FESTO

Small parts assembly and electronic industry

Pneumatic and electrical components

...further information

Automation technology
for the Electronics and Assembly industry

2021/01 issue

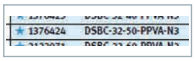
Festo SE & Co. KG
P.O. Box
73726 Esslingen

Ruiter Straße 82
73734 Esslingen
Germany

Legend

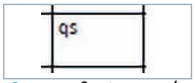
★
With the Festo Core Range, we have selected the most important products and functions from our broad product catalogue, and added the quickest delivery, worldwide – wherever, whenever.
Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Additional information ➔ page 10

Example



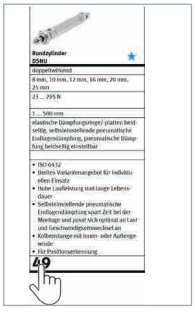
Blue type codes:
Type code for online searches.
➔ Click or follow the link.

➔ **www.festo.com/catalogue/dsbg**

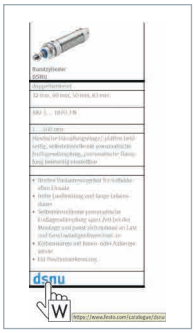


➔ **www.festo.com/catalogue/qs**

Black page numbers:
You can find these products in the catalog.
➔ Click or follow the page number.



Blue type codes on product overview pages:
You can find these products online.
➔ Click or follow the link.



Festo – the Company

Festo, the world's leading supplier of automation technology and technical education, is deploying its products and services to meet the challenge of smart production for the future in the course of digitalisation. The company also relies on artificial intelligence and machine learning. Established in 1925, the independent family-owned company based in Esslingen a.N., Germany, has been a driving force in automation for over 60 years and with its unique range of offers has become the world market leader in technical education.
As a family-owned company, Festo thinks and acts responsibly and with a long-term perspective. Festo stands for clear values, utmost quality and customer-oriented innovation. It has set standards in industrial automation technology and technical education ever since its establishment, thereby making a contribution to sustainable development of the environment, the economy and society.

Facts and figures

The company supplies pneumatic and electric automation technology to 300,000 customers of factory and process automation in over 35 industries. The products and services are available in 176 countries. With about 20,000 employees in over 250 branch offices in 61 countries worldwide, Festo achieved a turnover of around €2.84 billion in 2020. Each year about 8 % of this turnover is invested in research and development.
In this learning company, 1.5 % of turnover is invested in basic and further training. However, training services are not only provided for Festo's own staff – Festo Didactic SE also supplies basic and further training programmes in the field of automation technology for customers, students and trainees.

Greater productivity worldwide

At the heart of Europe: Our Scharnhausen and Rohrbach Technology Plants in Germany

Our main goal is fast, flexible and reliable production through a smooth workflow. This is true for both highly automated volume production and for the manufacture of complex, customised products.

A central position in the Midwest: Mason, Ohio, USA

70% of our customers that are served by Mason are located within a radius of 1000 kilometres.

In the region for the region: Jinan, China

Fast response times, outstanding flexibility and proximity to customers also differentiates us on the Asian automation market.

... the Engineers of Productivity

You live speed and innovation.
You think efficiency and miniaturisation.
We are your solution for electrics and pneumatics.

→ WE ARE THE ENGINEERS OF PRODUCTIVITY.

Our complete solutions make you more productive – electrically and pneumatically.
Ever-shorter innovation cycles. Miniaturisation and flexibility in manufacturing and assembly. Time and cost pressures. Highly complex processes. These are the challenges faced every day in the semiconductor, small parts assembly and electronics manufacturing industries. Our industry specialists are familiar with these challenges and they know your process sequences inside out: from a selection of over 30,000 electrical and pneumatic components, Festo promises to put together the perfect solution for you, from compact electric drives to complete handling systems. Everything from a single source.

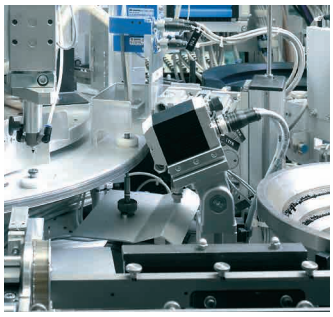
For more information:
www.festo.com/small_parts_assembly
www.festo.com/semiconductor
www.festo.com/battery

Fast, precise, reliable and cost effective

Our solutions meet the key requirements for successful automation in the small parts assembly, electronics and semiconductor industries. And we use the most suitable technology, whether electrical or pneumatic.

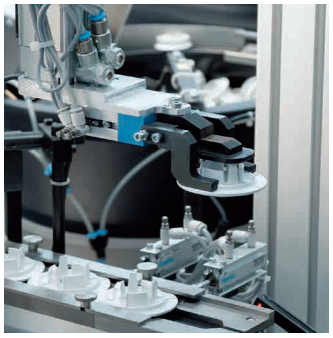
Our know-how

Your advantage



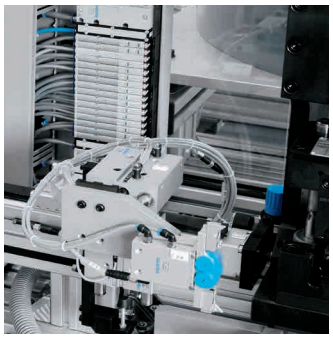
Testing and measuring
Reliable optimal results!

- Pneumatic
- Inductive
- Optical with sensors or Festo vision system



Handling
Get a grip on everything!

- Driving
- Gripping
- Holding
- Assembling
- Sorting
- Transporting
- Packaging

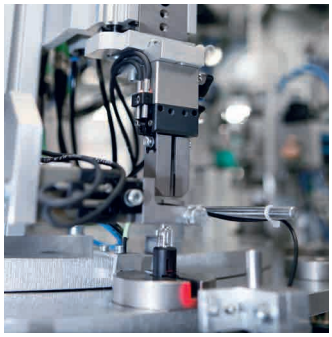


Open and closed-loop control
Control your success!

- With Festo controller in the -control cabinet, on the valve terminal or integrated in the smart camera
- Pneumatically controlled
- Servopneumatically or -electrically controlled

Processing
Reliability at every station!

- Marking
- Coating
- Joining, bonding
- Lasering, separating
- Pressing
- Welding, soldering
- Forming



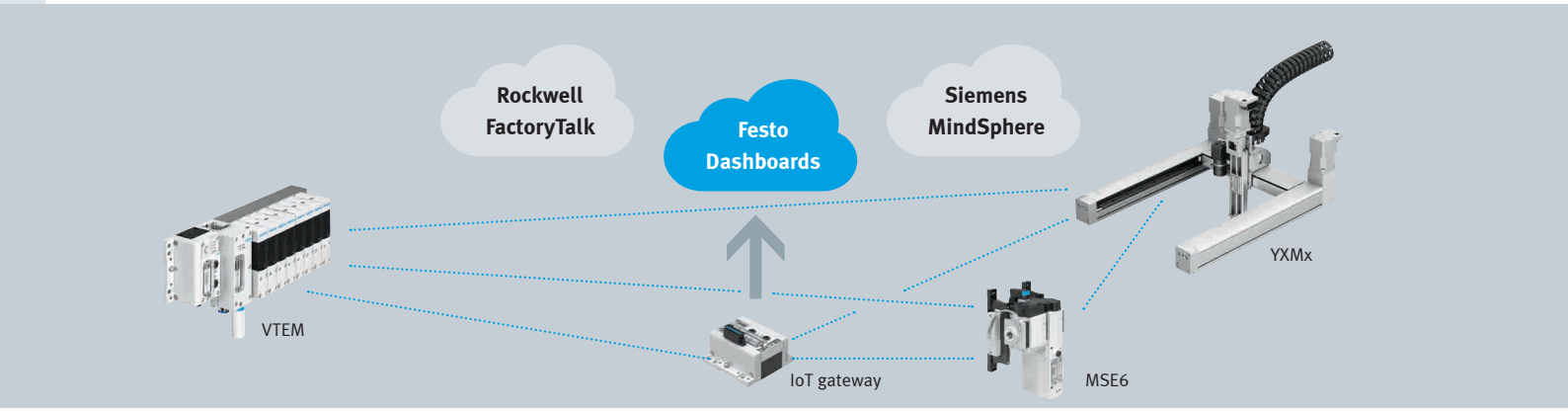
Positioning
Always at the right place!

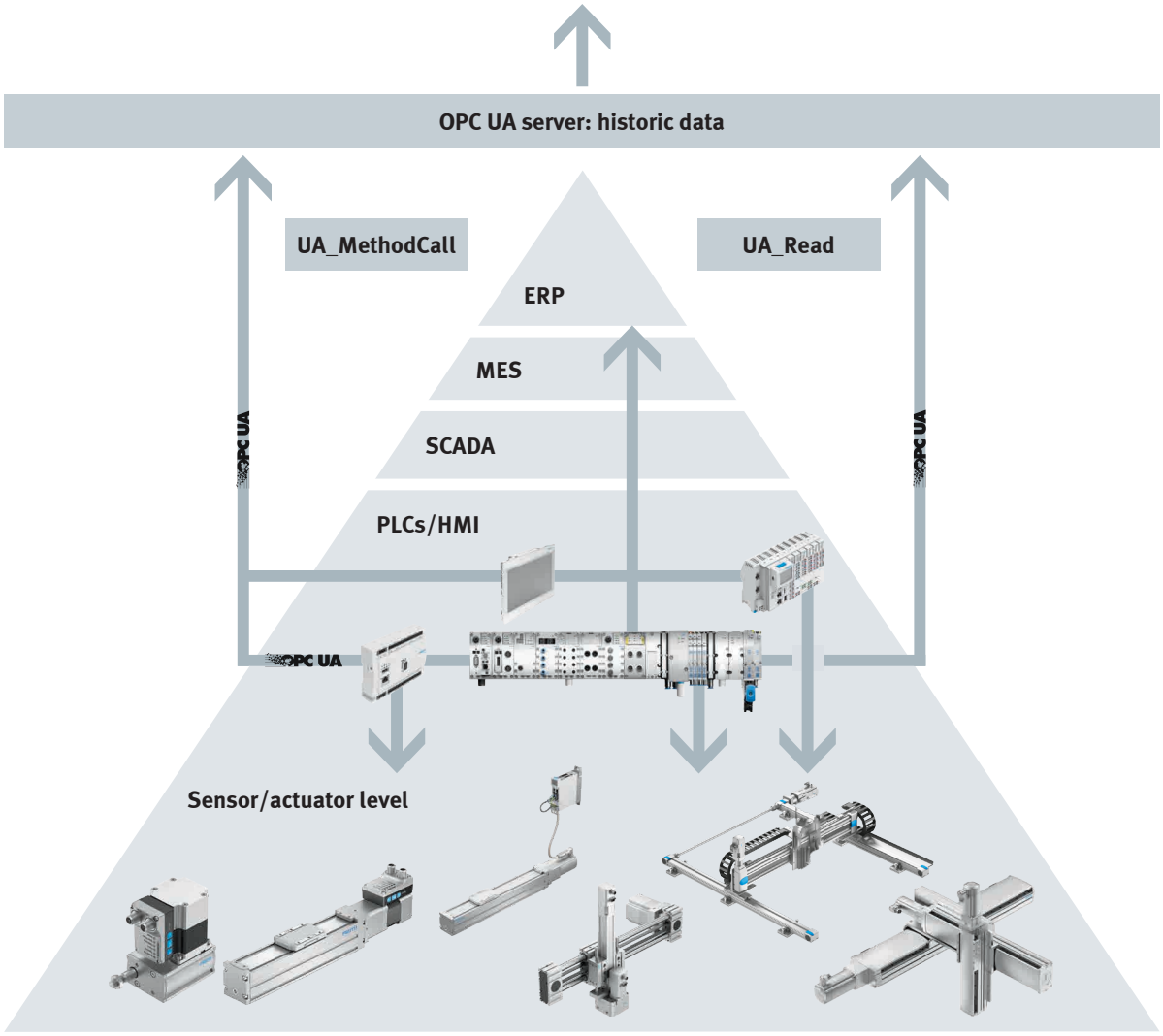
- Placing
- Aligning, rotating, turning
- Guiding, lifting
- Loading and unloading
- Sorting, feeding
- Clamping
- Stopping, separating

Welcome to the age of Industry 4.0

Industry 4.0 – always a finger on the pulse thanks to complete networking and partnerships

Many concepts from the past have been overtaken by the fourth industrial revolution: business models, partnerships, customer interfaces, value chains, and even the traditional automation pyramid – all are undergoing huge change. As an innovator and trendsetter in fieldbus technology, Festo will make a major contribution to reshaping the future with new concepts for Industry 4.0. This includes new products, cloud services, apps, as well as a new online shop with comprehensive, integrated engineering concepts. This will ensure that, in the medium term, data will be available seamlessly and globally on all user devices.





Festo Cloud Services – added focus. Added transparency. Added value!

Industry 4.0: things communicate with one another
More communication from controller to controller or subsystem to subsystem, and horizontal as well as vertical connectivity with a single, uniform information model, including the cloud: these are the hallmarks of a fourth industrial revolution – Industry 4.0. The traditional, inflexible automation pyramid will cease to exist in the foreseeable future. Festo CPX and the Motion Terminal VTEM are making an important contribution to this transformation.

Hardware for unlimited communication: Festo's IoT gateway CPX-IOT
The industrial Internet of Things gateway is based on the CPX module format.
CPX-IOT collects information about Festo devices and their statuses via an Ethernet connection and a standardised communication protocol such as OPC UA, for example. It then sends that information to the cloud via the second Ethernet connection using IoT protocols such as AMQP or MQTT. Suitable IT security mechanisms ensure data security.

Integration as a subsystem or as a non-hierarchical system
Festo products, such as electric and pneumatic drives, valves/valve terminals, I/O terminals, compressed air supply or sensors, can thus be integrated as subsystems from the traditional pyramid if needed, e.g. via decentralised controllers such as CPX or CECC.

Or alternatively they can be integrated directly, with no hierarchy. For example:
- The handling system YXMx*
- The energy efficiency module MSE6*
- Or the modular electrical terminal CPX and thus also the valve terminals MPA*

Our website ➔ **www.festo.com/iot** takes you to the latest comprehensive tools, products and services.

* These Festo products are thus cyber-physical systems in the sense of Industry 4.0.
They take in data from the application and from the device itself, pre-compress it by compiling the data into diagnostic modules in CoDeSys V3 in accordance with VDMA 24582, and then forward that information to the cloud.

The Festo App World
Festo has set up a separate portal, the Festo App World, for purchasing and using the apps, cloud products, software libraries and added value services.
You can make purchases directly online here, view the relevant apps for your hardware via your Product Key as well as your order history, and set up subscription models or subscriptions.
Simply log in with your Festo account, select the digital product you want, and add it to your basket. You can also just forward the basket to the appropriate colleagues authorised to make purchases.

➔ **www.festo.com/appworld**

Digitalisation – megatrend for productivity

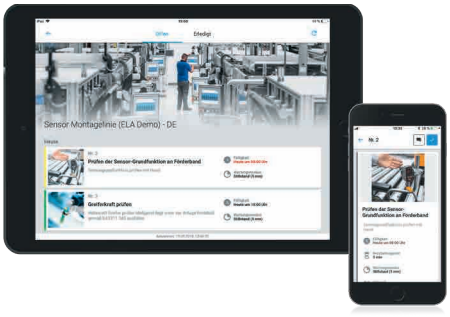
The virtual and real worlds are growing ever closer together – and are leading to Industry 4.0. Increased digitalisation is one of the basic prerequisites for this process. Festo is driving this process forward in the field of automation – and we invite our customers to undertake this journey together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

Pneumatic Sizing

You may have already asked yourself: isn't there a quicker and more accurate way to calculate the optimal pneumatic control chain? Yes, there is! Pneumatic Sizing doesn't just offer you one design version, but up to three that are suitable for your application. By entering three application parameters such as load, stroke and positioning time, you will get up to three suggestions: the precise result as well as the performance and eco versions.

Pneumatic Sizing allows you to benefit from:
- Optimal air consumption
- The ideal travel time per cycle
- Direct connections to the Festo Online Shop.

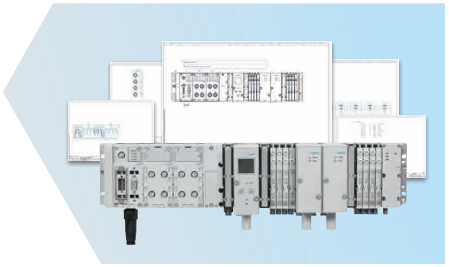
Festo Design Tool 3D



Festo Design Tool 3D is a 3D product configurator for generating Festo-specific CAD product combinations. Your search for matching accessories for standard components with fast delivery, for example for pneumatic cylinder series DSBC, DSNU and ADN, will be faster, more reliable and easier in the future. At the same time your documentation effort is reduced and traceability is simple: generate PDF assembly drawings and bills of materials within the Festo Design Tool 3D and query the traceable order code in the Support Portal.

The benefits for design, purchasing and commissioning:
- Quick and easy automated generation of product combinations
- Shorter bills of materials, fewer sources of error and optimised ordering processes thanks to a single order code for the complete assembly
- Native CAD models for retaining CAD/component links (CAD Constraints, CAD Mates)
- Simplified, accelerated processes in the warehouse and during assembly

Schematic Solution for EPLAN projects



This circuit diagram service for complete EPLAN projects is unique to Festo. EPLAN Schematic Solution documents your individually configured solutions in next to no time. 3D CAD data and product information for standard catalogue products have been available for 15 years. With EPLAN Schematic Solution you simply enter the order code and receive the complete plan in just a few minutes – error-free and trouble-free. No more tedious searching for, downloading and piecing together individual components.

- Intuitive, fast and reliable: error-free documentation at the push of a button
- Full mechatronic display of configured products like CPX, VTSA, MPA
- Reliably automated according to the standards IEC 61355, IEC 81346, ISO 1219

Automation Suite for parameterisation, programming and maintenance

Automate the entire drive package, from the mechanical system to the controller. Commissioning all components is easy, efficient and seamless since the basic functionalities of the components are already integrated into the software and can be customised using plug-ins and extensions.

