thread with sealing ring					
G $\frac{1}{8}$	4	3	578294	NPQH-H-G18F-Q4-P10	10
	6	5	578295	NPQH-H-G18F-Q6-P10	10
	8	7	578296	NPQH-H-G18F-Q8-P10	10
G $\frac{1}{4}$	6	5	578297	NPQH-H-G14F-Q6-P10	10
	8	7	578298	NPQH-H-G14F-Q8-P10	10

Push-in bulkhead connector NPQH-H



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	578299	NPQH-H-Q4-E-P10	10
6	6	5	578300	NPQH-H-Q6-E-P10	10
8	8	7	578301	NPQH-H-Q8-E-P10	10
10	10	9	578302	NPQH-H-Q10-E-P10	10
12	12	11	578303	NPQH-H-Q12-E-P10	10

Blanking plug NPQH-P



Pneumatic connection	Part no.	Type	PU ¹⁾
1 Push-in sleeve			
QS-4	578257	NPQH-P-S4-P10	10
QS-6	578258	NPQH-P-S6-P10	10
QS-8	578259	NPQH-P-S8-P10	10
QS-10	578260	NPQH-P-S10-P10	10
QS-12	578261	NPQH-P-S12-P10	10
QS-14	578262	NPQH-P-S14-P10	10

Plug screw NPQH-BK



Pneumatic connection	Part no.	Type	PU ¹⁾
1			
Metric thread with sealing ring			
M5	578404	NPQH-BK-M5-P10	10
M7	578405	NPQH-BK-M7-P10	10
G thread with sealing ring			
G $\frac{1}{8}$	578406	NPQH-BK-G18-P10	10
G $\frac{1}{4}$	578407	NPQH-BK-G14-P10	10
G $\frac{3}{8}$	578408	NPQH-BK-G38-P10	10
G $\frac{1}{2}$	578409	NPQH-BK-G12	1

1) Packaging unit per part

Fittings > Push-in fittings >

Push-in fittings NPQH

Ordering data

Push-in L-fitting NPQH-L

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	3	578276	NPQH-L-M5-Q4-P10	10
	6	3.5	578277	NPQH-L-M5-Q6-P10	10
M7	4	3	578278	NPQH-L-M7-Q4-P10	10
	6	4	578279	NPQH-L-M7-Q6-P10	10
G thread with sealing ring					
G1/8	4	3	578280	NPQH-L-G18-Q4-P10	10
	6	5	578281	NPQH-L-G18-Q6-P10	10
	8	5.5	578282	NPQH-L-G18-Q8-P10	10
G1/4	6	5	578283	NPQH-L-G14-Q6-P10	10
	8	5.5	578284	NPQH-L-G14-Q8-P10	10
	10	8.5	578285	NPQH-L-G14-Q10-P10	10
	12	11	578286	NPQH-L-G14-Q12-P10	10
G3/8	8	6	578287	NPQH-L-G38-Q8-P10	10
	10	8.5	578288	NPQH-L-G38-Q10-P10	10
	12	11	578289	NPQH-L-G38-Q12-P10	10
	14	12	578290	NPQH-L-G38-Q14-P10	10
G1/2	10	8.5	578291	NPQH-L-G12-Q10	1
	12	11	578292	NPQH-L-G12-Q12	1
	14	12	578293	NPQH-L-G12-Q14	1

Push-in L-fitting, long NPQH-LL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
G thread with sealing ring					
G1/8	4	3	578263	NPQH-LL-G18-Q4-P10	10
	6	5	578264	NPQH-LL-G18-Q6-P10	10
	8	6	578265	NPQH-LL-G18-Q8-P10	10
G1/4	6	5	578266	NPQH-LL-G14-Q6-P10	10
	8	6	578267	NPQH-LL-G14-Q8-P10	10
	10	8.5	578268	NPQH-LL-G14-Q10-P10	10
G3/8	10	8.5	578269	NPQH-LL-G38-Q10-P10	10

Push-in L-connector NPQH-L



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	578270	NPQH-L-Q4-E-P10	10
6	6	5	578271	NPQH-L-Q6-E-P10	10
8	8	7	578272	NPQH-L-Q8-E-P10	10
10	10	9	578273	NPQH-L-Q10-E-P10	10
12	12	11	578274	NPQH-L-Q12-E-P10	10
14	14	12	578275	NPQH-L-Q14-E-P10	10

1) Packaging unit per part

Ordering data

Push-in T-fitting NPQH-T

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	3	578390	NPQH-T-M5-Q4-P10	10
	6	3	578391	NPQH-T-M5-Q6-P10	10
G thread with sealing ring					
G ¹ / ₈	4	3	578392	NPQH-T-G18-Q4-P10	10
	6	5	578393	NPQH-T-G18-Q6-P10	10
	8	5.5	578394	NPQH-T-G18-Q8-P10	10
G ¹ / ₄	6	5	578395	NPQH-T-G14-Q6-P10	10
	8	5.5	578396	NPQH-T-G14-Q8-P10	10
	10	8.5	578397	NPQH-T-G14-Q10-P10	10
	12	11	578398	NPQH-T-G14-Q12-P10	10
G ³ / ₈	8	6	578399	NPQH-T-G38-Q8-P10	10
	10	8.5	578400	NPQH-T-G38-Q10-P10	10
	12	11	578401	NPQH-T-G38-Q12-P10	10
G ¹ / ₂	10	8.5	578402	NPQH-T-G12-Q10	1
	12	11	578403	NPQH-T-G12-Q12	1

Push-in T-connector NPQH-T



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	578380	NPQH-T-Q4-E-P10	10
6	6	5	578381	NPQH-T-Q6-E-P10	10
8	8	7	578382	NPQH-T-Q8-E-P10	10
10	10	9	578383	NPQH-T-Q10-E-P10	10
12	12	11	578384	NPQH-T-Q12-E-P10	10
14	14	12	578385	NPQH-T-Q14-E-P10	10
Reducing					
6	4	3	578386	NPQH-T-Q6-Q4-P10	10
8	6	5	578387	NPQH-T-Q8-Q6-P10	10
10	8	7	578388	NPQH-T-Q10-Q8-P10	10
12	10	9	578389	NPQH-T-Q12-Q10-P10	10

Push-in Y-connector NPQH-Y



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
6	6	5.5	578410	NPQH-Y-Q6-E-P10	10
8	8	7.5	578411	NPQH-Y-Q8-E-P10	10
10	10	9.5	578412	NPQH-Y-Q10-E-P10	10
Reducing					
6	4	3.5	578413	NPQH-Y-Q6-Q4-P10	10
8	6	5.5	578414	NPQH-Y-Q8-Q6-P10	10
10	8	7.5	578415	NPQH-Y-Q10-Q8-P10	10

1) Packaging unit per part



The sturdy and inexpensive metal fitting

- + Sturdy and flame retardant
- + Suitable for low temperatures
- + Antistatic means no electrostatic problems

Fittings > Push-in fittings >

Push-in fittings, metal

NPQM

Fittings > Push-in fittings >

Push-in fittings, metal

NPQM

 Overview, configuration and ordering
→ www.festo.com/catalogue/npqm



 Additional information, support and user documentation
→ www.festo.com/sp/npqm



- + Standard series
- + Attractively priced metal push-in fitting
- + Male or female thread with external or internal hex
- + Resistant to welding spatter
- + Antistatic means no electrostatic problems

Push-in fittings NPQM, metal, standard

Product range overview

Type	Version	Design	Pneumatic connection 1				Pneumatic connection 2		→ Page/ online
			M thread	G thread	Tubing O.D.	Push-in sleeve	Tubing O.D.	Push-in sleeve	
NPQM-D	Push-in fitting	Straight	–	■	–	–	■	–	1480
	Push-in connector		–	–	■	–	■	–	
	Push-in connector		–	–	■	–	–	■	1481
	Push-in sleeve		–	–	–	■	–	■	
NPQM-DK	Push-in fitting	Straight	■	–	–	–	■	–	1481
NPQM-H	Push-in bulkhead connector		–	–	■	–	■	–	
NPQM-L	Push-in fitting		L-shape	■	■	–	–	■	
NPQM-L	Push-in connector	–		–	■	–	■	–	
NPQM-L	Push-in connector	–		–	■	–	–	■	1483
NPQM-LH	Push-in fitting	■		■	–	–	■	–	
NPQM-LK	Push-in fitting	■	■	–	–	■	–	1484	
NPQM-LFK	Multiple distributor	F-shape	–	■	–	–	■		–
NPQM-T	Push-in fitting	T-shape	–	■	–	–	■	–	1484
	Push-in connector		–	–	■	–	■	–	
	Push-in connector		–	–	■	–	–	■	
NPQM-Y	Push-in connector	Y-shape	–	–	■	–	■	–	

Note

When using a push-in sleeve as a quick coupling plug, the only way to guarantee an optimal and secure connection is by using products from the same series.

In other words, a push-in sleeve NPQM may only be used with a push-in connector NPQM. The groove of the push-in sleeve must engage securely in the counterpart.

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:--:--]
Note on operating/pilot medium	Operation with lubricated medium possible
Operating pressure for entire temperature range [bar]	–0.95 ... +16
Ambient temperature [°C]	–20 ... +70

Materials	
Housing	Nickel-plated brass
Nut	Nickel-plated brass
Hollow bolt	Nickel-plated brass
Tubing seal	NBR

Push-in fittings NPQM, metal, standard

Ordering data

Push-in fitting NPQM-D

Male thread with internal/external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
G thread with sealing ring					
G ¹ / ₈	4	3	558661	NPQM-D-G18-Q4-P10	10
	6	4	558662	NPQM-D-G18-Q6-P10	10
	8	6	558663	NPQM-D-G18-Q8-P10	10
G ¹ / ₄	6	4	558664	NPQM-D-G14-Q6-P10	10
	8	6	558665	NPQM-D-G14-Q8-P10	10
	10	8	558666	NPQM-D-G14-Q10-P10	10
	12	8	558667	NPQM-D-G14-Q12-P10	10
G ³ / ₈	8	6	558668	NPQM-D-G38-Q8-P10	10
	10	8	558669	NPQM-D-G38-Q10-P10	10
	12	10	558670	NPQM-D-G38-Q12-P10	10
	14	10	570450	NPQM-D-G38-Q14-P10	1
G ¹ / ₂	10	8	558671	NPQM-D-G12-Q10-P10	10
	12	10	558672	NPQM-D-G12-Q12-P10	10
	14	12	570451	NPQM-D-G12-Q14-P10	1

Push-in fitting NPQM-D

Female thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Female thread	2 Tubing O.D. [mm]				
G ¹ / ₈	4	3	558674	NPQM-D-G18F-Q4-P10	10
	6	5	558675	NPQM-D-G18F-Q6-P10	10
	8	7	558676	NPQM-D-G18F-Q8-P10	10
G ¹ / ₄	6	5	558678	NPQM-D-G14F-Q6-P10	10
	8	7	558679	NPQM-D-G14F-Q8-P10	10
	10	9	558680	NPQM-D-G14F-Q10-P10	10

Push-in connector NPQM-D



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	558760	NPQM-D-Q4-E-P10	10
6	6	5	558761	NPQM-D-Q6-E-P10	10
8	8	7	558762	NPQM-D-Q8-E-P10	10
10	10	9	558763	NPQM-D-Q10-E-P10	10
12	12	11	558764	NPQM-D-Q12-E-P10	10
14	14	13	570452	NPQM-D-Q14-E-P10	1

1) Packaging unit per part

Push-in fittings NPQM, metal, standard

Ordering data

Push-in connector NPQM-D

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Push-in sleeve				
4	QS-6	3	558765	NPQM-D-Q4-S6-P10	10
	QS-8	3.5	558766	NPQM-D-Q4-S8-P10	10
6	QS-4	2.5	558767	NPQM-D-Q6-S4-P10	10
	QS-8	5	558768	NPQM-D-Q6-S8-P10	10
	QS-10	5.5	558769	NPQM-D-Q6-S10-P10	10
	QS-12	5.5	558770	NPQM-D-Q6-S12-P10	10
	QS-14	5	570457	NPQM-D-Q6-S14-P10	1
8	QS-6	4	558771	NPQM-D-Q8-S6-P10	10
	QS-10	7	558772	NPQM-D-Q8-S10-P10	10
	QS-12	7	558773	NPQM-D-Q8-S12-P10	10
	QS-14	7	570458	NPQM-D-Q8-S14-P10	1
10	QS-12	9	558774	NPQM-D-Q10-S12-P10	10
	QS-14	9	570456	NPQM-D-Q10-S14-P10	1
12	QS-14	11	570459	NPQM-D-Q12-S14-P10	1

Push-in sleeve NPQM-D



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Push-in sleeve	2				
QS-4		2	558811	NPQM-D-S4-E-P10	10
QS-6		4	558812	NPQM-D-S6-E-P10	10
QS-8		6	558813	NPQM-D-S8-E-P10	10
QS-10		8	558814	NPQM-D-S10-E-P10	10
QS-12		10	558815	NPQM-D-S12-E-P10	10
QS-14		12	570455	NPQM-D-S14-E-P10	1

Push-in fitting NPQM-DK

Male thread with internal hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2.5	558657	NPQM-DK-M5-Q4-P10	10
	6	2.5	558658	NPQM-DK-M5-Q6-P10	10
M7	4	3	558659	NPQM-DK-M7-Q4-P10	10
	6	3	558660	NPQM-DK-M7-Q6-P10	10

Push-in bulkhead connector NPQM-H



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	558806	NPQM-H-Q4-E-P10	10
6	6	5	558807	NPQM-H-Q6-E-P10	10
8	8	7	558808	NPQM-H-Q8-E-P10	10
10	10	9	558809	NPQM-H-Q10-E-P10	10
12	12	11	558810	NPQM-H-Q12-E-P10	10

1) Packaging unit per part

Fittings > Push-in fittings >

Push-in fittings NPQM, metal, standard

Ordering data

Push-in L-fitting NPQM-L

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	3	558704	NPQM-L-M5-Q4-P10	10
	6	3.5	558705	NPQM-L-M5-Q6-P10	10
G thread with sealing ring					
G ¹ / ₈	4	3	558708	NPQM-L-G18-Q4-P10	10
	6	5	558709	NPQM-L-G18-Q6-P10	10
	8	5.5	558710	NPQM-L-G18-Q8-P10	10
G ¹ / ₄	6	5	558711	NPQM-L-G14-Q6-P10	10
	8	5.5	558712	NPQM-L-G14-Q8-P10	10
	10	8.5	558713	NPQM-L-G14-Q10-P10	10
	12	11	558714	NPQM-L-G14-Q12-P10	10
G ³ / ₈	8	6	558715	NPQM-L-G38-Q8-P10	10
	10	8.5	558716	NPQM-L-G38-Q10-P10	10
	12	11	558717	NPQM-L-G38-Q12-P10	10
	14	12	570460	NPQM-L-G38-Q14-P10	1
G ¹ / ₂	10	8.5	558718	NPQM-L-G12-Q10-P10	10
	12	11	558719	NPQM-L-G12-Q12-P10	10
	14	12	570461	NPQM-L-G12-Q14-P10	1

Push-in L-connector NPQM-L



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	558776	NPQM-L-Q4-E-P10	10
6	6	5	558777	NPQM-L-Q6-E-P10	10
8	8	7	558778	NPQM-L-Q8-E-P10	10
10	10	9	558779	NPQM-L-Q10-E-P10	10
12	12	11	558780	NPQM-L-Q12-E-P10	10
14	14	12	570453	NPQM-L-Q14-E-P10	1

Push-in L-connector NPQM-L

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Push-in sleeve				
4	QS-4	3	558781	NPQM-L-Q4-S4-P10	10
6	QS-6	5	558782	NPQM-L-Q6-S6-P10	10
8	QS-8	5.5	558783	NPQM-L-Q8-S8-P10	10
10	QS-10	8.5	558784	NPQM-L-Q10-S10-P10	10

1) Packaging unit per part

Push-in fittings NPQM, metal, standard

Ordering data

Push-in L-fitting NPQM-LH

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	3	558827	NPQM-LH-M5-Q4-P10	10
	6	3.5	558828	NPQM-LH-M5-Q6-P10	10
G thread with sealing ring					
G ¹ / ₈	4	3	558829	NPQM-LH-G18-Q4-P10	10
	6	5	558830	NPQM-LH-G18-Q6-P10	10
	8	6.5	558831	NPQM-LH-G18-Q8-P10	10
G ¹ / ₄	6	5	558832	NPQM-LH-G14-Q6-P10	10
	8	6.5	558833	NPQM-LH-G14-Q8-P10	10
G ³ / ₈	8	7	558834	NPQM-LH-G38-Q8-P10	10
	10	8.5	558835	NPQM-LH-G38-Q10-P10	10
	12	10.5	558836	NPQM-LH-G38-Q12-P10	10

Push-in L-fitting NPQM-LK

Male thread with internal hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	3	2	558816	NPQM-LK-M5-Q3-P10	10
	4	2	558817	NPQM-LK-M5-Q4-P10	10
G thread with sealing ring					
G ¹ / ₈	4	4	558818	NPQM-LK-G18-Q4-P10	10
	6	4	558819	NPQM-LK-G18-Q6-P10	10
	8	4	558820	NPQM-LK-G18-Q8-P10	10
G ¹ / ₄	6	5.5	558821	NPQM-LK-G14-Q6-P10	10
	8	5.5	558822	NPQM-LK-G14-Q8-P10	10
	10	5.5	558823	NPQM-LK-G14-Q10-P10	10
G ³ / ₈	10	7	558825	NPQM-LK-G38-Q10-P10	10

Multiple distributor NPQM-LFK

Male thread with internal hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
G thread with sealing ring					
G ¹ / ₈	4	4	558837	NPQM-LFK-G18-Q4-P10	10
	6	4	558838	NPQM-LFK-G18-Q6-P10	10
	8	4	558839	NPQM-LFK-G18-Q8-P10	10
G ¹ / ₄	6	5.5	558840	NPQM-LFK-G14-Q6-P10	10
	8	5.5	558841	NPQM-LFK-G14-Q8-P10	10

1) Packaging unit per part

Fittings > Push-in fittings >

Push-in fittings NPQM, metal, standard

Ordering data

Push-in T-fitting NPQM-T

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
G thread with sealing ring					
G ¹ / ₈	4	3	558736	NPQM-T-G18-Q4-P10	10
	6	5	558737	NPQM-T-G18-Q6-P10	10
	8	5.5	558738	NPQM-T-G18-Q8-P10	10
G ¹ / ₄	6	5	558739	NPQM-T-G14-Q6-P10	10
	8	5.5	558740	NPQM-T-G14-Q8-P10	10
	10	8.5	558741	NPQM-T-G14-Q10-P10	10
G ³ / ₈	8	6	558743	NPQM-T-G38-Q8-P10	10
	10	8.5	558744	NPQM-T-G38-Q10-P10	10
	12	11	558745	NPQM-T-G38-Q12-P10	10
G ¹ / ₂	12	11	558747	NPQM-T-G12-Q12-P10	10

Push-in T-connector NPQM-T



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3	558786	NPQM-T-Q4-E-P10	10
6	6	5	558787	NPQM-T-Q6-E-P10	10
8	8	7	558788	NPQM-T-Q8-E-P10	10
10	10	9	558789	NPQM-T-Q10-E-P10	10
12	12	11	558790	NPQM-T-Q12-E-P10	10
14	14	12	570454	NPQM-T-Q14-E-P10	1

Push-in T-connector NPQM-T

with push-in sleeve



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Push-in sleeve				
4	QS-4	3	558791	NPQM-T-Q4-S4-P10	10
6	QS-6	5	558792	NPQM-T-Q6-S6-P10	10
8	QS-8	5.5	558793	NPQM-T-Q8-S8-P10	10
10	QS-10	8.5	558794	NPQM-T-Q10-S10-P10	10

Push-in Y-connector NPQM-Y



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	3.5	558798	NPQM-Y-Q4-E-P10	10
6	6	5.5	558799	NPQM-Y-Q6-E-P10	10
8	8	7.5	558800	NPQM-Y-Q8-E-P10	10
10	10	9.5	558801	NPQM-Y-Q10-E-P10	10
12	12	11.5	558802	NPQM-Y-Q12-E-P10	10
Reducing					
6	4	3.5	558803	NPQM-Y-Q6-Q4-P10	10
8	6	5.5	558804	NPQM-Y-Q8-Q6-P10	10
10	8	7.5	558805	NPQM-Y-Q10-Q8-P10	10

1) Packaging unit per part



The sturdy stainless steel fitting with maximum chemical resistance

- + Unlimited use in the food industry
- + Suitable for aggressive acids and alkalis
- + High temperature resistance

Fittings > Push-in fittings >

Push-in fittings, stainless steel

CRQS

Fittings > Push-in fittings >

Push-in fittings, stainless steel

CRQS



Overview, configuration and ordering

→ www.festo.com/catalogue/crqs



Additional information, support and user documentation

→ www.festo.com/sp/crqs



- + Stainless steel fitting
- + Connection M5, R1/8, R1/4, R3/8, R1/2
- + For tubing O.D. 4, 6, 8, 10, 12, 16 mm
- + Suitable for vacuum
- + Push-in fittings, push-in connectors, push-in bulkhead connectors
- + High resistance to chemicals and corrosion
- + High temperature resistance

Push-in fittings CRQS, stainless steel

Product range overview

Type	Version	Design	Pneumatic connection 1			Pneumatic connection 2	→ Page/ online
			M thread	R thread	Tubing O.D.	Tubing O.D.	
CRQS	Push-in fitting	Straight	■	■	–	■	1488
	Push-in connector		–	–	■	■	
CRQSS	Push-in bulkhead connector	L-shape	–	–	■	■	1489
CRQSL	Push-in fitting		■	■	–	■	
CRQST	Push-in connector	T-shape	–	–	■	■	1490
	Push-in fitting		■	■	–	■	
CRQSY	Push-in connector	Y-shape	–	–	■	■	

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-] Water as per manufacturer's declaration ¹⁾
Note on operating/pilot medium	Operation with lubricated medium possible
Operating pressure for entire temperature range [bar]	–0.95 ... +10
Ambient temperature [°C]	–15 ... +120
Food-safe ¹⁾	See supplementary material information

1) Additional information www.festo.com/sp → Certificates.

Materials	
Housing	High-alloy stainless steel
Releasing ring	High-alloy stainless steel
Tube retaining claw	High-alloy stainless steel
Threaded coupling	High-alloy stainless steel
Nut	High-alloy stainless steel
Tubing seal	FPM

Push-in fittings CRQS, stainless steel

Ordering data

Push-in fitting CRQS

Male thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2	162860	CRQS-M5-4	1
	6	2	162861	CRQS-M5-6	1
R thread					
R1/8	4	2.5	132643	CRQS-1/8-4	1
	6	4.1	162862	CRQS-1/8-6	1
	8	5.1	162863	CRQS-1/8-8	1
R1/4	6	4.2	132644	CRQS-1/4-6	1
	8	5.8	162864	CRQS-1/4-8	1
	10	5.9	162865	CRQS-1/4-10	1
R3/8	10	6	162866	CRQS-3/8-10	1
	12	7.6	162867	CRQS-3/8-12	1
R1/2	12	8.1	162868	CRQS-1/2-12	1
	16	10.1	162869	CRQS-1/2-16	1

Push-in fitting CRQS-...-I

Male thread with internal hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2	132328	CRQS-M5-4-I	1
	6	2	132329	CRQS-M5-6-I	1
R thread					
R1/8	6	4.1	132330	CRQS-1/8-6-I	1
	8	5.1	132331	CRQS-1/8-8-I	1
R1/4	8	5.8	132332	CRQS-1/4-8-I	1
	10	5.9	132333	CRQS-1/4-10-I	1
R3/8	10	6	132334	CRQS-3/8-10-I	1
	12	7.6	132335	CRQS-3/8-12-I	1
R1/2	12	8.1	132336	CRQS-1/2-12-I	1
	16	10.1	132337	CRQS-1/2-16-I	1

Push-in connector CRQS



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2.4	130645	CRQS-4	1
6	6	3.7	130646	CRQS-6	1
8	8	5.8	130647	CRQS-8	1
10	10	6.6	130648	CRQS-10	1
12	12	7.9	130649	CRQS-12	1
16	16	10.5	130650	CRQS-16	1
Reducing					
6	4	2.4	130651	CRQS-6-4	1
8	6	3.7	130652	CRQS-8-6	1
10	8	5.8	130653	CRQS-10-8	1
12	10	6.6	130654	CRQS-12-10	1
16	12	7.9	130655	CRQS-16-12	1

1) Packaging unit per part

Push-in fittings CRQS, stainless steel

Ordering data

Push-in bulkhead connector CRQSS



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2.4	164210	CRQSS-4	1
6	6	3.7	164211	CRQSS-6	1
8	8	5.7	164213	CRQSS-8	1
10	10	6.7	164215	CRQSS-10	1
12	12	7.9	164217	CRQSS-12	1
16	16	10.4	164219	CRQSS-16	1

Push-in L-fitting CRQSL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2	162870	CRQSL-M5-4	1
	6	2	162871	CRQSL-M5-6	1
R thread					
R $\frac{1}{8}$	4	2.2	132598	CRQSL-1/8-4	1
	6	3.9	162872	CRQSL-1/8-6	1
	8	5.2	162873	CRQSL-1/8-8	1
R $\frac{1}{4}$	6	3.6	132599	CRQSL-1/4-6	1
	8	5.1	162874	CRQSL-1/4-8	1
	10	6	162875	CRQSL-1/4-10	1
R $\frac{3}{8}$	10	6	162876	CRQSL-3/8-10	1
	12	8.1	162877	CRQSL-3/8-12	1
R $\frac{1}{2}$	12	7.9	162878	CRQSL-1/2-12	1
	16	9.4	162879	CRQSL-1/2-16	1

Push-in L-connector CRQSL



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2.1	130662	CRQSL-4	1
6	6	3.5	130663	CRQSL-6	1
8	8	5.1	130664	CRQSL-8	1
10	10	6.1	130665	CRQSL-10	1
12	12	7.8	130666	CRQSL-12	1
16	16	9.4	130667	CRQSL-16	1

1) Packaging unit per part

Push-in fittings CRQS, stainless steel

Ordering data

Push-in T-fitting CRQST

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	2	164200	CRQST-M5-4	1
	6	2	164201	CRQST-M5-6	1
R thread					
R1/8	6	3.7	164202	CRQST-1/8-6	1
	8	5	164203	CRQST-1/8-8	1
R1/4	8	5	164204	CRQST-1/4-8	1
	10	5.9	164205	CRQST-1/4-10	1
R3/8	10	5.9	164206	CRQST-3/8-10	1
	12	8.1	164207	CRQST-3/8-12	1
R1/2	12	8.1	164208	CRQST-1/2-12	1
	16	9.5	164209	CRQST-1/2-16	1

Push-in T-connector CRQST



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2.1	130668	CRQST-4	1
6	6	3.5	130669	CRQST-6	1
8	8	5	130670	CRQST-8	1
10	10	6.1	130671	CRQST-10	1
12	12	8	130672	CRQST-12	1
16	16	9.7	130673	CRQST-16	1

Push-in Y-connector CRQSY



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	2	130656	CRQSY-4	1
6	6	3.3	130657	CRQSY-6	1
8	8	4.9	130658	CRQSY-8	1
10	10	5.6	130659	CRQSY-10	1
12	12	7	130660	CRQSY-12	1
16	16	8.2	130661	CRQSY-16	1

1) Packaging unit per part



QSR



QSK

Push-in fittings with additional functions

QSK:

- + Shut-off function after the tubing is disconnected

QSR:

- + Simple and secure compressed air through-feed for rotary movements
- + Speed-resistant rotary fitting

Fittings > Push-in fittings >

Self-sealing/rotary push-in fittings

QSK

QSSK

QSKL

QSR

QSRL

Fittings > Push-in fittings >

Self-sealing/rotary push-in fittings

QSK/QSR

 Overview, configuration and ordering
→ www.festo.com/catalogue/qsk Additional information, support and user documentation
→ www.festo.com/sp/qsk

- + Standard series

- + Male thread with external hex

QSK:

- + Push-in fitting blocks the air flow after the tubing is disconnected

QSR:

- + Rotatable 360°, with ball bearing

- + Male thread with external hex

- + For speeds up to max. 500 rpm

Self-sealing/rotary push-in fittings QSK/QSR

Key features

Rotatable



The fitting can be aligned after it has been assembled.

Rotatable 360°, with ball bearing



Permits rotary movement of up to 500 rpm during use.

Product range overview

Type	Version	Design	Pneumatic connection 1				Pneumatic connection 2		→ Page/ online
			M thread	R thread	G thread	Tubing O.D.	Tubing O.D.		
Self-sealing push-in fitting QSK									
QSK	Push-in fitting	Straight	■	■	■	–	■	1494	
	Push-in connector		–	–	–	■	■		
QSSK	Push-in bulkhead connector		–	–	–	■	■		
QSKL	Push-in fitting	L-shape	■	■	■	–	■	1495	
Rotary push-in fitting QSR									
QSR	Push-in fitting	Straight	■	■	■	–	■	1496	
Q SRL	Push-in fitting	L-shape	■	■	■	–	■		

Data sheet

Operating conditions		Self-sealing push-in fitting QSK	Rotary push-in fitting QSR
Type			
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]	
		Water as per manufacturer's declaration ¹⁾	–
Note on operating/pilot medium		Operation with lubricated medium possible	
Operating pressure for entire temperature range	[bar]	–0.95 ... +6	
Temperature-dependent operating pressure	[bar]	–0.95 ... +14	
Ambient temperature	[°C]	–10 ... +80	0 ... +60

1) Push-in bulkhead connector QSSK only.
Additional information www.festo.com/sp → Certificates.

Materials

Housing	PBT, nickel-plated brass
Tube retaining claw	High-alloy stainless steel
Releasing ring	POM
Tubing seal	NBR

Self-sealing push-in fittings QSK

Ordering data

Self-sealing push-in fitting QSK

Male thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	1.4	153291	QSK-M5-4	1
	6	1.7	153292	QSK-M5-6	1
R thread					
R1/8	4	1.6	153419	QSK-1/8-4	1
	6	3	153420	QSK-1/8-6	1
	8	3.4	153422	QSK-1/8-8	1
R1/4	6	3	153421	QSK-1/4-6	1
	8	4.3	153423	QSK-1/4-8	1
	10	4.8	153425	QSK-1/4-10	1
R3/8	8	4.5	153424	QSK-3/8-8	1
	10	5.6	153426	QSK-3/8-10	1
	12	6.1	153427	QSK-3/8-12	1
R1/2	12	6.4	153428	QSK-1/2-12	1
G thread with sealing ring					
G1/8	4	1.6	186294	QSK-G1/8-4	1
	6	3	186295	QSK-G1/8-6	1
	8	3.4	186297	QSK-G1/8-8	1
G1/4	6	3	186296	QSK-G1/4-6	1
	8	4.3	186298	QSK-G1/4-8	1
	10	4.8	186300	QSK-G1/4-10	1
G3/8	8	4.5	186299	QSK-G3/8-8	1
	10	5.6	186301	QSK-G3/8-10	1
	12	6.1	186302	QSK-G3/8-12	1
G1/2	12	6.4	186303	QSK-G1/2-12	1

Self-sealing push-in connector QSK



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	1.6	153439	QSK-4	1
6	6	3	153440	QSK-6	1
8	8	4.4	153441	QSK-8	1
10	10	5.3	153442	QSK-10	1
12	12	6.2	153443	QSK-12	1

Push-in bulkhead connector QSSK



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Tubing O.D. [mm]	2 Tubing O.D. [mm]				
4	4	1.5	130637	QSSK-4	1
6	6	3	130638	QSSK-6	1
8	8	4.3	130639	QSSK-8	1
10	10	5.4	130640	QSSK-10	1
12	12	6.3	130641	QSSK-12	1

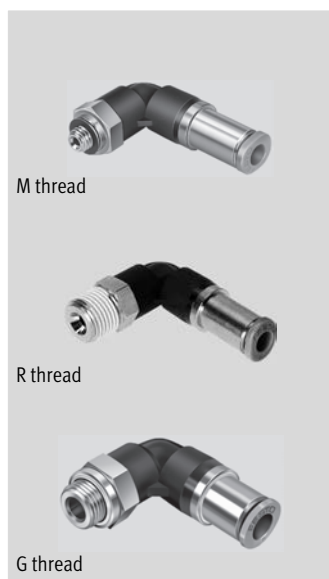
1) Packaging unit per part

Self-sealing push-in fittings QSK

Ordering data

Self-sealing push-in L-fitting QSKL

Male thread with external hex, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	1.4	153294	QSKL-M5-4	1
	6	1.7	153295	QSKL-M5-6	1
R thread					
R $\frac{1}{8}$	4	1.5	153429	QSKL-1/8-4	1
	6	3	153430	QSKL-1/8-6	1
	8	4.2	153432	QSKL-1/8-8	1
R $\frac{1}{4}$	6	3.2	153431	QSKL-1/4-6	1
	8	4.1	153433	QSKL-1/4-8	1
	10	5.2	153435	QSKL-1/4-10	1
R $\frac{3}{8}$	8	4.3	153434	QSKL-3/8-8	1
	10	5.3	153436	QSKL-3/8-10	1
	12	6.2	153437	QSKL-3/8-12	1
R $\frac{1}{2}$	12	6.2	153438	QSKL-1/2-12	1
G thread with sealing ring					
G $\frac{1}{8}$	4	1.5	186304	QSKL-G1/8-4	1
	6	2.9	186305	QSKL-G1/8-6	1
	8	4.2	186307	QSKL-G1/8-8	1
G $\frac{1}{4}$	6	3.2	186306	QSKL-G1/4-6	1
	8	4.1	186308	QSKL-G1/4-8	1
	10	5.2	186310	QSKL-G1/4-10	1
G $\frac{3}{8}$	8	4.3	186309	QSKL-G3/8-8	1
	10	5.3	186311	QSKL-G3/8-10	1
	12	6.2	186312	QSKL-G3/8-12	1
G $\frac{1}{2}$	12	6.2	186313	QSKL-G1/2-12	1

1) Packaging unit per part

Rotatable push-in fittings QSR

Ordering data

Rotatable push-in fitting QSR

Male thread with external hex, rotatable 360°, with ball bearing



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	1.6	153526	QSR-M5-4	1
	6	1.6	153527	QSR-M5-6	1
R thread					
R1/8	4	2.1	153401	QSR-1/8-4	1
	6	3.4	153402	QSR-1/8-6	1
	8	5	153404	QSR-1/8-8	1
R1/4	6	3.4	153403	QSR-1/4-6	1
	8	5	153405	QSR-1/4-8	1
R3/8	8	5	153406	QSR-3/8-8	1
	10	6.7	153407	QSR-3/8-10	1
	12	8	153408	QSR-3/8-12	1
R1/2	12	8	153409	QSR-1/2-12	1
G thread with sealing ring					
G1/8	4	2.1	186276	QSR-G1/8-4	1
	6	3.4	186277	QSR-G1/8-6	1
	8	5	186279	QSR-G1/8-8	1
G1/4	6	3.4	186278	QSR-G1/4-6	1
	8	5	186280	QSR-G1/4-8	1
G3/8	8	5	186281	QSR-G3/8-8	1
	10	6.7	186282	QSR-G3/8-10	1
	12	8	186283	QSR-G3/8-12	1
G1/2	12	8	186284	QSR-G1/2-12	1

Rotatable push-in L-fitting QSRL

Male thread with external hex, rotatable 360°, with ball bearing



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
Metric thread with sealing ring					
M5	4	1.4	153529	QSRL-M5-4	1
	6	1.6	153530	QSRL-M5-6	1
R thread					
R1/8	4	1.8	153410	QSRL-1/8-4	1
	6	3.1	153411	QSRL-1/8-6	1
	8	4.6	153413	QSRL-1/8-8	1
R1/4	6	3.1	153412	QSRL-1/4-6	1
	8	4.6	153414	QSRL-1/4-8	1
R3/8	8	4.6	153415	QSRL-3/8-8	1
	10	6.2	153416	QSRL-3/8-10	1
	12	7.4	153417	QSRL-3/8-12	1
R1/2	12	7.4	153418	QSRL-1/2-12	1
G thread with sealing ring					
G1/8	4	1.9	186285	QSRL-G1/8-4	1
	6	3.1	186286	QSRL-G1/8-6	1
	8	4.6	186288	QSRL-G1/8-8	1
G1/4	6	3.1	186287	QSRL-G1/4-6	1
	8	4.6	186289	QSRL-G1/4-8	1
G3/8	8	4.6	186290	QSRL-G3/8-8	1
	10	6.2	186291	QSRL-G3/8-10	1
	12	7.4	186292	QSRL-G3/8-12	1
G1/2	12	7.4	186293	QSRL-G1/2-12	1

1) Packaging unit per part



The Clean Design stainless steel fitting

- + Suitable for use in the food industry
- + Design free of any edges where dirt would accumulate
- + For cleaning intensive areas

Fittings › Barbed fittings ›
Quick connectors

NPCK

Fittings > Barbed fittings >
Quick connectors
NPCK



Overview, configuration and ordering
→ www.festo.com/catalogue/npck



Additional information, support and user documentation
→ www.festo.com/sp/npck



- + Stainless steel fitting for use in areas subject to intensive cleaning
- + Highly resistant to corrosion
- + For pneumatic applications with a temperature range up to 120°C and a pressure range up to 12 bar

Data sheet

Technical data						
Pneumatic connection 1	Male thread					
	M5	G $\frac{1}{8}$		G $\frac{1}{4}$		G $\frac{3}{8}$
Pneumatic connection 2	For tubing	For tubing	For tubing	For tubing	For tubing	For tubing
	O.D. 4 mm	O.D. 6 mm	O.D. 8 mm	O.D. 8 mm	O.D. 10 mm	O.D. 10 mm
Type of seal on threaded plug	O-ring	Sealing ring				

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
	Water as per manufacturer's declaration ¹⁾
Note on operating/pilot medium	Operation with lubricated medium possible
Operating pressure [bar] for entire temperature range	-0.95 ... +12
Ambient temperature [°C]	-20 ... +120 ²⁾
Food-safe ¹⁾	See supplementary material information

1) Additional information www.festo.com/sp → Certificates.

2) Other possibilities: The fitting can be used in the temperature range from -40 ... +60°C when suitable tubing is used. The maximum permissible operating pressure of the tubing must not be exceeded.

Materials			
Pneumatic connection	M5	G $\frac{1}{8}$	G $\frac{1}{4}$
Housing	High-alloy stainless steel		
Threaded plug	High-alloy stainless steel		
Sealing ring	EPDM	PEEK	

Ordering data

Fitting NPCK-C-D

Male thread with external hex



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ³⁾
1	2				
Male thread	Tubing O.D. [mm]				
Metric thread with O-ring					
M5	4	2	1857681	NPCK-C-D-M5-K4	1
G thread with sealing ring					
G $\frac{1}{8}$	6	2.9	1366257	NPCK-C-D-G18-K6	1
	8	4.9	1490383	NPCK-C-D-G18-K8	1
G $\frac{1}{4}$	8	4.9	1691701	NPCK-C-D-G14-K8	1
	10	6.1	1489336	NPCK-C-D-G14-K10	1
G $\frac{3}{8}$	10	6.2	1489614	NPCK-C-D-G38-K10	1

Accessories – Ordering data

Pneumatic connection		Part no.	Type	PU ³⁾
Sealing ring NPAS				
Data sheets online: → npas				
	For male thread G $\frac{1}{8}$	2652516	NPAS-C1-R-G18-P-FD-P10	10
	For male thread G $\frac{1}{4}$	2652517	NPAS-C1-R-G14-P-FD-P10	10
	For male thread G $\frac{3}{8}$	2652519	NPAS-C1-R-G38-P-FD-P10	10

3) Packaging unit quantity



The simple and sturdy threaded fitting

- + For high pressures and temperatures
- + Sturdy and corrosion resistant

Fittings > Threaded fittings >
Threaded fittings,
blanking plugs

NPFC

B ★

Fittings > Threaded fittings >

Threaded fittings, blanking plugs


NPFC/B

 Overview, configuration and ordering
→ www.festo.com/catalogue/npfc



 Additional information, support and user documentation
→ www.festo.com/sp/npfc



 Quick ordering of basic designs
→ page 1510



- + Nickel-plated brass
- + Blanking plug
- + Sleeve
- + Reducing sleeve
- + Extension
- + Double nipple
- + Reducing nipple
- + L-, T-, Y- or X-fitting

Product range overview

Type	Version	Design	Pneumatic connection 1			Pneumatic connection 2			→ Page/ online
			M thread	G thread	R thread ¹⁾	M thread	G thread	R thread ¹⁾	
NPFC-S	Sleeve	Straight	■	■	–	■	■	–	1504
NPFC-R	Reducing sleeve		–	■	–	■	■	–	
NPFC-E	Extension		■	■	–	■	■	–	
NPFC-D	Double nipple		■	■	■	■	■	■	1505
NPFC-R	Reducing nipple		■	■	–	■	■	–	
NPFC-H	Bulkhead fitting		■	■	–	■	■	–	
NPFC-L	Elbow fitting	L-shape	■	■	■	■	■	■	1506
NPFC-T	T-fitting	T-shape	■	■	■	■	■	■	1507
NPFC-Y	Y-fitting	Y-shape	–	■	■	–	■	–	1509
NPFC-X	X-fitting	X-shape	–	■	■	–	■	–	

1) Sealing with thread sealing tape GWB-Q1 (→ page 1527) is recommended.

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [:-:-] Gases on request Liquids on request
Operating pressure [bar]	–0.95 ... +50
Ambient temperature [°C]	–20 ... +150
Materials	
Threaded fitting	Nickel-plated brass

Threaded fittings NPFC

Ordering data

Sleeve NPFC-S



Pneumatic connection		Part no.	Type	PU ¹⁾
1				
Female thread				
Metric thread				
M5		8030290	NPFC-S-2M5-F	10
G thread				
G1/8		8030291	NPFC-S-2G18-F	10
G1/4		8030292	NPFC-S-2G14-F	10
G3/8		8030293	NPFC-S-2G38-F	10
G1/2		8030294	NPFC-S-2G12-F	10
G3/4		8030295	NPFC-S-2G34-F	10

Reducing sleeve NPFC-R



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Female thread	Female thread			
G thread				
G1/8	M5	8069219	NPFC-R-G18-M5-F	10
G1/4	G1/8	8069220	NPFC-R-G14-G18-F	10
G3/8	G1/8	8030296	NPFC-R-G38-G18-F	10
	G1/4	8069221	NPFC-R-G38-G14-F	10
G1/2	G1/8	8069222	NPFC-R-G12-G18-F	10
	G1/4	8069223	NPFC-R-G12-G14-F	10
	G3/8	8069224	NPFC-R-G12-G38-F	10
G3/4	G1/2	8030297	NPFC-R-G34-G12-F	10
G1	G1/2	8069225	NPFC-R-G1-G12-F	10
	G3/4	8069226	NPFC-R-G1-G34-F	10

Extension NPFC-E



Pneumatic connection		Length	Part no.	Type	PU ¹⁾
1	2				
Female thread	Male thread	[mm]			
Metric thread, extension E1					
M5	M5	18.5	8069218	NPFC-E1-2M5-FM	10
G thread, extension E1					
G1/8	G1/8	22	8030298	NPFC-E1-2G18-FM	10
G1/4	G1/4	28	8030299	NPFC-E1-2G14-FM	10
G3/8	G3/8	32	8030300	NPFC-E1-2G38-FM	10
G1/2	G1/2	35	8030301	NPFC-E1-2G12-FM	10
G thread, extension E2					
G1/8	G1/8	32	8030302	NPFC-E2-2G18-FM	10
G1/4	G1/4	35	8030303	NPFC-E2-2G14-FM	10
G thread, extension E3					
G1/8	G1/8	42	8030304	NPFC-E3-2G18-FM	10
G1/4	G1/4	51	8030305	NPFC-E3-2G14-FM	10
G thread, extension E4					
G1/8	G1/8	51	8030306	NPFC-E4-2G18-FM	10

1) Packaging unit per part

Ordering data

Double nipple NPFC-D



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Male thread			
Metric thread				
M3	M3	8069210	NPFC-D-2M3-M	10
M5	M5	8030267	NPFC-D-2M5-M	10
	G $\frac{1}{8}$	8069211	NPFC-D-M5-G18-M	10
M7	G $\frac{1}{8}$	8030268	NPFC-D-M7-G18-M	10
G thread				
G $\frac{1}{8}$	G $\frac{1}{8}$	8030269	NPFC-D-2G18-M	10
	G $\frac{1}{4}$	8030270	NPFC-D-G18-G14-M	10
	G $\frac{3}{8}$	8030271	NPFC-D-G18-G38-M	10
G $\frac{1}{4}$	G $\frac{1}{4}$	8030272	NPFC-D-2G14-M	10
	G $\frac{3}{8}$	8030273	NPFC-D-G14-G38-M	10
	G $\frac{1}{2}$	8030274	NPFC-D-G14-G12-M	10
G $\frac{3}{8}$	G $\frac{3}{8}$	8030275	NPFC-D-2G38-M	10
	G $\frac{1}{2}$	8030276	NPFC-D-G38-G12-M	10
G $\frac{1}{2}$	G $\frac{1}{2}$	8030277	NPFC-D-2G12-M	10
	G $\frac{3}{4}$	8069216	NPFC-D-G12-G34-M	10
G $\frac{3}{4}$	G $\frac{3}{4}$	8069217	NPFC-D-2G34-M	10
R thread				
R $\frac{1}{8}$	R $\frac{1}{8}$	8030278	NPFC-D-2R18-M	10
	R $\frac{1}{4}$	8030279	NPFC-D-R18-R14-M	10
	R $\frac{3}{8}$	8030280	NPFC-D-R18-R38-M	10
R $\frac{1}{4}$	R $\frac{1}{4}$	8030281	NPFC-D-2R14-M	10
	R $\frac{3}{8}$	8030282	NPFC-D-R14-R38-M	10
	R $\frac{1}{2}$	8030283	NPFC-D-R14-R12-M	10
R $\frac{3}{8}$	R $\frac{3}{8}$	8030284	NPFC-D-2R38-M	10
	R $\frac{1}{2}$	8030285	NPFC-D-R38-R12-M	10
R $\frac{1}{2}$	R $\frac{1}{2}$	8030286	NPFC-D-2R12-M	10
	R $\frac{3}{4}$	8030287	NPFC-D-R12-R34-M	10
R $\frac{3}{4}$	R $\frac{3}{4}$	8030288	NPFC-D-2R34-M	10
R1	R1	8030289	NPFC-D-2R1-M	10

Reducing nipple NPFC-R



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Female thread	Male thread			
G thread				
G $\frac{1}{8}$	M5	8030314	NPFC-R-G18-M5-FM	10
G $\frac{1}{4}$	G $\frac{1}{8}$	8030315	NPFC-R-G14-G18-FM	10
G $\frac{3}{8}$	G $\frac{1}{8}$	8030316	NPFC-R-G38-G18-FM	10
	G $\frac{1}{4}$	8030317	NPFC-R-G38-G14-FM	10
G $\frac{1}{2}$	G $\frac{3}{8}$	8030318	NPFC-R-G12-G38-FM	10

1) Packaging unit per part

Threaded fittings NPFC

Ordering data

Reducing nipple NPFC-R



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Female thread			
Metric thread				
M5	M3	8069227	NPFC-R-M5-M3-MF	10
M7	M5	8069228	NPFC-R-M7-M5-MF	10
G thread				
G ¹ / ₈	M5	8030307	NPFC-R-G18-M5-MF	10
G ¹ / ₄	M5	8069229	NPFC-R-G14-M5-MF	10
	G ¹ / ₈	8030308	NPFC-R-G14-G18-MF	10
G ³ / ₈	G ¹ / ₈	8030309	NPFC-R-G38-G18-MF	10
	G ¹ / ₄	8030310	NPFC-R-G38-G14-MF	10
G ¹ / ₂	G ¹ / ₄	8030311	NPFC-R-G12-G14-MF	10
	G ³ / ₈	8030312	NPFC-R-G12-G38-MF	10
G ³ / ₄	G ¹ / ₄	8069234	NPFC-R-G34-G14-MF	10
	G ³ / ₈	8069235	NPFC-R-G34-G38-MF	10
	G ¹ / ₂	8030313	NPFC-R-G34-G12-MF	10
G1	G ¹ / ₂	8069237	NPFC-R-G1-G12-MF	10
	G ³ / ₄	8069238	NPFC-R-G1-G34-MF	10

Bulkhead fitting NPFC-H



Pneumatic connection		Part no.	Type	PU ¹⁾
1				
Female thread				
Metric thread				
M5		8069239	NPFC-H-M5-F	10
G thread				
G ¹ / ₈		8069240	NPFC-H-G18-F	10
G ¹ / ₄		8069241	NPFC-H-G14-F	10
G ³ / ₈		8069242	NPFC-H-G38-F	10
G ¹ / ₂		8069243	NPFC-H-G12-F	10

Elbow fitting NPFC-L



Pneumatic connection		Part no.	Type	PU ¹⁾
1				
Female thread				
Metric thread				
M5		8030208	NPFC-L-2M5-F	10
G thread				
G ¹ / ₈		8030209	NPFC-L-2G18-F	10
G ¹ / ₄		8030210	NPFC-L-2G14-F	10
G ³ / ₈		8030211	NPFC-L-2G38-F	10
G ¹ / ₂		8030212	NPFC-L-2G12-F	10
G ³ / ₄		8030213	NPFC-L-2G34-F	10
G1		8030214	NPFC-L-2G1-F	10

1) Packaging unit per part

Threaded fittings NPFC

Ordering data

Elbow fitting NPFC-L



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Female thread			
Metric thread				
M5	M5	8030215	NPFC-L-2M5-MF	10
R thread/G thread				
R1/8	G1/8	8030216	NPFC-L-R18-G18-MF	10
R1/4	G1/4	8030217	NPFC-L-R14-G14-MF	10
R3/8	G3/8	8030218	NPFC-L-R38-G38-MF	10
R1/2	G1/2	8030219	NPFC-L-R12-G12-MF	10
R3/4	G3/4	8030220	NPFC-L-R34-G34-MF	10
R1	G1	8030221	NPFC-L-R1-G1-MF	10

Elbow fitting NPFC-L



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread				
Metric thread				
M5		8030222	NPFC-L-2M5-M	10
R thread				
R1/8		8030223	NPFC-L-2R18-M	10
R1/4		8030224	NPFC-L-2R14-M	10
R3/8		8030225	NPFC-L-2R38-M	10
R1/2		8030226	NPFC-L-2R12-M	10
R3/4		8030227	NPFC-L-2R34-M	10

T-fitting NPFC-T



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Female thread				
G thread				
G1/8		8030235	NPFC-T-3G18-F	10
G1/4		8030236	NPFC-T-3G14-F	10
G3/8		8030237	NPFC-T-3G38-F	10
G1/2		8030238	NPFC-T-3G12-F	10
G3/4		8030239	NPFC-T-3G34-F	10
G1		8030240	NPFC-T-3G1-F	10

T-fitting NPFC-T



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Female thread	Male thread			
Metric thread				
M5	M5	8030245	NPFC-T-3M5-FMF	10
G thread/R thread				
G1/8	R1/8	8030246	NPFC-T-2G18-R18-FMF	10
G1/4	R1/4	8030247	NPFC-T-2G14-R14-FMF	10
G3/8	R3/8	8030248	NPFC-T-2G38-R38-FMF	10
G1/2	R1/2	8030249	NPFC-T-2G12-R12-FMF	10
G3/4	R3/4	8030250	NPFC-T-2G34-R34-FMF	10
G1	R1	8030251	NPFC-T-2G1-R1-FMF	10

1) Packaging unit per part

Threaded fittings NPFC

Ordering data

T-fitting NPFC-T



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Female thread	Male thread			
G thread/R thread				
G 1/8	R 1/8	8030255	NPFC-T-G18-2R18-FMM	10
G 1/4	R 1/4	8030256	NPFC-T-G14-2R14-FMM	10
G 3/8	R 3/8	8030257	NPFC-T-G38-2R38-FMM	10
G 1/2	R 1/2	8030258	NPFC-T-G12-2R12-FMM	10

T-fitting NPFC-T



Pneumatic connection		Part no.	Type	PU ¹⁾
1				
Male thread				
R thread				
R 1/4		8030252	NPFC-T-3R14-M	10
R 3/8		8030253	NPFC-T-3R38-M	10
R 1/2		8030254	NPFC-T-3R12-M	10

T-fitting NPFC-T



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Female thread			
R thread/G thread				
R 1/8	G 1/8	8030259	NPFC-T-2R18-G18-MMF	10
R 1/4	G 1/4	8030260	NPFC-T-2R14-G14-MMF	10
R 1/2	G 1/2	8030261	NPFC-T-2R12-G12-MMF	10

T-fitting NPFC-T



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Female thread			
Metric thread				
M5	M5	8069244	NPFC-T-M5-MFF	10
R thread/G thread				
R 1/8	G 1/8	8030241	NPFC-T-R18-2G18-MFF	10
R 1/4	G 1/4	8030242	NPFC-T-R14-2G14-MFF	10
R 3/8	G 3/8	8030243	NPFC-T-R38-2G38-MFF	10
R 1/2	G 1/2	8030244	NPFC-T-R12-2G12-MFF	10

1) Packaging unit per part

Ordering data

Y-fitting NPFC-Y



Pneumatic connection		Part no.	Type	PU ¹⁾
1				
Female thread				
G thread				
G $\frac{1}{4}$		8030228	NPFC-Y-3G14-F	10
G $\frac{3}{8}$		8030229	NPFC-Y-3G38-F	10
G $\frac{1}{2}$		8030230	NPFC-Y-3G12-F	10

Y-fitting NPFC-Y



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Female thread			
R thread/G thread				
R $\frac{1}{8}$	G $\frac{1}{8}$	8030231	NPFC-Y-R18-2G18-MFF	10
R $\frac{1}{4}$	G $\frac{1}{4}$	8030232	NPFC-Y-R14-2G14-MFF	10
R $\frac{3}{8}$	G $\frac{3}{8}$	8030233	NPFC-Y-R38-2G38-MFF	10
R $\frac{1}{2}$	G $\frac{1}{2}$	8030234	NPFC-Y-R12-2G12-MFF	10

X-fitting NPFC-X



Pneumatic connection		Part no.	Type	PU ¹⁾
1				
Female thread				
G thread				
G $\frac{1}{4}$		8030262	NPFC-X-4G14-F	10
G $\frac{3}{8}$		8030263	NPFC-X-4G38-F	10
G $\frac{1}{2}$		8030264	NPFC-X-4G12-F	10

X-fitting NPFC-X



Pneumatic connection		Part no.	Type	PU ¹⁾
1	2			
Male thread	Female thread			
R thread/G thread				
R $\frac{1}{4}$	G $\frac{1}{4}$	8030265	NPFC-X-R14-3G14-MFFF	10
R $\frac{1}{2}$	G $\frac{1}{2}$	8030266	NPFC-X-R12-3G12-MFFF	10

1) Packaging unit per part

Blanking plugs B ★

Data sheet

Materials			
Type	B-M3-S9	B-M5	B-M5-B, B-M7, B with G thread
Blanking plug	High-alloy stainless steel	Galvanised steel	Galvanised steel

★ Quick ordering ¹⁾

Blanking plug B



Pneumatic connection		Part no.	Type	PU ²⁾
1				
Male thread				
Metric thread with sealing ring				
M3	With external hex	30979	B-M3-S9	10
M5	With external hex	3843	B-M5	10
	With internal hex	174308	B-M5-B	10
M7	With internal hex	174309	B-M7	10
G thread with sealing ring				
G $\frac{1}{8}$	With internal hex	3568	B-1/8	10
G $\frac{1}{4}$	With internal hex	3569	B-1/4	10
G $\frac{3}{8}$	With internal hex	3570	B-3/8	10
G $\frac{1}{2}$	With internal hex	3571	B-1/2	10
G $\frac{3}{4}$	With internal hex	3572	B-3/4	1
G1	With internal hex	5763	B-1	1

1) All products in this table are easy to select and quick to order.

2) Packaging unit per part



The fast and economical coupling system

- + Energy-efficient connection with minimal pressure drop
- + Shut off at one or both ends

Couplings >

Quick coupling sockets/plugs

NPHS ★
KD/KS ★


Couplings >

Quick coupling sockets/plugs

NPHS ★ , KD / KS ★

 Overview, configuration and ordering
 → www.festo.com/catalogue/couplings



 Additional information, support and user documentation
 → www.festo.com/sp/couplings



★ Quick ordering of basic designs
 → page 1516, 1518



- + NPHS: certified by IFA (German Institute for Occupational Health and Safety)
- + Quick connection coupling for standard applications without safety function
- + With male or female thread or with barbed fitting or quick connector
- + Shut off at one or both ends

Product range overview

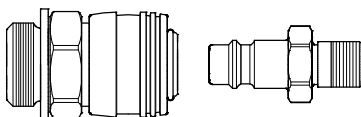
Quick coupling socket/plug	Pneumatic connection 1				Standard nominal flow rate [l/min]	→ Page/ online
	Male thread	Female thread	Quick connector with union nut	Barbed fitting		
Plug-in coupling, shut off at one end						
KD1/KS1	■/-	-	-	-/■	44	1514
KD2/KS2	■/■	■/■	■/■	-	68 ... 135	
KD3/KS3	■/■	■/■	■/■	-	158 ... 666	
KD4/KS4	■/■	■/■	■/■	■/■	252 ... 1350	
Plug-in coupling, shut-off at both ends						
KD3/KS3	■/■	-	-	-	563	1514
KD4/KS4	■/■	-	-	-	765	
Safety coupling, shut-off at one end						
NPHS-D6/ NPHS-S6	■/■	■/■	-	■/■	875 ... 2100	1517

Quick coupling sockets/plugs KD/KS ★

Key features

Mode of operation

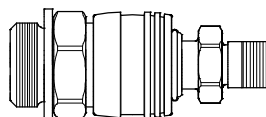
Coupling



To lock the coupling, push the plug into the socket. The plug automatically engages with an audible click when in a specific position.

Note
The maximum pressure that should be applied when mating and releasing the couplings is 10 bar.

Decoupling



To unlock, push the releasing sleeve.

When removing the quick coupling plug, it is important to hold it until it is fully exhausted.

Note
Quick coupling sockets and plugs with the same function and size are compatible.

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on operating/pilot medium	Operation with lubricated medium possible
Operating pressure for entire temperature range [bar]	-0.95 ... +12
Ambient temperature [°C]	-10 ... +60

Materials	Plug-in coupling, shut-off at one end			
	KD1/KS1	KD2/KS2	KD3/KS3	KD4/KS4
Quick coupling socket housing	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Quick coupling plug housing	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Releasing sleeve	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	PP

Quick coupling socket/plug	Plug-in coupling, shut-off at both ends	
	KD3/KS3	KD4/KS4
Quick coupling socket housing	Brass	Brass
Quick coupling plug housing	Brass	Brass
Releasing sleeve	Nickel-plated brass	PP

Coupling/tubing combination options		CN-2	CK-3	CK-4	CK-6, N-6	CK-9, N-9	→ Page/online
Pneumatic connection 1							
For tubing O.D.	[mm]	PAN	4	6	8	-	pan
	[mm]	PUN	3	4	6	-	1433
For tubing I.D.	[mm]	PU	-	-	-	9	pu

Ordering data – Plug-in coupling, shut-off at one end

Quick coupling socket/plug KD1/KS1



Pneumatic connection 1	Quick coupling socket			Quick coupling plug		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
M3	1.5	151995	KD1-M3-A	–	–	–
Barbed fitting						
CN-2	–	–	–	1.5	151996	KS1-CN-2

Quick coupling socket/plug KD2/KS2



Pneumatic connection 1	Quick coupling socket			Quick coupling plug		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
M5	2.4	4087	KD2-M5-A	2.4	531658	KS2-M5-A
Female thread						
M5	2.7	531620	KD2-M5-I	2.7	531660	KS2-M5-I
Quick connector with union nut						
CK-3	2	531621	KD2-CK-3	2	4091	KS2-CK-3
CK-4	2.9	531622	KD2-CK-4	2.7	4090	KS2-CK-4

Quick coupling socket/plug KD3/KS3



Pneumatic connection 1	Quick coupling socket			Quick coupling plug		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
G ¹ / ₈	4.95	2142	KD3-1/8-A	4.95	3492	KS3-1/8-A
G ¹ / ₄	5	531626	KD3-1/4-A	4.95	531666	KS3-1/4-A
Female thread						
G ¹ / ₈	5	531627	KD3-1/8-I	4.95	531668	KS3-1/8-I
G ¹ / ₄	5	531628	KD3-1/4-I	4.95	531669	KS3-1/4-I
Quick connector with union nut						
CK-4	2.9	531629	KD3-CK-4	2.9	3326	KS3-CK-4
CK-6	4.9	531630	KD3-CK-6	4.9	3478	KS3-CK-6

Quick coupling sockets/plugs KD/KS ★

Ordering data – Plug-in coupling, shut-off at one end

Quick coupling socket/plug KD4/KS4



Pneumatic connection 1	Quick coupling socket			Quick coupling plug		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
G $\frac{1}{4}$	8	★ 2143	KD4-1/4-A	7.85	2154	KS4-1/4-A
G $\frac{3}{8}$	10	★ 2144	KD4-3/8-A	7.85	2155	KS4-3/8-A
G $\frac{1}{2}$	10	★ 2145	KD4-1/2-A	7.85	531676	KS4-1/2-A
Female thread						
G $\frac{1}{4}$	7.2	531636	KD4-1/4-I	7.85	531678	KS4-1/4-I
G $\frac{3}{8}$	7.2	531637	KD4-3/8-I	7.85	531679	KS4-3/8-I
G $\frac{1}{2}$	7.2	531638	KD4-1/2-I	7.85	531680	KS4-1/2-I
Quick connector with union nut						
CK-4	–	–	–	2.9	2150	KS4-CK-4
CK-6	4.9	531639	KD4-CK-6	4.9	2151	KS4-CK-6
CK-9	7.4	531640	KD4-CK-9	7.4	531683	KS4-CK-9
Barbed fitting						
N-6	–	–	–	4.5	2152	KS4-N-6
N-9	7.4	531641	KD4-N-9	7	2153	KS4-N-9

Ordering data – Plug-in coupling, shut-off at both ends

Quick coupling socket/plug KD3/KS3



Pneumatic connection 1	Quick coupling socket			Quick coupling plug		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
G $\frac{1}{8}$	5	531659	KD3-1/8-A-R	4.2	531667	KS3-1/8-A-R

Quick coupling socket/plug KD4/KS4



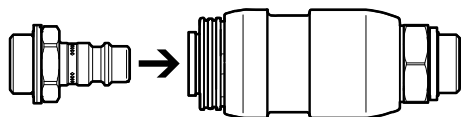
Pneumatic connection 1	Quick coupling socket			Quick coupling plug		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
G $\frac{1}{4}$	8	531694	KD4-1/4-A-R	8	531677	KS4-1/4-A-R

Key features

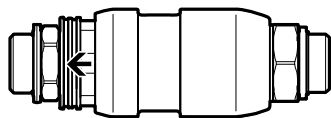
Mode of operation

Quick coupling socket NPHS-D6-M and quick coupling plug NPHS-S6

Coupling

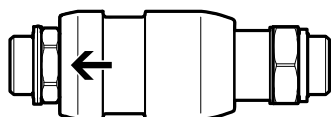


To lock the coupling, push the plug into the socket. The plug automatically engages with an audible click when in a specific position.



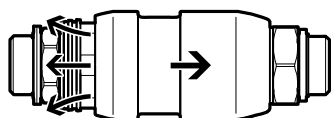
When the plug is engaged, the releasing sleeve shifts one position in the direction of the plug. This releases the locking mechanism between the releasing sleeve and the sliding sleeve. The sliding sleeve can now be actuated.

Pressurising



To pressurise, push the sliding sleeve in the direction of the plug.

Exhausting

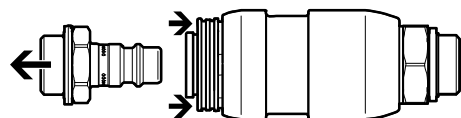


To exhaust, push the sliding sleeve in the direction of the thread on the quick coupling socket. The air from the plug and the components connected to it can escape. The air on the coupling side is shut off. The releasing sleeve can now be accessed.

Special features:

To repressurise the plug, the sliding sleeve must be pushed in the direction of the plug once more. It is not necessary to release the plug from the socket completely before doing this. This safety coupling can thus be used as an on-off valve, for example.

Decoupling



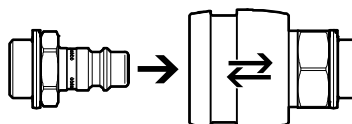
Unlock the plug fully by pushing the releasing sleeve. The plug should only be removed after all the air has been exhausted. With the plug removed, the two sleeves cannot slide or be pushed.

Note

Pressurise or exhaust the coupling to a maximum of 10 bar only. Hearing protection is recommended, especially at higher operating pressures.

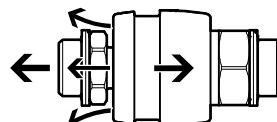
Quick coupling socket NPHS-D6-P and quick coupling plug NPHS-S6

Coupling



To lock the coupling, push the plug into the socket. The plug automatically engages with an audible click when in a specific position. In the process, the releasing sleeve moves briefly backwards and then forwards again.

Exhausting

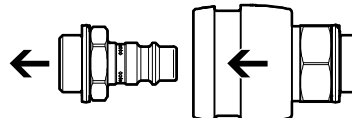


To exhaust, first push the releasing sleeve in the direction of the thread on the quick coupling socket. This releases the pin locking mechanism of the coupling. The plug moves approx. 5 mm out of the coupling and is held in this position by the ball locking mechanism of the coupling. The air from the plug and the components connected to it can escape. The air on the coupling side is shut off.

Special features:

To repressurise the plug, it must be pushed into the socket once more. It is not necessary to release the plug from the socket completely before doing this.

Decoupling



Next release the plug from the ball locking mechanism by pulling the releasing sleeve. This releases the plug completely so that it can be removed from the socket. The plug should only be removed after all the air has been exhausted.

Quick coupling sockets/plugs NPHS ★

Data sheet

Operating conditions	Quick coupling socket		Quick coupling plug
	Plastic releasing sleeve	Metal releasing sleeve	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]		
Note on operating/pilot medium	Operation with lubricated medium possible		
Operating pressure for entire temperature range [bar]	-0.95 ... +10	-0.95 ... +20 ¹⁾	-0.95 ... +10 (-0.95 ... +20) ²⁾
Ambient temperature [°C]	-10 ... +60	-20 ... +80	-10 ... +60 (-20 ... +100) ²⁾

- 1) Pressurise or exhaust the coupling to a maximum of 10 bar only. Hearing protection is recommended, especially at higher operating pressures. 20 bar is the maximum static operating pressure (without pulsation).
 2) Using a suitable sealing ring (e.g. sealing ring OL), it is possible to achieve a static operating pressure (without pulsation) of up to 20 bar in a temperature range of -20°C to +100°C.

Materials	Quick coupling socket		Quick coupling plug
	Plastic releasing sleeve	Metal releasing sleeve	
Housing	Nickel-plated brass	Nickel-plated brass	Hardened galvanised steel
Releasing sleeve	PP	Nickel-plated brass	-
Sliding sleeve	-	Colourless anodised aluminium	-

Note
 All types of quick coupling socket NPHS-D6 are compatible with all plugs NPHS-S6.
 In addition, the quick coupling sockets NPHS-D6-M and all quick coupling plugs NPHS-S6 can be combined with quick coupling sockets/plugs KD4/KS4 made of brass.
 In contrast, the quick coupling sockets NPHS-D6-P may only be used with the hardened quick coupling plugs NPHS-S6.
 No safety function when combining quick coupling socket KD4 with quick coupling plug NPHS-S6. In this combination, the plug is released directly in one step.

Ordering data – Safety coupling, shut-off at one end

Quick coupling socket NPHS-D6



Pneumatic connection	Plastic releasing sleeve			Metal releasing sleeve		
	Nominal width [mm]	Part no.	Type	Nominal width [mm]	Part no.	Type
Male thread						
G1/8	5	8059266	NPHS-D6-P-G18	-	-	-
G1/4	7.8	★ 8059267	NPHS-D6-P-G14	8.2	8059275	NPHS-D6-M-G14
G3/8	10.2	★ 8059268	NPHS-D6-P-G38	10	8059276	NPHS-D6-M-G38
G1/2	11	★ 8059269	NPHS-D6-P-G12	10	8059277	NPHS-D6-M-G12
Female thread						
G1/4	-	8059271	NPHS-D6-P-G14F	-	-	-
G3/8	-	8059272	NPHS-D6-P-G38F	-	-	-
G1/2	-	8059273	NPHS-D6-P-G12F	-	-	-
For plug-in nipple						
N-9	7	8059274	NPHS-D6-P-BC9	-	-	-

Quick coupling plug NPHS-S6



Pneumatic connection 1	Nominal width [mm]	Part no.	Type
Male thread			
G1/8	5.5	★ 8059257	NPHS-S6-M-G18
G1/4	7.85	★ 8059258	NPHS-S6-M-G14
G3/8	7.85	★ 8059259	NPHS-S6-M-G38
G1/2	7.85	★ 8059260	NPHS-S6-M-G12
Female thread			
G1/4	7.85	★ 8059262	NPHS-S6-M-G14F
G3/8	7.85	★ 8059263	NPHS-S6-M-G38F
G1/2	7.85	★ 8059264	NPHS-S6-M-G12F
For plug-in nipple			
N-9	7	8059265	NPHS-S6-M-BC9



Distribution of compressed air with maximum power density

- + Compact design
- + High flow rates

Distributors >

Multiple distributors

QSLV
QSQ


Distributors >

Multiple distributors

QSLV/QSQ

 Overview, configuration and ordering
→ www.festo.com/catalogue/qlsv



 Additional information, support and user documentation
→ www.festo.com/sp/qlsv



- + Standard series
- + Temperature range up to 80°C
- + L-shape, T-shape
- + Rotatable 360°
- + Connection via threaded or push-in connector
- + Reducing design
- + Suitable for use with water as an operating medium

Key features



The fitting can be aligned after assembly.

Product range overview

Type	Version	Design	Pneumatic connection 1			Pneumatic connection 2	→ Page/ online
			R thread	G thread	Tubing O.D.	Tubing O.D.	
QSQ	Multiple distributor, 4 outlets	Straight	■	■	■	■	1522
QSLV2	Multiple distributor, 2 outlets	L-shape	■	■	–	■	1523
QSLV3	Multiple distributor, 3 outlets		■	■	–	■	1524
QSLV4	Multiple distributor, 4 outlets		■	■	–	■	
QSLV6	Multiple distributor, 6 outlets		■	■	–	■	
QST3	Multiple distributor, 4 outlets		■	■	■	■	qst3
QSYTF	Multiple distributor, 3 outlets		■	■	–	■	qsytf

Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-] Water as per manufacturer's declaration ¹⁾
Note on operating/pilot medium	Operation with lubricated medium possible
Operating pressure [bar] for entire temperature range	–0.95 ... +6
Temperature-dependent operating pressure [bar]	–0.95 ... +14
Ambient temperature [°C]	–10 ... +80

1) Additional information www.festo.com/sp → Certificates.