- Only five steps to get a drive system up and running
- Greatly simplified integration into the control program
- Optional CODESYS extension

→ **www.festo.com/automationsuite**

Smartenance – the digital maintenance manager

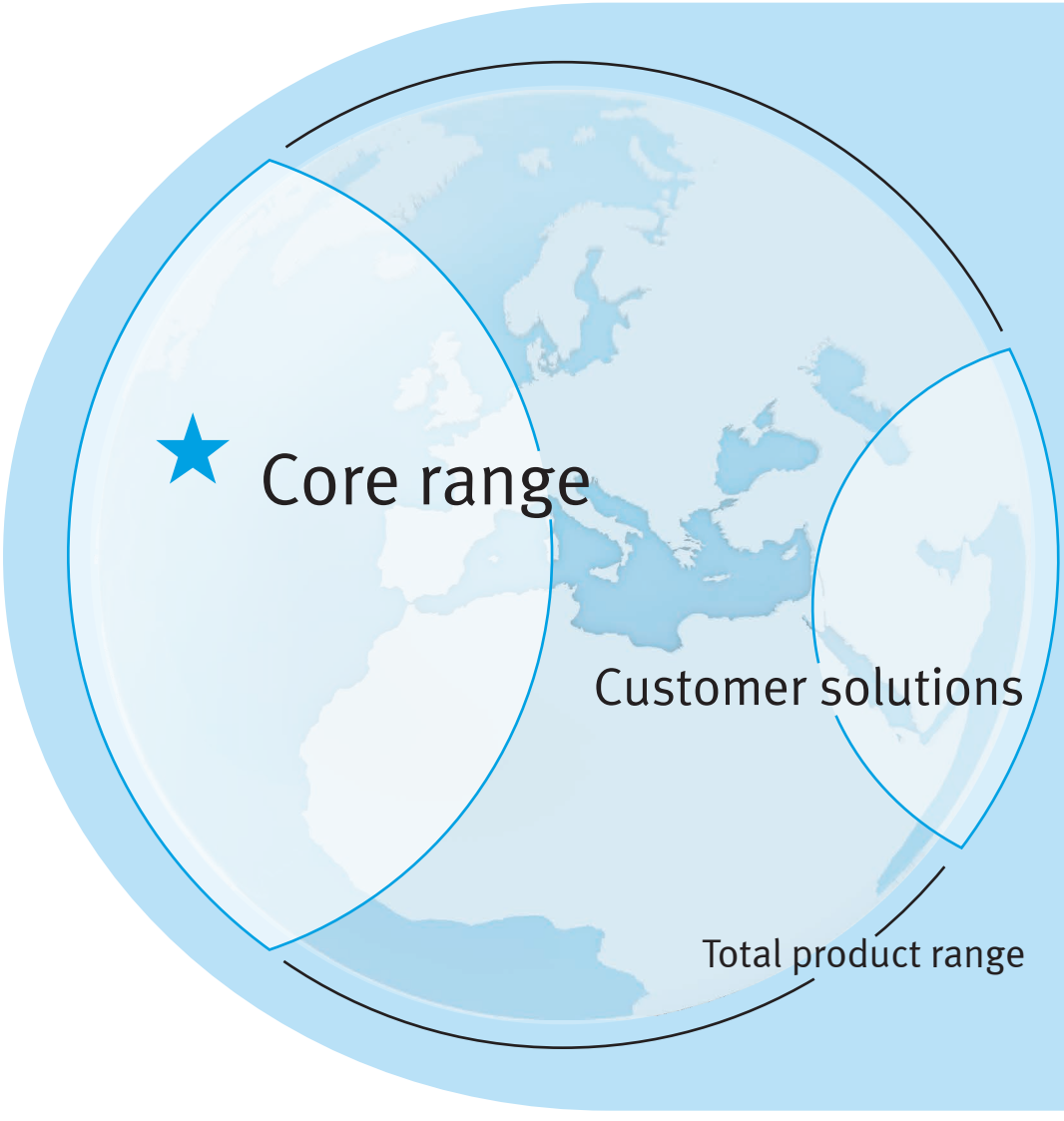
Smartenance makes your maintenance management paperless, transparent and efficient. You can create, duplicate and evaluate maintenance tasks and schedules easily and flexibly. The intelligent user management for fast teamwork increases the efficiency of your maintenance management. Smartenance is quick and easy to install, self-explanatory and a simple and cost-effective introduction to digitalisation. Smartenance is available in selected countries.

- For production managers and system operators: digital maintenance management directly on the shop floor
- For auditors: detailed proof with one click
- Cloud-based: mobile access from anywhere
- Feedback function: quick and easy collaboration in the maintenance team

→ **www.festo.com/smartenance**

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

→ WE ARE THE ENGINEERS OF PRODUCTIVITY.



Product range

Producere – implement in advance.
Until the turn of the millennium, production was essentially still synonymous with building up a stock of an item. Now it is better described as “being prepared”, since needs, parameters and processes change rapidly and require thinking and action on several fronts at the same time. Festo is facing these challenges too, and offers you different levels of solutions in its range.

1

Core Range

Our Core Range offers you special benefits – selected products that solve the majority of your automation tasks. They can be ordered by part number and are particularly attractively priced.

- **Quickest delivery, worldwide – wherever, whenever**
- Best value
- Easy and fast to select

Just look for the star!

2

Total product range

You will find solutions for more specific requirements in our total product range, which we will deliver on the indicated date. This part of the range is not specifically identified and also covers innovative cross-technology combinations of products right up to products that carry the seeds of digitalisation within them.

3

Customer solutions

If you cannot find the right products for your task in our range, our specialists in the Customer Solutions department are always available to provide support.

Your partner for all automation questions.
Get in touch with us at → **www.festo.com**

Easy selection – quick ordering

★ Quick ordering for core products

We make it easy for you!
We have created a quick and easy selection of products for you based on our new, global core product range. It has been compiled by our Festo experts in line with customers' needs and it covers all the main automation applications and offers an optimum price/performance ratio.

Products with a star: easy selection guaranteed
You can recognise these outstanding products at a glance:
they are marked in the catalogues with a star.

Quick and easy ordering
You can order these products, pre-configured for an optimum price/performance ratio, quickly and easily via either a self-explanatory order code or a unique part number.

High level of availability
In stock and ready for immediate dispatch:
these products are instantly available unless stated otherwise.

★
You can benefit from these advantages whenever you need core pneumatic 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 in stock and ready for immediate delivery unless otherwise specified.

At a glance for you:
The Festo core product programme for basic automation functions with excellent availability
- Worldwide: always in stock
- Superb: Festo quality at an attractive price
- Easy: Simplified procurement and warehousing

More variety or individually configurable? No problem!
If your requirements go beyond the main applications of automation technology or 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.
You can find these outstanding products in the overview in this printed catalogue, in our electronic catalogue or online on our website and in the online shop.

Ordering using the type code

Type code explanation or Modular products system explanation for each product can be found on the product pages.

The appropriate accessories for each product are presented in tabular format at the beginning of each product description.

Sample type code explanation:

Type codes

001	Series
DRVS	Semi-rotary drive, double-acting

002	Size
...	6, 8, 12, 16, 25, 32, 40

003	Nominal swivel angle [°]
90	90
180	180
270	270

004	Cushioning
P	Elastic cushioning rings/plates on both sides

005	EU certification
	None
EX4	II 2GD

Sample modular products system explanation:

Ordering – Modular product system DSNU-S

Ordering table

Size	8	12	16	20	25	Code		Enter code
Module no.	8112002	8112003	8112004	8112005	8112006			
Function	Double-acting round cylinder					DSNU		DSNU
Design	Space-saving					-S		-S
Piston ∅ [mm]	8	12	16	20	25	-...		
Stroke [mm]	1 ... 100	1 ...150	1 ...200	1 ...200	1 ...200	-...		
Cushioning	Elastic cushioning rings/pads at both ends					-P		
	–		Pneumatic cushioning, self-adjusting at both ends			-PPS		
Position sensing	Via proximity switch					-A		-A

Ordering using the part number

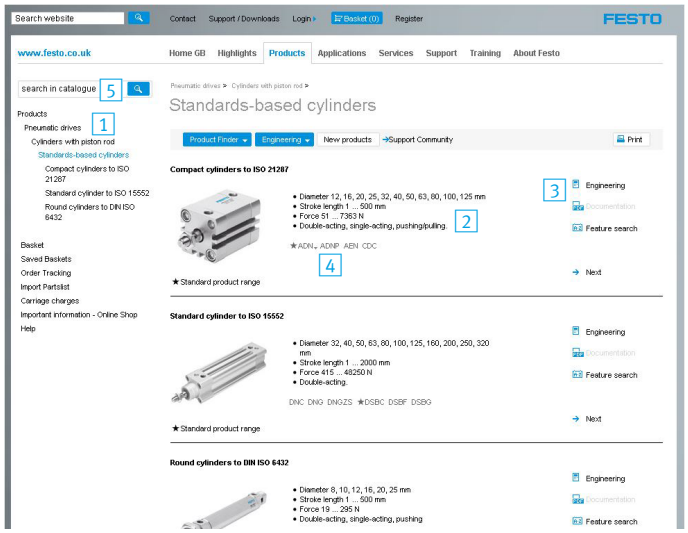
Clicking a part number in the PDF will lead you directly to the Festo online catalogue where you can place your order.

Part no.	Type	PU[1] [m]
197396	PUN-H-4x0.75-DUO	50
197[illegible]	[illegible]1-DUO	50

Online or offline – get the ideal solution fast

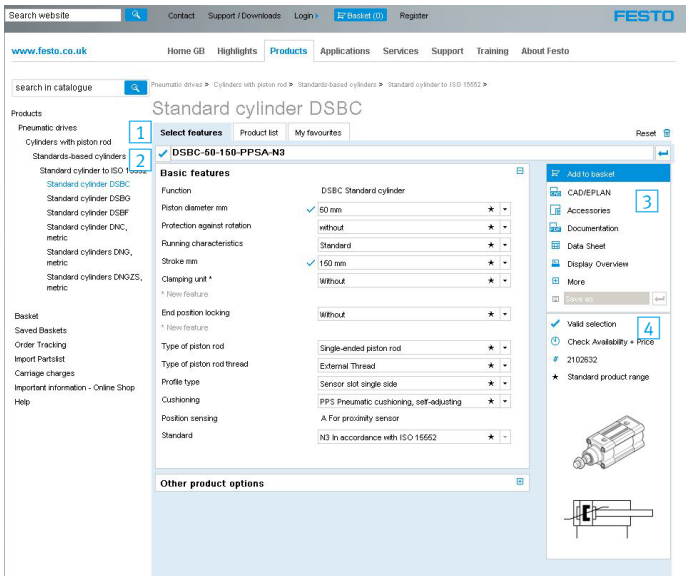
Online:
Enter www.festo.com in your web browser, then choose your country in the „Automation“ field. Click on „Go“.
On the homepage, select the „Products“ menu.

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



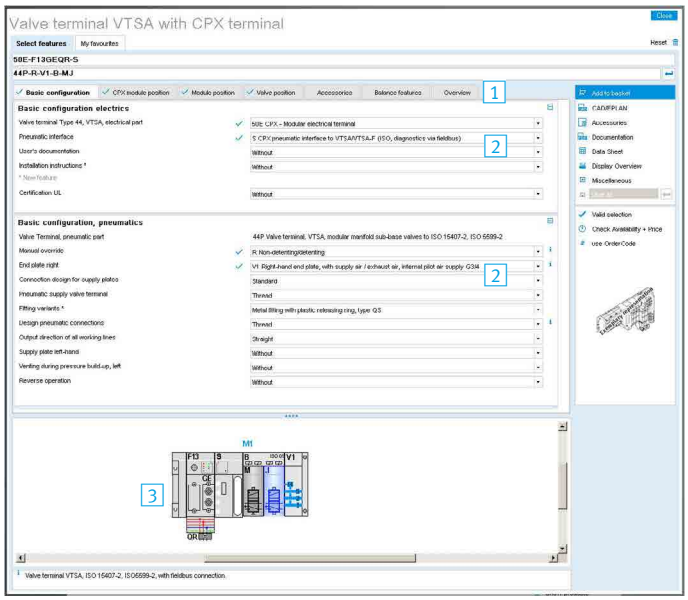
From the product group to the product
There are three options available:

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 a type 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 type code 2: Enter the exact type 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“
   – „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. Graphical representation 3:
   A dynamic graphic[1] 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“. 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“.

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

Festo Online Shop

Round-the-clock benefits

24 h online

Fast and convenient
Get a quick and easy overview of prices and delivery times in the basket at any time, including shipment tracking and order documentation.

Use our Online Shop.

Request quotes
+ Quickly create quotes for your purchasing department
+ View the quote by e-mail and in your user account shortly afterwards.

Express delivery[1)]
+ Fast and guaranteed delivery on the next business day
+ Regardless of the business hours of our order service

Order tracking
+ Planning reliability: all delivery dates in the basket at a glance
+ Track orders and view the status display, even for orders outside of the Online Shop
+ Track shipments

No minimum quantity surcharge for online orders
+ Reduces your costs
+ Gives you greater flexibility when ordering

Order documents and reordering
+ Easy and secure: download the order confirmation, delivery note and invoice
+ Reordering of previous orders made easy

Create warehouse labels with the Label Designer
+ Organisation and transparency in your warehouse
+ Easy identification of the stock location
+ Uniform labelling

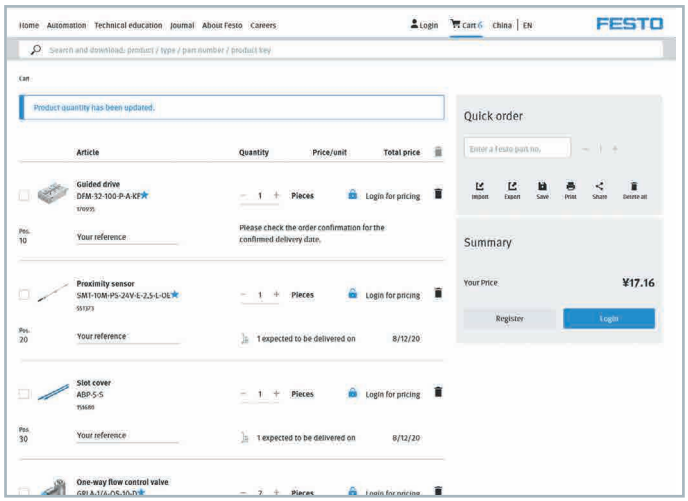
Share and import bills of materials and baskets
+ Supports teamwork
+ Exchange data quickly with colleagues, customers, suppliers
+ Enter data only once: greater efficiency, fewer errors

Download complete documentation
+ Download all documents for the selected products with just a few clicks

1) Orders placed before 8:30 p.m. with express delivery selected will be with you by noon the following working day, provided the items are in stock.

You can find the Online Shop at …

➔ **www.festo.com**
› click on the link for “Basket”



If you already have an account …
… then you can log in directly at ➔ **www.festo.com/login** or by clicking on “Login”.

If you have not yet registered …
… you can access the registration form via ➔ **www.festo.com** and click on “Register”.

Further information on the Festo Online Shop can be found here:
➔ **www.festo.com/ols**

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.

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.

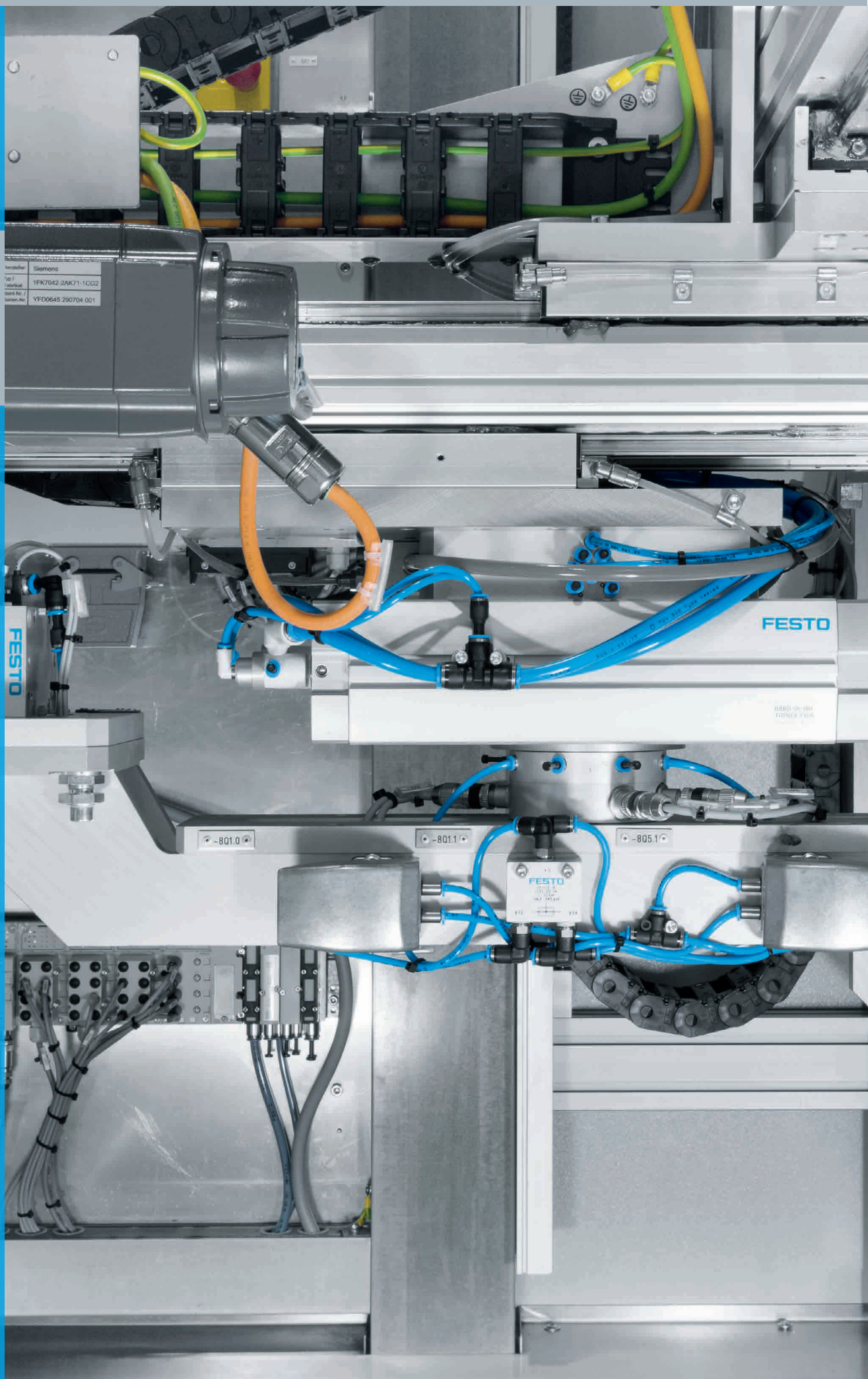
CP Factory Training – Production planning and control in the smart factory
Production planning and control (PPC) has always been one of the core tasks of a manufacturing company and is gaining in significance with smart factories and Industry 4.0 (e.g. greater product diversity, customised solutions 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.

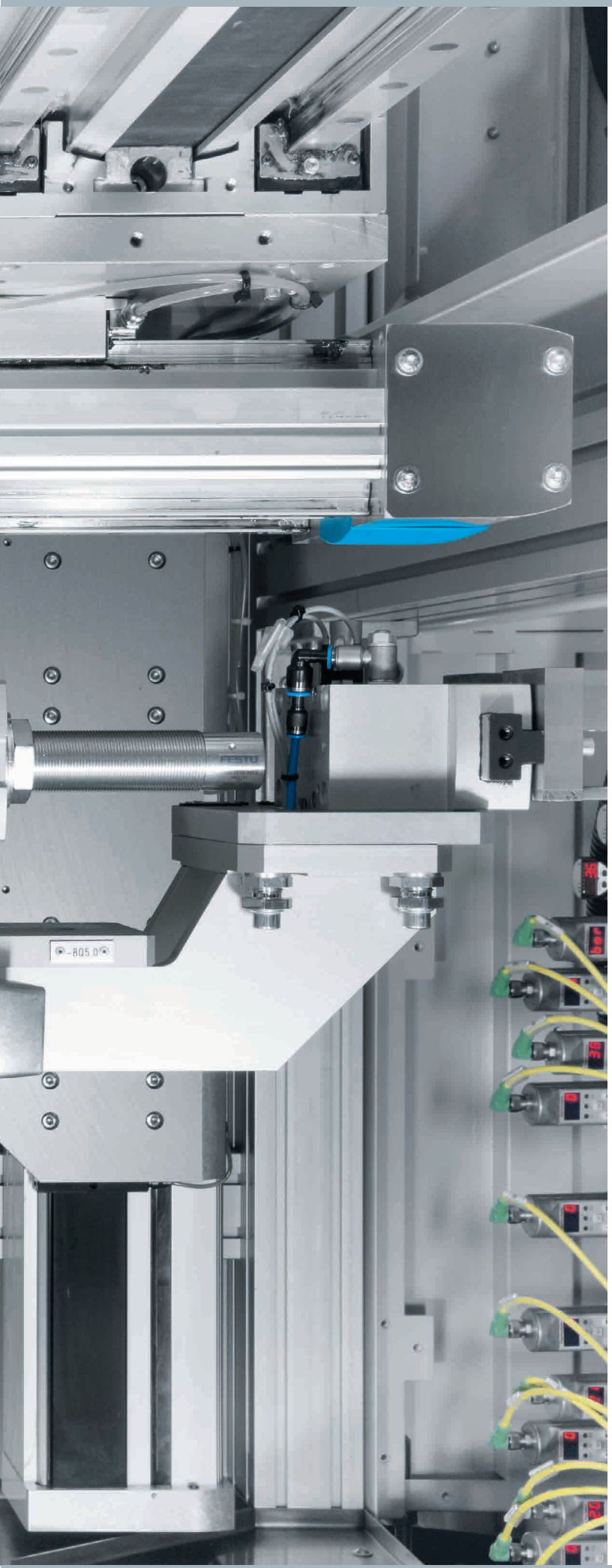
Smart Maintenance – Predictive and usage-based maintenance
Cyber-physical systems enable new approaches in maintenance and yet also place higher demands on maintenance. Because all the promises of Industry 4.0, such as one-piece flow or make-to-order, can only be fulfilled with extremely high machine 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.

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

01

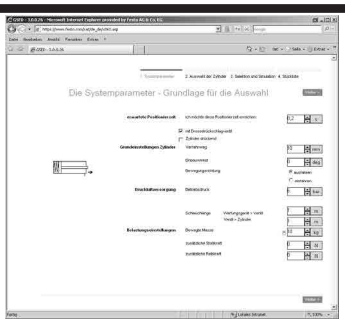
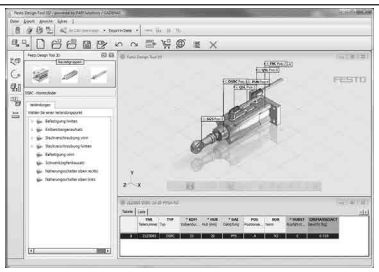
Pneumatic drives





Contents

Software tools

Pneumatic simulation		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. This tool can be found • on our website under www.festo.com/catalogue by clicking on the blue icon “Engineering”.
Festo Design Tool 3D		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 as a single order item, either completely pre-assembled or as individual parts in a single box. This considerably reduces your bill of materials, and downstream processes such as product ordering, order picking and assembly are significantly simplified. 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 on our website at www.festo.com/FDT-3D in the countries listed above.

Standards-based cylinders

Standards-based cylinders DSBC ★

Mode of operation	Double-acting
Piston ∅	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm
Theoretical force at 6 bar, advancing	415 ... 7363 N
Stroke	1 ... 2800 mm
Cushioning	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning, Pneumatic cushioning, adjustable at both ends
Description	• ISO 15552 (ISO 6431, VDMA 24562) • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Standard profile with two sensor slots • Wide range of variants for customised applications • Comprehensive range of mounting accessories for just about every type of installation • For position sensing
→ Page/online	**31**

Round cylinders

	 **Round cylinders DSNU** ★	 **Round cylinders DSNU**	 **Round cylinders DSNU-S**
Mode of operation	Double-acting	Double-acting	Double-acting
Piston ∅	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm	32 mm, 40 mm, 50 mm, 63 mm	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm
Theoretical force at 6 bar, advancing	23 ... 295 N	415 ... 1870 N	30.2 ... 294.5 N
Stroke	1 ... 500 mm	1 ... 500 mm	1 ... 200 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	Self-adjusting pneumatic end-position cushioning, Elastic cushioning rings/plates at both ends
Description	• 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	• 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	• Short variant of ISO cylinder DSNU • Wide range of variants for customised applications • Self-adjusting pneumatic end-position cushioning which adapts optimally to changes in load and speed • Piston rod with male thread • For position sensing
→ Page/online	**47**	**47**	**47**

Compact, short-stroke and flat cylinders

	 **Compact cylinders ADN-S** ★	 **Compact cylinders AEN-S**
Mode of operation	Double-acting	Single-acting, pushing
Piston ∅	6 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm	6 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm
Theoretical force at 6 bar, advancing	9.4 ... 1870 N	13 ... 1870 N
Stroke	5 ... 50 mm	5 ... 25 mm
Cushioning	No cushioning, Elastic cushioning rings/plates at both ends	No cushioning, Elastic cushioning rings/plates at both ends
Description	• Minimal fitting space • High forces in a compact size • Piston rod with female or male thread • F1A variant: Recommended for production plants for the manufacture of Li-Ion batteries (Cu ≤ 1%, Zn ≤ 1%, Ni ≤ 1%) • For position sensing	• Minimal fitting space • High forces in a compact size • Piston rod with female or male thread • For position sensing
→ Page/online	**63**	**aen-s**

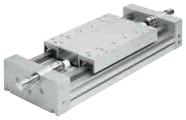
Compact, short-stroke and flat cylinders

	 **Compact cylinders ADN** ★	 **Compact cylinders AEN**	 **Compact cylinders ADNGF**
Mode of operation	Double-acting	Single-acting, Pushing, Pulling	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm
Piston ∅	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	68 ... 4712 N
Theoretical force at 6 bar, advancing	51 ... 7363 N	54 ... 4416 N	1 ... 400 mm
Stroke	1 ... 500 mm	1 ... 25 mm	Elastic cushioning rings/plates at both ends, self-adjusting pneumatic end-position cushioning
Cushioning	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning	Elastic cushioning rings/plates at both ends	Via proximity sensor
Description	• 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	• 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	• 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
→ Page/online	**adn**	**aen**	**adngf**

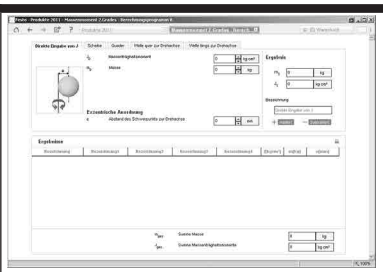
Multimount cylinders

	 **Compact cylinders, multimount DPDM**
Mode of operation	Double-acting, Single-acting, Pushing, Pulling
Piston ∅	6 mm, 10 mm, 16 mm, 20 mm, 25 mm, 32 mm
Theoretical force at 6 bar, advancing	9 ... 483 N
Stroke	5 ... 50 mm
Cushioning	Elastic cushioning rings/plates at both ends
Description	• Mounting using through-hole and female thread • Compact design • Piston rod variants • For position sensing
→ Page/online	**77**

Rodless cylinders

	 **Linear drives DLGF**	 **Linear drives DGC-K**	 **Linear drives DGC-G, DGC-GF, DGC-KF**	 **Linear drives with heavy-duty guide DGC-HD**
Mode of operation	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
Piston ∅	188 ... 754 N	153 ... 3016 N	30 ... 1870 N	153 ... 754 N
Theoretical force at 6 bar, advancing	50 ... 1000 mm	1 ... 8500 mm	1 ... 8500 mm	1 ... 5000 mm
Stroke	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, Shock absorber, hard characteristic curve, Shock absorber, soft characteristic curve	Shock absorber, hard characteristic curve, Shock absorber, soft characteristic curve
Cushioning	Via proximity switch	Via proximity switch	Via proximity switch	Via proximity switch
Description	• Extremely flat design • Choice of two types of cushioning: self-adjusting pneumatic end-position cushioning or external hydraulic shock absorbers • Supply port on the left or right or at both ends or alternatively from below • Loads and devices can be directly mounted • Basic design DLGF-G without external guide for simple drive functions in small installation spaces • Recirculating ball bearing guide DLGF-KF with a standard recirculating ball bearing guide for high torques and heavy loads	• Compact design: 30% smaller than basic design DGC-G • Basic drive without guide, for simple drive functions • Low moving dead weight • Symmetrical design	• Basic design, plain or ball bearing guide, guide axis without actuator • All settings accessible from one side • Available with variable end stops and intermediate position module • Software tool available for guide calculation • Optional: NSF-H1 lubricant for the food zone (see www.festo.com/sp/dgc -› “Certificates” tab) • Optional: clamping unit for holding loads	• For maximum loads and torques thanks to duo guide rail • Very good operating performance under torque load • Long service life • Ideal as a basic axis for linear gantries and cantilever axes • Wide range of adaptation options on the drives
➔ Page/online	**85**	**99**	**109**	**dgc-hd**

Software tools

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 • on our website under www.festo.com/catalogue by clicking on the blue icon "Engineering".

Semi-rotary drives

	 **Semi-rotary drives DRVS** ★	 **Semi-rotary drives DSM**	 **Semi-rotary drives DSM-B, DSM-HD-B**	 **Semi-rotary drives DRRD**
Size	6, 8, 12, 16, 25, 32, 40	6, 8, 10	12, 16, 25, 32, 40, 63	8, 10, 12, 16, 20, 25, 32, 35, 40, 50, 63
Theoretical torque at 6 bar	0.15 ... 20 Nm	0.15 ... 1.7 Nm	1.25 ... 80 Nm	0.2 ... 112 Nm
Permissible mass moment of inertia	6.5 ... 350 kgcm²	6.5 ... 26 kgcm²	50 ... 5000 kgcm²	15 ... 420000 kgcm²
Position sensing	Via proximity switch	Via proximity sensor, none	Via proximity sensor	Via proximity switch
Swivel angle	0 ... 270°	0 ... 240°	0 ... 270°	180°
Description	• 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	• 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	• 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	• Twin-piston drive, power transmission via rack and pinion principle • Very high accuracy in the end positions • Very high load bearing capacity • Very good axial run-out at the flanged shaft • Greater stability even with smaller sizes
→ **Page/online**	**133**	**dsm**	**dsm-b**	**145**

Drives with slides

	 **Mini slides DGST** ★	 **Mini slides DGSL**	 **Mini slides DGSC**
Piston ∅	6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm	6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm	6 mm
Theoretical force at 6 bar, advancing	34 ... 589 N	17 ... 483 N	17 N
Stroke	10 ... 200 mm	10 ... 200 mm	10 mm
Cushioning	Elastomer cushioning, double-sided, stroke not adjustable, Elastic cushioning rings/plates at both ends, External hydraulic cushioning	Short elastic cushioning rings/pads at both ends, No cushioning, Elastic cushioning rings/plates at both ends, Elastic cushioning rings/pads at both ends with fixed stop, Self-adjusting, progressive shock absorber at both ends, with reducing sleeve, Progressive shock absorber at both ends	Elastic cushioning rings/plates at both ends
Position sensing	Via proximity switch	Via proximity switch	Without
Description	• Powerful twin-piston drive • Shortest mini slide on the market • Precise recirculating ball bearing guide • Versatile mounting options • F1A variant: Recommended for production plants for the manufacture of Li-Ion batteries (Cu ≤ 1%, Zn ≤ 1%, Ni ≤ 1%)	• 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 a pressure drop thanks to clamping cartridge or end-position locking • Wide variety of mounting and attachment options • Compact design	
→ Page/online	**165**	**dgsl**	**dgsc**

Drives with guide rods

	 **Guided drives DFM, DFM-B** ★	 **Twin-piston drives DGTZ**
Piston ∅	6 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm	10 mm, 16 mm, 20 mm, 25 mm, 32 mm
Theoretical force at 6 bar, advancing	17 ... 4712 N	60 ... 966 N
Stroke	5 ... 400 mm	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
Cushioning	Elastic cushioning rings/plates at both ends, Pneumatic cushioning, adjustable at both ends, Shock absorber, soft characteristic curve	Elastic cushioning rings/plates at both ends
Position sensing	Via proximity switch	Via proximity switch
Description	• Drive and guide unit in a single housing • High resistance to torques and lateral forces • Plain or recirculating ball bearing guide • Wide variety of mounting and attachment options • Wide range of variants for customised applications • F1A variant: Recommended for production plants for the manufacture of Li-Ion batteries (Cu ≤ 1%, Zn ≤ 1%, Ni ≤ 1%)	• Minimal space requirement • Minimal mounting time • Wide range of mounting options • Good protection against torsion • High rigidity • Maintenance-free
→ Page/online	**175**	**205**

Product overview

Clamping cylinders

Clamping modules
EV

Clamping area	10x30 mm, 15x40 mm, 15x63 mm, 20x75 mm, 20x120 mm, 20x180 mm, Ø16 mm, Ø20 mm, Ø25 mm, Ø32 mm, Ø40 mm, Ø50 mm, Ø63 mm, Ø12 mm
Stroke	3 ... 5 mm
Description	• Compact rodless cylinder with diaphragm • Single-acting, with reset function • Flat design • Hermetically sealed • Pressure plates and foot mounting as accessories
➔ Page/online	ev

Linear/swivel clamps

Linear/swivel clamps
CLR

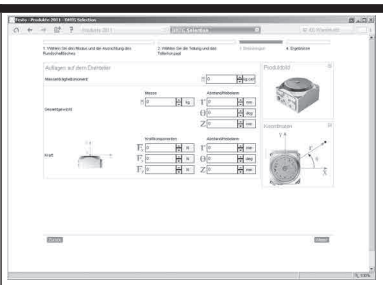
Piston ∅	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm
Theoretical clamping force at 6 bar	51 ... 1682 N
Clamping stroke	10 ... 50 mm
Swivel angle	90° +/- 2°, 90° +/- 3°, 90° +/- 4°
Description	• Swivelling and clamping in one step • Adjustable swivel direction • Available with clamping fingers as accessories • Available with dust and welding spatter protection • Double-acting • For position sensing
➔ Page/online	clr

Bellows actuators

Bellows actuators
EB

Size	80, 145, 165, 215, 250, 325, 385
Stroke	20 ... 230 mm
Description	• 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

Software tools

Rotary indexing table		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. This tool can be found • on our website under www.festo.com/catalogue by clicking on the blue icon “Engineering”.

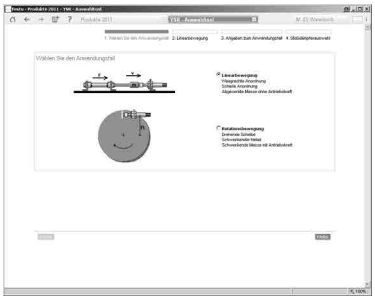
Rotary indexing tables

	 **Rotary indexing tables** **DHTG**
Size	65, 90, 140, 220
Theoretical torque at 6 bar	2.1 ... 58.9 Nm
Indexing stations	2 ... 24
Description	• 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**

Quarter turn actuators

	 **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
Description	• Uniform torque characteristic across the entire rotation angle range of 90° • Process valve connection to ISO 5211 on both sides • Can be mounted on all process valves using pressure relief slot • Mounting hole pattern to VDI/VDE 3845 • Sturdy, non-slip and easy-to-clean aluminium housing • Long service life, low wear • Increased corrosion protection	• 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**

Software tools

Shock absorber		All types of cushioned movements, whether diagonal or vertical, curved or straight, lever or disc, are taken into account. The software tool always recommends the best shock absorber. This tool can be found • on our website under www.festo.com/catalogue by clicking on the blue icon “Engineering”.

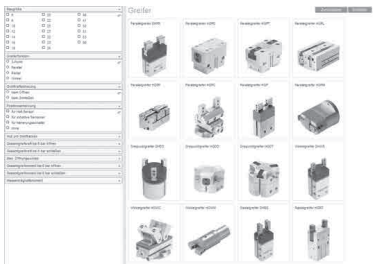
Shock absorbers

	 **Shock absorbers DYSR**	 **Shock absorbers YSR-C**	 **Shock absorbers YSRW**
Stroke	8 ... 60 mm	4 ... 60 mm	8 ... 34 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
Description	• Hydraulic shock absorber with spring return • Adjustable cushioning hardness	• Hydraulic shock absorber with path-controlled flow control function • Rapidly increasing cushioning force curve • Short cushioning stroke • Suitable for rotary drives	• 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
➔ Page/online	dysr	ysr-c	ysrw

Shock absorbers

	 **Shock absorbers YSRW-DGC**	 **Shock absorbers YSRWJ**
Stroke		8 ... 14 mm
Max. energy absorption per stroke		1 ... 3 J
Cushioning	Self-adjusting, Soft characteristic curve	Self-adjusting, Soft characteristic curve
Description	• For linear drives DGC • Gently increasing cushioning force curve • Size 12, 18, 25, 32, 40, 50, 63	• 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
➔ Page/online	ysrw-dgc	ysrwj

Software tools

Product finder for grippers		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. This tool can be found • on our website under www.festo.com/catalogue by clicking on the blue icon “Product Finder”.