Materials	
Housing	PBT
Releasing ring	POM
Tube retaining claw	High-alloy stainless steel
Tubing seal	NBR

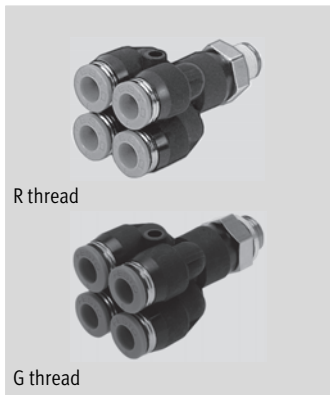
Distributors >

Multiple distributors QSQ

Ordering data

Multiple distributor QSQ

4 outlets, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Male thread	Tubing O.D. [mm]				
R thread					
R $\frac{1}{8}$	4	2.6	153206	QSQ-1/8-4	1
	6	5.2	153208	QSQ-1/8-6	1
R $\frac{1}{4}$	4	2.6	153207	QSQ-1/4-4	1
	6	5.2	153288	QSQ-1/4-6	1
G thread with sealing ring					
G $\frac{1}{8}$	4	2.6	186220	QSQ-G1/8-4	1
	6	5.2	186222	QSQ-G1/8-6	1
G $\frac{1}{4}$	4	2.6	186221	QSQ-G1/4-4	1
	6	5.2	186263	QSQ-G1/4-6	1



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1	2				
Tubing O.D. [mm]	Tubing O.D. [mm]				
Push-in connector, reducing					
6	4	1.4	153209	QSQ-6-4	1
8	6	3.2	153210	QSQ-8-6	1

1) Packaging unit per part

Ordering data

Multiple distributor QSLV2

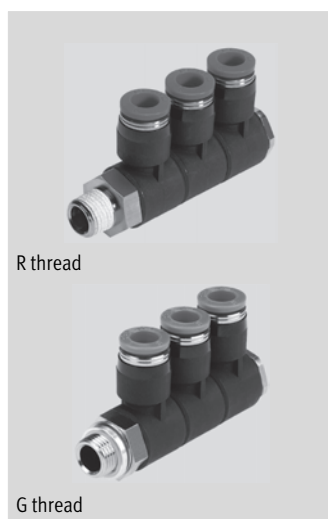
2 outlets, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R $\frac{3}{8}$	4	2.4	153211	QSLV2-1/8-4	1
	6	3.2	153212	QSLV2-1/8-6	1
	8	4.2	153214	QSLV2-1/8-8	1
R $\frac{1}{4}$	6	3.2	153213	QSLV2-1/4-6	1
	8	4.3	153215	QSLV2-1/4-8	1
	10	5.2	153217	QSLV2-1/4-10	1
R $\frac{3}{8}$	8	4.3	153216	QSLV2-3/8-8	1
	10	5.3	153218	QSLV2-3/8-10	1
	12	6.3	153219	QSLV2-3/8-12	1
R $\frac{1}{2}$	12	6.4	153220	QSLV2-1/2-12	1
G thread with sealing ring					
G $\frac{3}{8}$	4	2.4	186223	QSLV2-G1/8-4	1
	6	3.2	186224	QSLV2-G1/8-6	1
	8	4.2	186226	QSLV2-G1/8-8	1
G $\frac{1}{4}$	6	3.2	186225	QSLV2-G1/4-6	1
	8	4.3	186227	QSLV2-G1/4-8	1
	10	5.2	186229	QSLV2-G1/4-10	1
G $\frac{3}{8}$	8	4.3	186228	QSLV2-G3/8-8	1
	10	5.3	186230	QSLV2-G3/8-10	1
	12	6.3	186231	QSLV2-G3/8-12	1
G $\frac{1}{2}$	12	6.4	186232	QSLV2-G1/2-12	1

Multiple distributor QSLV3

3 outlets, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R $\frac{3}{8}$	4	2.4	153221	QSLV3-1/8-4	1
	6	3.2	153222	QSLV3-1/8-6	1
	8	4.3	153224	QSLV3-1/8-8	1
R $\frac{1}{4}$	6	3.2	153223	QSLV3-1/4-6	1
	8	4.2	153225	QSLV3-1/4-8	1
	10	5.2	153227	QSLV3-1/4-10	1
R $\frac{3}{8}$	8	4.3	153226	QSLV3-3/8-8	1
	10	5.3	153228	QSLV3-3/8-10	1
	12	6.4	153229	QSLV3-3/8-12	1
R $\frac{1}{2}$	12	6.5	153230	QSLV3-1/2-12	1
G thread with sealing ring					
G $\frac{3}{8}$	4	2.4	186233	QSLV3-G1/8-4	1
	6	3.2	186234	QSLV3-G1/8-6	1
	8	4.3	186236	QSLV3-G1/8-8	1
G $\frac{1}{4}$	6	3.2	186235	QSLV3-G1/4-6	1
	8	4.2	186237	QSLV3-G1/4-8	1
	10	5.2	186239	QSLV3-G1/4-10	1
G $\frac{3}{8}$	8	4.3	186238	QSLV3-G3/8-8	1
	10	5.3	186240	QSLV3-G3/8-10	1
	12	6.4	186241	QSLV3-G3/8-12	1
G $\frac{1}{2}$	12	6.5	186242	QSLV3-G1/2-12	1

1) Packaging unit per part

Distributors >

Multiple distributors QSLV

Ordering data

Multiple distributor QSLV4

4 outlets, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R ¹ / ₈	4	2.3	153231	QSLV4-1/8-4	1
	6	2.9	153232	QSLV4-1/8-6	1
	8	4	153234	QSLV4-1/8-8	1
R ¹ / ₄	6	2.9	153233	QSLV4-1/4-6	1
	8	4.1	153235	QSLV4-1/4-8	1
	10	5	153237	QSLV4-1/4-10	1
R ³ / ₈	8	4.1	153236	QSLV4-3/8-8	1
	10	5.1	153238	QSLV4-3/8-10	1
	12	6	153239	QSLV4-3/8-12	1
R ¹ / ₂	12	6.2	153240	QSLV4-1/2-12	1
G thread with sealing ring					
G ¹ / ₈	4	2.3	186243	QSLV4-G1/8-4	1
	6	2.9	186244	QSLV4-G1/8-6	1
	8	4	186246	QSLV4-G1/8-8	1
G ¹ / ₄	6	2.9	186245	QSLV4-G1/4-6	1
	8	4.1	186247	QSLV4-G1/4-8	1
	10	5	186249	QSLV4-G1/4-10	1
G ³ / ₈	8	4.1	186248	QSLV4-G3/8-8	1
	10	5.1	186250	QSLV4-G3/8-10	1
	12	6	186251	QSLV4-G3/8-12	1
G ¹ / ₂	12	6.2	186252	QSLV4-G1/2-12	1

Multiple distributor QSLV6

6 outlets, rotatable



Pneumatic connection		Nominal width [mm]	Part no.	Type	PU ¹⁾
1 Male thread	2 Tubing O.D. [mm]				
R thread					
R ¹ / ₈	4	2.3	153241	QSLV6-1/8-4	1
	6	2.9	153242	QSLV6-1/8-6	1
	8	4	153244	QSLV6-1/8-8	1
R ¹ / ₄	6	2.9	153243	QSLV6-1/4-6	1
	8	4	153245	QSLV6-1/4-8	1
	10	5.2	153247	QSLV6-1/4-10	1
R ³ / ₈	8	4.1	153246	QSLV6-3/8-8	1
	10	5.2	153248	QSLV6-3/8-10	1
	12	6.3	153249	QSLV6-3/8-12	1
R ¹ / ₂	12	6.3	153250	QSLV6-1/2-12	1
G thread with sealing ring					
G ¹ / ₈	4	2.3	186253	QSLV6-G1/8-4	1
	6	2.9	186254	QSLV6-G1/8-6	1
	8	4	186256	QSLV6-G1/8-8	1
G ¹ / ₄	6	2.9	186255	QSLV6-G1/4-6	1
	8	4	186257	QSLV6-G1/4-8	1
	10	5.2	186259	QSLV6-G1/4-10	1
G ³ / ₈	8	4.1	186258	QSLV6-G3/8-8	1
	10	5.2	186260	QSLV6-G3/8-10	1
	12	6.3	186261	QSLV6-G3/8-12	1
G ¹ / ₂	12	6.3	186262	QSLV6-G1/2-12	1

1) Packaging unit per part



Prevent leakages simply and reliably

- + Two-component sealing rings ensure zero leakage
- + Thread sealing tape for flexible sealing

Accessories for pneumatic connection technology >

Sealing materials

GWB

Thread sealing tape

O

Sealing rings

ZRS

Pipe and tubing cutters

Accessories for pneumatic connection technology >

Sealing materials

GWB/O



Overview, configuration and ordering

→ www.festo.com/catalogue/pn_acc



Additional information, support and user documentation

→ www.festo.com/sp/pn_acc



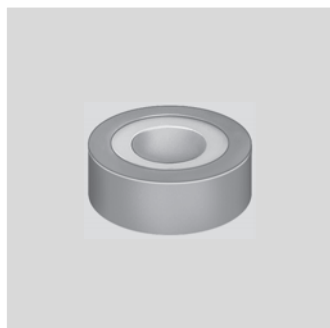
- + Sealing materials
- + Pipe and tubing cutters
- + Tubing accessories
- + Pipe accessories

Product range overview

Type	Function	M3	M5	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	→ Page/ online
Sealing material											
GWB	Thread sealing tape	-									1527
O	Sealing ring	■	■	-	■	■	■	■	■	■	1528
CRO	Sealing ring	-	■	-	■	■	■	■	■	■	
OL	Sealing ring, sealing ring assortment	-	■	-	■	■	■	■	■	-	
OK	Sealing ring, sealing ring assortment	■	■	■	■	■	■	■	■	-	1499
NPAS	Sealing ring	-	-	-	■	■	■	-	-	-	

Ordering data

Thread sealing tape GWB-0,1



Width [mm]	Thickness [mm]	Length [m]	Part no.	Type
10	0,1	12,5	9076	GWB-0,1

Sealing ring O/CRO



For thread	Part no.	Type	PU ¹⁾
PA			
M3	30290	O-M3-B	1
PVC			
M5	3565	O-M5	1
	534226	O-M5-500	500
G1/8	2223	O-1/8	1
	534227	O-1/8-500	500
G1/4	2224	O-1/4	1
	534228	O-1/4-200	200
G3/8	2225	O-3/8	1
	534229	O-3/8-200	200
G1/2	2226	O-1/2	1
	534230	O-1/2-100	100
G3/4	2227	O-3/4	1
G1	210893	O-1	1
PVDF			
M5	165191	CRO-M5	1
G1/8	575895	CRO-1/8	1
G1/4	165193	CRO-1/4	1
G3/8	165194	CRO-3/8	1
G1/2	165195	CRO-1/2	1
G3/4	165196	CRO-3/4	1
G1	165197	CRO-1	1

1) Packaging unit per part

Accessories for pneumatic connection technology >

Sealing materials

Ordering data

Sealing ring OL

with metal body, based on standard ISO 16030



For thread	Part no.	Type	PU ¹⁾
Stainless steel, NBR			
M5	34634	OL-M5	1
	534231	OL-M5-500	500
G ¹ / ₈	33840	OL-1/8	1
	534232	OL-1/8-500	500
G ¹ / ₄	34635	OL-1/4	1
	534233	OL-1/4-200	200
Aluminium, NBR			
G ³ / ₈	34636	OL-3/8	1
	534234	OL-3/8-200	200
G ¹ / ₂	34637	OL-1/2	1
	534235	OL-1/2-100	100
G ³ / ₄	34638	OL-3/4	1

Sealing ring assortment OL-S1



Contents	Quantity	Part no.	Type
OL-M5	50	161355	OL-S1
OL-1/8	100		
OL-1/4	100		
OL-3/8	40		
OL-1/2	30		
OL-3/4	10		

Sealing ring OK

with support ring, based on standard ISO 16030



For thread	Part no.	Type	PU ¹⁾
Stainless steel, NBR			
M3	130849	OK-M3	1
M5	130850	OK-M5	1
M7	130851	OK-M7	1
PA, TPE-U(PU)			
G ¹ / ₈	531771	OK-1/8	1
G ¹ / ₄	531772	OK-1/4	1
G ³ / ₈	531773	OK-3/8	1
G ¹ / ₂	531774	OK-1/2	1
G ³ / ₄	531775	OK-3/4	1

Sealing ring assortment OK-S1



Contents	Quantity	Part no.	Type
OK-M3	50	570465	OK-S1
OK-M5	100		
OK-M7	50		
OK-1/8	100		
OK-1/4	100		
OK-3/8	40		
OK-1/2	30		
OK-3/4	10		

1) Packaging unit per part

Product range overview

Type	Function		→ Page/ online
Tools			
ZRS	Pipe and tubing cutter	For cutting plastic and nitrile rubber tubing with outside diameters of up to 20 mm, with or without textile insert. It is not suitable for tubing with metal casing.	1529
PAN-VOS	Tubing cutter	For flame-retardant PAN-V0 tubing	zds
ZDS	Disconnecting pliers	For removing plastic tubing from barbed fittings	
ZMS	Connecting pliers	For connecting plastic tubing to barbed fittings	
ZR	Pipe cutter	For cutting plastic pipes PQ-PA with outside diameters of up to 28 mm	

Ordering data

Pipe and tubing cutter ZRS



	Part no.	Type
Pipe and tubing cutter with 2 spare blades	7658	ZRS
10 spare blades for pipe and tubing cutter	218606	ZRS 10PACK.

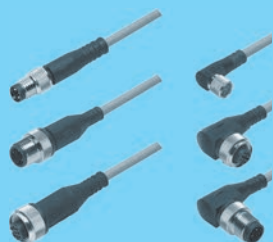
15 Electrical connector technology

- + Universal connecting cables
- + Connecting cables for controllers, sensors, valves and valve terminals
- + Universal plug connectors
- + Plug connectors for controllers, sensors, valves and valve terminals
- + Accessories for electrical connector technology



NEBU★

Connecting cables



- + The modular cable system with unlimited combination options of plugs, plug sockets, cable lengths and qualities
- + It complements all devices with M8 and M12 plugs such as proximity sensors, position sensors, pressure switches, pressure sensors, pressure transmitters, flow sensors and optical and inductive sensors, as well as valves with a central connector, such as CPE, MPA or VSVA
- + Cable length Q1 ... 30 m

→ page 1541

NEDY

Plug connectors



- + Collecting signals between field devices (sensors) and double-assigned controller inputs
- + Distributing signals between double-assigned controller outputs and field devices (actuators, e.g. valves)
- + Different variants with plugs, sockets and open cable ends

→ page 1551

Contents

Product overview 1532

Motor, encoder, resolver cables NEBM 1533

NEW Additional versions

Connecting cables NEBB 1536


NEW New series

Connecting cables NEBU 1541




T-distributors NEDY 1551

Product overview





Software tool

<p>Configurator</p>		<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
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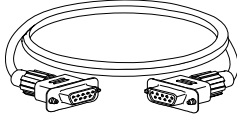

Connecting cables, universal

	 <p>Connecting cables NEBU</p>	 <p>Connecting cables/plug sockets with cable SIM</p>	 <p>Connecting cables KM12</p>
<p>Electrical connection</p>	<p>Socket: straight, angled, rotatable, plug: straight, angled, M8x1, M12x1, 3-pin, 4-pin, 5-pin, 8-pin, rotatable thread, open end</p>	<p>Straight, angled socket, angled socket/open end, straight socket/open end, M12x1, M8x1, clip-on, 3-pin, 4-pin, 5-pin, 3-wire, 4-wire, 5-wire,</p>	<p>8-pin/8-pin, M12x1/M12x1, plug: straight/socket: straight</p>
<p>Cable length</p>	<p>0.1 ... 30 m</p>	<p>2 ... 10 m</p>	<p>2 m</p>
<p>Description</p>	<ul style="list-style-type: none"> • Designs for static, standard, energy chain and robot applications • Designs with switching status indication • Designs for connecting sensors and actuators 	<ul style="list-style-type: none"> • Pre-assembled at both ends 	<ul style="list-style-type: none"> • For connecting inputs and outputs • Type of mounting: union nut, threaded connector
<p>→ Page/online</p>	<p>1541</p>	<p>sim</p>	<p>km12</p>




Connecting cables for controllers

	 <p>Connecting cables NEBC</p>	 <p>Connecting cables NEBP</p>	 <p>Connecting cables, diagnostic cables SBOA</p>	 <p>Cables FEC-KBG</p>
<p>Electrical connection</p>	<p>Straight plug, socket, M12.x, Sub-D, 5-pin, 9-pin, 25-pin, square design/angled, Sub-D/Sub-D</p>	<p>Angled socket, M16x0.75, 6-pin; angled plug, M9x0.5, 5-pin</p>	<p>Straight plug/straight socket/straight socket</p>	<p>Open end, for RS232 interface</p>
<p>Cable length</p>	<p>0.25 ... 20 m</p>	<p>2 m</p>	<p>2 m</p>	<p>2.5 ... 5 m</p>
<p>Description</p>	<ul style="list-style-type: none"> • For I/O interface • For connecting motor controller CMMS-ST to any controllers 	<ul style="list-style-type: none"> • Connection between displacement encoder MME and measuring module CPX-CMIX 	<ul style="list-style-type: none"> • Used as Ethernet diagnostic cable, for integration in a CPI system, for I/O extension, for compact vision system type SBOC-Q, SBOI-Q 	<ul style="list-style-type: none"> • For connecting to control block CPX-FEC • Connection between displacement encoder MME and measuring module CPX-CMIX
<p>→ Page/online</p>	<p>nebc</p>	<p>nebp</p>	<p>sboa</p>	<p>fec-kbg</p>


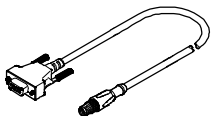
Connecting cables for control systems

Type	 Control cables KES	 Programming cables KDI	 Programming cables PS1-ZK11	 Connecting cables KV-M12
Electrical connection	15-pin, straight socket, Sub-D, cable, open end, 15-pin, 18-pin	4-pin, 9-pin, straight socket, straight plug, M8x1, Sub-D	Sub-D, 9-pin	Socket, plug, straight, round, M12x1 A-coded to EN 61076-2-101
Cable length	2.5 ... 10 m	3 m	2 m	1.5 ... 3.5 m
Description	<ul style="list-style-type: none"> For I/O interface for connecting motor controller SFC-DC to any controller 	<ul style="list-style-type: none"> Pre-assembled at both ends For diagnostic interface 	<ul style="list-style-type: none"> The null modem cable ZK11 is intended exclusively as a programming cable for direct connection to a PC Among other things for motor controller CMMS-ST 	<ul style="list-style-type: none"> Plug socket with cable for diagnostic interface (to CPX terminal) Pre-assembled at both ends 5-pin/4-wire Round plug Mounting via union nut M12
→ Page/online	kes	kdi	cmms-st	kv-m12

Connecting cables for motors



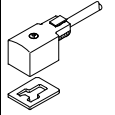
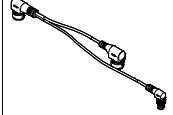
Type	 Motor, encoder, resolver cables NEBM	 Control cables KES	 Motor cables KMTR
Electrical connection	Socket, cable, plug, straight, angled, connection pattern L4, connection pattern L5, RJ45, ITT M3, Sub-D, M12x1 A-coded to EN 61076-2-101, M16x0.75, open end, M23x1, M40x1.5	15-pin, straight socket, Sub-D, cable, open end, 15-pin, 18-pin	11-pin, 12-pin, straight socket, M12x1, A-coded to EN 61076-2-101, 11-pin, 15-pin, straight plug, Sub-D
Cable length	1 ... 25 m	2.5 ... 10 m	2.5 ... 10 m
NEW	<ul style="list-style-type: none"> Additional versions 		
Description	<ul style="list-style-type: none"> For servo motor EMMS-AS and stepper motor EMMS-ST Suitable for energy chains 	<ul style="list-style-type: none"> For I/O interface for connecting motor controller SFC-DC to any controller 	<ul style="list-style-type: none"> For motor controller SFC-DC
→ Page/online	nebm	kes	kmtr

Connecting cables for motors



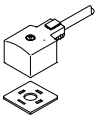
Type	 Power supply cables KPWR	 Fieldbus adapters fba
Electrical connection	6-pin, 7-pin, straight socket, Sub-D mixed, 6-pin, cable, open end	9-pin Sub-D plug to 5-pin round plug/socket M12, plus round plug M12 for logic voltage supply
Cable length	2.5 ... 10 m	0.1 m
Description	<ul style="list-style-type: none"> For motor controller SFC-DC for connecting load and logic supply 	<ul style="list-style-type: none"> 9-pin Sub-D plug to 5-pin round plug/socket M12
→ Page/online	kpwr	fba

Product overview

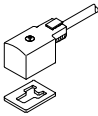


Connecting cables for valves

				
Type	Connecting cables NEBV ★	Plug sockets with cable KMEB-1, KMEB-2, KMEB-3 ★	Plug sockets with cable KMF ★	Connecting cables NEDV
Electrical connection	M8x1, socket, straight socket, M12, 8-pin, straight plug, M12, 4-pin, 2-pin, angled socket/straight plug, angled socket/cable, straight socket/straight plug, M8x1/M8x1, M12x1/M12x1, 4-pin/3-pin, 8-pin/4-pin, 4-pin/2-wire, socket/plug/plug, M12x1/M12x1/M12x1, 8-pin/4-pin/4-pin	2-pin, 3-pin, 4-pin, 5-pin, angled socket, type C, to DIN EN 175301-803	Socket	M12, 3-pin, 2x angled socket, 1x angled plug, M8, 4-pin
Cable length	0.2 ... 30 m	0.5 ... 10 m	2.5 ... 10 m	0.2 m
Description	<ul style="list-style-type: none"> For valves with ZC solenoid coil Pre-assembled at both ends 	<ul style="list-style-type: none"> For valves with EB solenoid coil Mounting via central screw Polyvinyl chloride cable Ambient temperature -20 ... +80 °C 	<ul style="list-style-type: none"> For valves with F solenoid coil Mounting via central screw Polyvinyl chloride cable Temperature range -20 ... +80 °C 	<ul style="list-style-type: none"> For proportional valves VPWP For connecting to sub-base VAPV-S3 Pre-assembled
→ Page/online	nebv	kmeb-1	kmf	nedv




Connecting cables for valves

			
Type	Plug sockets with cable KMYZ-2, KMYZ-4	Plug sockets with cable KME	Plug sockets with cable KMC
Electrical connection	Angled socket/straight plug, angled socket/cable, square design/M8x1, square design/open end, 2-pin/3-pin, 2-pin/2-wire Cable, angled socket, square design MSZB/MSZC	Angled socket, square design, 3-pin, type C	Socket, type A
Cable length	0.5 ... 10 m	2.5 ... 10 m	2.5 ... 10 m
Description	<ul style="list-style-type: none"> For valves with ZB solenoid coil For valves with ZC solenoid coil Mounting via central screw 	<ul style="list-style-type: none"> For valves with E solenoid coil Mounting via central screw Polyvinyl chloride cable Ambient temperature -20 ... +80 °C 	<ul style="list-style-type: none"> For valves with D solenoid coil For valves with N1 solenoid coil Polyvinyl chloride cable Mounting via central screw Ambient temperature -20 ... +80 °C
→ Page/online	kmyz-2	kme	kmc




Connecting cables for valves

			
Type	Plug sockets with cable KMV	Connecting cables KRP	Electrical plug-in bases MHAP-PI
Electrical connection	Socket, type B	2-pin, angled socket	2-pin, 3-pin, socket
Cable length	2.5 ... 10 m	2.5 ... 5 m	0.5 ... 1 m
Description	<ul style="list-style-type: none"> For valves with V solenoid coil Mounting via central screw M3 Polyvinyl chloride cable Ambient temperature -20 ... +80 °C 	<ul style="list-style-type: none"> Plug socket with cable for connecting relay plates (valve terminal CPV10 and CPV14) Pre-assembled Mounting via self-tapping central screw 	<ul style="list-style-type: none"> Plug base with cable for connecting individual valves Pre-assembled Mounting via clip
→ Page/online	kmv	krp	mhap




Connecting cables for valves

			
Type	Plug sockets with cable KMPPE	Connecting cables KMPYE-AIF, KMPYE-5, KMPYE-...	Connecting cables MHJ9-KMH
Electrical connection	8-pin		2-pin/2-pin/4-wire, straight socket/straight socket/ cable
Cable length	2.5 ... 5 m	0.3 ... 5 m	0.5 ... 2.5 m
Description	<ul style="list-style-type: none"> For proportional pressure regulators MPPE and MPPES Mounting via union nut M16x0.75 Polyvinyl chloride cable Ambient temperature -30 ... +80 °C 	<ul style="list-style-type: none"> Plug socket with cable, screened, for proportional directional control valves MPYE 	<ul style="list-style-type: none"> For valves MHJ9 With plug sockets KMH With control electronics for two valves
→ Page/online	kmppe	kmpye	mhj9-kmh

Connecting cables for valve terminals




			
Type	Connecting cables/plug sockets with cable NEBV-S1W37	Flat cables KASI	Addressing cables KASI-ADR
Electrical connection	Socket, cable, Sub-D, open end	2-pin, open cable end	4-pin/4-pin/2-pin, straight socket/angled plug/ straight socket
Cable length	2.5 ... 10 m	100 m	2.5 m
Description	<ul style="list-style-type: none"> For multi-pin plug connection to valve terminal VTSA and VTSA-F Pre-assembled at one end 	<ul style="list-style-type: none"> For AS-Interface® Reverse polarity protected Contact using insulation displacement technology No need to strip cable and wire insulation Two different colours: yellow (preferred for the AS-Interface® network) and black (for auxiliary power supply) 	<ul style="list-style-type: none"> For AS-Interface® For any slaves such as individual valve interface, valve terminal with AS-Interface® connection Reverse polarity protected
→ Page/online	nebv	kasi	kasi-adr

Connecting cables for valve terminals

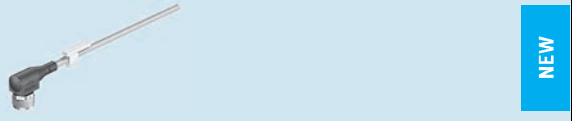

			
Type	Connecting cables KMP3, KMP4, KMP6	Connecting cables KV-M12	Plug sockets with cable KMPV
Electrical connection	15-pin, 25-pin, 26-pin, 9-pin, socket, Sub-D	Straight socket, M12, 5-pin, A-coded, straight plug, M12x1, 5-pin, A-coded	Cable with socket, Sub-D, 15-pin
Cable length	2.5 ... 10 m	1.5 ... 3.5 m	5 m ... 10 m
Description	<ul style="list-style-type: none"> Plug socket with cable for multi-pin plug connection Pre-assembled Mounting via union nut, with 2 screws 	<ul style="list-style-type: none"> Plug socket with cable for diagnostic interface (to CPX terminal) Pre-assembled at both ends 5-pin/4-wire Round plug Mounting via union nut M12 	<ul style="list-style-type: none"> Connecting cable for multi-pin plug connection Pre-assembled
→ Page/online	kmp	kv-m12	nebv

Product overview



Connecting cables for valve terminals

			
Type	Connecting cables KVI	Connecting cables KVIA	Connecting cables VMPA-KMS1, VMPA-KMS2, VMPAL-KM, VMPAL-KMSK
Electrical connection	M9, plug, socket, 5-pin, straight socket/straight plug	Straight plug, straight plug/straight socket, straight plug/angled socket	Cable with plug
Cable length	0.25 ... 8 m	5 ... 10 m	2.5 ... 10 m
Description	<ul style="list-style-type: none"> For fieldbus connection (for valve terminal CPV and installation system CPI) Pre-assembled at both ends Suitable for energy chains 	<ul style="list-style-type: none"> For inputs/outputs (analogue connections) Pre-assembled at both ends 4-pin/5-pin round plug Suitable for energy chains 	<ul style="list-style-type: none"> Plug socket with cable for multi-pin connection (to valve terminal MPA) Variant suitable for use with energy chains Cable outlet straight or to side Pre-assembled at one end Polyvinyl chloride or polyurethane cable
→ Page/online	kvi	kvia	vmpa-kms



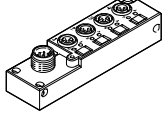
Connecting cables for sensors

		
Type	Connecting cables NEBB	Connecting cables NEBS
Electrical connection	Straight socket, angled socket, M8x1 A-coded to EN 61076-2-104, M12x1 A-coded to EN 61076-2-101, cable, open end	Straight socket, M12x1, 12-pin, A-coded, straight socket, M12x1, 5-pin, A-coded, socket, square design L1, 4-pin, open end, 12-wire, open end, 4-wire, open end, 5-wire
Cable length	2.5 ... 10 m	0.3 ... 10 m
NEW	<ul style="list-style-type: none"> New series 	
Description	<ul style="list-style-type: none"> Degree of protection IP65, IP68, IP69K, in mounted condition 	<ul style="list-style-type: none"> Degree of protection IP40
→ Page/online	nebs	nebs




Universal plug connectors

		
Type	Sensor/actuator distributors NEDY	Cable sockets NEFU
Electrical connection	Controller side: plug M8x1, A-coded, EN 61076-2-104, plug M12x1, A-coded, EN 61076-2-101, open end Field device side: socket M8x1, A-coded, EN 61076-2-104, socket type A, EN 175301-803, socket type B, EN 175301-803, socket type B, industry standard 11 mm, socket type C, EN 175301-803, socket type C, industry standard 9.4 mm, socket connection pattern H, socket connection pattern ZB, self-tapping screw, socket connection pattern ZC, self-tapping screw, socket connection pattern ZC, metric screw, open end	Angled socket, RJ45, 4-pin, straight socket, M12x1, 4-pin, D-coded
Connection cross section		
Degree of protection	IP65, IP67, IP68, IP69K	IP20, IP65, IP67, in mounted condition, to IEC 60529
Description	<ul style="list-style-type: none"> Collecting signals between field devices (sensors) and double-assigned controller inputs Distributing signals between double-assigned controller outputs and field devices (actuators, e.g. valves) 	<ul style="list-style-type: none"> Cable socket for branching the AS-Interface® network at any required point Reconnecting AS-Interface® flat cable to 5-pin M12 socket Reverse polarity protected
→ Page/online	1551	nefu

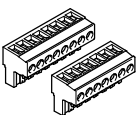

Universal plug connectors

Type	 Plugs NECU, NECU-HX	 Push-in T-connectors NEDU	 Multi-pin plug distributors NEDU
Electrical connection	3-pin, 4-pin, 5-pin, 8-pin, 9-pin, Sub-D, straight socket, straight plug, spring-loaded terminal, screw terminal, insulation displacement connector, 7/8", AIDA push-pull, M8x1, M12x1, for self-assembly, can be screened, square design	Socket/socket/plug, M12x1/M12x1/M12x1, 4-pin/4-pin/4-pin, A-coded/A-coded/A-coded	Straight socket, M8, 3-pin, Straight plug, M12x1, 8-pin
Connection cross section	0.08 ... 2.5 mm ²		
Degree of protection	IP20, IP40, IP65, IP67	IP65, IP67	IP68
Description	<ul style="list-style-type: none"> Power supply socket for fieldbus connection Plug and socket for power supply Can be assembled with any cable lengths NECU-HX: reconnectable M8 and M12 round plug connectors with Harax® quick connection technology for low-voltage applications 	<ul style="list-style-type: none"> For fieldbus connection Branch line for connecting and disconnecting fieldbus components 	<ul style="list-style-type: none"> Particularly compact
→ Page/online	necu	nedu	nedu

Universal plug connectors




Type	 Plugs SEA	 Cable distributors ASI-KVT	 Cable sockets ASI-SD
Electrical connection	3-pin, 4-pin, 5-pin, angled socket, straight plug, screw terminal, insulation displacement connector, solder connection, type A, M8x1, M12x1, M12x1 round plug connector	Insulation displacement technology	2-pin, 4-pin, straight socket, screw terminal
Connection cross section	0.08 ... 0.75 mm ²	1.5 mm ²	0.75 ... 1.5 mm ²
Degree of protection	IP65, IP67	IP65	IP65, IP67
Description	<ul style="list-style-type: none"> Sensor plug and socket for inputs/outputs Can be assembled with any cable lengths 	<ul style="list-style-type: none"> Flat cable distributor for branching or for reconnecting AS-Interface® flat cables Reverse polarity protected 	<ul style="list-style-type: none"> For AS-Interface® Flat-cable socket for connecting AS-Interface® stations to the AS-Interface® bus system M12 connection Reverse polarity protected Detachable connection
→ Page/online	sea	asi-kvt	asi-sd

Plug connectors for controllers


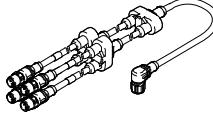


Type	 Plug assortments NEKM	 Plugs NECC
Electrical connection	2 ... 9-pin, screw connector	11-pin, 9-pin/9-pin, plug, Sub-D/screw terminal
Connection cross section	0.2 ... 2.5 mm ²	0.2 ... 2.5 mm ²
Degree of protection		IP40
Description	<ul style="list-style-type: none"> For motor controller CMMS-ST, CMMO-ST, CMMP-AS 	<ul style="list-style-type: none"> Encoder plug for motor controller CMMS-ST Plug for multi-axis controller CMXR for interface housing CAMI-C, 11-pin Plug for multi-axis controller CMXR and for modular controller CECX for peripheral modules 2-pin, 4-pin, 6-pin, 8-pin, 11-pin, 18-pin
→ Page/online	nekm	necc

Product overview





Plug connectors for control systems

			
Type	Plugs PS1-SAC, PS1-ZC	Plugs FBS-SUB-9-WS	Plugs FBS-RJ45
Electrical connection	10-pin/10-pin/10-pin, 30-pin, socket/terminal strip	5-pin, type A, M12x1, straight plug/screw terminal	5-pin, type A, M12x1, straight plug/screw terminal
Connection cross section	0.08 ... 0.75 mm ²	0.75 mm ²	0.75 mm ²
Degree of protection		IP40	IP65, IP67, to IEC 60529
Description	<ul style="list-style-type: none"> For power supply Cable connection using clamping technology Individually or as a set 	<ul style="list-style-type: none"> Plug connector for bus connection CAN bus and PROFIBUS Cable connection 2x horizontal or 2x vertical Printed circuit terminal block with screw connector 	<ul style="list-style-type: none"> Ethernet plug with 8-pin RJ45 connection High transmission quality Detachable connection
→ Page/online	ps1	fbs-sub-9-ws	fbs-rj

Plug connectors for valves

				
Type	Plug sockets MSSD	Adapters NEFV	Soldering bases PCBC	Multi-pin plug sockets NECA
Electrical connection	3-pin, 4-pin, angled socket, type A, type B, type C, to DIN EN 175301-803, to DIN EN 61984, square design	Socket, round, angled, M12x1, A-coded to EN 61076-2-101, 8-pin	2-pin	Socket, Sub-D, 9-pin
Connection cross section	0.25 ... 1.5 mm ²			0.34 ... 1 mm ²
Degree of protection	IP50, IP65, IP67, in mounted state, to IEC 60529	IP65, IP67	IP40	IP65, to IEC 60529
Description	<ul style="list-style-type: none"> For valves with F, D, N1, V, E, EB, N2, Y, Z, ZB, ZC, MD-2 and MH-2 solenoid coils For connecting individual valves Cable connection using clamping screws, insulation displacement technology or push-in connector Optionally with LED display 	<ul style="list-style-type: none"> Adapter for connecting a proportional valve to the controller 	<ul style="list-style-type: none"> For mounting miniature valves MHA1 and MHP1 on a PCB with plug connection underneath (-PI) 	<ul style="list-style-type: none"> For soft-start/quick exhaust valves MS6-SV, MS series Electrical connection via 9-pin Sub-D, 9-pin screw terminal
→ Page/online	mssd	nefv	pcbc	ms6-sv




Plug connectors for valves

				
Type	Angled plug sockets MPPE-3-B	Time delay adapters MFZ	Illuminating seals MF-LD, MC-LD, MV-LD, ME-LD, MEB-LD	Indicating inserts MCL, MCLZ, MFL, MFLZ
Electrical connection	8-pin, angled socket, solderable	For connector socket or device plug, type F	Type A, B, C, to DIN EN 175301-803, square design, MSC/MSE/MSEB/MSF/MSV	Plug, to DIN 43650
Connection cross section	0.75 mm ²			
Degree of protection	IP67	IP64	IP65	IP65
Description	<ul style="list-style-type: none"> For proportional pressure regulators MPPE and MPPES Mounting via union nut 	<ul style="list-style-type: none"> Electronic timer with adjustable time delay of between 0 ... 10 s For mounting between the solenoid coil and connector socket and plug 	<ul style="list-style-type: none"> The seal is illuminated yellow when the power is switched on For mounting between the plug socket and solenoid coil For F, D, N1, V, E and EB solenoid coils 	<ul style="list-style-type: none"> Variant with integrated protective circuit For mounting between the solenoid coil and plug connection With yellow LED display
→ Page/online	mppe-3-b	mfz	mc-ld	mcl




Plug connectors for valve terminals

			
Type	Plug sockets FBSD-GD, FBSD-WD	Plug sockets NTSD-GD, NTSD-WD	T-adapters FB-TA
Electrical connection	4-pin, 5-pin, socket: straight, angled, screw terminal, type A, M12x1	4-pin, 5-pin, socket: straight, angled, plug: straight, screw terminal	Plug/socket, M12x1/M12x1, 5-pin/5-pin
Connection cross section	0.75 mm ²	0.75 ... 2.5 mm ²	
Degree of protection	IP20, IP67	IP67	IP67
Description	<ul style="list-style-type: none"> For fieldbus connection Straight or angled design Can be assembled with any cable lengths 	<ul style="list-style-type: none"> Straight or angled design For power supply Can be assembled with any cable lengths 	<ul style="list-style-type: none"> Branch line for connecting and disconnecting fieldbus components
→ Page/online	fbs	ntsd	fb-ta

Plug connectors for valve terminals

			
Type	Bus connections FBA-1, FBA-2	Plugs FBS-SUB, FBS-SCRJ, FBS-M12	Sensor sockets SIE-GD, SIE-WD
Electrical connection	9-pin/5-pin, straight socket/straight plug, straight socket/plug and socket, Sub-D/-, Sub-D/M12x1	5-pin, type A, M12x1, straight plug/screw terminal	4-pin, straight socket, angled socket, M12x1
Connection cross section		0.75 mm ²	0.25 ... 0.75 mm ²
Degree of protection	IP40, IP65, to IEC 60529	IP65, IP67, in mounted condition, to IEC 60529	IP67
Description	<ul style="list-style-type: none"> Can be assembled with any cable lengths 	<ul style="list-style-type: none"> Variants for PROFIBUS DP, INTERBUS® nodes CPX and CPV, CC-LINK® CPX and CPV, CPX-FEC Position of DIL switches can be read externally Easy assembly 	<ul style="list-style-type: none"> For customised fabrication of cables Pin adapter for fieldbus connection With screw terminals Straight or angled design
→ Page/online	fba-1	fbs-sub	sie-gd

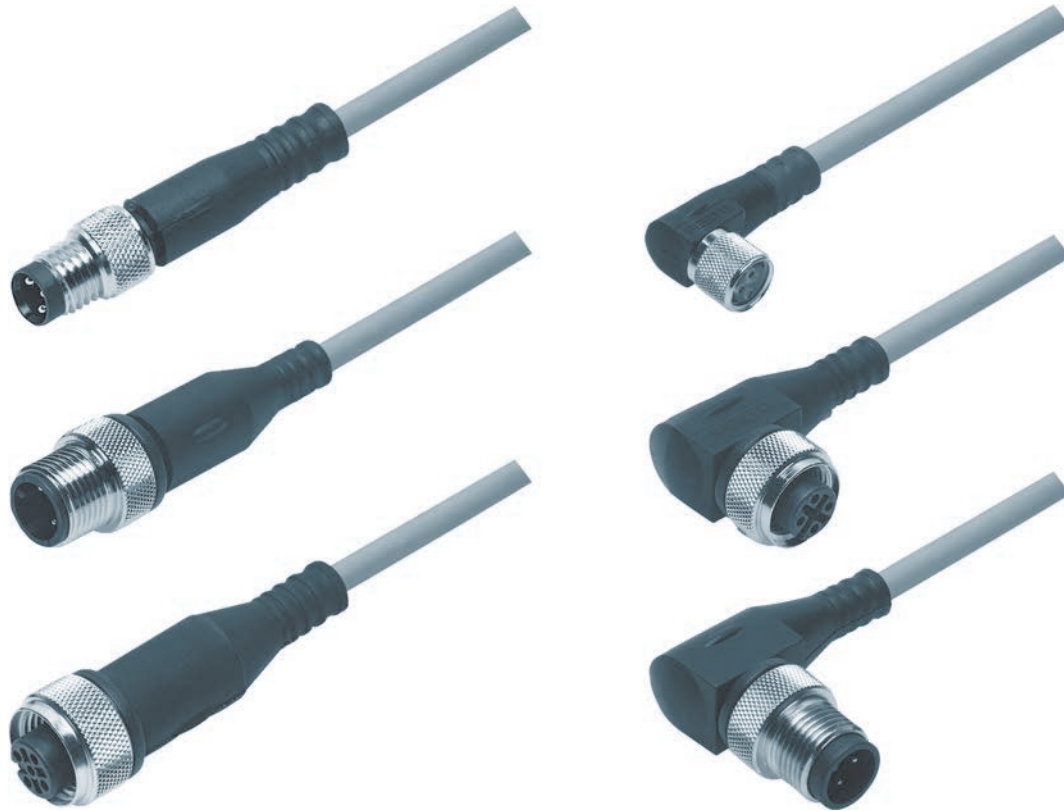
Plug connectors for valve terminals

			
Type	Cover caps ISK	Plug sockets, plugs SD-SUB	Bus connections FBSD-KL
Electrical connection		25-pin, plug, Sub-D	Angled socket, screw terminal
Connection cross section			0.2 ... 2.5 mm ²
Degree of protection	IP65	IP65	IP20
Description	<ul style="list-style-type: none"> For sealing unused ports/openings Thread M8, M12 	<ul style="list-style-type: none"> Socket for multi-pin plug connection Plug for inputs/outputs Can be assembled with any cable lengths 	<ul style="list-style-type: none"> 5-pin angled socket, 5-pin screw terminal
→ Page/online	isk	sd-sub	fbsd-kl

Product overview

Plug connectors for sensors

Type	 Angled plug sockets PEV-WD	 Plug sockets SD-4-WD
Electrical connection	4-pin, angled socket	4-pin, plug, Sub-D
Connection cross section		
Degree of protection	IP65	IP65, to IEC 60529
Description	<ul style="list-style-type: none"> • For pressure switch PEV • 15 ... 30, 180 V DC, 230 V AC • Optionally with LED display • Angled design 	<ul style="list-style-type: none"> • For swivel module DSM1 • Angled design
→ Page/online	pev*wd	sd-4-wd



Select the right connecting cable quickly and easily

- + Plugs, sockets and cables can be configured individually
- + Choose from different cable qualities
- + Ready to install standard designs

Cables > Connecting cables, universal >
Connecting cables

NEBU 


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 Overview, configuration and ordering
→ www.festo.com/catalogue/nebu



 Additional information, support and user documentation
→ www.festo.com/sp/nebu



 Quick ordering of basic designs
→ page 1549



- + Designs for static, standard, energy chain and robot applications
- + Design with switching status indication
- + Designs for connecting sensors and actuators

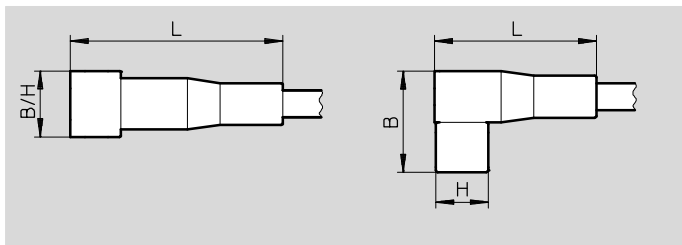
Product range overview

Type	Electrical connection	Cable characteristic	Electrical connection	Number of wires	Cable length [m]	→ Page/ online
	Left		Right			
NEBU-LE	Open end	Basic	Plug M8x1	3, 4, 5	0.1 ... 30	1544
			Plug M12x1			
		Standard	Plug M8x1	3, 4, 5	0.1 ... 30	1544
			Plug M12x1			
NEBU-M8	Socket M8x1	Basic	Open end	2, 3, 4	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		Standard	Open end	2, 3, 4	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		Suitable for use with energy chains	Open end	3, 4	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		Suitable for robot applications	Open end	3, 4	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		With switching status indication	Open end	3	0.1 ... 30	1544
			Plug M8x1			
Plug M12x1						
NEBU-M12	Socket M12x1	Basic	Open end	3, 4, 5	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		Standard	Open end	3, 4, 5	0.1 ... 30	1544
			8		2, 5, 10, 15	
			Plug M8x1	3, 4, 5	0.1 ... 30	1544
		Suitable for use with energy chains	Open end	3, 4, 5	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		Suitable for robot applications	Open end	3, 4, 5	0.1 ... 30	1544
			Plug M8x1			
			Plug M12x1			
		With switching status indication	Open end	3	0.1 ... 30	1544
			Plug M8x1			
Plug M12x1						
NEBU-G78	Socket 7/8"	Standard	Open end	5	2	nebu-g78

Connecting cables, universal >

Connecting cables NEBU

Data sheet



Technical data		NEBU-LE	NEBU-M8	NEBU-M12
Type		NEBU-LE	NEBU-M8	NEBU-M12
Conforms to standard		EN 61076-2-101	–	EN 61076-2-101
		EN 61076-2-104	EN 61076-2-104	–
		EN 61984		
Cable characteristic	NEBU...-P	Basic		
	NEBU...-K	Standard		
	NEBU...-E	Suitable for energy chains, cables halogen-free and oil-resistant		
	NEBU...-R	Suitable for robot applications, cables halogen-free and oil-resistant		

Electrical connection	Socket M8x1		Plug M8x1		Socket M12x1		Plug M12x1	
	Straight	Angled	Straight	Angled	Straight	Angled	Straight	Angled
Cable composition	2 x 0.25 mm ²				–			
	3 x 0.25 mm ²				3 x 0.25 mm ²			
	4 x 0.25 mm ²				4 x 0.25 mm ²			
	–				5 x 0.25 mm ²			
	–				5 x 1.00 mm ²			
Conductor nominal cross section	[mm ²] 0.25		0.25		1		–	
Cable diameter	[mm] 4.5		4.5		4.5		1	
Cable length	[m] 0.1 ... 30		0.1 ... 30		0.1 ... 30		0.1 ... 30	
Plug coding	–		–		A		A	
Length L/width W/height H	[mm] 35/9/9	27/17/9	42/10/10	27/24/10	48/15/15	38/26/15	55/15/15	38/33/15

Type	NEBU...P	NEBU...N	NEBU...L	NEBU...P2
Indicator	LED, PNP	LED, NPN	LED, DC	2x LED, PNP
Ready status indication	Green LED	Green LED	–	Green LED
Switching status indication	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	–	–	–	Blue LED

Electrical data		NEBU-M8			
Type		NEBU-M8		NEBU-M8	
Cable composition		2 x 0.25 mm ²		4 x 0.25 mm ²	
Indicator		L	–	P, N	–
Operating voltage range ¹⁾	[V AC]	–	0 ... 60	–	0 ... 30
	[V DC]	21.6 ... 30	0 ... 60	10 ... 30	10 ... 30
Surge capacity ¹⁾	[kV]	0.8	1.5	0.8	0.8
Acceptable current load at 40 °C ¹⁾	[A]	3			
Contamination level		3			

1) When different connection technologies are combined, the lower value applies.

Data sheet

Type	NEBU-M12							
Cable composition	3 x 0.25 mm ²		4 x 0.25 mm ²		5 x 0.25 mm ²		5 x 1.00 mm ²	
Indicator	-		P, N		-		P2	
Operating voltage range ¹⁾	[V AC]	0 ... 250	-		0 ... 250	-		
	[V DC]	0 ... 250	10 ... 30		0 ... 250	10 ... 30		
Surge capacity ¹⁾	[kV]	2.5 ²⁾	0.8		2.5	0.8		
Acceptable current load at 40 °C ¹⁾	[A]	4						
Contamination level	3							

1) When different connection technologies are combined, the lower value applies.
2) 0.8 kV applies for alternative number of wires = 3.

Materials

Type	NEBU-...-P	NEBU-...-K	NEBU-...-E	NEBU-...-R
Cable characteristic	Basic	Standard	Suitable for energy chains	Suitable for robot applications
Housing	PUR	PUR	PUR	PUR
Union nut	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Cable sheath	PVC	PUR	PUR	PUR
Pin contacts	Gold-plated brass	Gold-plated brass	Gold-plated brass	Gold-plated brass
Insulating sheath	PVC	PVC	TPE-E	TPE-E

Operating conditions

Type	NEBU-...-P	NEBU-...-K	NEBU-...-E	NEBU-...-R
Cable characteristic	Basic	Standard	Suitable for energy chains	Suitable for robot applications
Ambient temperature [°C]	-25 ... +70	-25 ... +70	-25 ... +80	-25 ... +80
Ambient temperature with flexible cable installation [°C]	-5 ... +80	-5 ... +70	-5 ... +80	-5 ... +80
Degree of protection	IP65, IP68			

Pin allocation to EN 60947-5-2

Socket M8x1						Plug M8x1					
3-pin	Pin	Wire colour	4-pin	Pin	Wire colour	3-pin	Pin	Wire colour	4-pin	Pin	Wire colour
	1	Brown		1	Brown		1	Brown		1	Brown
	3	Blue		2	White		3	Blue		2	White
	4	Black		3	Blue		4	Black		3	Blue
				4	Black					4	Black

Socket M12x1			4-pin			5-pin		
3-pin	Pin	Wire colour	4-pin	Pin	Wire colour	5-pin	Pin	Wire colour
	1	Brown		1	Brown		1	Brown
	3	Blue		2	White		2	White
	4	Black		3	Blue		3	Blue
				4	Black		4	Black
							5	Grey

Plug M12x1			4-pin			5-pin		
3-pin	Pin	Wire colour	4-pin	Pin	Wire colour	5-pin	Pin	Wire colour
	1	Brown		1	Brown		1	Brown
	3	Blue		2	White		2	White
	4	Black		3	Blue		3	Blue
				4	Black		4	Black
							5	Grey

Pin allocation – Indicator L

Socket M8x1			Plug M8x1				Plug M12x1	
4-pin	Pin	Wire colour	3-pin	Pin	4-pin	Pin	2-pin	Pin
	3	Black		3		3		3
	4	Black		4		4		4

Connecting cables, universal >

Connecting cables NEBU-LE

Order code

NEBU		-	LE	-		-		-		-		-		-		-		-	
Function																			
NEBU		Connecting cable																	
Connection technology, on the left																			
LE		Open end																	
Number of pins/wires (on the left)																			
3		3-pin (suitable for open end, plug M8)															1		
4		4-pin (suitable for open end, plug M8)															1		
5		5-pin (suitable for 3, 4 and 5-pin plug M12)															1		
Cable characteristic																			
P		Basic																	
K		Standard																	
E		Suitable for energy chains																	
R		Suitable for robot applications																	
Cable length																			
0.1 ... 30		0.1 ... 30 m (0.1 ... 2.5 m in 0.1 m increments, 2.5 ... 30 m in 0.5 m increments)																	
Cable designation																			
-		With inscription label holder (standard)																	
N		Without inscription label holder																	
Connection technology, on the right																			
M8		Plug with connecting thread M8																	
M12		Plug with connecting thread M12, A-coded																	
Plug design																			
G		Straight																	
W		Angled																	
Number of pins/wires (on the right)																			
3		3-pin (suitable for socket M8/M12)															2		
4		4-pin (suitable for socket M8/M12)															2		
5		5-pin (suitable for socket M12)															2		

1 With connection technology LE on the left, the number of wires selected must be equal to the number of pins (on the right).

2 With connection technology LE on the left, the number of wires (on the left) must be copied over.

Order example:

NEBU-LE5-K-1-N-M12G5

Connecting cable NEBU – open end, 5-pin – standard – cable length 1 m – without inscription label holder – plug M12x1, A-coded, straight, 5-pin

Connecting cables NEBU-M8

Order code

NEBU - M8 - - - - -	
Function	
NEBU	Connecting cable
Connection technology, on the left	
M8	Socket with connecting thread M8
Socket design	
G	Straight
W	Angled
Number of pins/wires (on the left)	
3	3-pin (suitable for open end, plug M8)
4	4-pin (suitable for open end, plug M8)
Indicator	
-	Without LED, DC (standard)
P	LED, PNP 1
N	LED, NPN 1
L	LED, DC 2
Cable characteristic	
P	Basic
K	Standard
E	Suitable for energy chains
R	Suitable for robot applications
Cable length	
0.1 ... 30	0.1 ... 30 m (0.1 ... 2.5 m in 0.1 m increments, 2.5 ... 30 m in 0.5 m increments)
Cable designation	
-	With inscription label holder (standard)
N	Without inscription label holder
Connection technology, on the right	
LE	Open end
M8	Plug with connecting thread M8
M12	Plug with connecting thread M12, A-coded
Plug design	
-	Open end 3
G	Straight 4
W	Angled 4
Number of pins/wires (on the right)	
2	2-pin 5
3	3-pin (suitable for socket M8/M12)
4	4-pin (suitable for socket M8/M12)

1 Can only be combined with socket design W and 3 pins/wires (on the left).

2 Can only be combined with 4 pins/wires (on the left), M8 connection technology on the right with 3, 4 pins/wires (on the right) or with connection technology LE on the right, M12 with 2 pins/wires (on the right) (always a 2-wire cable), cable characteristics K.

3 Must be selected with connection technology LE on the right.

4 Must be selected with M8, M12 connection technology on the right.

5 Can only be combined with connection technology LE on the right. Cannot be combined with cable characteristics P, E, R.

Order example:

NEBU-M8G4-K-5-LE4

Connecting cable NEBU – socket M8x1, straight, 4-pin, without LED, DC – standard – cable length 5 m – with inscription label holder – open end, 4-pin

Connecting cables, universal >

Connecting cables NEBU-M12

Order code

NEBU - M12 5 - - - - -

Function

NEBU	Connecting cable
------	------------------

Connection technology, on the left

M12	Socket with connecting thread M12, A-coded
-----	--

Socket design

G	Straight
W	Angled

Number of pins/wires (on the left)

5	5-pin
---	-------

Indicator

-	Without LED, DC (standard)	
P	LED, PNP	1
N	LED, NPN	1
P2	2x LED, PNP	2

Cable characteristic

P	Basic
K	Standard
E	Suitable for energy chains
R	Suitable for robot applications

Cable length

0.1 ... 30	0.1 ... 30 m (0.1 ... 2.5 m in 0.1 m increments, 2.5 ... 30 m in 0.5 m increments)
------------	---

Cable designation

-	With inscription label holder (standard)
N	Without inscription label holder

Wire cross section

-	0.25 mm ² (standard)	
Q8N	1 mm ²	3

Connection technology, on the right

LE	Open end
M8	Plug with connecting thread
M12	Plug with connecting thread, A-coded

Plug design

-	Open end	4
G	Straight	5
W	Angled	5

Number of pins/wires (on the right)

3	3-pin (suitable for socket M8/M12)	6
4	4-pin (suitable for socket M8/M12)	6
5	5-pin (suitable for socket M12)	6

- 1 Can only be combined with socket design W and 5 pins/wires (on the left) and 3 pins/wires (on the right).
- 2 Can only be combined with socket design W and 4 pins/wires (on the right).
- 3 Can only be combined with M12 connection technology on the left and socket design G with 5 pins/wires, M12 connection technology on the right and socket design G with 5 pins/wires, cable characteristics E.

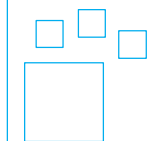
- 4 Must be selected with connection technology LE on the right.
- 5 Must be selected with M8, M12 connection technology on the right.
- 6 With LE open end on the right, the number of pins/wires must be less than or equal to the number of pins on the opposite side.

Order example:

NEBU-M12W5P-E-3.5-N-M8G3

Connecting cable NEBU – socket M12x1, A-coded, angled, 5-pin, LED indicator, PNP – suitable for use with energy chains – cable length 3.5 m – without inscription label holder – plug M8x1, straight, 3-pin

Ordering – Product options



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★ Quick ordering¹⁾

	Cable length [m]	Part no.	Type
Straight socket, 3-pin, M8			
Open cable end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
	5	541334	NEBU-M8G3-K-5-LE3
	10	541332	NEBU-M8G3-K-10-LE3
Straight plug, 3-pin, M8	0.5	541346	NEBU-M8G3-K-0.5-M8G3
	1	541347	NEBU-M8G3-K-1-M8G3
	2.5	541348	NEBU-M8G3-K-2.5-M8G3
	5	541349	NEBU-M8G3-K-5-M8G3
Angled socket, 3-pin, M8			
Open cable end	2.5	541338	NEBU-M8W3-K-2.5-LE3
	5	541341	NEBU-M8W3-K-5-LE3
	10	541335	NEBU-M8W3-K-10-LE3

	Cable length [m]	Part no.	Type
Straight socket, 5-pin, M12			
Open cable end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3
	5	541364	NEBU-M12G5-K-5-LE3
Open cable end, 4-wire	2.5	550326	NEBU-M12G5-K-2.5-LE4
	5	541328	NEBU-M12G5-K-5-LE4

1) All products in this table are easy to select and quick to order.



Collect or distribute system signals easily and save space

- + Collect signals between sensors and double-assigned controller inputs
- + Distribute between double-assigned controller outputs and valves

Universal plug connectors >

Sensor/actuator distributors

NEDY

Universal plug connectors >

Sensor/actuator distributors

NEDY



Overview, configuration and ordering

→ www.festo.com/catalogue/nedy



Additional information, support and user documentation

→ www.festo.com/sp/nedy



+ Different variants with plugs, sockets and open cable end

Product range overview

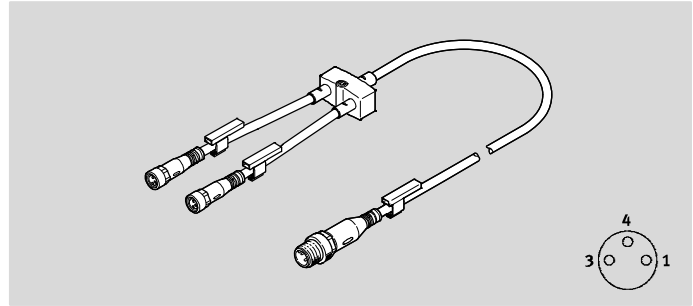
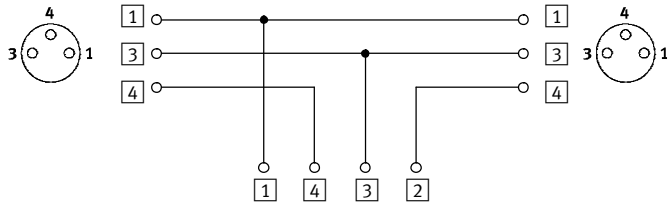
Type	Design	Connection technology on the right, controller side				→ Page/ online
		Plug M8x1	Plug M12x1	Open cable end		
		4-pin	4-pin	3-wire	4-wire	
2x socket M8x1, A-coded, EN 61076-2-104, 3-pin						
NEDY-L2R1-V1-M8	Sensor/actuator distributor without cable	■	■	-	-	1554
	Sensor/actuator distributor with cable on field device side	■	■	-	-	1554
	Sensor/actuator distributor with cable on controller side	■	■	■	■	1554
	Sensor/actuator distributor with cables on both sides	■	■	■	■	1554
2x socket M8x1, A-coded, EN 61076-2-104, 4-pin						
NEDY-L2R1-V1-M8	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	■	■	nedy
2x socket M12x1, A-coded, EN 61076-2-101, 5-pin						
NEDY-L2R1-V1-M12	Sensor/actuator distributor without cable	-	■	-	-	1554
	Sensor/actuator distributor with cable on field device side	■	■	-	-	1554
	Sensor/actuator distributor with cable on controller side	■	■	-	■	1554
	Sensor/actuator distributor with cables on both sides	■	■	-	■	1554
2x socket, type A, EN 175301-803, 4-pin						
NEDY-L2R1-V1-A1W4L	Sensor/actuator distributor with cable on field device side	■	■	-	-	1555
	Sensor/actuator distributor with cables on both sides	■	■	■	-	1555
2x socket, type B, EN 175301-803, 3-pin						
NEDY-L2R1-V1-B1W3L	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	■	-	nedy
2x socket, type B, industry standard 11 mm, 3-pin						
NEDY-L2R1-V1-B2W3L	Sensor/actuator distributor with cable on field device side	■	■	-	-	1555
	Sensor/actuator distributor with cables on both sides	■	■	■	-	1555
2x socket, type C, EN 175301-803, 4-pin						
NEDY-L2R1-V1-C1W4L	Sensor/actuator distributor with cable on field device side	■	■	-	-	1556
	Sensor/actuator distributor with cables on both sides	■	■	■	-	1556
2x socket, type C, industry standard 9.4 mm, 4-pin						
NEDY-L2R1-V1-E1W4L	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	■	-	nedy
2x socket, connection pattern H, 3-pin						
NEDY-L2R1-V1-H1G3	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	■	-	nedy
2x socket, connection pattern ZB, self-tapping screw, 2-pin						
NEDY-L2R1-V1-Z1W2L	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	■	-	nedy
2x socket, connection pattern ZC, self-tapping screw, 2-pin						
NEDY-L2R1-V1-Z3W2Z	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	■	-	nedy
2x socket, connection pattern ZC, metric screw, 2-pin						
NEDY-L2R1-V1-Z4W2	Sensor/actuator distributor with cable on field device side	■	■	-	-	1556
	Sensor/actuator distributor with cables on both sides	■	■	■	-	1556
2x open cable end, 3-wire						
NEDY-L2R1-V1-LE3	Sensor/actuator distributor with cable on field device side	■	■	-	-	nedy
	Sensor/actuator distributor with cables on both sides	■	■	-	■	nedy

1) The solenoid coil must be ordered separately.

Universal plug connectors >

Sensor/actuator distributors

Data sheet – Y-distributor, socket M8x1, EN 61076-2-104, 3-pin



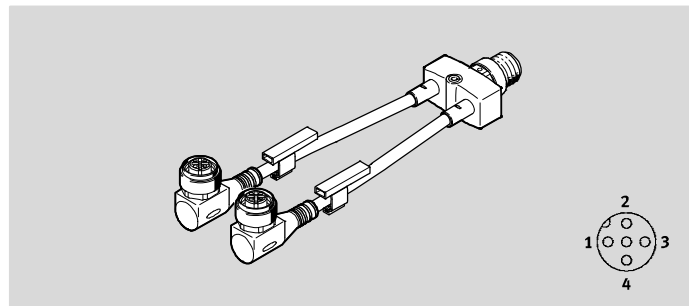
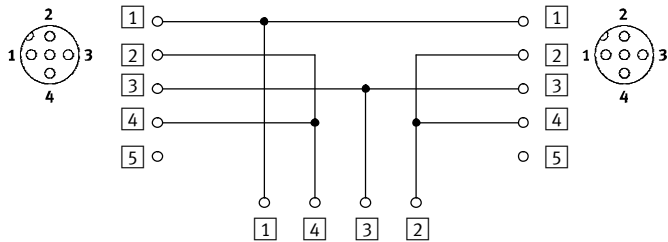
Technical data

Download CAD data → www.festo.com

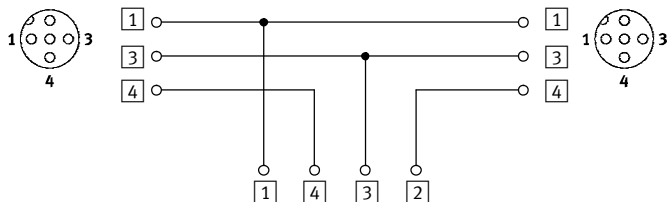
Connection technology	M8x1, A-coded to EN 61076-2-104	
Indicator	None	
	Green LED and yellow LED, ready and switching status	
Operating voltage range	No indicator	[V DC] 0 ... 30
	Indicator P	[V DC] 10 ... 30
Cable characteristic	Suitable for use with energy chains/robot applications	
Ambient temperature with flexible cable installation	[°C]	-20 ... +80
Degree of protection	IP65/IP68, IP69K	

Data sheet – Y-distributor, socket M12x1, EN 61076-2-104, 5-pin

No indicator



With yellow LED indicator, ready status and switching status

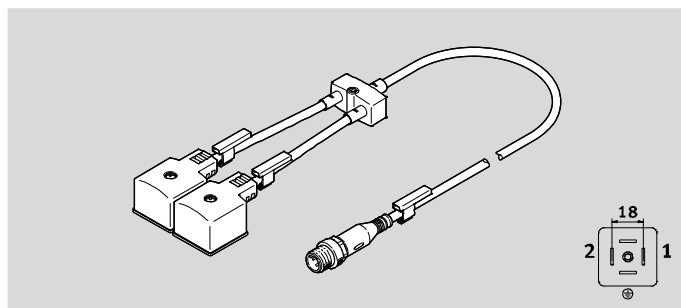
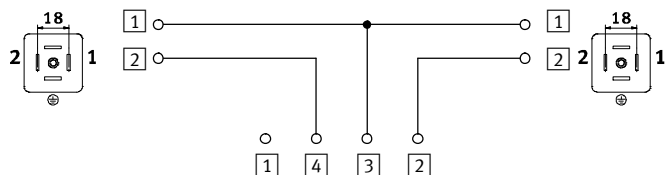


Technical data

Download CAD data → www.festo.com

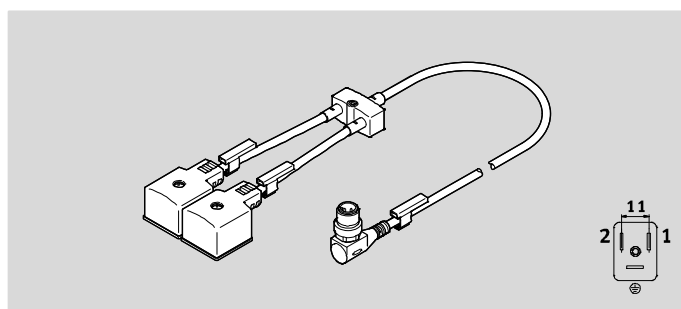
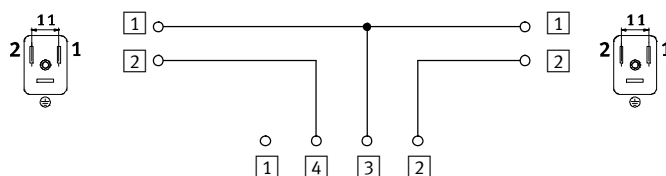
Connection technology	M12x1, A-coded to EN 61076-2-101	
Indicator	None	
	Yellow LED, ready and switching status	
Operating voltage range	No indicator	[V DC] 0 ... 30
	Indicator P	[V DC] 10 ... 30
Cable characteristic	Suitable for use with energy chains/robot applications	
Ambient temperature with flexible cable installation	[°C]	-20 ... +80
Degree of protection	IP65/IP68, IP69K	

Data sheet – Y-distributor, socket type A, EN 175301-803



Technical data		Download CAD data → www.festo.com
Connection technology		Connection pattern type A to EN 175301-803
Indicator		Yellow LED, signal status
Operating voltage range	[V DC]	20.4 ... 27.6
Cable characteristic		Suitable for use with energy chains/robot applications
Ambient temperature with flexible cable installation	[°C]	-20 ... +80
Degree of protection		IP65/IP67

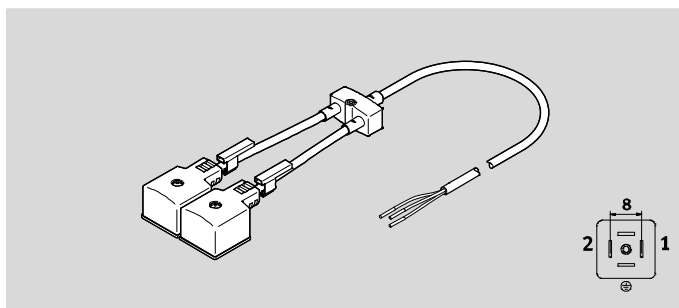
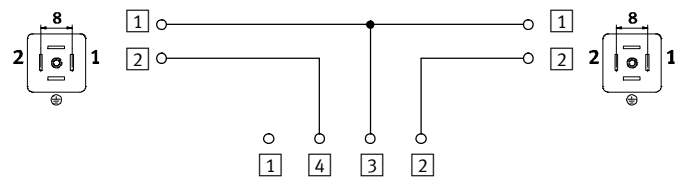
Data sheet – Y-distributor, socket type B, industry standard 11 mm



Technical data		Download CAD data → www.festo.com
Connection technology		Connection pattern type B to industry standard 11 mm
Indicator		Yellow LED, signal status
Operating voltage range	[V DC]	20.4 ... 27.6
Cable characteristic		Suitable for use with energy chains/robot applications
Ambient temperature with flexible cable installation	[°C]	-20 ... +80
Degree of protection		IP65/IP67

Sensor/actuator distributors

Data sheet – Y-distributor, socket type C, EN 175301-803

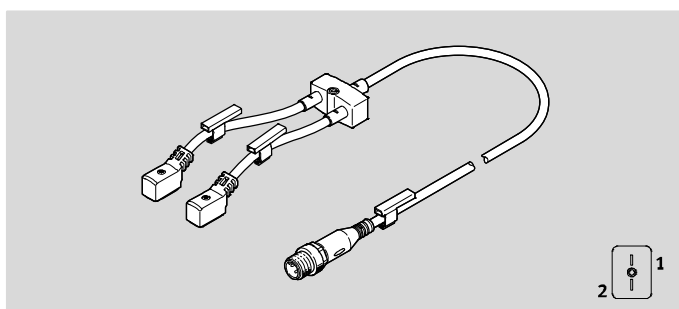
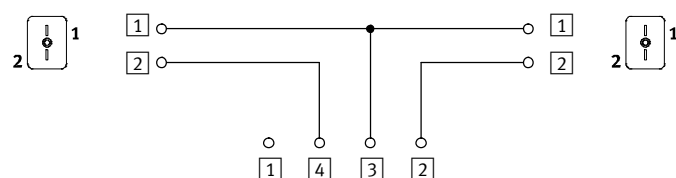


Technical data

Download CAD data → www.festo.com

Connection technology	Connection pattern type C to EN 175301 803
Indicator	Yellow LED, signal status
Operating voltage range	[V DC] 20.4 ... 27.6
Cable characteristic	Suitable for use with energy chains/robot applications
Ambient temperature with flexible cable installation	[°C] -20 ... +80
Degree of protection	IP65/IP67

Data sheet – Y-distributor, socket connection pattern ZC, metric screw



Technical data

Download CAD data → www.festo.com

Connection technology	Connection pattern ZC, metric screw
Indicator	Yellow LED, signal status
Additional function	Holding current reduction
Operating voltage range	[V DC] 20.4 ... 26.4
Cable characteristic	Field device side Controller side
	Standard Suitable for use with energy chains/robot applications
Ambient temperature with flexible cable installation	[°C] -5 ... +50
Degree of protection	IP65

Order code – Y-distributor, socket M8x1, EN 61076-2-104, 3-pin

		NEDY	-	L2R1	-	V1	-	M8	G3	-	-	-	-	-	G4	-
Function																
NEDY	Distributor															
Distributor type																
L2R1	Y type															
Circuitry																
V1	Standard variant															
Connection technology on the left, field device side																
M8	Socket M8x1, A-coded, EN 61076-2-104															
Cable outlet on the left																
G3	Straight, 3-pin															
Cable characteristic																
-	Without cable															
U	Suitable for use with energy chains/ robot applications															
Cable length on the left																
-	Without cable															
0.3L	0.3 m	1														
Cable identification																
-	With inscription label holder															
N	Without inscription label holder	2														
Connection technology on the right, controller side																
M8	Plug M8x1, A-coded, EN 61076-2-104															
M12	Plug M12x1, A-coded, EN 61076-2-101															
Cable outlet on the right																
G4	Straight, 4-pin															
Cable length on the right																
-	None															
2.5R	2.5 m															
5R	5 m															

1 Only with cable length on the right
2.5R or 5R.

2 Not with cable length on the right
2.5R or 5R.

Order example:

NEDY-L2R1-V1-M8G3-N-M8G4

Distributor - Y type - standard variant - socket M8x1, A-coded, EN 61076-2-104, straight, 3-pin - without inscription label holder - plug M8x1, A-coded, EN 61076-2-104, straight, 4-pin

Sensor/actuator distributors

Order code – Y-distributor, socket M12x1, EN 61076-2-104, 5-pin

NEDY - L2R1 - V1 - M12 G5 - - - - - G4 -

Function

NEDY	Distributor
------	-------------

Distributor type

L2R1	Y type
------	--------

Circuitry

V1	Standard variant
----	------------------

Connection technology on the left, field device side

M12	Socket M12x1, A-coded, EN 61076-2-101
-----	---------------------------------------

Cable outlet on the left

G5	Straight, 5-pin
----	-----------------

Cable characteristic

-	Without cable
U	Suitable for use with energy chains/robot applications

Cable length on the left

-	Without cable
0.3L	0.3 m 1

Cable identification

-	With inscription label holder
N	Without inscription label holder 2

Connection technology on the right, controller side

M8	Plug M8x1, A-coded, EN 61076-2-104
M12	Plug M12x1, A-coded, EN 61076-2-101

Cable outlet on the right

G4	Straight, 4-pin
----	-----------------

Cable length on the right

-	None 3
2.5R	2.5 m
5R	5 m

1 Only with cable length on the right 2.5R or 5R.

2 Not with cable length on the right 2.5R or 5R.

3 Only with connection technology on the right, controller side M12.

Order example:

NEDY-L2R1-V1-M12G5-U-M8G4-5R

Distributor - Y type - standard variant - socket M12x1, A-coded, EN 61076-2-101, straight, 5-pin - cable characteristic: suitable for use with energy chains/robot applications - with inscription label holder - plug M8x1, A-coded, EN 61076-2-104, straight, 4-pin - cable length, right 5 m