Parallel grippers

	 **Parallel grippers, electric** **EHPS**	 **Parallel grippers** **DHPS**	 **Parallel grippers** **HGPL-B**
Total gripping force at 6 bar, closing	see documentation on our website	25 ... 910 N	158 ... 2742 N
Stroke per gripper jaw	10 ... 16 mm	2 ... 12.5 mm	20 ... 150 mm
Position sensing	Via IO-Link interface, With Hall sensor, With integrated displacement encoder, Via proximity switch	Via Hall sensor, Via proximity switch	Via proximity switch
Gripping force backup		During opening, During closing	
Description	• Electric version of the pneumatically actuated parallel gripper DHPS • Ideal for use as a front-end actuator thanks to its low dead weight • Controller-free actuation using digital signals • Adjustable gripping force (4 settings)	• Sturdy and precise T-slot guidance of the gripper jaws • High gripping force and compact size • Max. repetition accuracy • Wide range of adaptation options on the drives	• 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	**ehps**	**dhps**	**hgpl**

Parallel grippers

	 **Parallel grippers** **DHPC**	 **Parallel grippers** **HGPT**
Total gripping force at 6 bar, closing	5.2 ... 53.9 N	106 ... 6300 N
Stroke per gripper jaw	2 ... 6 mm	1.5 ... 25 mm
Position sensing	Via proximity switch	Via proximity switch
Gripping force backup	During opening, During closing	During opening, During closing
Description	• Resilient and precise ball guide • High gripping force and compact size • Max. repetition accuracy • Wide range of adaptation options on the drives	• 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
➔ Page/online	**211**	**hgpt**

Product overview

Three-point grippers

	 Three-point grippers DHDS	 Three-point grippers HGDT
Total gripping force at 6 bar, closing	87 ... 750 N	207 ... 2592 N
Stroke per gripper jaw	2.5 ... 6 mm	1.5 ... 10 mm
Position sensing	Via Hall sensor, Via proximity switch	Via proximity switch
Gripping force backup	During closing	During opening, During closing
Description	• Sturdy and precise T-slot guidance of the gripper jaws • High gripping force and compact size • Max. repetition accuracy • Wide range of adaptation options on the drives	• 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 available
→ Page/online	dhds	hgdt

Angle grippers

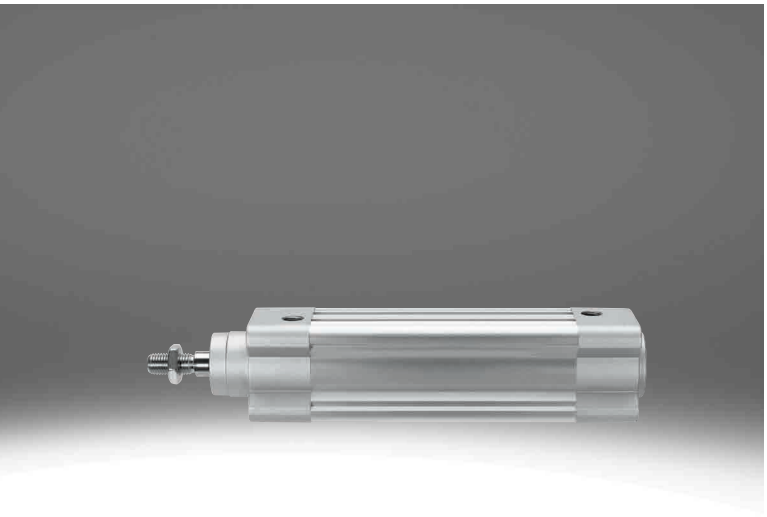
	 Angle grippers DHWS
Total gripping force at 6 bar, closing	30 ... 1362 Ncm
Stroke per gripper jaw	40°
Position sensing	Via Hall sensor, Via proximity switch
Gripping force backup	During closing
Description	• Improved gripper jaw guide • Slotted guide • Internal fixed flow control, does away with the need for external flow control in 90% of applications • Max. repetition accuracy • Wide range of adaptation options on the drives
→ Page/online	dhws

Radial grippers

	 **Radial grippers DHRS**	 **Radial grippers HGRT**
Total gripping force at 6 bar, closing	15 ... 660 Ncm	158 ... 7754 Ncm
Stroke per gripper jaw	180°	180°
Position sensing	Via Hall sensor, Via proximity switch	Via proximity switch, Via inductive sensors
Gripping force backup	Lateral gripper jaw support for high torque loads Self-centring Gripper jaw centring options Max. repetition accuracy	Secure gripping thanks to precise, polished plain-bearing guide Gripping force backup via compression spring 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 up to a maximum of 90° per gripper finger. This prevents possible collisions due to the gripper jaws opening too far
Description	• Sturdy and precise T-slot guidance of the gripper jaws • High gripping force and compact size • Max. repetition accuracy • Wide range of adaptation options on the drives	• 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 available
➔ Page/online	**ehps**	**dhps**

Product overview

Standard cylinders DSBC, to ISO 15552



Highlights

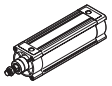
+ ISO 15552 (ISO 6431, VDMA 24562)
+ Strokes of up to 2800 mm
+ With self-adjusting pneumatic end-position cushioning PPS
+ For position sensing
+ Excellent flexibility thanks to the wide range of variants
+ Comprehensive range of accessories for just about every type of installation
+ Optionally with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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Standard cylinders DSBC, to ISO 15552

Product range overview

Function	Version	Type	Piston diameter [mm]	Stroke [mm]	Sensor slot on 3 sides D3	Cushioning P	PPS	PPV	Position sensing A
Double-acting		DSBC-...	32, 40, 50, 63, 80, 100, 125	1 ... 2800	■	■	■	■	■

Features

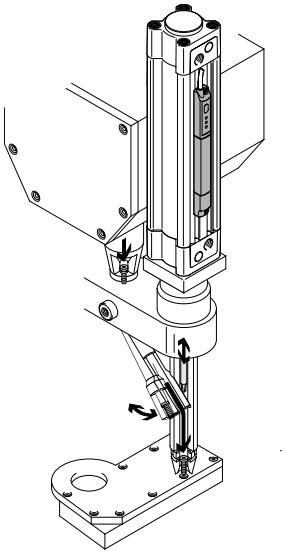
At a glance

ISO DIN VDMA

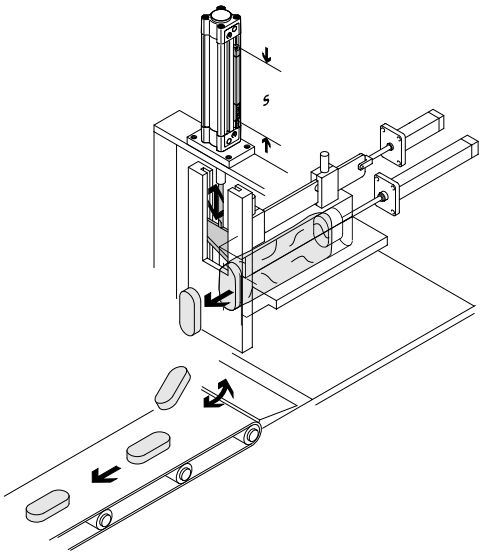
- Standards-based cylinders to ISO15552 (corresponds to the withdrawn standards ISO 6431, DIN ISO 6431, VDMA24562, NFE49003.1 and UNI 10290)
- Double-acting
- For contactless position sensing
- Extensive range of accessories makes it possible to install the cylinder virtually anywhere
- Three types of cushioning available:
  - Elastic cushioning: elastic cushioning rings/plates at both ends
  - PPS cushioning: pneumatic cushioning, self-adjusting at both ends
  - PPV cushioning: pneumatic cushioning, adjustable at both ends
- The variants can be configured according to individual needs using a modular product system
- Wide range of variants provides high level of flexibility

Example applications

Automatic screw machine



For process control



Sensor options

Proximity sensors SMT-8/SME-8, for T-slots

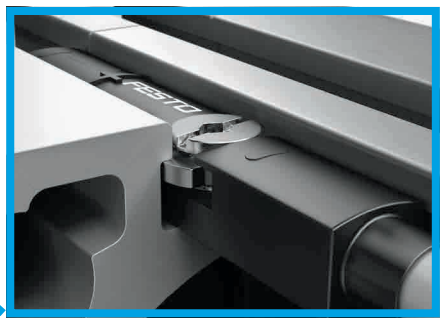
Quick ordering:

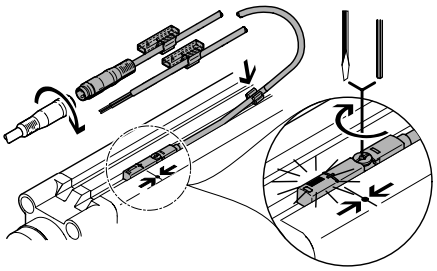
Reliable sensing – strong magnetic field

Perfect fixing on cylinders with T-slots

Insertable in the slot from above

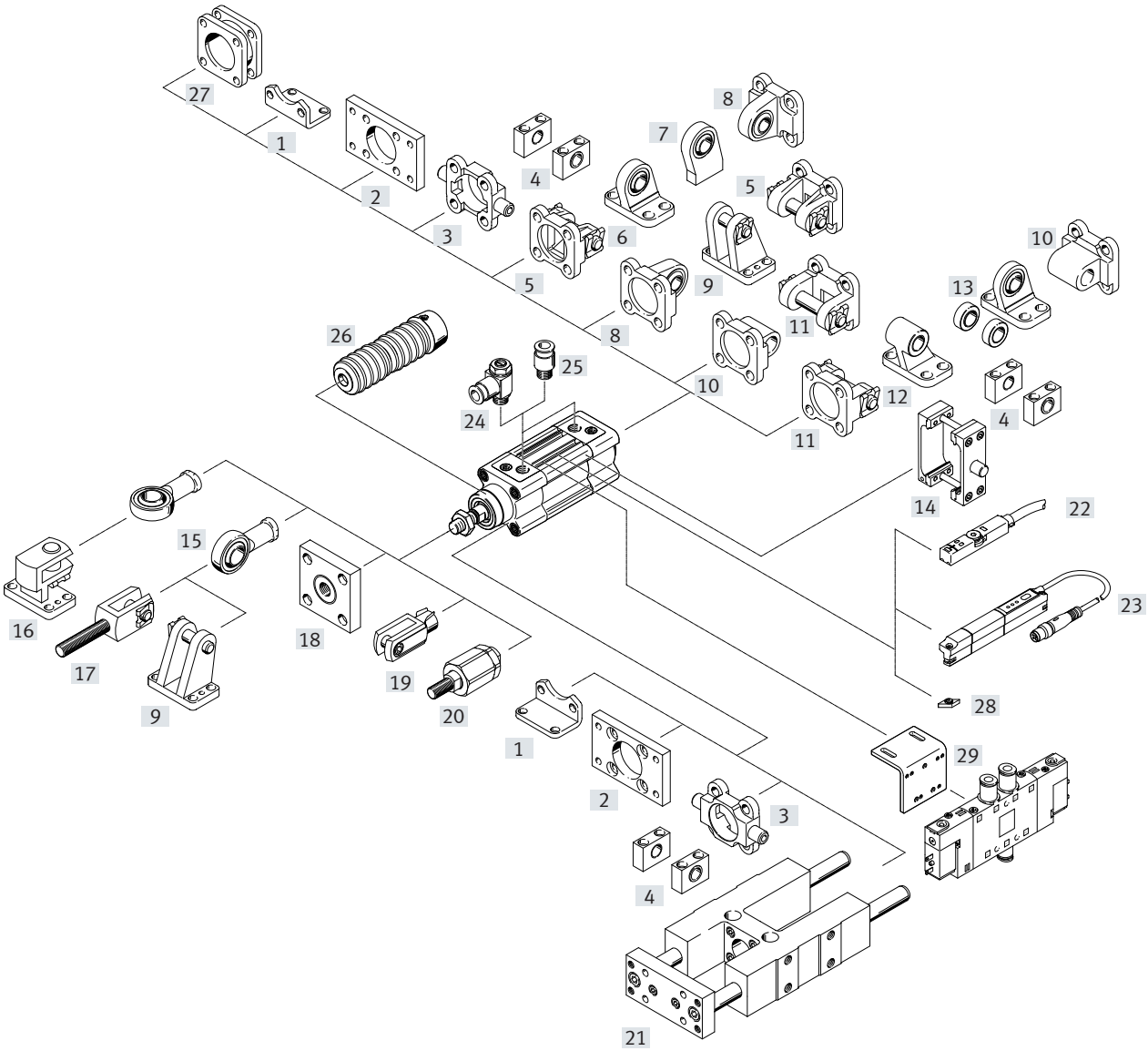
Flexible product configuration based on application needs





Standard cylinders DSBC, to ISO 15552

Peripherals overview



		➔ Page/ Internet
[1]	Foot mounting HNC	42
[2]	Flange mounting FNC	
[3]	Trunnion flange ZNCF	
[4]	Trunnion support LNZG	
[5]	Swivel flange SNC	
[6]	Clevis foot LSNG	
[7]	Clevis foot LSNSG	
[8]	Swivel flange SNCS	
[9]	Clevis foot LBG	
[10]	Swivel flange SNCL	
[11]	Swivel flange SNCB	
[12]	Clevis foot LNG	
[13]	Clevis foot LSN	
[14]	Trunnion flange kit DAMT	43
[15]	Rod eye SGS	

		➔ Page/ Internet
[16]	Right-angle clevis foot LQG	43
[17]	Rod clevis SGA	
[18]	Coupling piece KSG, KSZ	
[19]	Rod clevis SG	
[20]	Self-aligning rod coupler FK	
[21]	Guide unit FENG	
[22]	Proximity switch SME/SMT-8M	681
[23]	Position transmitter SMAT, SDAT	**smat-8m,** 715
[24]	One-way flow control valve GRLA	43
[25]	Push-in fitting NPQE	803
[26]	Bellows kit DADB	**dadb**
[27]	Multi-position kit DPNC	43
[28]	Slot nut ABAN	**aban**
[29]	Mounting kit DAVM	**davm**
–	Slot cover ABP-5-S	43

Ordering – Modular product system

Size		32	40	50	63	80	100	125	Code	Enter code
Module no.		1463250	1461995	1463770	1463475	1463495	1463520	1722457		
Function		Standards-based cylinder, double-acting, based on ISO 15552							DSBC	DSBC
Protection against rotation		None								
		With protection against rotation						–	-Q	
Running characteristics		Standard								
		Low friction						–	L	
		Constant, slow movement							U	
		Low friction for balancer applications							L1	
Piston diameter	[mm]	32	40	50	63	80	100	125	-...	
Stroke	[mm]	1 ... 2800							-...	
Piston rod type		At one end								
		Through piston rod							-T	
Piston rod thread type		Male thread								
		Female thread							F	
Profile type		Sensor slot on 1 side								
		Sensor slot on 3 sides							D3	
Cushioning		Elastic cushioning rings/plates at both ends							-P	
		Pneumatic cushioning, self-adjusting at both ends							-PPS	
		Pneumatic cushioning, adjustable at both ends							-PPV	
Position sensing		Via proximity switch							A	A
Standard		Based on ISO 15552								
		Corresponds to ISO 15552							-N3	
Corrosion protection		Standard								
		High corrosion protection							R3	
Temperature range		Standard								
	[°C]	Heat-resistant seals up to max. 120							T1	
	[°C]	–40 ... +80							T3	
	[°C]	0 ... +150							T4	
Protection against particles		Standard								
		Bellows on bearing cap						–	P2	
Scraper variant		None								
		Increased chemical resistance							A1	
		Hard scraper							A2	
		For unlubricated operation							A3	
		Metal scraper							A6	
EU certification		None								
		II 2GD							EX4	
Piston rod extension		None								
	[mm]	1 ... 500							-...E	
Piston rod thread extension		None								
	[mm]	1 ... 35		1 ... 70					-...L	

Standard cylinders DSBC, to ISO 15552

Ordering data

Piston diameter [mm]	Stroke [mm]	With PPV cushioning		With PPS cushioning	
		Part no.	Type	Part no.	Type
32	20	★ 2123069	DSBC-32-20-PPVA-N3	★ 2123085	DSBC-32-20-PPSA-N3
	25	★ 1376422	DSBC-32-25-PPVA-N3	★ 1376467	DSBC-32-25-PPSA-N3
	30	★ 2123070	DSBC-32-30-PPVA-N3	★ 2123086	DSBC-32-30-PPSA-N3
	40	★ 1376423	DSBC-32-40-PPVA-N3	★ 1376468	DSBC-32-40-PPSA-N3
	50	★ 1376424	DSBC-32-50-PPVA-N3	★ 1376469	DSBC-32-50-PPSA-N3
	60	★ 2123071	DSBC-32-60-PPVA-N3	★ 2123087	DSBC-32-60-PPSA-N3
	70	★ 2123072	DSBC-32-70-PPVA-N3	★ 2123088	DSBC-32-70-PPSA-N3
	80	★ 1376425	DSBC-32-80-PPVA-N3	★ 1376470	DSBC-32-80-PPSA-N3
	100	★ 1376426	DSBC-32-100-PPVA-N3	★ 1376471	DSBC-32-100-PPSA-N3
	125	★ 1376427	DSBC-32-125-PPVA-N3	★ 1376472	DSBC-32-125-PPSA-N3
	150	★ 2123073	DSBC-32-150-PPVA-N3	★ 2123089	DSBC-32-150-PPSA-N3
	160	★ 1376428	DSBC-32-160-PPVA-N3	★ 1376473	DSBC-32-160-PPSA-N3
	200	★ 1376429	DSBC-32-200-PPVA-N3	★ 1376474	DSBC-32-200-PPSA-N3
	250	★ 1376430	DSBC-32-250-PPVA-N3	★ 1376475	DSBC-32-250-PPSA-N3
	300	★ 2123074	DSBC-32-300-PPVA-N3	★ 2123090	DSBC-32-300-PPSA-N3
	320	★ 1376431	DSBC-32-320-PPVA-N3	★ 1376476	DSBC-32-320-PPSA-N3
	400	★ 1376432	DSBC-32-400-PPVA-N3	★ 1376477	DSBC-32-400-PPSA-N3
	500	★ 1376433	DSBC-32-500-PPVA-N3	★ 1376478	DSBC-32-500-PPSA-N3
	1 ... 2800	1463254	DSBC-32-...-PPVA-N3	1463252	DSBC-32-...-PPSA-N3
40	20	★ 2123166	DSBC-40-20-PPVA-N3	★ 2123780	DSBC-40-20-PPSA-N3
	25	★ 1376656	DSBC-40-25-PPVA-N3	★ 1376903	DSBC-40-25-PPSA-N3
	30	★ 2123167	DSBC-40-30-PPVA-N3	★ 2123781	DSBC-40-30-PPSA-N3
	40	★ 1376657	DSBC-40-40-PPVA-N3	★ 1376904	DSBC-40-40-PPSA-N3
	50	★ 1376658	DSBC-40-50-PPVA-N3	★ 1376905	DSBC-40-50-PPSA-N3
	60	★ 2123224	DSBC-40-60-PPVA-N3	★ 2123782	DSBC-40-60-PPSA-N3
	70	★ 2123225	DSBC-40-70-PPVA-N3	★ 2123783	DSBC-40-70-PPSA-N3
	80	★ 1376659	DSBC-40-80-PPVA-N3	★ 1376906	DSBC-40-80-PPSA-N3
	100	★ 1376660	DSBC-40-100-PPVA-N3	★ 1376907	DSBC-40-100-PPSA-N3
	125	★ 1376661	DSBC-40-125-PPVA-N3	★ 1376908	DSBC-40-125-PPSA-N3
	150	★ 2123226	DSBC-40-150-PPVA-N3	★ 2123784	DSBC-40-150-PPSA-N3
	160	★ 1376662	DSBC-40-160-PPVA-N3	★ 1376909	DSBC-40-160-PPSA-N3
	200	★ 1376663	DSBC-40-200-PPVA-N3	★ 1376910	DSBC-40-200-PPSA-N3
	250	★ 1376664	DSBC-40-250-PPVA-N3	★ 1376911	DSBC-40-250-PPSA-N3
	300	★ 2123227	DSBC-40-300-PPVA-N3	★ 2123785	DSBC-40-300-PPSA-N3
	320	★ 1376665	DSBC-40-320-PPVA-N3	★ 1376912	DSBC-40-320-PPSA-N3
	400	★ 1376666	DSBC-40-400-PPVA-N3	★ 1376913	DSBC-40-400-PPSA-N3
	500	★ 1376667	DSBC-40-500-PPVA-N3	★ 1376914	DSBC-40-500-PPSA-N3
	1 ... 2800	1462834	DSBC-40-...-PPVA-N3	1462835	DSBC-40-...-PPSA-N3