Order code – Y-distributor, socket type A, EN 175301-803, 4-pin

		NEDY	-	L2R1	-	V1	-	A1	W4	L	-	U	-	0.3L	-		G4	-	
Function																			
NEDY	Distributor																		
Distributor type																			
L2R1	Y type																		
Circuitry																			
V1	Standard variant																		
Connection technology on the left, field device side																			
A1	Socket type A, EN 175301-803																		
Cable outlet on the left																			
W4	Angled, 4-pin																		
Indicator																			
L	Signal status LED (only for valves)																		
Cable characteristic																			
U	Suitable for use with energy chains/ robot applications																		
Cable length on the left																			
0.3L	0.3 m																		
Connection technology on the right, controller side																			
M8	Plug M8x1, A-coded, EN 61076-2-104																		
M12	Plug M12x1, A-coded, EN 61076-2-101																		
Cable outlet on the right																			
G4	Straight, 4-pin																		
Cable length on the right																			
2.5R	2.5 m																		
5R	5 m																		

Order example:

NEDY-L2R1-V1-A1W4L-U-0.3L-M8G4-2.5R

Distributor - Y type - standard variant - socket type A, EN 175301-803, angled, 4-pin - cable characteristic: suitable for use with energy chains/robot applications - cable length, left 0.3 m - with inscription label holder - plug M8x1, A-coded, EN 61076-2-104, straight, 4-pin - cable length, right 2.5 m

Universal plug connectors >

Sensor/actuator distributors

Order code – Y-distributor, socket type B, industry standard 11 mm

NEDY - L2R1 - V1 - B2 W3 L - U - 0.3L - G4 -	
Function	
NEDY	Distributor
Distributor type	
L2R1	Y type
Circuitry	
V1	Standard variant
Connection technology on the left, field device side	
B2	Socket type B, industry standard 11 mm
Cable outlet on the left	
W3	Angled, 3-pin
Indicator	
L	Signal status LED (only for valves)
Cable characteristic	
U	Suitable for use with energy chains/robot applications
Cable length on the left	
0.3L	0.3 m
Connection technology on the right, controller side	
M8	Plug M8x1, A-coded, EN 61076-2-104
M12	Plug M12x1, A-coded, EN 61076-2-101
Cable outlet on the right	
G4	Straight, 4-pin
Cable length on the right	
2.5R	2.5 m
5R	5 m

15

Order example:

NEDY-L2R1-V1-B2W3L-U-0.3L-M12G4-2.5R

Distributor - Y type - standard variant - socket type B, industry standard 11 mm, angled, 3-pin, signal status LED (only for valves) - cable characteristic: suitable for use with energy chains/robot applications - cable length, left 0.3 m - with inscription label holder - plug M12x1, A-coded, EN 61076-2-101, straight, 4-pin - cable length, right 2.5 m

Order code – Y-distributor, socket type C, EN 175301-803

NEDY		-	L2R1		-	V1		-	C1		W4	L	-	U		-	0.3L		-			G4	-		
Function																									
NEDY		Distributor																							
Distributor type																									
L2R1		Y type																							
Circuitry																									
V1		Standard variant																							
Connection technology on the left, field device side																									
C1		Socket type C, EN 175301-803																							
Cable outlet on the left																									
W4		Angled, 4-pin																							
Indicator																									
L		Signal status LED (only for valves)																							
Cable characteristic																									
U		Suitable for use with energy chains/robot applications																							
Cable length on the left																									
0.3L		0.3 m																							
Connection technology on the right, controller side																									
M8		Plug M8x1, A-coded, EN 61076-2-104																							
M12		Plug M12x1, A-coded, EN 61076-2-101																							
Cable outlet on the right																									
G4		Straight, 4-pin																							
Cable length on the right																									
2.5R		2.5 m																							
5R		5 m																							

Order example:

NEDY-L2R1-V1-C1W4L-U-0.3L-M12G4-2.5R

Distributor - Y type - standard variant - socket type C, EN 175301-803, angled, 4-pin, signal status LED (only for valves) - cable characteristic: suitable for use with energy chains/robot applications - cable length on the left 0.3 m - with inscription label holder - plug M12x1, A-coded, EN 61076-2-101, straight, 4-pin - cable length, right 2.5 m

Sensor/actuator distributors

Order code – Y-distributor, socket connection pattern ZC, metric screw

NEDY - L2R1 - V1 - Z4 W2 Z - U - 0.3L - G4 -	
Function	
NEDY	Distributor
Distributor type	
L2R1	Y type
Circuitry	
V1	Standard variant
Connection technology on the left, field device side	
Z4	Socket connection pattern ZC, metric screw
Cable outlet on the left	
W2	Angled, 2-pin
Indicator	
Z	LED signal status, holding current reduction (only for valves without holding current reduction)
Cable characteristic	
U	Suitable for use with energy chains/robot applications
Cable length on the left	
0.3L	0.3 m
Connection technology on the right, controller side	
M8	Plug M8x1, A-coded, EN 61076-2-104
M12	Plug M12x1, A-coded, EN 61076-2-101
Cable outlet on the right	
G4	Straight, 4-pin
Cable length on the right	
2.5R	2.5 m
5R	5 m

Order example:

NEDY-L2R1-V1-Z4W2Z-U-0.3L-M12G4-5R

Distributor - Y type - standard variant - socket connection pattern ZC, metric screw, angled, 2-pin, signal status LED indicator, holding current reduction (only for valves without holding current reduction) - cable characteristic: suitable for use with energy chains/robot applications - cable length, left 0.3 m - with inscription label holder - plug M12x1, A-coded, EN 61076-2-101, straight, 4-pin - cable length, right 5 m

Ordering – Product options



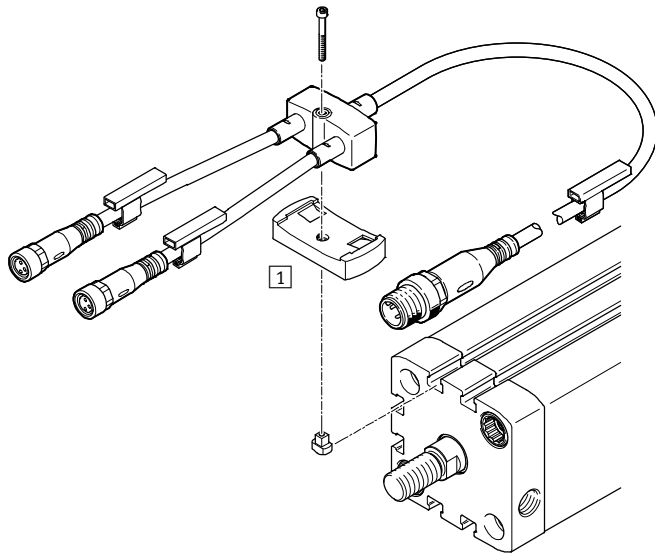
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

Accessories




Variants and accessories

→ Page/online

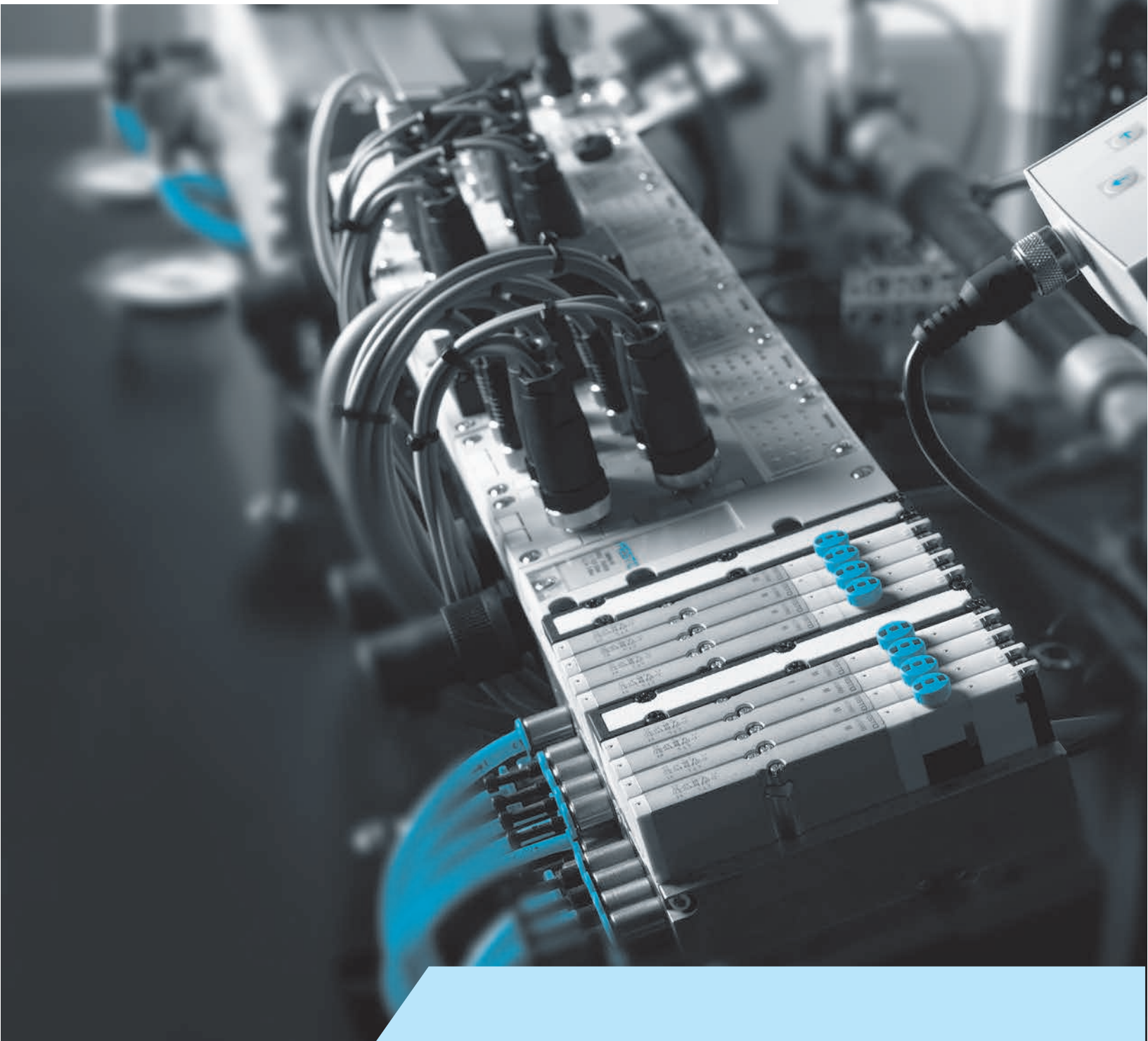
1	Mounting for T-slot NEAU	1563
---	--------------------------	------

Accessories – Ordering data

	Description	Part no.	Type
1	Mounting for T-slot		
	<ul style="list-style-type: none"> For Y-distributor without cable with plug M8x1 and socket M8x1 For Y-distributor with cable on field device side and plug M8x1 For Y-distributor with cable on controller side and socket M8x1 	8032868	NEAU-A-N8-1
	<ul style="list-style-type: none"> For Y-distributor without cable with plug M12x1 For Y-distributor with cable on field device side and plug M12x1 For Y-distributor with cable on controller side and socket M12x1 For Y-distributor with cables on both sides 	8032869	NEAU-A-N8-2

16 Control technology and software

- + Pneumatic and electropneumatic controllers
- + Electronic controllers with serial and Ethernet interfaces
- + Electrical peripherals: electrical components for valve terminals and AS-Interface components
- + Display and operating units for controllers and electrical terminals
- + Software






CECC
Controllers

- + Compact controller with powerful processor
- + CODESYS provided by Festo
- + 12 digital inputs
- + 8 digital outputs

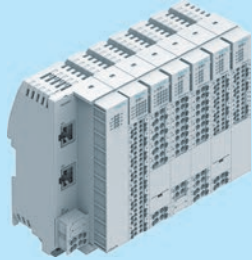
→ page 1573



CPX
Terminal

- + Installation variants: stand-alone as remote I/O or with valve terminal VTSA/MPA
- + Digital or analogue input/output modules
- + Optional CODESYS controller

→ page 1595



CPX-E
Automation systems

- + High-performance control and automation system
- + Very flexible system setup

→ page 1639

Contents

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EPLAN projects GDDE 1570

NEW New software

Software packages GSAY 1571

NEW New software

Controllers CECC 1573

Fieldbus modules CTEU 1581




Terminal CPX 1595

Terminal CPX-E 1639

NEW New series


Product overview

Pneumatic and electropneumatic controllers

			
Type Pulse generators TAA, TAB	Memory modules SBA-2N	Pulse generators VLG	
Pneumatic connection	Barbed connector for 3 mm I.D. plastic tubing	Barbed connector for 3 mm I.D. plastic tubing	G1/8, G1/4
Type of mounting	On mounting frame	On mounting frame	Through-hole in housing
Nominal width	2 mm	3 mm	3.5 mm, 7 mm
Standard nominal flow rate	60 l/min	70 l/min	120 l/min, 600 l/min
Description	<ul style="list-style-type: none"> For ensuring a logical program sequence Poppet valve with integrated AND as well as OR element 	<ul style="list-style-type: none"> For input logic operations For simplifying the design and installation of pneumatic controllers 	<ul style="list-style-type: none"> For generating infinitely adjustable signals in controllers For high-speed cylinder movements of diaphragm cylinders, single and double-acting cylinders
→ Page/online	taa	sba	vlg

Software tool

CODESYS



CODESYS
The IEC 61131-3 Programming System provided by Festo

CODESYS for standardised programming of embedded devices to IEC 61131-3. It makes your life easier with simple commissioning, fast programming and parameterisation.





Advantages

- Hardware-neutral software platform for quick and easy configuration, programming and commissioning of pneumatic and electric automation solutions
- Extensive module libraries for single or multi-axis positioning motions




- The IEC 61131-3 standard means that CODESYS is flexible and open for all types of control tasks
- Modular: offline and online functions as well as components for hardware configuration and visualisation
- Convenient IEC function element extension
- Re-use of existing application parts

The parameterisation software can be found in the support portal at www.festo.com/sp > enter search term "CODESYS" > start "Search" > select "Software" tab.



Electronic controllers

			
Type Controllers CECC-D, CECC-LK, CECC-S	Controllers CECX-X-M1, CECX-X-C1	Input/output modules CECX-D-E8A, CECX-A-4E4A	Input modules CECX-D-16E, CECX-A-4E-V, CECX-E-E-T-P
Operating voltage	19.2 ... 30 V DC, 20.4 ... 30 V DC	19.2 ... 30 V DC	19.2 ... 30 V DC
CPU data	400 MHz processor	64 MB DRAM, 400 MHz processor	64 MB DRAM, 400 MHz processor
Fieldbus interface, type	CAN bus	CAN bus	
Ethernet, connector plug	RJ45	8-pin, socket, RJ45	
Description	<ul style="list-style-type: none"> Compact programmable logic controller Programming with CODESYS to IEC 61131-3 12 digital inputs, 8 digital outputs, additionally two high-speed counters up to 250 kHz Ethernet 10/100 Mbps USB interface for data transfer CECC-LK with CANopen, IO-Link®, I-Port and Modbus TCP protocol 	<ul style="list-style-type: none"> Modular master controller with CODESYS or motion controller with CODESYS and SoftMotion Programming to standard IEC 61131-3 Three plug-in slots for optional modules Optional: communication module for PROFIBUS 	<ul style="list-style-type: none"> Digital modules: 6 or 8 digital inputs and 8 digital outputs Analogue modules for voltage: 4 analogue voltage inputs and 4 analogue voltage outputs Analogue modules for current: 4 analogue current inputs and 4 analogue current outputs Address setting function, short circuit monitoring function for outputs, debounce function, interrupt function, sensor failure detection function
→ Page/online	1573	cecx-x-m1	cecx

Electronic controllers





			
Type	Output modules CECX-D-14A-2, CECX-A-4A-V	Encoder interfaces CECX-C-2G	Bus interfaces CECX-F-PB-S-V, CECX-F-PB-V1, CECX-B-CO
Operating voltage	24 V DC +25%/-15%	19.2 ... 30 V DC	19.2 ... 30 V DC
CPU data			
Fieldbus interface, type			CAN bus, PROFIBUS master DP-V1, PROFIBUS slave DP-V0, PROFIBUS slave DP-V1
Ethernet, connector plug		9-pin, socket, RJ45	8-pin, socket, 9-pin, plug connector
Description	<ul style="list-style-type: none"> Digital modules: 14 digital outputs Analogue modules: 4 analogue voltage outputs 	<ul style="list-style-type: none"> Displacement measurement function Pulse counter Speed measurement function Shaft encoder monitoring function Counter reading latch function Sensor break monitoring Status display function 	<ul style="list-style-type: none"> Connection via CAN bus to the modular controller For connecting decentralised peripheral modules in series
→ Page/online	cecx	cecx	cecx

Electronic controllers




		
Type	Electrical interfaces CECX-C-2S1	AS-Interface® modules CESA
Operating voltage	9.2 ... 30 V DC	AS-Interface® voltage 30 V DC
CPU data		
Fieldbus interface, type		CANopen device specification CiA DS-301, PROFIBUS to DIN 19245 Part 3
Ethernet, connector plug	8-pin	
Description	<ul style="list-style-type: none"> For extending the controller with two RS232 serial interfaces 	<ul style="list-style-type: none"> AS-Interface® master gateway Duplicate address recognition Direct operation via pushbuttons Graphic display Comprehensive diagnostics via LED and display Specification 3.0
→ Page/online	cecx	cesa

Product overview



Electrical peripherals

Type	 Terminal CPX	 NEW Automation systems CPX-E	 Terminal CPX-P	 Electrical interfaces CPX-CTEL
Max. no. of inputs	Digital 512, analogue 32	Digital 512, analogue 32	512	256
Max. no. of outputs	Digital 512, analogue 18	Digital 512, analogue 32	512	256
No. of module positions	Max. 9 electric input/output modules	10	10	Max. 4 modules with I-Port interface
Electric actuation	Fieldbus, integrated controller	Fieldbus, integrated controller	Fieldbus, integrated controller	I-Port
NEW		<ul style="list-style-type: none"> New series 		
Description	<ul style="list-style-type: none"> Automation platform Open to all common fieldbus protocols and Ethernet Integrated diagnostic and maintenance functions Can be used as stand-alone remote I/O or with valve terminals MPA-S, MPA-L, VTSA/VTSA-F Choice of polymer or metal housing with individual linking Analogue inputs and outputs, 2-way/4-way, optionally with HART protocol 	<ul style="list-style-type: none"> Modern control system with high performance Fieldbus master interfaces, EtherCAT® master, fieldbus slave interfaces, PROFINET, EtherNet/IP, PROFIBUS, EtherCAT® Digital input modules (16DI), digital output modules (8DO/0.5 A) Analogue input modules (current, voltage), analogue output modules (current, voltage) Modern programming system CODESYS V3 to IEC 61131-3 Integration of motion functions (SoftMotion) High I/O component density Easy mounting of the control system on an H-rail 	<ul style="list-style-type: none"> Use of matching remote I/O and valve terminals in a control cabinet Combination with modules of the electrical terminal CPX, which enables use for hybrid applications Unique modular structure Comprehensive integrated diagnostic and maintenance functions Analogue inputs and outputs with HART protocol 	<ul style="list-style-type: none"> CPX-CTEL master module with 4 I-Port connections Decentralised point-to-point connection to input modules and/or valve terminals possible Standardised M12 connections
→ Page/online	1595	1639	cpx-p	cpx-ctel



Electrical peripherals

Type	 Measuring modules CPX-CMIX	 Input modules CTSL	 CPI installation system CTEC
Max. no. of inputs	6x8	16	128
Max. no. of outputs	6x8		128
No. of module positions	9		
Electric actuation	Via fieldbus	IO-Link®, I-Port	Fieldbus, integrated controller
Description	<ul style="list-style-type: none"> Pneumatics and electrics – movement and measurement on one platform Innovative measurement technology – piston rod drives, rodless drives, rotary drives Actuation via fieldbus Remote maintenance, remote diagnostics, web server, SMS and e-mail alert are all possible via TCP/IP Modules can be quickly exchanged and expanded without altering the wiring 	<ul style="list-style-type: none"> For installation system CTEC For recording sensor input signals Display of the input status for each input signal via an assigned LED Diagnostic LED for short circuit/overload of sensor supply 	<ul style="list-style-type: none"> CPX master module for four CPI strings Combination of centralised and decentralised installation possible Decentralised pneumatic components and sensors for fast processes Can be connected to valve terminal CPV, MPA-S, CPV-SC
→ Page/online	cpc-cmix	1581	ctec

Electrical peripherals

		
Type	Fieldbus modules CTEU	AS-Interface® components ASI, CACC
Max. no. of inputs	128	4, 8
Max. no. of outputs	128	8
No. of module positions	32	
Electric actuation	CANopen, DeviceNet, AS-Interface®, CC-Link, PROFIBUS, EtherCAT, Ethernet/IP, PROFINET, CPI-B, I-Port	AS-Interface®
Description	<ul style="list-style-type: none"> For valve terminals VTUB-12, VTUG, MPA-L, CPV, VTOC Can be expanded into installation system CTEL Fieldbus-typical LEDs, interfaces and switching elements available Isolated power supply for electronics and valves 	<ul style="list-style-type: none"> Accessories for the AS-Interface® installation system Modules for actuating individual valves ASI-EVA Cable distributor ASI-KVT Addressing device ASI-PRG-ADR Compact I/O modules (IP65, IP67)
→ Page/online	1581	as-interface

Operator units


		
Type	Operator units, with touchscreen CDPX	Simulators CDSM
Display	Colour TFT	
Display size	4.3", 7", 10.4", 13.3"	
Recipe memory	32 KB	
Display resolution	480x272 pixels, SVGA, 800x600 pixels, WVGA, 800x480 pixels, WXGA, 1280x800 pixels	
Ethernet interface	RJ45 10/100 MBd	
Description	<ul style="list-style-type: none"> Powerful processors combined with wide-screen technology Remote access, remote control FTP and HTTP servers Open for web and multimedia applications With touchscreen 	<ul style="list-style-type: none"> Straightforward design of human-machine dialogues Semi-graphical display of process values makes them easier to read Suitable for commissioning the following motor controllers: CMMO-ST, CMMP-AS, CMMS-ST To simulate input and output signals during commissioning
→ Page/online	cdpx	cdsm

Documentation





	
Type	Manuals GDCW, GDCC, GSIB, P.BE, P.BP
Description	<ul style="list-style-type: none"> For software For control blocks For motors and controllers For valve terminals and electrical peripherals For vision systems
→ Page/online	documentation

Product overview


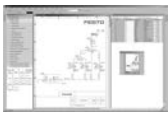

Learning systems

	 <p>EduTrainer® Universal D:ET-SPS</p>
Type	
Description	<ul style="list-style-type: none"> • PLC EduTrainer® support system for use in teaching and training • Equipped with PLCs from different manufacturers • Two series: universal and compact • Equipped with 19" simulation modules • Individually configurable or pre-assembled
→ Page/online	edutrain

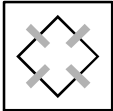

Software

	 <p>Operator packages GSIB</p>	 <p>Operator packages P.BP</p>	 <p>Software GSPF</p>	 <p>Software and manuals P.SW</p>
Type				
Description	<ul style="list-style-type: none"> • Information software and documentation for motor controllers CMMD-AS, CMMP-AS, CMMS-ST • The operator package contains a CD-ROM with user documentation for motor controller and configuration software FCT (Festo Configuration Tool) and a brief description 	<ul style="list-style-type: none"> • Information software and documentation for motor controllers CMMP-AS and SFC-DC, handling module HSP/HSW • The operator package contains a CD-ROM with user documentation for motor controller and configuration software FCT (Festo Configuration Tool) and a brief description 	<ul style="list-style-type: none"> • Programming software and documentation for motor controller CMMP-AS with additional functions for cam disc functionality • Software for configuring, programming, commissioning and maintaining the controller CECC • Programming software for creating custom application programs for safety systems CMGA • Operating software for configuring, programming and for AS-Interface® diagnostics with serial connecting cable • The software package contains a CD-ROM with user documentation for the motor controller 	<ul style="list-style-type: none"> • For configuring the terminal CPX, for parameterising the CPX modules, for programming the controller CPX-FEC • Software for Checkbox CHB-C for image evaluation, display, protocol and adaptation of the I/O parameters • Software for Checkbox CHB-C for the complete analysis of recognition processes
→ Page/online	gsib	software	gspf	software



Software

	 <p>Software licenses GSLO</p>	 <p>FluidDraw® software GSWF</p>	 <p>EPLAN projects GDDE</p>
Type			
Description	<ul style="list-style-type: none"> • For enabling tools on the compact vision system SBOC-Q/SBOI-Q 	<ul style="list-style-type: none"> • Quick and easy creation of pneumatic circuit diagrams • Comprehensive library of pneumatic and electrical symbols • User-specific product databases and translation tables • Terminal plans, cable diagrams, cable lists, parts lists • Dimensioning function for preparing simple control cabinet and system layouts • Consistent equipment identification • Multi-level project tree 	<ul style="list-style-type: none"> • New software • The EPLAN documentation for a complex Festo product can be created within a few minutes • Automated generation to IEC 61355, IEC 81346 and ISO 1219 • Available at any time via the web service
→ Page/online	gslo	gswf	gdde

Software

	<p>Motion Apps GAMM</p>	 <p>Software packages GSAY</p>	NEW
<p>NEW</p>		<ul style="list-style-type: none"> • New software 	
<p>Description</p>	<ul style="list-style-type: none"> • A new dimension in flexibility thanks to Motion Apps – one valve, numerous functions • Accelerated engineering processes • Short response times without adjusting the hardware • Reduced system complexity • Shorter market launch times for your application • Control programs for VEVN valves 	<ul style="list-style-type: none"> • Modular operating software for the servo press kit YJKP, which is already pre-installed on the press controller and thus immediately ready for use once system integration is complete • No programming knowledge required • Thanks to the integrated sequencer, press-fitting operations are quick to configure and easy to implement • Configurator for the joining process: feed/joining path, possible wait times, threading functionality, etc. • Recording process data for quality assurance • Recorded force/displacement graph exported as *.csv file • Analysis functions for the force/displacement graph • Definition of windows • Envelopes • Through points • Advanced licensed software package available to purchase via Festo AppWorld 	
<p>→ Page/online</p>	<p>gamm</p>	<p>gsay</p>	

Software

	<p>App World</p>	 <p>Smartenance GASM</p>	NEW	NEW
<p>NEW</p>	<ul style="list-style-type: none"> • A Festo portal for selling apps, cloud-based digital products and other software libraries 	<ul style="list-style-type: none"> • Mobile and digital maintenance management 		
<p>Description</p>	<ul style="list-style-type: none"> • As a customer, you can use this portal to buy directly online and, with your type code, see the apps that are relevant for your system. • Simply log in via the link provided • Order and receive your digital product immediately • View your App World order history - it's quick, convenient and transparent 	<ul style="list-style-type: none"> • Digital maintenance manager for production managers and system operators • Maintenance management is finally paperless • Clear schedule and evaluation for your system maintenance • Fast and easy transition to digital maintenance • Clear structures • Easy to use • 2 parts: 1 dashboard for production managers to manage and document and 1 mobile maintenance app for the shop floor • Transform the maintenance tasks for every system directly into a digital solution and offer customers added value for the system 		
<p>→ Page/online</p>	<p>www.festo.com/appworld</p>	<p>www.festo.com/smartenance</p>		



Compact and connective

- + Compact CODESYS controllers in IP20 with OPC UA server for Industry 4.0 integration
- + Numerous predefined interfaces to a higher-order control system

Electronic controllers >
Controllers

CECC

Electronic controllers >

Controllers

CECC



Overview, configuration and ordering

[→ www.festo.com/catalogue/cecc](http://www.festo.com/catalogue/cecc)


Additional information, support and user documentation

[→ www.festo.com/sp/cecc](http://www.festo.com/sp/cecc)


- + Modern, compact and versatile controller
- + Programming with CODESYS to IEC 61131-3
- + 12 digital inputs, 8 digital outputs, additionally 2 high-speed counter inputs up to 250 kHz
- + Ethernet 10/100 Mbps
- + USB interface for data transfer
- + CECC-LK with CANOpen, IO-Link®, I-Port and Modbus TCP protocol

Application

Controller



The controllers CECC are modern, compact and versatile controllers that enable programming with CODESYS to IEC 61131-3.

State-of-the-art programming

CODESYS V3 pbF offers a user-friendly interface with the following new functions:

- Object-oriented programming
- Modern editors for simplified input
- Simplified configuration for fieldbus

- New configurator for IO-Link masters

IO-Link

- Multiple controllers in one project
- Improved troubleshooting function
- Simplified project navigation

Basic functions of the CECC-D

The controllers CECC (CECC-D) offer the following basic functions:

- 12 digital inputs, 8 digital outputs, additionally 2 high-speed counters up to 180 kHz
- Ethernet 10/100 Mbps, Modbus TCP client/server, EasyIP, TCP/IP, OPC server available

- CANopen master: connection of the electric drives
- USB interface for data transfer
- Can be connected directly with modern HMI devices: CDPX

Additional functions of the CECC-LK

- This variant of the CECC offers four IO-Link masters and one IO-Link device interface
- The integrated IO-Link interface of the CECC-LK enables quick and easy connection of Festo valve terminals and sensors to a controller

- All modern, compact valve terminals from the CTEU series can be connected to IO-Link masters: VTUB, VTUG, MPA, CPV, VTOC and upcoming devices, as well as the input box CTSL

Additional functions of the CECC-S

- 2 RS232 interfaces
- 1 RS422/RS485 interface, allows freely configurable communication with different devices
- The RS422 interface can optionally be used as an encoder interface. For this operating mode, there are numerous setting options on the encoder type, comparison functions and referencing
- In addition, the CECC offers an IO-Link master and an IO-Link device interface

Fieldbus interfaces

The CECC-LK and CECC-S can be connected to a combination of CTEU nodes and CAPC on various fieldbuses via the IO-Link device interface:

- PROFIBUS
- EtherCAT
- DeviceNet
- CANopen
- AS-Interface



System configuration

The CECC can communicate with all electric drive controllers from Festo and actuate all valve terminals via CANopen. The CECC communicates via Ethernet with other controllers and operator units from Festo, such as the modern, new HMI device series CDPX and the camera SBOx-Q for image evaluation.

Controllers CECC

Data sheet



Technical data

CPU data	400 MHz processor
Degree of protection	IP20
Status displays	LED
Electrical connection technology for I/O	Socket strip, grid 3.5 mm

Digital inputs

Number	12
Switching logic	Positive logic (PNP)
High-speed clock pulse inputs	2, each with max. 180 kHz
Input signal delay [ms]	Typically 3
Input voltage [V DC]	24
Permissible connecting cable length [m]	30

Digital outputs

Number	8
Switching logic	Positive logic (PNP)
Contact	Transistor
Output voltage [V DC]	24
Output current [mA]	500
Switching frequency [kHz]	Max. 1
Protection against short circuit	Yes

Serial interfaces	CECC-LK	CECC-D	CECC-S
USB interface	USB 1.1		
Ethernet interface	RJ45		
IO-Link interface	Cage Clamp, master 5-pin	–	Cage Clamp, master 5-pin
Fieldbus interface			
Programming software	CODESYS V3		
Type of fieldbus interface	CAN bus		
Connection technology	Sub-D plug, 9-pin		
Transmission rate [kbps]	125, 250, 500, 800, 1000 Can be set using software		

Operating and environmental conditions	CECC-LK	CECC-D	CECC-S
Operating voltage [V DC]	19.2 ... 30		20.4 ... 30
Current consumption at 24 V DC [mA]	100		
Ambient temperature [°C]	0 ... +55		

Order code

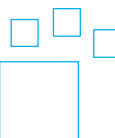
		CECC	
Type			
CECC			
Function module			
LK	With 14 digital inputs and 8 digital outputs, Ethernet, USB, CANopen, 4 IO-Link masters, 1 IO-Link device		
D	With 14 digital inputs and 8 digital outputs, Ethernet, USB, CANopen		
S	With 14 digital inputs and 8 digital outputs, Ethernet, USB, CANopen, 2 RS232, 1 RS485/RS422/encoder, 1 IO-Link master, 1 IO-Link device		

Order example:

CECC-LK

Function module CECC-LK, with 14 digital inputs and 8 digital outputs, Ethernet, USB, CANopen, 4 IO-Link masters, 1 IO-Link device

Ordering – Product options



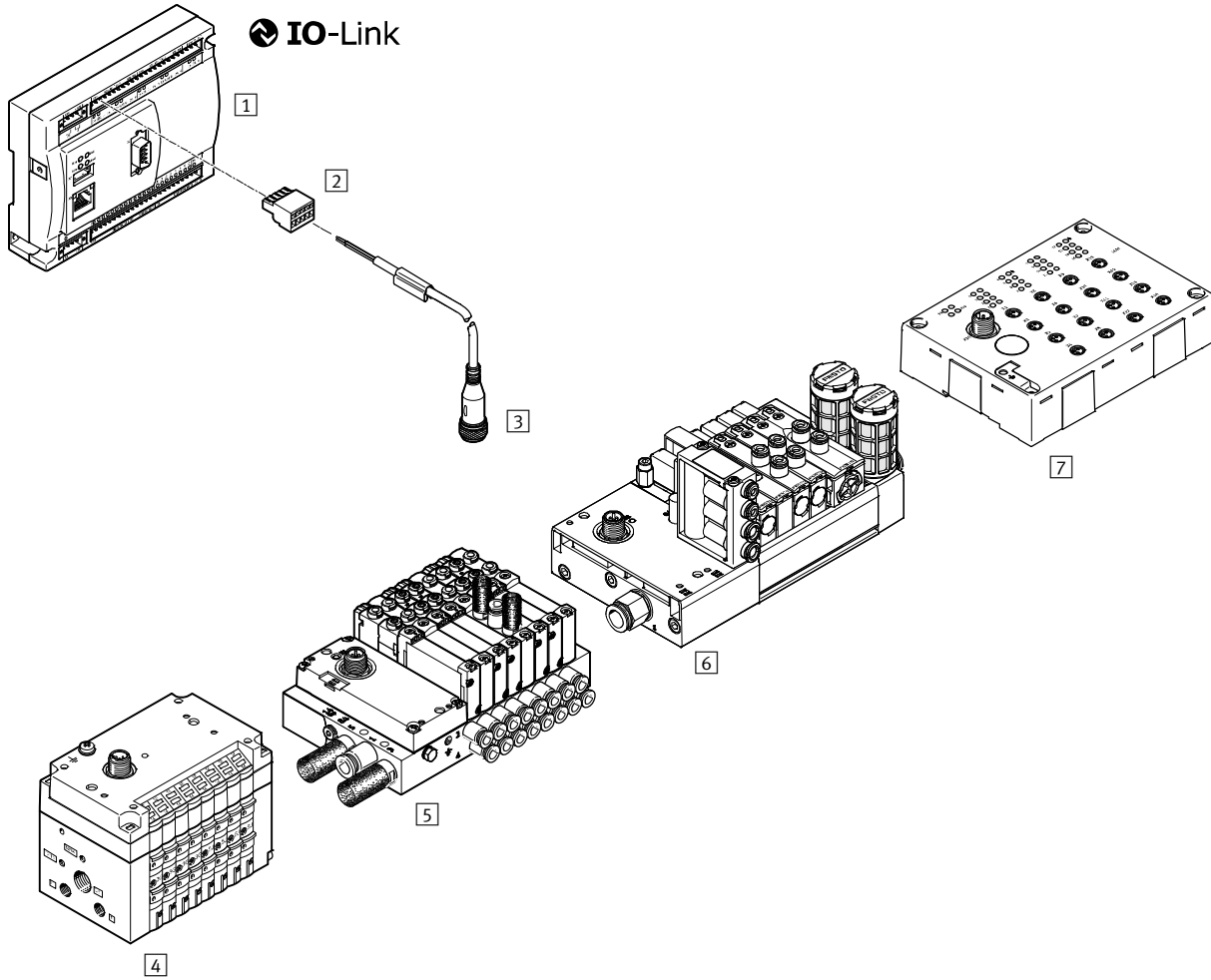
Configurable product

This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.


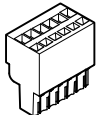



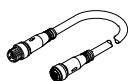

Accessories



		→ Page/ online
1	Controller CECC	1576
2	Plug NECC	1579
3	Connecting cable NEBU	1579
4	Valve terminal CPV	cpv

		→ Page/ online
5	Valve terminal VTUG	vtug
6	Valve terminal VTUB	vtub
7	Input module CTSL	ctsl
-	CODESYS V3 software	1579

Accessories – Ordering data

	Description	Part no.	Type
2 Plugs			
	–	575303	NECC-L2G4-C1-M
	2-pin	575302	NECC-L2G2-C1
	4-pin	8024782	NECC-L2G4-C1
	5-pin	575304	NECC-L2G5-C1
	6-pin	575305	NECC-L2G6-C1
	8-pin	575306	NECC-L2G8-C1
	24-pin	575307	NECC-L2G24-C1
	9-pin	576031	NECC-S1G9-C2-M
3 Connecting cables Data sheets → 1543			
	Straight socket, 5-pin, cable length 2.5 m	★ 541330	NEBU-M12G5-K-2,5-LE5
	Angled socket, 5-pin, cable length 2.5 m	★ 567843	NEBU-M12W5-K-2,5-LE5
	Up to 20 m can be used ¹⁾	★ 574321	NEBU-M12G5-E-5-Q8-M12G5
		★ 574322	NEBU-M12G5-E-7,5-Q8-M12G5
		★ 574323	NEBU-M12G5-E-10-Q8-M12G5
Programming software			
	–	542000	GSPF-CDS-3

1) Modular product, additional information → Internet: nebu



Cost-sensitive and simple communication

- + Universal connection to controllers
- + All key communication standards available
- + Plug and work functionality

Electrical peripherals >
Fieldbus modules

CTEU

Electrical peripherals >

Fieldbus modules

CTEU



Overview, configuration and ordering

→ www.festo.com/catalogue/cteu

Additional information, support and user documentation

→ www.festo.com/sp/cteu

- + Fieldbus module for valve modules VTOC, VTUB-12, VTUG, MPA-L and CPV
- + Bus protocols: CANopen, PROFIBUS, DeviceNet®, AS-Interface, CC-LINK®, EtherCAT®, EtherNet/IP, PROFINET, CPI-B
- + Optional: 2 I-Port interfaces via adapter CAPC for installation system CTEL

Fieldbus modules CTEU/installation system CTEL

Product range overview

Type	Designation	Address space		→ Page/ online
		Inputs	Outputs	
CTEU-AS	Bus node for AS-Interface	2 bytes	2 bytes	cteu
CTEU-CC	Bus node for CC-LINK	16 bytes	16 bytes	1586
CTEU-CO	Bus node for CANopen	8 bytes	8 bytes	1586
CTEU-CP	Interface for CP installation system	4 bytes	4 bytes	cteu
CTEU-DN	Bus node for DeviceNet	8 bytes	8 bytes	1587
CTEU-EC	Bus node for EtherCAT	16 bytes	16 bytes	1587
CTEU-EP	Bus node for EtherNet/IP	64 bytes	64 bytes	1588
CTEU-PB	Bus node for PROFIBUS	16 bytes	16 bytes	1588
CTEU-PN	Bus node for PROFINET	64 bytes	64 bytes	cteu
CPX-CTEL	I-Port interface for CPX	32 bytes	32 bytes	1589
CPX-CTEL-2	IO-Link interface for CPX	32 bytes	32 bytes	cteu
VMPAL-EPL	I-Port interface for valve terminal MPA-L	–	4 bytes	1590
VAEM-L1-S	I-Port interface for valve terminal VTUG	–	6 bytes	1590
CPV-GE-PT	I-Port interface for valve terminal CPV	–	2 bytes	cteu
VABM-C8	I-Port interface for valve terminal VTUB-12	–	4 bytes	cteu
CTSL-D-16E	Input module	2 bytes	–	1591
CAPC-F1	Decentralised adapter for connecting I-Port devices	Dependent on connected I-Port devices		1591

Note

CTEU is ordered using an ident. code. A configurator is available to help you select a suitable valve terminal.

The convenient product configurator can be found at:

→ www.festo.com/catalogue/cteu

Fieldbus modules CTEU/installation system CTEL

Key features

The system

- Bus nodes CTEU for valve terminals
- Festo-specific interface (I-Port)
- Input modules CTSL for recording sensor signals
- Cost savings for valve terminals with a large number of valves on the fieldbus thanks to the reduction of hardware
- Direct and easy networking of valve terminals and other devices via a bus connection
- Versatility thanks to high protection class IP65/67
- Universal connection technology (Sub-D, M12, terminal strip)
- Optional decentralised installation of bus node for connecting two valve terminals
- Basic diagnostics: undervoltage, short circuit

CTEU for universal use of valve terminals. The Festo-specific, standardised interface (I-Port) enables the bus modules to be used for different valve terminal types.

The following protocols are currently supported:

- CC-LINK
- CANopen
- DeviceNet
- EtherCAT
- EtherNet/IP
- PROFIBUS

Fieldbus systems



CC-LINK

"Control and Communications Link" (CC-LINK) was developed by Mitsubishi Electric and has been available as an open fieldbus network since 1999.



CANopen

CANopen was originally developed for the automotive industry by a joint venture led by Bosch. It has been maintained by the organisation CiA (CAN in Automation) since 1995, and at the end of 2002 it was standardised as European standard EN 50325-4.



DeviceNet

DeviceNet is an open fieldbus standard that was developed by Rockwell Automation on the basis of the CAN protocol. DeviceNet is standardised in European standard EN 50325.



EtherCAT

EtherCAT is a bus with real-time capability; it was developed by Beckhoff and the EtherCAT Technology Group (ETG). EtherCAT is an open technology and has been standardised in international standards IEC 61158 and IEC 61784 and in ISO 15745-4.



EtherNet/IP

EtherNet/IP was developed by Allen-Bradley (Rockwell Automation) and the ODVA (Open DeviceNet Vendor Association). EtherNet/IP is an open standard (technology based on Ethernet TCP/IP and UDP/IP) for industrial networks and is standardised in the IEC 61158 series of international standards.



PROFIBUS

Process Fieldbus (PROFIBUS) is a fieldbus that was developed by Siemens and has been standardised in the IEC 61158 series of international standards. It enables communication between devices without the need for any specific adaptations to the interface.

Fieldbus modules CTEU/installation system CTCL

Key features

Different bus nodes are used for integration in the control systems of various manufacturers.

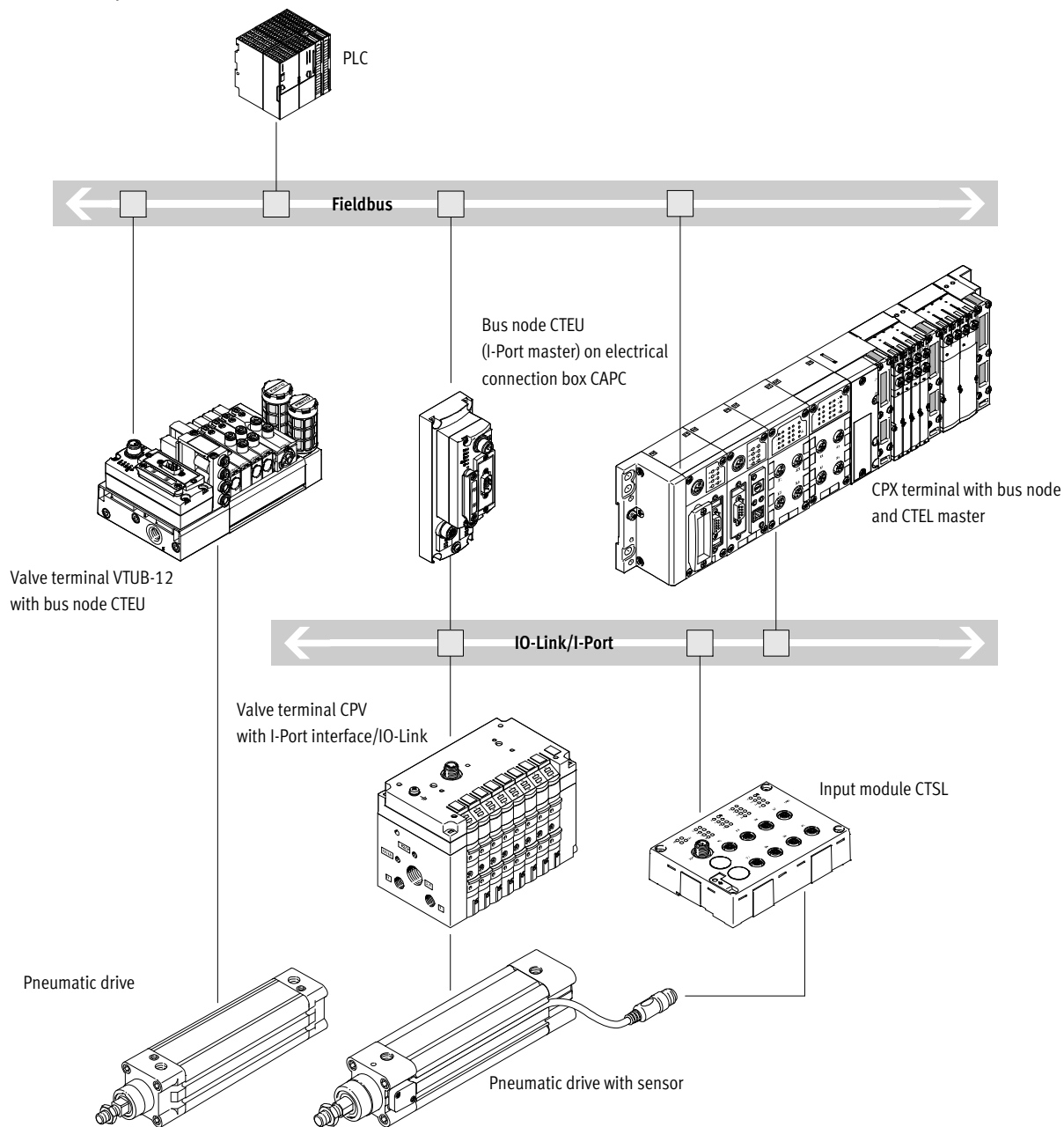
The following protocols are supported with the compatible bus node CTEU:

- CC-LINK
- CANopen
- DeviceNet

- EtherCAT
- EtherNet/IP
- PROFIBUS

A second valve terminal can be connected via an electrical connection box (decentralised adapter). (→ Page 1591)

System overview, example



• Communication with the higher-order controller via fieldbus

• Use a bus node CTEU compatible with the fieldbus protocol

• Up to 64 inputs/outputs (solenoid coils), depending on the valve terminal

Fieldbus modules CTEU/installation system CTEL

Data sheet – CTEU-CC



Materials
Housing: PC, PA reinforced



Technical data		
Type	CTEU-CC	
Fieldbus interface		<ul style="list-style-type: none"> • Sub-D socket, 9-pin • Sub-D plug for self-assembly • Screw terminal strip, IP20
Baud rate	[kbps]	156 ... 10000
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 70
Parameterisation		<ul style="list-style-type: none"> • Activating diagnostics • Failsafe and idle response
Max. address capacity, inputs	[byte]	16
Max. address capacity, outputs	[byte]	16
Additional functions		System status can be displayed using process data
Dimensions W x L x H	[mm]	40 x 91 x 50

Data sheet – CTEU-CO



Materials
Housing: PC, PA reinforced



Technical data		
Type	CTEU-CO	
Fieldbus interface		<ul style="list-style-type: none"> • Sub-D socket, 9-pin • Sub-D plug for self-assembly • 2x M12x1, 5-pin • Terminal strip, 5-pin
Baud rate	[kbps]	125, 250, 500 and 1000
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Parameterisation		<ul style="list-style-type: none"> • Diagnostic behaviour • Fail state
Max. address capacity, inputs	[byte]	8
Max. address capacity, outputs	[byte]	8
Additional functions		<ul style="list-style-type: none"> • Emergency message • Acyclic data access via "SDO"
Dimensions W x L x H	[mm]	40 x 91 x 50

Data sheet – CTEU-DN



Materials
Housing: PC, PA reinforced



Technical data		
Type		CTEU-DN
Fieldbus interface		<ul style="list-style-type: none"> • Sub-D socket, 9-pin • Sub-D plug for self-assembly • 2x M12x1, 5-pin • Terminal strip, 5-pin
Baud rate	[kbps]	125; 250; 500
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Parameterisation		<ul style="list-style-type: none"> • Diagnostic behaviour • Failsafe and idle response
Max. address capacity, inputs	[byte]	8
Max. address capacity, outputs	[byte]	8
Additional functions		<ul style="list-style-type: none"> • Acyclic data access via "Explicit Message" • QuickConnect • System status can be displayed using process data
Dimensions W x L x H	[mm]	40 x 91 x 50

Data sheet – CTEU-EC



Materials
Housing: PC, PA reinforced



Technical data		
Type		CTEU-EC
Fieldbus interface		2x socket M12, D-coded, 4-pin
Baud rate	[Mbps]	100
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 60
Parameterisation		<ul style="list-style-type: none"> • Diagnostic behaviour • Failsafe response
Max. address capacity, inputs	[byte]	16
Max. address capacity, outputs	[byte]	16
Additional functions		<ul style="list-style-type: none"> • Diagnostic object • Acyclic data access via "SDO" • Emergency message • Modular Device Profile (MDP)
Dimensions W x L x H	[mm]	40 x 91 x 50

Fieldbus modules CTEU/installation system CTEL

Data sheet – CTEU-EP



Materials
Housing: PA reinforced



Technical data		
Type	CTEU-EP	
Fieldbus interface	2x socket, M12x1, 4-pin, D-coded	
Baud rate	[Mbps]	10/100
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Parameterisation	<ul style="list-style-type: none"> • Failsafe and idle response • Diagnostic behaviour 	
Max. address capacity, inputs	[byte]	64
Max. address capacity, outputs	[byte]	64
Additional functions	<ul style="list-style-type: none"> • AddressConflictDetection (ACD) • Acyclic data access via "Explicit Message" • EtherNet/IP QuickConnect • IP addressing via DHCP, DIL switch, fieldbus or FFT • Integrated switch • Ring topology (DLR) • SNMP • Start-up parameterisation in plain text via fieldbus • System status can be displayed using process data • Web server 	
Dimensions W x L x H	[mm]	40 x 91 x 50

Data sheet – CTEU-PB

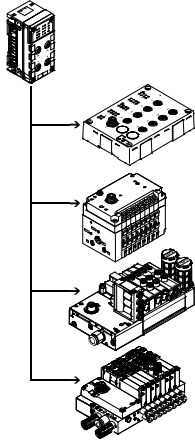


Materials
Housing: PC, PA reinforced



Technical data		
Type	CTEU-PB	
Fieldbus interface	<ul style="list-style-type: none"> • Sub-D socket, 9-pin • Sub-D plug for self-assembly • 2x M12x1, 5-pin, B-coded 	
Baud rate	[kbps]	9.6; 19.2; 93.75; 187.5; 500
	[Mbps]	1.5, 12
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 100
Parameterisation	<ul style="list-style-type: none"> • Diagnostic behaviour • Failsafe response 	
Max. address capacity, inputs	[byte]	16
Max. address capacity, outputs	[byte]	16
Additional functions	<ul style="list-style-type: none"> • System status via diagnostics program • Emergency message 	
Dimensions W x L x H	[mm]	40 x 91 x 50

Data sheet – CPX-CTEL



Materials
Housing: PC, PA reinforced



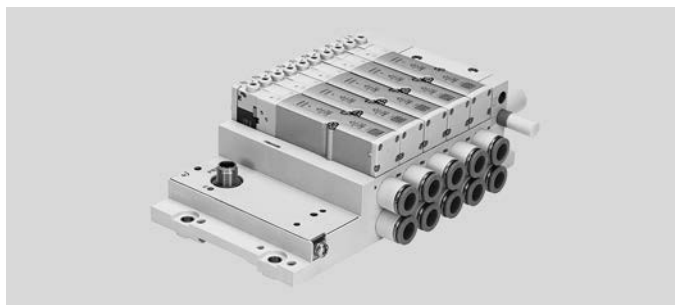
Technical data		
Type		CPX-CTEL-4-M12-5POL
I-Port connection		4x socket M12, 5-pin, A-coded
Protocol		I-Port
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Parameterisation		<ul style="list-style-type: none"> • Diagnostic behaviour • Failsafe per channel • Forcing per channel • Idle mode per channel • Module parameters • Tool change mode
Max. address capacity, inputs	[byte]	32
Max. address capacity, outputs	[byte]	32
Additional functions		Tool change mode
Dimensions (incl. interlinking block) W x L x H	[mm]	50 x 107 x 55

Electrical peripherals >

Fieldbus modules CTEU/installation system CTEL

Data sheet –MPA-L

Flow rate		I-Port interface for communication between a valve terminal MPA-L and an I-Port master. It activates a valve terminal MPA-L with up to 32 solenoid coils on max. 32 valve positions.
VMPA1:	up to 360 l/min	
VMPA14:	up to 670 l/min	
VMPA2:	up to 700 l/min	
Valve width		Materials
VMPA1:	10 mm	End plate: PPA reinforced
VMPA14:	14 mm	
VMPA2:	20 mm	



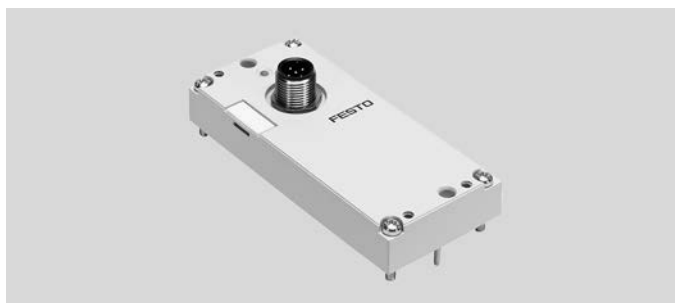
Technical data

Type	VMPAL-EPL-IPO32		
Protocol	IO-Link/I-Port		
IO-Link	Connection technology	5-pin	
	Protocol	V 1.0	
	Communication mode	COM2 (38.4 kBaud), COM3 (230 kBaud)	
	Port type	B	
	Number of ports	1	
	Process data width OUT	[bit]	8 ... 32
Baud rate		[kbps]	38.4; 230.4
Intrinsic current consumption	Operating voltage	[mA]	30
	Load voltage	[mA]	30

Data sheet – I-Port interface/IO-Link for valve terminal VTUG

Versions:

- I-Port interface for bus nodes (CTEU)
- IO-Link mode for direct connection to a higher-level IO-Link master



Technical data

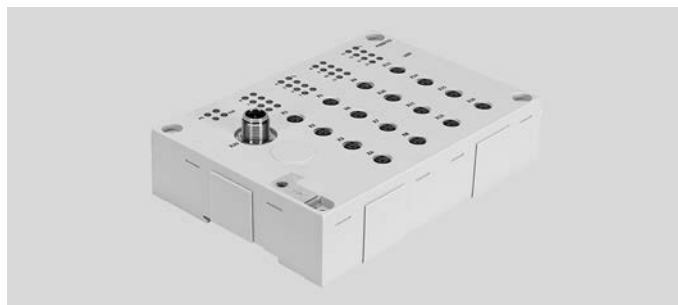
Type	VAEM-L1-S		
Communication types	IO-Link		
Electrical connection	<ul style="list-style-type: none"> • M12 plug, 5-pin • A-coded • Metal thread for screening 		
Baud rate	COM3	[kbps]	230.4
	COM2	[kbps]	38.4
Intrinsic current consumption	Logic supply PS	[mA]	30
	Valve supply PL	[mA]	30
Max. number of solenoid coils	VAEM-L1-S-8-PT		16
	VAEM-L1-S-16-PT		32
	VAEM-L1-S-24-PT		48
Max. no. of valve positions	VAEM-L1-S-8-PT		8
	VAEM-L1-S-16-PT		16
	VAEM-L1-S-24-PT		24
Ambient temperature		[°C]	-5 ... +50

Data sheet – CTSL

Function

Digital input modules facilitate the connection of proximity sensors or other 24 V DC sensors (inductive, capacitive, etc.).

Materials: PA reinforced



Technical data

Type	CTSL-D-16E-M8-3	CTSL-D-16E-M12-5
Electrical connection	16x socket, M8, 3-pin	8x socket, M12, 5-pin
Protocol	IO-Link/I-Port	
IO-Link	Connection technology	5-pin
	Protocol	V 1.0
	Communication mode	COM2 (38.4 kBaud), COM3 (230 kBaud)
	Port type	B
	Number of ports	1
	Process data width OUT [bit]	16
	Minimum cycle time [ms]	3.2
Device ID	0x 700410	
Current consumption at nominal operating voltage of logic circuit [mA]	Max. 35	
Baud rate [kbps]	38.4; 230.4	
Max. number of inputs	16	

Data sheet – Electrical connection box CAPC

Function

The electrical connection box CAPC enables the decentralised installation of bus nodes CTEU on a valve terminal or input modules with I-Port interface.

Area of application

- M12 connection technology (two interfaces)
- Enables the installation of valve terminals or other devices over a distance of 20 metres
- Accessory CAFM enables the connection box to be installed on an H-rail

Housing: PA reinforced



Technical data

Type	CAPC-F1-E-M12
Fieldbus interface	2x socket M12, 5-pin, A-coded
Operating voltage range [V DC]	18 ... 30
Max. power supply [A]	2
Nominal operating voltage [V DC]	24
Dimensions W x L x H [mm]	50 x 148 x 28

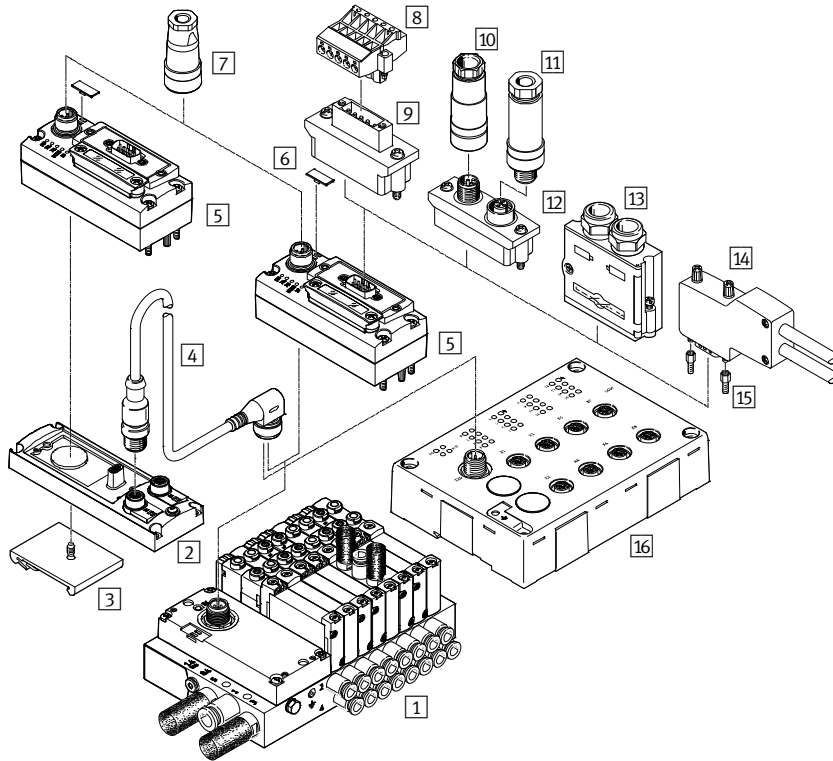
Pin allocation – I-Port interface/IO-Link

	Pin	Allocation	Description
	1	24V _{EL} /SEN	Operating voltage supply (electronics, sensors/inputs)
	2	24V _{VAL} /OUT	Load voltage supply (valves/outputs)
	3	0V _{EL} /SEN	Operating voltage supply (electronics, sensors/inputs)
	4	C/Q	Data communication
	5	0V _{VAL} /OUT	Load voltage supply (valves/outputs)
		Housing, FE	

Electrical peripherals >

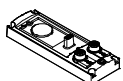
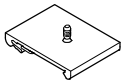
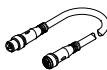
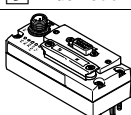





Fieldbus modules CTEU/installation system CTSL

Peripherals overview – CTEU with valve terminal VTUG



Accessories		→ Page/online
1	Manifold rail VABM, with I-Port interface, for connecting max. 35 valves	vtug
2	Electrical connection box CAPC, for connecting a further terminal (2x I-Port interface)	1593
3	H-rail adapter CAFM, for adapter CAPC	1593
4	Connecting cable NEBU, for IO-Link	1593
5	Bus node CTEU	1593
6	Inscription label ASLR, for bus node	1593
7	Power supply socket NTSD/FBSD, for power supply	1593
8	Terminal strip FBSD-KL, for open style connection	1593
9	Bus connection FBA-1, open style for 5-pin terminal strip	1593
10	Socket FBSD-GD, NECU, for micro style connection, M12, 5-pin	1594
11	Plug FBS, NECU, for micro style connection, M12, 5-pin	1594
12	Bus connection FBA-2, micro style, 2xM12, 5-pin	1594
13	Plug FBS-SUB-9-BU, Sub-D	1594
14	Plug FBS-SUB-9-WS, Sub-D, angled	1594
15	Threaded sleeve UNC, Sub-D mounting bolt	1594
16	Input module CTSL-D-16E	1594
-	Connecting cable NEBC for EtherCAT and EtherNet/IP	1594

Accessories – Ordering data

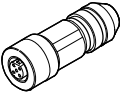
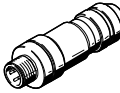

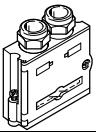
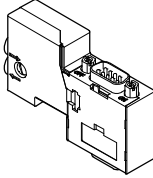
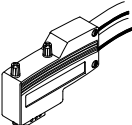

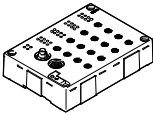
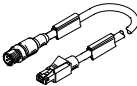
	Code ¹⁾	Description	Part no.	Type
2 Electrical connection box				
	–	For connecting two devices with I-Port interface to a bus node	570042	CAPC-F1-E-M12
3 H-rail mounting				
	–	For electrical connection box CAPC-F1-E-M12	570043	CAFM-F1-H
4 Connecting cable Data sheets → Page 1543				
	–	Connecting cable, M12, 5-pin, straight plug-straight socket	5 m	574321 NEBU-M12G5-E-5-Q8N-M12G5
	–		7.5 m	574322 NEBU-M12G5-E-7.5-Q8N-M12G5
	–		10 m	574323 NEBU-M12G5-E-10-Q8N-M12G5
5 Bus node				
	CC	CC-Link bus node	1544198	CTEU-CC
	CO	CANopen bus node	570038	CTEU-CO
	DN	DeviceNet bus node	570039	CTEU-DN
	EC	EtherCAT bus node	572556	CTEU-EC
	EP	EtherNet/IP bus node	2798071	CTEU-EP
	PB	PROFIBUS bus node	570040	CTEU-PB
6 Inscription label				
	–	40 pieces in frame	565306	ASLR-C-E4
7 Power supply socket Data sheets online: → ntsd				
	–	M12 socket, 5-pin	For DeviceNet, CANopen	538999 NTSD-GD-9-M12-5POL-RK
	–		For CC-Link, PROFIBUS, EtherCAT, EtherNet/IP	18324 FBSD-GD-9-5POL
8 Terminal strip for open style connection Data sheets online: → fbsd				
	–	Terminal strip for open style connection, 5-pin	Compatible with FBA-1-SL-5POL	525635 FBSD-KL-2x5POL
9 Bus connection Data sheets online: → fba				
	–	Screw terminal bus connection	For CC-Link	197962 FBA-1-KL-5POL
	–	Open style bus connection	For DeviceNet, CANopen	525634 FBA-1-SL-5POL

1) Code letter within the order code for a valve terminal configuration.

Electrical peripherals >

Fieldbus modules CTEU/installation system CTEL

Accessories – Ordering data

	Code ¹⁾	Description		Part no.	Type
9 Socket for micro style connection Data sheets online: → fbsd/necu					
	-	Socket for micro style connection, M12x1, 5-pin	Compatible with FBA-2-M12-5POL	18324	FBSD-GD-9-5POL
			Compatible with FBA-2-M12-5POL-RK	1067905	NECU-M-B12G5-C2-PB
11 Plug for micro style connection, M12, 5-pin Data sheets online: → fbs/necu					
	-	Plug for micro style connection, M12x1, 5-pin	Compatible with FBA-2-M12-5POL	175380	FBS-M12-5GS-PG9
			Compatible with FBA-2-M12-5POL-RK	1066354	NECU-M-S-B12G5-C2-PB
12 Bus connection M12 adapter					
	-	Micro style bus connection, 2xM12, 5-pin	For DeviceNet, CANopen	525632	FBA-2-M12-5POL
			For PROFIBUS	533118	FBA-2-M12-5POL-RK
13 Sub-D plug, straight Data sheets online: → fbs					
	-	Plug connector to fabricate a connecting cable	For DeviceNet, CANopen	532219	FBS-SUB-9-BU-2x5POL-B
			For CC-Link	532220	FBS-SUB-9-GS-2x4POL-B
	-	Plug connector with terminating resistor and programming interface, to fabricate a connecting cable	For CANopen	574588	NECU-S1W9-C2-ACO
			For PROFIBUS	574589	NECU-S1W9-C2-APB
14 Sub-D plug, angled Data sheets online: → fbs					
	-	Plug connector to fabricate a connecting cable	For CANopen	533783	FBS-SUB-9-WS-CO-K
			For PROFIBUS	533780	FBS-SUB-9-WS-PB-K
15 Threaded sleeve					
	-	Threaded sleeve for Sub-D		533000	UNC4-40/M3X8
16 Input module					
	-	16 sensor connections M8, 3-pin, single allocation		1387363	CTSL-D-16E-M8-3
	-	8 sensor connections M12, 5-pin, double allocation		1387359	CTSL-D-16E-M12-5
Connecting cable Data sheets online: → nebc					
	-	Straight plug, M12x1, 4-pin, D-coded, straight plug, RJ45, 8-pin	1 m	8040451	NEBC-D12G4-ES-1-S-R3G4-ET
			3 m	8040452	NEBC-D12G4-ES-3-S-R3G4-ET
			5 m	8040453	NEBC-D12G4-ES-5-S-R3G4-ET

1) Code letter within the order code for a valve terminal configuration.



The automation platform

- + Universal connection to controllers
- + Integration of electric and pneumatic functions on one platform
- + Safety on board

Electrical peripherals >
Terminal

CPX

Electrical peripherals >

Terminal CPX



Overview, configuration and ordering

→ www.festo.com/catalogue/cpx

Additional information, support and user documentation

→ www.festo.com/sp/cpx

- + Centralised, decentralised, hybrid installation system with maximum modularity and flexibility
- + IP65, IP67 or IP20
- + Choice of polymer or metal housing with individual linking
- + Open to all leading fieldbus protocols/Industrial EtherNet with integrated IT services such as SMS/e-mail alert, web monitor
- + Comprehensive integrated diagnostic and service function
- + Operating modes: stand-alone as remote I/O or with valve terminals MPA, VTSA/VTSA-F

Product range overview

Type	Designation	Code ¹⁾	Address space		Version		→ Page/ online
			Inputs	Outputs	Polymer	Metal	
CPX-CEC	CoDeSys embedded controller	T06, T07	512 bit	512 bit	■	–	cpx
CPX-CEC-V3	CODESYS V3 embedded controller	T32, T33, T34	512 bit	512 bit	■	–	1608
CPX-FB6	Bus node for INTERBUS	F06	96 bit	96 bit	■	–	1609
CPX-FB11	Bus node for DeviceNet	F11	512 bit	512 bit	■	–	1609
CPX-FB13	Bus node for PROFIBUS DP	F13	512 bit	512 bit	■	–	1610
CPX-FB14	Bus node for CANopen	F14	256 bit	256 bit	■	–	1610
CPX-M-FB21	Bus node for INTERBUS, fibre-optic connection	F21	96 bit	96 bit	–	■	cpx
CPX-FB23-24	Bus node for CC-Link	F23	256 bit	256 bit	■	–	1611
		F24	512 bit	512 bit	■	–	1611
CPX-FB33	Bus node for PROFINET RT, 2x M12	F33	512 bit	512 bit	–	■	1612
CPX-M-FB34	Bus node for PROFINET RT, 2x RJ45	F34	512 bit	512 bit	–	■	1612
CPX-M-FB35	Bus node for PROFINET RT, 2x SCRJ push-pull, AIDA	F35	512 bit	512 bit	–	■	1613
CPX-FB36	Bus node for EtherNet/IP, 2x M12	F36	512 bit	512 bit	■	–	1614
CPX-FB37	Bus node for EtherCAT	F37	512 bit	512 bit	■	–	cpx
CPX-FB39	Bus node for Sercos III	F39	512 bit	512 bit	■	–	cpx
CPX-FB40	Bus node for POWERLINK	F40	512 bit	512 bit	■	–	cpx
CPX-M-FB41	Bus node for PROFINET RT, 2x SCRJ push-pull, AIDA	F41	512 bit	512 bit	–	■	cpx
CPX-CP-4-FB	CP interface	T11 ... T18	16 ... 128 bit	16 ... 128 bit	■	–	1615
CPX-CTEL-4-M12-5POL	CPX CTEL master	T40 ... T44	0 ... 256 bit	0 ... 256 bit	■	–	1615
CPX-CTEL-2-M12-5POL-LK	CPX CTEL master, IO-Link	T45 ... T48	0 ... 192 bit	0 ... 192 bit	■	–	cmpx
CPX-CMPX	End-position controller CMPX	T20	48 bit	48 bit	■	–	cmpx
CPX-CMAX	Axis controller CMAX	T21	64 bit	64 bit	■	–	cmax
CPX-CMIX	Measuring module CMIX	T23	48 bit	48 bit	■	–	cpx
CPX-CM-HPP	FHPP gateway	T31	256 bit	256 bit	■	–	1616

1) Code letter within the order code for a valve terminal configuration.

Note

The electrical terminal can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/cpx

Note

The bus node and control block provide the aforementioned address space.

Product range overview

Type	Designation	Code ¹⁾	Address space		Version		→ Page/ online
			Inputs	Outputs	Polymer	Metal	
CPX-4DE	Input module, 4 digital inputs	F	4/8 bit ²⁾	–	■	–	cpx
CPX-8DE	Input module, 8 digital inputs	E	8 bit	–	■	–	1616
CPX-8DE-D	Input module, 8 digital inputs (channel diagnostics)	D	8 bit	–	■	–	cpx
CPX-8NDE	Input module, 8 digital inputs (NPN)	O	8 bit	–	■	–	1616
CPX-P-8DE-N	Input module, 8 digital inputs, NAMUR	BR	16 bit	8 bit	–	■	cpx
	Input module, 16 digital inputs, NAMUR (inputs configured as counters)	BR	80 bit	16 bit	–	■	cpx
CPX-16DE	Input module, 16 digital inputs	M	16 bit	–	■	–	1617
CPX-M-16DE-D	Input module, 16 digital inputs (channel diagnostics)	NM	16 bit	–	■	–	1617
CPX-L-16DE-16-KL-3POL	Input module, 16 digital inputs (spring-loaded terminal)	NB	16 bit	–	■	–	cpx
CPX-F8DE-P	PROFIsafe input module, 8 digital inputs for reliable detection and evaluation of input statuses	ND	48 bit	56 bit	■	–	cpx
CPX-4DA	Output module, 4 digital outputs	A	–	4/8 bit ²⁾	■	–	1617
CPX-8DA	Output module, 8 digital outputs	L	–	8 bit	■	–	cpx
CPX-8DA-H	Output module, 8 digital outputs (high current)	NL	–	8 bit	■	–	1618
CPX-8DE-8DA	Input/output module, 16-way, 8 digital inputs/outputs each	Y	8 bit	8 bit	■	–	1619
CPX-L-8DE-8DA-16-KL-3POL	Input module, 8 digital inputs/outputs (spring-loaded terminal)	NC	8 bit	8 bit	■	–	cpx
CPX-2ZE2DA	Counter module, 2 digital inputs, 2 digital outputs	T25	96 bit	96 bit	■	–	cpx
CPX-4AE-4AA-H	HART input/output module, 4 analogue inputs/outputs with HART protocol	H01 ... H10	0 ... 192 bit	0 ... 64 bit	■	■	cpx
CPX-2AE-U-I	Input module, 2 analogue inputs	U	32 bit	–	■	–	1620
CPX-4AE-U-I	Input module, 4 analogue inputs	NI	64 bit	–	■	–	cpx
CPX-4AE-I	Input module, 4 analogue inputs (current)	I	64 bit	–	■	–	1621
CPX-4AE-T	Input module, 4 analogue inputs (temperature)	T	64 bit	–	■	–	1622
CPX-4AE-TC	Input module, 4 analogue inputs (temperature, thermocouples)	NT	64 bit	–	■	–	1623
CPX-4AE-P	Input module, 4 analogue inputs (pressure)	NY, NV	64 bit	–	■	–	1624
CPX-2AA-U-I	Output module, 2 analogue outputs	P	–	32 bit	■	–	1625
CPX-FVDA-P2	PROFIsafe shut-off module	NG	48 bit	48 bit	–	■	1626
VMPA-FB-EPL	Pneumatic interface to MPA-S	–D	16 ... 512 bit	4 ... 512 bit	■	■	cpx
VMPAL-EPL-CPX	Pneumatic interface to MPA-L	–L	–	4 ... 32 bit	■	–	1629
VABA-S6-1-X	Pneumatic interface to VTSA and VTSA-F	–S, –T,	–	8 ... 32 bit	■	■	1629

1) Code letter within the order code for a valve terminal configuration.