Ordering data

Piston diameter [mm]	Stroke [mm]	With PPV cushioning		With PPS cushioning	
		Part no.	Type	Part no.	Type
50	20	★ 2098969	DSBC-50-20-PPVA-N3	★ 2102628	DSBC-50-20-PPSA-N3
	25	★ 1366948	DSBC-50-25-PPVA-N3	★ 1376301	DSBC-50-25-PPSA-N3
	30	★ 2098970	DSBC-50-30-PPVA-N3	★ 2102629	DSBC-50-30-PPSA-N3
	40	★ 1366949	DSBC-50-40-PPVA-N3	★ 1376304	DSBC-50-40-PPSA-N3
	50	★ 1366950	DSBC-50-50-PPVA-N3	★ 1376305	DSBC-50-50-PPSA-N3
	60	★ 2098972	DSBC-50-60-PPVA-N3	★ 2102630	DSBC-50-60-PPSA-N3
	70	★ 2098973	DSBC-50-70-PPVA-N3	★ 2102631	DSBC-50-70-PPSA-N3
	80	★ 1366951	DSBC-50-80-PPVA-N3	★ 1376306	DSBC-50-80-PPSA-N3
	100	★ 1366952	DSBC-50-100-PPVA-N3	★ 1376307	DSBC-50-100-PPSA-N3
	125	★ 1366953	DSBC-50-125-PPVA-N3	★ 1376308	DSBC-50-125-PPSA-N3
	150	★ 2098974	DSBC-50-150-PPVA-N3	★ 2102632	DSBC-50-150-PPSA-N3
	160	★ 1366954	DSBC-50-160-PPVA-N3	★ 1376309	DSBC-50-160-PPSA-N3
	200	★ 1366955	DSBC-50-200-PPVA-N3	★ 1376310	DSBC-50-200-PPSA-N3
	250	★ 1366956	DSBC-50-250-PPVA-N3	★ 1376311	DSBC-50-250-PPSA-N3
	300	★ 2098975	DSBC-50-300-PPVA-N3	★ 2102633	DSBC-50-300-PPSA-N3
	320	★ 1366957	DSBC-50-320-PPVA-N3	★ 1376312	DSBC-50-320-PPSA-N3
	400	★ 1366958	DSBC-50-400-PPVA-N3	★ 1376313	DSBC-50-400-PPSA-N3
	500	★ 1366959	DSBC-50-500-PPVA-N3	★ 1376314	DSBC-50-500-PPSA-N3
	1 ... 2800	1463766	DSBC-50-...-PPVA-N3	1463768	DSBC-50-...-PPSA-N3
63	20	★ 2125490	DSBC-63-20-PPVA-N3	★ 2126684	DSBC-63-20-PPSA-N3
	25	★ 1383578	DSBC-63-25-PPVA-N3	★ 1383632	DSBC-63-25-PPSA-N3
	30	★ 2125491	DSBC-63-30-PPVA-N3	★ 2126685	DSBC-63-30-PPSA-N3
	40	★ 1383579	DSBC-63-40-PPVA-N3	★ 1383633	DSBC-63-40-PPSA-N3
	50	★ 1383580	DSBC-63-50-PPVA-N3	★ 1383634	DSBC-63-50-PPSA-N3
	60	★ 2125492	DSBC-63-60-PPVA-N3	★ 2126686	DSBC-63-60-PPSA-N3
	70	★ 2125493	DSBC-63-70-PPVA-N3	★ 2126687	DSBC-63-70-PPSA-N3
	80	★ 1383581	DSBC-63-80-PPVA-N3	★ 1383635	DSBC-63-80-PPSA-N3
	100	★ 1383582	DSBC-63-100-PPVA-N3	★ 1383636	DSBC-63-100-PPSA-N3
	125	★ 1383583	DSBC-63-125-PPVA-N3	★ 1383637	DSBC-63-125-PPSA-N3
	150	★ 2125494	DSBC-63-150-PPVA-N3	★ 2126688	DSBC-63-150-PPSA-N3
	160	★ 1383584	DSBC-63-160-PPVA-N3	★ 1383638	DSBC-63-160-PPSA-N3
	200	★ 1383585	DSBC-63-200-PPVA-N3	★ 1383639	DSBC-63-200-PPSA-N3
	250	★ 1383586	DSBC-63-250-PPVA-N3	★ 1383640	DSBC-63-250-PPSA-N3
	300	★ 2125495	DSBC-63-300-PPVA-N3	★ 2126689	DSBC-63-300-PPSA-N3
	320	★ 1383587	DSBC-63-320-PPVA-N3	★ 1383641	DSBC-63-320-PPSA-N3
	400	★ 1383588	DSBC-63-400-PPVA-N3	★ 1383642	DSBC-63-400-PPSA-N3
	500	★ 1383589	DSBC-63-500-PPVA-N3	★ 1383643	DSBC-63-500-PPSA-N3
	1 ... 2800	1463483	DSBC-63-...-PPVA-N3	1463481	DSBC-63-...-PPSA-N3

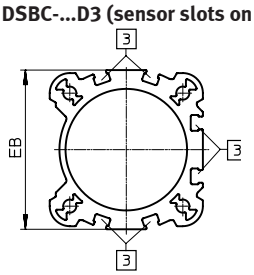
Standard cylinders DSBC, to ISO 15552

Ordering data

Piston diameter [mm]	Stroke [mm]	With PPV cushioning		With PPS cushioning	
		Part no.	Type	Part no.	Type
80	20	★ 2126594	DSBC-80-20-PPVA-N3	★ 2126636	DSBC-80-20-PPSA-N3
	25	★ 1383333	DSBC-80-25-PPVA-N3	★ 1383366	DSBC-80-25-PPSA-N3
	30	★ 2126595	DSBC-80-30-PPVA-N3	★ 2126637	DSBC-80-30-PPSA-N3
	40	★ 1383334	DSBC-80-40-PPVA-N3	★ 1383367	DSBC-80-40-PPSA-N3
	50	★ 1383335	DSBC-80-50-PPVA-N3	★ 1383368	DSBC-80-50-PPSA-N3
	60	★ 2126597	DSBC-80-60-PPVA-N3	★ 2126638	DSBC-80-60-PPSA-N3
	70	★ 2126598	DSBC-80-70-PPVA-N3	★ 2126639	DSBC-80-70-PPSA-N3
	80	★ 1383336	DSBC-80-80-PPVA-N3	★ 1383369	DSBC-80-80-PPSA-N3
	100	★ 1383337	DSBC-80-100-PPVA-N3	★ 1383370	DSBC-80-100-PPSA-N3
	125	★ 1383338	DSBC-80-125-PPVA-N3	★ 1383371	DSBC-80-125-PPSA-N3
	150	★ 2126599	DSBC-80-150-PPVA-N3	★ 2126640	DSBC-80-150-PPSA-N3
	160	★ 1383339	DSBC-80-160-PPVA-N3	★ 1383372	DSBC-80-160-PPSA-N3
	200	★ 1383340	DSBC-80-200-PPVA-N3	★ 1383373	DSBC-80-200-PPSA-N3
	250	★ 1383341	DSBC-80-250-PPVA-N3	★ 1383374	DSBC-80-250-PPSA-N3
	300	★ 2126600	DSBC-80-300-PPVA-N3	★ 2126641	DSBC-80-300-PPSA-N3
	320	★ 1383342	DSBC-80-320-PPVA-N3	★ 1383375	DSBC-80-320-PPSA-N3
	400	★ 1383343	DSBC-80-400-PPVA-N3	★ 1383376	DSBC-80-400-PPSA-N3
	500	★ 1383344	DSBC-80-500-PPVA-N3	★ 1383377	DSBC-80-500-PPSA-N3
	1 ... 2800	1463483	DSBC-63-...-PPVA-N3	1463481	DSBC-63-...-PPSA-N3
100	25	1384804	DSBC-100-25-PPVA-N3	1384890	DSBC-100-25-PPSA-N3
	40	1384805	DSBC-100-40-PPVA-N3	1384891	DSBC-100-40-PPSA-N3
	50	1384806	DSBC-100-50-PPVA-N3	1384892	DSBC-100-50-PPSA-N3
	80	1384807	DSBC-100-80-PPVA-N3	1384893	DSBC-100-80-PPSA-N3
	100	1384808	DSBC-100-100-PPVA-N3	1384894	DSBC-100-100-PPSA-N3
	125	1384809	DSBC-100-125-PPVA-N3	1384895	DSBC-100-125-PPSA-N3
	160	1384810	DSBC-100-160-PPVA-N3	1384896	DSBC-100-160-PPSA-N3
	200	1384811	DSBC-100-200-PPVA-N3	1384897	DSBC-100-200-PPSA-N3
	250	1384812	DSBC-100-250-PPVA-N3	1384898	DSBC-100-250-PPSA-N3
	320	1384813	DSBC-100-320-PPVA-N3	1384899	DSBC-100-320-PPSA-N3
	400	1384814	DSBC-100-400-PPVA-N3	1384900	DSBC-100-400-PPSA-N3
	500	1384815	DSBC-100-500-PPVA-N3	1384901	DSBC-100-500-PPSA-N3
	1 ... 2800	1463598	DSBC-100-...-PPVA-N3	1463558	DSBC-100-...-PPSA-N3
125	25	1804956	DSBC-125-25-PPVA-N3	1804661	DSBC -125-25-PPSA-N3
	40	1804957	DSBC-125-40-PPVA-N3	1804662	DSBC-125-40-PPSA-N3
	50	1804958	DSBC-125-50-PPVA-N3	1804663	DSBC-125-50-PPSA-N3
	80	1804959	DSBC-125-80-PPVA-N3	1804664	DSBC-125-80-PPSA-N3
	100	1804960	DSBC-125-100-PPVA-N3	1804665	DSBC-125-100-PPSA-N3
	125	1804961	DSBC-125-125-PPVA-N3	1804666	DSBC-125-125-PPSA-N3
	160	1804962	DSBC-125-160-PPVA-N3	1804667	DSBC-125-160-PPSA-N3
	200	1804963	DSBC-125-200-PPVA-N3	1804668	DSBC-125-200-PPSA-N3
	250	1804964	DSBC-125-250-PPVA-N3	1804669	DSBC-125-250-PPSA-N3
	320	1804965	DSBC-125-320-PPVA-N3	1804671	DSBC-125-320-PPSA-N3
	400	1804966	DSBC-125-400-PPVA-N3	1804672	DSBC-125-400-PPSA-N3
	500	1804967	DSBC-125-500-PPVA-N3	1804673	DSBC-125-500-PPSA-N3
	1 ... 2800	1755348	DSBC-125-...-PPVA-N3	1755619	DSBC-125-...-PPSA-N3

Ordering data

DSBC-...D3 (sensor slots on 3 sides)



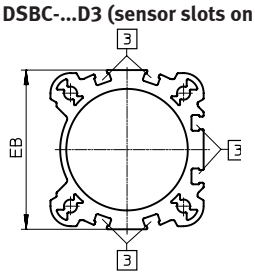
In this version, the piston position can be sensed on 3 sides of the drive.

[3] Sensor slot for proximity switch

Piston diameter [mm]	Stroke [mm]	With PPV cushioning		With PPS cushioning	
		Part no.	Type	Part no.	Type
32	20	3656511	DSBC-32-20-D3-PPVA-N3	3659374	DSBC-32-20-D3-PPSA-N3
	25	3656512	DSBC-32-25-D3-PPVA-N3	3659375	DSBC-32-25-D3-PPSA-N3
	30	3656513	DSBC-32-30-D3-PPVA-N3	3659376	DSBC-32-30-D3-PPSA-N3
	40	3656514	DSBC-32-40-D3-PPVA-N3	3659377	DSBC-32-40-D3-PPSA-N3
	50	3656515	DSBC-32-50-D3-PPVA-N3	3659378	DSBC-32-50-D3-PPSA-N3
	60	3656516	DSBC-32-60-D3-PPVA-N3	3659379	DSBC-32-60-D3-PPSA-N3
	70	3656517	DSBC-32-70-D3-PPVA-N3	3659380	DSBC-32-70-D3-PPSA-N3
	80	3656518	DSBC-32-80-D3-PPVA-N3	3659381	DSBC-32-80-D3-PPSA-N3
	100	3656519	DSBC-32-100-D3-PPVA-N3	3659382	DSBC-32-100-D3-PPSA-N3
	125	3656520	DSBC-32-125-D3-PPVA-N3	3659383	DSBC-32-125-D3-PPSA-N3
	150	3656521	DSBC-32-150-D3-PPVA-N3	3659384	DSBC-32-150-D3-PPSA-N3
	160	3656522	DSBC-32-160-D3-PPVA-N3	3659385	DSBC-32-160-D3-PPSA-N3
	200	3656523	DSBC-32-200-D3-PPVA-N3	3659386	DSBC-32-200-D3-PPSA-N3
	250	3656524	DSBC-32-250-D3-PPVA-N3	3659387	DSBC-32-250-D3-PPSA-N3
	300	3656525	DSBC-32-300-D3-PPVA-N3	3659388	DSBC-32-300-D3-PPSA-N3
	320	3656526	DSBC-32-320-D3-PPVA-N3	3659389	DSBC-32-320-D3-PPSA-N3
40	20	3660615	DSBC-40-20-D3-PPVA-N3	3660759	DSBC-40-20-D3-PPSA-N3
	25	3660616	DSBC-40-25-D3-PPVA-N3	3660760	DSBC-40-25-D3-PPSA-N3
	30	3660617	DSBC-40-30-D3-PPVA-N3	3660761	DSBC-40-30-D3-PPSA-N3
	40	3660618	DSBC-40-40-D3-PPVA-N3	3660762	DSBC-40-40-D3-PPSA-N3
	50	3660619	DSBC-40-50-D3-PPVA-N3	3660763	DSBC-40-50-D3-PPSA-N3
	60	3660620	DSBC-40-60-D3-PPVA-N3	3660764	DSBC-40-60-D3-PPSA-N3
	70	3660621	DSBC-40-70-D3-PPVA-N3	3660765	DSBC-40-70-D3-PPSA-N3
	80	3660622	DSBC-40-80-D3-PPVA-N3	3660766	DSBC-40-80-D3-PPSA-N3
	100	3660623	DSBC-40-100-D3-PPVA-N3	3660767	DSBC-40-100-D3-PPSA-N3
	125	3660624	DSBC-40-125-D3-PPVA-N3	3660768	DSBC-40-125-D3-PPSA-N3
	150	3660625	DSBC-40-150-D3-PPVA-N3	3660769	DSBC-40-150-D3-PPSA-N3
	160	3660626	DSBC-40-160-D3-PPVA-N3	3660770	DSBC-40-160-D3-PPSA-N3
	200	3660627	DSBC-40-200-D3-PPVA-N3	3660771	DSBC-40-200-D3-PPSA-N3
	250	3660628	DSBC-40-250-D3-PPVA-N3	3660772	DSBC-40-250-D3-PPSA-N3
	300	3660629	DSBC-40-300-D3-PPVA-N3	3660773	DSBC-40-300-D3-PPSA-N3
	320	3660630	DSBC-40-320-D3-PPVA-N3	3660774	DSBC-40-320-D3-PPSA-N3

Ordering data

DSBC-...D3 (sensor slots on 3 sides)



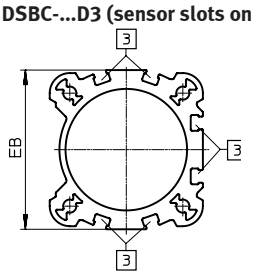
In this version, the piston position can be sensed on 3 sides of the drive.

[3] Sensor slot for proximity switch

Piston diameter [mm]	Stroke [mm]	With PPV cushioning		With PPS cushioning	
		Part no.	Type	Part no.	Type
50	20	3659467	DSBC-50-20-D3-PPVA-N3	3659491	DSBC-50-20-D3-PPSA-N3
	25	3659468	DSBC-50-25-D3-PPVA-N3	3659492	DSBC-50-25-D3-PPSA-N3
	30	3659469	DSBC-50-30-D3-PPVA-N3	3659493	DSBC-50-30-D3-PPSA-N3
	40	3659470	DSBC-50-40-D3-PPVA-N3	3659494	DSBC-50-40-D3-PPSA-N3
	50	3659471	DSBC-50-50-D3-PPVA-N3	3659495	DSBC-50-50-D3-PPSA-N3
	60	3659472	DSBC-50-60-D3-PPVA-N3	3659496	DSBC-50-60-D3-PPSA-N3
	70	3659473	DSBC-50-70-D3-PPVA-N3	3659497	DSBC-50-70-D3-PPSA-N3
	80	3659474	DSBC-50-80-D3-PPVA-N3	3659498	DSBC-50-80-D3-PPSA-N3
	100	3659475	DSBC-50-100-D3-PPVA-N3	3659499	DSBC-50-100-D3-PPSA-N3
	125	3659476	DSBC-50-125-D3-PPVA-N3	3659500	DSBC-50-125-D3-PPSA-N3
	150	3659477	DSBC-50-150-D3-PPVA-N3	3659501	DSBC-50-150-D3-PPSA-N3
	160	3659478	DSBC-50-160-D3-PPVA-N3	3659502	DSBC-50-160-D3-PPSA-N3
	200	3659479	DSBC-50-200-D3-PPVA-N3	3659503	DSBC-50-200-D3-PPSA-N3
	250	3659480	DSBC-50-250-D3-PPVA-N3	3659504	DSBC-50-250-D3-PPSA-N3
	300	3659481	DSBC-50-300-D3-PPVA-N3	3659505	DSBC-50-300-D3-PPSA-N3
	320	3659482	DSBC-50-320-D3-PPVA-N3	3659506	DSBC-50-320-D3-PPSA-N3
63	20	3657859	DSBC-63-20-D3-PPVA-N3	3657811	DSBC-63-20-D3-PPSA-N3
	25	3657860	DSBC-63-25-D3-PPVA-N3	3657812	DSBC-63-25-D3-PPSA-N3
	30	3657861	DSBC-63-30-D3-PPVA-N3	3657813	DSBC-63-30-D3-PPSA-N3
	40	3657862	DSBC-63-40-D3-PPVA-N3	3657814	DSBC-63-40-D3-PPSA-N3
	50	3657863	DSBC-63-50-D3-PPVA-N3	3657815	DSBC-63-50-D3-PPSA-N3
	60	3657864	DSBC-63-60-D3-PPVA-N3	3657816	DSBC-63-60-D3-PPSA-N3
	70	3657865	DSBC-63-70-D3-PPVA-N3	3657817	DSBC-63-70-D3-PPSA-N3
	80	3657866	DSBC-63-80-D3-PPVA-N3	3657818	DSBC-63-80-D3-PPSA-N3
	100	3657867	DSBC-63-100-D3-PPVA-N3	3657819	DSBC-63-100-D3-PPSA-N3
	125	3657868	DSBC-63-125-D3-PPVA-N3	3657820	DSBC-63-125-D3-PPSA-N3
	150	3657869	DSBC-63-150-D3-PPVA-N3	3657821	DSBC-63-150-D3-PPSA-N3
	160	3657870	DSBC-63-160-D3-PPVA-N3	3657822	DSBC-63-160-D3-PPSA-N3
	200	3657871	DSBC-63-200-D3-PPVA-N3	3657823	DSBC-63-200-D3-PPSA-N3
	250	3657872	DSBC-63-250-D3-PPVA-N3	3657824	DSBC-63-250-D3-PPSA-N3
	300	3657873	DSBC-63-300-D3-PPVA-N3	3657825	DSBC-63-300-D3-PPSA-N3
	320	3657874	DSBC-63-320-D3-PPVA-N3	3657826	DSBC-63-320-D3-PPSA-N3

Ordering data

DSBC-...D3 (sensor slots on 3 sides)

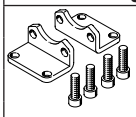
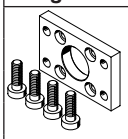
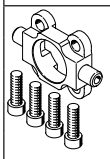
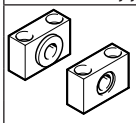
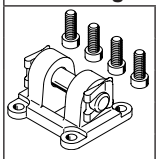
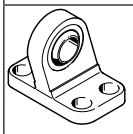
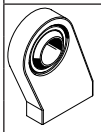


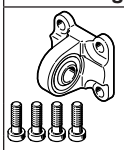
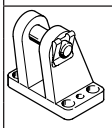
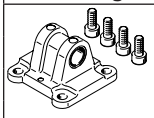
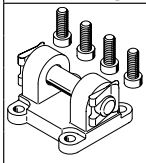
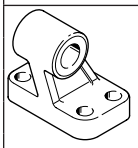
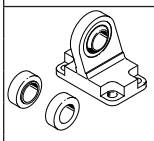
In this version, the piston position can be sensed on 3 sides of the drive.

[3] Sensor slot for proximity switch

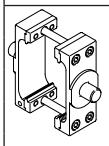
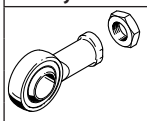
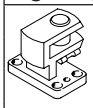
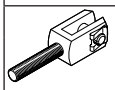
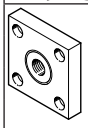
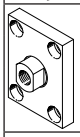
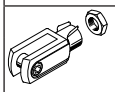
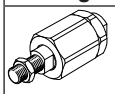
Piston diameter [mm]	Stroke [mm]	With PPV cushioning		With PPS cushioning	
		Part no.	Type	Part no.	Type
80	20	3656631	DSBC-80-20-D3-PPVA-N3	3656854	DSBC-80-20-D3-PPSA-N3
	25	3656632	DSBC-80-25-D3-PPVA-N3	3656855	DSBC-80-25-D3-PPSA-N3
	30	3656633	DSBC-80-30-D3-PPVA-N3	3656856	DSBC-80-30-D3-PPSA-N3
	40	3656634	DSBC-80-40-D3-PPVA-N3	3656857	DSBC-80-40-D3-PPSA-N3
	50	3656635	DSBC-80-50-D3-PPVA-N3	3656858	DSBC-80-50-D3-PPSA-N3
	60	3656636	DSBC-80-60-D3-PPVA-N3	3656859	DSBC-80-60-D3-PPSA-N3
	70	3656637	DSBC-80-70-D3-PPVA-N3	3656860	DSBC-80-70-D3-PPSA-N3
	80	3656638	DSBC-80-80-D3-PPVA-N3	3656861	DSBC-80-80-D3-PPSA-N3
	100	3656639	DSBC-80-100-D3-PPVA-N3	3656862	DSBC-80-100-D3-PPSA-N3
	125	3656640	DSBC-80-125-D3-PPVA-N3	3656863	DSBC-80-125-D3-PPSA-N3
	150	3656641	DSBC-80-150-D3-PPVA-N3	3656864	DSBC-80-150-D3-PPSA-N3
	160	3656642	DSBC-80-160-D3-PPVA-N3	3656865	DSBC-80-160-D3-PPSA-N3
	200	3656643	DSBC-80-200-D3-PPVA-N3	3656866	DSBC-80-200-D3-PPSA-N3
	250	3656644	DSBC-80-250-D3-PPVA-N3	3656867	DSBC-80-250-D3-PPSA-N3
	300	3656645	DSBC-80-300-D3-PPVA-N3	3656868	DSBC-80-300-D3-PPSA-N3
	320	3656646	DSBC-80-320-D3-PPVA-N3	3656869	DSBC-80-320-D3-PPSA-N3

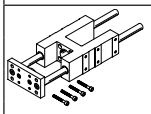
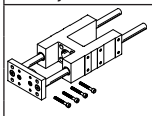
Accessories – Ordering data

	For ∅	Part No.	Type
Foot mounting			
	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
Flange mounting			
	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
Trunnion flange			
	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
Trunnion support			
	32	32959	LNZG-32
	40, 50	32960	LNZG-40/50
	63, 80	32961	LNZG-63/80
	100, 125	32962	LNZG-100/125
Swivel flange			
	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
Clevis foot			
	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
Clevis foot			
	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 ∅	Part No.	Type
Swivel flange			
	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
Clevis foot			
	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
Swivel flange			
	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
Swivel flange			
	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
Clevis foot			
	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
Clevis foot			
	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

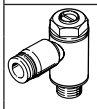
Accessories – Ordering data

	For ∅	Part No.	Type
Trunnion mounting kit			
	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
Rod eye			
	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
Right-angle clevis foot			
	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
Rod clevis			
	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
Coupling piece			
	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
Coupling piece			
	32	36125	KSZ-M10x1,25
	40	36126	KSZ-M12x1,25
	50, 63	36127	KSZ-M16x1,5
	80, 100	36128	KSZ-M20x1,5
Rod clevis			
	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
Self-aligning rod coupler			
	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

	For ∅	Part No.	Type
Guide unit for variable strokes from 10 ... 500 mm, with recirculating ball bearing guide			
	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]
Guide unit for variable strokes from 10 ... 500 mm, with plain-bearing guide			
	32	34481	FENG-32-...[1]
	40	34482	FENG-40-...[1]
	50	34483	FENG-50-...[1]
	63	34484	FENG-63-...[1]
	80	34485	FENG-80-...[1]
	100	34486	FENG-100-...[1]
Slot cover[2]			
		151680	ABP-5-S
Multi-position kit			
	32	174418	DPNC-32
	40	174419	DPNC-40
	50	174420	DPNC-50
	63	174421	DPNC-63
	80	174422	DPNC-80
	100	174423	DPNC-100

1) Enter required stroke. Order example: the order code for an appropriate guide unit for the standard 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.

	Description	Part No.	Type
Connecting cable, straight socket			
	2,5 m	★ 541333	NEBU-M8G3-K-2.5-LE3
	5 m	★ 541334	NEBU-M8G3-K-5-LE3

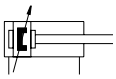
Function	For ∅	Connection		Part No.	Type
		Thread	O.D. [mm]		
One-way flow control valve for exhaust air flow control[1] **with slotted head screw, metal**					
	32	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
	40, 50		6	★ 193144	GRLA-1/8-QS-6-D
	63, 80	G3/8	8	★ 193150	GRLA-3/8-QS-8-D
	100, 125	G1/2	12	★ 193152	GRLA-1/2-QS-12-D

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.

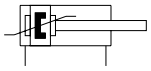
Standard cylinders DSBC, to ISO 15552

Data sheet

Function
PPV cushioning

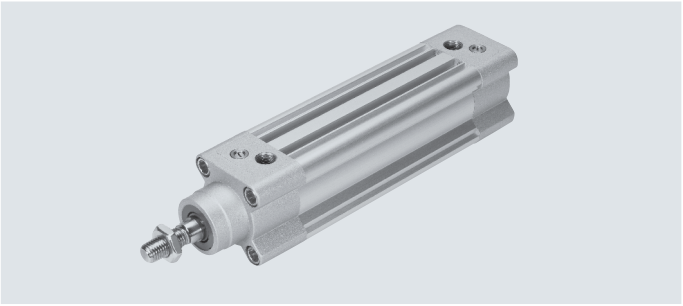


PPS cushioning



Diameter
32 ... 125 mm

Stroke length
1 ... 2800 mm



General technical data

Piston diameter		32	40	50	63	80	100	125
Design		Piston/piston rod/profile barrel						
Mode of operation		Double-acting						
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	[mm]	1 ... 2800						
Cushioning								
DSBC-...-PPV		Pneumatic cushioning, adjustable at both ends						
DSBC-...-PPS		Pneumatic cushioning, self-adjusting at both ends						
Cushioning length								
DSBC-...-PPV	[mm]	17	19	22	22	31	31	45
Position sensing		Via proximity switch						
Type of mounting		With female thread/accessories						
Mounting position		Any						

Operating and environmental conditions

Piston diameter		32	40	50	63	80	100	125
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								
DSBC-...	[MPa]	0.06 ... 1.2		0.04 ... 1.2				0.02 ... 1.0
	[bar]	0.6 ... 12		0.4 ... 12				0.2 ... 10
Ambient temperature[3]								
DSBC-...	[°C]	–20 ... +80						
Corrosion resistance CRC								
DSBC-...		2[4]						

3) Note operating range of proximity switches.
4) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Forces [N] and impact energy [J]

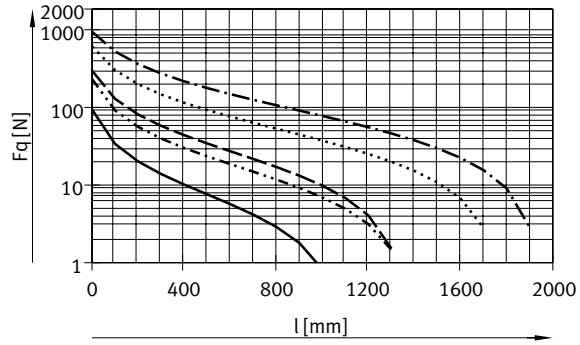
Piston diameter	32	40	50	63	80	100	125
Theoretical force at 6 bar, advancing	483	754	1178	1870	3016	4712	7363
Theoretical force at 6 bar, retracting	415	633	990	1682	2721	4418	6881
Max. impact energy in the end positions	0.4[1]	0.7	1.0	1.3	1.8	2.5	3.3

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

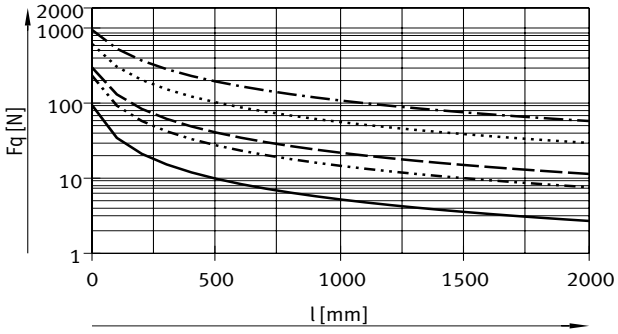
Data sheet

Max. transverse load Fq as a function of stroke length l

Horizontal installation



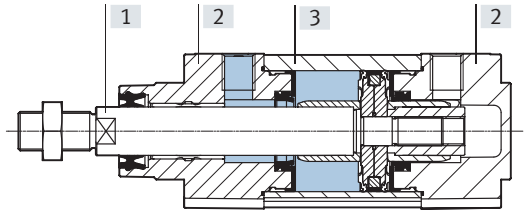
Vertical installation



Ø 32
Ø 40
Ø 50/63
Ø 80/100
Ø 125

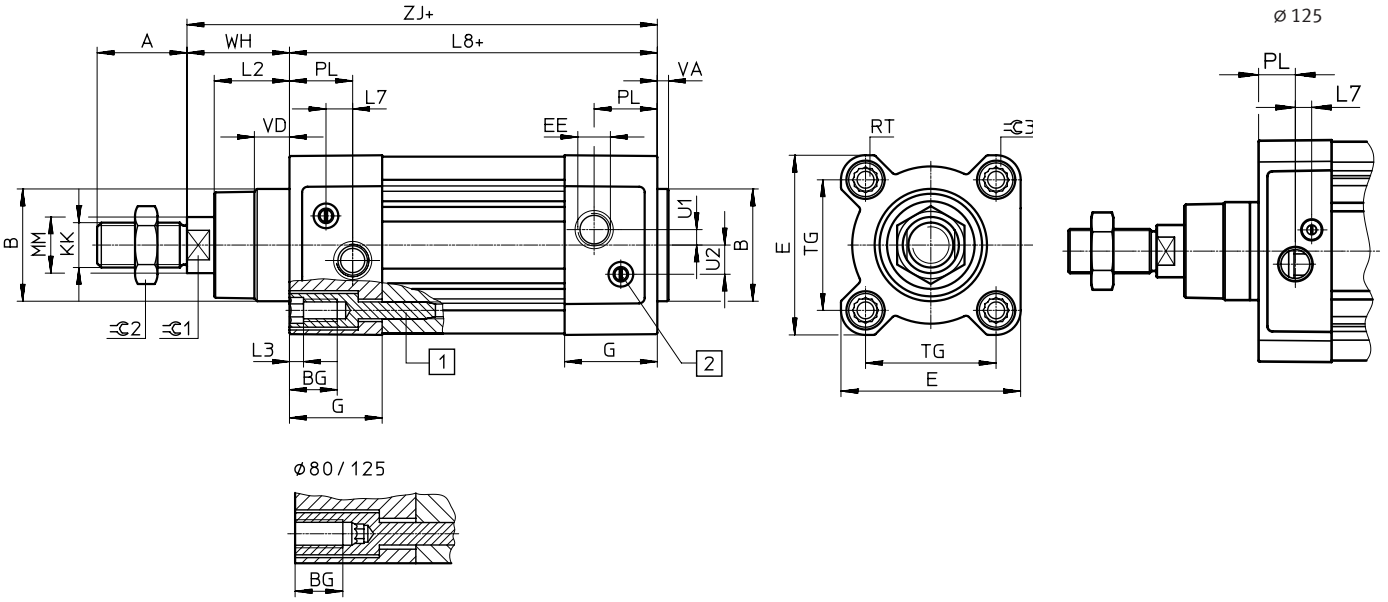
Materials

Sectional view



Standards-based cylinder		
[1]	Piston rod	High-alloy steel
[2]	Cover	Coated die-cast aluminium
[3]	Profile barrel	Anodised wrought aluminium alloy
–	Piston rod seal	PUR
	Buffer seal	PUR
	Cushion piston	POM
	Note on materials	RoHS-compliant

Dimensions



\+ = plus stroke length
[1] Socket head screw with female thread for mounting components
[2] Adjusting screw for adjustable end-position cushioning
[3] Sensor slot for proximity switch

ø [mm]	A –0.5	B ø d11	BG min.	E +0.5	EE	G –0.2	U2 ±0.1	U1 ±0.1	KK
32	22	30	16	45	G1/8	28	5.7	5.25	M10x1.25
40	24	35	16	54	G1/4	33	8	4	M12x1.25
50	32	40	16	64	G1/4	33	10.4	5.5	M16x1.5
63	32	45	16	75	G3/8	40.5	12.75	6.25	M16x1.5
80	40	45	17	93	G3/8	43	12.5	8	M20x1.5
100	40	55	17	110	G1/2	48	13.5	10	M20x1.5
125	54	60	20	136	G1/2	44.7	13	8	M27x2

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

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

Round cylinders DSNU

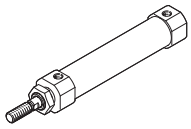
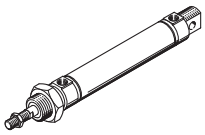
Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Product range overview

Function	Design	Piston ∅ [mm]	Stroke [mm]	Variable stroke[1] [mm]	Cushioning: Fixed P	Cushioning: Adjustable PPV[2]	Cushioning: Self-adjusting PPS	Position sensing A
Double-acting	**DSNU-S-... – Space-saving**							
		8	10, 15, 20, 25, 30, 40, 50, 60, 80, 100	1 ... 100	■	–	■ From ∅ 16	■
		12	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 125, 150	1 ... 150				
		16	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 125, 150, 200	1 ... 200				
		20						
		25						
	DSNU-... – Cylinder barrel made of stainless steel							
		8, 10	10, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100, 125, 150, 160, 200, 250, 300, 320, 400, 500	1 ... 100	■	■ From ∅ 16	■ From ∅ 16	■
		12, 16		1 ... 200				
		20		1 ... 320				
		25		1 ... 500				
		32, 40, 50, 63	25, 40, 50, 80, 100, 125, 160, 200, 250, 320	1 ... 500				

Features

At a glance

DSNU-8 ... 63

- Stainless steel piston rod
- Good running performance and long service life
- Piston rod with male and female thread
- Extensive range of accessories makes it possible to install the cylinder virtually anywhere

DSNU-8 ... 25

- The basic versions correspond to ISO 6432, variants are based on these standards.