2) Number of occupied bits is dependent on the upstream bus node/control block.

Note

The electrical terminal can be ordered quickly and easily online.
The convenient product configurator can be found at:

→ www.festo.com/catalogue/cpx

Note

Input/output modules, etc. use the specified address space.

Key features

Installation concept

- Choice of several valve terminal types for different applications:
 - MPA-L
 - VTSA/VTSA-F
- Economical from the smallest configuration up to the maximum number of modules
- Up to 9 electrical input/output modules plus bus nodes and pneumatic interface/electronics modules for valves
- Extensive range of functions and connection options for the electrical modules
- Choice of connection technology for technically and economically optimised connections
- Can be used as a dedicated remote I/O module

Electrics

- High operating voltage tolerance ($\pm 25\%$)
- Choice of M18, 7/8" or AIDA push-pull connection for power supply
- Open to all fieldbus protocols and Ethernet
- Optional function and technology modules for pre-processing
- IT services and TCP/IP such as remote maintenance, remote diagnostics, SMS and e-mail alert
- Digital inputs and outputs, 4-way/8-way/16-way, optionally available with individual channel diagnostics
- Analogue inputs and outputs, 2-way/4-way
- Supply ports
- Temperature inputs
- Controllers for pneumatic and electric axes
- IP65 and IP67 or IP20

Mounting

- Wall or H-rail mounting, also on mobile units
- Conversions/extensions are possible at any time, individual linking with CPX metal design
- Modular system offering a range of configuration options
- Fully assembled and tested unit
- Lower selection, ordering, assembly and commissioning costs thanks to the central CPX terminal
- Choice of pneumatic components for optimised control chain system design
- Decentralised, subordinate CPI installation system improves cycle times by up to 30%
- Safe and convenient earthing thanks to earthing plate

Operation

- Fast troubleshooting thanks to an extensive selection of LEDs (some of which are multi-coloured) on the bus node and on all I/O modules
- Supports module and channel-oriented diagnostics
- Fieldbus/Ethernet remote diagnostics
- Innovative diagnostic support with maintenance tool with USB adapter for PC
- Optimised commissioning thanks to parameterisable functions
- Reliable servicing with connection blocks and modules that are quick to replace without changing the wiring

Pneumatic variants of the CPX terminal

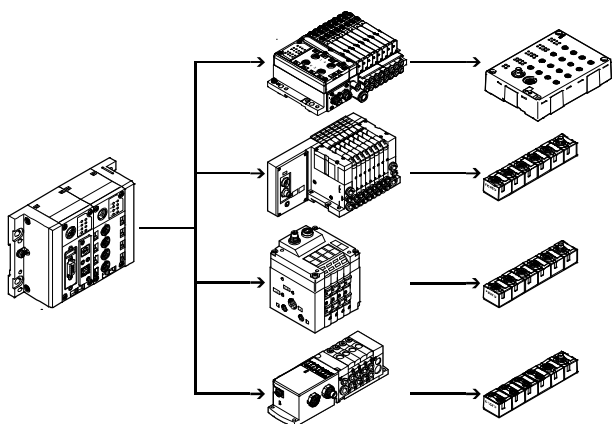
The electrical CPX terminal is a modular peripheral system for valve terminals. The system is specifically designed so

that the valve terminal can be adapted to suit different applications.

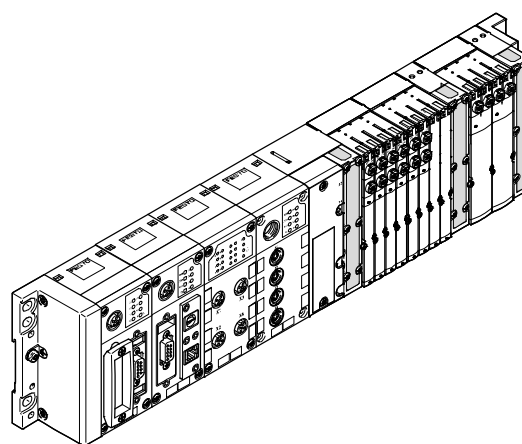
The modular system design lets you configure the number of valves, inputs and

additional outputs to suit the application.

With valve terminal – decentralised

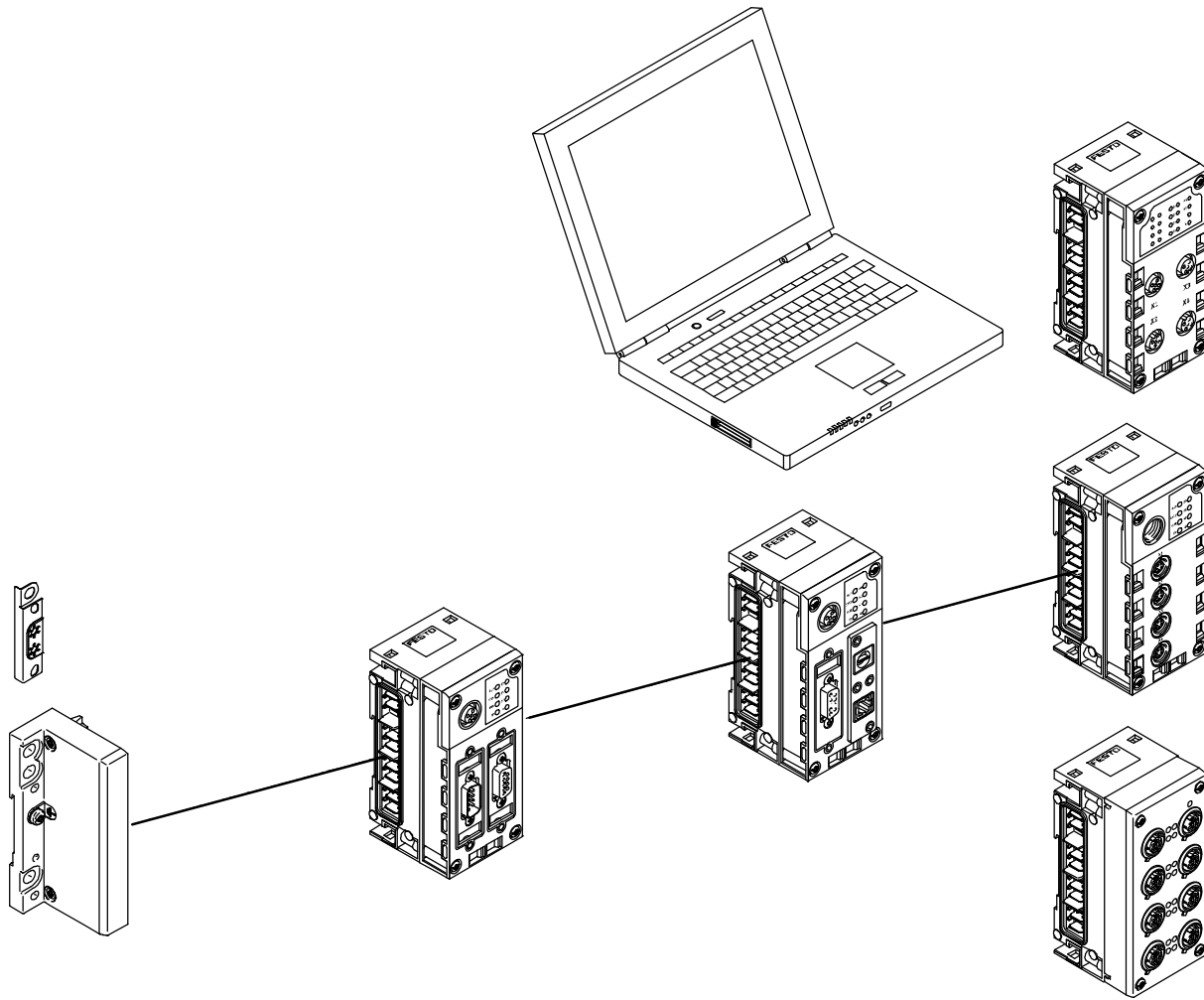


With valve terminal MPA-S – centralised



Variants

Complete overview of modules



End plate

- Mounting holes for wall mounting
- Functional earth connection
- Special earthing plate for safe and easy connection to the machine bed or H-rail

Bus node

- Fieldbus/Industrial EtherNet connection using various types of connection technology
- Setting fieldbus parameters via DIL switch
- Display of fieldbus and peripheral equipment status via LED
- PROFINET to AIDA standard in metal housing, fast start-up

Control block

- Pre-processing, stand-alone controller or remote unit
- Connection via EtherNet TCP/IP or Sub-D programming interface
- Setting operating modes via DIL switch and program selection via rotary switch
- CPX-CMX products for controlling axes

CP interface/CTEL interface

- Interfaces for decentralised installation systems, thus optimising the pneumatic control chains (short tubes/short cycle times)
- Actuation for I/O modules and valve terminals
- Power supply and bus interface via the same cable

Web monitor

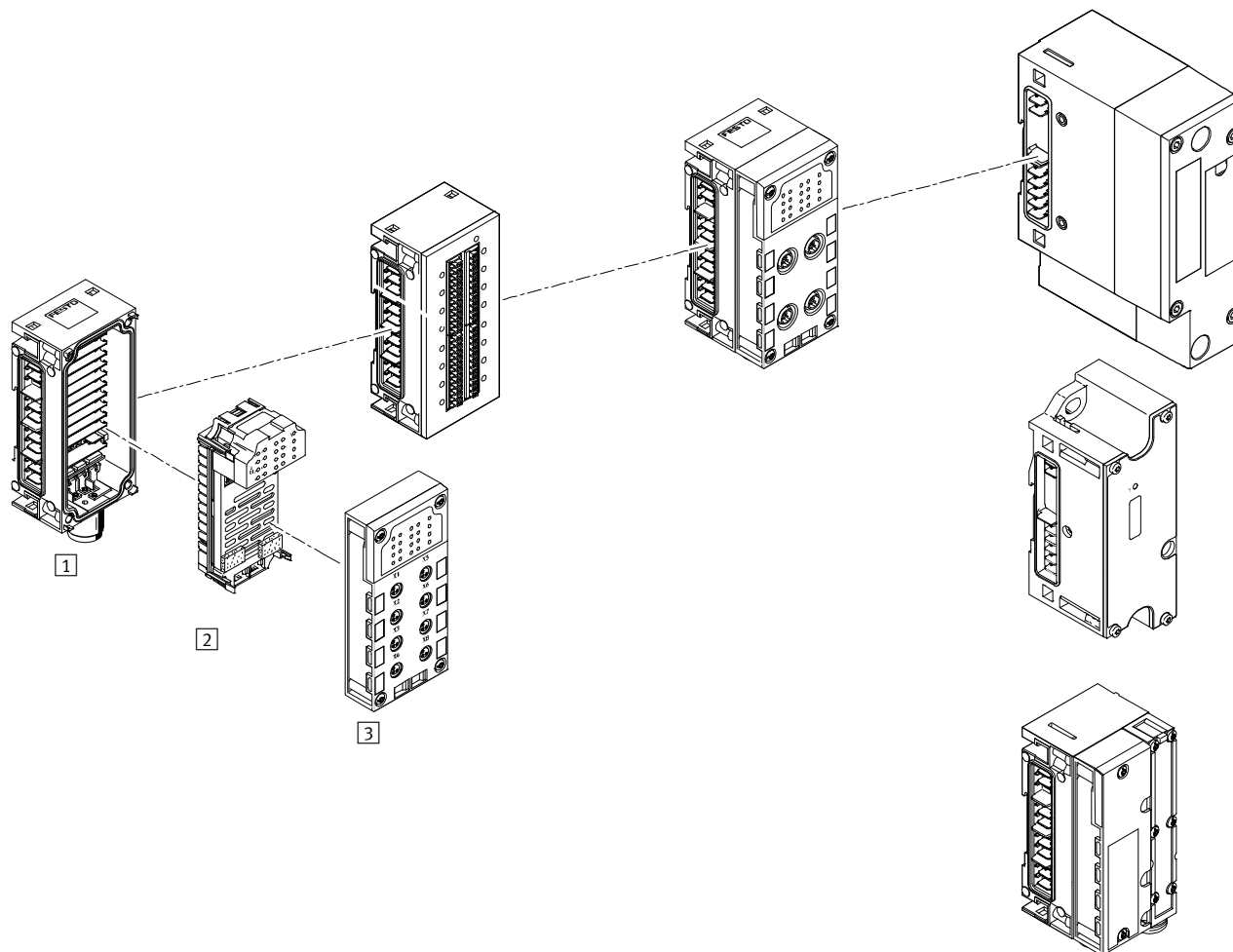
- Website integrated in the CPX terminal
- Dynamic status display
- Online diagnostics
- SMS/e-mail alert

Input/output modules

- Combination of
- Interlinking block
 - Electronics module
 - Connection block

Variants

Complete overview of modules



Input/output modules

1 Interlinking block

- Internal linking of the power supply and serial communication
- External power supply for the entire system
- Additional power supply for outputs or valves
- Connection accessories for M18, 7/8" or AIDA push-pull
- Polymer design: linking with tie rods
- Metal design: individual linking with M6 screws, individually expandable

2 Electronics module

- Digital inputs for connecting the sensors
- Digital outputs for activating additional actuators
- Analogue inputs
- Temperature inputs (analogue)
- Analogue outputs
- PROFIsafe shut-off module with two digital outputs for shutting off the supply voltage for valves

3 Connection block

- Choice of 8 connection technology variants
- Degree of protection IP65/IP67 or IP20
- Can be combined with the electronics modules
- M8/M12/Sub-D/quick connection
- M8/M12/Sub-D, etc. connecting cables
- Modular system for M8/M12 connecting cables
- M12 connection technology for the metal design

Pneumatic interface

- MPA-L
- VTSA/VTSA-F

Terminal CPX

Variants

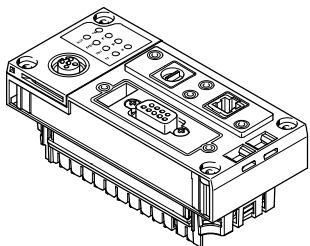
Individual overview of modules

Control block

Data sheets → Page 1608

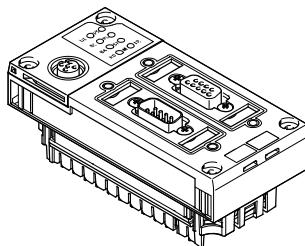
Bus node

Data sheets → Page 1614 and following



CPX-CEC

- Programming with CODESYS
- Ethernet interface
- Modbus/TCP
- EasyIP
- CANopen master



Bus node for

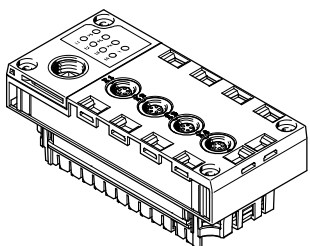
- INTERBUS
- DeviceNet
- PROFIBUS DP
- CANopen
- CC-LINK
- EtherNet/IP
- PROFINET
- EtherCAT

CP interface

Data sheets → Page 1615

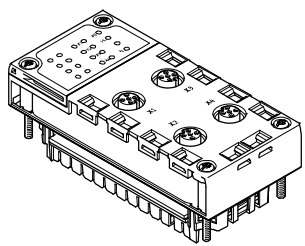
CTEL interface

Data sheets → Page 1615



CP interface

- 4 CP strings
- Max. 4 modules per string
- 32 inputs/32 outputs per string
- CPI functionality

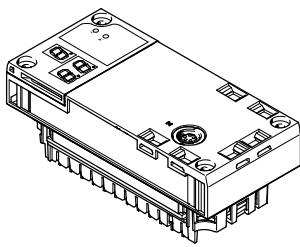


CPX-CTEL interface

- CTEL master
- Max. 4 devices with individual electronic fuse protection
- Max. 64 inputs/64 outputs per I-Port interface
- The maximum length of a string is 20 m

Modules for actuating electric drive units

Data sheets → Page 1616

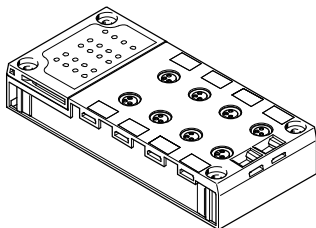


CPX-CM-HPP

- Axis interface
- CAN bus for up to 4 individual electric axes

Polymer connection block

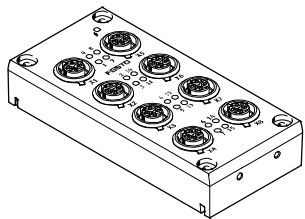
Metal connection block



Direct machine mounting

(degree of protection IP65/IP67)

- M8 3-pin or 4-pin
- M12 5-pin, 5-pin with quick lock/metal thread screened, 8-pin, optional screening plate
- Sub-D
- Quick connection
- Spring-loaded terminal with protection to IP20 or with cover



Direct machine mounting

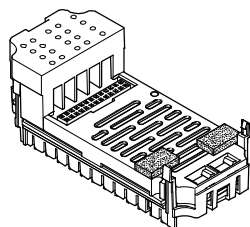
(degree of protection IP65/IP67)

- M12 5-pin

Variants

Individual overview of modules

Digital electronics module



Data sheets → Page 1616 and following

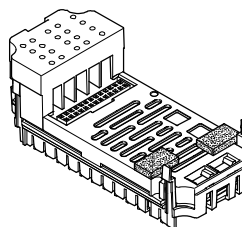
Digital inputs and outputs

- 8 digital inputs NPN
- 8 digital inputs PNP
- 16 digital inputs
- 16 digital inputs with channel diagnostics
- 4 digital outputs (1 A per channel, individual channel diagnostics)
- 8 digital outputs (2.1 A/50 W lamp load per channel pair, individual channel diagnostics)

Multi I/O modules

- 8 digital inputs and 8 digital outputs

Analogue electronics module



Data sheets → Page 1620 and following

Analogue inputs

- 2 analogue inputs (0 ... 10 V DC, 0 ... 20 mA, 4 ... 20 mA)
- 4 analogue inputs (0 ... 20 mA, 4 ... 20 mA)

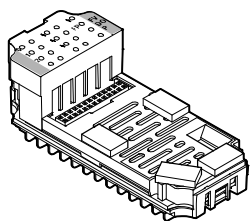
Analogue temperature inputs

- 4 analogue inputs for temperature measurement (Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni500, Ni1000)
- 4 analogue inputs for temperature measurement (thermocouple and PT1000 sensor for cold-junction compensation)

Analogue outputs

- 2 analogue outputs (0 ... 10 V DC, 0 ... 20 mA, 4 ... 20 mA)

PROFIsafe shut-off module

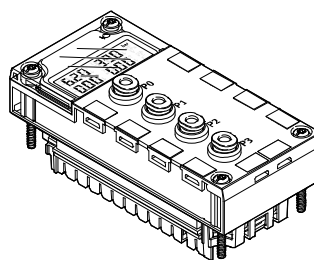


Data sheets → Page 1626

Digital outputs

- 2 digital outputs
- Supply voltage for valves can be shut off

Electronics module for supply ports

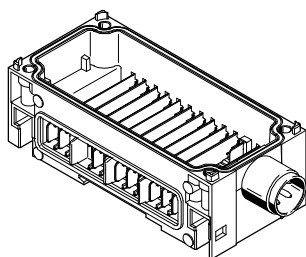


Data sheets → Page 1624

Analogue inputs

- 4 analogue supply ports (0 ... 10 bar, -1 ... +1 bar)

Polymer interlinking block – Interlinking using tie rods



Data sheets → Page 1627 and following

System linking

- Different voltages for supplying the modules
- Serial communication between the modules

System supply

- M18 4-pin
- 7/8" 4-pin or 5-pin

In addition to system linking, power supply for the

- electronics plus sensors (16 A)
- valves plus actuators (16 A)

Additional power supply

In addition to system linking, power supply for the

- actuators (16 A per supply)

Power supply for the

- valves (16 A per supply)

Expandability

- Can be expanded using an interlinking block with tie rod CPX-ZA-1-E

Note

The 7/8" supply is subject to the following restrictions due to the available accessories:

- 5-pin 8 A
- 4-pin 10 A

Note

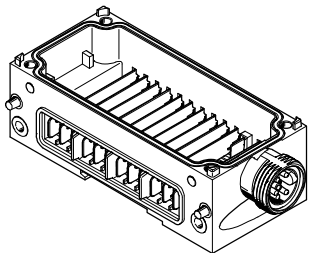
Polymer interlinking blocks (tie rods) and metal interlinking blocks (individual linking) cannot be combined due to their different interlinking systems.

Terminal CPX

Variants

Individual overview of modules

Metal interlinking block – Individual linking



System linking

- Different voltages for supplying the modules
- Serial communication between the modules

System supply

- 7/8" 5-pin
- AIDA push-pull

In addition to system linking, power supply for the

- electronics plus sensors (16 A)
- valves plus actuators (16 A)

Additional power supply

In addition to system linking, power supply for the

- actuators (16 A per supply)

Power supply for the

- valves (16 A per supply)

Expandability

- Can be expanded as required by up to 10 interlinking blocks

Data sheets → Page 1627 and following

Note

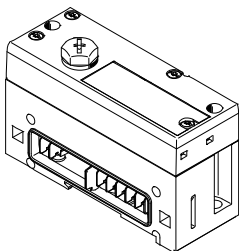
The 7/8" supply is subject to the following restrictions due to the available accessories:

- 5-pin 8 A
- 4-pin 10 A

Note

Polymer interlinking blocks (tie rods) and metal interlinking blocks (individual linking) cannot be combined due to their different interlinking systems.

Pneumatic interface MPA-L

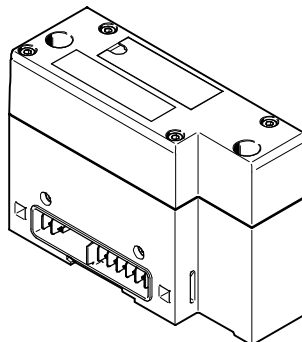


Data sheets → Page 1629

Valve terminal

- MPAL1 (360 l/min)
- MPAL14 (670 l/min)
- MPAL2 (870 l/min)
- Up to 32 solenoid coils
- For CPX polymer design

Pneumatic interface VTSA/VTSA-F

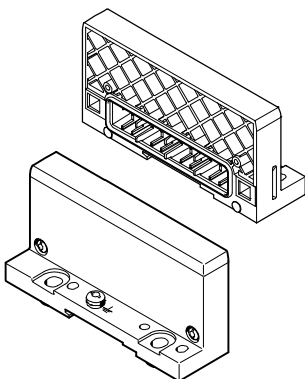


Data sheets → Page 1629

Valve terminal (valve flow rate according to width)

- 18 mm (700 l/min)
- 26 mm (1350 l/min)
- 42 mm (1300 l/min)
- 52 mm (2900 l/min)
- 65 mm (4000 l/min)
- Max. 32 valve positions/ max. 32 solenoid coils
- For CPX polymer design
- For CPX metal design

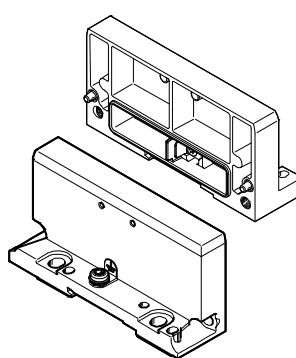
Polymer end plate



End plate

- Left
- Right (for use without valves)

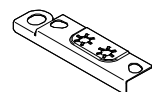
Metal end plate



End plate

- Left
- Right (for use without valves)

Earthing plate (for polymer end plate)



Earthing plate

- For safe and easy connection to the machine bed or H-rail, suitable for right-hand and left-hand end plate
- Assembly and earthing in a single processing step, which means:
 - 50% time saving
 - No additional material required

Data sheet

General basic data and guidelines

- Max. 11 modules in total:
- One bus node and/or one control block, freely positionable
- Up to 9 additional input/output modules, freely positionable
- An additional pneumatic interface, always positioned as the last module on the right-hand side
- With VTSA, VTSA-F and MPA-L: fixed operating range, set using switch at the pneumatic interface
- Address capacity max. 512 inputs and 512 outputs, depending on the bus node or control block
- The maximum system configuration can be limited in individual cases by exceeding the address space
- One interlinking block with system supply, freely positionable
- Multiple interlinking blocks with additional power supply, always positioned to the right of the interlinking block with system supply
- The connection blocks can, with just a few exceptions, be freely combined with the electronics modules for inputs/outputs, either in metal or polymer (→ table below)
- All electronics modules for inputs/outputs can be combined with any interlinking block
- Polymer interlinking blocks (tie rods) and metal interlinking blocks (individual linking) cannot be combined due to their different interlinking systems.

Combinations of connection blocks and digital electronics modules for inputs/outputs

Connection blocks	Digital electronics modules							
	CPX-8DE	CPX-8NDE	CPX-16DE	CPX-M-16DE-D	CPX-4DA	CPX-8DA-H	CPX-8DE-8DA	CPX-FVDA-P2
Polymer version with mounting screws for mounting on polymer interlinking blocks								
CPX-AB-8-M8-3POL	■	■	-	-	■	-	-	-
CPX-AB-8-M8X2-4POL	-	-	■	-	■	■	-	-
CPX-AB-4-M12x2-5POL	■	■	-	-	■	-	-	-
CPX-AB-4-M12x2-5POL-R	■	■	-	-	■	■	-	-
CPX-AB-8-KL-4POL	■	■	■	-	■	■	■	■
CPX-AB-1-SUB-BU-25POL	■	■	■	-	■	■	■	-
CPX-AB-4-HAR-4POL	■	■	-	-	■	-	-	-
Polymer design with mounting screws for assembly on metal plates								
CPX-AB-8-M8X2-4P-M3	-	-	■	-	■	■	-	-
CPX-AB-4-M12-8P-M3	-	-	-	-	-	-	■	-
CPX-AB-4-M12x2-5P-R-M3	■	■	-	-	■	■	-	-
Metal version with mounting screws for mounting on metal and polymer interlinking blocks								
CPX-M-AB-4-M12x2-5POL	■	■	-	-	■	■	-	■
CPX-M-AB-8-M12x2-5POL	-	-	-	■	-	-	-	-

Combinations of connection blocks and analogue electronics modules for inputs/outputs

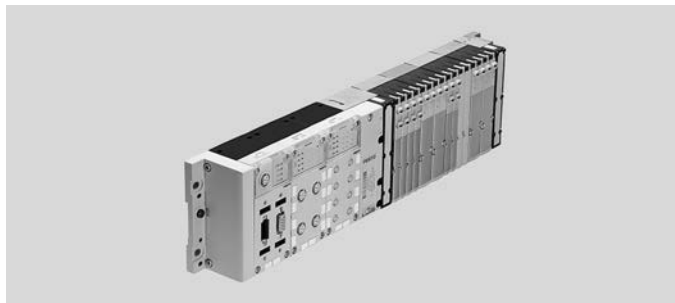
Connection blocks	Analogue electronics modules					
	CPX-2AE-U-I	CPX-4AE-I	CPX-4AE-P	CPX-4AE-T	CPX-4AE-TC	CPX-2AA-U-I
Polymer version with mounting screws for mounting on polymer interlinking blocks						
CPX-AB-4-M12x2-5POL	■	■	-	■	■	■
CPX-AB-4-M12x2-5POL-R	■	■	-	■	■	■
CPX-AB-8-KL-4POL	■	■	-	■	■	■
CPX-AB-1-SUB-BU-25POL	■	■	-	-	-	■
CPX-AB-4-HAR-4POL	-	-	-	■	-	-
Polymer design with mounting screws for assembly on metal plates						
CPX-AB-4-M12x2-5P-R-M3	■	■	-	■	■	■
Metal version with mounting screws for mounting on metal and polymer interlinking blocks						
CPX-M-AB-4-M12x2-5POL	■	■	-	■	■	■

Electrical peripherals >

Terminal CPX

Data sheet – Electrical terminal CPX

Module width
50 mm



General technical data

Max. number of modules ¹⁾	Control block	1	
	Bus node	1	
	I/O modules/CP interface/CTEL interface/electrical interface CPX-CTEL-2/multi-axis interface	9	
	Pneumatic interface	1	
Max. address capacity	Inputs [byte]	64	
	Outputs [byte]	64	
Configuration support		Fieldbus-specific	
LED displays	Bus node/control block	Up to 4 LEDs, bus-specific 4 LEDs, CPX-specific PS = Power system PL = Power load SF = System fault M = Modify parameter/forcing active	
	I/O modules	Min. one centralised diagnostic LED Channel-oriented status and diagnostic LED, depending on the module	
	Pneumatic interface	One centralised diagnostic LED Valve status LED on valve	
Diagnostics		Channel and module-oriented diagnostics for inputs/outputs and valves Detection of module undervoltage for the different potential values Storage of the last 40 errors with timestamp (acyclic access)	
	Parameterisation, module-specific and entire system, for example		Diagnostic behaviour
			Condition monitoring
		Profile of inputs	
		Fail-safe response of outputs and valves	
Commissioning support		Forcing of inputs and outputs	
Degree of protection to EN 60529		IP65/IP67	
Tests	Vibration test to DIN IEC 68	With wall mounting: severity level 2	
		With H-rail mounting: severity level 1	
	Shock test to DIN IEC 68	With wall mounting: severity level 2	
		With H-rail mounting: severity level 1	
Resistance to interference		EN 61000-6-2 (industry)	
Emitted interference		EN 61000-6-4 (industry)	
Grid dimension	[mm]	50	

1) A maximum of 11 modules in total can be combined
(e.g. 1 control block + 9 I/O modules + 1 pneumatic interface, or 1 control block + 1 bus node + 8 I/O modules + 1 pneumatic interface)

Data sheet – Electrical terminal CPX

Download CAD data → www.festo.com

Electrical data		
Power supply	Interlinking block with system supply	
	Electronics plus sensors	[V DC] 24, max. 16 A (8 A/10 A with 7/8" supply, 5-pin/4-pin)
	Actuators plus valves	[V DC] 24, max. 16 A (8 A/10 A with 7/8" supply, 5-pin/4-pin)
	Additional power supply	
	Actuators	[V DC] 24, max. 16 A per supply (8 A/10 A with 7/8" supply, 5-pin/4-pin)
Additional power supply	Valves	[V DC] 24, max. 16 A per supply (10 A with 7/8" supply, 4-pin)
Current consumption		Depending on system configuration
Power failure bridging (bus electronics only)	[ms]	10
Power supply connection		M18 4-pin
		7/8" 5-pin
		7/8" 4-pin
		AIDA push-pull, 5-pin
Fuse concept		Per module with electronic fuses
Isolation test for galvanically isolated circuits to IEC 1131 Part 2	[V DC]	500
Galvanic isolation of electrical voltages	[V DC]	80
Protection against direct and indirect contact		PELV

Operating conditions

Temperature range, electronics	Operation	[°C]	-5 ... +50
	Storage/transport	[°C]	-20 ... +70
Temperature range, electronics plus pneumatic components	Operation	[°C]	-5 ... +50
	Storage/transport	[°C]	-20 ... +40

Materials

Housing	Die-cast aluminium, PA reinforced, PC
---------	---------------------------------------

Data sheet – Control block CPX-CEC



Technical data		Download CAD data → www.festo.com	
Type		CPX-CEC-C1-V3	CPX-CEC-M1-V3
Ethernet interface		RJ45 (socket, 8-pin)	
Data transmission speed	[Mbps]	10/100	
Supported protocols		TCP/IP, EasyIP, Modbus TCP	
Fieldbus interface		CAN bus (plug, Sub-D, 9-pin)	
Transmission rate	[kbps]	125, 250, 500, 800, 1000	
		Can be set using software	
Flags		28 kB remanent memory	
		CODESYS variable concept	
IP address setting		DHCP via CODESYS	
Program memory		16 MB user program	
Programming software		CODESYS provided by Festo	
Programming language		SFC, IL, FCH, LDR and ST to IEC 61131-3	
		Also CFC	
Parameterisation		CODESYS V3	
Configuration support		CODESYS V3	
Control elements		DIL switch for CAN termination	
		Rotary switch for RUN/STOP	
Function elements		CPX diagnostic status, copy CPX diagnostic trace, read CPX module diagnostics	
		And others	
Additional functions		Diagnostic functions	
		Motion functions for electric drives	SoftMotion functions for electric drives
Total number of axes		127	31
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 85	
Length/width/height (incl. interlinking block)	[mm]	50/107/55	

Data sheet – Bus node CPX-FB6



Technical data				Download CAD data → www.festo.com
Fieldbus interface				Socket and plug, Sub-D, 9-pin
Baud rates			[Mbps]	0.5 and 2
Max. number of process data bits	Inputs/outputs		[bit]	96/96
Parameterisation				Start-up parameterisation via user functions (CMD) Via PCP communication
Additional functions				Storage of the last 40 errors with timestamp (access via PCP) 8-bit system status in image table for inputs 2-byte inputs and 2-byte outputs, system diagnostics in image table
Current consumption			[mA]	Typically 200
Length/width/height (incl. interlinking block)			[mm]	107/50/55

Data sheet – Bus node CPX-FB11



Technical data				Download CAD data → www.festo.com
Fieldbus interface	Either			Micro style bus connection: 2x M12 with protection to IP65/IP67 Open style bus connection: 5-pin terminal strip, IP20
Baud rates			[kbps]	125, 250, 500
Addressing range				0 ... 63, set using DIL switch
Communication types				Polled I/O, change of state/cyclic, strobed I/O and explicit messaging
Max. address capacity	Inputs/outputs		[byte]	64/64
Parameterisation				Module and system parameterisation via configuration interface in plain text (EDS) Online in run or program mode
Additional functions				Storage of the last 40 errors with timestamp (access via EDS) 8-bit system status in image table for inputs 2-byte inputs and 2-byte outputs, system diagnostics in image table
Current consumption			[mA]	Typically 200
Length/width/height (incl. interlinking block)			[mm]	107/50/50

Data sheet – Bus node CPX-FB13



Technical data			Download CAD data → www.festo.com
Fieldbus interface			Sub-D socket, 9-pin (EN 50170), galvanically isolated 5 V
Baud rates		[Mbps]	0.0096 ... 12
Addressing range			1 ... 125, set using DIL switch
Communication types	DPV0		Cyclic communication
	DPV1		Acyclic communication
Max. address capacity	Inputs/outputs	[byte]	64/64
Parameterisation			Start-up via configuration interface in plain text (GSD)
			Acyclic parameterisation via DPV1
Additional functions			Storage of the last 40 errors with timestamp (access via DPV1)
			8-bit system status in image table for inputs
			2-byte inputs and 2-byte outputs, system diagnostics in image table
Current consumption		[mA]	Max. 200
Length/width/height (incl. interlinking block)		[mm]	107/50/50

Data sheet – Bus node CPX-FB14



Technical data			Download CAD data → www.festo.com
Fieldbus interface			Sub-D plug, 9-pin (to DS 102), galvanically isolated via optocoupler, 24 V supply for CAN interface via bus
Baud rates		[kbps]	125, 250, 500 and 1000 can be set via DIL switch
Communication profile			DS 301, V4.01
Max. address capacity	Inputs/outputs	[byte]	16 digital, 16 analogue channels/16 digital, 16 analogue channels
Parameterisation			Via SDO
Additional functions			Storage of the last 40 errors with timestamp (access via SDO)
			8-bit system status via transmit PDO 4 (default)
			2-byte inputs and 2-byte outputs, system diagnostics via PDO 4
			Minimum boot-up
			Variable PDO mapping
			Emergency message
			Node guarding
Current consumption		[mA]	Max. 200
Length/width/height (incl. interlinking block)		[mm]	107/50/50

Data sheet – Bus node CPX-FB23-24



Technical data				Download CAD data → www.festo.com
Fieldbus interface, either		Sub-D socket, 9-pin Screw terminal strip, IP20		
Baud rates		[kbps]	156 ... 10,000	
Number of stations per slave		1, 2, 3 or 4 stations, set using DIL switch		
Communication types		Cyclic communication		
Max. address capacity, inputs	FB23	RWr	[byte]	32
		Rx	[byte]	14
	FB24	RWr	[byte]	64
		Rx	[byte]	64
Max. address capacity, outputs	FB23	RWw	[byte]	32
		Ry	[byte]	14
	FB24	RWw	[byte]	64
		Ry	[byte]	64
Parameterisation		Hold/clear via DIL switch		
Additional functions		Storage of the last 40 errors with timestamp (access via system diagnostics)		
Current consumption		[mA]	Typically 200	
Length/width/height (incl. interlinking block)		[mm]	107/50/50	

Data sheet – Bus node CPX-FB33



Technical data		Download CAD data → www.festo.com
Fieldbus interface		2x M12 socket, 4-pin, D-coded
Baud rates	[Mbps]	100
Max. address capacity	Inputs/outputs [byte]	64/64
Parameterisation		System parameters Diagnostic behaviour Signal setup Fail-safe response Forcing of channels
Additional functions		Start-up parameterisation in plain text via fieldbus Fast start-up (FSU) Channel-oriented diagnostics via fieldbus Acyclic data access via fieldbus System status can be displayed using process data Additional diagnostic interface for operator units Acyclic data access via Ethernet
Current consumption	[mA]	Typically 120
Length/width/height (incl. interlinking block)	[mm]	107/50/50

Data sheet – Bus node CPX-M-FB34



Technical data		Download CAD data → www.festo.com
Fieldbus interface		2x RJ45 push-pull socket, AIDA
Baud rates	[Mbps]	100
Max. address capacity	Inputs/outputs [byte]	64/64
Parameterisation		System parameters Diagnostic behaviour Signal setup Fail-safe response Forcing of channels
Additional functions		Start-up parameterisation in plain text via fieldbus Fast start-up (FSU) Channel-oriented diagnostics via fieldbus Acyclic data access via fieldbus System status can be displayed using process data Additional diagnostic interface for operator units Acyclic data access via Ethernet
Current consumption	[mA]	Typically 120
Length/width/height (incl. interlinking block)	[mm]	107/50/80

Data sheet – Bus node CPX-M-FB35



Technical data		Download CAD data → www.festo.com
Fieldbus interface		2x SCRJ push-pull socket, AIDA
Baud rates	[Mbps]	100
Max. address capacity	Inputs/outputs [byte]	64/64
Parameterisation		System parameters
		Diagnostic behaviour
		Signal setup
		Fail-safe response
		Forcing of channels
Additional functions		Start-up parameterisation in plain text via fieldbus
		Fast start-up (FSU)
		Channel-oriented diagnostics via fieldbus
		Acyclic data access via fieldbus
		System status can be displayed using process data
		Additional diagnostic interface for operator units
Current consumption	[mA]	Typically 150
Length/width/height (incl. interlinking block)	[mm]	107/50/80

Data sheet – Bus node CPX-FB36

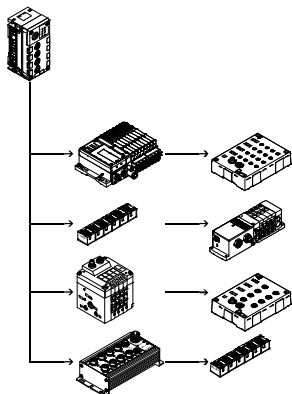


IT services:



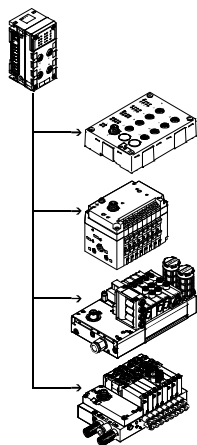
Technical data		Download CAD data → www.festo.com
Fieldbus interface		2x M12x1 socket, 4-pin, D-coded
Baud rates	[Mbps]	10/100
Max. address capacity	Inputs/outputs [byte]	64/64
Parameterisation		Diagnostic behaviour
		Fail-safe response
		Forcing of channels
		Idle mode characteristics
		Signal setup
		System parameters
Additional functions		EtherNet/IP Quickconnect
		Ring topology (DLR)
		Acyclic data access via "Explicit Message" and Ethernet
		Integrated switch
		IP addressing via DHCP, DIL switch
		Channel-oriented diagnostics via fieldbus
		Start-up parameterisation in plain text via fieldbus
		System status can be displayed using process data
	Additional diagnostic interface for operator units	
Current consumption	[mA]	Typically 100
Length/width/height (incl. interlinking block)	[mm]	107 x 50 x 50

Data sheet – Interface CPX-CP-4-FB



Technical data		Download CAD data → www.festo.com	
CP connection		Socket M9, 5-pin	
Max. number of	CP strings	4	
	CP modules per string	4	
	Outputs per string	32	
	Inputs per string	32	
Baud rate	[kbps]	1000	
Sensor supply voltage	[V DC]	24 ±25% coming from bus node	
Actuator load voltage	[V DC]	24 ±10% coming from bus node	
Current consumption	Without CP modules	[A]	Max. 0.2
	Per CP string	[A]	Max. 1.6
Length/width/height (incl. interlinking block)	[mm]	107/50/45	

Data sheet – Interface CPX-CTEL-4-M12-5POL

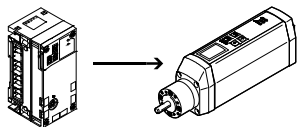


Technical data		Download CAD data → www.festo.com	
I-Port connection		4x socket M12, 5-pin, A-coded	
Max. address capacity	Inputs/outputs	[bit]	256/256
Number of I-Port interfaces		4	
Max. cable length		[m]	20
Internal cycle time		[ms]	1 per 8 bits of user data
Additional functions		Tool change mode	
Max. power supply per channel		[A]	4x 1.6
Max. residual current of outputs per channel		[A]	4x 1.6
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 65
Length/width/height (incl. interlinking block)		[mm]	107/50/55

Electrical peripherals >

Terminal CPX

Data sheet – Control block CPX-CM-HPP

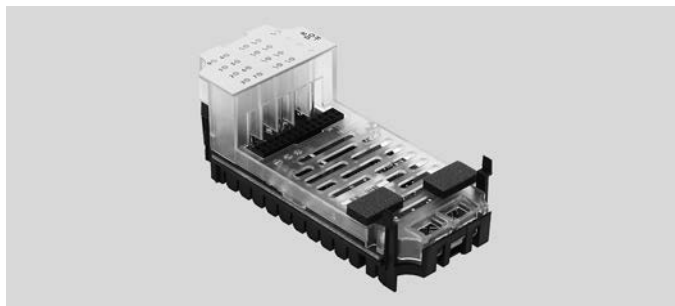


Technical data		Download CAD data → www.festo.com
Fieldbus interface		1x socket M9, 5-pin
Control interface		CAN bus
Baud rate	[Mbps]	1
Protocol		FHPP
Max. address capacity	Inputs/outputs [byte]	32/32
Parameterisation		Forcing of channels System parameters
Total number of axes		4
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 80
Length/width/height (incl. interlinking block)	[mm]	107/50/55

Data sheet – Digital input module with 8 inputs, CPX-8DE, CPX-8NDE

Possible connection blocks:

- CPX-AB-8-M8-3POL
- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL
- CPX-AB-4-HAR-4POL
- CPX-M-AB-4-M12X2-5POL
- CPX-M-AB-8-M12X2-5POL



Technical data		Download CAD data → www.festo.com	
Type		CPX-8DE	CPX-8NDE
Number of inputs		8	
Max. residual current of inputs per module	[A]	1	0.7
Internal electronic fuse		Per module	Per module
Intrinsic current consumption at operating voltage	[mA]	Typically 15	Typically 15
Sensor supply voltage	[V DC]	24 ±25%	24 ±25%
Electrical isolation	Channel – channel	No	No
	Channel – internal bus	No	No
Switching level	Signal 0 [V DC]	≤ 5	≥ 11
	Signal 1 [V DC]	≥ 11	≤ 5
Input characteristic		IEC 1131-T2	
Switching logic		Positive logic (PNP)	Negative logic (NPN)
Parameterisation		Module monitoring	
		Behaviour after short circuit	
		Input debounce time	
		Signal extension time	

Data sheet – Digital input module with 16 inputs, CPX-16DE, CPX-M-16DE-D

Possible connection blocks

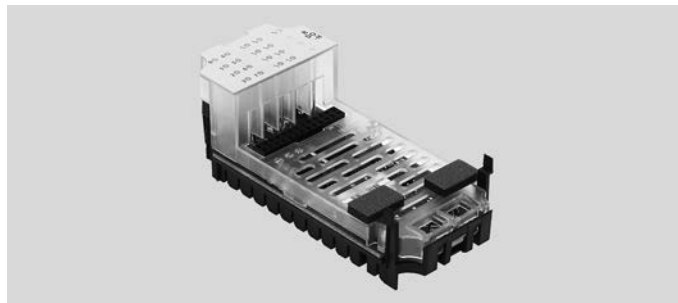
CPX-16DE:

- CPX-AB-8-M8X2-4POL
- CPX-AB-8-M8X2-4P-M3
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL

Possible connection blocks

CPX-M-16DE-D:

- CPX-M-AB-8-M12X2-5POL



Technical data		Download CAD data → www.festo.com	
Type		CPX-16DE	CPX-M-16DE-D
Number of inputs		16	
Max. residual current of inputs per module	[A]	1.8	
Internal electronic fuse		Per module	Per channel pair
Intrinsic current consumption at operating voltage	[mA]	Typically 15	Typically 34
Sensor supply voltage	[V DC]	24 ±25%	
Electrical isolation	Channel – channel	No	
	Channel – internal bus	No	
Switching level	Signal 0	[V DC]	≤ 5
	Signal 1	[V DC]	≥ 11
Input characteristic		IEC 1131-2	
Switching logic		Positive logic (PNP)	
Parameterisation		Module monitoring	
		Behaviour after short circuit	
		Input debounce time	
		Signal extension time	

Data sheet – Digital output module with 4 outputs, CPX-4DA

Possible connection blocks:

- CPX-AB-8-M8-3POL
- CPX-AB-8-M8X2-4POL
- CPX-AB-8-M8X2-4P-M3
- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL
- CPX-AB-4-HAR-4POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL

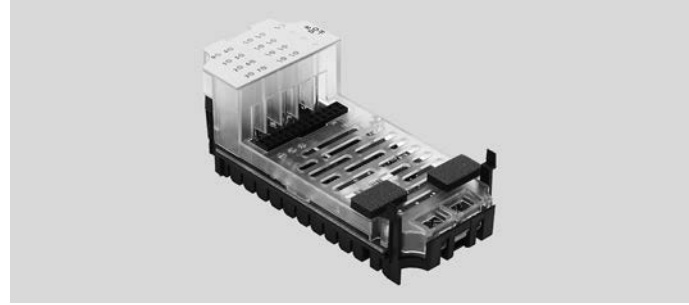


Technical data		Download CAD data → www.festo.com	
Type		CPX-4DA	
Number of outputs		4	
Max. power supply	Per module	[A]	4
	Per channel	[A]	1 (24 W lamp load, 4 channels can be connected in parallel)
Fuse protection (short circuit)		Internal electronic fuse per channel	
Module current consumption (voltage supply for electronics)	[mA]	Typically 16	
Supply voltage	[V DC]	24 ±25%	
Electrical isolation	Channel – channel	No	
	Channel – internal bus	Yes, with intermediate supply	
Output characteristic		Based on IEC 1131-2	
Switching logic		Positive logic (PNP)	
Parameterisation		Module monitoring	
		Behaviour after short circuit	
		Fail-safe channel x	
		Forcing channel x	
	Idle mode channel x		

Data sheet – Digital output module with 8 high-current outputs, CPX-8DA-H

Possible connection blocks:

- CPX-AB-8-M8X2-4POL
- CPX-AB-8-M8X2-4P-M3
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL

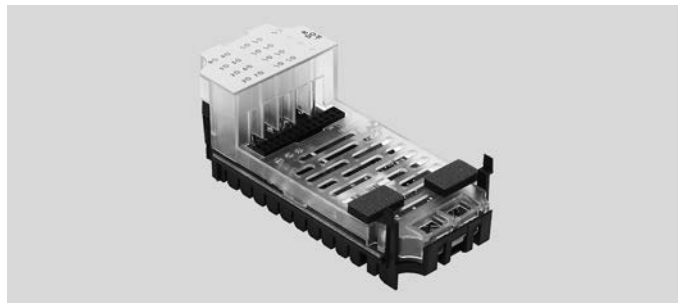


Technical data			Download CAD data → www.festo.com
Type			CPX-8DA-H
Number of outputs			8
Max. power supply	Per module	[A]	8.4
	Per channel	[A]	2.1 (50 W lamp load) per channel pair
Fuse protection (short circuit)			Internal electronic fuse per channel
Module current consumption (voltage supply for electronics)		[mA]	Typically 34
Supply voltage		[V DC]	24 ±25%
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, with intermediate supply
Output characteristic			Based on IEC 1131-2
Switching logic			Positive logic (PNP)
Parameterisation			Module monitoring
			Behaviour after short circuit
			Fail-safe channel x
			Forcing channel x
		Idle mode channel x	

Data sheet – Digital input/output module with 8 inputs and 8 outputs, CPX-8DE-8DA

Possible connection blocks:

- CPX-AB-4-M12-8POL
- CPX-AB-4-M12-8P-M3
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL



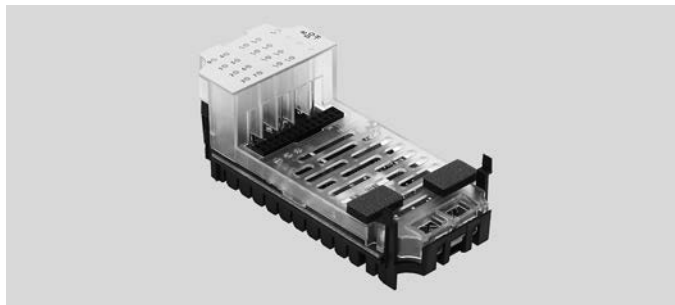
Technical data			Download CAD data → www.festo.com
Type			CPX-8DE-8DA
Number	Inputs/outputs		8/8
Max. power supply Per module	Sensor supply	[A]	0.7
	Outputs	[A]	4
Max. power supply per channel		[A]	0.5 (12 W lamp load, channels A0 ... A03 can be connected in parallel to A4 ... A7)
Fuse protection	Sensor supply		Internal electronic fuse for sensor supply
	Outputs		Internal electronic fuse per channel
Current consumption of internal electronics	Inputs/outputs	[mA]	Typically 22/typically 34
Electrical isolation, inputs	Sensors/outputs	[V DC]	24 ±25% / 24 ±25%
	Channel – channel		No
Electrical isolation, outputs	Channel – internal bus		No
	Channel – channel		No
	Channel – internal bus		Yes, with intermediate supply
Characteristic	Inputs/outputs		IEC 1131-2/IEC 1131-2
Switching logic			Positive logic (PNP)
Parameterisation	Inputs		Module monitoring
			Behaviour after short circuit, sensor supply
			Input debounce time
			Signal stretching time, inputs
	Outputs		Behaviour after short circuit
			Fail-safe channel x
			Forcing channel x
			Idle mode channel x

Terminal CPX

Data sheet – Analogue input module with 2 inputs, CPX-2AE-U-I

Possible connection blocks:

- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL

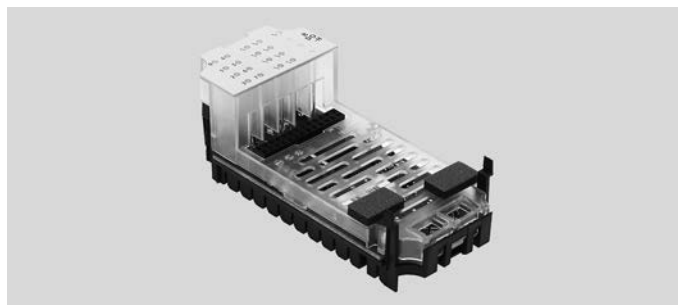


Technical data		Download CAD data → www.festo.com	
Type	CPX-2AE-U-I		
	Voltage input	Current input	
Number of inputs	2	2	
Max. power supply per module [A]	0.7	0.7	
Fuse protection	Internal electronic fuse for sensor supply		
Current consumption from 24 V sensor supply (quiescent current) [mA]	Typically 50	Typically 50	
Current consumption from 24 V sensor supply (at full load) [A]	Max. 0.7	Max. 0.7	
Sensor supply voltage [V DC]	24 ±25%	24 ±25%	
Signal range (parameterisable for each channel via DIL switch or software)	0 ... 10 V DC	0 ... 20 mA 4 ... 20 mA	
Resolution [bit]	12		
Absolute accuracy [%]	±0.5	±0.6	
Input resistance	100 kΩ	≤ 100 Ω	
Max. permissible input voltage [V DC]	30	–	
Max. permissible input current [mA]	–	40	
Data format	Prefix + 15 bits, linear scaling Prefix + 15 bits left-aligned, S7 compatible Prefix + 12 bits left-aligned + diagnostics, S5 compatible		
Cable length	Max. 30 m (screened)		
Electrical isolation	Channel – channel	No	
	Channel – internal bus	Yes, with external sensor supply	
	Channel – sensor supply	Yes, with external sensor supply	
Parameterisation	Short circuit monitoring, sensor supply		
	Behaviour after short circuit, sensor supply		
	Data format		
	Lower limit value/full-scale value		
	Upper limit value/full-scale value		
	Monitoring value falling below nominal range/full-scale value		
	Monitoring value exceeding nominal range/full-scale value		
	Monitoring wire break (measuring range 4 ... 20 mA)		
	Signal range		
	Measured value smoothing		

Data sheet – Analogue input module with 2 or 4 inputs, CPX-4AE-I

Possible connection blocks:

- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL



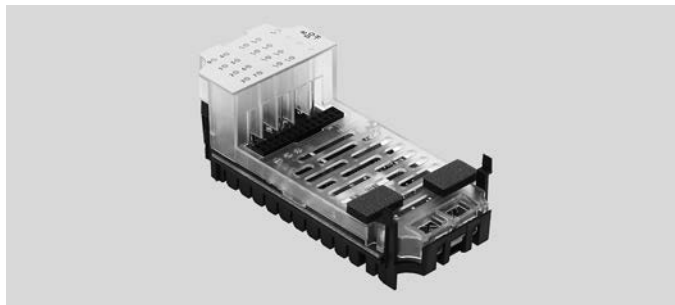
Technical data		Download CAD data → www.festo.com
Type		CPX-4AE-I
		Current input
Number of inputs		4
Max. power supply per module	[A]	0.7
Fuse protection		Internal electronic fuse for sensor supply
Current consumption from 24 V sensor supply (quiescent current)	[mA]	Typically 50
Current consumption from 24 V sensor supply (at full load)	[A]	Max. 0.7
Sensor supply voltage	[V DC]	24 ±25%
Signal range (parameterisable for each channel via DIL switch or software)	[mA]	0 ... 20
	[mA]	4 ... 20
Resolution	[bit]	12
Absolute accuracy	[%]	±0.6
Input resistance	[Ω]	≤ 100
Max. permissible input voltage	[V DC]	–
Max. permissible input current	[mA]	40
Data format		Prefix + 15 bits, linear scaling Prefix + 15 bits left-aligned, S7 compatible Prefix + 12 bits left-aligned + diagnostics, S5 compatible
Cable length	[m]	Max. 30 (screened)
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes, with external sensor supply
	Channel – sensor supply	Yes, with external sensor supply
Parameterisation		Short circuit monitoring, sensor supply Behaviour after short circuit, sensor supply Data format Lower limit value/full-scale value Upper limit value/full-scale value Monitoring value falling below nominal range/full-scale value Monitoring value exceeding nominal range/full-scale value Monitoring wire break (measuring range 4 ... 20 mA) Signal range Measured value smoothing

Terminal CPX

Data sheet – Analogue input module with 2 or 4 inputs for temperature sensors, CPX-4AE-T

Possible connection blocks:

- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-4-HAR-4POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL



Technical data		Download CAD data → www.festo.com	
Type		CPX-4AE-T	
Number of inputs		2 or 4	
Max. power supply per module	[A]	0.7	
Fuse protection		Internal electronic fuse for sensor supply	
Current consumption from 24 V sensor supply (quiescent current)	[mA]	Typically 50	
Sensor supply voltage	[V DC]	24 ±25%	
Sensor type (parameterisable for each channel via DIL switch)		PT100, PT200, PT500, PT1000 Ni100, Ni120, Ni500, Ni1000	
Temperature range	Pt standard	[°C]	-200 ... +850
	Pt climate	[°C]	-120 ... +130
	Ni	[°C]	-60 ... +180
Sensor connection technology		2-wire, 3-wire and 4-wire technology	
Resolution		[bit]	15 + prefix
Operating error limit relative to input range		[%]	±0.06
Basic error limit (25 °C)	Standard	[K]	±0.6
	Pt climate	[K]	±0.2
Temperature error relative to input range		[%]	±0.001
Linearity error (no software scaling)		[%]	±0.02
Repetition accuracy (at 25 °C)		[%]	±0.05
Max. line resistance per conductor		[Ω]	10
Max. permissible input voltage		[V DC]	±30
Data format		[bit]	15 + prefix, complement of two, binary notation in tenths of a degree
Cable length		[m]	Max. 200 (screened)
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes
Parameterisation			Unit of measurement and interference frequency suppression
			Diagnostic message in the event of a wire break or short circuit
			Limit monitoring per channel
			Sensor connection technology
			Sensor type/temperature coefficient, temperature range
			Limit value per channel
			Measured value smoothing

Data sheet – Analogue input module with 4 inputs for thermocoupler, CPX-4AE-TC

Possible connection blocks:

- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL



Technical data		Download CAD data → www.festo.com
Type		CPX-4AE-TC
Number of inputs		4
Fuse protection		Internal electronic fuse per channel
Sensor supply voltage	[V DC]	24 ±25%
Sensor type (parameterisable for each channel via software)		<ul style="list-style-type: none"> • Type B +400 ... +1820 °C, 8 µV/°C • Type E -270 ... +900 °C, 60 µV/°C • Type J -200 ... +1200 °C, 51 µV/°C • Type K -200 ... +1370 °C, 40 µV/°C • Type N -200 ... +1300 °C, 38 µV/°C • Type R 0 ... +1760 °C, 12 µV/°C • Type S 0 ... +1760 °C, 11 µV/°C • Type T -200 ... +400 °C, 40 µV/°C
Sensor connection technology		2-wire technology
Operating error limit relative to ambient temperature	[%]	Max. ±0.6
Basic error limit (at 25 °C)	[%]	Max. ±0.4
Repetition accuracy (at 25 °C)	[%]	±0.05
Max. line resistance per conductor	[Ω]	10
Max. residual current per module	[mA]	30
Max. permissible input voltage	[V]	±30
Internal cycle time (module)	[ms]	250
Data format	[bit]	15 + prefix, complement of two, binary notation in tenths of a degree
Cable length	[m]	Max. 50 (screened)
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
Diagnostics		Parameterisation error
		Wire break per channel
		Limit value violation per channel
Parameterisation		Monitoring wire break per channel
		Unit of measurement
		Cold-junction compensation
		Sensor type per channel
		Limit value monitoring per channel
		Measured value smoothing

Terminal CPX

Data sheet – Analogue input module with pressure sensors, CPX-4AE-P

Tubing connections:

- 4x QS4



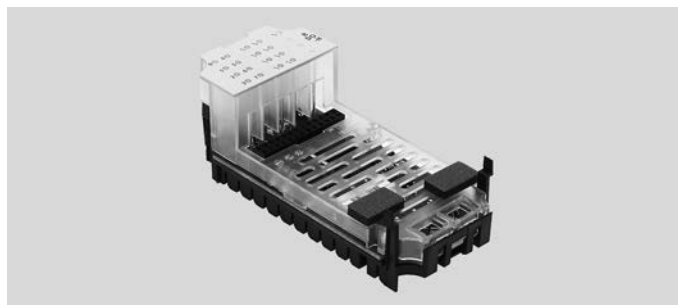
Technical data		Download CAD data → www.festo.com		
Type		CPX-4AE-P-B2	CPX-4AE-P-D10	
Number of analogue inputs		4		
Nominal operating voltage	[V DC]	24 ±25%		
Intrinsic current consumption	[mA]	Typically 50		
Measured variable		4x relative or 2x differential pressure measurement		
Displayable units		kPa		
		mbar		
		psi		
Pressure measuring range	Start value	[bar]	-1	0
	End value	[bar]	1	10
Data format		15 bits + prefix		
		Binary notation in mbar, kPa, psi		
LED displays		Group diagnostics		
Diagnostics		Limit value violation per channel		
		Parameterisation error		
		Sensor limit per channel		
Parameterisation		Diagnostic delay per channel		
		Hysteresis per module		
		Unit of measurement		
		Measured value smoothing per channel		
		Limit value monitoring per channel		
		Sensor limit per channel		
		Measurement of relative/differential pressure		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Temperature of medium	[°C]	0 ... +50		
Length/width/height (incl. interlinking block)	[mm]	107/50/55		

Note
Extreme pneumatic conditions, e.g. high cycle rates with high pressure amplitudes, can damage the sensors.

Data sheet – Analogue output module with 2 inputs, CPX-2AA-U-I

Possible connection blocks:

- CPX-AB-4-M12X2-5POL
- CPX-AB-4-M12X2-5POL-R
- CPX-AB-8-KL-4POL
- CPX-AB-1-SUB-BU-25POL
- CPX-AB-4-M12X2-5P-R-M3
- CPX-M-AB-4-M12X2-5POL



Technical data		Download CAD data → www.festo.com		
Type	CPX-2AA-U-I			
		Voltage output	Current output	
Number of outputs		2	2	
Max. actuator supply per module	[A]	2.8	2.8	
Fuse protection		Internal electronic fuse for actuator supply		
Current consumption from 24 V sensor supply (at full load)	[mA]	Max. 150	Max. 150	
Current consumption from 24 V actuator supply (at full load)	[A]	4 ... 10	4 ... 10	
Supply voltage for actuators	[V DC]	24 ±25%	24 ±25%	
Signal range (parameterisable for each channel via DIL switch or software)		0 ... 10 V DC	0 ... 20 mA 4 ... 20 mA	
Resolution		12 bit	12 bit	
Absolute accuracy	[%]	±0.6	±0.6	
Encoder selection	Load resistance for ohmic load	[kΩ]	Min. 1	Max. 0.5
	Load resistance for capacitive load	[µF]	Max. 1	–
	Load resistance for inductive load	[mH]	–	Max. 1
	Short circuit protection for analogue output		Yes	–
	Short circuit current of analogue output	[mA]	Approx. 20	–
	Open circuit voltage	[V DC]	–	18
	Destruction limit against externally applied voltage	[V DC]	15	15
	Actuator connection		2 wires	2 wires
Response time	For ohmic load	[ms]	0.1	0.1
	For capacitive load	[ms]	0.7	–
	For inductive load	[ms]	–	0.5
Data format		15 bits + prefix, linear scaling 12 bits left-aligned, S7 compatible 12 bits left-aligned, S5 compatible		
Cable length	[m]	Max. 30 (screened)		
Parameterisation		Short circuit monitoring, actuator supply		
		Short circuit monitoring, analogue output		
		Behaviour after short circuit, actuator supply		
		Data format		
		Lower limit value/full-scale value		
		Upper limit value/full-scale value		
		Monitoring value falling below nominal range/full-scale value		
		Monitoring value exceeding nominal range/full-scale value		
		Monitoring wire break		
	Signal range			

Terminal CPX

Data sheet – PROFIsafe shut-off module, CPX-FVDA-P2

CPX-FVDA-P2

Possible connection blocks:

- CPX-M-AB-4-M12x2-5POL
- CPX-AB-8-KL-4POL

Possible bus nodes:

- CPX-FB6
- CPX-FB33
- CPX-M-FB34
- CPX-M-FB35

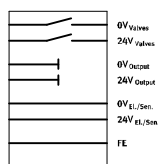
Possible interlinking blocks:

- CPX-M-GE-EV-FVO



Technical data			Download CAD data → www.festo.com
Type			CPX-FVDA-P2
Number of outputs			2
Note on outputs			1 internal channel for shutting off the supply voltage for valves 2 external outputs
Max. power supply	Per module	[A]	5
	Per channel	[A]	1.5
Fuse protection (short circuit)			Internal electronic fuse per channel
Current consumption of module			Typically 65 (power supply for valves)
			Typically 25 (power supply for electronics)
Voltage drop per channel			0.6
Residual ripple			2 within voltage range
Load capacity to FE			400
Max. response time to shut-off command			23
Electrical isolation	Channel – channel	No	
	Channel – internal bus	Yes, with intermediate supply	
Switching logic	Outputs	P-M switching	
Safety integrity level			Safe Switch Off, SIL3
Performance Level			Safe Switch Off/category 3, Performance Level e
Diagnostics			Short circuit/overload per channel
			Undervoltage at valves
			Cross circuit
			Wire break per channel
Parameterisation			Monitoring wire break per channel
			Diagnostic behaviour
Length/width/height (incl. interlinking block and connection block)	[mm]	107 x 50 x 55	

Data sheet – Interlinking block without supply, CPX-M-GE-EV-FVO



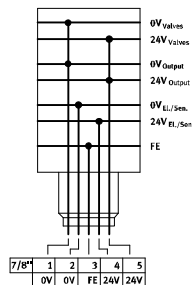
Possible modules:

- CPX-FVDA-P2



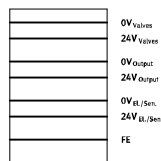
Technical data			Download CAD data → www.festo.com
Type			CPX-M-GE-EV-FVO
Acceptable current load (per contact/contact rail)	[A]	16	
Type of mounting			Angled fitting
Length/width/height	[mm]	107 x 50 x 35	

Data sheet – Interlinking block with system supply, CPX-GE-EV-S, CPX-M-GE-EV-S



Technical data		Download CAD data → www.festo.com				
Type		CPX-GE-EV-S	CPX-GE-EV-S-7/8-4POL	CPX-GE-EV-S-7/8-5POL	CPX-M-GE-EV-S-7/8-5POL	CPX-M-GE-EV-S-PP-5POL
Electrical connection		M18	7/8", 4-pin	7/8", 5-pin	7/8", 5-pin	AIDA push-pull, 5-pin
Nominal operating voltage	[V DC]	24				
Current supply	Sensors and electronics [A]	Max. 16		Max. 12	Max. 8	Max. 16
	Valves and outputs [A]	Max. 16		Max. 12	Max. 8	Max. 16
Degree of protection to EN 60529		Depending on connection block				
Ambient temperature	[°C]	-5 ... +50				
Type of mounting		Tie rod			Angled fitting	
Length/width/height	[mm]	107/50/35				

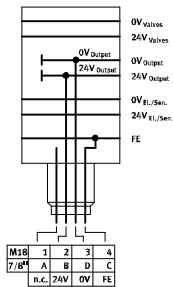
Data sheet – Interlinking block without supply, CPX-GE-EV, CPX-M-GE-EV



Technical data		Download CAD data → www.festo.com	
Type		CPX-GE-EV	CPX-M-GE-EV
Electrical connection		-	
Nominal operating voltage	[V DC]	24	
Acceptable current load (per contact/contact rail)	[A]	16	
Degree of protection to EN 60529		Depending on connection block	
Ambient temperature	[°C]	-5 ... +50	
Type of mounting		Tie rod Angled fitting	
Length/width/height	[mm]	107/50/35	

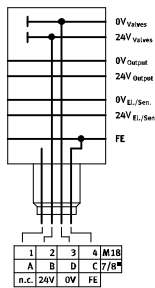
Terminal CPX

Data sheet – Interlinking block with additional power supply for outputs, CPX-GE-EV-Z, CPX-M-GE-EV-Z



Technical data		Download CAD data → www.festo.com				
Type		CPX-GE-EV-Z	CPX-GE-EV-Z-7/8-4POL	CPX-GE-EV-Z-7/8-5POL	CPX-M-GE-EV-Z-7/8-5POL	CPX-M-GE-EV-Z-PP-5POL
Electrical connection		M18	7/8", 4-pin	7/8", 5-pin	7/8", 5-pin	AIDA push-pull, 5-pin
Nominal operating voltage	[V DC]	24				
Current supply	Outputs [A]	Max. 16		Max. 12	Max. 8	Max. 16
Degree of protection to EN 60529		Depending on connection block				
Ambient temperature	[°C]	-5 ... +50				
Type of mounting		Tie rod			Angled fitting	
Length/width/height	[mm]	107/50/35				

Data sheet – Interlinking block with additional power supply for valves, CPX-GE-EV-V



Technical data		Download CAD data → www.festo.com	
Type		CPX-GE-EV-V	CPX-GE-EV-V-7/8-4POL
Electrical connection		M18	7/8", 4-pin
Nominal operating voltage	[V DC]	24	
Acceptable current load (per contact/contact rail)	[A]	16	
Degree of protection to EN 60529		Depending on connection block	
Ambient temperature	[°C]	-5 ... +50	
Type of mounting		Tie rod	
Length/width/height	[mm]	107/50/35	

Data sheet – Pneumatic interface for valve terminal MPA-L, VMPAL-EPL-CPX

Operating voltage
24 V DC



Technical data		Download CAD data → www.festo.com	
Type		VMPAL-EPL-CPX	
Type of mounting		Tie rod	
Number of solenoid coils		32	
Operating pressure	[bar]	-0.9 ... 10	
Intrinsic current consumption of valve terminal (internal electronics, without valves)	At 24 V U _{EL/SEN} ¹⁾	[mA]	Typically 13
	At 24 V U _{val} ²⁾	[mA]	Typically 35
Diagnostic message on undervoltage U _{OFF} Load voltage outside function range	[V]	17.7 ... 17.8	
Nominal pick-up current/duration per solenoid coil at nominal voltage	[mA]	50/20 ms	
Nominal current per solenoid coil at nominal voltage with current reduction	[mA]	10 after 20 ms	
Length/width/height	[mm]	107/40/70	

1) Power supply for electronics and sensors.

2) Load voltage supply for valves.