DSNU-S

DSNU-16-25-P-A

DSNU-S-16-25-P-A

Space-saving mounting

- Diameter reduced by up to 40%
- Overall length up to 3.5 cm shorter

Wide choice of variants

DSNU-S-8 ... 16

- Piston diameter 8 ... 16 mm
- Cylinder barrel made of stainless steel
- Short end cap made of wrought aluminium alloy
- Space-saving

DSNU-S-20 ... 25

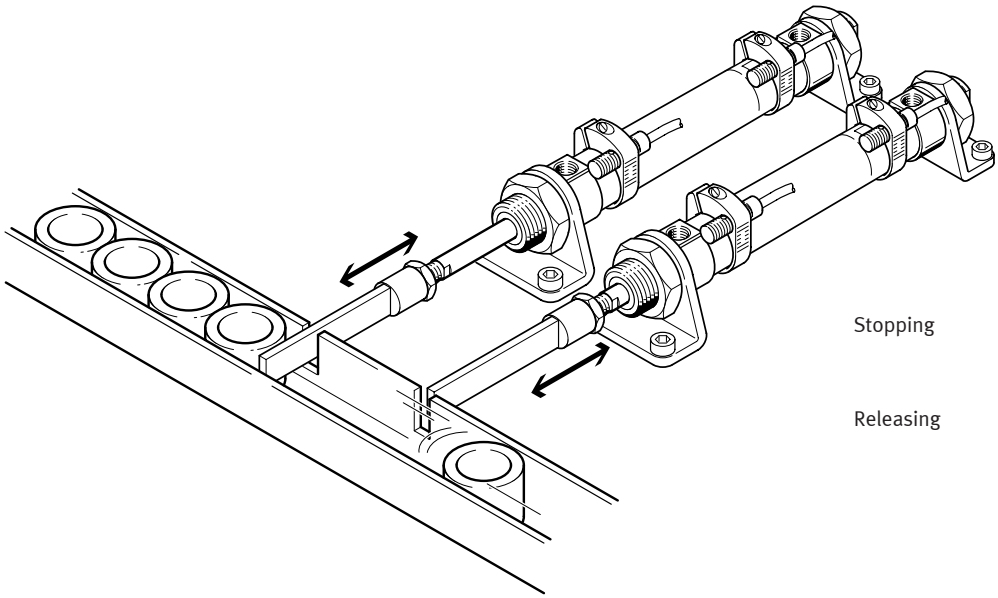
- Piston diameter 20 ... 25 mm
- Cylinder barrel made of stainless steel
- End cap made of wrought aluminium alloy with short thread
- Space-saving

DSNU

- Piston diameter 8 ... 63 mm
- Cylinder barrel made of stainless steel
- Bearing and end caps made of wrought aluminium alloy

Example Application

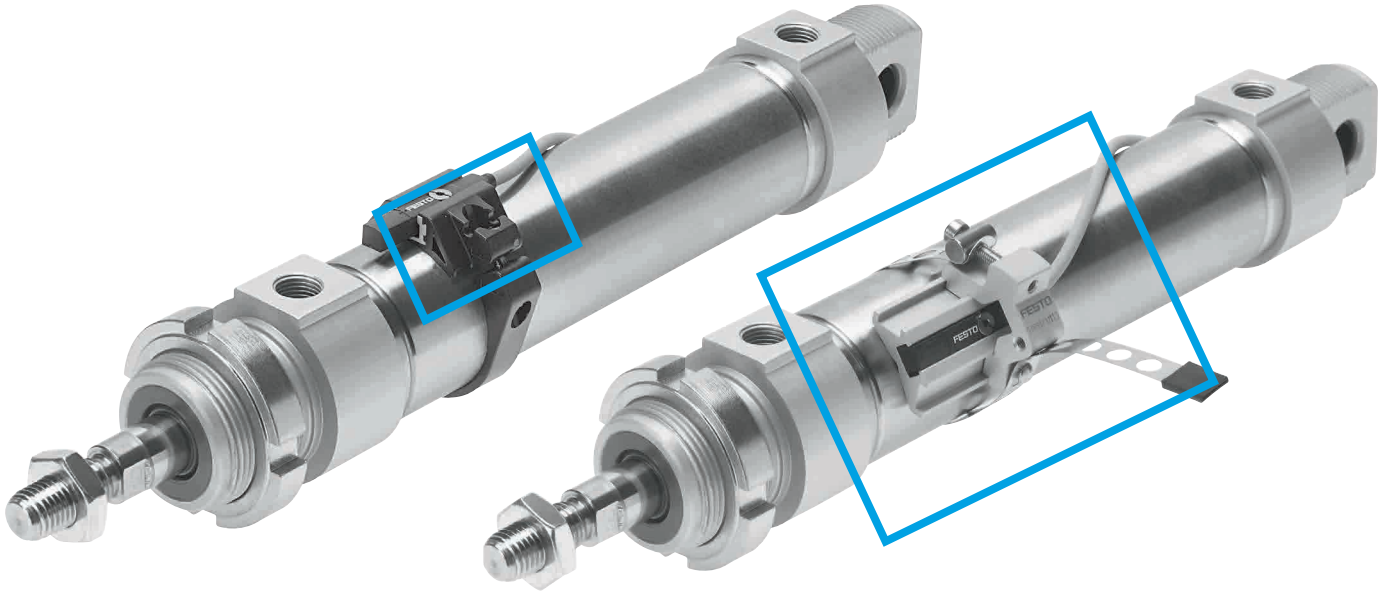
Feed separation



Sensor options

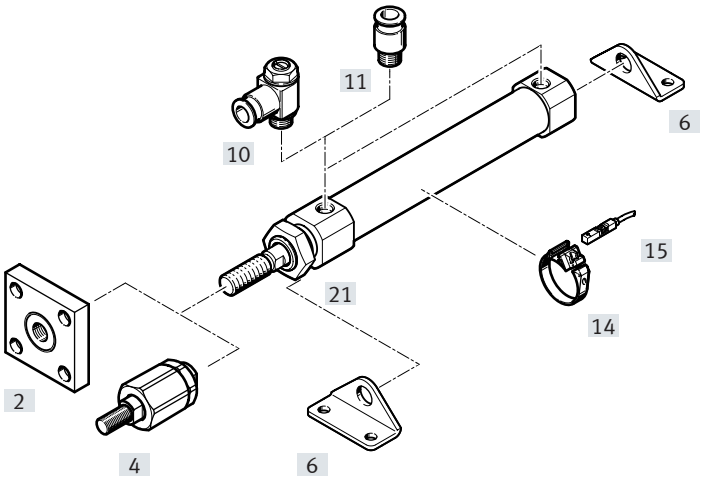
Proximity sensors SMT-8/SME-8, for T-slots

Reliable sensing – strong magnetic field
Mounting via mounting kits SMBR
Insertable in the mounting kit's slot from above
Flexible product configuration based on application needs

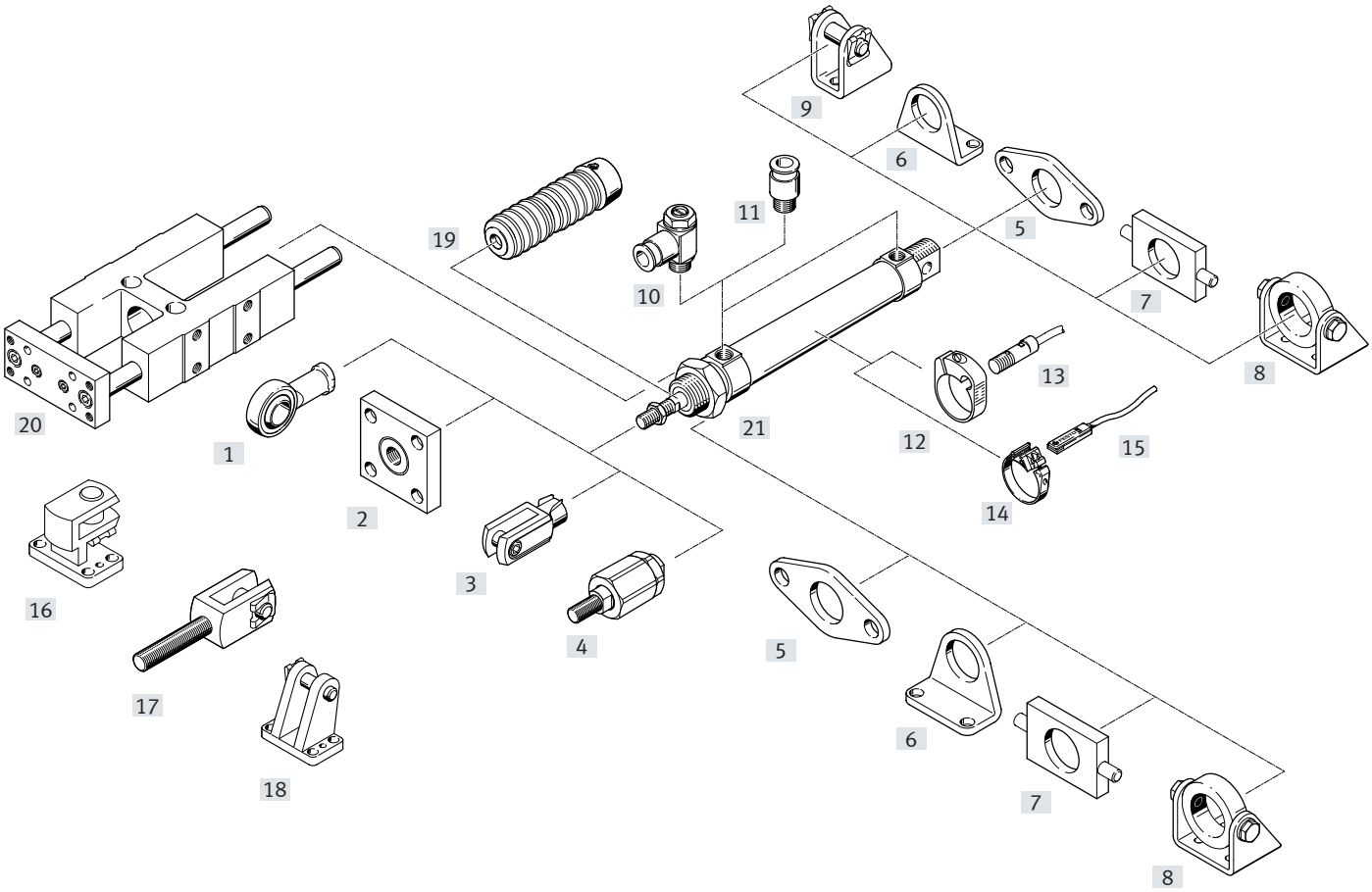


Peripherals overview

DSNU-S...



DSNU-...

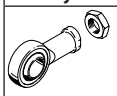
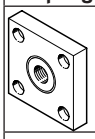
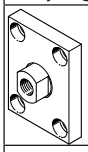
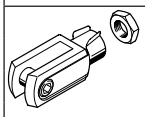
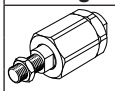
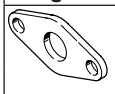
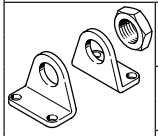


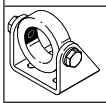
Peripherals overview

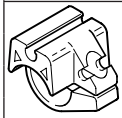
Mounting attachments and accessories		DSNU	DSNU-S	→ Page/ Internet
[1]	Rod eye SGS	■	–	51
[2]	Coupling piece KSG/KSZ	■	■	
[3]	Rod clevis SG	■	–	
[4]	Self-aligning rod coupler FK	■	■	
[5]	Flange mounting FBN	■	–	
[6]	Foot mounting HBN	■	–	
	Foot mounting HBN-S	–	■	
[7]	Swivel mounting WBN	■	–	
[8]	Swivel mounting SBN	■	–	
[9]	Clevis foot LBN/CRLBN	■	–	
[10]	One-way flow control valve GRLA/GRLZ	■	■	52

Mounting attachments and accessories		DSNU	DSNU-S	→ Page/ Internet
[11]	Push-in fitting NPQE	■	■	803
[12]	Mounting kit SMBR	■	–	51
[13]	Proximity switch SMEO/SMTO	■	–	smeo
[14]	Mounting kit SMBR-8	■	■	51
[15]	Proximity switch SME/SMT-8	■	■	681
[16]	Right-angle clevis foot LQG	■	–	43
[17]	Rod clevis SGA	■	–	
[18]	Clevis foot LBG	■	–	
[19]	Bellows kit DADB	■	–	dadb
[20]	Guide unit FEN	■	–	52
[21]	Hex nut MSK	■	–	

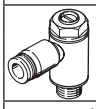
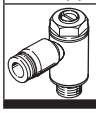
Accessories – Ordering data

	For ∅	Part No.	Type
Rod eye			
	8, 10	9253	SGS-M4
	12, 16	★ 9254	SGS-M6
	20	★ 9255	SGS-M8
	25, 32	★ 9261	SGS-M10x1,25
Coupling piece			
	25, 32	32963	KSG-M10x1,25
Coupling piece			
	12, 16	36123	KSZ-M6
	20	36124	KSZ-M8
	25, 32	36125	KSZ-M10x1,25
Rod clevis			
	8, 10	6532	SG-M4
	12, 16	★ 3110	SG-M6
	20	★ 3111	SG-M8
	25, 32	★ 6144	SG-M10x1,25
Self-aligning rod coupler			
	8, 10	6528	FK-M4
	12, 16	★ 2061	FK-M6
	20	★ 2062	FK-M8
	25, 32	★ 6140	FK-M10x1,25
Flange mounting			
	8, 10	5129	FBN-8/10
	12, 16	5130	FBN-12/16
	20, 25	5131	FBN-20/25
	32	195855	FBN-32
Foot mounting			
	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

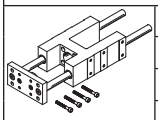
	For ∅	Part No.	Type
Swivel mounting			
	8, 10	8608	WBN-8/10x1
	12, 16	8609	WBN-12/16
	20, 25	8610	WBN-20/25
	32	195863	WBN-32
Swivel mounting			
	20, 25	539927	SBN-20/25
	32	539924	SBN-32
Clevis foot			
	8, 10	6057	LBN-8/10
	12, 16	★ 6058	LBN-12/16
	20, 25	★ 6059	LBN-20/25
	32	195860	LBN-32
		31761	LBG-32

	For ∅	Part No.	Type
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
Mounting kit for proximity sensor 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

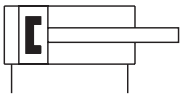
Accessories – Ordering data

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1] for exhaust air flow control					
	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
For supply air flow control					
	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	6	★193158	GRLZ-1/8-QS-6-D

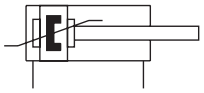
1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For ∅	Stroke	Part No.	Type
Guide unit for variable strokes				
	**With recirculating ball bearing guide**			
	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			
	8, 10	1 … 100	35196	FEN-8/10-…
	12, 16	1 … 200	19168	FEN-12/16-…
	20	2 … 250	19169	FEN-20-…
	25	2 … 250	19170	FEN-25-…
Hex nut				
	16		★189007	MSK-M16X1,5
	20, 25		★189009	MSK-M22X1,5

P cushioning



PPS cushioning



Diameter
8 … 25 mm

Stroke length
1 … 200 mm

Ordering – Modular product system DSNU-S

Ordering table

Size		8	12	16	20	25	Code		Enter code
Module no.		8112002	8112003	8112004	8112005	8112006			
Function		Double-acting round cylinder					DSNU		DSNU
Design		Space-saving					-S		-S
Piston ∅	[mm]	8	12	16	20	25	-…		
Stroke	[mm]	1 … 100	1 …150	1 …200	1 …200	1 …200	-…		
Cushioning		Elastic cushioning rings/pads at both ends					-P		
		–		Pneumatic cushioning, self-adjusting at both ends			-PPS		
Position sensing		Via proximity switch					-A		-A

Ordering data – DSNU-S

Piston diameter [mm]	Stroke [mm]	P –elastic cushioning rings/plates at both ends A – with position sensing		PPS –pneumatic cushioning, self-adjusting at both ends A – with position sensing	
		Part no.	Type	Part no.	Type
8	10	5205897	DSNU-S-8-10-P-A	–	
	15	5205898	DSNU-S-8-15-P-A		
	20	5205899	DSNU-S-8-20-P-A		
	25	5205900	DSNU-S-8-25-P-A		
	30	5205902	DSNU-S-8-30-P-A		
	40	5205903	DSNU-S-8-40-P-A		
	50	5205904	DSNU-S-8-50-P-A		
	60	5205905	DSNU-S-8-60-P-A		
	80	5205906	DSNU-S-8-80-P-A		
	100	5205907	DSNU-S-8-100-P-A		

Ordering data – DSNU-S

Piston diameter [mm]	Stroke [mm]	P –elastic cushioning rings/plates at both ends A – with position sensing Part no.	Type	PPS –pneumatic cushioning, self-adjusting at both ends A – with position sensing Part no.	Type
12	10	★ 5211896	DSNU-S-12-10-P-A	–	
	15	★ 5211897	DSNU-S-12-15-P-A		
	20	★ 5211898	DSNU-S-12-20-P-A		
	25	★ 5211899	DSNU-S-12-25-P-A		
	30	★ 5211900	DSNU-S-12-30-P-A		
	40	★ 5211901	DSNU-S-12-40-P-A		
	50	★ 5211903	DSNU-S-12-50-P-A		
	60	★ 5211904	DSNU-S-12-60-P-A		
	80	★ 5211905	DSNU-S-12-80-P-A		
	100	★ 5211906	DSNU-S-12-100-P-A		
	125	★ 5211908	DSNU-S-12-125-P-A		
	150	★ 5211909	DSNU-S-12-150-P-A		
16	10	★ 5216087	DSNU-S-16-10-P-A	–	
	15	★ 5216088	DSNU-S-16-15-P-A		
	20	★ 5216089	DSNU-S-16-20-P-A		
	25	★ 5216090	DSNU-S-16-25-P-A	★ 5217238	DSNU-S-16-25-PPS-A
	30	★ 5216091	DSNU-S-16-30-P-A	★ 5217239	DSNU-S-16-30-PPS-A
	40	★ 5216093	DSNU-S-16-40-P-A	★ 5217240	DSNU-S-16-40-PPS-A
	50	★ 5216094	DSNU-S-16-50-P-A	★ 5217241	DSNU-S-16-50-PPS-A
	60	★ 5216095	DSNU-S-16-60-P-A	★ 5217242	DSNU-S-16-60-PPS-A
	80	★ 5216096	DSNU-S-16-80-P-A	★ 5217243	DSNU-S-16-80-PPS-A
	100	★ 5216098	DSNU-S-16-100-P-A	★ 5217244	DSNU-S-16-100-PPS-A
	125	★ 5216099	DSNU-S-16-125-P-A	★ 5217245	DSNU-S-16-125-PPS-A
	150	★ 5216100	DSNU-S-16-150-P-A	★ 5217246	DSNU-S-16-150-PPS-A
	200	★ 5216101	DSNU-S-16-200-P-A	★ 5217248	DSNU-S-16-200-PPS-A
20	10	★ 5224633	DSNU-S-20-10-P-A	–	
	15	★ 5224634	DSNU-S-20-15-P-A		
	20	★ 5224635	DSNU-S-20-20-P-A		
	25	★ 5224636	DSNU-S-20-25-P-A	★ 5225836	DSNU-S-20-25-PPS-A
	30	★ 5224637	DSNU-S-20-30-P-A	★ 5225837	DSNU-S-20-30-PPS-A
	40	★ 5224639	DSNU-S-20-40-P-A	★ 5225838	DSNU-S-20-40-PPS-A
	50	★ 5224641	DSNU-S-20-50-P-A	★ 5225839	DSNU-S-20-50-PPS-A
	60	★ 5224642	DSNU-S-20-60-P-A	★ 5225840	DSNU-S-20-60-PPS-A
	80	★ 5224643	DSNU-S-20-80-P-A	★ 5225841	DSNU-S-20-80-PPS-A
	100	★ 5224644	DSNU-S-20-100-P-A	★ 5225842	DSNU-S-20-100-PPS-A
	125	★ 5224645	DSNU-S-20-125-P-A	★ 5225843	DSNU-S-20-125-PPS-A
	150	★ 5224646	DSNU-S-20-150-P-A	★ 5225844	DSNU-S-20-150-PPS-A
	200	★ 5224647	DSNU-S-20-200-P-A	★ 5225846	DSNU-S-20-200-PPS-A
25	10	★ 5228227	DSNU-S-25-10-P-A	–	
	15	★ 5228228	DSNU-S-25-15-P-A		
	20	★ 5228229	DSNU-S-25-20-P-A		
	25	★ 5228230	DSNU-S-25-25-P-A	★ 5228452	DSNU-S-25-25-PPS-A
	30	★ 5228231	DSNU-S-25-30-P-A	★ 5228453	DSNU-S-25-30-PPS-A
	40	★ 5228232	DSNU-S-25-40-P-A	★ 5228454	DSNU-S-25-40-PPS-A
	50	★ 5228233	DSNU-S-25-50-P-A	★ 5228455	DSNU-S-25-50-PPS-A
	60	★ 5228234	DSNU-S-25-60-P-A	★ 5228456	DSNU-S-25-60-PPS-A
	80	★ 5228235	DSNU-S-25-80-P-A	★ 5228457	DSNU-S-25-80-PPS-A
	100	★ 5228236	DSNU-S-25-100-P-A	★ 5228458	DSNU-S-25-100-PPS-A
	125	★ 5228237	DSNU-S-25-125-P-A	★ 5228459	DSNU-S-25-125-PPS-A
	150	★ 5228238	DSNU-S-25-150-P-A	★ 5228460	DSNU-S-25-150-PPS-A
	200	★ 5228239	DSNU-S-25-200-P-A	★ 5228461	DSNU-S-25-200-PPS-A