Data sheet – Pneumatic interface for valve terminal VTSA/VTSA-F, VABA-S6-1-X

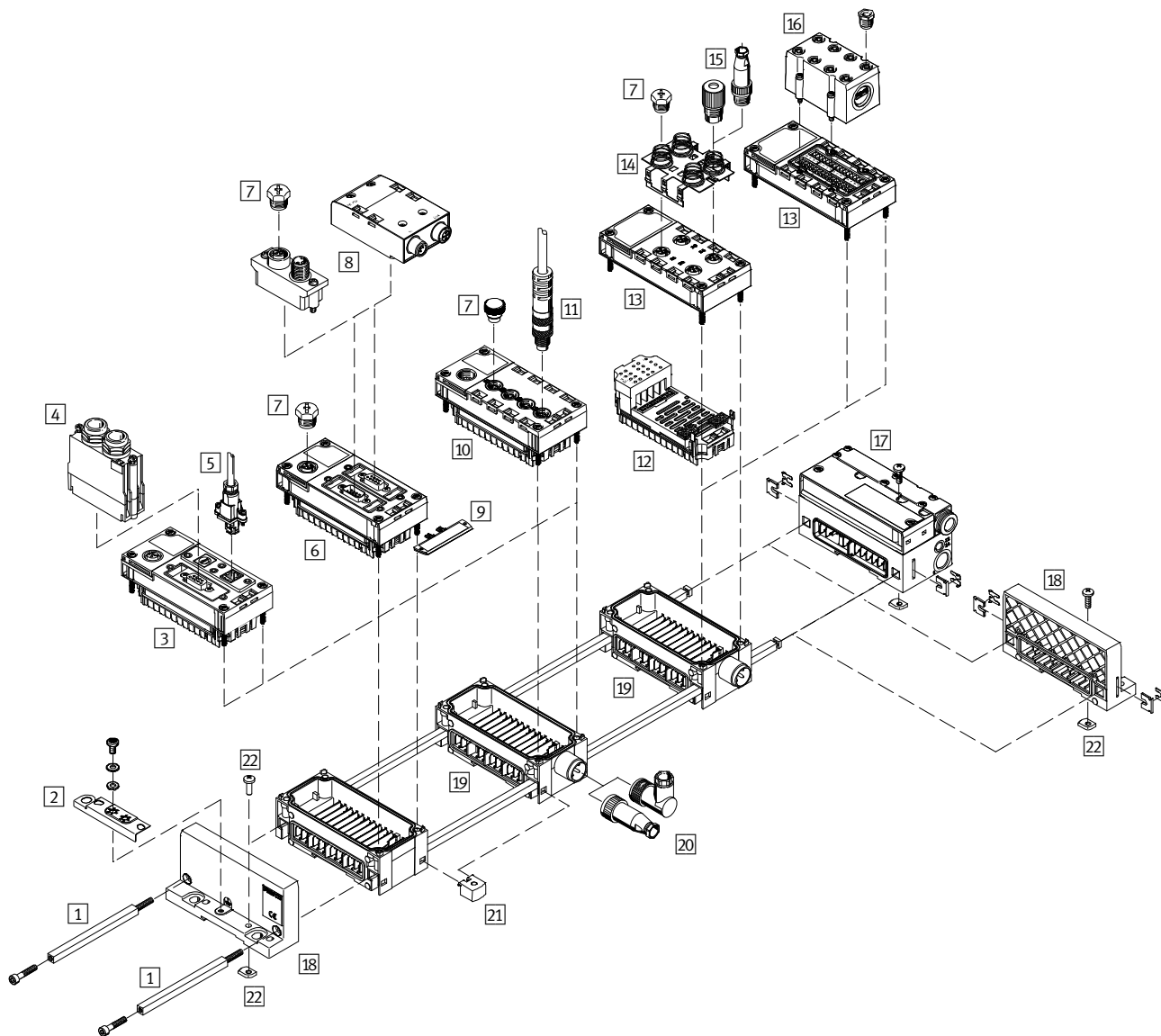
Operating voltage
24 V DC



Technical data		Download CAD data → www.festo.com	
Type		VABA-S6-1-X1	VABA-S6-1-X2
Type of mounting		Tie rod	Angled fitting
Number of solenoid coils		32	
Electrical actuation		Fieldbus	
Electrical connection		Via CPX	
Nominal operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	10	
Degree of protection to EN 60529		IP65	
Ambient temperature	[°C]	-5 ... +50	

Terminal CPX

Accessories



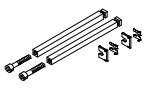
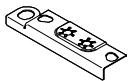
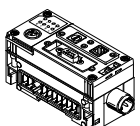
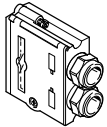
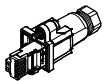
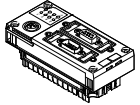
Control technology and software

16




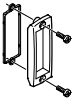








	→ Page/ online
1 Tie rod/tie-rod extension CPX-ZA	1631
2 Earthing component CPX-EPFE-EV for right-hand/left-hand end plate	1631
3 Control block CPX-CEC	1631
4 Plug FBS-SUB-9 for fieldbus connection (version dependent on bus type)	1631
5 Plug FBS-RJ45 for Ethernet connection	1631
6 CPX bus node CPX-FB	1631
7 Cover cap ISK/CPX-M-AK/AK-SUB (for unused connections)	1632
8 Connector plug FBA/FBS/NECU/FBSD/CPX-AB for fieldbus connection	1632
9 Inscription label IBS/CPX-ST	1633
10 CPX CP interface/CPX CTEL master/axis interface CPX-CP-4-FB/CPX-CTEL-4-M12-5POL/CPX-CM	1633
11 Connecting cable for CP interface/CPX CTEL master KVI-CP-3/NEBU-M12G5	1633
12 CPX module CPX (analogue/digital input/output module)	1633
13 Connection block CPX-AB/CPX-M-AB	1634
14 Screening plate CPX-AB-S	1634

	→ Page/ online
15 Connector plug/connecting cable for inputs/outputs NEDY/NEBU/KV-M12	1634
16 Cover AK-8KL for CPX-AB-8-KL-4POL (IP65/67)	1634
17 Pneumatic interface VMPAL-EPL-CPX/VABA-S6-1-X	1635
18 End plate CPX-EP	1635
19 Interlinking block CPX-GE/CPX-M-GE (with/without voltage supply)	1635
20 Connector plug NTSD/NECU for voltage supply	1636
21 Mounting components for wall mounting CPX-BG-RW/CPX-M-BG-RW	1636
22 H-rail mounting CPX-CPA-BG-NRH	1636
- Hood CAFC	1636
- Screws for mounting the bus node/connection block on an interlinking block	1636
- Temperature sensor CPX-W-PT1000 for CPX module CPX-4AE-TC for cold-junction compensation	1636
- Memory card CPX-SK-3 for PROFINET bus node	1636
- User documentation P.BE-CPX	1637

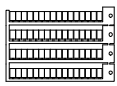
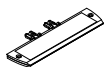

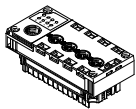
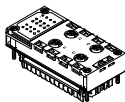
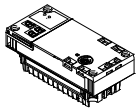



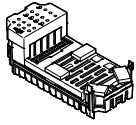
Accessories – Ordering data

	Description	Part no.	Type
1 Tie rod/tie-rod extension			
	Extension, 1 module	525418	CPX-ZA-1-E
	1 module	195718	CPX-ZA-1
	2 modules	195720	CPX-ZA-2
	3 modules	195722	CPX-ZA-3
	4 modules	195724	CPX-ZA-4
	5 modules	195726	CPX-ZA-5
	6 modules	195728	CPX-ZA-6
	7 modules	195730	CPX-ZA-7
	8 modules	195732	CPX-ZA-8
	9 modules	195734	CPX-ZA-9
10 modules	195736	CPX-ZA-10	
2 Earthing component for right/left end plate			
	5 pieces	538892	CPX-EPFE-EV
3 Control block Data sheets → Page 1608			
	CODESYS embedded controller, CANopen	3473128	CPX-CEC-C1-V3
	CODESYS embedded controller, SoftMotion	3472765	CPX-CEC-M1-V3
4 Plug for bus connection, Sub-D Data sheets online: → fbs			
	For INTERBUS, incoming	532218	FBS-SUB-9-BU-IB-B
	For INTERBUS, outgoing	532217	FBS-SUB-9-GS-IB-B
	For DeviceNet/CANopen	532219	FBS-SUB-9-BU-2x5POL-B
	For PROFIBUS DP	532216	FBS-SUB-9-GS-DP-B
	For CC-Link	532220	FBS-SUB-9-GS-2x4POL-B
	For control block	534497	FBS-SUB-9-GS-1x9POL-B
5 EtherNet connection Data sheets online: → fbs			
	RJ45 plug	534494	FBS-RJ45-8-GS
6 CPX bus node Data sheets → Page 1614			
	INTERBUS	195748	CPX-FB6
	DeviceNet	526172	CPX-FB11
	PROFIBUS DP	195740	CPX-FB13
	CANopen	526174	CPX-FB14
	CC-Link	526176	CPX-FB23-24
	PROFINET with M12, D-coded, 4-pin	548755	CPX-FB33
	PROFINET with RJ45 push-pull, AIDA	548751	CPX-M-FB34
	PROFINET with SCRJ push-pull, AIDA	548749	CPX-M-FB35
	EtherNet/IP with M12	1912451	CPX-FB36

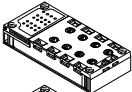
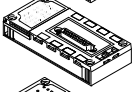
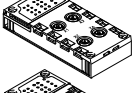
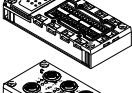
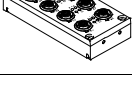
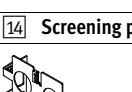
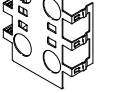
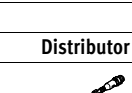
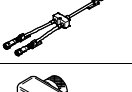
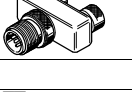


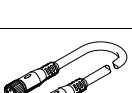
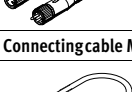
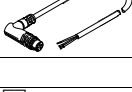

Accessories – Ordering data

	Description	Part no.	Type
7 Cover cap			
	For M8 connections (packaging unit 10 pieces)	177672	ISK-M8
	For M12 connections (packaging unit 10 pieces)	165592	ISK-M12
	Cover cap for bus connection RJ45 push-pull, AIDA	2873540	CPX-M-AK-D
	Cover for DIL switch and memory card	548754	CPX-M-AK-M
	Inspection cover, for DIL switch and bus connection	533334	AK-SUB-9/15-B
8 Connector plug for bus connection Data sheets online: → necu			
	M12 adapter (B-coded) for PROFIBUS DP	533118	FBA-2-M12-5POL-RK
	Micro style, 2x M12 for DeviceNet/CANopen	525632	FBA-2-M12-5POL
	Socket for micro style connection, M12	18324	FBSD-GD-9-5POL
	Plug for micro style connection, M12	175380	FBS-M12-5GS-PG9
	Plug M12x1, 4-pin, D-coded, for PROFINET	543109	NECU-M-S-D12G4-C2-ET
	Socket M12x1, for FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP	1067905	NECU-M-B12G5-C2-PB
	Plug M12x1, for FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP	1066354	NECU-M-S-B12G5-C2-PB
	Plug RJ45, 8-pin, push-pull	552000	FBS-RJ45-PP-GS
	Plug SCRJ, 2-pin, push-pull	571017	FBS-SCRJ-PP-GS
	8 Connector plug for bus connection		
	M12 adapter for PROFIBUS DP (B-coded)	541519	CPX-AB-2-M12-RK-DP
	M12 adapter for INTERBUS (B-coded)	534505	CPX-AB-2-M12-RK-IB
	Open style for 5-pin terminal strip, for DeviceNet/CANopen	525634	FBA-1-SL-5POL
	5-pin terminal strip, for DeviceNet/CANopen	525635	FBSD-KL-2x5POL
	Screw terminal for CC-Link	197962	FBA-1-KL-5POL

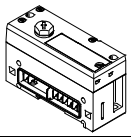
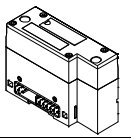
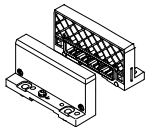
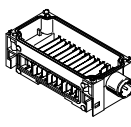
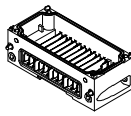
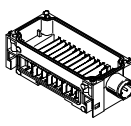
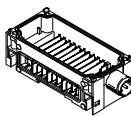
Accessories – Ordering data

	Description	Part no.	Type
9 Inscription label			
	Inscription labels 6x10 mm, in frame (64 pieces)	18576	IBS-6x10
	Inscription label holder for connection block M12	536593	CPX-ST-1
	Screws for attaching an inscription label holder to the bus node (12 pieces)	550222	CPX-M-M2,5X8-12X
10 CPX CP interface/axis interface Data sheets → Page 1615			
	Central node for connecting I/O modules of the CPI system	526705	CPX-CP-4-FB
	Interface for max. 4 I/O modules and valve terminals with I-Port interface (devices)	1577012	CPX-CTEL-4-M12-5POL
	For actuating up to 4 electric drives via CAN bus	562214	CPX-CM-HPP
11 Connecting cable			
for CP interface, M9-M9 Data sheets online: → kvi			
	Angled plug/angled socket	0.25 m	540327 KVI-CP-3-WS-WD-0,25
		0.5 m	540328 KVI-CP-3-WS-WD-0,5
		2 m	540329 KVI-CP-3-WS-WD-2
		5 m	540330 KVI-CP-3-WS-WD-5
		8 m	540331 KVI-CP-3-WS-WD-8
	Straight plug/straight socket	2 m	540332 KVI-CP-3-GS-GD-2
		5 m	540333 KVI-CP-3-GS-GD-5
		8 m	540334 KVI-CP-3-GS-GD-8
For CPX CTEL master, M12-M12 Data sheets → Page 1543			
	Straight plug/straight socket	5 m	574321 NEBU-M12G5-E-5-Q8N-M12G5
		7.5 m	574322 NEBU-M12G5-E-7.5-Q8N-M12G5
		10 m	574323 NEBU-M12G5-E-10-Q8N-M12G5
12 CPX module Data sheets → Page 1617			
	8 digital inputs PNP	195750	CPX-8DE
	8 digital inputs NPN	543813	CPX-8NDE
	16 digital inputs	543815	CPX-16DE
	16 digital inputs with channel diagnostics	550202	CPX-M-16DE-D
	4 digital outputs	195754	CPX-4DA
	8 digital outputs	550204	CPX-8DA-H
	8 digital inputs and 8 digital outputs	526257	CPX-8DE-8DA
	2 analogue inputs	526168	CPX-2AE-U-I
	4 analogue inputs	541484	CPX-4AE-I
	4 analogue inputs for temperature measurement	541486	CPX-4AE-T
	4 analogue inputs for temperature measurement, thermocoupler and PT1000 sensor for cold-junction compensation	553594	CPX-4AE-TC
	Input module, 4 analogue inputs (pressure), pressure range -1 ... +1 bar	560361	CPX-4AE-P-B2
	Input module, 4 analogue inputs (pressure), pressure range 0 ... 10 bar	560362	CPX-4AE-P-D10
	2 analogue outputs	526170	CPX-2AA-U-I
PROFIsafe shut-off module	PROFINET, PROFIBUS	1971599	CPX-FVDA-P2






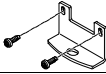
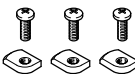

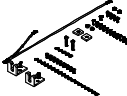
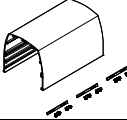

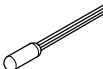

Accessories – Ordering data

	Description	Part no.	Type
13 Connection block			
Polymer version with mounting screws for mounting on polymer interlinking blocks			
	8x socket M8, 3-pin	195706	CPX-AB-8-M8-3POL
	8x socket M8, 4-pin	541256	CPX-AB-8-M8X2-4POL
	4x socket M12, 5-pin	195704	CPX-AB-4-M12x2-5POL
	4x socket M12, 5-pin, with quick lock and metal thread	541254	CPX-AB-4-M12x2-5POL-R
	Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL
	1x socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL
	4x socket, quick connector, 4-pin	525636	CPX-AB-4-HAR-4POL
Metal version with mounting screws for mounting on metal and polymer interlinking blocks			
	4x socket M12, 5-pin	549367	CPX-M-AB-4-M12x2-5POL
	8x socket M12, 5-pin	549335	CPX-M-AB-8-M12x2-5POL
14 Screening plate			
	For M12 connections	526184	CPX-AB-S-4-M12
Distributor		Data sheets online: → nedy	
	1x plug M12, 4-pin – 2x socket M8, 3-pin	8005311	NEDY-L2R1-V1-M8G3-N-M12G4
	1x plug M12, 4-pin – 2x socket M12, 5-pin	8005310	NEDY-L2R1-V1-M12G5-N-M12G4
	1x plug M8, 4-pin – 2x socket M8, 3-pin	8005312	NEDY-L2R1-V1-M8G3-N-M8G4
	Modular system for any sensor/actuator distributor	-	→ internet: nedy
15 Connecting cable		Data sheets → Page 1543	
	M8-M8, straight plug/straight socket	0.5 m	541346 NEBU-M8G3-K-0.5-M8G3
		1.0 m	541347 NEBU-M8G3-K-1-M8G3
		2.5 m	541348 NEBU-M8G3-K-2.5-M8G3
		5.0 m	541349 NEBU-M8G3-K-5-M8G3
		M12-M12	1.5 m
	5-pin/5-pin	3.5 m	530901 KV-M12-M12-3,5
	Modular system for any connecting cable	-	→ internet: nebu
Connecting cable M9, 5-pin		Data sheets online: → nebc	
	M9/open end 5-pin/5-wire	2.0 m	563711 NEBC-M9W5-K-2-N-LE3
		5.0 m	563712 NEBC-M9W5-K-5-N-LE3
16 Cover for CPX-AB-8-KL-4POL (IP65/67)			
	- 8 cable throughfeeds M9 - 1 cable throughfeed for multi-pin plug	538219	AK-8KL
	Fittings kit for cover AK-8KL	538220	VG-K-M9

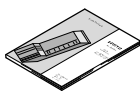
Accessories – Ordering data

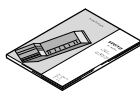
	Description	Part no.	Type
17	Pneumatic interface, for valve terminal MPA-L	Data sheets → Page 1629	
	CPX in polymer version	570783	VMPAL-EPL-CPX
For valve terminal VTSA/VTSA-F			
	CPX in polymer version	543416	VABA-S6-1-X1
	CPX in metal version	550663	VABA-S6-1-X2
18	End plates		
	Polymer version	Right	195714 CPX-EPR-EV
		Left	195716 CPX-EPL-EV
	Metal version	Right	550214 CPX-M-EPR-EV
		Left	550212 CPX-M-EPL-EV
19	Interlinking block, with system supply	Data sheets → Page 1627	
	Polymer version	M18 connection	195746 CPX-GE-EV-S
		7/8" connection, 4-pin	541248 CPX-GE-EV-S-7/8-4POL
		7/8" connection, 5-pin	541244 CPX-GE-EV-S-7/8-5POL
	Metal version	7/8" connection, 5-pin	550208 CPX-M-GE-EV-S-7/8-5POL
		Push-pull plug connection (AIDA), 5-pin	563057 CPX-M-GE-EV-S-PP-5POL
Without supply			
	Polymer version	195742	CPX-GE-EV
	Metal version	550206	CPX-M-GE-EV
	Metal design, for CPX-FVDA-P2	567806	CPX-M-GE-EV-FVO
With additional power supply for outputs			
	Polymer version	M18 connection	195744 CPX-GE-EV-Z
		7/8" connection, 4-pin	541250 CPX-GE-EV-Z-7/8-4POL
		7/8" connection, 5-pin	541246 CPX-GE-EV-Z-7/8-5POL
	Metal version	7/8" connection, 5-pin	550210 CPX-M-GE-EV-Z-7/8-5POL
		Push-pull plug connection (AIDA), 5-pin	563058 CPX-M-GE-EV-Z-PP-5POL
With additional power supply for valves			
	Polymer version	M18 connection	533577 CPX-GE-EV-V
		7/8" connection, 4-pin	541252 CPX-GE-EV-V-7/8-4POL

Accessories – Ordering data

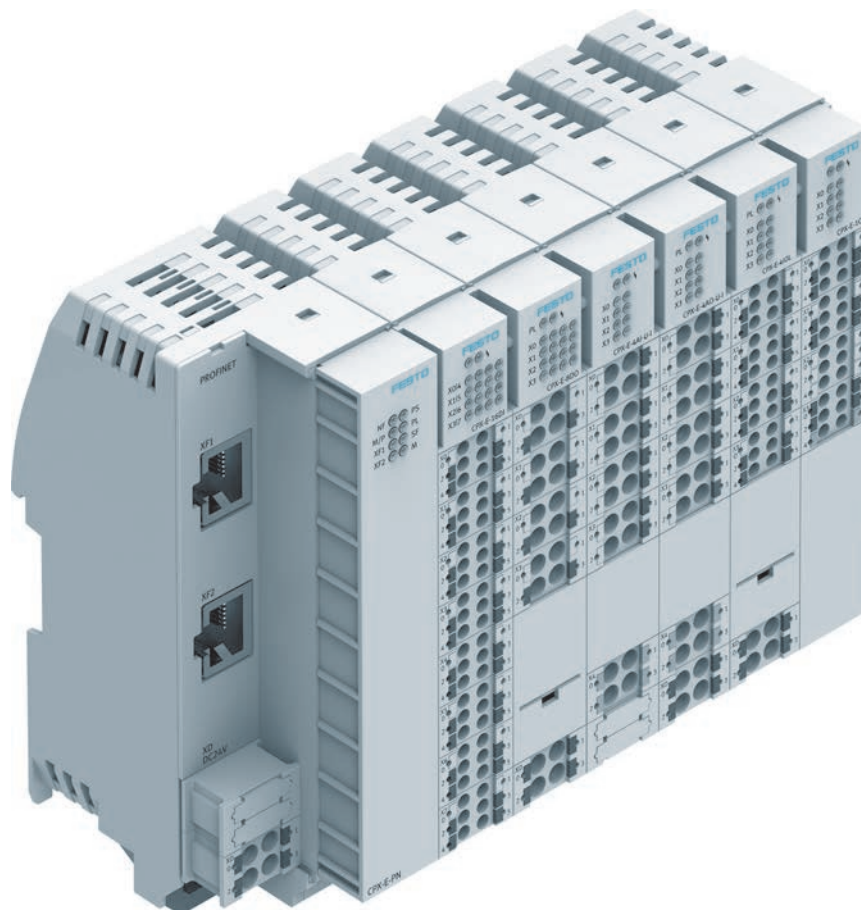
Description		Part no.	Type
20 Connector plug for power supply Data sheets online: → ntsd			
	M18 socket, straight	For 1.5 mm ²	18493 NTSD-GD-9
		For 2.5 mm ²	18526 NTSD-GD-13,5
	M18 socket, angled	For 1.5 mm ²	18527 NTSD-WD-9
		For 2.5 mm ²	533119 NTSD-WD-11
	7/8" connection	5-pin	543107 NECU-G78G5-C2
		4-pin	543108 NECU-G78G4-C2
	AIDA push-pull plug socket, spring-loaded terminal	5-pin	5195383 NECU-M-PPG5PP-C1-PN
21 Attachment for wall mounting			
	For long valve terminals, 10 pieces, for polymer manifold sub-bases	529040	CPX-BG-RW-10x
	For long valve terminals, 2 mounting brackets and 4 screws, for metal manifold sub-bases	550217	CPX-M-BG-RW-2x
22 H-rail mounting			
	For mounting a CPX terminal and valve terminal on an H-rail	526032	CPX-CPA-BG-NRH
Hood			
	Mounting rail for attaching the hood, 1 m	572256	CAFC-X1-S
	Mounting kit for CPX hood	572257	CAFC-X1-BE
	Hood section	200 mm	572258 CAFC-X1-GAL-200
		300 mm	572259 CAFC-X1-GAL-300
Screws for mounting the bus node/connection block on an interlinking block			
	Metal connection block, polymer interlinking block	550218	CPX-DPT-30X32-S-4X
	Polymer connection block, metal interlinking block	550219	CPX-M-M3x22-4x
	Metal connection block, metal interlinking block	550216	CPX-M-M3x22-S-4x
Temperature sensor			
	PT1000, for cold-junction compensation for CPX module CPX-4AE-TC	553596	CPX-W-PT1000
Memory card			
	For PROFINET bus node (CPX-FB33, CPX-M-FB34, CPX-M-FB35), 2 MB	4798288	CPX-SK-3

Accessories – Ordering data

	Description	Part no.	Type
User documentation			
	Bus node CPX-FB06		
	German	526433	P.BE-CPX-FB6-DE
	English	526434	P.BE-CPX-FB6-EN
	French	526436	P.BE-CPX-FB6-FR
	Italian	526437	P.BE-CPX-FB6-IT
	Spanish	526435	P.BE-CPX-FB6-ES
Bus node CPX-FB11			
	German	526421	P.BE-CPX-FB11-DE
	English	526422	P.BE-CPX-FB11-EN
	French	526424	P.BE-CPX-FB11-FR
	Italian	526425	P.BE-CPX-FB11-IT
	Spanish	526423	P.BE-CPX-FB11-ES
Bus node CPX-FB13			
	German	526427	P.BE-CPX-FB13-DE
	English	526428	P.BE-CPX-FB13-EN
	French	526430	P.BE-CPX-FB13-FR
	Italian	526431	P.BE-CPX-FB13-IT
	Spanish	526429	P.BE-CPX-FB13-ES
Bus node CPX-FB14			
	German	526409	P.BE-CPX-FB14-DE
	English	526410	P.BE-CPX-FB14-EN
	French	526412	P.BE-CPX-FB14-FR
	Italian	526413	P.BE-CPX-FB14-IT
	Spanish	526411	P.BE-CPX-FB14-ES
Bus node CPX-FB23-24			
	German	526403	P.BE-CPX-FB23-24-DE
	English	526404	P.BE-CPX-FB23-24-EN
Bus node CPX-FB33, CPX-M-FB34, CPX-M-FB35			
	German	548759	P.BE-CPX-PNIO-DE
	English	548760	P.BE-CPX-PNIO-EN
	Spanish	548761	P.BE-CPX-PNIO-ES
Bus node CPX-FB36			
	German	8024074	CPX-FB36-DE
	English	8024075	CPX-FB36-EN
	Spanish	8024076	CPX-FB36-ES

	Description	Part no.	Type
User documentation			
	CPX system manual		
	German	526445	P.BE-CPX-SYS-DE
	English	526446	P.BE-CPX-SYS-EN
	Spanish	526447	P.BE-CPX-SYS-ES
	French	526448	P.BE-CPX-SYS-FR
	Italian	526449	P.BE-CPX-SYS-IT
CPX CP interface			
	German	539293	P.BE-CPX-CP-DE
	English	539294	P.BE-CPX-CP-EN
	Spanish	539295	P.BE-CPX-CP-ES
CPX CTCL master			
	German	574600	P.BE-CPX-CTCL-DE
	English	574601	P.BE-CPX-CTCL-EN
	Spanish	574602	P.BE-CPX-CTCL-ES
Control block CPX-CM-HPP			
	German	568683	CPX-CM-HPP-DE
	English	568684	CPX-CM-HPP-EN
PROFIsafe shut-off module			
	German	8022606	P.BE-CPX-FVDA-P2-DE
	English	8022607	P.BE-CPX-FVDA-P2-EN
	Spanish	8022608	P.BE-CPX-FVDA-P2-ES
	French	8022609	P.BE-CPX-FVDA-P2-FR
	Italian	8022610	P.BE-CPX-FVDA-P2-IT
	Chinese	8022611	P.BE-CPX-FVDA-P2-ZH
Digital input/output modules			
	German	526439	P.BE-CPX-EA-DE
	English	526440	P.BE-CPX-EA-EN
	Spanish	526441	P.BE-CPX-EA-ES
Analogue input/output modules			
	German	526415	P.BE-CPX-AX-DE
	English	526416	P.BE-CPX-AX-EN
	Spanish	526417	P.BE-CPX-AX-ES

New New series



Powerful, flexible system

- + Modern control system with high performance
- + Easy mounting of the control system on an H-rail
- + Reduced development work through seamless data management


Electrical peripherals >
Automation systems

CPX-E


Electrical peripherals > Automation systems CPX-E

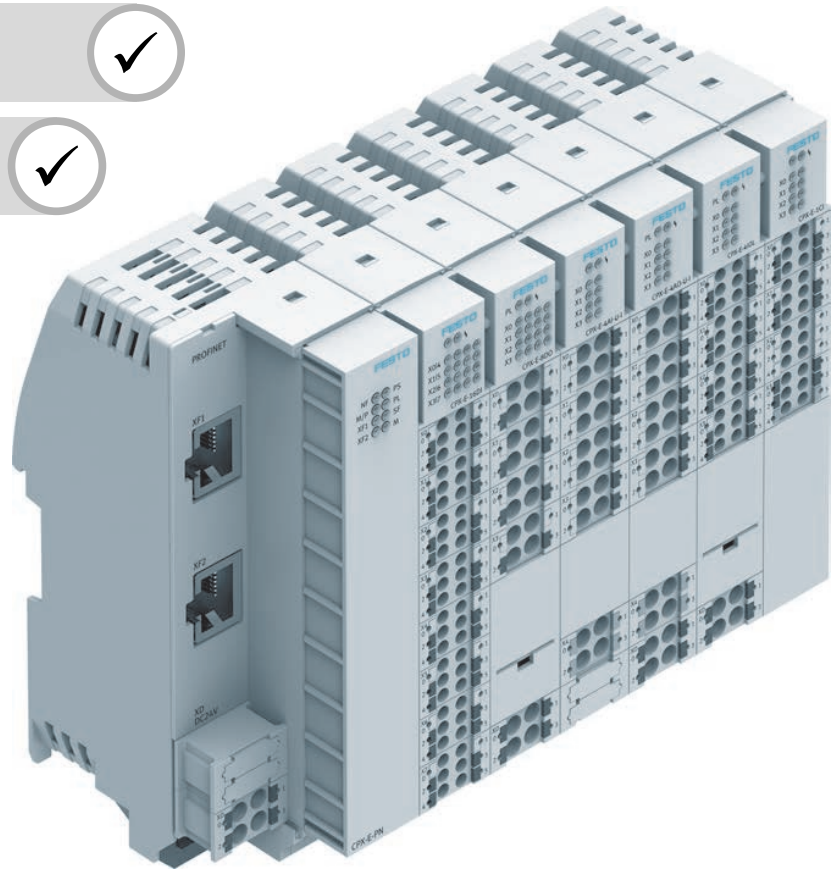
 Overview, configuration and ordering
→ www.festo.com/catalogue/cpx-e



 Additional information, support and user documentation
→ www.festo.com/sp/cpx-e



 Spare parts service



- + Fieldbus master interfaces, EtherCAT® master, fieldbus slave interfaces, PROFINET, EtherNet/IP, PROFIBUS, EtherCAT®
- + Can be designed and used purely as a remote I/O system or as a control system
- + High I/O component density

NEW

Electrical peripherals >

Automation system CPX-E

Product range overview

Type	Designation	Code ¹⁾	Address space		→ Page/ online
			Inputs	Outputs	
Controllers and bus modules					
CPX-E-CEC-C1-PN	Controller, CODESYS V3	CPN	512 bits	512 bits	1644
CPX-E-CEC-M1-PN	Controller, CODESYS V3 with SoftMotion	MPN	512 bits	512 bits	1644
CPX-E-CEC-C1-EP	Controller, CODESYS V3, EtherNet/IP	CEN	512 bits	512 bits	1644
CPX-E-CEC-M1-EP	Controller, CODESYS V3 with SoftMotion, EtherNet/IP	MEN	512 bits	512 bits	1644
CPX-E-PN	Bus module for PROFINET	PN	512 bits	512 bits	1646
CPX-E-EC	Bus module for EtherCAT®	EC	512 bits	512 bits	1646
CPX-E-EP	Bus module for Ethernet IP	EP	512 bits	512 bits	1647
CPX-E-PB	Bus module for PROFIBUS	PB	512 bits	512 bits	1647
Modules					
CPX-16DI	Input module, 16 digital inputs	M	16 bits	–	1648
CPX-E-1CI	Counter module, digital with 1 input	T53	96 bits	16 bits	1648
CPX-E-8-DO	Output module, 8 digital outputs	L	–	8 bits	1649
CPX-E-4AE-U-I	Input module, 4 analogue inputs	NI	64 bits	–	1649
CPX-E-4AO-U-I	Output module, 4 analogue outputs	NO	–	64 bits	1650
CPX-E-4IOL	Master for IO-Link®, 4 ports	T51	64 ... 256 bits	64 ... 256 bits	1650
Accessories					
CAFC-X3-C	Module cover including label strips	MH	–	–	1652
CAMC-M-MS-G32	32 GB memory card	SK	–	–	1652
CDSB-A1	Display and control unit	AB	–	–	1652

1) Code letter within the order code for a valve terminal configuration.

Note

The automation system CPX-E can be ordered quickly and easily online. The convenient product configurator can be found at:

→ www.festo.com/catalogue/cpx

Note

- The bus module and controller provide the aforementioned address space.
- Input/output modules, etc. use the specified address space.

Automation system CPX-E

NEW

Key features

The automation system CPX-E is a high-performance control and automation system focusing primarily on motion control functions for handling technology. It comprises individual function modules that allow a very flexible system structure.

Depending on the combination, the automation system CPE-X can be configured and used purely as a remote I/O system or as a control system. The following modules are available:

- Controller
- Bus modules
- Input/output modules
- Counter modules
- IO-Link® master modules

The controllers for the automation system CPX-E are powerful and have comprehensive PLC functions. They have an integrated EtherCAT® master for communication with other products such as motor controllers.

There is support for SoftMotion, depending on the variant. SoftMotion is a powerful software library for simple and complex motion control applications.

All controllers have an integrated bus interface; an additional bus module for connection to higher-order controllers is not required.

- Standardised CODESYS programming interface
- Reduced development effort thanks to integrated data management
- Extended software functions for seamless integration and simplified control of electric drives
- Standardised, integrated platform combining servo technology and stepper motor technology, enabling mixed operation of the two technologies without problems in the application

- Scalable motion control functions:
- Simple movements
 - Multi-axis movements (cam discs)
 - Contour applications
 - Robotics

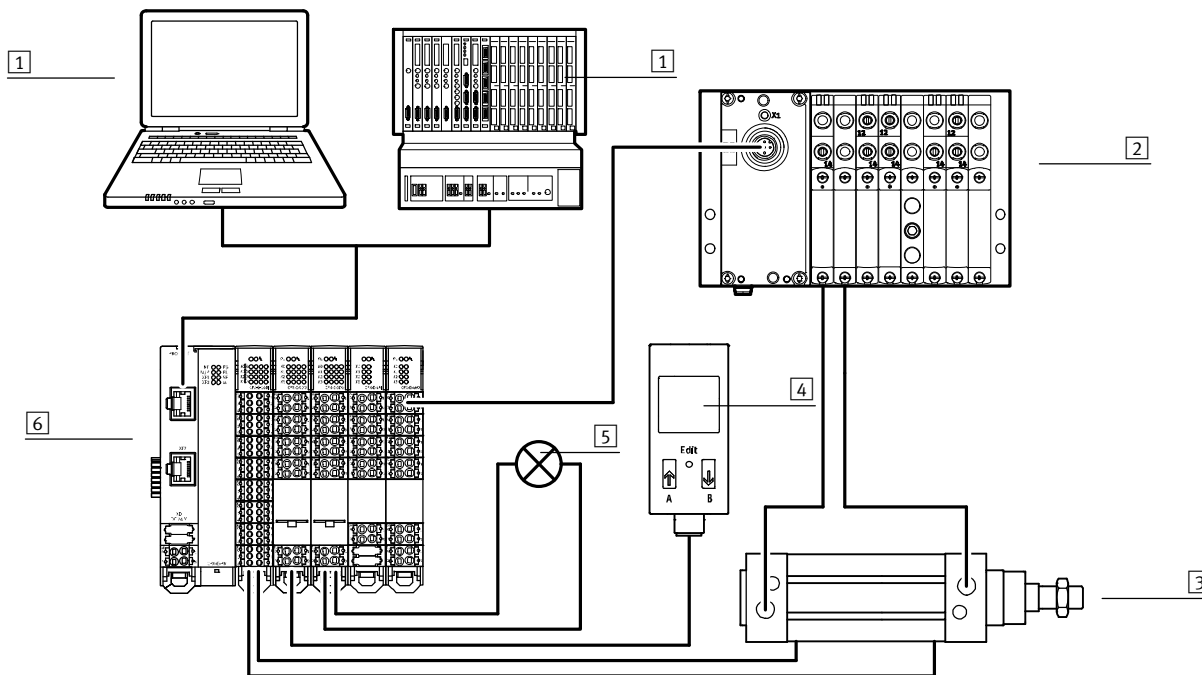
Handling technology using Festo kinematics (planar surface gantry, linear gantry, Cartesian three-dimensional gantries)

- Parts handling
- Assembly systems
- Palletising
- Gluing, dispensing

Complete automation of machines:

- Packaging machines
- Palletising systems
- Assembly machines
- Handling systems

Overview



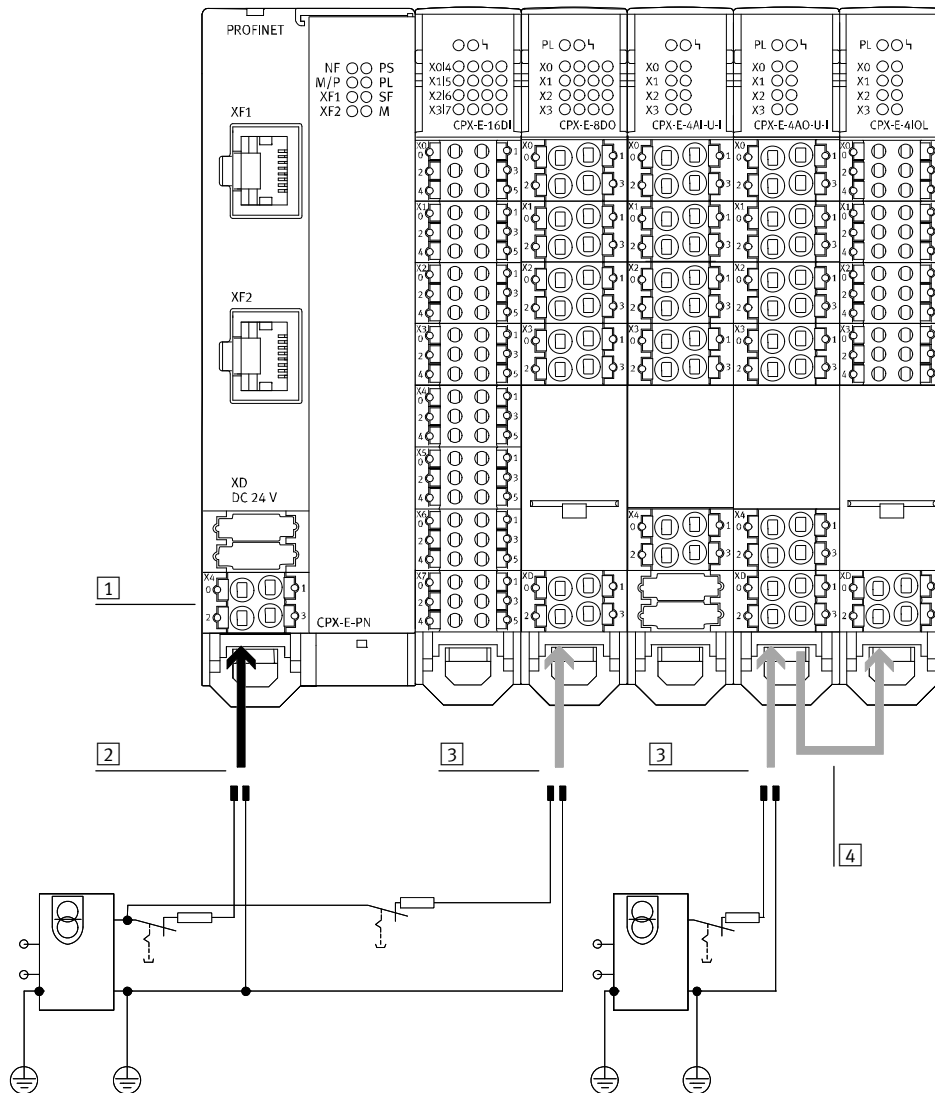
- 1 Higher-order controller
- 2 Valve terminal with I-Port interface/ device with IO-Link® interface
- 3 Cylinder with sensors for position sensing
- 4 Flow sensor
- 5 Visual indicator
- 6 Automation system CPX-E

NEW

Electrical peripherals >

Automation system CPX-E

Power supply concept



- 1 The power supply is provided via a terminal strip with spring-loaded terminals on the module
- 2 The power supply for the modules themselves and the connected sensors is provided centrally on the bus module/controller
- 3 The power supply for connected actuators is provided via a terminal strip with spring-loaded terminals on the respective output module/IO-Link® master module
- 4 The power supply for actuators can be looped through from output module to output module/IO-master module

Interlinking blocks represent the backbone of the automation system CPX-E with all supply lines. They provide the power supply for the modules used on them as well as their bus connections. For segmentation into voltage zones, the power supply for the outputs is fed in separately at the output module. This provides electrically isolated, all-pin disconnectable potential groups/voltage segments.



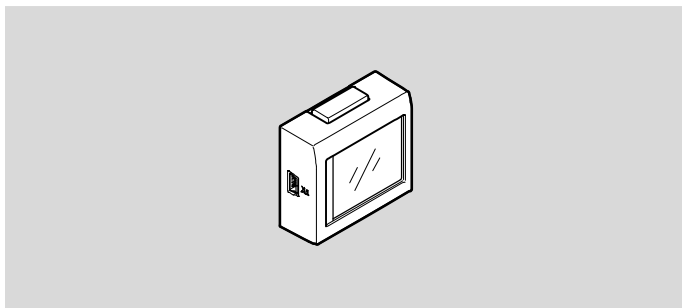
Data sheet – Automation system CPX-E

Technical data		
Nominal operating voltage DC	[V DC]	24
Nominal operating voltage DC for electronics/sensors	[V DC]	24
Permissible voltage fluctuations for electronics/sensors	[%]	±25
Max. power supply	[A]	8
Protection against direct and indirect contact		PELV
Type of mounting		Via H-rail
Ambient temperature	[°C]	-5 ... +50
Electrical connection		
Connection type		Terminal strip
Connection technology		Spring-loaded terminal
Wire cross-section	[mm ²]	0.2 ... 1.5
Note on wire cross-section		0.2 ... 2.5 mm ² for flexible conductor without wire end sleeve

Data sheet – Display and control unit CDSB-A1

The operator unit CDSB-A1 from Festo is a plug-in display and control unit for the automation system CPX-E. The built-in colour TFT display with touchscreen allows both operation and simple diagnostics of the connected basic unit. User-friendliness is enhanced through fault diagnostics with plain text error message.

- Display of full text messages (errors, warnings, data)
- Easy data backup of parameters and firmware in the unit (e.g. for series commissioning or device replacement)



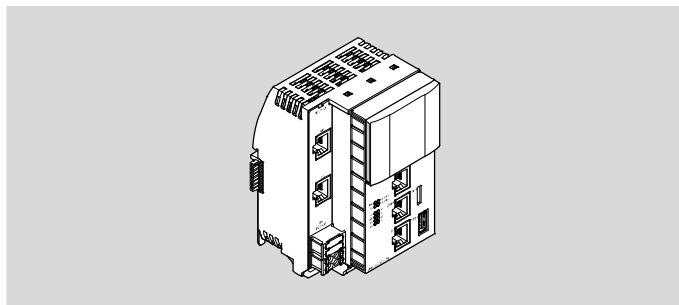
Technical data			Download CAD data → www.festo.com
Display component			LCD graphic display with background illumination (128 x 64 pixels)
Control elements			7 buttons: 4 arrow keys and 3 function keys
Data interface			RS 232 interface, 57.6 kBaud, M12 socket, 4-pin
Operating voltage	[V DC]		24, supplied by the connected device
Current consumption	[mA]		50 ... 60
Length/width/height	[mm]		137/81/28

NEW

Electrical peripherals >

Automation system CPX-E

Data sheet – Controller

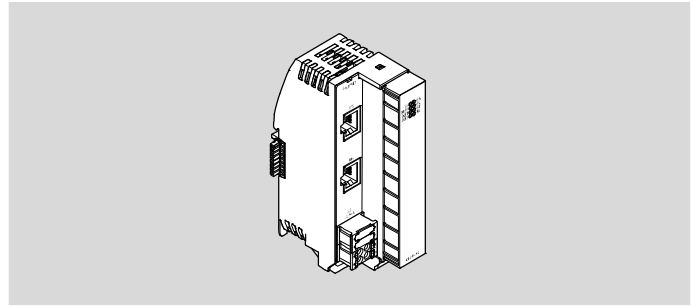


Data sheet – Controller

General Technical data		CPX-E-CEC-...-PN	CPX-E-CEC-...-EP
Type			
CPU data		Dual core 766 MHz 512 MB RAM	
Programming software		CODESYS provided by Festo	
Program memory		12 MB, user program	
Control elements		DIL switch for RUN/STOP	DIL switch for RUN/STOP
		Optional operator unit CDSB	Optional operator unit CDSB
		–	Rotary switch for address setting
Configuration support		Operator unit CDSB	Operator unit CDSB
		CODESYS V3	CODESYS V3
		GSDML file	–
Maximum number of modules		10	
Intrinsic current consumption at nominal operating voltage for electronics/sensors	[mA]	Typically 150	
Dimensions W x L x H	[mm]	75.9 x 124.3 x 82.5	
Inputs/outputs			
Max. address capacity outputs	[byte]	64	
Max. address capacity inputs	[byte]	64	
Fieldbus interface 1			
Protocol		PROFINET IO	EtherNet/IP
Transmission rate	[Mbps]	100	
Type		Ethernet	
Connection type		2x socket	
Connection technology		RJ45	
Fieldbus interface 2			
Protocol		EtherCAT® master	
Transmission rate	[Mbps]	100	
Type		Ethernet	
Connection type		Socket	
Connection technology		RJ45	
Number of poles/wires		8	
USB interface			
USB interface		USB 2.0	

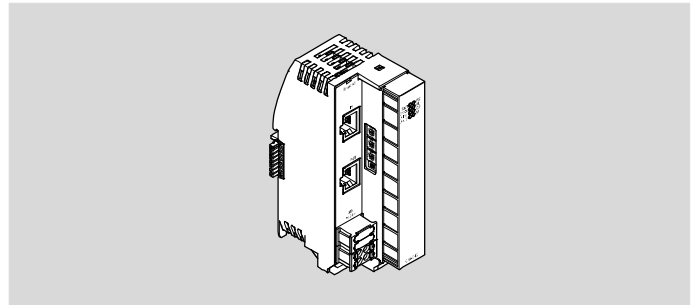


Data sheet – PROFINET bus module



Technical data			Download CAD data → www.festo.com
Fieldbus interface			
Protocol		PROFINET IRT	
		PROFINET IRT	
Transmission rate	[Mbps]	100	
Type		Ethernet	
Connection type		2x socket	
Connection technology		RJ45	
Max. address capacity outputs	[byte]	64	
Max. address capacity inputs	[byte]	64	
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 75	
Dimensions W x L x H	[mm]	42.2 x 125.8 x 76.5	

Data sheet – EtherCAT® bus module



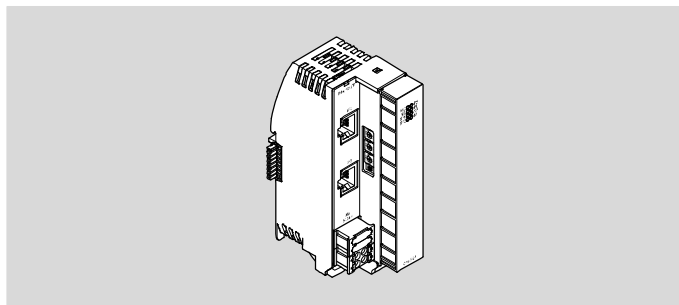
Technical data			Download CAD data → www.festo.com
Fieldbus interface			
Protocol		EtherCAT®	
Transmission rate	[Mbps]	100	
Type		EtherCAT®	
Connection type		2x socket	
Connection technology		RJ45	
Max. address capacity outputs	[byte]	64	
Max. address capacity inputs	[byte]	64	
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 64	
Dimensions W x L x H	[mm]	42.2 x 125.8 x 76.5	

NEW

Electrical peripherals >

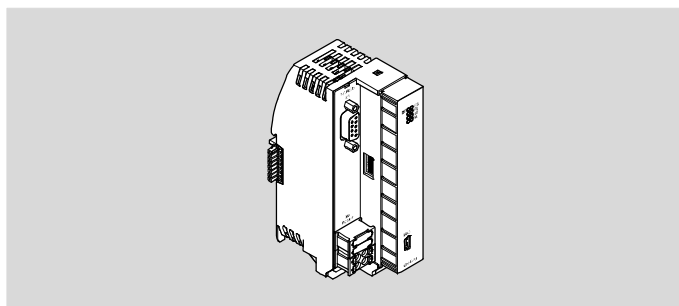
Automation system CPX-E

Data sheet – EtherNet/IP bus module



Technical data		Download CAD data → www.festo.com			
Fieldbus interface					
Protocol		EtherNet/IP			
		Modbus®/TCP			
Transmission rate	[Mbps]	100			
Type		Ethernet			
Connection type		2x socket			
Connection technology		RJ45			
Max. address capacity outputs	[byte]	64			
Max. address capacity inputs	[byte]	64			
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65			
Dimensions W x L x H	[mm]	42.2 x 125.8 x 76.5			

Data sheet – PROFIBUS bus module



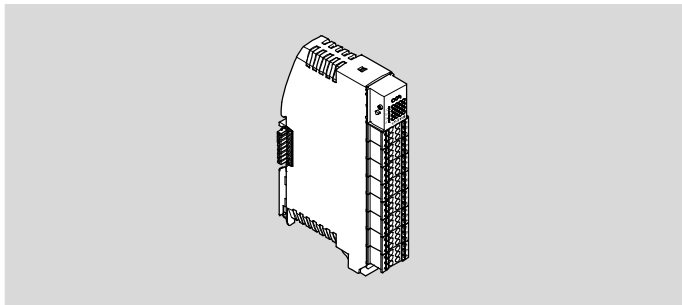
Technical data		Download CAD data → www.festo.com				
Fieldbus interface						
Protocol		PROFIBUS DP				
Transmission rate	[kbps]	9.6	19.2	93.75	187.5	500
	[Mbps]	1.5	3	6	12	
Type		PROFIBUS				
Connection type		Socket				
Connection technology		Sub-D				
Max. address capacity outputs	[byte]	64				
Max. address capacity inputs	[byte]	64				
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 75				
Dimensions W x L x H	[mm]	42.2 x 125.8 x 76.5				



Data sheet – Digital input module

Function

Digital input modules facilitate the connection of proximity sensors or other 24 V DC sensors (inductive, capacitive, etc.).



Technical data

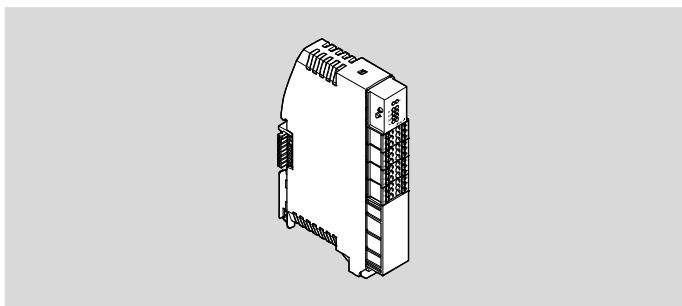
Download CAD data → www.festo.com

Function		Digital input
Number of inputs		16
Max. address capacity inputs	[byte]	2
Max. residual current of inputs per module	[A]	1.8
Internal electronic fuse		Per module
Intrinsic current consumption at nominal operating voltage	[mA]	15
Sensor supply voltage	[V DC]	24 ±25
Electrical isolation	Channel – channel	No
	Channel – internal bus	No
Input switching logic		PNP (positive switching)
		2- and 3-wire sensors to IEC 61131-2
Connection type		8x terminal strip
Connection technology		Spring-loaded terminal
Wire cross-section	[mm ²]	0.2 ... 1.5
Dimensions W x L x H	[mm]	18.9 x 76.6 x 124.3

Data sheet – Digital counter module

Function

Digital counter modules support the connection of sensors for detecting pulses.



Technical data

Download CAD data → www.festo.com

Function	Electrical input 1	Digital input
	Electrical input 2	Counter input
Number of inputs		4
Max. address capacity inputs	[byte]	12
Max. residual current of inputs per module	[A]	1.8
Internal electronic fuse		Per module
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 15
Sensor supply voltage	[V DC]	24 ±25
Electrical isolation	Channel – channel	No
	Channel – internal bus	No
Input switching logic		PNP (positive switching)
		2- and 3-wire sensors to IEC 61131-2
Connection type		Terminal strip
Connection technology		Spring-loaded terminal
Wire cross-section	[mm ²]	0.2 ... 1.5
Dimensions W x L x H	[mm]	18.9 x 76.6 x 124.3

NEW

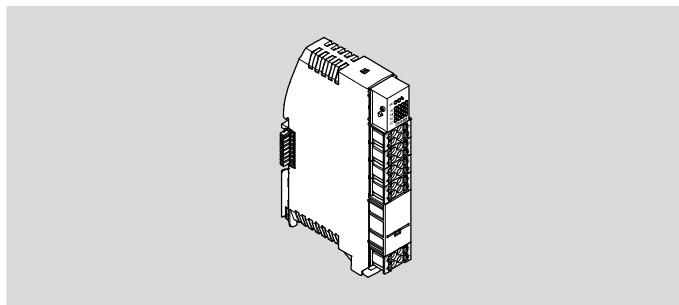
Electrical peripherals >

Automation system CPX-E

Data sheet – Digital output module

Function

Digital output modules make it possible to connect electrical consumers in accordance with IEC 1131-2 type 0.5 (valves, contactors or display components) with an operating voltage of 24 V DC.

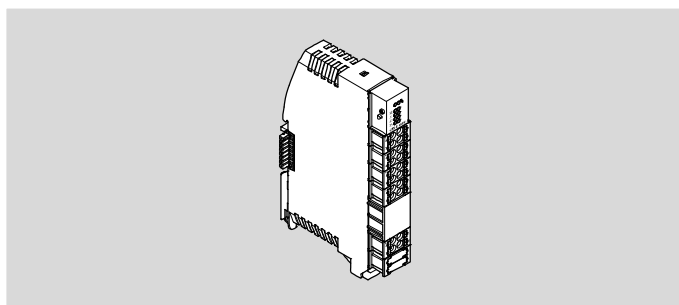


Technical data		Download CAD data → www.festo.com
Function		Digital output
Number of outputs		8
Max. address capacity outputs	[byte]	1
Max. residual current of outputs per module	[A]	4
Internal electronic fuse		Per channel
Intrinsic current consumption at nominal operating voltage load	[mA]	34
Sensor supply voltage	[V DC]	24 ±25
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
Switching logic at outputs		PNP (positive switching)
Connection type		4x terminal strip
Connection technology		Spring-loaded terminal
Wire cross-section	[mm ²]	0.2 ... 1.5
Dimensions W x L x H	[mm]	18.9 x 76.6 x 124.3

Data sheet – Analogue input module

Function

Analogue input modules make it possible to detect analogue input signals such as current or voltage.

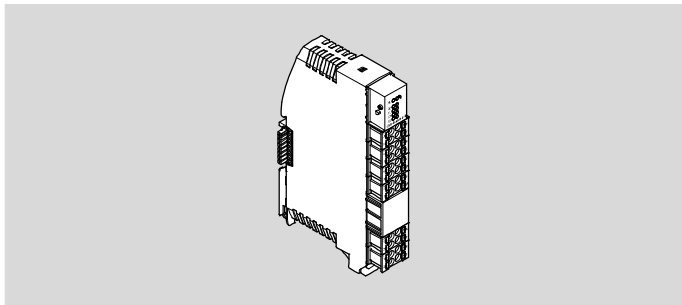


Technical data		Download CAD data → www.festo.com
Function		Analogue input
Number of inputs		4
Max. address capacity inputs	[byte]	8
Max. residual current of inputs per module	[A]	1.4
Internal electronic fuse		Per module
Intrinsic current consumption at nominal operating voltage	[mA]	70
Sensor supply voltage	[V DC]	24 ±25
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
Connection type		4x terminal strip
Connection technology		Spring-loaded terminal
Wire cross-section	[mm ²]	0.2 ... 1.5
Dimensions W x L x H	[mm]	18.9 x 76.6 x 124.3

Data sheet – Analogue output module

Function

The module converts the value specified by the controller (15-bit value with prefix) and transfers it to a connected actuator as an analogue current or voltage value.



Technical data

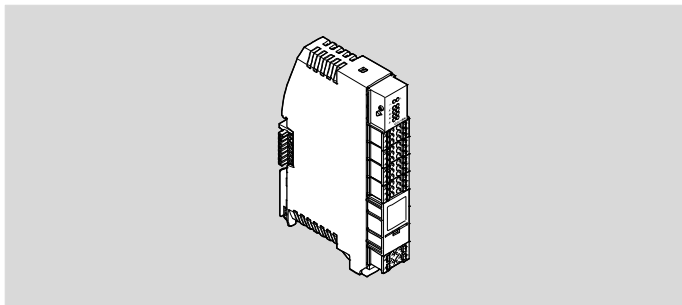
Download CAD data → www.festo.com

Function	Analogue output	
Number of outputs	4	
Max. address capacity outputs	[byte]	8
Max. residual current of outputs per module	[A]	2
Internal electronic fuse	Per module	
Intrinsic current consumption at nominal operating voltage	[mA]	60
Sensor supply voltage	[V DC]	24 ±25
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
Connection type	4x terminal strip	
Connection technology	Spring-loaded terminal	
Wire cross-section	[mm ²]	0.2 ... 1.5
Dimensions W x L x H	[mm]	18.9 x 76.6 x 124.3

Data sheet – IO-Link® master module

Function

The IO-Link® master module establishes the connection to modules that have an IO-Link® interface (device). The I/O data from the connected devices is transmitted to the connected CPX-E bus module and thus to the higher-order controller via fieldbus.



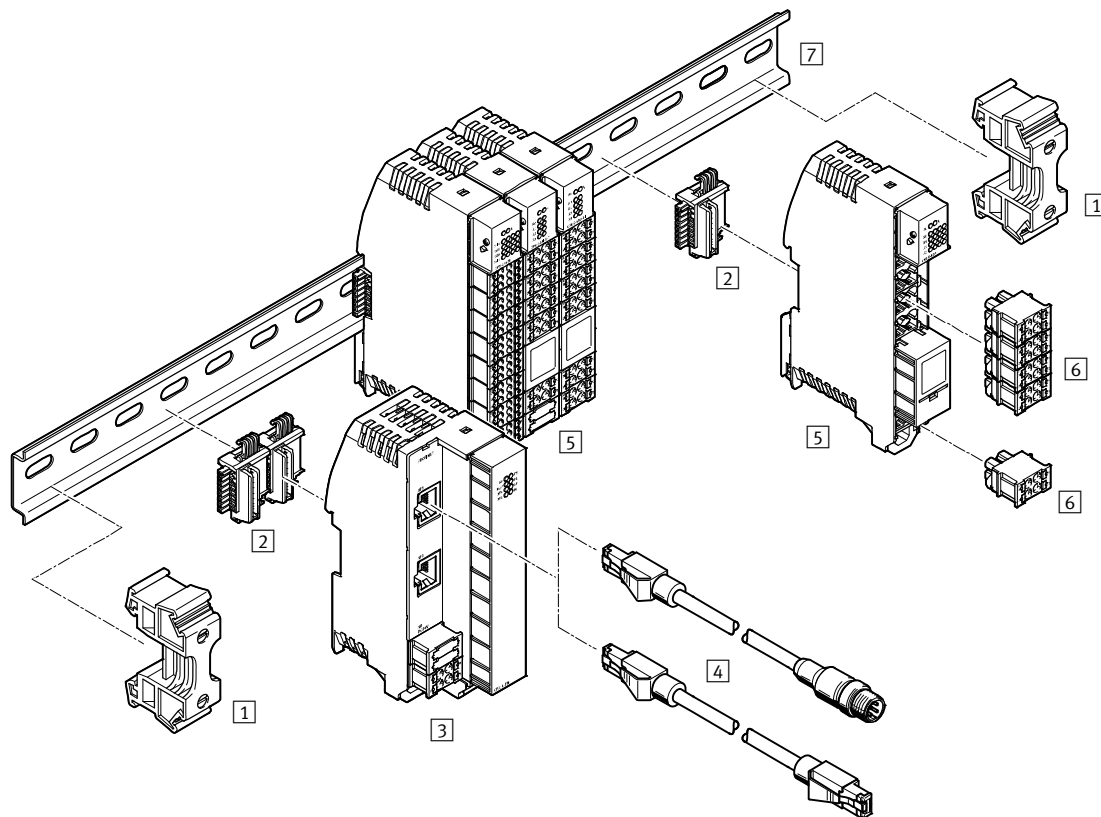
Technical data

Download CAD data → www.festo.com

Protocol	I/O-Link®	
Number of ports	4	
Internal electronic fuse	Per module	
	Per channel	
Intrinsic current consumption at nominal operating voltage	[mA]	50
Sensor supply voltage	[V DC]	24 ±25
Electrical isolation	Channel – channel	No
	Channel – internal bus	No
Connection type	4x terminal strip	
Connection technology	Spring-loaded terminal	
Wire cross-section	[mm ²]	0.2 ... 1.5
Dimensions W x L x H	[mm]	18.9 x 76.6 x 124.3

NEW

Accessories

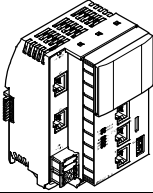
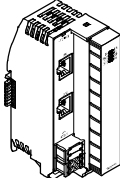
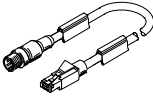
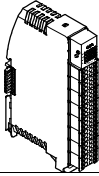
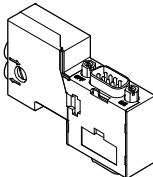
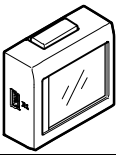




		→ Page/online
1	Holder CAFM	-
2	Electrical interlinking module VAEA	-
3	Controller/bus module CPX-E	1652
4	Connecting cable NEBC, for controller	1652
5	Module CPX-E	1652
6	Terminal strip NEKC, for input and output modules and IO-Link® master modules	-
7	DIN mounting rail NRH	nrh
-	Plug FBS/NECU, for PROFIBUS	1652
-	Display and control unit CDSB, for controller	1652
-	Memory card CAMC, for controller	1652
-	Inscription label holder CAFC, for input and output modules and IO-Link® master modules	1652

Control technology and software

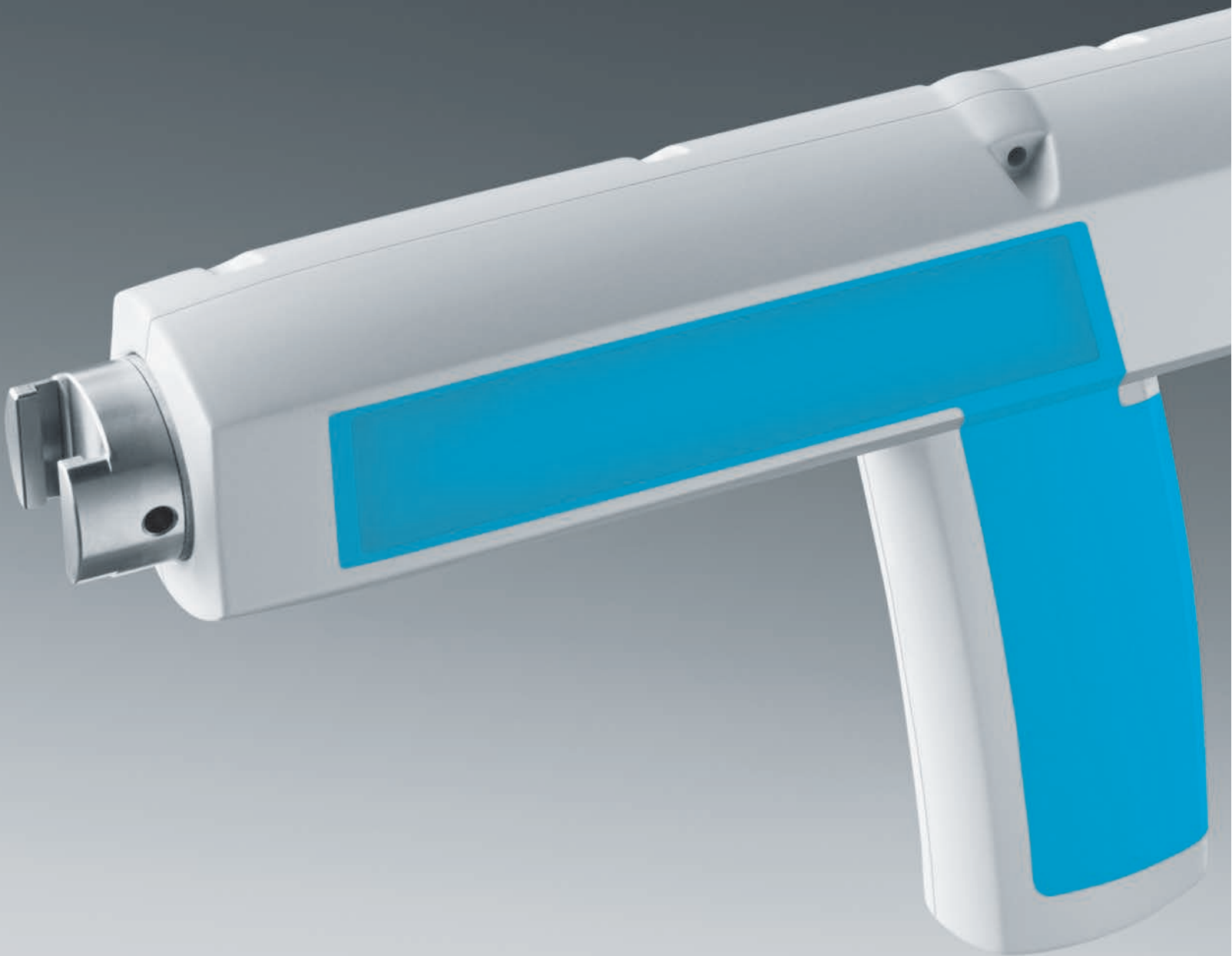


Accessories – Ordering data

Description		Part no.	Type	
3 Controller/bus module		Data sheets online: → nebc		
	Controller with PROFINET IO	CODESYS V3	4252741 CPX-E-CEC-C1-PN	
		CODESYS V3 with SoftMotion	4252743 CPX-E-CEC-M1-PN	
	Controller with EtherNet/IP	CODESYS V3	4252742 CPX-E-CEC-C1-EP	
		CODESYS V3 with SoftMotion	4252744 CPX-E-CEC-M1-EP	
	Bus module	PROFINET	4080497 CPX-E-PN	
		EtherCAT	4080498 CPX-E-EC	
		EtherNet/IP	4080499 CPX-E-EP	
		PROFIBUS	4080496 CPX-E-PB	
4 Connecting cable		Data sheets online: → nebc		
	Straight plug, RJ45, 8-pin	Straight plug, M12x1, 4-pin, D-coded	1 m	8040451 NEBC-D12G4-ES-1-S-R3G4-ET
			3 m	8040452 NEBC-D12G4-ES-3-S-R3G4-ET
			5 m	8040453 NEBC-D12G4-ES-5-S-R3G4-ET
			10 m	8040454 NEBC-D12G4-ES-10-S-R3G4-ET
		Straight plug, RJ45, 8-pin	1 m	8040455 NEBC-R3G4-ES-1-S-R3G4-ET
5 Module		Data sheets online: → nebc		
	Digital input module	16 inputs	4080492 CPX-E-16DI	
	Digital counter module	1 input	4827505 CPX-E-1CI	
	Digital output module	8 outputs	4080491 CPX-E-8DO	
	Analogue input module	4 inputs	4080493 CPX-E-4AI-U-I	
	Analogue output module	4 outputs	4080494 CPX-E-4AO-U-I	
	IO-Link master module	4 ports	4080495 CPX-E-4IOL	
Plug		Data sheets online: → necu		
	Sub-D plug, straight	532216	FBS-SUB-9-GS-DP-B	
	Sub-D plug, straight, with terminating resistor and programming interface	574589	NECU-S1W9-C2-APB	
Operator unit		Data sheets online: → cdsb		
	Display and control unit	8070984	CDSB-A1	
Memory card				
	32 GB memory card, for controller	4553880	CAMC-M-MS-G32	
Inscription label holder				
	5 pieces	4080500	CAFC-X3-C	

17 Other pneumatic devices

- + Pneumatic assembly tools
- + Air reservoirs
- + Silencers
- + Air guns
- + Inscription systems





CRVZS

Air reservoirs

- + Compensation of pressure fluctuations and as accumulators in the event of sudden air consumption
- + Corrosion resistant

→ page 1665



AMTE★

Silencers

- + Metal design
- + High temperature resistance up to 80°C
- + Slim overall width
- + Wide range of variants
- + Can be used universally

→ page 1659



U★

Silencers

- + Polymer design
- + Thread connection M5, G1/2, G1/4, G1/8, G3/8, G3/4, G1
- + Barbed fitting connection PK-3, PK-4
- + Noise level 65 ... 84 dB(A)

→ page 1659

Contents





Product overview 1656

Silencers AMTE, U 1659




Air reservoirs CRVZS 1665

Product overview


Silencers

				
Type	Silencers AMTE ★	Silencers U ★	Silencers AMTC	Silencers UC
Information on materials - silencer insert	Bronze	Bronze, PE	PE	PE
Pneumatic connection	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M3, M5, NPT1/2-14, NPT1/4-18, NPT1/8-27, NPT3/8-18, UNF10-32	G1/8, G1/4, G3/8, G1/2, G3/4, G1, NPT3/4-14, PK-3, PK-4, NPT1-11	Cartridge 10 mm	G1/8, G1/4, G3/8, M5, M7, QS-3, QS-4, QS-6, QS-8, QS-10
Noise level	55 ... 95 dB(A)	70 ... 85 dB(A)	58 dB(A)	58 ... 68 dB(A)
Description	<ul style="list-style-type: none"> • Long or short design • Metal version • Operating medium compressed air • High temperature resistance up to 80°C • Slim overall width • Wide range of variants • Can be used universally 	<ul style="list-style-type: none"> • Compact design, polymer or die-cast • Barbed connector or threaded connection • Operating medium compressed air 	<ul style="list-style-type: none"> • For valve terminal VTUB-12 • Attached via pin (spring clip, included in the scope of delivery of the valve) • Polymer version • Operating medium compressed air 	<ul style="list-style-type: none"> • Polymer version • Operating medium compressed air • Threaded connection or push-in sleeve for push-in fitting QS
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Silencers

			
Type	Silencers UO	Silencers UOS-1, UOS-1-LF	Silencers UOM, UOMS
Information on materials - silencer insert	PE	PE	PU foam
Pneumatic connection	G1/8, G1/4, M7	G1	G1/4, G3/8
Noise level			
Description	<ul style="list-style-type: none"> • Special open minimal resistance silencer • For vacuum generators • Facilitates trouble-free operation of the vacuum generator • Operating medium compressed air 	<ul style="list-style-type: none"> • Safety silencer for MS6-SV, MS series • Operating medium compressed air 	<ul style="list-style-type: none"> • Special open minimal resistance silencer • For vacuum generators • Facilitates trouble-free operation of the vacuum generator • Silencer extension for extending the silencer for further noise reduction • Operating medium compressed air
→ Page/online	1659	1659	1659

Tools



	
Type	Clip fix tools AGTC
Valve function	3/2-way, closed, single solenoid
Actuation type	Mechanical
Operating pressure	2 ... 6 bar
Pneumatic connection 1	Female thread G1/4
Description	<ul style="list-style-type: none"> Pneumatic mounting device for clips of various design Material recommendation for polymer clip adapter: e.g. PBT, PE-UHMW or POM
→ Page/online	agtc

Air reservoirs



		
Type	Air reservoirs CRVZS	Air reservoirs VZS
Volume	0.1 l, 0.4 l, 0.75 l, 2 l, 5 l, 10 l, 20 l	20 l
Information on materials - air reservoirs	High-alloy stainless steel	Powder-coated steel
Conforms to	AD 2000	EN 286-1
Condensate drain connection	G3/8	G3/8
Description	<ul style="list-style-type: none"> Corrosion resistant Compensation of pressure fluctuations and as accumulators in the event of sudden air consumption Provision of large volumes of compressed air for supplying fast pulsing drives With port for condensate drain in some cases Food safe see www.festo.com/sp/crvzs > tab "Certificates" Designs to EU Pressure Equipment Directive EN 286-1 Operating media compressed air, vacuum 	<ul style="list-style-type: none"> Compensation of pressure fluctuations Provision of large volumes of compressed air for supplying fast pulsing drives With connection for condensate drain Conforms to the requirements of Directive 2014/29/EC and EN 286-1 Operating media compressed air, vacuum
→ Page/online	1665	1665

Product overview



Air guns

		
Type	Low consumption air guns LSP	Air nozzles LPZ
Exhaust air function	Metered blowing	
Pneumatic connection	Female thread G1/4	Male thread M12x1.25
Information on materials - housing	Wrought aluminium alloy, PA6-reinforced	Aluminium, brass, die-cast zinc, chrome-plated, nickel-plated
Description	<ul style="list-style-type: none"> Precise, infinitely variable, lever-operated flow metering Interchangeable nozzles Operating medium compressed air 	<ul style="list-style-type: none"> With protective air shield or silencer Targeted, strong air jet or powerful, focused air jet Low noise level Operating medium compressed air
→ Page/online	lsp	lpz

Pneumatic indicators

		
Type	Pressure indicators OH	Pneumatic terminals, end clamps, distributors LT, LTE, LTV
Design	Indicator plate with 16 pressure indicators, indicating pin with spring return, reflection principle	
Size	8, 10, 22	
Operating pressure	-1 ... 8 bar	0.1 ... 8 bar
Pneumatic connection	G1/8, barbed connector PK-3	Barbed connector PK-3, barbed connector PK-4, G1/4
Type of mounting	Front panel mounting in Ø 22.5	Can be snapped onto DIN mounting rail type NRC32
Description	<ul style="list-style-type: none"> Visual indicator Indicator colours: red, blue, yellow or green Aluminium or polymer Operating medium compressed air 	<ul style="list-style-type: none"> Pneumatic terminal for checking incoming and outgoing signals at the controller input and output Up to 15 distributor pieces with common air supply, for easy connection Brass, polymer Operating medium compressed air
→ Page/online	oh	lt

Inscription systems

		
Type	Inscription labels ASLR, BZ, HWF, IBS, KM, KMC, MH, SBS, SIEZ-LB	Inscription label holders CPV10-VI-ST, CPV14-VI-ST, CPV18-VI-ST, CPVSC1-ST, CPX-ST, IBT, MN2H-BZT, MVH-BZ, VMPPA1-ST
Type of mounting	Inscription clip is pressed onto a cable, pressed into a holder or carrier, through-hole	Plug-on, snap-in, clip-on
Width	4.5 ... 11 mm	12 mm
Height	9 ... 20 mm	2 mm
Description	<ul style="list-style-type: none"> For labelling items Can be inserted in holders or carriers on suitably equipped components 	<ul style="list-style-type: none"> Holder for inscription labels For components without pre-assembled carriers
→ Page/online	aslr	ascl



Lower the noise level of your system

- + Compact and sturdy metal designs
- + Highly efficient polymer designs

Silencers

AMTE ★

AMTC

U ★


UC, UOS

Silencers

U... ★ /AMT... ★

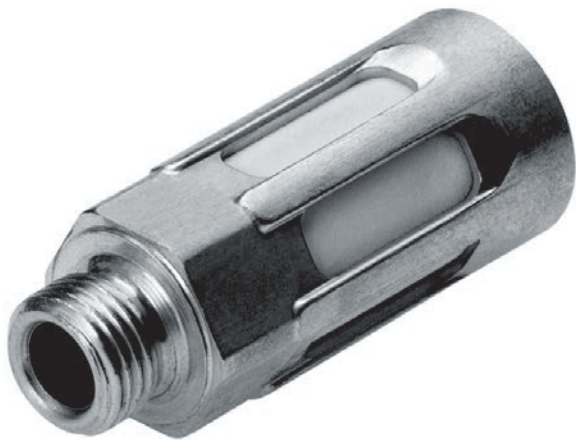
 Overview, configuration and ordering
→ www.festo.com/catalogue/u



 Additional information, support and user documentation
→ www.festo.com/sp/u



★ Quick ordering of basic designs
→ page U: 1662, AMTE: 1663



- + Small designs, polymer or metal version
- + Barbed connector or threaded connection
- + Version with push-in sleeve for push-in fitting QS
- + Mounting by spring clip

Product range overview

Type	Version	Pneumatic connection					→ Page/ online
		Male thread	Female thread	Barbed connector	Push-in sleeve	Cartridge	
U	Sintered metal	–	–	PK-3, PK-4	–	–	u-pk-*
	Polymer	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$, G1	–	–	–	–	1662
		–	G $\frac{1}{8}$	–	–	–	u
	Die-cast metal	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$, G1	–	–	–	–	1662
NPT $\frac{3}{4}$ -14, NPT1-11 $\frac{1}{2}$		–	–	–	–	u	
UC	–	–	–	–	QS-3, QS-4, QS-6, QS-8, QS-10	–	1662
		M5, M7, G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	1662
AMTC	–	–	–	–	–	10 mm	1663
AMTE	Short	M5, G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	–	–	–	–	1663
	Long	M3, M5, G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$, G1	–	–	–	–	amte
		UNF10-32, NPT $\frac{1}{8}$ -27, NPT $\frac{1}{4}$ -18, NPT $\frac{3}{8}$ -18, NPT $\frac{1}{2}$ -14	–	–	–	–	
UOS-1	For MS6-SV-D	G1	–	–	–	–	1663
UO	For VN...-T2/T3	M7, G $\frac{1}{8}$, G $\frac{1}{4}$	–	–	–	–	1664
UOM(S)	For VN...-T4/T6	G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	1664

Data sheet

Operating conditions						
Type	U/UC	AMTC	AMTE	UOS-1	UO	UOM(S)
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]			Compressed air to ISO 8573-1:2010 [-:-:-]	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [-:-:-]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			–		
Operating pressure [bar]	0 ... 10				0 ... 8	
Ambient temperature [°C]	-10 ... +70	-5 ... +60	-40 ... +80	-10 ... +50	-10 ... +60	0 ... +60

Note

Clean silencers with paraffin or benzene (not with trichloroethylene).

Materials								
Type	U			UC/AMTC	AMTE	UOS-1	UO	UOM(S)
Version	Sintered metal	Polymer	Die-cast metal					
Threaded plug	Brass	POM	Aluminium	PE	Brass	Wrought aluminium alloy, POM	PE	POM
Silencer insert	Bronze	PE	PE	PE	Bronze	PE	PE	Polyurethane foam

Silencers >

Silencers U ★ /UC

Ordering data

Silencer U

Polymer



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Flow rate with respect to atmosphere ²⁾ [l/min]	Part no.	Type	PU ³⁾
G ¹ / ₈	< 77	2050	★ 2307	U-1/8	1
			534222	U-1/8-50	50
G ¹ / ₄	< 77	3400	★ 2316	U-1/4	1
			534223	U-1/4-20	20
G ³ / ₈	< 82	5900	★ 2309	U-3/8	1
			534224	U-3/8-20	20
G ¹ / ₂	< 80	10,600	★ 2310	U-1/2	1
			534225	U-1/2-20	20
G ³ / ₄	< 83	15,000	2311	U-3/4	1
G1	< 84	19,900	2312	U-1	1

Die-cast metal



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Flow rate with respect to atmosphere ²⁾ [l/min]	Part no.	Type	PU ³⁾
G ¹ / ₈	< 74	1340	★ 6841	U-1/8-B	1
G ¹ / ₄	< 80	2440	★ 6842	U-1/4-B	1
G ³ / ₈	< 80	5800	★ 6843	U-3/8-B	1
G ¹ / ₂	< 80	7500	★ 6844	U-1/2-B	1
G ³ / ₄	< 81	10,000	6845	U-3/4-B	1
G1	< 80	17,500	151990	U-1-B	1

Silencer UC

With push-in sleeve



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Flow rate with respect to atmosphere ²⁾ [l/min]	Part no.	Type	PU ³⁾
QS-3	< 60	170	165005	UC-QS-3H	1
QS-4	< 60	350	165006	UC-QS-4H	1
QS-6	< 60	800	165007	UC-QS-6H	1
QS-8	< 60	1500	175611	UC-QS-8H	1
QS-10	< 68	3100	526475	UC-QS-10H	1

Threaded connection



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Flow rate with respect to atmosphere ²⁾ [l/min]	Part no.	Type	PU ³⁾
M5	< 60	350	165003	UC-M5	1
			534217	UC-M5-50	50
M7	< 58	800	161418	UC-M7	1
			534218	UC-M7-50	50
G ¹ / ₈	< 59	1700	161419	UC-1/8	1
			534219	UC-1/8-50	50
G ¹ / ₄	< 60	3200	165004	UC-1/4	1
			534220	UC-1/4-20	20
G ³ / ₈	< 60	5000	1707427	UC-3/8	1
			576759	UC-3/8-20	20

1) Measured at 6 bar with respect to atmosphere at a distance of 1 m.

2) Measured at p₁ = 6 bar.

3) Packaging unit quantity

Other pneumatic equipment

Ordering data

Silencer AMTC



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Flow rate with respect to atmosphere ²⁾ [l/min]	Part no.	Type	PU ³⁾
Cartridge 10 mm	< 58	800	1224460	AMTC-P-PC10	1

Silencer AMTE



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Flow rate with respect to atmosphere ²⁾ [l/min]	Part no.	Type	PU ³⁾
Short version					
M5	< 71	91	1206621	AMTE-M-H-M5	20
G1/8	< 92	615	1206622	AMTE-M-H-G18	20
G1/4	< 95	1000	1206623	AMTE-M-H-G14	20
G3/8	< 92	1545	1206624	AMTE-M-H-G38	10
G1/2	< 92	2745	1206625	AMTE-M-H-G12	10
Long version					
M3	< 55	95	1231120	AMTE-M-LH-M3	20
M5	< 72	255	★ 1205858	AMTE-M-LH-M5	20
G1/8	< 76	1735	★ 1205860	AMTE-M-LH-G18	20
G1/4	< 83	3140	★ 1205861	AMTE-M-LH-G14	20
G3/8	< 82	5430	★ 1205862	AMTE-M-LH-G38	10
G1/2	< 88	10,500	★ 1205863	AMTE-M-LH-G12	10
G3/4	< 85	12,400	1205864	AMTE-M-LH-G34	10
G1	< 88	17,235	1205865	AMTE-M-LH-G1	10

Silencer UOS-1

For soft-start/quick exhaust valve MS6-SV-D → Page 1358



Pneumatic connection	Noise level ¹⁾ [dB (A)]	Part no.	Type	PU ³⁾
For high exhaust rate				
G1	< 75	552252	UOS-1	1
For low exhaust rate				
G1	< 75	1901207	UOS-1-LF	1

- 1) Measured at 6 bar with respect to atmosphere at a distance of 1 m.
2) Measured at p1 = 6 bar.

3) Packaging unit quantity

Silencers >

Silencers UO/UOM

Ordering data

Silencer UO

For vacuum generators VN-...-T2/T3 → Page 883



Pneumatic connection	Part no.	Type	PU ¹⁾
M7	197582	UO-M7	1
G $\frac{1}{8}$	197583	UO-1/8	1
G $\frac{1}{4}$	197584	UO-1/4	1

Silencer UOM/silencer extension UOMS

For vacuum generators VN-...-T4/T6 → Page 883



Pneumatic connection	Part no.	Type	PU ¹⁾
G $\frac{1}{4}$	538432	UOM-1/4	1
G $\frac{3}{8}$	538433	UOM-3/8	1
Silencer extension			
-	538436	UOMS-1/4	1
-	538437	UOMS-3/8	1

1) Packaging unit quantity



Reduce pressure fluctuations

- + Compensation of pressure
fluctuations
- + Corrosion-resistant stainless steel
- + Designs in accordance with EU
Pressure Equipment Directive

Air reservoirs

CRVZS

Stainless steel

VZS

Air reservoirs

CRVZS



Overview, configuration and ordering

→ www.festo.com/catalogue/crvzs



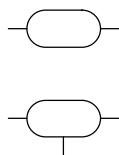
Additional information, support and user documentation

→ www.festo.com/sp/crvzs



- + Corrosion resistant
- + Volume up to 20 l
- + Optionally with condensate drain
- + Compensation of pressure fluctuations and as accumulators in the event of sudden air consumption
- + Provision of large volumes of compressed air for supplying fast pulsing drives
- + Designs in accordance with EU Pressure Equipment Directive

Data sheet



Technical data		Download CAD data → www.festo.com						
Type		CRVZS-01	CRVZS-04	CRVZS-075	CRVZS-2	CRVZS-5	CRVZS-10	CRVZS-20
Pneumatic connection		G $\frac{1}{8}$	G $\frac{1}{4}$		G $\frac{1}{2}$	G1		
Condensate drain connection		-					G $\frac{3}{8}$	
Type of mounting		Retaining clips			Via through-hole			
Mounting position		Optional			Condensate drain underneath			
Volume	[l]	0.1 ±20%	0.4 ±20%	0.75 ±20%	2 ±10%	5 ±10%	10 ±10%	20 ±10%
Length/width/height	[mm]	132/51/71	240/54/84	248/60/95	300/134/110	330/162/195	558/162/195	740/162/233

Operating conditions		CRVZS-01	CRVZS-04	CRVZS-075	CRVZS-2	CRVZS-5	CRVZS-10	CRVZS-20	
Operating medium		Compressed air to ISO 8573-1:2010 [–:–:–]							
		Nitrogen							
Operating pressure	[bar]	–0.95 ... +16							
Ambient temperature	[°C]	–10 ... +100 (observe operating range of tubing and piping)							
CE marking (see declaration of conformity) ¹⁾		-					In accordance with EU Pressure Equipment Directive		
Suitable for use in the food industry ¹⁾		See supplementary material information							

1) Additional information www.festo.com/sp → Certificates.

Materials		CRVZS-01	CRVZS-04	CRVZS-075	CRVZS-2	CRVZS-5	CRVZS-10	CRVZS-20	
Air reservoir		High-alloy stainless steel							
Retaining clips		High-alloy stainless steel				-			

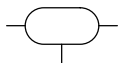
Ordering data

Pneumatic connection	Volume [l]	Part no.	Type
G $\frac{1}{8}$	0.1 ±20%	160233	CRVZS-01
G $\frac{1}{4}$	0.4 ±20%	160234	CRVZS-04
	0.75 ±20%	160235	CRVZS-075
G $\frac{1}{2}$	2 ±10%	160236	CRVZS-2
G1	5 ±10%	192159	CRVZS-5
	10 ±10%	160237	CRVZS-10
	20 ±10%	534845	CRVZS-20

Air reservoirs >

Air reservoirs VZS

Data sheet



Technical data		Download CAD data → www.festo.com
Type	VZS-20-B	
Pneumatic connection	G1	
Condensate drain connection	G $\frac{3}{8}$	
Type of mounting	Via through-hole	
Mounting position	Condensate drain underneath	
Volume [l]	20 ±10%	
Length/width/height [mm]	696/206/250	

Operating conditions	
Type	VZS-20-B
Operating medium	Compressed air to ISO 8573-1:2010 [-:-:-] Nitrogen
Operating pressure [bar]	-0.95 ... +16
Ambient temperature [°C]	-10 ... +100 (observe operating range of tubing and piping)
CE marking (see declaration of conformity) ¹⁾	In accordance with EU Directive on Simple Pressure Vessels

1) Additional information www.festo.com/sp → Certificates.

Materials	
Type	VZS-20-B
Air reservoir	Powder-coated steel

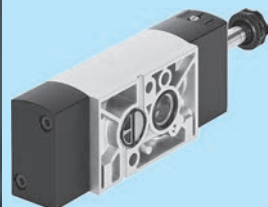
Ordering data

Pneumatic connection	Volume [l]	Part no.	Type
G1	20 ±10%	192161	VZS-20-B

18 Process automation

- + Electronic controllers and remote I/O
- + Valve modules with electrical individual, multi-pin or fieldbus connections or integrated control
- + Solenoid valves with interface as per NAMUR (VDI/VDE 3845)
- + Electropneumatic positioners for quarter turn actuators
- + Pneumatic linear actuators with integrated positioner
- + Pneumatic quarter turn actuators
- + Ball valves with pneumatic actuator
- + Pneumatically or solenoid actuated media valves





VSNC★

Solenoid valves, NAMUR

- + Certified in accordance with established explosion standards
- + Sturdy and capable of high flow rates

→ page 1672

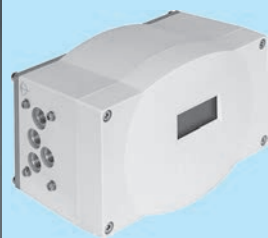


SRBC★

Sensor boxes

- + Weatherproof aluminium housing
- + Cost-optimised, high-performance and reliable series

→ page 1673



CMSX★

Positioners

- + Very energy-efficient: no compressed air consumption at standstill
- + Ideally suited to dispensing applications

→ page 1674



DFPD★

Quarter turn actuators

- + Flange hole pattern to ISO 5211
- + Connection pattern to NAMUR for solenoid valves and sensor boxes to VDI/VDE 3845

→ page 1675



VZXA

Angle seat valves

- + Highly flexible, extremely high flow rates
- + Hygienic design, insensitive to dirt

→ page 1677

Contents

Product overview 1672

Solenoid valves VSNC 1672

Quarter turn actuators DFPD 1675

NEW Additional versions

Ball valves VZBM 1675

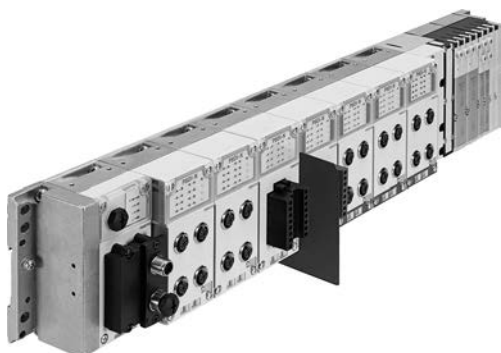
NEW Additional versions

Pinch valves VZQA 1679

NEW Additional versions

Product overview

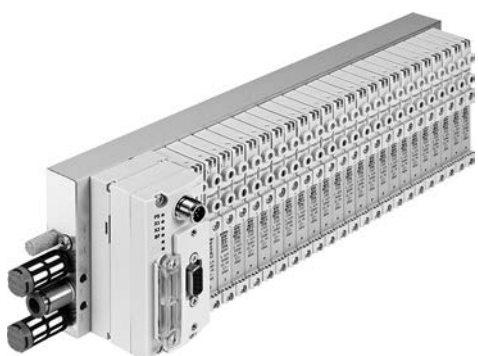
Control technology and remote I/O



- Electronic controllers and remote I/Os including electrical peripherals for standard and potentially explosives atmospheres

→ www.festo.com/pa/control

Valve terminals



- Valve modules with electrical multi-pin, individual or fieldbus connections or integrated control, with or without electrical inputs and outputs

→ www.festo.com/pa/valveterminals

Pilot valves



Solenoid valves
VSNC



Solenoid valves, to NAMUR
(VDI/VDE 3845)
NVF3






Solenoid valves
VOFC





Solenoid valves
VOFD

Type	Solenoid valves VSNC	Solenoid valves, to NAMUR (VDI/VDE 3845) NVF3	Solenoid valves VOFC	Solenoid valves VOFD
Valve function	5/2-way double solenoid, 5/2- or 3/2-way convertible, 5/3-way pressurised, 5/3-way exhausted, 5/3-way closed	5/2-way or 3/2-way single solenoid	3/2-way closed, single solenoid, 5/2-way double solenoid, 5/2-way single solenoid	3/2-way, closed, single solenoid, semi-automatic, 3/2-way, closed, single solenoid
Operating pressure	1.5 ... 10 bar	2 ... 10 bar	0 ... 8 bar	0 ... 12 bar
Ambient temperature	-20 ... 60 °C	-5 ... 40 °C	-25 ... 60 °C	-50 ... 60 °C
Pneumatic connection 1	G1/4, NPT1/4-18, QS-5/16, QS-6, QS-8, QS-10, QS-1/4, QS-3/8	G1/4	G1/2, G1/4, NPT1/4-18, connection pattern to NAMUR	G1/4, M5, NPT1/4-18, connection pattern to NAMUR
Standard nominal flow rate	800 ... 1350 l/min	900 l/min	766 ... 2686 l/min	52 ... 1900 l/min
Explosion prevention and protection	II 2G, II 2D, for zone 1, 2, 21, 22, Ex t IIIC T80°C Db, EPL Db (IEC-EX), Ex ia IIC T6 Ga, EPL Ga (IEC-EX)	II 2G, II 2D, EPL Db (RU), EPL Dc (RU), EPL Gb (RU), c T6, EPL Gc (RU), c 40°C, c T70°C	II 2G, II 2D, for zone 1, 2, 21, 22, Ex ia IIIC T85°C, T125°C Db, EPL Db (IEC-EX), EPL Db (KR), Ex ia IIC T6, T5 Gb, EPL Gb (IEC-EX), EPL Gb (KR)	For zone 1, 2, 21, 22
Description	<ul style="list-style-type: none"> • NAMUR interface • Rotatable seal for 3/2- or 5/2-way valve • Wide choice of EX solenoid systems • Sturdy and powerful • Extended temperature range • Outstanding value for money • All solenoid coils can be used on an armature tube • The variant VSNC...FN achieves increased energy efficiency thanks to reduced power consumption 	<ul style="list-style-type: none"> • Connection pattern as per NAMUR for solenoid valves to VDI/VDE 3845 • Electrically actuated, piloted • Mechanical spring return • Explosion protection to ATEX 	<ul style="list-style-type: none"> • Suitable for process automation, for applications in the chemical and petrochemical industries • Suitable for outdoor use under harsh ambient conditions • Especially suitable for quarter turn actuators thanks to flange pattern to NAMUR • Valve can switch between internal and external pilot air • Variants with TÜV approval up to SIL3 to IEC 61508 	<ul style="list-style-type: none"> • Suitable for process automation, for applications in chemical and petrochemical plants • Suitable for outdoor use under harsh ambient conditions • Especially suitable for quarter turn actuators thanks to flange pattern to NAMUR • Variants with TÜV approval up to SIL4 to IEC 61508
→ Page/online	967	nvf3	vofc	vofd

Sensor boxes

			
Type	Sensor boxes SRBC	★ Sensor boxes SRBG	Sensor boxes SRBE
Information on materials – housing	Die-cast aluminium	PBT	Die-cast aluminium
Operating voltage range AC	0 ... 250 V		0 ... 250 V
Operating voltage range DC	0 ... 175 V	6 ... 60 V	0 ... 60 V
Measuring principle	Inductive, magnetic reed, mechanical/electrical, for proximity sensor	Inductive	Inductive, magnetic reed, mechanical/electrical, for proximity sensor
Switching element function	N/C contact, N/O contact, toggle switch, single-pole	N/C contact, N/O contact, N/C contact or N/O contact switchable	N/C contact, N/O contact, toggle switch, single-pole, double-pole
Description	<ul style="list-style-type: none"> Pre-assembled mounting adapter for ease of installation Trip cams can be set easily without additional tools Sturdy, corrosion-resistant design, ideal for use in harsh operating conditions Clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator 	<ul style="list-style-type: none"> Compact housing with M12 plug connection Direct mounting on quarter turn actuators to VDI/VDE 3845 AS-Interface® version with extended addressing Intrinsically safe version to ATEX and SIL 2 to IEC 61508 	<ul style="list-style-type: none"> Trip cams can be set easily without additional tools Sturdy, corrosion-resistant design, ideal for use in harsh operating conditions Clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator
→ Page/online	srbc	srbg	srbee

Sensor boxes

		
Type	Sensor boxes SRAP	Limit switch attachments DAPZ
Information on materials – housing	Wrought aluminium alloy	
Operating voltage range AC		4 ... 250 V
Operating voltage range DC	15 ... 30 V	4 ... 250 V
Measuring principle	Magnetic Hall	Inductive, mechanical/electrical
Switching element function		N/C contact, N/O contact, changeover switch
Description	<ul style="list-style-type: none"> Based on standard VDI/VDE 3845 (NAMUR) Analogue For monitoring the position of quarter turn actuators Sensors based on 2D Hall technology 	<ul style="list-style-type: none"> Round design Drive interface to standard VDI/VDE 3845 (NAMUR) With display
→ Page/online	srap	dapz

Product overview

Positioners



Positioners
CMSX



Type	Positioners CMSX
Standard nominal flow rate	50 ... 130 l/min
Ambient temperature	-5 ... 60 °C
Setpoint value	0 - 20 mA, 4 - 20 mA, 0 - 10 V
Operating voltage range DC	21.6 ... 26.4 V
Operating pressure	3 ... 8 bar
Safety information	Adjustable, opening, closing, holding
Degree of protection	IP65
Type of mounting	On flange ISO 5211, via accessories
Information on materials – housing	PC
Description	<ul style="list-style-type: none"> • Digital electropneumatic positioner for single-acting or double-acting pneumatic quarter turn actuators and double-acting pneumatic linear actuators • No air consumption in the controlled state
→ Page/online	cmsx

Linear actuators



Linear actuators with displacement encoder
DFPI





Linear actuators with displacement encoder
DFPI-NB3P







Linear actuators Copac
DLP

Type	Linear actuators with displacement encoder DFPI	Linear actuators with displacement encoder DFPI-NB3P	Linear actuators Copac DLP
Design	Piston rod, cylinder barrel	Piston rod, cylinder barrel	Piston rod
Mode of operation	Double-acting	Double-acting	Double-acting
Size of valve actuator	100, 125, 160, 200, 250, 320	100, 125, 160, 200, 250, 320	80, 100, 125, 160, 200, 250, 320
Stroke	40 ... 990 mm	40 ... 990 mm	40 ... 600 mm
Operating pressure	3 ... 8 bar	3 ... 8 bar	2 ... 8 bar
Ambient temperature	-20 ... 60 °C	-20 ... 80 °C	-20 ... 80 °C
Description	<ul style="list-style-type: none"> • Mounting interfaces for process valves to DIN 3358 • Integrated air supply • Optionally with integrated displacement encoder or fully integrated positioner • IP65, IP67, IP69K, NEMA4 • ATEX certification 	<ul style="list-style-type: none"> • Mounting interfaces to ISO 15552 • Sturdy tie rod design • Optionally with integrated displacement encoder or fully integrated positioner • IP65, IP67, IP69K, NEMA4 • ATEX certification 	<ul style="list-style-type: none"> • Mounting interfaces for process valves to DIN 3358 • Connection pattern as per NAMUR to VDI/VDE 3845 • Integrated air supply • ATEX certification
→ Page/online	dfpi	dfpi	dtp

Quarter turn actuators





		
Type	Quarter turn actuators DFPD	Quarter turn actuators DAPS
Design	Rack and pinion	Scotch yoke system
Mode of operation	Double-acting, single-acting	Double-acting, single-acting
Size of valve actuator	10, 20, 40, 80, 120, 160, 240, 300, 480, 700, 900, 1200, 2300	0008, 0015, 0030, 0053, 0060, 0090, 0106, 0120, 0180, 0240, 0360, 0480, 0720, 0960, 1440, 1920, 2880, 3840, 4000, 5760, 8000
Flange hole pattern	F03, F04, F05, F14, F0507, F0710, F1012, F1216	F03, F04, F05, F07, F10, F12, F14, F16, F25
Operating pressure	2 ... 8 bar	1 ... 8.4 bar
Ambient temperature	-50 ... 150 °C	-50 ... 150 °C
NEW	<ul style="list-style-type: none"> Additional versions 	
Description	<ul style="list-style-type: none"> Uniform torque characteristic across the entire rotation angle range of 90° with double-acting version Process valve connection to ISO 5211 Mounting hole pattern to VDI/VDE 3845 Sturdy, non-slip and easy-to-clean aluminium housing Long service life, low wear Increased corrosion protection 	<ul style="list-style-type: none"> High breakaway torques Approved in accordance with Directive 2014/34/EU (ATEX) Flange hole pattern to ISO 5211 Mounting hole pattern to VDI/VDE 3845 Available with handwheel as a manual emergency override Corrosion-resistant variant made from stainless steel
→ Page/online	dfpd	daps

Ball valves and ball valve units




				
Type	Ball valves VZBD	Ball valves VZBE	Ball valves VZBF	Ball valves VZBM
Design	2-way ball valve	2-way ball valve, 3-way ball valve with L-shaped hole or T-shaped hole	2-way ball valve	2-way ball valve, 3-way ball valve, L-shaped hole, quarter turn actuator, T-shaped hole
Actuation type	Mechanical	Mechanical	Mechanical	Mechanical, pneumatic
Nominal width DN	15, 20, 25, 32, 40, 50, 65, 80, 100	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 65, 80, 100, 150, 200	8, 10, 15, 20, 25, 32, 40, 50
Process valve connection				
Flow rate Kv	3.5 ... 436.3 m³/h	5 ... 435.2 m³/h	8.5 ... 2078.3 m³/h	5.9 ... 243 m³/h
Temperature of medium	-20 ... +200 °C	-20 ... +200 °C	-20 ... +200 °C	-20 ... +130 °C
Process valve nominal pressure	16	63	20	25, 40, 50
NEW				<ul style="list-style-type: none"> Additional versions
Description	<ul style="list-style-type: none"> Electropolished surfaces SFV4 PFTE seal with little dead space The powerful ball valve for the pharmaceutical and cosmetic industries FDA-compliant seal to FDA 21 CFR 177.1550 	<ul style="list-style-type: none"> 2-way manual, optionally with lockable hand lever 3-way, L-shaped or T-shaped hole, optionally with lockable hand lever Stainless steel design Pipe thread to ASME B1.20.1 	<ul style="list-style-type: none"> Flanged connections to ANSI B 16.5 class 150 Static dissipation guaranteed API 607 fire safe approval Easy to maintain 	<ul style="list-style-type: none"> Brass design Pipe thread to EN 10226-1
→ Page/online	vzbd	vzbe	vzbf	vzbm

Product overview



Ball valves and ball valve units

Type	 Ball valves VAPB	 Ball valves VZBC	 Ball valve actuator units VZBC	 Ball valves VZBA
Design	2-way ball valve	2-way ball valve	2-way ball valve, quarter turn actuator	2-way ball valve, 3-way ball valve, L-shaped hole, T-shaped hole
Actuation type	Mechanical	Mechanical	Pneumatic	Mechanical
Nominal width DN	15, 20, 25, 32, 40, 50, 63	15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 65, 80, 100	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100
Process valve connection	Rp1, Rp1 1/2, Rp1 1/4, Rp1/2, Rp1/4, Rp2, Rp2 1/2, Rp3/4, Rp3/8	Ring housing with threaded flange	Ring housing with threaded flange	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2, Rp3, Rp4, weld-on ends/weld-on ends
Flow rate Kv	5.9 ... 535 m³/h	19.4 ... 1414 m³/h	19.4 ... 1414 m³/h	7 ... 1414 m³/h
Temperature of medium	-20 ... 150 °C	-10 ... 200 °C	-10 ... 200 °C	-10 ... 200 °C
Process valve nominal pressure	25, 40	16, 40	16, 40	63
Description	<ul style="list-style-type: none"> • Automatable 2-way ball valve • Brass design • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to EN 10226-1 • Mounting flange to ISO 5211 	<ul style="list-style-type: none"> • Automatable 2-way ball valve with compact flange • Stainless steel design • Short installed length • Blow-out proof shaft • Manual operation possible using hand lever • Flange to DIN 1092-1 • Mounting flange according to ISO 5211 • Use in zone 1, 21, 2, 22 	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting or single-acting quarter turn actuator • Stainless steel ball valve in compact design • Connection pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions • Use in zone 1, 21, 2, 22 	<ul style="list-style-type: none"> • Automatable 2-way or 3-way ball valve • Stainless steel design • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to EN 10226-1 • Mounting flange to ISO 5211 • Use in zone 1, 21, 2, 22
→ Page/online	vapb	vzbc	vzbc	vzba


Ball valves and ball valve units

Type	 Ball valve actuator units VZBA	 Ball valve actuator units VZPR	 Ball valves QH
Design	2-way ball valve, 3-way ball valve, L-shaped hole, quarter turn actuator, T-shaped hole	2-way ball valve, quarter turn actuator	Ball valve
Actuation type	Pneumatic	Pneumatic, electric	Manual
Nominal width	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 63	10, 15, 20, 25, 40
Process valve connection	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2, Rp3, Rp4, welded ends/welded ends	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2	
Flow rate Kv	7 ... 1414 m³/h	5.9 ... 535 m³/h	
Temperature of medium	-10 ... 200 °C	-20 ... 150 °C	
Process valve nominal pressure			
Description	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting or single-acting quarter turn actuator • Stainless steel ball valve • Connection pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions • Use in zone 1, 21, 2, 22 	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting quarter turn actuator • Brass ball valve • Connection pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions 	<ul style="list-style-type: none"> • Shut-off valve, manually actuated • In-line installation • Female thread at both ends • With hand lever • Pipe thread to ISO 2281
→ Page/online	vzba	vzpr	1021


Angle seat valves

			
Type	Angle seat valves VZXF	★	Angle seat valves VZXA
Actuator size			46 mm, 75 mm, 90 mm
Design	Poppet valve with piston drive		Poppet valve with piston drive, poppet valve with diaphragm actuator
Valve function	2/2-way, closed, monostable		2/2-way
Control function			Closed by reduced spring force, NC, double-acting, opened by spring force, NO, closed by spring force, NC
Actuation type	Pneumatic		Pneumatic
Nominal width DN	15, 20, 25, 32, 40, 50		1/2" ... 2", DN13 ... DN50
Nominal width	12 ... 45 mm		
Process valve connection	G1/2, G3/4, G1, G11/4, G11/2, G2		
Flow rate Kv	3.3 ... 43 m³/h		6 ... 68.5 m³/h
Medium pressure	-0.9 ... 40 bar		0 ... 30 bar
Temperature of medium	-40 ... 200 °C		-10 ... +180 °C
Process valve nominal pressure	16, 40		
Description	<ul style="list-style-type: none"> Sturdy design Stainless steel and gunmetal process valves with stainless steel, brass or aluminium actuators Safety position "closing" Different actuator sizes and housing materials Selection of different seat and shaft seals Flow direction is freely selectable For liquids, gases and other easily contaminated media Easy-to-clean design 		<ul style="list-style-type: none"> Highly flexible, extremely high flow rates Long service life Modular design Hygienic design, insensitive to dirt Quick and easy maintenance Simple and sturdy: ideally suited for virtually all media up to a viscosity of 600 mm²/s High chemical and thermal resistance
→ Page/online	vzxf		vzxa

Software tool







<p>Configurator</p> 	<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
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Butterfly valves




	
Type	Butterfly valves KVZA
Description	<ul style="list-style-type: none"> For versatile use in a wide range of industry segments Butterfly valve with hand lever, with quarter turn actuator or with quarter turn actuator and positioner Butterfly valve type wafer or lug Nominal width DN25 ... DN200 Connection standard DIN EN 1092-1 or ANSI CLASS 150
→ Page/online	kvza

Product overview

Solenoid-actuated media valves



Type	 Solenoid valves VZWD 	 Solenoid valves VZWF 	 Solenoid valves VZWM-L 
Design	Directly actuated poppet valve	Diaphragm valve, force pilot operated	Poppet valve with diaphragm seal
Actuation type	Electric	Electric	Electric
Nominal width	1 ... 6 mm	13.5 ... 50 mm	13 ... 50 mm
Process valve connection	G1/8, G1/4, NPT1/8, NPT1/4	G1/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2 NPT1/4, NPT3/8, NPT1/2, NPT3/4, NPT1, NPT1 1/4, NPT1 1/2, NPT2	G1/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2
Flow rate Kv	0.06 ... 430 l/min	1.8 ... 29900 l/min	1.6 ... 31000 l/min
Medium pressure	0 ... 90 bar	0 ... 10 bar	0.5 ... 10 bar
Temperature of medium	-10 ... 80 °C	-10 ... 80 °C	-10 ... 60 °C
Description	<ul style="list-style-type: none"> Extensive pressure range Directly actuated poppet valve No pressure difference required Can also be used in vacuum technology 	<ul style="list-style-type: none"> High flow rates Large nominal widths with relatively small solenoids No pressure difference required Can also be used in vacuum technology 	<ul style="list-style-type: none"> Brass or stainless steel casting design Electrical connection via solenoid armature tube Wide range of coils Coil can be ordered separately
→ Page/online	vzwd	vzwf	vzwm

Solenoid-actuated media valves

Type	 Solenoid valves MN1H-2	 Solenoid valves VZWP	 Reverse jet pulse valves VZWE-E, VZWE-F
Design	Diaphragm valve	Piloted piston poppet valve	Angled version, straight version with flange, diaphragm valve
Actuation type	Electric	Electric	Electric
Nominal width	13 ... 40 mm	13 ... 25 mm	20 ... 76 mm
Process valve connection	G1/4, G3/8, G1/2, G3/4, G1, G1 1/2	G1/4, G3/8, G1/2, G3/4, G1 NPT1/4, NPT3/8, NPT1/2, NPT3/4, NPT1	Flange diameter 60, 75, 89, G1, G1 1/2, G2, G2 1/2, G3/4
Flow rate Kv	2000 ... 30500 l/min	1.5 ... 12250 l/min	15 ... 210 m ³ /h
Medium pressure	0.5 ... 10 bar	0.5 ... 40 bar	0.35 ... 8 bar
Temperature of medium	-10 ... 60 °C	-10 ... 80 °C	-20 ... 60 °C
Description	<ul style="list-style-type: none"> Pilot operated diaphragm valve Brass design Can only be used for gaseous media Adjustable closing cushioning, in-line mounting or through-hole Operating voltage 24 V DC, 110/230 V AC (50 ... 60 Hz) 	<ul style="list-style-type: none"> For all applications with a differential pressure of min. 0.5 bar For high pressures and high flow rates with relatively small solenoids For controlling gaseous and liquid media in open circuits 	<ul style="list-style-type: none"> High flow rates For mechanically cleaning filters and dust filter systems Fast opening and closing times Sturdy pilot system
→ Page/online	mn1h-2	vzwp	vzwe

Product overview

Pneumatically actuated media valves

		
Type	Pinch valves VZQA	Pneumatic valves VLX
Design	Pneumatically actuated pinch valve	Diaphragm valve
Actuation type	Pneumatic	Pneumatic
Nominal size DN	6, 15, 25	
Nominal width		13 ... 25 mm
Process valve connection	G1/4, G1/2, G1, NPT1/4, NPT1/2, clamp to ASME-BPE type A/type B, clamp to DIN 32676 series A	G1/4, G3/8, G1/2, G3/4, G1
Flow rate Kv	0.7 ... 18 m ³ /h	
Standard nominal flow rate		2400 ... 14000 l/min
Medium pressure	0 ... 6 bar	1 ... 10 bar
Temperature of medium	-5 ... 150 °C	-10 ... 80 °C
NEW	• Additional versions	
Description	<ul style="list-style-type: none"> • Modular design • Quick and easy replacement of the diaphragm • Selection of different materials for housing and connector caps • Different connection cap designs (G and NPT thread), clamp ferrule to DIN 32676 and ASME-BPE • For critical, abrasive and viscous media • Up to 2 million switching cycles • FDA-compliant materials • Easy-to-clean design • Flow direction is freely selectable 	<ul style="list-style-type: none"> • Poppet valve • Indirectly actuated • Brass design • In-line mounting
→ Page/online	vzqa	vlx

Compressed air preparation



- Service unit combinations and individual units for compressed air preparation in two series: MS and D series (in metal or polymer)

→ www.festo.com/pa/airprep

Pneumatic connection technology

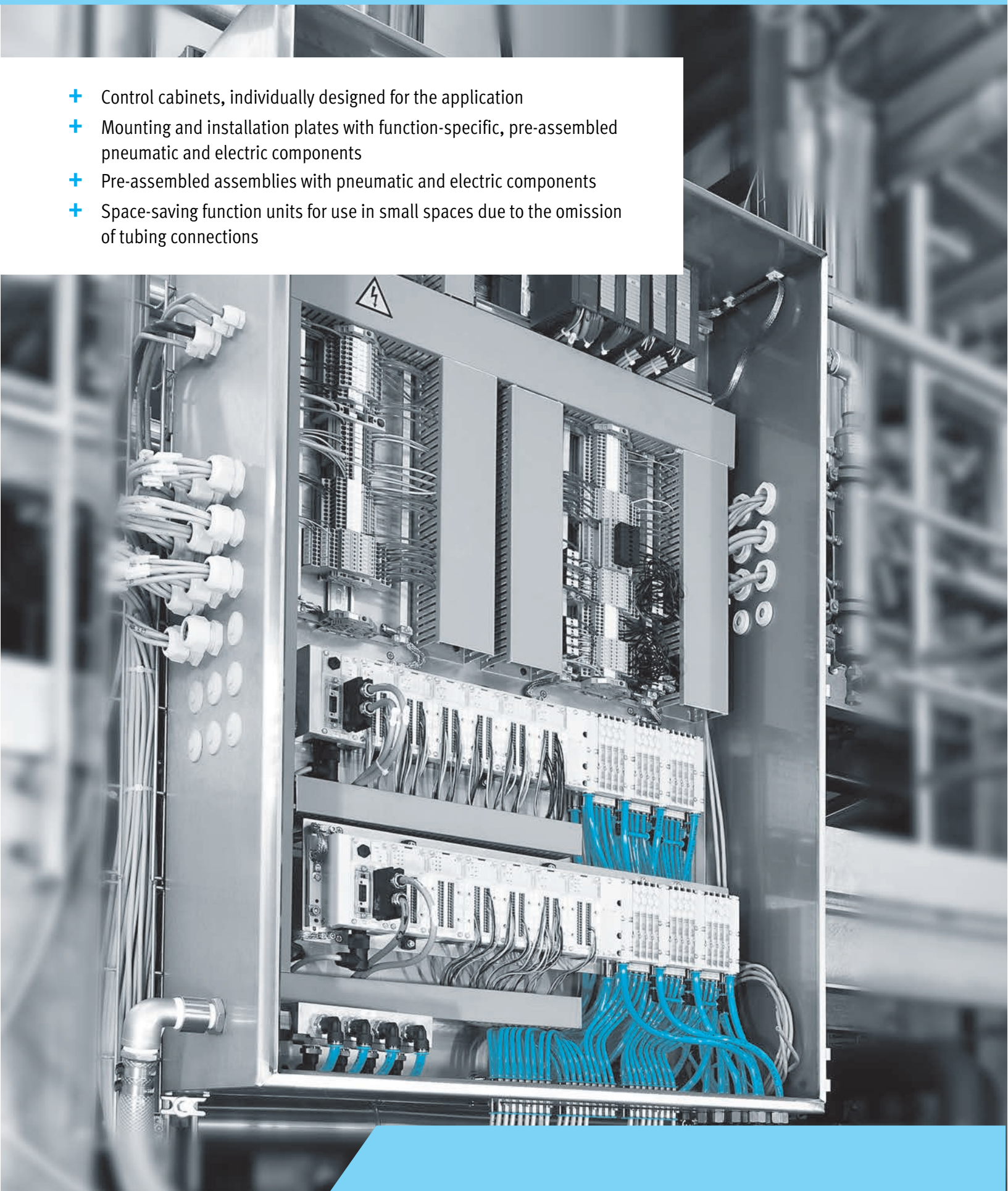


- Pipes
- Tubing
- Plug connectors
- Couplings
- Distributors
- Protective tubing systems
- Accessories

→ www.festo.com/pa/fittings

19 Ready-to-install solutions

- + Control cabinets, individually designed for the application
- + Mounting and installation plates with function-specific, pre-assembled pneumatic and electric components
- + Pre-assembled assemblies with pneumatic and electric components
- + Space-saving function units for use in small spaces due to the omission of tubing connections





Control cabinets

- + Factory automation
- + Process automation
- + Control of handling systems

→ page 1686

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Cartridge solutions 1694

Sheet-metal structures and special housings 1696

Function blocks 1698

Profile solutions 1700


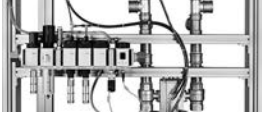

Product overview

Control cabinets

Type	Factory automation	Process automation	Control cabinets for handling systems
Technical data	<ul style="list-style-type: none"> • Simple to complex control cabinet designs • Application-specific combination of components • Fully tested, with test certificate • Ready to install • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions • Different bus technologies 	<ul style="list-style-type: none"> • Simple to complex control cabinet designs • Application-specific combination of components • Different operating voltages possible • Fully tested, with test certificate • Ready to install • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions • Wide range of bus technologies • Compliance with special cleanliness and hygiene requirements • Special materials • Protected against the ingress of liquids and foreign matter <ul style="list-style-type: none"> • Heating or cooling elements • Intrinsically safe valve terminal technology • Hot swap inspection window 	<ul style="list-style-type: none"> • Simple to complex control cabinet designs • Control of motion sequences with up to 6 axes • Application-specific combination of components • Use of the latest innovations and technologies • Fully tested, with test certificate • Ready to install • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions • Wide range of bus technologies • Function modules for motion applications • Host modules for easy connection to the customer's control environment
Description	<ul style="list-style-type: none"> • Made-to-measure control cabinets • Pneumatic, electric, combined • Individually configured • Adapted to requirements in industrial automation • Design and sizing included 	<ul style="list-style-type: none"> • Made-to-measure control cabinets • Pneumatic, electric, combined • Individually configured • Adapted to requirements in process automation • Design and sizing included 	<ul style="list-style-type: none"> • Made-to-measure control cabinets for handling systems • Software package for third-party devices included • Individually configurable • Adapted to requirements for handling solutions → Chapter 6 "Handling systems", page 830
→ Page/online	1686	1688	1689



Mounting and installation plates

	 Mounting plates	 Hall installation plates (HIP) for body assembly	 Robot installation plates (RIP) for body assembly
Technical data	<ul style="list-style-type: none"> • Customised support plate shape • Support plate in different materials • Application-specific combination of components • Fully assembled, connected and wired • Defined interfaces • Ready to install • Fully tested, with test certificate • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions 	<ul style="list-style-type: none"> • Media supply for compressed air and cooling water for welding cells • Made to measure: profile as support element, design perfectly adapted to the installation space, for installation within safety barriers • Labelling: customised labelling for safe operation • Fast installation: thanks to assembly according to the customer's specification • Medium water: fittings for liquid media 	<ul style="list-style-type: none"> • Media supply for compressed air and cooling water for welding robots • Protection against ambient conditions through the use of special materials, such as hoses and fittings resistant to welding spatter • Protection against environmental influences to prevent damage to the installation • Made to measure: profile as support element, design perfectly adapted to the installation space • Cooling water suction cylinder for drawing in cooling water when changing welding caps • Water flow sensor: measures flow rate, volume and cooling water temperature – to monitor the welding process • Easy to maintain thanks to removable fittings
Description	<ul style="list-style-type: none"> • Machine-specific pre-assembly of pneumatic and electric components on support plate • Tubing and wiring included • Defined interfaces for simple installation directly in the system 	<ul style="list-style-type: none"> • Controls and monitors the compressed air and cooling water supply for whole welding cells 	<ul style="list-style-type: none"> • Controls and monitors the compressed air and cooling water supply for individual welding guns
→ Page/online	1690	www.festo.com/sp/hip	www.festo.com/sp/rip

Product overview

Assemblies

Type	Assemblies	Cartridge solutions	Sheet-metal structures and special housings
Technical data	<ul style="list-style-type: none"> • Combination of a wide range of pneumatic and/or electric components into one unit • Application-specific combination of components • Accessories mounted on the sub-assemblies • Use of the latest innovations and technologies • Ready to install • Fully tested, with test certificate • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions 	<ul style="list-style-type: none"> • Space saving thanks to extremely compact design • Pneumatic functions integrated in a single compact housing • Housing available in different materials • No tubing required • Minimal cabling required • Significant design freedom • Flexible integration options on and within the machine • Sturdy design • Fully tested • Ready to install • Complete documentation 	<ul style="list-style-type: none"> • Sheet-metal structures <ul style="list-style-type: none"> – Customised shape and size – Reduced weight and number of assembly parts • Special housing <ul style="list-style-type: none"> – Customised shape – Customised dimensions – Different materials – Compact, space-saving format – Protection against environmental influences and unauthorised access • In combination <ul style="list-style-type: none"> – Alternative to conventional control cabinets – Variable integration options on and within the machine – Short tubing and cable lengths – Attractive design
Description	<ul style="list-style-type: none"> • Pneumatic and electric components pre-assembled to create a function unit • Can be combined from around 30,000 catalogue components • Connections included • For integration in machines 	<ul style="list-style-type: none"> • Integration of various pneumatic functions in one component • No need for individual housings • Ideal for applications that require a highly compact design 	<ul style="list-style-type: none"> • Reduced weight thanks to optimal use of materials with sheet-metal structures • Protection against environmental influences and unauthorised access in the special housing • Ideally combined as a control cabinet directly in the system
→ Page/online	1692	1694	1696

Assemblies

Type	Function blocks	Profile solutions
Technical data	<ul style="list-style-type: none"> • No tubing required thanks to drilled ducts • Housing available in different materials • Customised design of the pneumatic interfaces for the system • Ideal for a small number of components and variable connection options • Extremely economical, even for small quantities 	<ul style="list-style-type: none"> • Profiles in customised cross sections and lengths • Integrated ducts for straight-line routing of the compressed air • Common air supply for multiple valves or valve terminals via a single duct • Combination of exhaust air and supply air without tubing, even over long distances • Supply of compressed air at different locations • No tubing required • Significantly reduced cabling • Modular structure easy to achieve • Optional: profile as mechanical mounting element for other components or as a supporting part of the machine frame
Description	<ul style="list-style-type: none"> • Compressed air supply for pneumatic components via drilled ducts • Ideal for small number of pneumatic components and variable connection options • Compact and easy to service 	<ul style="list-style-type: none"> • Extruded profiles in combination with valves as a valve terminal • For the distribution of compressed air in the machine concept • Customised profile cross sections available
→ Page/online	1698	1700

Ready-to-install solutions – the benefits to you at a glance

Modernise

The benefit to you:

- State-of-the-art technology
- Easy to service and clear layout
- Energy efficiency as standard

Our service:

- Compressed air cost calculator
- Energy Saving Services

Make contact

The benefit to you:

- Systematic support right from the start
- Expert know-how included

Our service:

- Personal advice in 59 countries
- Pneumatic, servo-pneumatic, electric and mechatronic technologies
- Application- and industry-specific

Operate

The benefit to you:

- Complete documentation, quickly integrated into overall documentation

Our service:

- Detailed system documentation in the end customers' national language
 - Assembly drawing
 - Parts list
 - Circuit diagrams
 - Operating instructions for components

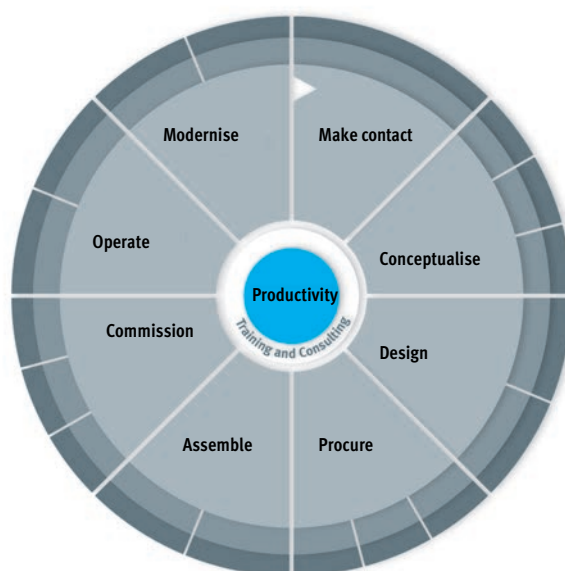
Conceptualise

The benefit to you:

- Consideration of application-specific requirements
- Detailed quotation with engineering concept
- Specific automation expertise for different industry segments

Our service:

- Quotation includes
 - 2D/3D concept
 - Detailed parts list
 - Functional sequence



Commission

The benefit to you:

- Minimal assembly and installation effort with Festo plug and work
 - Straightforward assembly principles
 - Defined interfaces
 - Teach-in or parameterisation functions

Our service:

- Commissioning service

Design

The benefit to you:

- No engineering effort required
- Individually tailored solutions based on application-specific requirements
- Solution based on the latest technological standards

Our service:

- Full engineering
 - Technology and component selection
 - Sizing of solutions
 - CAD design (2D/3D)
 - Circuit diagram creation
 - Simulation
 - Programming

Assemble

The benefit to you:

- Reduced manufacturing involvement as no in-house machining or pre-assembly is required
- Maximum reliability with regard to function and quality
- Expertise on standards and directives included

Our service:

- Application-specific machining
- Assembly of all individual components
- Installation of third-party components possible
- Complete tubing and wiring
- Full functional and leak testing
- Test certificate
- Certifications, e.g. EN60204-1, ATEX, UL-508A

Procure

The benefit to you:

- Reduced costs thanks to single sourcing
- Easy order processing and minimal logistical effort with just one order item for the entire solution
- One delivery date

Our service:

- Procurement of all components and foreign parts
- Delivery of a ready-to-install system

Factory automation



- Control cabinets made to measure
- Individually configured
- Adapted to requirements in industrial automation
- Design and sizing included

Festo made-to-measure control cabinets provide protection for all pneumatic, electric and electronic system components.

The control cabinets are individually designed and built for the application, taking into account specific industry requirements such as those in the food or automotive industries, for example.

The design is also influenced by local conditions such as weather and climate. Along with Festo components, third-party components are integrated into the control cabinets as required.

The operationally tested system is delivered ready to install – directly to where it will be used, if requested.

Technical data

- Simple to complex control cabinet designs
 - Pneumatic
 - Electric
 - Combined
- Application-specific combination of components
- Use of the latest innovations and technologies
- Fully tested, with test certificate
- Ready to install
- Complete documentation

- Design conforms to:
 - EN 60204-1
 - ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electropneumatic)
 - UL-508A
- Implementation of safety functions

- Different bus technologies:
 - PROFIBUS
 - PROFIBUS DP
 - PROFIBUS PA
 - PROFIBUS FMS
 - PROFINET
 - INTERBUS
 - EtherCAT
 - CANopen
 - MODBUS
 - DeviceNet
 - EtherNet/IP
 - CC-Link
 - AS-Interface

Ready-to-install – the benefits to you

Ordering

Just one order number for the entire control cabinet.

Engineering

Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly

The entire production and assembly process is taken care of for you.

Checking and testing

The control cabinet is fully tested.

Documentation

You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation:

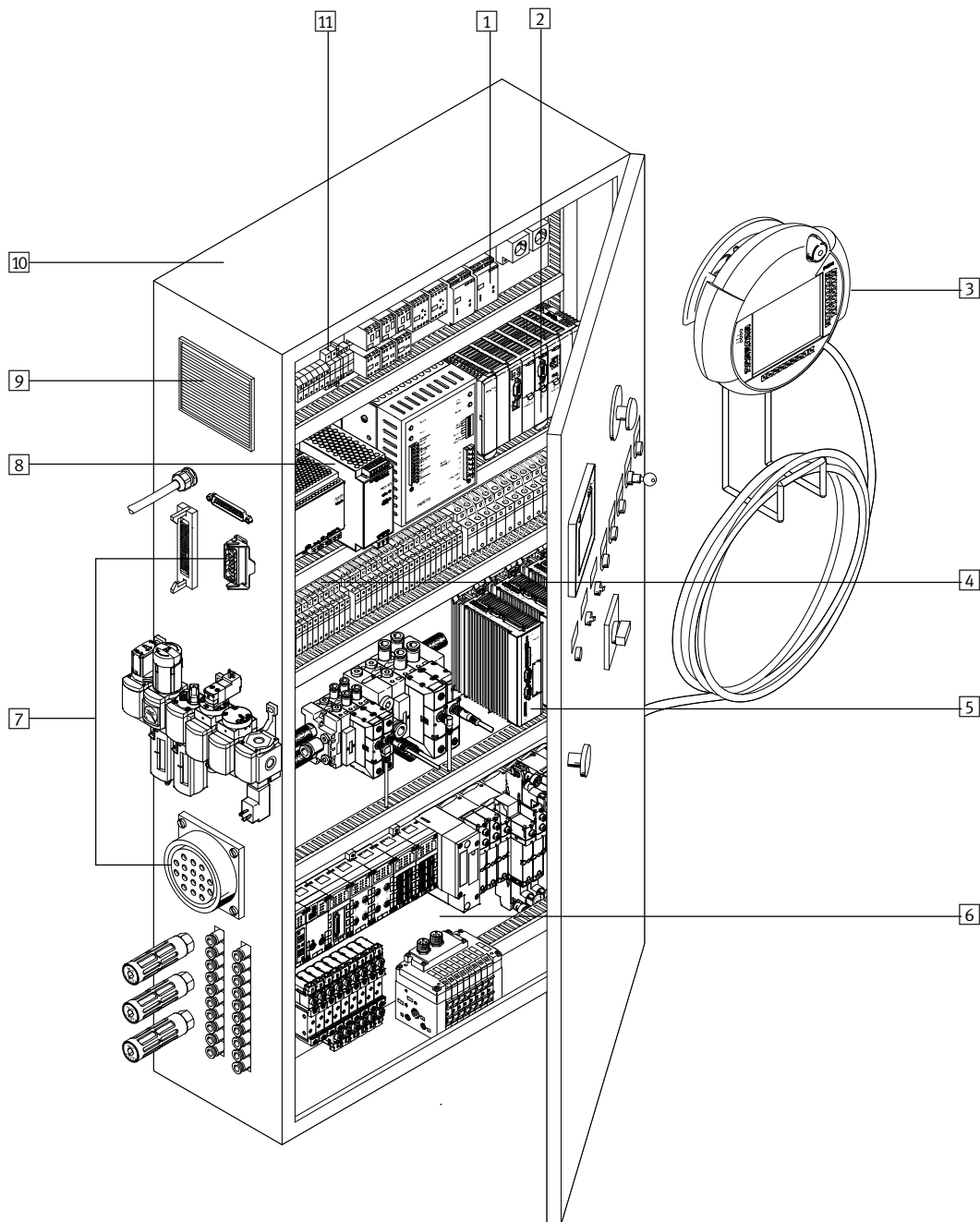
- Assembly drawing
- Parts list
- Circuit diagrams (EPLAN/Promis)
- Operating instructions for components

Interested in control cabinets for factory automation?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com, where you will

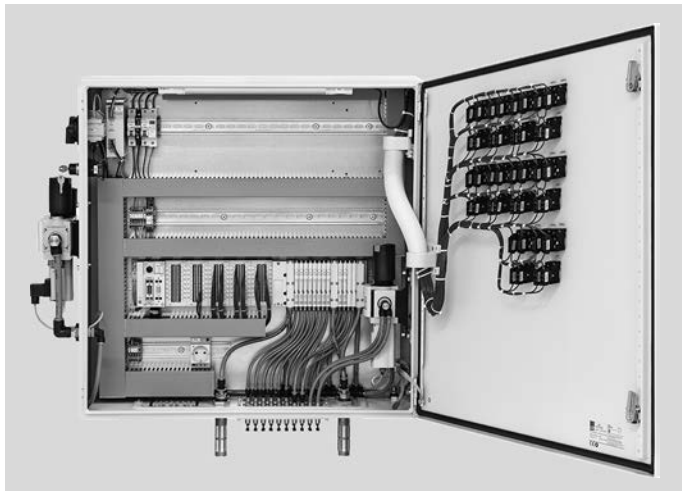
find further information on ready-to-install solutions.



- | | | | |
|---|---|---|--|
| <p>1 Power supply</p> <ul style="list-style-type: none"> - 24 V DC, to 20 A - 48 V DC - Single-phase/three-phase - Plug sockets <p>2 Control system</p> <ul style="list-style-type: none"> - CMXR, CECX, FED, CPX - Robot control system - Third-party control systems - Up to 6 axes - Safety relay <p>3 Operator units</p> <ul style="list-style-type: none"> - Mobile: MMI, CDSA - Integration in the control cabinet: emergency off, key actuator, control elements | <p>4 Wiring/tubing</p> <ul style="list-style-type: none"> - Number of wires - Cross section - Cable harness/individual cables - Cable inscription - Tubing diameter - Tubing colour/material - Tubing designation <p>5 Controller</p> <ul style="list-style-type: none"> - Servo motor - Stepper motor - DC motor | <p>6 Pneumatics</p> <ul style="list-style-type: none"> - Valves/valve terminals - Compressed air preparation - Pressure regulators - Sensors - Servo-pneumatics <p>7 Outputs</p> <ul style="list-style-type: none"> - Pneumatic, electric - Multi-pin interfaces <p>8 Power supply unit</p> <ul style="list-style-type: none"> - Converts AC voltage/frequency - Speed regulation | <p>9 Cooling/heating</p> <ul style="list-style-type: none"> - Active - Passive <p>10 Housing</p> <ul style="list-style-type: none"> - Sheet steel/stainless steel/aluminium/polymer - Standard sizes - Special sizes - Illuminated - Control cabinet colour RAL 7035 or special colour - Labels <p>11 Fuses</p> <ul style="list-style-type: none"> - Fuse - Circuit breaker |
|---|---|---|--|

Ready-to-install solutions

Process automation



- Control cabinets made to measure
- Individually configured
- Adapted to requirements in process automation
- Design and sizing included

Festo made-to-measure control cabinets provide protection for all pneumatic, electric and electronic system components.

The control cabinets are individually designed and built for the application, taking into account specific requirements in process automation. The design is also influenced by local conditions such as

weather and climate as well as compliance with hygiene criteria or degrees of protection. Along with Festo components, third-party components are integrated into

the control cabinets as required. The operationally tested system is delivered ready to install – directly to where it will be used, if requested.

Technical data

- Simple to complex control cabinet designs
 - Pneumatic
 - Electric
 - Combined
- Application-specific combination of components
- Different operating voltages possible
- Use of the latest innovations and technologies
- Fully tested, with test certificate
- Ready to install
- Complete documentation
- Design conforms to:
 - EN 60204-1
 - ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electropneumatic)
 - UL-508A

- Implementation of safety functions
- Wide range of bus technologies
- Compliance with special cleanliness and hygiene requirements
- Special materials, e.g. stainless steel, for use in virtually all ambient conditions
- Protected against the ingress of liquids and foreign matter
- Installation of heating or cooling elements
- Intrinsically safe valve terminal technology

- Replacement of individual terminal valves during operation (hot swap)
- Installation of inspection windows
- Control elements on the outside
- Safe thanks to key lock system on the service unit: to switch off, all employees responsible must remove their lock

Ready-to-install – the benefits to you

Ordering

Just one order number for the entire control cabinet.

Engineering

Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly

The entire production and assembly process is taken care of for you.

Checking and testing

The control cabinet is fully tested.

Documentation

You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation:

- Assembly drawing
- Parts list
- Circuit diagrams (EPLAN/Promis)
- Operating instructions for components

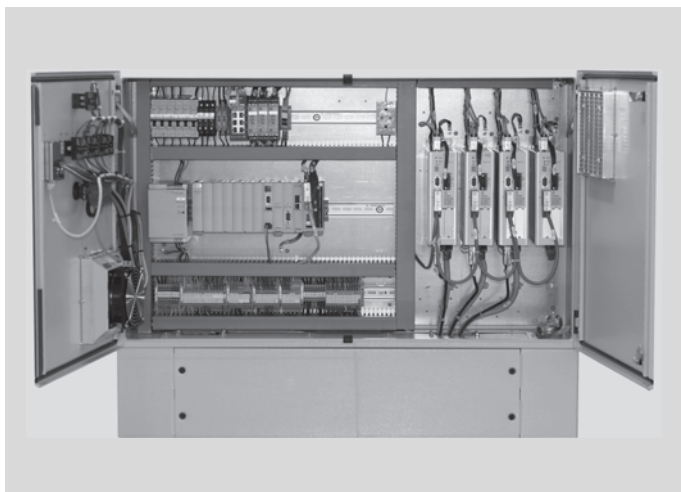
Interested in control cabinets for process automation?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com, where you will

find further information on ready-to-install solutions.

Control cabinets for handling systems



- Control cabinets made to measure for controlling handling systems
- Software package for third-party devices included
- Individually configurable
- Adapted to requirements for handling solutions
➔ Chapter 6 "Handling systems", page 830

Festo made-to-measure control cabinets for controllers provide protection for control components for single-axis and multi-axis systems, from solutions involving simple control tasks to the complex control of highly dynamic

movements, such as with the parallel kinematic system. The control cabinets are individually designed and built for the application, taking into account specific industry

requirements such as those in the food or pharmaceuticals industries, for example. Festo can also integrate third-party components, including software

packages, as required. The operationally tested system is delivered ready to install – directly to where it will be used, if requested.

Technical data

- Simple to complex control cabinet designs
- Control of motion sequences with up to 6 axes
- Application-specific combination of components
- Use of the latest innovations and technologies

- Fully tested, with test certificate
- Ready to install
- Complete documentation
- Design conforms to:
 - EN 60204-1
 - ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electropneumatic)
 - UL-508A

- Implementation of safety functions
- Wide range of bus technologies
- Function modules for motion applications
- Host modules for easy connection to the customer's control environment

Ready-to-install – the benefits to you

Everything from a single source
Handling system and control cabinet perfectly co-ordinated.

Ordering

Just one order number for the entire control cabinet.

Engineering

Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly

The entire production and assembly process is taken care of for you.

Checking and testing

The control cabinet is fully tested.

Documentation

You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation:

- Assembly drawing
- Parts list
- Circuit diagrams (EPLAN/Promis)
- Operating instructions for components

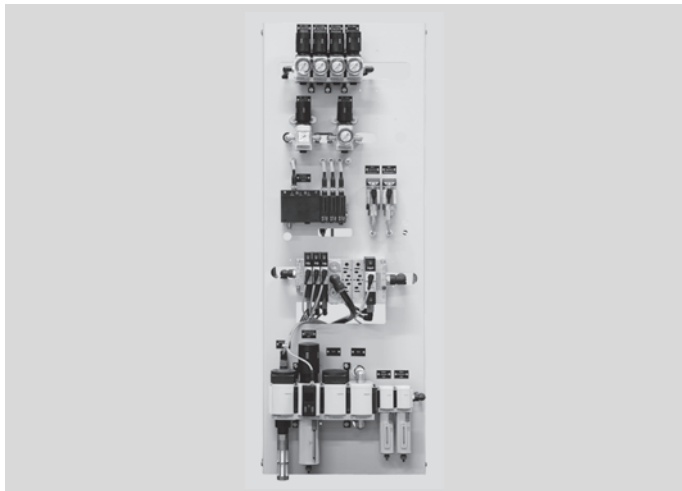
Interested in cabinets for control systems?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com, where you will

find further information on ready-to-install solutions.

Mounting plates



- Machine-specific pre-assembly of pneumatic and electric components on a support plate
- Tubing and wiring included
- Defined interfaces for simple installation directly in the system

Festo mounting plates are used for the function-specific pre-assembly of pneumatic and electric components. They support the individual components and are integrated directly into the system concept.

Each mounting plate has a customised design based on the respective application and with a customised combination of components. In addition to Festo components, third-party components can be

integrated as required. The mounting plate is supplied ready to install – fully connected and tested. It can be installed directly in the machine. Suitable mounting attachments are

already fitted to or integrated into the support plate. The pneumatic and electric connections are also provided. These simply have to be connected to the machine.

Technical data

- Customised support plate shape
- For a wide range of industrial applications
- Support plate available in different materials, e.g. sheet steel, stainless steel, etc.
- Application-specific combination of components
- Fully assembled, connected and wired

- Defined interfaces
- Use of the latest innovations and technologies
- Ready to install: all the steps from engineering through to assembly and right up to quality inspection are carried out by Festo specialists
- Fully tested, with test certificate
- Complete documentation

- Design conforms to:
 - EN 60204-1
 - ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electropneumatic)
 - UL-508A
- Implementation of safety functions

Ready-to-install – the benefits to you

Ordering
Just one order number for the entire solution.

Engineering
Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly
The mounting plate is ready to install. The entire assembly process, including wiring and connection, is thus taken care of for you.

Documentation
You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation:

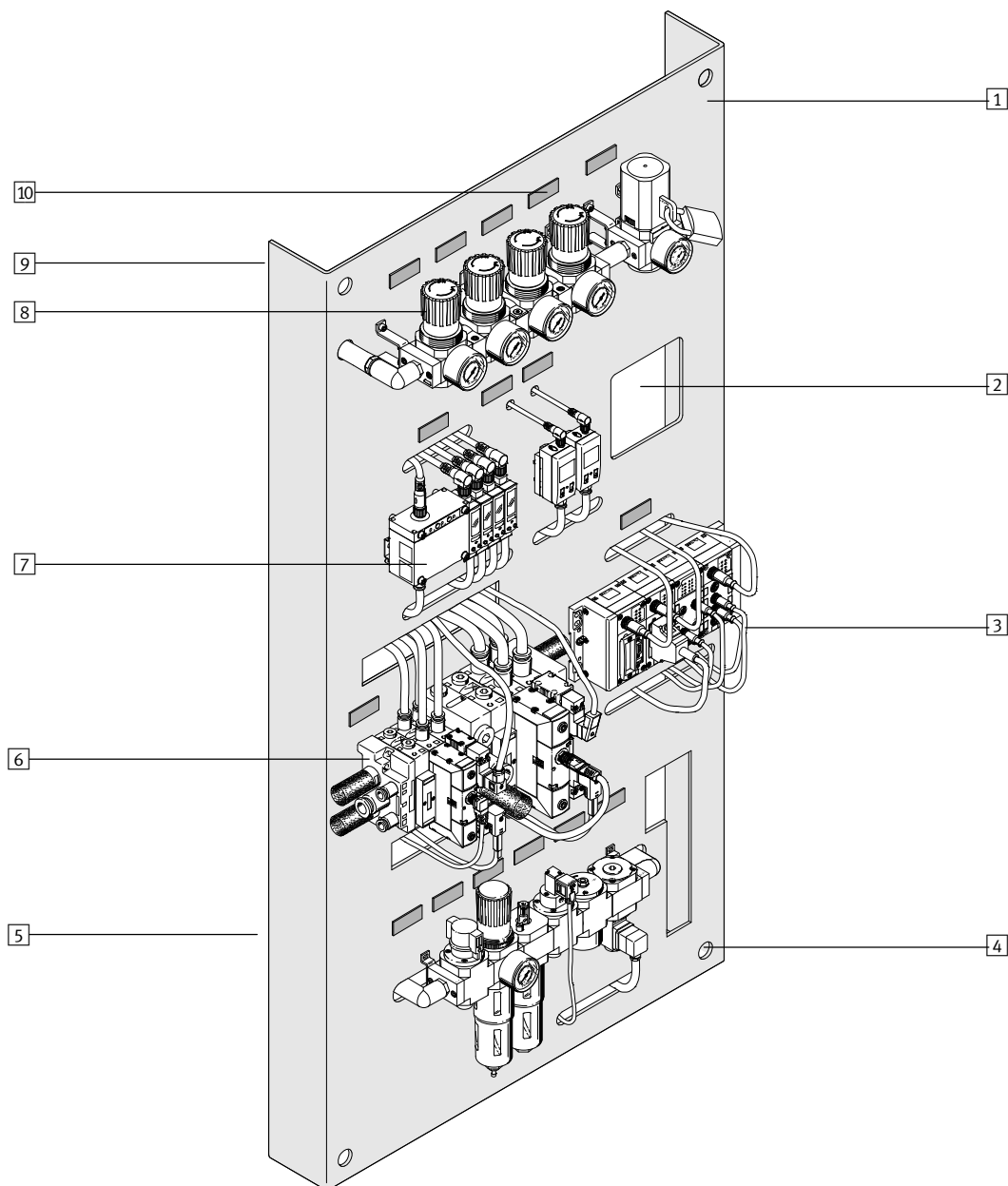
- Assembly drawing
- Parts list
- Circuit diagrams
- Operating instructions for components

Interested in mounting plates?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com,

where you will find further information on ready-to-install solutions.

**1** Support plate

- Sheet steel/stainless steel/aluminium/polymer
- Individually adapted shape and size
- Plate is integrated directly into the machine concept as a supporting component
- Label

2 Cut-outs

- For tubing
- For connections
- etc.

3 Wiring/tubing

- Number of wires
- Cross section
- Cable harness/individual cables
- Cable inscription

4 Mounting options

- For mounting in the system

5 Electrical installation

- Implementation of electrical circuit diagrams in a solution (not shown)

6 Valves and valve terminals**7** Sensors

- Pressure
- Flow rate
- Position

8 Compressed air preparation

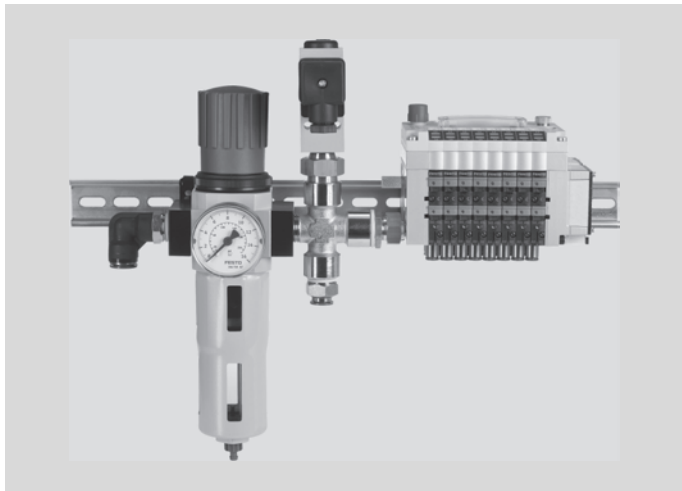
- MS series
- D series
- Customised configuration of modules

9 Defined interfaces for the machine

- Tubing/cables in specified length
- Customised coupling
- etc.

10 Customised inscriptions

Assemblies



- Pneumatic and electric components pre-assembled to create a function unit
- Can be combined from around 30,000 catalogue components
- Connections included
- For integration in machines

The product range from Festo comprises about 30,000 individual components, which can be pre-assembled to form a functional module. Accessories such as fittings and connections can also be assembled on the unit. The assembly can

thus be installed directly in the system or in the higher-level system as a ready-to-install subsystem.

An assembly can be made up of a wide range of components. Typical combinations include:

- Cylinder/valve combinations
- Components for compressed air preparation combined with valves
- Valve blocks

Third-party components can be integrated and the assembly can be mounted on a plate as required.

A complete functional test of the entire unit is carried out after completion. The assembly is supplied ready to install.

Technical data

- Combination of various pneumatic and/or electric components to create a single unit
- For a wide range of industrial applications
- Application-specific combination of components
- Optional: accessories mounted on sub-assemblies
- Use of the latest innovations and technologies

- Ready to install: all the steps from engineering through to assembly and right up to quality inspection are carried out by Festo specialists
- Fully tested, with test certificate
- Complete documentation

- Design conforms to:
 - EN 60204-1
 - ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electropneumatic)
 - UL-508A
- Implementation of safety functions

Ready-to-install – the benefits to you

Ordering

Just one order number for the entire solution.

Production and assembly

The entire production and assembly process, including wiring and connection, is taken care of for you. Connections to the system can be pre-installed on the assembly if required.

Checking and testing

The assembly is fully tested.

Documentation

You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation:

- Assembly drawing
- Parts list
- Circuit diagrams
- Operating instructions for components

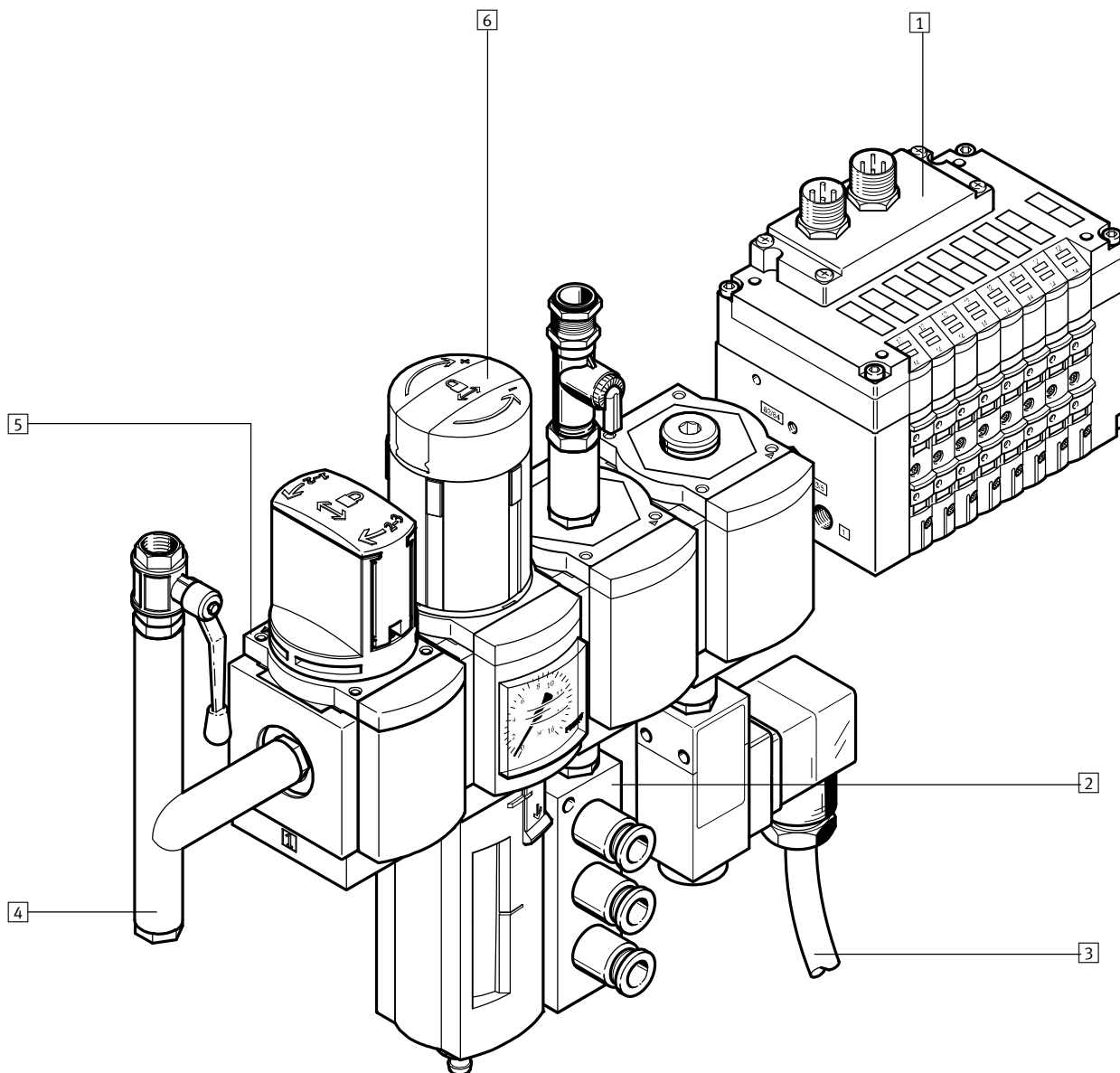
Interested in assemblies?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com,

where you will find further information on ready-to-install solutions.

Assemblies



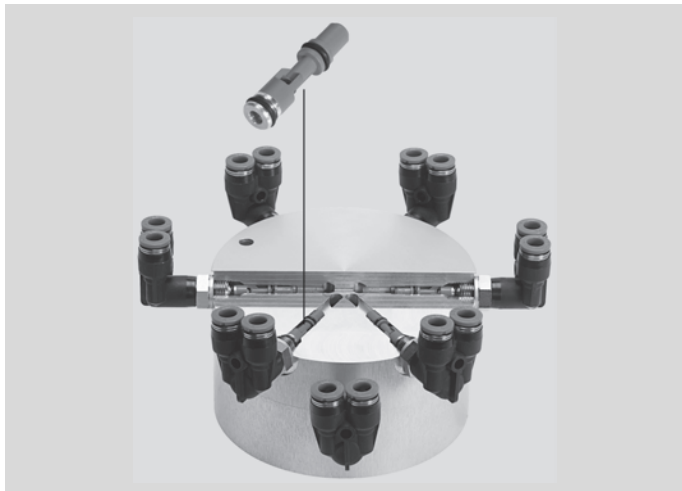
- 1 Valves and valve terminals
- 2 Other pneumatic components
 - Cylinders
 - Pressure regulators
 - Pressure gauges
 - Third-party components
 - Connections
 - Sensors
 - Servopneumatics
 - etc.

- 3 Tubing, wiring and piping
 - Number of wires
 - Cross section
 - Cable harness/individual cables
 - Cable inscription

- 4 Outputs
 - Pneumatic
 - Electric
 - Multi-pin interfaces
- 5 Mounting options
 - For mounting in the system

- 6 Compressed air preparation
 - MS series
 - D series
 - Customised configuration of modules

Cartridge solutions



- Integration of various pneumatic functions in one component
- No need for individual housings
- Ideal for applications that require a highly compact design

Cartridge solutions integrate one or more pneumatic functions in a closed unit. There is no need for individual housings, as the "insides" of the parts are housed in the component itself. Festo cartridge solutions are used

wherever an extremely compact design and component protection are required – with just a small number of pneumatic functions. Functionality provided by standard technology, such as directional control valves

or flow control valves, is fully integrated into the housing, thus reducing the required installation space. The housing has a customised design based on specific application requirements, which means that the cartridge

solution can be attached or installed just about anywhere on the machine.

Technical data

- Space-saving thanks to extremely compact design
- Pneumatic functions integrated in a single compact housing, e.g.
 - Directional control valves
 - Flow control valves
 - Check valves
 - Vacuum generators
 - Pressure regulators
 - Pneumatic logic functions

- Housing available in different materials
- No tubing required
- Minimal cabling required
- Significant design freedom
- Variable integration options on and within the machine
- Sturdy design thanks to protected installed parts and smooth surfaces

- Fully tested
- Ready to install
- Complete documentation

Ready-to-install – the benefits to you**Engineering**

Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly

The entire production and assembly process is taken care of for you.

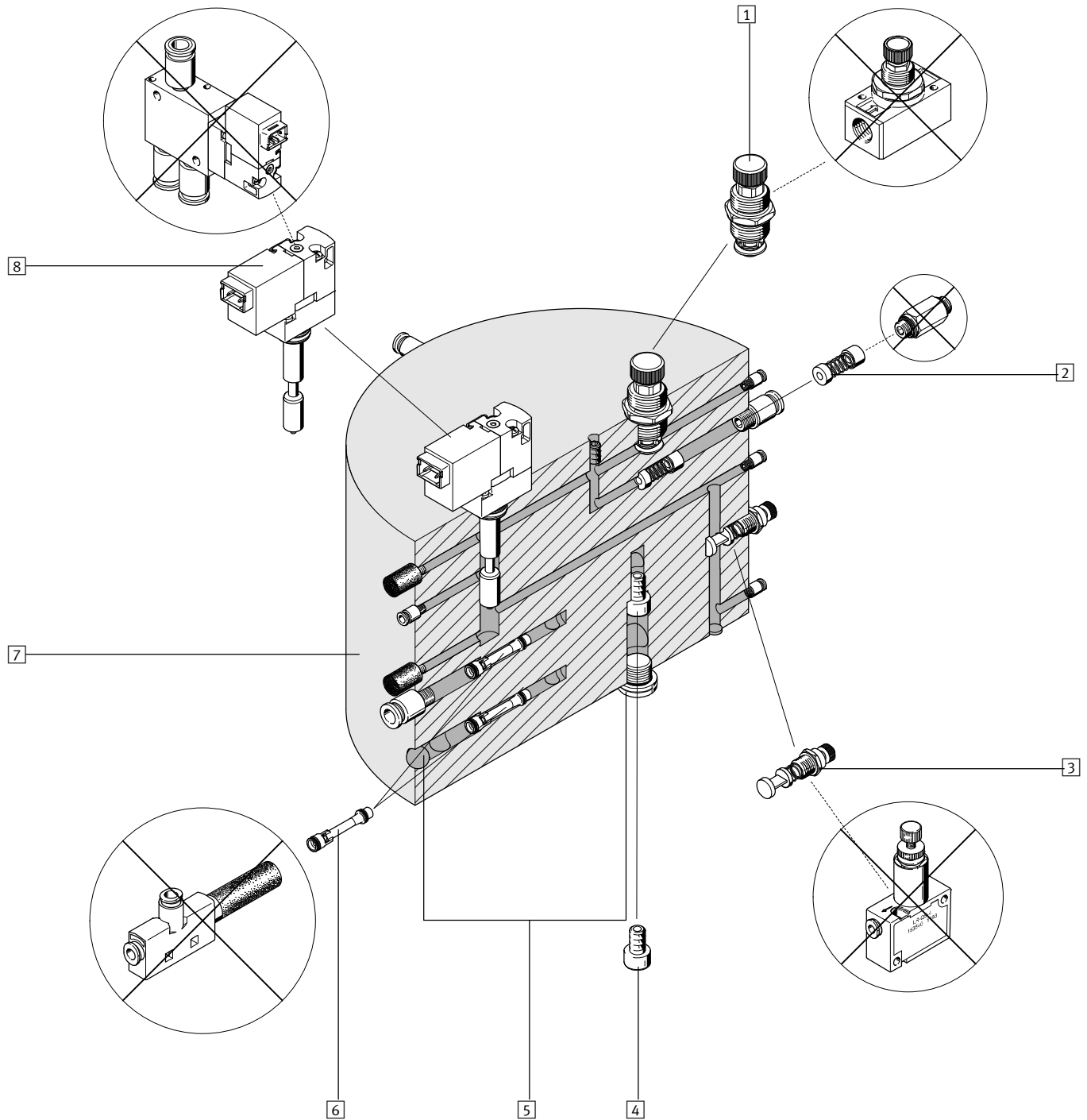
Documentation

You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation.

Interested in cartridge solutions?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com, where you will find further information on ready-to-install solutions.



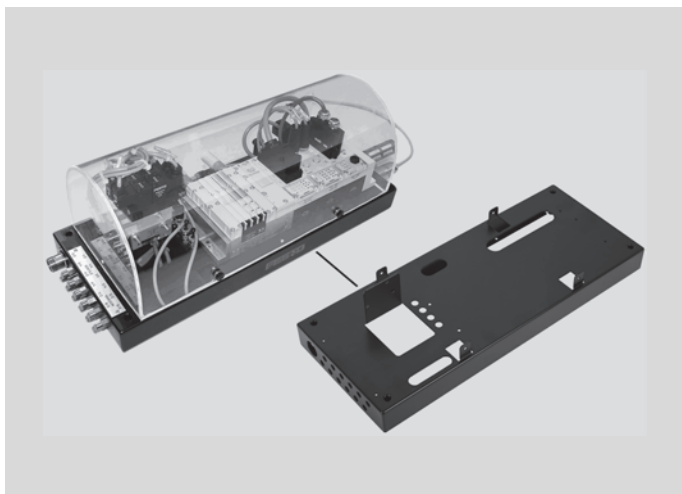
- 1 Flow control valve
– Integrated
- 2 Check valve
– Integrated
- 3 Pressure regulator
– Integrated

- 4 Fixed restrictor
– Screw-in
- 5 Sealing of holes
- 6 Vacuum generator
– Integrated
– Various sizes

- 7 Housing
– Aluminium
– Brass
– Steel
– POM
– PEEK
– PA
– etc.

- 8 Valve
– Integrated

Sheet-metal structures and special housings



- Reduced weight thanks to optimal use of materials with sheet-metal structures
- Protection against environmental influences and unauthorised access
- Ideally combined as a control cabinet directly in the system

A sheet-metal structure acts as a support for pneumatic and electric components. The well thought-out design makes it possible to get the most out of the material used. Upright steel parts perform the function of mounting brackets in this

case. This means fewer components and reduced weight, making the entire system into a compact unit. Special housings protect electric and pneumatic components against environmental influences and unauthorised ac-

cess. They also lend applications a more attractive appearance. They are developed for specific applications in a space-saving design.

When combined, sheet-metal structures

and special housings produce a small control cabinet which can be fitted directly in or on the application. The resulting short tubing and cable lengths significantly shorten the switching times.

Technical data

- Sheet-metal structures
 - Customised shape and size
 - Reduced weight and number of assembly parts

- Special housing
 - Customised shape (flat, curved, rectangular, etc.)
 - Customised dimensions
 - Different materials (metal, aluminium, polymer, etc.)
 - Compact, space-saving format
 - Protection against environmental influences and unauthorised access

- In combination
 - Alternative to conventional control cabinets
 - Variable integration options on and within the machine
 - Short tubing and cable lengths
 - Attractive design

Ready-to-install – the benefits to you

Engineering

Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly

The entire production and assembly process is taken care of for you.

Checking and testing

The solution is fully tested.

Documentation

You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation.

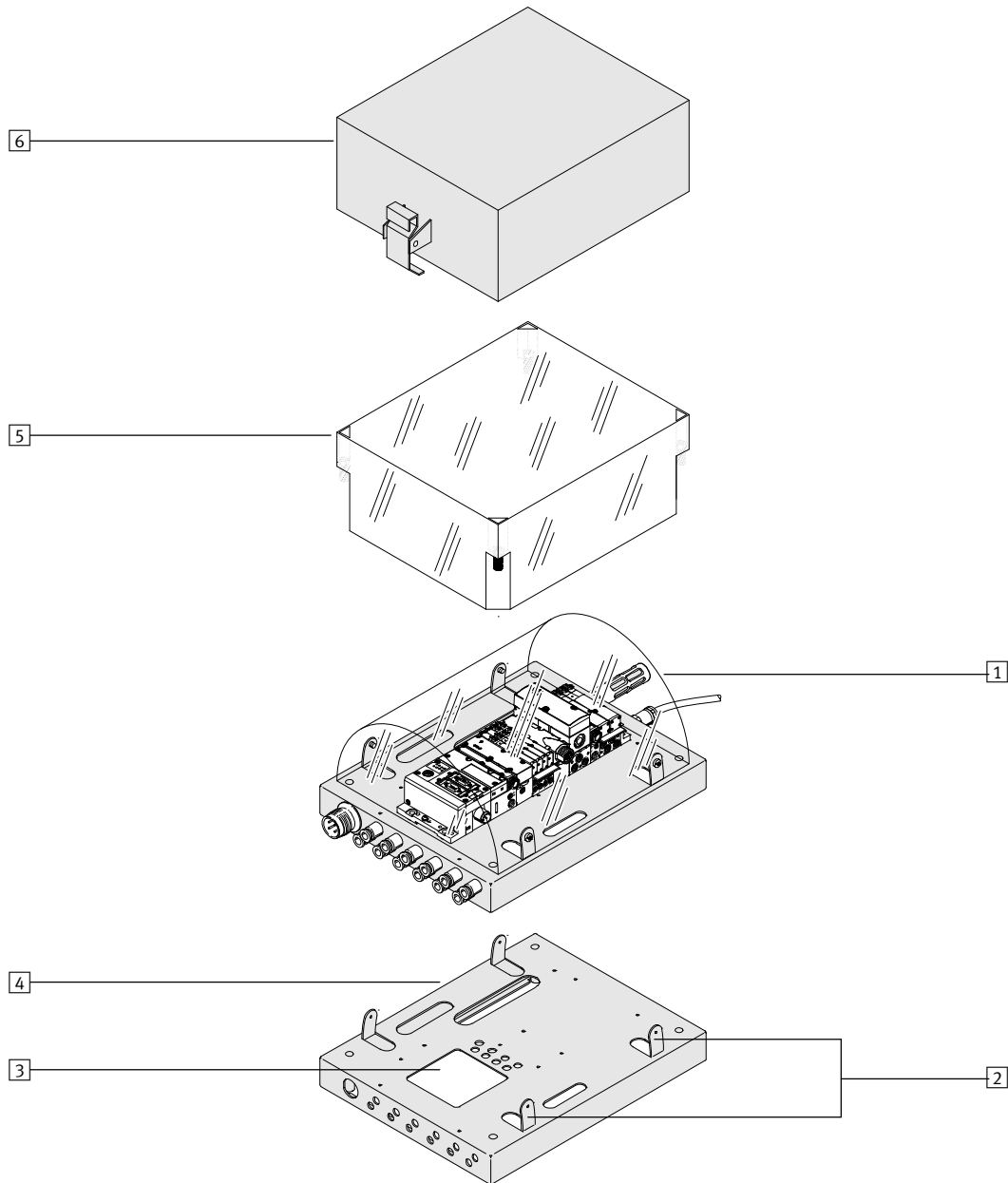
Interested in sheet-metal structures and special housings?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com,

where you will find further information on ready-to-install solutions.

Sheet-metal structures and special housings



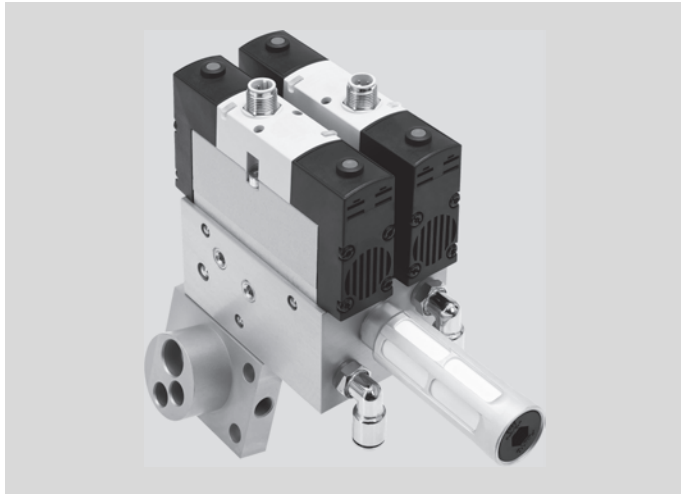
- 1 One basic solution
 - Small control cabinet
- 2 Upright sheet-metal parts
 - As mounting brackets
- 3 Cut-outs
 - For tubing
 - For connections
 - etc.

- 4 Sheet-metal structure
 - Customised dimensions
 - Customised shapes

- 5 Material
 - Metal
 - Polymer
 - etc.

- 6 Special housing
 - Customised dimensions
 - Customised shapes (flat, curved, etc.)

Function blocks



- Compressed air supply for pneumatic components via drilled ducts
- Ideal for a small number of pneumatic components and variable connection options
- Compact and easy to service

For applications that require the installation of only a small number of pneumatic components in a compact space, Festo function blocks with drilled ducts represent

a practical alternative to manifold duct plates. The position of the connections must be variable and not subject to any special requirements.

In the function block, the air supply connections are established using intersecting ducts – individual sub-bases are no longer required. The components are

mounted directly on the function block, which means that no tubing is required.

Technical data

- No tubing required thanks to drilled ducts
- Housing available in different materials:
 - Aluminium
 - Brass
 - Steel
 - POM
 - PEEK
 - PA
 - etc.

- Customised design of the pneumatic interfaces for the system
- Ideal for a small number of components and variable connection options

- Extremely economical, even for small quantities

Ready-to-install – the benefits to you

Engineering

Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly

The entire production and assembly process is taken care of for you.

Checking and testing

The solution is fully tested.

Documentation

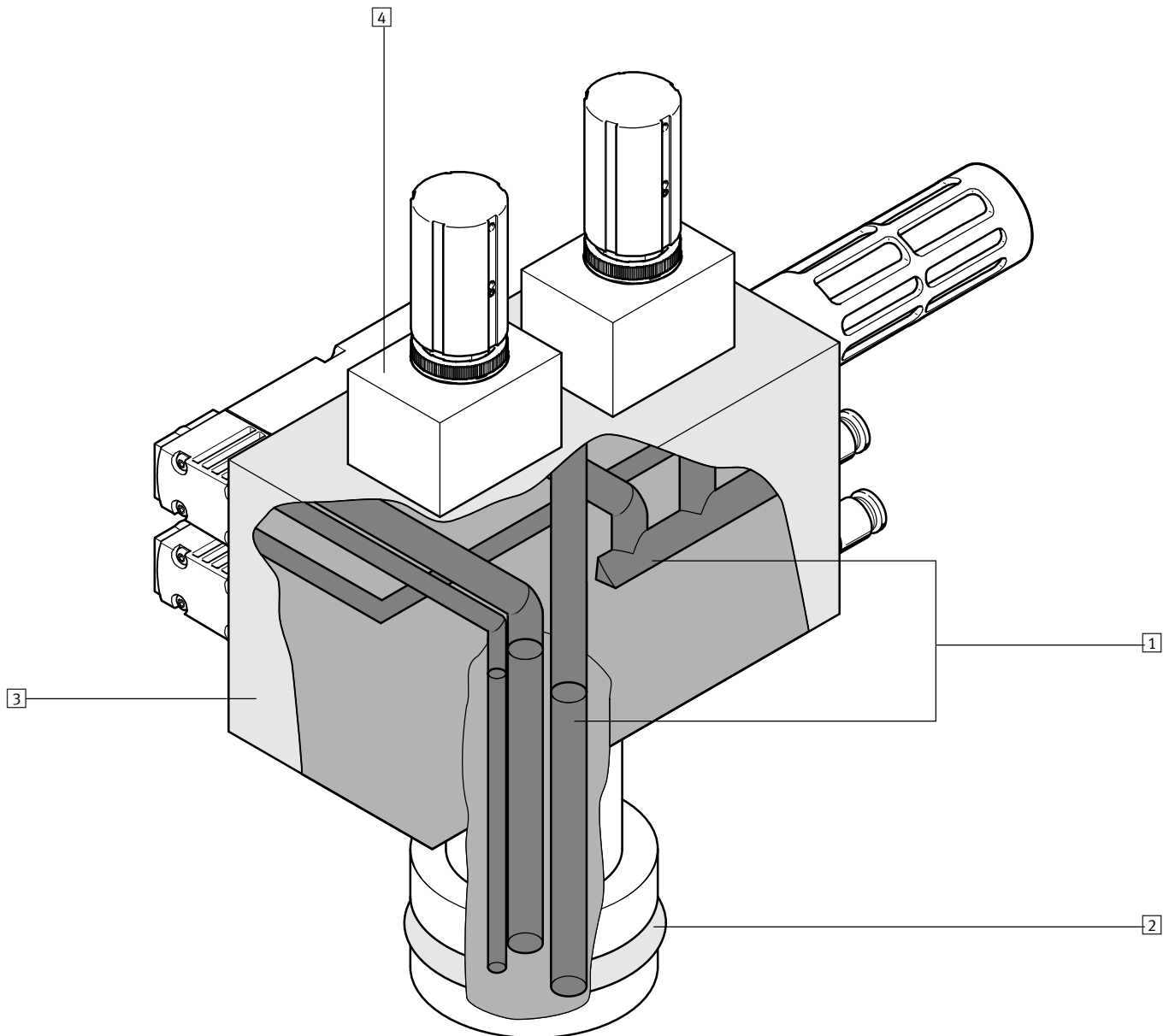
You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation.

Interested in function blocks?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com,

where you will find further information on ready-to-install solutions.

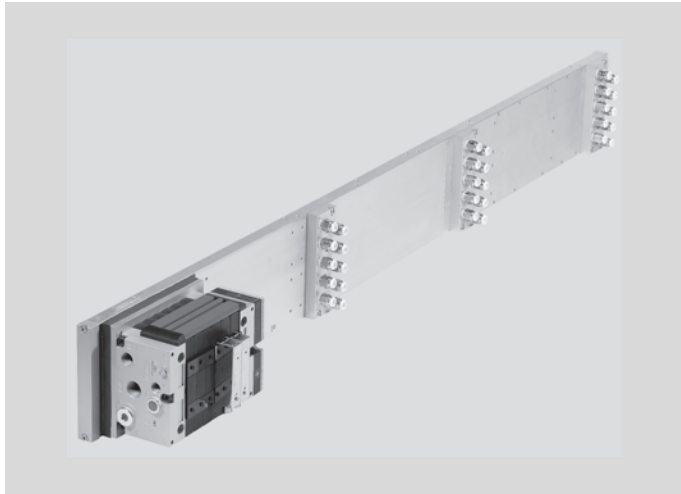


- 1 Drilled ducts
 - For the air supply
- 2 Pneumatic interfaces for the machine
 - Customised

- 3 Housing
 - Aluminium
 - Brass
 - Steel
 - POM
 - PEEK
 - PA
 - etc.

- 4 Pneumatics
 - Compressed air preparation
 - Valves
 - Valve terminals
 - Pressure regulators
 - Pressure gauges
 - Third-party components
 - Connections

Profile solutions



- Extruded profiles in combination with valves as a valve terminal
- For the distribution of compressed air in the machine concept
- Customised profile cross sections available

Profile solutions enable valve terminal concepts to be adapted to the machine design. Space optimisation, high performance in a small space and optimal distribution of compressed air within the

system are just some of the main advantages. The compressed air flows into integrated ducts. Exhaust air and supply air can thus be combined over long distances

without any tubing. The compressed air is then provided at different locations according to specific requirements. Festo profiles have different cross sec-

tions and lengths depending on application requirements. The valves and valve terminals can be mounted on the profile in a freely definable grid.

Technical data

- Profiles in customised cross sections and lengths
- Integrated ducts for straight-line routing of the compressed air
- Common air supply for multiple valves or valve terminals via a single duct

- Combination of exhaust air and supply air without tubing, even over long distances
- Supply of compressed air at different locations
- No tubing required

- Significantly reduced cabling
- Modular structure easy to achieve
- Optional: profile as mechanical mounting element for other components or as a supporting part of the machine frame

Ready-to-install – the benefits to you

Engineering
Complete engineering solution according to your application-specific requirements by Festo specialists.

Production and assembly
The entire production and assembly process is taken care of for you.

Documentation
You receive detailed system documentation, which you can quickly and easily integrate into your overall documentation.

Checking and testing
The solution is fully tested.

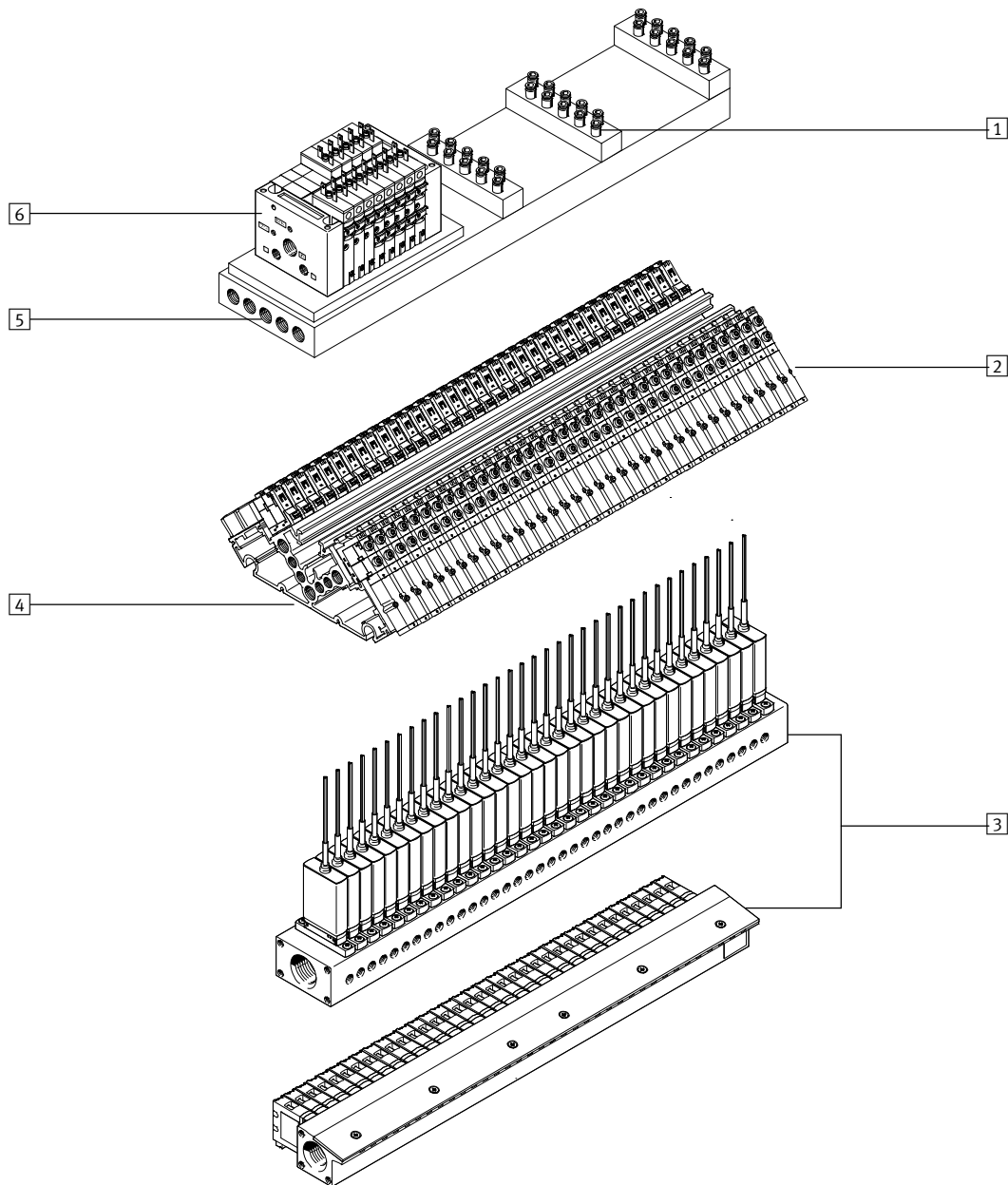
Interested in profile solutions?

Ask your Festo sales engineer, who will be happy to help.

Or visit your local website at www.festo.com,

where you will find further information on ready-to-install solutions.

Integration solutions >
Profile solutions



- 1 Air ducts
 - Supply of compressed air at different locations
- 2 Valves and valve terminals
 - Freely definable grid
 - Freely definable number

- 3 Customised pneumatic connection
 - Optimised for the machine concept

- 4 Aluminium extruded profile
 - Customised shape (round, square, trapezoidal, etc.)
 - Customised profile cross sections
 - Freely definable lengths

- 5 Air ducts
 - For the distribution of compressed air in the system
- 6 Valve terminals

20 Function-specific systems

Platform strategies and modularisation for greater productivity

- + Pre-assembled system kit comprising software, controller and kinematics
- + Application-specific software for fast, intuitive commissioning
- + Coordinated components
- + Easy integration into the system concept
- + Lower project and total costs



Contents

Product overview 1704

Software packages GSAY 1704

NEW New software

Balancer kit YHBP 1705

NEW New series

Servo press kits YJKP 1707

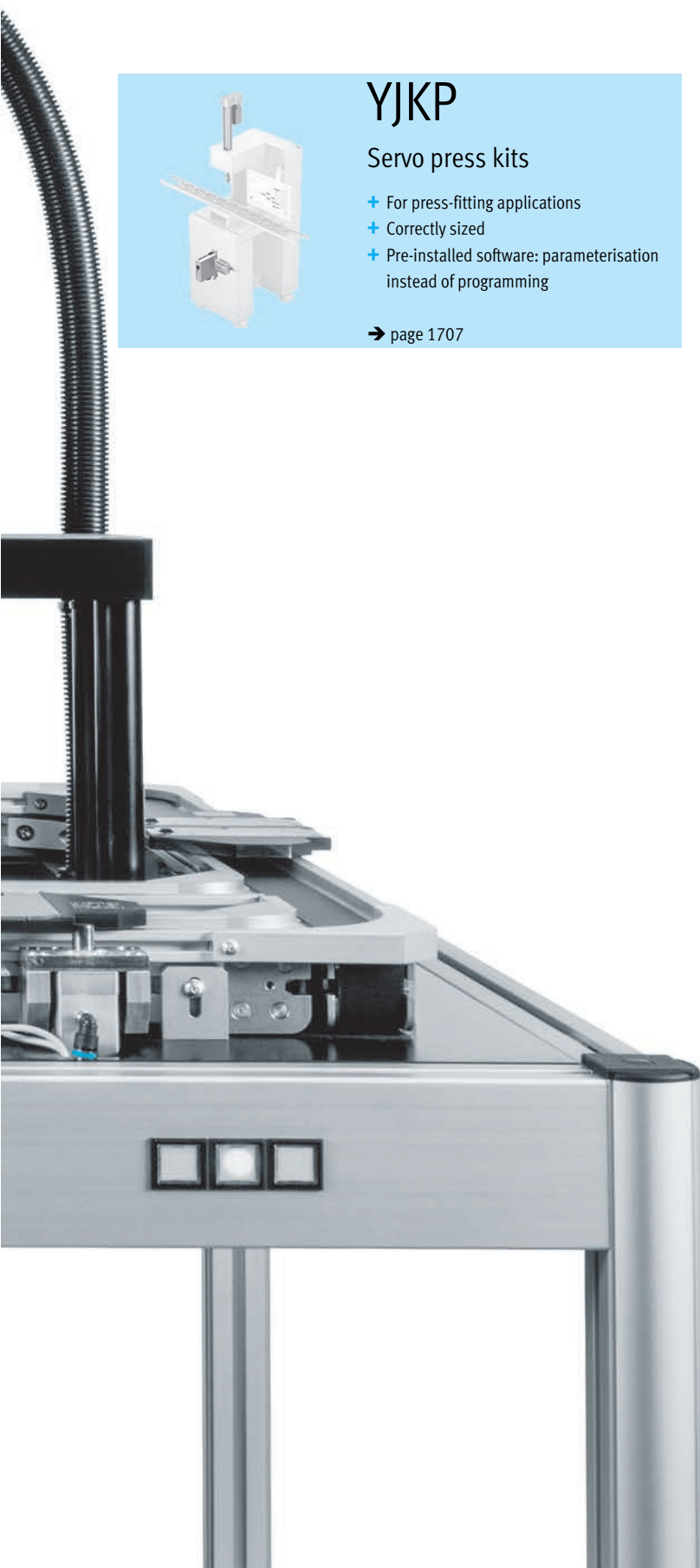


YJKP

Servo press kits

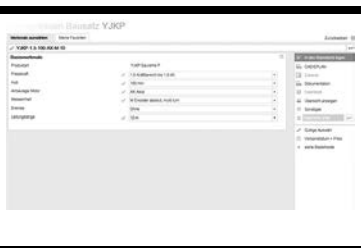
- + For press-fitting applications
- + Correctly sized
- + Pre-installed software: parameterisation instead of programming

→ page 1707




Product overview


Software tool

<p>Configurator</p> 	<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the required product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
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Function-specific systems

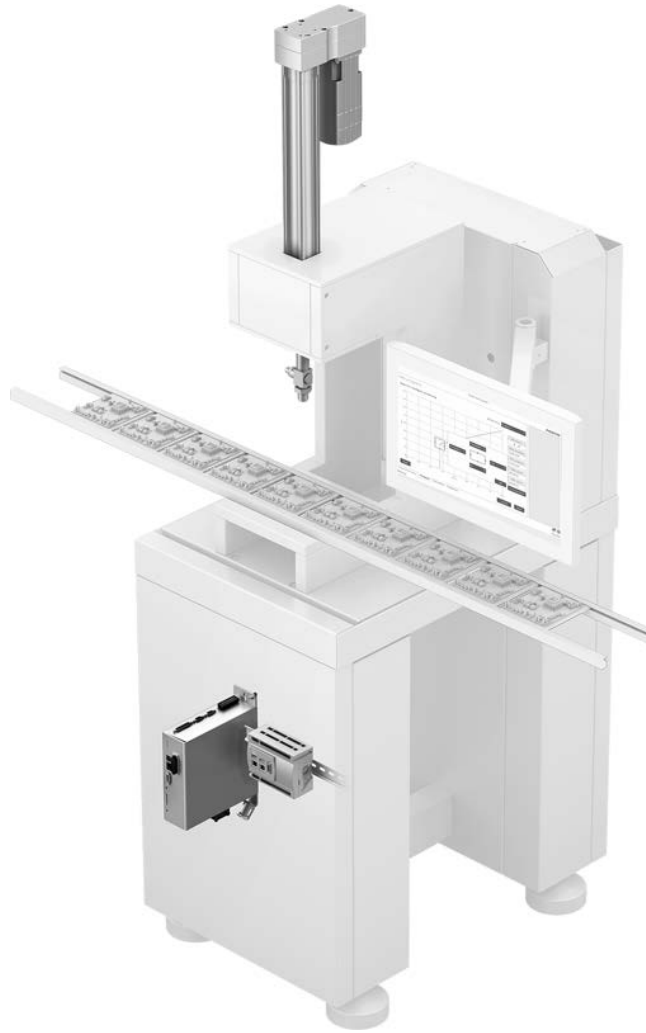
<p>Type</p>	 <p>Servo press kits YJKP</p>
<p>Function</p>	<p>Press-fitting</p>
<p>Working stroke</p>	<p>100 mm, 200 mm, 300 mm, 400 mm</p>
<p>Pressing force</p>	<p>0.1 ... 17 kN</p>
<p>Feed speed</p>	<p>0 ... 250 mm/s</p>
<p>Accuracy in ± % FS</p>	<p>0.5 %FS</p>
<p>Protocol</p>	<p>EtherNet/IP, Modbus TCP, TCP/IP, PROFINET</p>
<p>NEW</p>	
<p>Description</p>	<ul style="list-style-type: none"> • Modular system kit comprising operating software GSAY, electric cylinder with spindle drive ESBF, motor EMMS-AS, motor controller CMMP-AS, force sensor and controller CECC-X together with the required accessories • Less expensive than conventional press-fitting systems • Pre-installed operating software GSAY offers precisely the required application-specific functions • Expanded software package for even greater customisation to your application • Commissioning made easy: parameterisation instead of programming • For top quality: real-time monitoring of the press-fitting operation and clear visualisation of the force/displacement curves • Fit for Industry 4.0 thanks to the OPC UA interface at the controller
<p>→ Page/online</p>	<p>1707</p>

Software

<p>Type</p>	 <p>Software packages GSAY</p>	<p>NEW</p>
<p>NEW</p>		
<p>Description</p>	<ul style="list-style-type: none"> • The modular operating software for the servo press kit YJKP is already installed on the press controller and therefore ready to use as soon as system integration is complete • No programming skills are needed • Thanks to the integrated sequencer, press-fitting operations are quick to configure and easy to implement • Configurator for the joining process: feed/joining path, possible wait times, threading functionality, etc. • Recording process data for quality assurance • Recorded force/displacement graph exported as *.csv file • Analysis functions for the force/displacement graph • Definition of windows • Envelopes • Through points • Extended licensed software package available to purchase via the Festo AppWorld 	
<p>→ Page/online</p>	<p>gsay</p>	

Handling solutions

		NEW
Type	Balancer kit YHBP	
Stroke range	100 ... 1000 mm	
Cylinder diameter	80 ... 200 mm	
Max. travel speed	1 m/s	
Load	70 ... 999 kg	
Operating pressure	4 ... 8 bar	
Nominal operating voltage DC	24 V	
NEW	<ul style="list-style-type: none"> • New series 	
Description	<ul style="list-style-type: none"> • Very low operating forces of only 10 N • Very fast, automatic weight detection for production processes with large numbers of variants • Safety Performance Level d • For loads from 70 to 999 kg • Suitable for all commercially available kinematic systems 	
→ Page/online	yhbp	



Low-cost press-fitting

- + Less expensive than conventional press-fitting systems
- + Software and hardware from a single source
- + Pre-installed, modular software
- + Pre-assembled kit
- + Easy integration into your own system concept

Joining technology >

Servo press kits

YJKP

Joining technology >

Servo press kits

YJKP



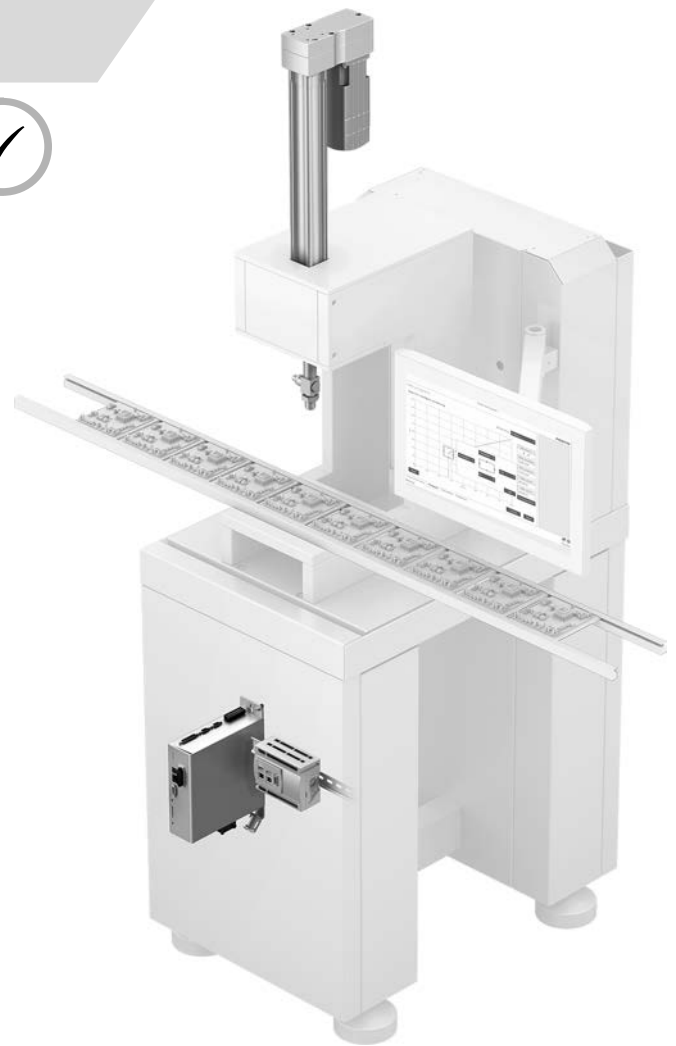
Overview, configuration and ordering

→ www.festo.com/catalogue/yjkgp



Additional information, support and user documentation

→ www.festo.com/sp/yjkgp



- + Ready-to-use system kit for electrical press-fitting applications
- + Pre-installed, modular software for configuration, operation and visualisation
- + High precision and repetition accuracy
- + Simple, cost-effective and quick to install

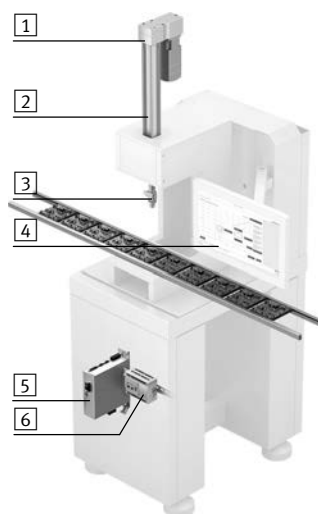
At a glance

The servo press kit and its associated software can be used to respond quickly to a range of press processes. It offers the ideal alternative to complex and often oversized presses.

The software can be used to monitor parameters such as the force and displacement of joining and press-fitting processes continuously.

Advantages:

- Pressing forces up to 17 kN (higher force ranges on request)
- Very high positioning and repetition accuracy
- Ideal price/performance ratio
- Easy integration into any application



Individual components:

- 1 Servo motor
- 2 Electric cylinder
- 3 Force sensor
(incl. inspection record)
- 4 Software package
- 5 Motor controller
- 6 Controller
(incl. micro SD memory card)

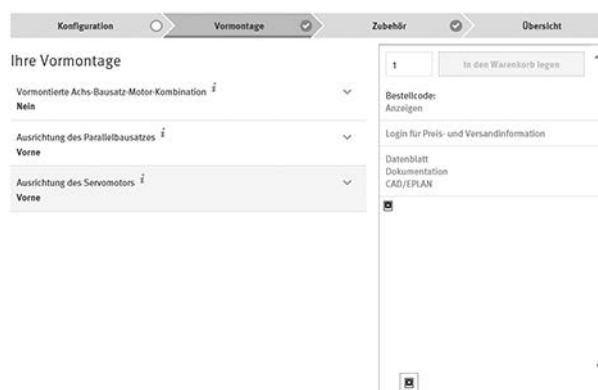
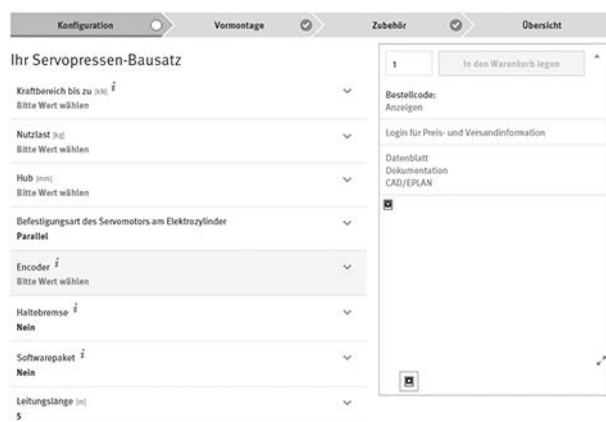
Motor/encoder cables are included in the scope of delivery.

Ordering via configurator

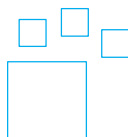
It is very easy to put together and order a wide range of servo press kits using the configurator.

The "Configuration", "Pre-assembly" and "Accessories" tabs are used to select the combinations and display them with the correct configuration.

CAD files and ePLAN macros included.



Ordering – Product options



Configurable product

This product and all its options can be ordered using the configurator.

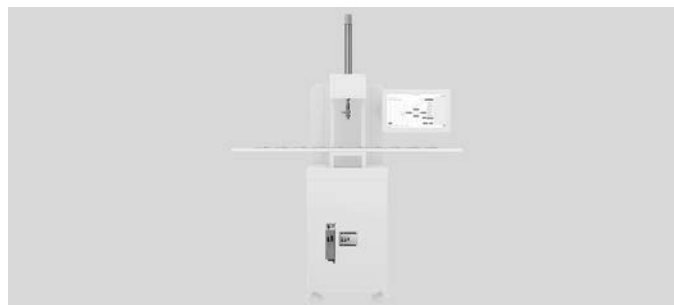
The configurator can be found under Products on the DVD or
→ www.festo.com/catalogue/...

Enter the type code in the search field.

Servo press kits YJKP

Data sheet

Fieldbus interfaces



Technical data		Dimensions → Page 1713					
Force range up to	[kN]	0.8	1.5	4	7	12	17
Protection against torsion/guide		With plain-bearing guide					
Working stroke	[mm]	100, 200, 300, 400					
Pressing force	[kN]	0.8	1.5	4	7	12	17
Max. payload ¹⁾	[kg]	19.5	19.5	48	48	95	95
Max. feed speed	[mm/s]	250				160	
Acceleration							
For positioning operation	[m/s ²]	2					
For cushioning phase	[m/s ²]	2					
Repetition accuracy	[mm]	±0.01			±0.015	±0.01	
Scanning frequency of the force sensor	[Hz]	1000					
Accuracy FS of the force measurement ²⁾	[%]	±0.25					
Parameterisation interface		Ethernet					
Fieldbus interface		Modbus TCP, EtherNet/IP, EtherNet TCP/IP, PROFINET IO					
Configuration via visualisation system		Force/displacement graphs, default for good/defective parts, visualisation					
Evaluation methods		Threshold value, envelopes, windowing					
Visualisation		At the customer's premises via a web browser					
Mounting position		Any					

1) Caused by tool weight, for example.

2) Related to the calibration range of the force sensor and/or the force measurement range of the software for the complete system. Example for YJKP with a force range of 0.8 kN: 0.25% x 1200 N

Technical data – Force sensor							
Force range to	[kN]	0.8	1.5	4	7	12	17
Force measuring range of software	[kN]	-0.2 ... 1	-0.2 ... 2	-0.5 ... 4.5	-0.5 ... 7.5	-1 ... 13	-1 ... 18
Max. overload	[kN]	1.5	3.75	11.25	15	30	37.5
Analogue output	[mA]	4 ... 20					

Note

The accuracy of the force measurement is influenced by the following properties of the force sensor:

- Accuracy
- Calibration range
- Nominal signal range
- Overload range

Lateral forces on the force sensor should be avoided as they may lead to false measurement results or damage the sensor.

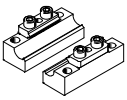
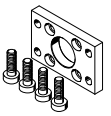

Data sheet

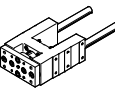
Electrical data		0.8	1.5	4	7	12	17
Force range to	[kN]						
Motor controller							
Input voltage range	[V AC]	100 ... 230 ±10%			3x 230 ... 480 ±10%		
Max. nominal input current	[A]	3		6	5.5		11
Nominal power	[VA]	500		1000	3000		6000
Controller							
Operating voltage	[V DC]	24					
Current consumption	[mA]	200					
Force sensor							
Operating voltage range	[V DC]	10 ... 30					
Safety characteristics of the motor controller							
Safety function to EN 61800-5-2		Safe Torque Off (STO)					
Performance Level (PL) to EN ISO 13849-1		Category 4, Performance Level e					
Safety Integrity Level (SIL) to EN 61800-5-2, EN 62061, EN 61508		SIL 3					
Certificate issuing authority		TÜV 01/205/5262.01/14					
Operating conditions							
Ambient temperature	[°C]	0 ... 40					
Degree of protection		IP20					

Joining technology >

Servo press kits YJKP

Accessories – Ordering data

	For force range to [kN]	Part no.	Type
Profile mounting Dimensions online: → yjkp			
	0.8; 1.5	2838839	EAHF-V2-32/40-P
	4; 7	1547781	EAHF-V2-50/63-P
	12; 17	1547780	EAHF-V2-80/100-P
Flange mounting Dimensions online: → yjkp			
	0.8	2827587	EAAH-V2-32-R1
	1.5	2827588	EAAH-V2-40-R1
	4	2827589	EAAH-V2-50-R1
	7	1502305	EAAH-V2-63-R1
	12	1502306	EAAH-V2-80-R1
	17	1502307	EAAH-V2-100-R1
Clamping component Dimensions online: → yjkp			
	–	1461069	EADT-E-U1-110

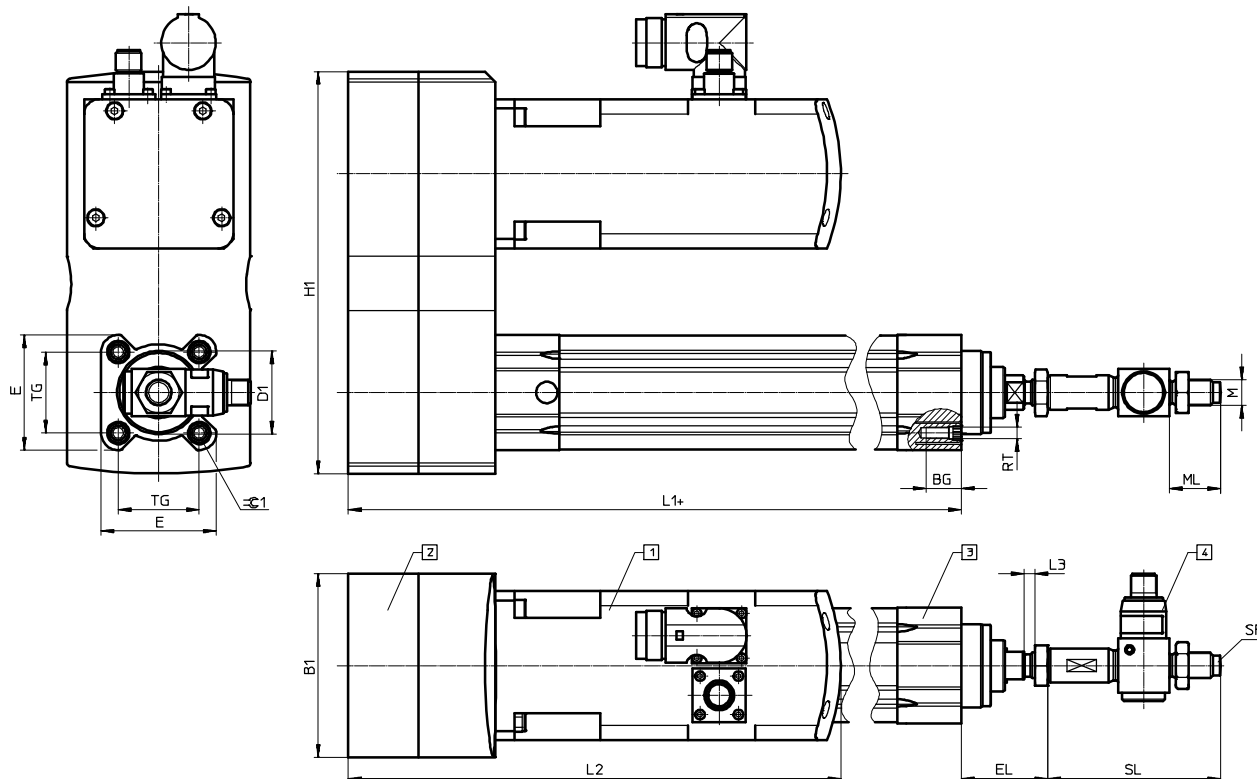
	Stroke [mm]	Part no.	Type
Guide unit order data Data sheets online: → eagf			
	For force range up to 0.8 kN		
	100	2782679	EAGF-V2-KF-32-170
	200	2782818	EAGF-V2-KF-32-270
	300	2782885	EAGF-V2-KF-32-370
	400	2782923	EAGF-V2-KF-32-470
For force range up to 1.5 kN			
100	2782939	EAGF-V2-KF-40-170	
200	2782976	EAGF-V2-KF-40-270	
300	2783047	EAGF-V2-KF-40-370	
400	2783080	EAGF-V2-KF-40-470	
For force range up to 4 kN			
100	2783639	EAGF-V2-KF-50-190	
200	2784152	EAGF-V2-KF-50-290	
300	2784164	EAGF-V2-KF-50-390	
400	2784184	EAGF-V2-KF-50-490	
For force range up to 7 kN			
100	1725842	EAGF-V2-KF-63-190	
200	1725843	EAGF-V2-KF-63-290	
300	1725844	EAGF-V2-KF-63-390	
400	1725845	EAGF-V2-KF-63-490	
For force range up to 12 kN			
100	1725846	EAGF-V2-KF-80-220	
200	1725847	EAGF-V2-KF-80-320	
300	1725848	EAGF-V2-KF-80-420	
400	1725849	EAGF-V2-KF-80-520	
For force range up to 17 kN			
100	1725850	EAGF-V2-KF-100-220	
200	1725851	EAGF-V2-KF-100-320	
300	1725852	EAGF-V2-KF-100-420	
400	1725853	EAGF-V2-KF-100-520	

1) Max. load capacity.

Dimensions

With parallel kit

Download CAD data → www.festo.com



- 1 Servo motor
- 2 Parallel kit
- 3 Electric cylinder
- 4 Force sensor

Type	B1	BG	D1 ∅ d11	E	EL ¹⁾	H1	L1	L2
YJKP-0.8	60	16	34	45 ^{+0.5}	35.5	157	178.5	220.4
YJKP-1.5	86	16	39	54 ^{+0.5}	40.5	188.5	213	230.8
YJKP-4	110	17	45	64 ^{+0.5}	49.5	225	245	274.3
YJKP-7	110	17	52	75 ^{+0.5/-0.1}	50	225	253	325.3
YJKP-12	140	17	60	93 ^{+0.5/-0.1}	61	348	303.5	385
YJKP-17	140	17	70	110 ^{+0.5/-0.1}	66	348	323.5	385

Type	L3	M	ML	RT	SL	SR	TG	∅1
YJKP-0.8	5	M10x1.25	22	M6	78	60	32.5	6
YJKP-1.5	5	M12x1.25	24	M6	81	60	38	6
YJKP-4	5	M16x1.5	32	M8	107	100	46.5	8
YJKP-7	5	M16x1.5	32	M8	107	100	56.5±0.5	8
YJKP-12	5	M20x1.5	40	M10	140.5	150	72±0.5	6
YJKP-17	5	M20x1.5	40	M10	140.5	150	89±0.5	6

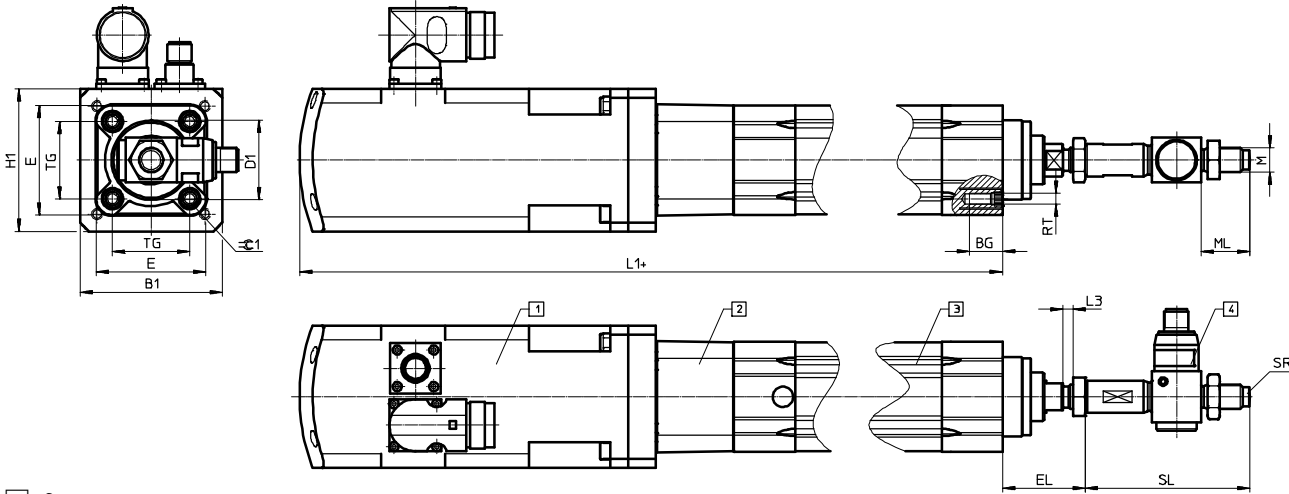
1) With a spacing of 5 mm to the lock nut (in the retracted state).

Servo press kits YJKP

Dimensions

Download CAD data → www.festo.com

With axial kit



- 1 Servo motor
- 2 Axial kit
- 3 Electric cylinder
- 4 Force sensor

Type	B1	BG	D1	E	EL ¹⁾	H1	L1
YJKP-0.8	55	16	34	45 ^{+0.5}	35.5	55	336.1
YJKP-1.5	70	16	39	54 ^{+0.5}	40.5	70	357.8
YJKP-4	100	17	45	64 ^{+0.5}	49.5	100	439.3
YJKP-7	100	17	52	75 ^{+0.5/-0.1}	50	100	492.5
YJKP-12	140	17	60	93 ^{+0.5/-0.1}	61	140	581.5
YJKP-17	140	17	70	110 ^{+0.5/-0.1}	66	140	619

Type	L3	M	ML	RT	SL	SR	TG	≙C1
YJKP-0.8	5	M10x1.25	22	M6	78	60	32.5	6
YJKP-1.5	5	M12x1.25	24	M6	81	60	38	6
YJKP-4	5	M16x1.5	32	M8	107	100	46.5	8
YJKP-7	5	M16x1.5	32	M8	107	100	56.5±0.5	8
YJKP-12	5	M20x1.5	40	M10	140.5	150	72±0.5	6
YJKP-17	5	M20x1.5	40	M10	140.5	150	89±0.5	6

1) With a spacing of 5 mm to the lock nut (in the retracted state).

21 Services



- + After Sales Services:
from commissioning through to maintenance and repair
- + Energy Saving Services:
energy efficiency as a modular service. PreAudit and Audit to suit your specific requirements
- + Technical Support Services:
technical advice and technical customer support

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- Repair service 1722
- Technical support 1723
- PreAudit 1724
- Analysis of compressed air generation 1725
- Compressed air quality analysis 1726
- Pressure drop measurement 1727
- Compressed air consumption analysis 1728
- Leakage detection and elimination 1729
- Machine analysis for energy efficiency 1730



Commissioning service

- + Configuration and parameterisation on site
- + Fast, reliable, optimised

→ page 1720



Maintenance

- + Inspection and preventive maintenance measures
- + Corrective maintenance

→ page 1721





PreAudit – Energy Saving Services

- + Comprehensive report on your compressed air system
- + Determine savings potential for compressed air and define measures



→ page 1724

Product overview

After Sales and Technical Support Services





		
Type	Commissioning service	Maintenance
Services	<ul style="list-style-type: none"> • Mechanical, pneumatic and electrical integration and configuration of Festo automation solutions • Configuration and parameterisation • Optimisation with test run • Data backup and documentation • Technical guidance and briefing of staff responsible for the machine 	<p>Implementation of the following preventive maintenance measures to DIN 31051:</p> <ul style="list-style-type: none"> • Inspections <ul style="list-style-type: none"> – Checking for damage and wear characteristics – Checking mechanical, pneumatic and electrical connections and connectors – Checking lubrication – Checking compressed air preparation – Carrying out component-specific inspections • Maintenance <ul style="list-style-type: none"> – Lubrication/relubrication of guides – Tightening of connectors – Replacement of air filters – Replacement of silencers – Carrying out component-specific preventive maintenance tasks • Repair <ul style="list-style-type: none"> – Troubleshooting – Solution finding – Error elimination – Elimination of leakages – Replacement or repair of components
Description	<ul style="list-style-type: none"> • Support with professional commissioning of Festo automation solutions • Competent briefing of staff responsible for the machine 	<ul style="list-style-type: none"> • Preventive and corrective maintenance • Directly at your system • For high system availability and rapid assistance should the worst happen
→ Page/online	1720	1721

After Sales and Technical Support Services




		
Type	Repair service	Technical support
Services	<ul style="list-style-type: none"> • Inspection • Analysis of economic efficiency • Repair or replacement of faulty components or wearing parts • Leakage testing • Functional testing 	<ul style="list-style-type: none"> • Technical advice: answering technical questions or solving technical problems <ul style="list-style-type: none"> – Online support – Hotline support • Technical customer support: technical support on site <ul style="list-style-type: none"> – Remote support – On-site support
Description	<ul style="list-style-type: none"> • Extended service life • Reduced costs 	<ul style="list-style-type: none"> • Your technical questions answered • Technical support on site
→ Page/online	1722	1723

Product overview

Energy Saving Services

Type	 PreAudit	 Analysis of compressed air generation	 Compressed air quality analysis	 Pressure drop measurement
Services	<ul style="list-style-type: none"> Energy analysis – assessment Compressed air quality analysis Pressure drop measurement Compressed air consumption analysis Leakage detection – quick check Machine analysis for energy efficiency – quick check Comprehensive report on the analysis with weighted recommendations on what to do next 	<ul style="list-style-type: none"> Measurement of compressor operating times as well as load/idling times Power consumption measurement Flow measurement/consumption measurement Pressure measurement (level and band width) If possible, estimation of leakage volume Comparison of energy consumption and compressed air volume supplied 	<ul style="list-style-type: none"> Inspection of decentralised air preparation at point of usage Measurement of the residual oil content up to class 2 (ISO 85731:2010) Measurement of the pressure dew point up to class 2 (ISO 85731:2010) Analysis of measurement results and if applicable recommendation of improvement measures Documentation of all measurement results 3 hours on-site service (max. 3 measurements; additional time on request) 	<ul style="list-style-type: none"> Measurement of the pressure in the compressor room (input), in production (draw off) and storage of the results Recording of the pressure drop using multiple pressure sensors with data loggers Evaluation and comparison of the pressure profiles Controlled pressure reduction following evaluation Demonstration of pressure fluctuations in production
Description	<ul style="list-style-type: none"> Implementation of the Festo Energy Saving Services to DIN ISO 11011 Analysis of your compressed air system by experts on site Important advice and recommendations on the topic of energy efficiency – immediate identification of worthwhile measures 	<ul style="list-style-type: none"> Energy Saving Service to DIN ISO 11011 Determination of a clear consumption profile Information about the output reserves of the compressed air system Measurement during operation 	<ul style="list-style-type: none"> Energy Saving Service to DIN ISO 11011 Assurance of optimum compressed air quality Increased service life of components Minimisation of unexpected production downtimes Class 1 on request 	<ul style="list-style-type: none"> Energy Saving Service to DIN ISO 11011 Recording of the pressure drop in the system Up to 8% energy saving in generated compressed air through pressure reduction
→ Page/online	1724	1725	1726	1727

Energy Saving Services

Type	 Compressed air consumption analysis	 Leakage detection and elimination	 Machine analysis for energy efficiency
Services	<ul style="list-style-type: none"> Installation and removal of the measuring equipment with standard components (fittings, tubing, etc.) Measurement of flow rate, consumption and pressure with machine running and idle Determination and analysis of different characteristics <ul style="list-style-type: none"> Consumption per machine cycle Average consumption per minute Average pressure Max./min. pressure Max./min. rate of air flow Documentation of measurement results including graphical representation of measurement results, optionally available as a PDF file or colour printout 3 hours on-site service (additional time on request) 	<ul style="list-style-type: none"> Detection of compressed air leakages using highly sensitive ultrasound detectors during operation Checking the complete compressed air system from the compressor to the pneumatic application Classification of the leakages according to size and cost Documentation of defective components Leakage report containing: <ul style="list-style-type: none"> Recommended measures Spare parts required Estimate of repair time Prioritisation of measures Assessment as to whether repair can be carried out while machine is in operation Information on optimisation options Documentation of measures carried out Online access to all results and repair data via the Energy Saving Assessment Portal 	<ul style="list-style-type: none"> Identification and analysis of the pneumatic applications of relevance to energy consumption Measurement of flow rate, consumption and pressure of the relevant compressed air applications Ascertain and recommendation of optimisation measures Estimation of the costs and savings, including the predicted amortisation time Installation and removal of the measuring equipment with standard components (fittings, tubing, etc.) Measurement of flow rate, consumption and pressure with machine running and idle Documentation of the measurement results including graphical representation
Description	<ul style="list-style-type: none"> Energy Saving Service to DIN ISO 11011 Determination of exact compressed air consumption Optimal configuration of compressed air supply No pressure drop due to undersupply No unnecessary energy costs due to oversupply 	<ul style="list-style-type: none"> Energy Saving Service to DIN ISO 11011 Detection and repair of leakages in production plants Immediate energy and operating cost savings 	<ul style="list-style-type: none"> Energy Saving Service to DIN ISO 11011 Reviewing of systems with respect to possible energy optimisation potential Documentation of the analysed compressed air applications
→ Page/online	1728	1729	1730

Commissioning service



- Professional commissioning of Festo automation solutions
- Competent briefing of staff responsible for the machine
- Fast – reliable – optimised

Objectives

- Professional commissioning of Festo components and solutions in your plant
- Competent briefing of staff responsible for the machine

Services

- Mechanical, pneumatic and electrical integration and configuration of Festo automation solutions
- Configuration and parameterisation
- Optimisation with test run
- Data backup and documentation
- Technical guidance and briefing of staff responsible for the machine

Requirements and prerequisites

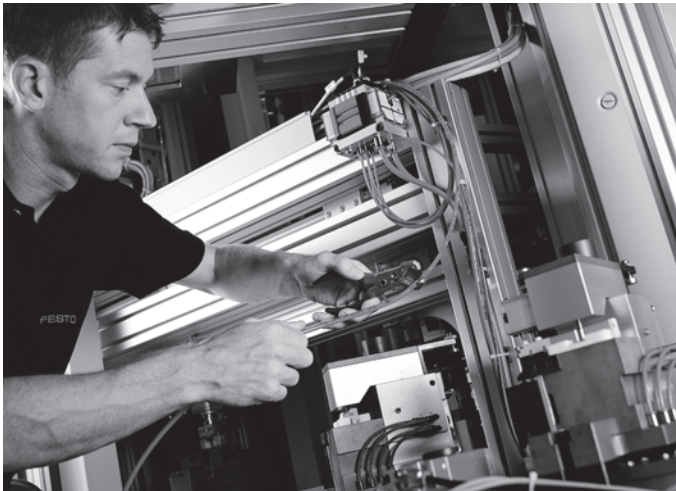
- Optimum prerequisites
- Use of Festo components
 - Access to the machine or system
 - Mechanical, pneumatic and electrical work is complete
 - Qualified personnel responsible for the machine present on the agreed date

The benefits to you

- Optimum configuration and parameterisation
- Time saving
- Maximum system availability

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services



- Preventive and corrective maintenance
- Directly at your system
- For high system availability and rapid assistance should the worst happen

Objectives

- Optimal preventive maintenance of pneumatic and electrical automation components and systems
- Prevention of unplanned production downtime
- Fast and effective support in the event of malfunctions or production downtime
- Reduced energy consumption

Services

Implementation of the following preventive maintenance measures to DIN 31051:

- Inspections
 - Checking for damage and wear characteristics
 - Checking mechanical, pneumatic and electrical connections and connectors
 - Checking lubrication
 - Checking compressed air preparation
 - Carrying out component-specific inspections
- Maintenance
 - Lubrication/relubrication of guides
 - Tightening of connectors
 - Replacement of air filters
 - Replacement of silencers
 - Carrying out component-specific preventive maintenance tasks
- Repair
 - Troubleshooting
 - Solution finding
 - Error elimination
 - Elimination of leakages
 - Replacement or repair of components

The benefits to you

- Professional implementation of preventive maintenance measures for optimum machine operation by specialists from Festo
- The entire compressed air system is always in a good condition
- High system availability and prevention of unplanned downtimes
- Reduced workload for your maintenance personnel
- Individual services available on request

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services

Repair service



- Extended service life
- Reduced costs

Objectives

- Cost-effective extension of the service life of high-quality components and assemblies

Services

- Inspection
- Analysis of economic efficiency
- Repair or replacement of faulty components or wearing parts
- Leakage testing
- Functional testing

Please send the faulty component and a detailed error description to your Festo national company. Detailed spare parts lists can be found on the Festo website.

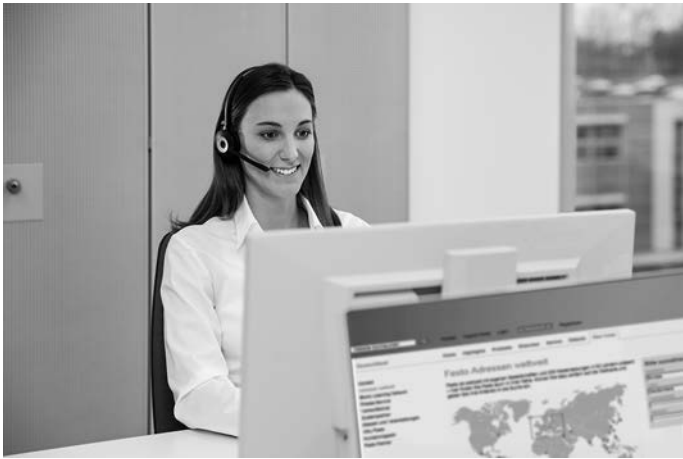
The benefits to you

- Extension of the service life of components and assemblies through replacement or repair of defective or worn parts
- Also available in some countries as an Express Repair Service (e.g. repair within 2 hours) and at a fixed price

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services

Technical support



- Your technical questions answered
- Technical support on site

Services

- Technical advice: answering technical questions or solving technical problems using Festo automation solutions
 - Online support
 - Hotline support
- Technical customer support: technical support on site
 - Remote support
 - On-site support

The benefits to you

- Worldwide availability of technical support services
- Time saving when answering technical questions and solving problems
- Optimum sizing and increased availability of your system

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services

PreAudit



- Implementation of the Festo Energy Saving Services to DIN ISO 11011
- Analysis of your compressed air system by experts on site
- Important advice and recommendations on the topic of energy efficiency – immediate identification of worthwhile measures

Objectives

- Determine a detailed picture of the energy situation in your compressed air system
- Demonstrate potential improvements and possible weaknesses

Services

Implementation of the Festo Energy Saving Services to DIN ISO 11011:

- Analysis of compressed air generation – assessment
 - Assessment of the compressors – utilisation
 - Documentation of compressor-specific performance data and all relevant maintenance data
- Compressed air quality analysis
 - Page 1726 "Compressed air quality analysis"
- Pressure drop measurement
 - Page 1727 "Pressure drop measurement"
- Compressed air consumption analysis
 - Page 1728 "Compressed air consumption analysis"
- Leakage detection – quick check
 - Systematic identification of leaks in the compressed air system
 - Leakage detection and documentation on one machine by way of example
- Machine analysis for energy efficiency – quick check
 - Review of one machine's pneumatic energy efficiency by way of example
 - Documentation of the analysed compressed air applications
 - Comprehensive report on the analysis with weighted recommendations on what to do next

General technical conditions

- Duration approx. 1 to 1 ½ days on site, 1 day for evaluation and report, ½ day for presentation of the results
- Access required to the compressor station, the systems and the plant. Accompanied by one of the customer's employees, provision of the data requested in advance.
- See Energy Saving Services for further general requirements

The benefits to you

- Important advice and recommendations on how to improve energy efficiency
- Immediate identification of weaknesses and worthwhile measures

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Analysis of compressed air generation



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the analysis of compressed air generation:

- Determination of a clear consumption profile
- Information about the output reserves of the compressed air system
- Measurement during operation

Objectives

- Determine a clear consumption profile for compressed air requirements including fluctuations in consumption at different operating times
- Identify potential savings

Services

- Measurement of compressor operating times as well as load/idling times
- Power consumption measurement
- Flow measurement/consumption measurement
- Pressure measurement (level and band width)
- If possible, estimation of leakage volume
- Comparison of energy consumption and compressed air volume supplied

General technical conditions

- Simultaneous power consumption measurement on up to 6 compressors
- Simultaneous power consumption measurement on 6 to 12 compressors on request
- Pressure measurement up to 16 bar
- Volumetric flow rate measurement in main line up to DN 300 (approx. 39,500 Nm³/h)
- Flow sensor can be installed during operation and under pressure
- Measurement duration 1 week (different measurement duration on request)
- Documentation of results as a PDF file and printout in colour

The benefits to you

- Information about compressed air costs and potential savings
- Transparent energy consumption of the entire system
- Information about the output reserves of the compressed air system
- Manufacturer-independent measurement
- Installation of the measuring devices during operation

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Compressed air quality analysis



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the compressed air quality analysis:

- Assurance of optimum compressed air quality
- Increased service life of components
- Minimisation of unexpected production downtimes

Objectives

- Optimise the current compressed air quality of the compressed air system
- Increase machine availability and process reliability
- Reduce maintenance costs

Services

- Inspection of decentralised air preparation at point of usage
- Measurement of residual oil content
- Measurement of pressure dew point
- Analysis of measurement results and if applicable recommendation of improvement measures
- Documentation of all measurement results
- 3 hours on-site service (max. 3 measurements; additional time on request)
- General technical requirements: sampling ideally using standard push-pull fittings or standard O.D. tubing
- Brief interruption of the compressed air supply necessary to install the measurement technology
- Pressure range up to 10 bar
- Measurement of the residual oil content up to class 2 (ISO 8573-1:2010)
- Measurement of the pressure dew point up to class 2 (ISO 8573-1:2010)
- Measurement of pressure dew points and residual oil class 1 (ISO 8573-1:2010) on request and in accordance with individual quotation

The benefits to you

- Assurance of optimum compressed air quality
- Targeted adaptation of compressed air preparation to requirements
- Minimisation of unexpected production downtimes
- Increased service life of pneumatic components and process reliability
- Analysis and documentation of measurement results by compressed air specialists

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Pressure drop measurement



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the pressure drop measurement:

- Record the pressure drop in the system
- Up to 8% energy saving in generated compressed air through pressure reduction

Objectives

- Record the pressure drop in the system
- Reduce pressure

Services

- Measurement of the pressure in the compressor room (input), in production (draw off) and storage of the results
- Recording of the pressure drop using multiple pressure sensors with data loggers
- Evaluation and comparison of the pressure profiles
- Controlled pressure reduction following evaluation
- Demonstration of pressure fluctuations in production

The benefits to you

- Process reliability thanks to constant pressure level
- Potential savings from pressure reduction: up to 8% of the energy for generated compressed air

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Compressed air consumption analysis



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the compressed air consumption analysis:

- Determination of exact compressed air consumption
- Optimal configuration of compressed air supply
- No pressure drop due to undersupply
- No unnecessary energy costs due to oversupply

Objectives

- Determine and analyse compressed air consumption and leakage of machines and machine lines
- Identify inappropriate compressed air usage and of improvement potential

Services

- Installation and removal of the measuring equipment with standard components (fittings, tubing, etc.)
- Measurement of flow rate, consumption and pressure with machine running and idle
- Determination and analysis of different characteristics
 - Consumption per machine cycle
 - Average consumption per minute
 - Average pressure
 - Max./min. pressure
 - Max./min. rate of air flow
- Documentation of measurement results including graphical representation of measurement results, optionally available as a PDF file or colour printout
- 3 hours on-site service (additional time on request)

General technical conditions

- Measurement of flow rates from 6 l/min ... 5000 l/min (higher flow rates on request)
- Accuracy of flow rate measurements: $\pm 4.5\%$
- Flow measurements in 1" ... 12" lines on request
- Applied measuring principles: usually calorimetric, sometimes differential pressure method
- Pressure range 1 ... 10 bar
- Pressure range up to 50 bar on request
- Sensor installation in supply line or bypass as special solution
- Brief interruption of the compressed air supply line necessary to install/remove the measurement technology
- Compressed air quality min. class 7:4:2 (to ISO 8573-1:2010)
- Provision of measurement results as a CSV file and as a colour printout
- Parallel measurement of multiple flow rates and pressures, including documentation, on request

The benefits to you

- Information about potential compressed air savings
- Use of state-of-the-art, highly accurate pressure and flow measurement technology
- All relevant measuring ranges are covered
- Analysis of measurement results by compressed air specialists

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Leakage detection and elimination



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is leakage detection and elimination:

- Detection and repair of leakages in production plants
- Immediate energy and operating cost savings

Objectives

- Transparency of energy and money losses as well as CO₂ emissions
- Assess and classify the individual leaks
- Lower compressed air requirements and thus lower operating costs

Services

- Detection of compressed air leakages using highly sensitive ultrasound detectors during operation
- Checking the complete compressed air system from the compressor to the pneumatic application
- Classification of the leakages according to size and cost
- Documentation of defective components
- Leakage report
 - Recommended measures
 - Required spare parts
 - Estimate of repair time
 - Prioritisation of measures
 - Assessment as to whether repair can be carried out while machine is in operation
- Information on optimisation options
- Documentation of measures carried out
- Online access to all results and repair data via the Energy Saving Assessment Portal

General technical conditions

- Contactless ultrasound detection and classification of compressed air leakages (other gases on request)
- Detection while the machines are running, usually no or only short production downtimes required
- Max. detection distance: 20 m
- Documentation of the results in the Energy Saving Assessment Portal

The benefits to you

- No production downtime required
- Fast and professional checking of your entire plant for compressed air leakages
- Detailed documentation of required measures, including spare parts
- Online access to the prepared data via the Energy Saving Assessment Portal
- Software tools for optimum planning of leakage rectification
- No investment in measurement technology for leakage detection needed
- Experience from many major projects

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Machine analysis for energy efficiency



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the machine analysis for energy efficiency:

- Reviewing of systems with respect to possible energy optimisation potential
- Documentation of the analysed compressed air applications

Objectives

- Analyse and establish recommendations for optimising the energy consumption of your compressed air applications
- Determine and analyse compressed air consumption and of leakage of applications and machines
- Identify inappropriate compressed air usage and of improvement potential

Services

- Identification and analysis of the pneumatic applications of relevance to energy consumption
- Measurement of flow rate, consumption and pressure of the relevant compressed air applications
- Ascertain and recommendation of optimisation measures
- Estimation of the costs and savings, including the predicted amortisation time
- Installation and removal of the measuring equipment with standard components (fittings, tubing, etc.)
- Measurement of flow rate, consumption and pressure with machine running and idle
- Documentation of the measurement results including graphical representation

General technical conditions

- Sensor installation in supply line or bypass as special solution
- Brief interruption of the compressed air supply line necessary to install/remove the measurement technology
- Compressed air quality min. class 7:4:2 (to ISO 8573-1:2010)
- Parallel measurement of multiple flow rates and pressures, including documentation, on request
- On request: installation and commissioning of the developed solutions

The benefits to you

- Systematic review by experienced pneumatic specialists
- Rapid identification of measures that are economically sensible and technically feasible
- Certification of the energy efficiency of pneumatic solutions

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

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Conditions for using, storing and transporting Festo products

What must be taken into account when using Festo products?

The limit values specified in the technical data and any specific safety instructions must be adhered to by the user in order to ensure correct functioning.

The pneumatic components must be supplied with correctly prepared compressed air free of aggressive media

→ page 1736 ff.

Take the ambient conditions at the place of use into consideration. Corrosive, abrasive and dusty environments (e.g. water, ozone, grinding dust) will reduce the service life of the product.

Check the resistance of the materials of Festo products with respect to the media used and surrounding media

→ page 1752.

When Festo products are used in safety-oriented applications, all national and international laws and regulations, for example the Machinery Directive, together with the relevant references to standards, trade association rules and the applicable international regulations must be observed and complied with.

Unauthorised conversions or modifications to products and systems from Festo constitute a safety risk and are thus not permitted.

Festo does not accept any liability for the resulting damages.

You should contact Festo's advisors if one of the following applies to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

All technical data is correct at the time of going to print.

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All technical data is subject to change according to technical updates.

Storage conditions

Temperature

The temperature range in storage areas must be between 10 °C and 40 °C all year round. Rapid changes of temperature in the storage area should be avoided. Heat sources such as heating elements, heating pipes and the like should be shielded to ensure the stored goods are not directly subject to radiant heat.

UV radiation

No direct sunlight (skylights, vent flaps, etc.) and no high-UV artificial lighting. Use fluorescent tubes with UV protection.

Ambient air

Air circulation and permanently feeding (proportionally) ambient air to the storage room is absolutely essential. You must prevent any media that may affect the materials, e.g. solvents and the like arising from production processes, from entering the storage areas. The storage location should not contain any equipment that generates ozone such as indoor air ionisers or high-voltage equipment.

The relative humidity should not exceed 75%. Condensation must be avoided in all cases.

Dust

The parts must be stored in suitable containers. The storage room must as far as possible be free of dust. Attention should be paid in particular to using abrasion-resistant, non-porous floor coverings, and ingress of dust particles from external sources (ambient air) should be prevented.

When repairs are being made to the building technology systems in the warehouse (welding, grinding etc.), the stored goods should be protected from welding spatter, chips etc.

Adding to/removing from storage

The parts should not be exposed to any extreme fluctuations in temperature.

Mechanical effect

All products, including packs of spare parts/wearing parts for example, should be stored in such a way that they are not mechanically deformed or damaged, i.e. no buckling or sagging, no point loads. Direct contact between elastomer products and copper or manganese for an extended period should also be avoided because of possible reciprocal effects.

Stock management

To avoid storing parts for long periods of time, the first-in first-out principle should be followed. The total storage duration should be kept as short as possible. In principle, the specified guarantee periods apply.

Transport conditions

In principle, there are no restrictions in terms of operating conditions during land/sea or air transport, provided the

products are sufficiently protected in accordance with the specifications in the product data sheet by using appropriate

product and shipping packaging. If necessary, special transport such as temperature-controlled transport can be

organised. However, this should be agreed contractually and as a separate financial matter.

Standards in pneumatics

Standards are also of great importance in pneumatics. Standards mean harmonisation. Standardisation is also the basis for the free trade of goods and services between companies

nationally as well as internationally. Standards in industry describe the latest state of technology. They provide a common basis for the evaluation of technical aspects. Standards relevant for pneumat-

ics deal with dimensions, safety and quality. Festo has for many years been actively working with the relevant national and international standards organisations.

Pneumatic drives

- Standards-based cylinders to ISO 6432
- Standards-based cylinders to ISO 21287

- Standards-based cylinders to ISO 15552 (ISO 6431, DIN ISO 6431, VDMA 24 562), NFE 49003.1 and UNI 10290.

- Rod clevises to ISO 8140 and DIN 71752

- Rod eyes to ISO 12240-4, dimension series K

Valves/valve terminals

- Valve terminals for standard valves
- Solenoid and pneumatic valves with port pattern to ISO 15407-1
- Valve sub-bases to ISO 15407-1
- Valve terminals with port pattern to ISO 15407-2

- Solenoid and pneumatic valves with port pattern to ISO 5599-1
- Valve terminals with port pattern to DIN ISO 5599-2

- Valve sub-bases with port pattern to ISO 5599-1 and external dimensions to VDMA 24345

- Solenoid valves with port pattern to VDI/VDE 3845 (NAMUR)

Compressed air preparation

- Compressed air quality according to ISO 8573-1 (2010)
- Bourdon tube pressure gauge to EN 837-1
- Capsule pressure gauge to EN 837-3

- Reservoirs to directive 2014/68/EU, 2014/29/EU or EN 286-1.

Compressed air preparation

Why compressed air preparation?

Properly prepared compressed air helps to prevent faults in pneumatic components. It increases the service life of the components and reduces machine failures and downtime, thereby increasing process reliability.

Compressed air contains contaminants in the form of

- particles,
- water and
- oil.

Water and oil can be in liquid or gaseous form and change from one state to another within the compressed air system. An actual compressed air system will not have any of these contaminants in their pure form; they will occur in a mixture. The composition of this mixture can vary greatly at different times in different places in the system. For example, water can collect in branch lines or particles can become deposited in empty spaces over time, and then suddenly be propelled along by a pressure surge.

Particles

Particles in the compressed air usually occur in the form of dust (carbon black, abraded and corrosion particles). Metal chips (e.g. from conversion work) and residues of sealants such as PTFE tape can also occasionally get into the com-

pressed air via the compressed air system.

The particles are classified as fine dust: size 0.1 ... 5 µm and coarse dust: size > 5 µm in accordance with ISO 8573-1:2010.

Poorly prepared compressed air causes faults such as:

- Accelerated wearing of seals
- Oil-fouled valves in the control section
- Dirty silencers

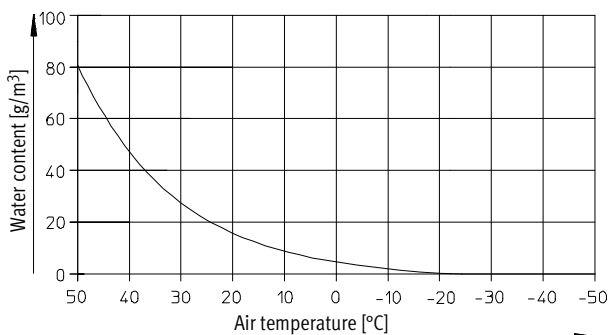
Possible effects for the user and machine:

- Reduced machine availability
- Higher energy costs due to leakages
- Higher maintenance costs
- Shorter component and system service life

Water content in air

The maximum water content in air (100% relative air humidity) is dependent on temperature. Air can only absorb a certain amount of water (in g) per volumetric unit (in m³), irrespective of pressure. The warmer the air, the more water it can absorb. Excessive humidity manifests itself as condensation. If the air temperature drops, for example from

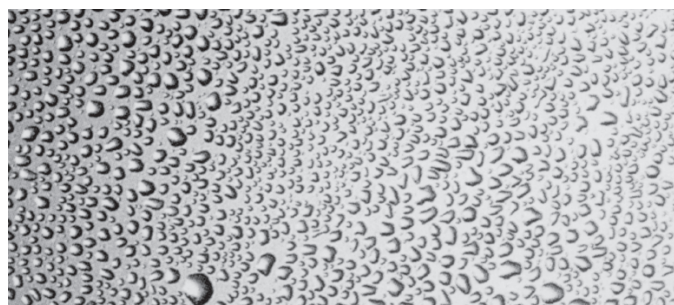
20 °C to 3 °C, the maximum water content of compressed air is reduced from 18 g/m³ to 6 g/m³. The compressed air can therefore only absorb approx. 1/3 as much water as before. The rest (12 g/m³) is precipitated as drops (dew) and must be drawn off so that it cannot cause any malfunctions.



Water condensation

Water is always present in the air in the form of humidity. When compressed air is cooled, water is released in large quantities. Drying helps to prevent corrosion

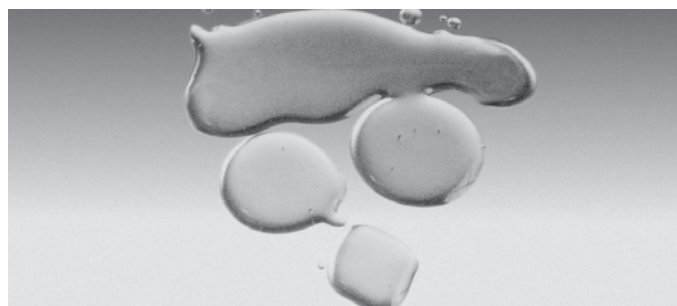
damage in compressed air systems and prevents malfunctions in the connected consuming devices.



Oil contamination

Similarly, in the case of compressors that operate without oil, oil aerosols present in the drawn-in air also lead to a residue of oil pollutants. However, this oil is not

suitable for the lubrication of drives and can even lead to the clogging of sensitive parts.



How clean should compressed air be?

The compressed air quality is determined by the requirements

The answer is quite simple: compressed air must be so clean that it cannot cause any malfunctions or damage.

As each filter also creates a flow resistance, compressed air should be as clean as possible for economic reasons.

The wide application range of compressed air places many different requirements on compressed air quality.

If high quality is required, several filtration stages are necessary → page 1740. If just a single "fine" filter were used, it would quickly become ineffective.

Sizing

Note

Equipment at an air branching/air distribution input should have a high flow rate as it must supply the total demand for air.

More information
→ Chapter 13

The size of the service unit depends on the system's air consumption. Under-sizing leads to pressure fluctuations and to reduced filter service life. For cost reasons, high quality com-

pressed air should only be used where it is absolutely necessary. Branching modules between the individual filter stages enable the user to tap off compressed air of various qualities.

Service unit functions

Compressed air filters remove particles and moisture droplets from the air. Particles > 40 ... 5 µm (depending on the grade of filtration) are retained by a sintered filter. Liquids are separated by centrifugal force. The condensate which accumulates in the filter bowl must be emptied from time to time, because it would otherwise be drawn in by the air flow.

Several industries often require finely filtered air. Fine and micro filters are used for this. Fine filters are used for pre-filtering down to a particle size of 1 µm.

Micro filters further purify pilot air, removing practically all remaining water and oil droplets and contamination particles. The degree of compressed air filtration is 99.999% relative to a particle size of 0.01 µm.

The pressure regulator maintains a constant working pressure (secondary side), regardless of the pressure variations in the system (primary side) and the air consumption. Inlet pressure must always be greater than working pressure.

The compressed air lubricator provides pneumatic components with adequate lubricant if required. Oil is drawn from a reservoir and atomised when it comes into contact with the air stream. The lubricator is only functional when the air flow is sufficiently strong.

Compressed air preparation

Lubricated compressed air

The following notes must be observed when lubricated compressed air is used:

- Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524-HLP 32, viscosity 32 cSt at 40 °C).
- If lubricated compressed air is used, additional lubrication must not exceed 25 mg/m³ (ISO 8573-1:2010). The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air.
- The lifetime lubrication required for unlubricated operation can be

"flushed out" when products are operated using lubricated compressed air. This can result in malfunctions if a system is switched back to unlubricated operation after lubricated operation.

- The lubricators should, where possible, always be installed directly upstream of the cylinders used in order to prevent operating the entire system with lubricated air.
- Never over-lubricate the system. To determine the correct lubricator settings, the following "oil form test" can be implemented: hold a piece of white card

approx. 10 cm away from the exhaust port (without silencer) of a working valve of the cylinder furthest away. Allow the system to work for some time; the card should only show a pale yellow colouration. If oil droplets appear, this is an indication that too much oil has been used.

- The colour and condition of the exhaust silencer provide further evidence of over-lubrication. Marked yellow coloration and dripping oil indicate that the lubrication setting is too high.

- Dirty or incorrectly lubricated compressed air will reduce the service life of the pneumatic components.
- Service units must be inspected at least twice a week for condensate and correct lubrication settings. These inspections should be included in the machine maintenance plan.
- To protect the environment, as little lubrication as possible should be used. Festo pneumatic valves and cylinders have been designed in such a manner that, under permitted operating conditions, additional lubrication is not required and yet a long service life is guaranteed.

Oil content

A differentiation must be made between residual oil for operation with unlubricated air and additional oil for operation with lubricated air.

Unlubricated operation:

Examinations involving residual oil content have revealed that the various types of oil have entirely different effects. A distinction must therefore be made between

the following oil types when analysing the residual oil content:

- Bio-oils: oils based on synthetic or natural ester (e.g. rapeseed oil methyl ester). In this case, residual oil content must not exceed 0.1 mg/m³. This corresponds to ISO 8573-1:2010 class 2 → Chapter 13. Larger amounts of oil result in damage to O-rings, seals and other component parts

(e.g. filter bowls) in pneumatic systems, and may result in premature product failure.

- Mineral oils (e.g. HLP oils to DIN 51524, part 2) or similar oils based on polyalphaolefins (PAO). In this case, residual oil content must not exceed 5 mg/m³. This corresponds to ISO 8573-1:2010 class 4 → Chapter 13. A higher residual oil

content is not permitted, regardless of the compressor oil, because permanent lubrication would otherwise be flushed out over a period of time. This can lead to malfunctions.

Humidity

Max. pressure dew point 3 °C. Corresponds to ISO 8573-1:2010, at least class 4 → Chapter 13.

Note

The pressure dew point must be at least 10 K lower than the temperature of the medium, since ice would otherwise form in the expanded compressed air.

Solids

Permissible particle load max. 10 mg/m³, particle size max. 40 µm. Corresponds to ISO 8573-1:2010 class 7 → Chapter 13.

Suitable oils

Special oil in 1 litre containers:
Order code OFSW-32

Note

Optimum compressed air preparation means fewer machine failures and greater process reliability. See **Compressed air quality analysis** → 1726

Purity classes for particles to ISO 8573-1:2010

Class	Maximum number of particles per m ³ as a function of particle size d		
	0.1 µm < d ≤ 0.5 µm	0.5 µm < d ≤ 1.0 µm	1.0 µm < d ≤ 5.0 µm
0	As stipulated by the user or supplier of the equipment, stricter requirements than class 1		
1	≤ 20,000	≤ 400	≤ 10
2	≤ 400,000	≤ 6,000	≤ 100
3	Not specified	≤ 90,000	≤ 1,000
4	Not specified	Not specified	≤ 10,000
5	Not specified	Not specified	≤ 100,000

Class	Mass concentration C _p [mg/m ³]
6 ¹⁾	0 < C _p ≤ 5
7 ¹⁾	5 < C _p ≤ 10
X	C _p > 10

- 1) Air cleaned using universal filters designed for particle sizes of 5 µm (class 6) and 40 µm (class 7) is normally used for the compressed air supply to industrial tools and pneumatic machines. These designs have been used for many years, before the latest systems for measuring particle sizes were developed, and have enabled satisfactory operation while minimising pressure (and therefore performance) losses. These filters are not 100% efficient; they offer an efficiency of at least 95% based on the specified particle size, i.e. for class 6, 95% of all particles of size 5 µm are filtered; for class 7, 95% of all particles of size 40 µm are filtered (measured as per ISO 12500-3).

Purity classes for humidity and liquid water to ISO 8573-1:2010

Class	Pressure dew point [°C]
0	As stipulated by the user or supplier of the equipment, stricter requirements than class 1
1	≤ -70
2	≤ -40
3	≤ -20
4	≤ +3
5	≤ +7
6	≤ +10

Class	Concentration of liquid water C _w [g/m ³]
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10
X	C _w > 10

Purity classes for total oil content to ISO 8573-1:2010

Class	Total concentration of oil (liquid, aerosol and vapour) [mg/m ³]
0	As stipulated by the user or supplier of the equipment, stricter requirements than class 1
1	≤ 0.01
2	≤ 0.1
3	≤ 1
4	≤ 5
X	> 5

Compressed air preparation

Compressed air quality in use

Designation to ISO 8573-1:2010 [particle:water:oil]

The class that can be achieved with compressed air preparation depends on the

quality of the compressed air downstream of the compressor. The specifica-

tions apply to typical compressed air systems (this list is not exhaustive).

Central air preparation		Air distribution	Decentralised air preparation		Typical applications
Component	Class	Class	Component	Class ³⁾	
Compressor	[-:--:-]	[-:--:-]	Water separator	[-:7:4]	All applications requiring virtually condensate-free compressed air. No defined particle filtering.
Compressor + pre-filter + air dryer	[7:4:4] ¹⁾	[-:4:--] ²⁾	Filter 40 µm	[7:4:4]	Operating medium for valves, cylinders, secondary packaging (standard)
			Filter 5 µm	[6:4:4]	Servo-pneumatic positioning with proportional directional control valves, compressed air tools
			Filter 5 + 1 µm	[5:4:3]	Applications with a residual oil content < 0.5 mg/m ³ , textile industry, pneumatic spinning machines, paper industry
			Filter 5 + 1 + 0.01 µm	[1:4:2]	Applications with a residual oil content < 0.01 mg/m ³ , e.g. air bearings, painting, powder coating
			Filter 5 + 1 + 0.01 µm + activated carbon filter	[1:4:1]	Applications with a residual oil content < 0.003 mg/m ³ , reduction of oil vapours and odours, optical instruments, sealing air for precision glass scales/lasers, primary packaging
			Filter 5 + 1 + 0.01 µm + activated carbon filter + membrane air dryer	[1:3:1]	Semiconductor industry, pharmaceutical products
			Filter 5 + 1 µm + adsorption dryer	[2:2:2]	Applications in the low-temperature range, dry process air, powder transportation, food production [1:2:1]

1) Much higher classes are possible with suitable air preparation downstream of the compressor.

2) Pipe systems can increase the particle content of the compressed air (chips, rust, etc.), liquid oil can accumulate in some lines of the compressed air distribution system. Specifications apply at normal room temperature. If parts in the compressed air system are subject to lower temperatures, the humidity class must be chosen so that the pressure dew point is 10 K below the minimum expected temperature.

3) Class to ISO 8573-1:2010 at room temperature (20°C).

Definition of the compressed air purity class to ISO 8573-1:2010

The quality of the compressed air is determined by

- solid contaminants (particles),
- humidity and water, and
- oil content.

The air purity class is specified as follows:

- A = Particles
- B = Humidity
- C = Oil content

Example:

ISO 8573-1:2010 [-:7:-]
 Particles: Not defined
 Humidity: ≤ 0.5 g/m³
 Oil content: Not defined

Working conditions for valves

Medium

Under normal working conditions, pneumatic valves from Festo can be operated with lubricated or unlubricated compressed air.

If any particular product requires a different quality of compressed air, this is indicated in the technical data for the relevant product.

Nominal size

The nominal width provides information about the smallest cross section in the main flow of the valve. It specifies the diameter of the orifice and is expressed

Standard nominal flow rate

The standard nominal flow rate q_n is the flow rate characteristic used by Festo for a device or component expressed in l/min.

The standard nominal flow rate q_n is the flow rate based on standard conditions (to DIN 1343) under the following measurement conditions:

- Test medium air
- Temperature 20 ± 3 °C (temperature of medium)

Pressure and pressure ranges**Pressure**

Force per area. There is a difference between differential pressure with respect to atmosphere and absolute pressure. Pressure specifications for pneumatic devices must normally be assumed to be the differential pressure with respect to atmosphere, unless expressly indicated otherwise.

Pilot pressure range

The range between the lowest required and highest permissible pilot pressure for correct operation of a valve or system.

The following pressures, for example, have been standardised to ISO 4399: 2.5, 6.3, 10, 16, 40 and 100 bar.

Operation with unlubricated compressed air is made possible by the selection of the material combination, the shape of the dynamic seals and the basic lubrication applied ex works.

Operation with unlubricated compressed air is not possible under the following working conditions:

in mm. This is a measurement that only provides a limited comparison between different components. To compare

- Test specimen at ambient temperature
- The pressures to be set are for components with constant cross section (e.g. directional control valves):
Input pressure $p_1 = 6$ bar
Output pressure $p_2 = 5$ bar

Standard conditions to DIN 1343:

- $t_n = 0$ °C (standard temperature)
- $p_n = 1.013$ bar (standard pressure)

Symbols

Differential pressure with respect to atmosphere p

Absolute pressure p_{abs}

Unit: bar, Pa (pascal)

1 bar = 100000 Pa

Drop-off pressure

Pressure which, if no longer maintained, causes a monostable directional control valve to return to the normal position by its spring.

- Once the valves have been operated with lubricated compressed air, it is essential that lubricated compressed air is always used subsequently since the oil in the lubricated air will have flushed away the basic lubrication.

products, the standard nominal flow rate must also be considered.

Exception 1:

Silencers

Input pressure $p_1 = 6$ bar

Output pressure $p_2 = p_{amb}$

p_{amb} = atmospheric pressure

Exception 2:

Low-pressure components

Input pressure $p_1 = 0.1$ bar

Output pressure $p_2 = p_{amb}$

Operating pressure

Data quoted as "max." or "max. permissible" values refer to the maximum safe pressure at which a component or system can be operated.

Absolute pressure

Zero pressure occurs in a completely air-free space (100% vacuum). Pressure that is calculated from this theoretical zero point is absolute pressure.

- In all cases, a grade of filtration is required that removes contaminants up to $40 \mu\text{m}$ (standard filter cartridge version).

Micro compressed air filtration may be required for special applications.

Exception 3:

For pressure regulators:

Input pressure $p_1 = 10$ bar (constant)

and output pressure $p_2 = 6$ bar

at $q = 0$ l/min are set for the test specimen. Subsequently, the flow rate is

slowly and constantly increased using the flow control valve until the output

pressure reaches a value of $p_2 = 5$ bar.

The resulting flow rate is measured.

Operating pressure range

This is the range between the lowest required and highest permissible operating pressure for safe operation of a component or system. In pneumatics, this pressure range is also referred to as the working pressure range.

Response pressure

Pressure at which a directional control valve is actuated. Catalogue specifications for response pressure signify that the indicated minimum pressure must be present at the signal input to safely switch the valve.

Port designations of pneumatic components to ISO 5599

Port designations	Using ISO 5599 numbers (5/2-way and 5/3-way valves)	Using letters ¹⁾
Supply port	1	P
Working ports	2	B
	4	A
		C
Exhaust ports	3	S
	5	R
		T
Pilot ports (signal)	10 ²⁾	Z ²⁾
	12	Y
	14	Z
Pilot air ports (power supply)	81 (12)	
	81 (14)	
Pilot exhaust ports	83 (82)	
	83 (84)	
Leakage lines		L

- 1) Still frequently used.
- 2) Clears the output signal.

Working conditions for drives

Medium

Under normal working conditions, pneumatic drives from Festo can be operated with lubricated or unlubricated dried compressed air. If any particular product requires a different quality of compressed air, this is indicated in the technical data for the relevant product. Operation with unlubricated compressed

air is made possible by the choice of materials used, the material combinations, the shape of the dynamic seals and the basic lubrication applied ex works. Operation with unlubricated compressed air is not possible under the following working conditions: Once the drives have been operated

with lubricated compressed air, it is essential that lubricated compressed air is always used subsequently since the oil in the lubricated air will have flushed away the basic lubrication.

Ambient conditions

Take the ambient conditions at the place of use into consideration. Corrosive, abrasive and dusty environments (e.g. water, ozone, grinding dust) will reduce the service life of the product. Check the resistance of the materials of Festo products with respect to the media used and surrounding media
→ page 1752.

Intended use

Pneumatic drives are intended to convert pressure energy into motion energy; this process involves the transmission and transfer of forces. "Intended use" does

not include use as a spring or cushioning component, since this would involve additional loads.

Frequency

If pneumatic drives are operated at maximum possible speed, a pause time must

be taken into account between the stroke movements.

Assembly position

In general, drives from Festo can be installed in any position. Any limitations or special measures are indicated in the technical data for the relevant product.

Operating pressure

"Max." or "max. permissible" values refer to the maximum safe pressure at which a drive or system can be operated.

Operating pressure range

This is the range between the lowest required and highest permissible operating pressure for safe operation of a compon-

ent or system. In pneumatics, this pressure range is also referred to as the working pressure range.

Effective force with single-acting cylinders

Permissible deviation of spring forces in accordance with DIN 2095, quality class 2, must be taken into consideration for the cylinders' effective force. The effective

force is also reduced by the value of prevailing frictional forces.

The degree of friction depends on the mounting position and the type of load involved. Lateral forces increase friction. Frictional force must be lower than the

spring return force. Single-acting cylinders should as far as possible be operated without lateral forces.

Permissible stroke deviations for standard cylinders

ISO 15552 (corresponds to the withdrawn standards ISO 6431, DIN ISO 6431, VDMA 24562, NF E 49003.1, UNI 10290), ISO 6432

and ISO 21287 permit a certain amount of stroke length deviation from the nominal value due to manufacturing tolerances. These tolerances are always

positive. Refer to the table for details regarding precise permissible deviations.

Standard	Piston Ø [mm]	Stroke length [mm]	Permissible stroke deviation [mm]
ISO 6432	8, 10, 12, 16, 20, 25	0 ... 500	+1.5
ISO 15552	32	0 ... 500	+2
	40, 50	500 ... 12,500	+3.2
	63	0 ... 500	+2
	80, 100	500 ... 12,500	+4
	125, 160	0 ... 500	+4
	200, 250, 320	500 ... 2,000	+5
ISO 21287	20, 25	0 ... 500	+1.5
	32, 40, 50	0 ... 500	+2
	63, 80, 100	0 ... 500	+2.5

Note

In the case of stroke lengths larger than those shown in the table, the tolerances must be agreed upon between the manufacturer and the user.

Contactless position sensing

Pneumatic drives from Festo with contactless position sensing are fitted with a permanent magnet on the cylinder piston, the magnetic field of which is used to actuate proximity sensors.

Proximity sensors can be used to detect end or intermediate positions of cylinders. One or more proximity sensors can be clamped to a cylinder, either directly or using mounting kits.

**Piston diameter**

This pictogram is used to indicate the piston diameter. This is just represented by Ø in the dimensions table.

Pressure/force table

Piston force [N]								
∅	Operating pressure [bar]							
	1	2	3	4	5	6	7	8
2.5	0.4	0.9	1.3	1.8	2.2	2.7	3.1	3.5
3.5	0.9	1.7	3.8	3.5	4.3	5.2	6.1	6.9
5.35	2	4	6.1	8.1	10.1	12.1	14.2	16.2
6	2.5	5.1	7.6	10.2	12.7	15.3	17.8	20.4
8	4.5	9	13.6	18.1	22.6	27.1	31.7	36.2
10	7.1	14.1	21.2	28.3	35.3	42.4	49.5	56.5
12	10.2	20.4	30.5	40.7	50.9	61.0	71.3	81.4
16	18.1	36.5	54.3	72.4	90.5	109	127	145
20	28.3	56.5	84.8	113	141	170	198	226
25	44.2	88.4	133	177	221	265	309	353
32	72.4	145	217	290	362	434	507	579
40	113	226	339	452	565	679	792	905
50	177	353	530	707	884	1,060	1,240	1,410
63	281	561	842	1,120	1,400	1,680	1,960	2,240
80	452	905	1,360	1,810	2,260	2,710	3,170	3,620
100	707	1,410	2,120	2,830	3,530	4,240	4,950	5,650
125	1,100	2,210	3,310	4,420	5,520	6,630	7,730	8,840
160	1,810	3,620	5,430	7,240	9,050	10,900	12,700	14,500
200	2,830	5,650	8,480	11,300	14,100	17,000	19,800	22,600
250	4,420	8,840	13,300	17,700	22,100	26,500	30,900	35,300
320	7,240	14,500	21,700	29,000	36,200	43,400	50,700	57,900

Piston force [N]								
∅	Operating pressure [bar]							
	9	10	11	12	13	14	15	
2.5	4	4.4	4.9	5.3	5.7	6.2	6.6	
3.5	7.8	8.7	9.5	10.4	11.3	12.1	13	
5.35	18.2	20.2	22.2	24.3	26.3	28.3	30.3	
6	22.9	25.4	28	30.5	33.1	35.6	38.2	
8	40.7	45.2	49.8	54.3	58.8	63.3	67.9	
10	63.6	70.7	77.8	84.8	91.9	99	106	
12	91.6	101	112	122	132	143	153	
16	163	181	199	217	235	253	271	
20	254	283	311	339	368	396	424	
25	398	442	486	530	574	619	663	
32	651	724	796	869	941	1,010	1,090	
40	1,020	1,130	1,240	1,360	1,470	1,580	1,700	
50	1,590	1,770	1,940	2,120	2,300	2,470	2,650	
63	2,520	2,810	3,090	3,370	3,650	3,930	4,210	
80	4,070	4,520	4,980	5,430	5,880	6,330	6,790	
100	6,360	7,070	7,780	8,480	9,190	9,900	10,600	
125	9,940	11,000	12,100	13,300	14,400	15,500	16,600	
160	16,300	18,100	19,900	21,700	23,500	25,300	27,100	
200	25,400	28,300	31,100	33,900	36,800	39,600	42,400	
250	39,800	44,200	48,600	53,000	57,400	61,900	66,300	
320	65,100	72,400	79,600	86,900	94,100	101,000	109,000	

The piston force F can be calculated from the piston area A, the operating pressure p and the friction R using the following formulae:

Piston force (final pressure)

$$F = p \cdot A - R$$

$$F = p \cdot 10 \cdot \frac{d^2 \cdot \pi}{4} - R$$

p = Operating pressure [bar]

d = Piston diameter [cm]

R = Friction ~10% [N]

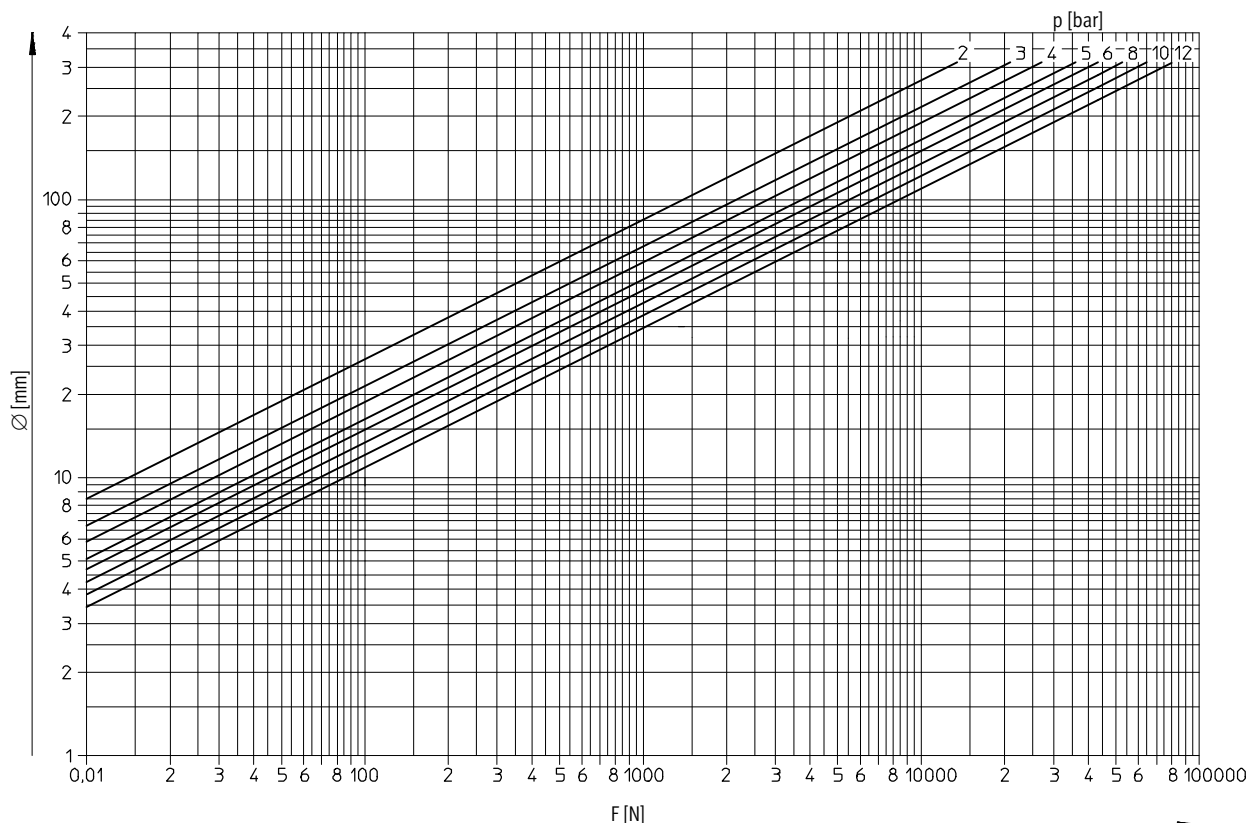
A = Piston area [cm²]

F = Effective piston force [N]

ProPneu software tool for sizing can be found on the DVD and at www.festo.com

Operating pressure p as a function of piston diameter and force F

An allowance of 10% has been included for frictional force



Given:

Load: 800 N

Available system pressure: 6 bar

To be calculated:

Required piston diameter

Operating pressure to be set

Procedure:

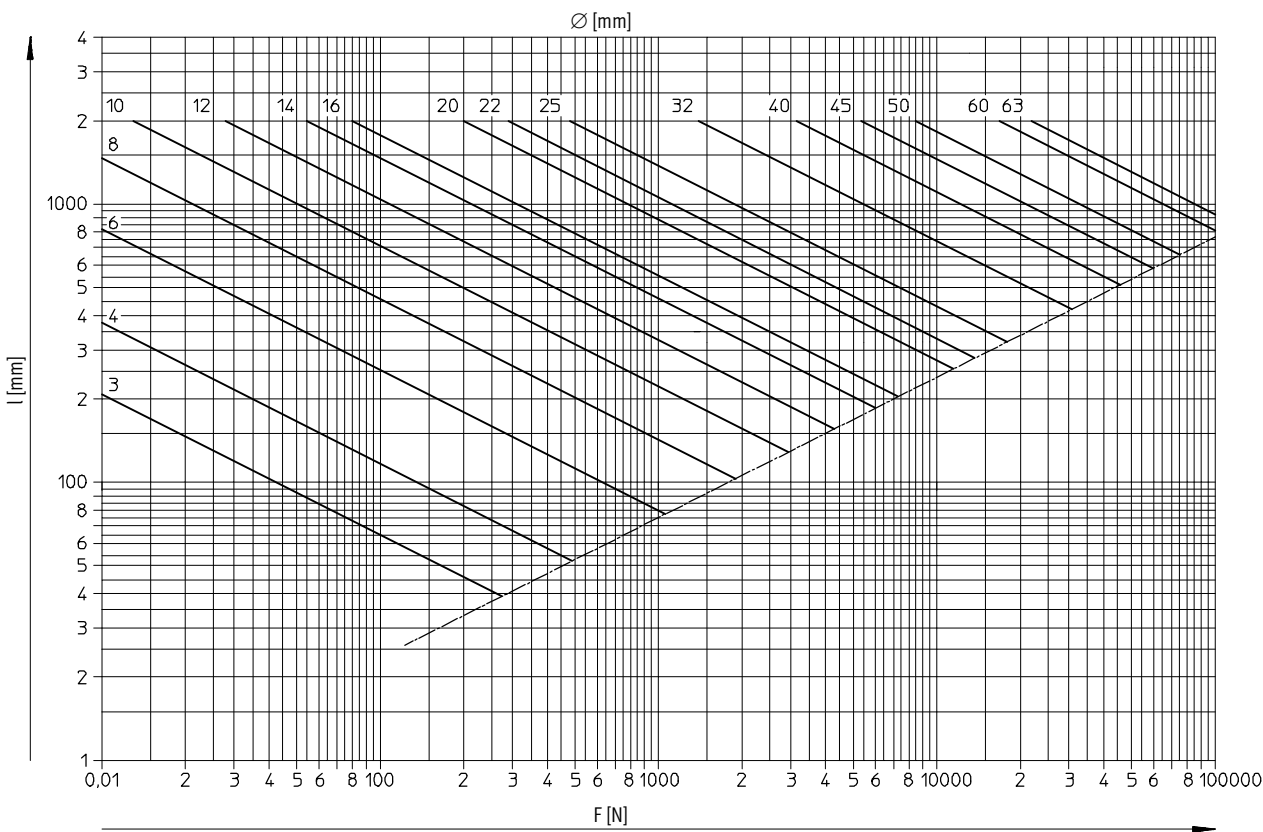
From $F = 800$ N go straight up where it intersects the 6 bar line. The next largest piston diameter, 50 mm, lies between the lines for 4 and 5 bar, which means that the operating pressure should be set to approx. 4.5 bar.

The selection of pneumatic drives is determined primarily by the forces to be overcome and the distances to be travelled. A small percentage of the piston force is used to overcome friction, the remainder is used to drive the load. Only approximate values can be given, since friction force depends on numerous

factors (lubrication, operating pressure, back pressure, seal design, etc.). Back pressure generates a force which acts in the opposite direction and partially cancels out the effective force. Back pressure occurs in particular when exhaust air flow controls are used or the exhaust port is constricted.

Buckling load graph

Piston rod diameter as a function of stroke length *l* and force *F*



Given:
 Load: 800 N
 Stroke length: 500 mm
 Piston diameter: 50 mm

To be calculated:
 Piston rod diameter
 Cylinder type: Standard cylinder

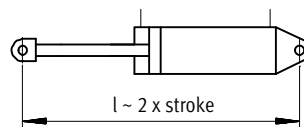
Procedure:
 From $F = 800$ N go straight up where it intersects the horizontal line through $l = 500$ mm. The next largest piston rod diameter in the graph is 16 mm. The standard cylinder DNC-50-500 with a piston rod diameter of 20 mm is suitable for this stroke length.

Due to buckling stress, the maximum permissible load for a piston rod with a long stroke length is lower than the value suggested by the maximum permissible operating pressure and piston area. This load must not exceed certain maximum values. These depend on stroke length and piston rod diameter.

The graph shows this relationship based on the following formula:

$$F_k = \frac{\pi^2 \cdot E \cdot J}{l^2 \cdot S}$$

- F_k = Permissible buckling force [N]
- E = Modulus of elasticity [N/mm²]
- J = Moment of inertia [cm⁴]
- l = Buckling length
= 2x stroke length [cm]
- S = Safety factor (selected value: 5)



Note
 The least satisfactory type of mounting for this kind of stress is a swivel mounting. The permissible load is higher for other types of mounting.

Air Consumption engineering software

The "Air Consumption" engineering software determines the air consumption of a cylinder (approximate value), taking into consideration the following parameters:

- Mode of operation of the cylinder
- Piston diameter
- Number of cycles
- Stroke length
- Operating pressure

This tool can be found online under Support in the Engineering design area.

Calculating air consumption using the engineering software

Given:

Cylinder: DNC-32-500

Piston diameter: 32 mm

Piston rod diameter: 12 mm

Stroke length: 500 mm

Operating pressure: 6 bar

Number of cycles per minute: 60 1/min

To be calculated:

Air consumption


Result:

Once the parameters have been entered, the following values are returned for the air consumption:

Per cycle: 5.23 l

Per minute: 314.03 l

Cylinder Air Consumption

Operating mode: single acting, pulling  Number of cycles: 60 1/min
 Size: 32 mm Stroke/Length: 500 mm
 NOTE: Using estimated piston rod diameter of 12 mm.
 Energy Saving Turn on energy saving to differentiate between working stroke and return stroke

Clear table Add

Selected cylinders and their air consumption					
Op. Mode	Size [mm]	Stroke/Length [mm]	Pressure	Number of cycles [1/min]	Air Consumption [per Minute]

Utilization Working pressure: 6 bar Working hours per day: 8 h

Air Consumption per Minute: 0 l per day: 0 m³ per Year: 0 l

Energy Costs Currency: € Price: 0.04 €/m³ per day: €

NOTE: The air consumption values determined in this way are only guide values. Particularly with high cycle speeds, pressurised chambers are not fully exhausted, which means that actual air consumption may be significantly lower.

Calculating air consumption using the formula

$$Q = \frac{\pi}{4} \cdot (d_1^2 - d_2^2) \cdot h \cdot (p + 1) \cdot 10^{-6}$$

Q = Air consumption per cm stroke
[l]

d1 = Piston diameter [mm]

d2 = Piston rod diameter [mm]

h = Stroke [mm]

p = Operating pressure, relative [bar]

Forward stroke:

$$Q = \frac{\pi}{4} \cdot (32\text{mm})^2 \cdot 500\text{mm} \cdot (6\text{bar} + 1\text{bar}) \cdot 10^{-6}$$

$$Q = 2,815\text{l}$$

Return stroke:

$$Q = \frac{\pi}{4} \cdot ((32\text{mm})^2 - (12\text{mm})^2) \cdot 500\text{mm} \cdot (6\text{bar} + 1\text{bar}) \cdot 10^{-6}$$

$$Q = 2,419\text{l}$$

Air consumption per cycle:

$$Q = 2,815\text{l} + 2,419\text{l} = 5,234\text{l}$$

Pneumatics and explosion protection – ATEX

What does ATEX mean?

Explosive atmospheres are a constant hazard in the chemical and petrochemical industries because of the processing techniques used. These explosive atmo-

spheres are caused by escaping gas, vapours and mist, for example. Explosive atmospheres can also occur in mills, silos and sugar and feed processing

plants because of the dust/oxygen mixtures there. Electrical equipment in potentially explosive areas is therefore subject to a special directive, 2014/34/EU.

This directive was also extended to non-electrical equipment on 1 July 2003.

ATEX - Directive 2014/34/EU

ATEX is an acronym of the French expression "Atmosphère explosible".



- Directive 2014/34/EU stipulates the minimum safety requirements for equipment and protective systems that are to be operated in explosive atmospheres and that have their own ignition sources.

- It applies to the sale of equipment and protective systems within the European Economic Area.

- It relates to both electrical and non-electrical devices, if they have their own potential ignition source.

Dual responsibility

When equipment for explosion protection areas is being produced, system manufacturers and component suppliers must work closely together to ensure that the correct category and explosion protection zone are chosen.

Explosion protection documentation from system manufacturer	Festo/equipment supplier
System rating Directive 1999/92/EC	Equipment rating Directive 2014/34/EU
	
Result: <ul style="list-style-type: none"> • Zone classification • Temperature classes • Explosion groups • Ambient temperature 	Result: <ul style="list-style-type: none"> • Equipment categories • Temperature classes • Explosion groups • Ambient temperature
Zone	Category

Explosion protection classes

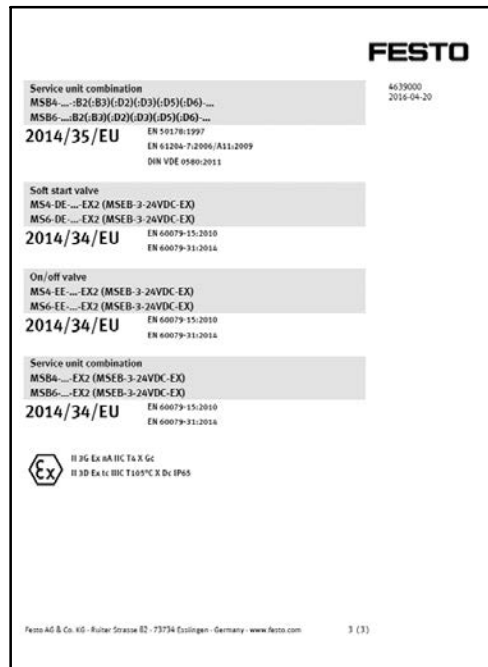
Zone Gas	Zone Dust	Frequency	Equipment group	Equipment category	Area of application
-	-	-	I	M M1 M2	Mining
			II	-	All non-mining areas of application
0	-	Constant, frequent, long-term	II	1G	Gas, mist, vapour
-	20		II	1D	Dust
1	-	Occasional	II	2G	Gas, mist, vapour
-	21		II	2D	Dust
2	-	Seldom, short-term in the event of a fault	II	3G	Gas, mist, vapour
-	22		II	3D	Dust

ATEX at Festo

www.festo.com/atex

Products requiring approval

Products requiring approval are those that have their own potential ignition risk. They are labelled with the CE marking and the explosion protection hexagon; operating instructions and the EU declaration of conformity are provided.



Products not requiring approval

Products not requiring approval are those that do not have their own potential ignition source. These products can be used in specific explosion zones in compliance with our manufacturer's instructions:

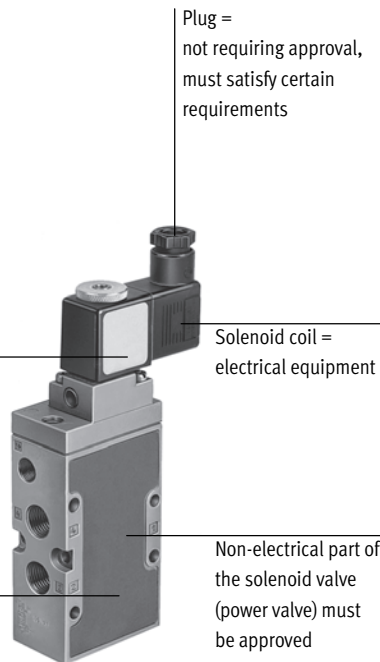
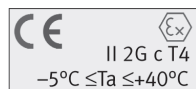
- Pneumatic accessories
- Tubing
- Fittings
- Pneumatic sub-bases
- Flow control and shut-off valves
- Non-electrical service units
- Mechanical accessories

Festo's product range for explosion protection includes products for equipment category II



According to Directive 2014/34/EU, both the solenoid coil and the power valve require approval. At Festo, each has a separate rating plate so that it is possible to tell at a glance where the valve may be used.

Important: The equipment with the lowest equipment category defines the category for the module.



For the module in this example:
II 3G T4

Note
The permissible technical catalogue data for the equipment in question as well as the warning notices and safety information in the special documentation provided (including operating instructions or, if applicable, device documentation) must be observed.

EC directives/approvals

EC directives (CE marking)



As a fundamental principle, Festo AG & Co. KG adheres to all applicable regulations and standards. All information is based on the current level of knowledge and is subject to change. We carefully follow any amendments/additions to these regulations and will produce our products accordingly.

This guarantees that products from Festo AG & Co. KG always comply with the currently valid requirements.

2. EU Electromagnetic Compatibility Directive (2014/30/EU), including amendments.

The directive must be applied to our electronic and electronic/pneumatic products. The corresponding products have the CE marking and the corresponding declaration of conformity is available. For you, this means a guarantee that this equipment complies with the fundamental requirements in industrial areas. The use of this equipment in residential areas is restricted if no additional measures are taken to guarantee compliance with the fundamental requirements of the directive for residential areas.

Solenoid coils are not affected by the EMC Directive.

Most pneumatic products are not subject to any EC directive and must therefore not be given a CE marking. Currently, products from the sales range of Festo AG & Co. KG that are labelled with the CE marking are subject to one or more of the following six EC directives in Europe.

3. EU Low Voltage Directive (2014/35/EU), including amendments.

Electrical and electronic products from Festo designated for use within specific voltage limits (50 ... 1,000 V AC and 75 ... 1,500 V DC) must be labelled with the CE marking. The corresponding declarations of conformity are available.

4. EU Directive on Simple Pressure Vessels (2014/29/EU), including amendments.

The simple pressure vessels made from non-alloyed steel offered by Festo AG & Co. KG comply with the requirements of this directive. These air reservoirs require CE marking above a certain volume.

1. EC Machinery Directive 2006/42/EC, including amendments: 2006/42/EC:2007-03-16 and 2009/127/EC:2009-10-21

Pneumatic products from Festo AG & Co. KG are designed in accordance with the standard for pneumatic systems EN ISO 4414 "Pneumatic fluid power – General rules and safety requirements for systems and their components". Our pneumatic products do not fall within the scope of application specified in the Machinery Directive.

These products are labelled with the CE marking. The declaration of conformity is available.

5. EU Directive on Pressure Equipment (2014/68/EU), including amendments.

The pressure vessels offered by Festo AG & Co. KG comply with the requirements of this directive. These pressure vessels require CE marking above a certain pressure/volume product or pressure/diameter product. These products are labelled with the CE marking. The declaration of conformity is available.

Reservoirs made from stainless steel are subject to the Directive on Pressure Equipment rather than the Directive on Simple Pressure Vessels.

They must therefore not be labelled with the CE marking in accordance with the Machinery Directive. Exceptions to this are safety devices. As of 29 December 2009, incomplete machines also fall under the scope of the Machinery Directive. These include handling systems intended for installation in machines, for example. Incomplete machines are not labelled with the CE marking. A declaration of incorporation is enclosed with the machines instead of a declaration of conformity.

6. EU Directive on Equipment and Protective Systems for Use in Explosive Atmospheres - ATEX (2014/34/EC).

The products offered by Festo AG & Co. KG which are intended for use in potentially explosive atmospheres and which have their own potential ignition hazards comply with the requirements of this directive. Products that are subject to this directive are correspondingly labelled with the CE marking and identified in compliance with the directive. The corresponding declaration of conformity and the operating instructions are available.

Product markings

	See above
	To EU Directive 2014/34/EU (ATEX) Additional marking for equipment and protective systems for use in accordance with regulations in a potentially explosive atmosphere.
	UL certification for use in Canada and the USA. Recognized Product intended for installation, for example MPA-S valve terminal.
	UL certification for use in Canada and the USA. Listed Product, a ready-to-use device, for example limit switch with cable and plug.
	CSA certification for Canada and the USA.

Design awards



product design award

Festo products appear regularly on the winners' podium in major design competitions. There is much more to good design than being "pleasing to the eye". The design emphasises and symbolises the cutting-edge technology and long-standing value of Festo products.



reddot

Cleanroom suitability

www.festo.com/en/cleanroom



Fraunhofer
TESTED[®]
DEVICE
Festo Competence for
Cleanroom Suitability Testing
Report No. FE 0008-190

Qualifizierungs-
bescheinigung
Certificate of
qualification

Cost-effective series for cleanroom class 7

At Festo, cost-effective standard pneumatic components take the place of complex special designs because the quality concept applies to virtually all series-produced products. These standard pneumatic components are suitable for use in a class 7 cleanroom to ISO 14644-1.

Individuality made to measure

If you need to go as far as class 1, the products will be manufactured according to your specific requirements. Festo integrates these application-oriented solutions in close-to-standard production, which means they will be available the next time you need them.

The reliability to meet the highest requirements

Festo works with the Fraunhofer Institute for Production Technology and Automation (IPA) and the renowned Nanyang Technological University in Singapore to ensure that its products meet the high requirements for use in cleanrooms. A dedicated Competence Centre for Cleanroom Technology at Festo Singapore offers the necessary infrastructure for the production of pneumatic cleanroom products.



Fraunhofer
TESTED[®]
DEVICE
Festo DGPL mit Bandsabdeckung
und Unterdruckabsaugung
Report No. FE 9805-153

Close-to-standard products for cleanrooms to class 4

Stringent requirements but still an optimum cost/benefit ratio. At Festo, class 4 also means standard products – with just one restriction: they are not available ex-stock. However, they can be delivered to you within the shortest possible time.

IPA-Qualifizierungskunde

Hiermit wird bescheinigt, daß für untenstehendes Produkt die
Voraussetzungen
Festo KIS
Inhaltsnr. 12
erfüllt sind.
Die Gültigkeitsergänzung der Berichtnummer
FE 9805-153 ergibt sich.
Die Unterdruck-Feste DGPL mit Bandsabdeckung und Unterdruck-
absaugung ist für den Einsatz in der Klasse 4 bis Klasse 7
geeignet. Die Unterdruckabsaugung ist geeignet für den Einsatz
in der Klasse 4 bis Klasse 7.
Die Gültigkeit dieser Bescheinigung ist begrenzt. Zur
Überprüfung der Gültigkeit dieser Bescheinigung für einen
Nachfrage, den 11. Mai 1998

[Signature]

Fraunhofer
IPA
Produktionstechnik und
Automatisierung

Paint-wetting impairment substances and resistance to media

PWIS-free products

	PW	I	S
Paint-wetting			
Impairment			
Substances			

PWIS are substances that cause small concave indentations at various points in the paint layer when surfaces are painted.

Silicone, fluorid materials, certain oils and greases may contain substances of this kind.

The following are PWIS-free

- Individual parts and modules that are manufactured without using materials, consumables or sundries containing paint-wetting impairment substances. Tests carried out during the sampling

Components used in the automotive industry, and especially in painting equipment, must be free of paint-wetting impairment substances.

Because it is impossible to determine the level of paint-wetting impairment sub-

stances contained in substances and components with the naked eye, Volkswagen developed the testing standard PV 3.10.7.

stances contained in substances and components with the naked eye, Volkswagen developed the testing standard PV 3.10.7.

All products from Festo and the lubricants used in them undergo this test.

Products from Festo are free of paint-wetting impairment substances as standard. However, grease containing paint-wetting impairment substances needs to be used for some products for functional and other reasons.

Media resistance database

It is well known that the resistance of materials depends on many parameters such as concentration of contact medium, temperature, pressure, duration of contact, stroke speed and switching frequency, surface finish in the case of mating frictional parts, flow velocity and stress as well as ageing.

This applies in particular to the compatibility of elastomers with special chemical compounds.

The Festo resistance database shows you the suitable material and its resistance to chemical substances.

The information contained in this database is based on lab tests from raw material manufacturers, material tables

from semi-finished product and seal suppliers and practical experience. The information is evaluated and the tables are created based on the knowledge available. Although every effort has been made to ensure the accuracy of this database, its contents should only be used for reference purposes.

Please note that the recommendations in this resistance database can neither be guaranteed nor serve as the basis for a warranty claim.

Wherever possible and especially in cases of doubt, it is advisable to perform a practical test with the desired product under actual working conditions.

stances contained in substances and components with the naked eye, Volkswagen developed the testing standard PV 3.10.7.

All products from Festo and the lubricants used in them undergo this test.

- Liquid or paste-like sundry materials (e.g. lubricating greases) that do not cause any paint-wetting impairment effects through application as a result of the test.

- Products that consist of PWIS-free parts and contain PWIS-free lubricants.

www.festo.com/mediaresistance

The screenshot shows the Festo Media Resistance database interface. It includes a search bar, a navigation menu, and a table of results. The table lists various materials (PUN-H, PUN, PLN, PAN, PAN-PEN, PFAN, PAN-R, PUN-V0-B) and their resistance to acetic acid at different concentrations and temperatures. A key explains the symbols used in the table: '+' for resistant, '0' for conditionally resistant, '-' for not resistant, and blank for no specification.

Corrosion resistance class CRC

Corrosion resistance class CRC to Festo standard FN 940070		
CRC	Corrosion resistance	Description
0	No corrosion stress	Applies to small, visually irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.
1	Low corrosion stress	Dry indoor applications or transport and storage protection. Also applies to parts behind covers, in non-visible interior areas, and parts which are covered in the application (e.g. drive trunnions).
2	Moderate corrosion stress	Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
3	High corrosion stress	Outdoor exposure under moderate corrosive conditions. External visible parts in direct contact with the ambient atmosphere typical for industrial applications, with primarily functional requirements for the surface.
4	Particularly high corrosion stress	Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be safeguarded by special testing (→ also FN 940082) using appropriate media.

Protection classes to IEC/EN 60529

Protection of electrical equipment

The term "IP" (International Protection) is defined by IEC/EN 60529 "Degree of Protection Provided by Enclosures (IP Code)" and DIN 40050 "IP Protection Classes" (standard for electrical equipment in road vehicles). These standards describe the classification of the protection classes provided by enclosures for electrical equipment with rated voltages of up to and including 72.5 kV. They set forth the following:

- Protection of individuals against contact with live or moving components within enclosures (protection against accidental contact).
- Protection of equipment inside the enclosure against ingress of solid foreign matter, including dust (protection against foreign matter).
- Protection of electrical equipment against damage that would result if water were to enter the enclosure (protection against water).

The IP code to IEC/EN 60529

The degree of protection provided by an enclosure is established using standardised testing methods. The IP code is used for classifying this degree of protection. The IP code is made up of the letters IP and a two-digit code number. The definition of both digits is explained in the table below → page 1755.

Meaning of digit 1:

Digit 1 denotes firstly the protection of individuals. It specifies the extent to which the enclosure prevents individuals from coming into contact with dangerous parts. The enclosure prevents or restricts the entry of body parts or of objects held by an individual. Secondly, digit 1 specifies the extent to which the equipment is protected against the ingress of solid foreign objects.

Meaning of digit 2:

Digit 2 refers to the protection of equipment. It rates the protection class of the enclosure with respect to the harmful effects on the equipment due to water entering the enclosure.

Note

The food industry generally uses components with degree of protection IP65 (dustproof and water-jet proof) or IP67 (dustproof and capable of brief submersion). The use of IP65 or IP67 depends on the specific application, as each is governed by completely different test criteria. IP67 is not necessarily better than IP65. A component that fulfils the IP67 criteria does not therefore automatically meet the criteria for IP65.

Protection classes to IEC/EN 60529

IP codes

IP 6 5

Code letters

IP	International Protection
----	--------------------------

Digit 1	Brief description	Definition
0	Not protected	–
1	Protected against solid foreign objects, 50 mm and larger	A probing object, a ball of 50 mm in diameter, must not enter or penetrate the enclosure.
2	Protected against solid foreign objects, 12.5 mm and larger	A probing object, a ball of 12.5 mm in diameter, must not enter or penetrate the enclosure.
3	Protected against solid foreign objects, 2.5 mm and larger	A probing object, a ball of 2.5 mm in diameter, must not penetrate at all.
4	Protected against solid foreign objects, 1.0 mm and larger	A probing object, a ball of 1 mm in diameter, must not penetrate at all.
5	Protected against dust	The ingress of dust is not completely prevented. The quantity of dust that enters must not impair the safety or satisfactory operation of the equipment.
6	Dustproof	No ingress of dust

Digit 2	Brief description	Definition
0	Not protected	–
1	Protected against water droplets	Vertically falling droplets must not have any harmful effect.
2	Protected against water droplets	Vertically falling droplets must not have any harmful effect when the enclosure is at an angle of 15° either side of the vertical.
3	Protected against spraying water	Water sprayed at any angle of up to 60° either side of the vertical must not have any harmful effect.
4	Protected against splash-water	Water splashing against the enclosure from any angle must not have any harmful effect.
5	Protected against hose water	Water jets directed at the enclosure from any angle must not have any harmful effect.
6	Protected against powerful water jets	Powerful water jets directed against the enclosure from any angle must not have any harmful effect.
7	Protected against the effect of brief submersion in water	Water must not enter the equipment in amounts that can have a harmful effect if the enclosure is briefly submerged in water under standardised pressure and time conditions.
8	Protected against the effect of continuous submersion in water	Water must not enter the equipment in amounts that can have a harmful effect if the enclosure is continuously submerged in water. The conditions must be agreed on between the manufacturer and the user. The conditions must, however, be more stringent than code 7.
9K	Protected against water from high-pressure and steam jet cleaning	Water directed at the enclosure from any angle under high pressure must not have any harmful effect.

Functional earth – protective earth – PELV

Concepts for ensuring protection against electric shock to IEC 60364-4-41/VDE 0100 Part 410

Definitions

Protection against electric shock means protection against indirect and direct contact.

Protection against direct contact implies that under normal operating conditions, live parts which are not insulated are protected against accidental contact.

Protection against indirect contact implies that in the event of an insulation fault between live parts and bodies or enclosures, contact voltages outside of the permissible range cannot occur or are disconnected promptly.

The three best-known and most widely used concepts for ensuring protection against electric shock are also referred to as protection class I to III in specialist literature and standardisation documentation.

Protection class I – Protective earth conductor

In the case of electrical equipment in protection class I, protection against direct contact is ensured by basic insulation.

Protection against indirect contact is provided by prompt disconnection of the fault voltage. This disconnection is ensured by the contact with the protective earth conductor on the equipment enclosure via protective earth.

If an insulation fault occurs in the equipment, the fault current flows via the protective circuit against the earth potential, thereby triggering the upstream fuse element (e.g. residual current device protection or circuit-breaker).

Equipment in protection class I includes lights, white goods (washing machines, dryers, etc.) and industrial machinery.

Symbol:



Protection class II – Protective insulation

In the case of equipment in protection class II, the protection refers to direct and indirect contact with the improved enclosure insulation. The enclosure insulation is reinforced or doubled so that it

is not possible to come into contact with contact voltages outside of the permissible range either in the event of a fault or during operation.

Equipment in protection class II must not be connected to the protective circuit. Therefore the equipment does not have a protective contact on the plug.

Equipment in protection class II includes hi-fi components, electric power tools and household appliances and is identified with the following symbol:



Protection class III – Protective extra-low voltage

In the case of equipment in protection class III, protection against direct and indirect contact is ensured both by a sufficiently high IP degree of protection

(protection against direct contact with live parts) and electrical supply of the component with PELV (protective extra-

low voltage) or SELV (safety extra-low voltage) (protection against indirect contact in the event of a fault).

Equipment in protection class III is frequently identified (no mandatory identification) with the following symbol:



Functional earth – protective earth – PELV

Special protection class for components from Festo**Protection class III**

On the basis of the information currently available, all 24 V DC valve terminals (e.g. CPV, MPA), position controllers (e.g. PLCs), sensors (proximity sensors, pressure switches, pressure sensors) and proportional valves from Festo belong to protection class III.

This means that, in the case of the 24 V DC components from Festo, protection against direct and indirect contact is ensured by a sufficiently high IP degree of protection as well as a protective extra-low voltage supply to the component: PELV "Protective Extra-Low Voltage".

The use of a PELV supply ensures that no contact voltages outside of the permissible range can occur in the event of a fault due to the high dielectric strength (4 kV) from the primary to the secondary side.

The earth terminal therefore is a functional earthing (discharge of electromagnetic disturbances) rather than a protective earth function and must always make contact.

**Why does Festo use protection class III?**

Due to the increasingly compact designs of modern automation components, protection class I is no longer the optimum solution with respect to

design size. This is because the standards specify minimum distances for the air and leakage paths, which means that further minimising the size of

the components is no longer possible. It is for this reason that protection class III (no protective earth conductor, as protection against electric shock is provided

by protective extra-low voltage) is used in modern automation components.

What do customers need to know about installing equipment in protection class III?

The electrical supply to the equipment must only be provided by PELV circuits to IEC/EN 60204-1. The general requirements for PELV circuits to IEC/EN 60204-1 must be taken into ac-

count. Power sources are permitted if reliable electrical isolation of the operating voltage to IEC/EN 60204-1 is guaranteed. The earth terminals on the components, where available, are used for discharging

electromagnetic disturbances, equipotential bonding and thus ensuring proper functioning. They must be connected to the earth potential with low resistance (short cables with large cross section).

Spark arresting

Spark arresting of switch contacts in circuits with solenoid coils

The inductance of solenoid coils stores electromagnetic energy when the circuit is switched on and this is discharged when switched off. Depending on the

switch used, this energy is either converted to a voltage peak (switch-off over-voltage), which can cause a breakdown

in the insulation, or an arc which can burn away the contacts (material creep). Various types of components can be used

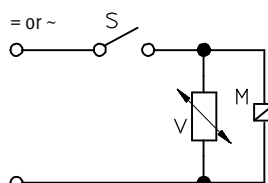
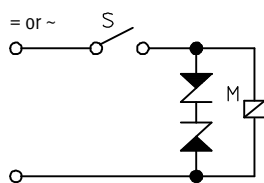
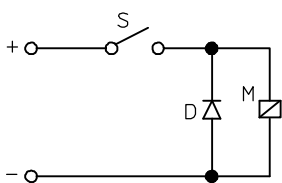
to avoid these effects by slowly and constantly discharging the electromagnetic energy.

Electronic arc arrestors

If the polarity in DC circuits is clearly defined, a simple diode can be used, wired parallel to the coil. It must be noted that this considerably increases the solenoid switch-off time.

A more suitable arrangement consists of two breakdown diodes, wired with opposing polarity parallel to the coil, which can be used for DC and AC. This prevents switch-off delay. However, several breakdown diodes must be wired in series for voltages over 150 V.

Varistors are ideal elements for reducing switch-off overvoltage; their leakage current only rises if the rated voltage is exceeded. They are suitable for DC and AC.



100% duty cycle

Within DIN VDE 0580, the 100% duty cycle test covers only the electrical part of the solenoid coil. Festo also includes the pneumatic part in this test.

The worst-case scenario is reviewed in the test. The test constitutes a functional test of the solenoid. If the solenoid is also used on valve terminals, the 100%

duty cycle test is performed on the individual device and on equipment in a manifold assembly.

Conditions

- The solenoids are operated with the maximum permissible voltage (continuous operation S1 to DIN VDE 0580).
- The solenoids are subjected to the maximum permissible ambient temperature in a temperature cabinet (non-convecting).
- The solenoids are supplied with the maximum permissible operating pressure with sealed working ports.

Procedure

The solenoids are operated for at least 72 hours under the above conditions. At the end of this period, the following tests are carried out:

- Drop-off current measurement: drop-off behaviour when switched to de-energised state.
- Starting behaviour when immediately energised with the minimum operating voltage and with the least favourable pressure ratios for excitation.

Termination criterion

The drop-off behaviour, starting behaviour or leakage exceeds or falls below the following limit values:

- Drop-off current: > 1.0 mA
- Starting voltage: > UN+10%
- Leakage: > 10 l/h

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