Data sheet – DSNU-S

General technical data						
Piston ∅		8	12	16	20	25
Pneumatic connection		M5			G1/8	
Piston rod thread		M4	M6		M8	
Stroke[1]	[mm]	10, 15, 20, 25, 30, 40, 50, 60, 80, 100	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 125, 150	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 125, 150, 200		
Design		Piston				
		Piston rod				
		Cylinder barrel				
Mode of operation		Double-acting				
Cushioning						
DSNU-S...-P		Elastic cushioning rings/pads at both ends				
DSNU-S...-PPS		–		Self-adjusting pneumatic end-position cushioning		
Cushioning length						
DSNU-S...-PPS	[mm]	–		12	15	17
Position sensing		Via proximity switch				
Type of mounting		Via accessories				
Mounting position		Any				

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

Operating and environmental conditions						
Piston ∅		8	12	16	20	25
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]	1.5 ... 10	1 ... 10	0.8 ... 10	0.8 ... 10	0.6 ... 10
Ambient temperature[1]	[°C]	–20 ... +80				
Corrosion resistance class CRC[2]		2				

1) Note operating range of proximity switches.

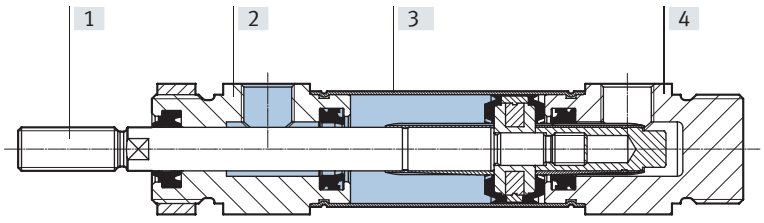
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Forces [N] and impact energy [J]						
Piston ∅		8	12	16	20	25
Theoretical force at 6 bar, advancing		30.2	67.9	120.6	188.5	294.5
Theoretical force at 6 bar, retracting		22.6	50.9	103.7	158.3	247.4
Impact energy in the end positions[1]		0.03	0.07	0.15	0.20	0.30

1) The values are reduced by approx. 50% at an ambient temperature of 80°C
Flow-controlled compressed air is recommended to protect against overload.

Materials

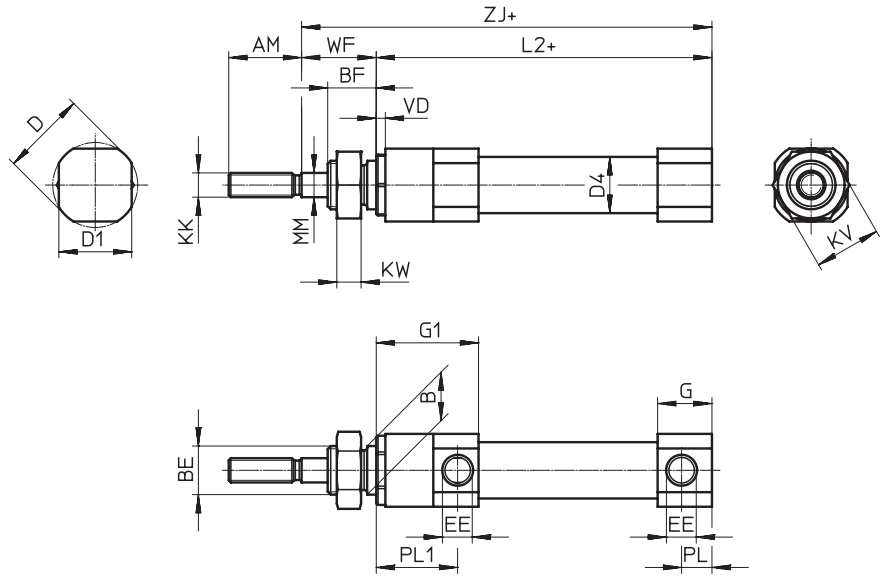
Sectional view



Round cylinder		8 ... 25
[1]	Piston rod	High-alloy stainless steel
[2]	Bearing cap	Wrought aluminium alloy
[3]	Cylinder barrel	High-alloy stainless steel
[4]	End cap	Wrought aluminium alloy
–	Seals	TPE-U(PU)
	Note on materials	RoHS-compliant

Dimensions – DSNU-S

DSNU-S-8



\+ = plus stroke length

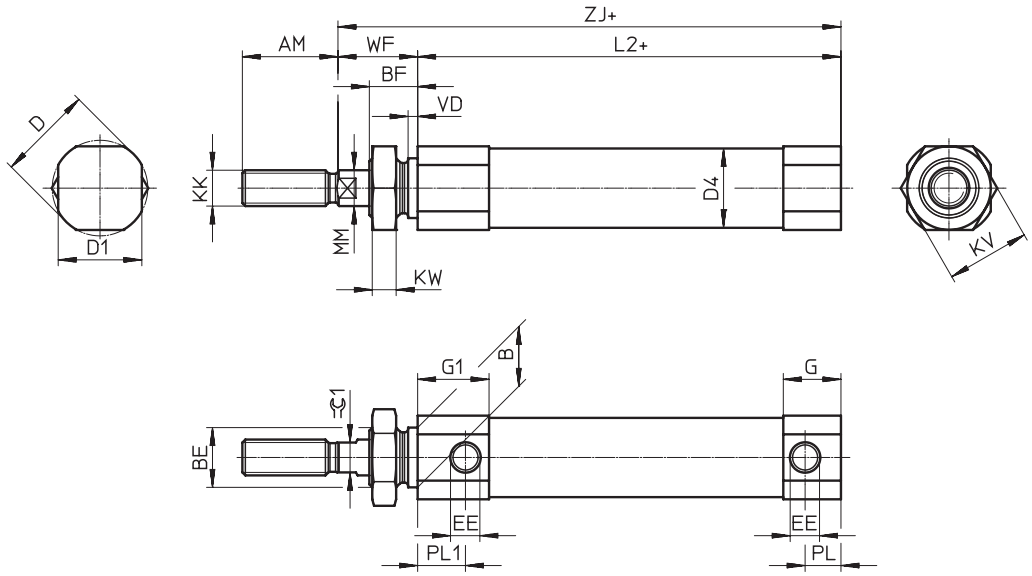
∅ [mm]	AM	B h8	BE	BF	D ∅	D1 ∅	D4 ∅
8	12	8	M8x1	8	14	12	9.3

∅ [mm]	EE	G	G1	KK	KV	KW	L2+
8	M5	9	16.9	M4	11	4	45.4

∅ [mm]	MM ∅	PL	PL1	VD	WF ±0.7	ZJ ±1
8	4	5	13.4	1.5	11.9	57.7

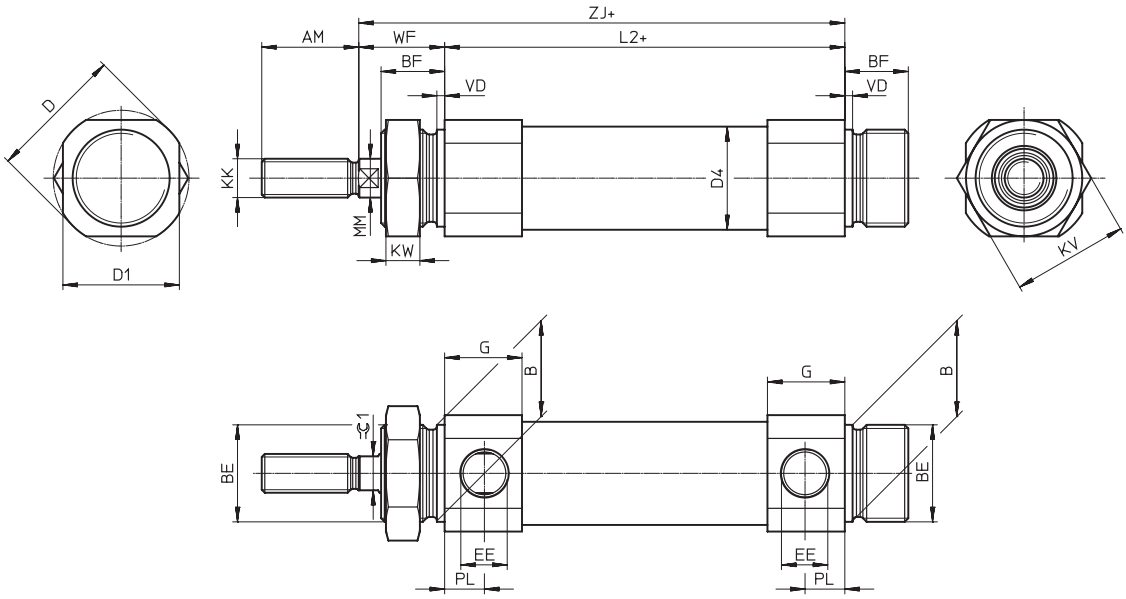
Dimensions – DSNU-S

DSNU-S-12 ... 16



+ = plus stroke length

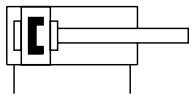
DSNU-S-20 ... 25



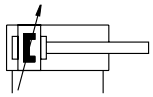
∅ [mm]	AM	B h8	BE	BF	D ∅	D1 ∅	D4 ∅	EE	G DS-NU-...-P	G DSNU-...-PPS	G1	KK	KV
12	16	10	M10x1	8	16	14	13.3	M5	9.7	–	12	M6	14
16					20	18	17.3		11.2	9.7	11.2		
20	20	20	M20x1.5	13	28	24	21.3	G1/8	16	16	–	M8	24
25	22				30	27	26.5		16.8	16.8	–	M10x1.25	

∅ [mm]	KW	L2+ DSNU-...-P	L2+ DSNU-...-PPS	MM ∅	PL	PL1	VD	WF	ZJ ±1 DSNU-...-P	ZJ ±1 DSNU-...-PPS	⫰1
12	4	46	–	6	6	8	1.5	13 ±0.7	59.3	–	5
16		45.5	57			7.5		12.9 ±0.75	58.8	70.3	
20	7	57.6	57.6	8	8.2	–	1.5	17.3 ±0.75	75.3	75.3	7
25		60.3	60.3	10	8.3			19.6 ±0.75	80.3	80.3	9

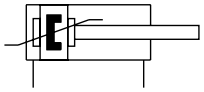
P cushioning



PPV cushioning



PPS cushioning



Diameter
8 ... 25 mm
ISO 6432

Diameter
32 ... 63 mm

Stroke length
1 ... 500 mm,
longer strokes on request

Ordering – Modular product system DSNU

Ordering table

Size	8	10	12	16	20	25	32	40	50	63	Code		Enter code
Module no.	193986	193987	193988	193989	193990	193991	193992	193993	193994	193995			
Function	Round cylinder, double-acting, based on ISO 6432						Double-acting round cylinder				DSNU		DSNU
Piston ∅ [mm]	8	10	12	16	20	25	32	40	50	63	-...		
Stroke [mm]	1 ... 100		1 ... 200		1 ... 320	1 ... 500	1 ... 500				-...		
Cushioning	Elastic cushioning rings/pads at both ends						Elastic cushioning rings/pads at both ends				-P		
	–	–	Pneumatic cushioning, adjustable at both ends				Pneumatic cushioning, adjustable at both ends				-PPV		
	–	–	–	Pneumatic cushioning, self-adjusting at both ends			Pneumatic cushioning, self-adjusting at both ends				-PPS		
Position sensing	Via proximity switch						Via proximity switch				-A		
Cylinder cap	Lateral supply port, short end cap						Lateral supply port, short end cap				-MQ		
	Axial supply port, short end cap						Axial supply port, short end cap				-MA		
	With mounting flange at front (direct mounting), bearing cap						Mounting flange at front (direct mounting), bearing cap				-MH		
Piston rod type	Through piston rod						Through piston rod				-S2		

Ordering data – DSNU

Piston ∅ [mm]	Stroke [mm]	P – Elastic cushioning rings/pads at both ends A – With position sensing Part no.	Type
8	10	19177	DSNU-8-10-P-A
	15	1908247	DSNU-8-15-P-A
	20	1908248	DSNU-8-20-P-A
	25	19178	DSNU-8-25-P-A
	30	1908249	DSNU-8-30-P-A
	40	19179	DSNU-8-40-P-A
	50	19180	DSNU-8-50-P-A
	60	1908250	DSNU-8-60-P-A
	80	19181	DSNU-8-80-P-A
	100	19182	DSNU-8-100-P-A
	125	–	
	160	–	
	200	–	

Piston ∅ [mm]	P – Elastic cushioning rings/pads at both ends A – With position sensing Part no.	Type
10	19183	DSNU-10-10-P-A
	1908251	DSNU-10-15-P-A
	1908252	DSNU-10-20-P-A
	19184	DSNU-10-25-P-A
	1908253	DSNU-10-30-P-A
	19185	DSNU-10-40-P-A
	19186	DSNU-10-50-P-A
	1908254	DSNU-10-60-P-A
	19187	DSNU-10-80-P-A
	19188	DSNU-10-100-P-A
	–	
	–	
	–	

Piston ∅ [mm]	P – Elastic cushioning rings/pads at both ends A – With position sensing Part no.	Type
12	★ 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

Round cylinders DSNU

Ordering data – DSNU

Piston ∅	Stroke	P – Elastic cushioning rings/pads at both ends A – With position sensing		PPV – Pneumatic cushioning, adjustable at both ends A – With position sensing		PPS – Pneumatic cushioning, self-adjusting at both ends A – With position sensing	
[mm]	[mm]	Part no.	Type	Part no.	Type	Part no.	Type
16	10	★ 19198	DSNU-16-10-P-A	★ 1908266	DSNU-16-10-PPV-A	★ 1908274	DSNU-16-10-PPS-A
	15	★ 1908259	DSNU-16-15-P-A	★ 1908267	DSNU-16-15-PPV-A	★ 1908275	DSNU-16-15-PPS-A
	20	★ 1908260	DSNU-16-20-P-A	★ 1908268	DSNU-16-20-PPV-A	★ 1908276	DSNU-16-20-PPS-A
	25	★ 19199	DSNU-16-25-P-A	★ 33973	DSNU-16-25-PPV-A	★ 559263	DSNU-16-25-PPS-A
	30	★ 1908261	DSNU-16-30-P-A	★ 1908269	DSNU-16-30-PPV-A	★ 1908277	DSNU-16-30-PPS-A
	35	★ 1908262	DSNU-16-35-P-A	★ 1908270	DSNU-16-35-PPV-A	★ 1908278	DSNU-16-35-PPS-A
	40	★ 19200	DSNU-16-40-P-A	★ 19229	DSNU-16-40-PPV-A	★ 559264	DSNU-16-40-PPS-A
	50	★ 19201	DSNU-16-50-P-A	★ 19230	DSNU-16-50-PPV-A	★ 559265	DSNU-16-50-PPS-A
	60	★ 1908263	DSNU-16-60-P-A	★ 1908271	DSNU-16-60-PPV-A	★ 1908279	DSNU-16-60-PPS-A
	70	★ 1908264	DSNU-16-70-P-A	★ 1908272	DSNU-16-70-PPV-A	★ 1908280	DSNU-16-70-PPS-A
	80	★ 19202	DSNU-16-80-P-A	★ 19231	DSNU-16-80-PPV-A	★ 559266	DSNU-16-80-PPS-A
	100	★ 19203	DSNU-16-100-P-A	★ 19232	DSNU-16-100-PPV-A	★ 559267	DSNU-16-100-PPS-A
	125	★ 19204	DSNU-16-125-P-A	★ 19233	DSNU-16-125-PPV-A	★ 559268	DSNU-16-125-PPS-A
	150	★ 1908265	DSNU-16-150-P-A	★ 1908273	DSNU-16-150-PPV-A	★ 1908281	DSNU-16-150-PPS-A
	160	★ 19205	DSNU-16-160-P-A	★ 19234	DSNU-16-160-PPV-A	★ 559269	DSNU-16-160-PPS-A
	200	★ 19206	DSNU-16-200-P-A	★ 19235	DSNU-16-200-PPV-A	★ 559270	DSNU-16-200-PPS-A
20	10	★ 19207	DSNU-20-10-P-A	★ 1908289	DSNU-20-10-PPV-A	★ 1908297	DSNU-20-10-PPS-A
	15	★ 1908282	DSNU-20-15-P-A	★ 1908290	DSNU-20-15-PPV-A	★ 1908298	DSNU-20-15-PPS-A
	20	★ 1908283	DSNU-20-20-P-A	★ 1908291	DSNU-20-20-PPV-A	★ 1908299	DSNU-20-20-PPS-A
	25	★ 19208	DSNU-20-25-P-A	★ 33974	DSNU-20-25-PPV-A	★ 559271	DSNU-20-25-PPS-A
	30	★ 1908284	DSNU-20-30-P-A	★ 1908292	DSNU-20-30-PPV-A	★ 1908300	DSNU-20-30-PPS-A
	35	★ 1908285	DSNU-20-35-P-A	★ 1908293	DSNU-20-35-PPV-A	★ 1908301	DSNU-20-35-PPS-A
	40	★ 19209	DSNU-20-40-P-A	★ 19236	DSNU-20-40-PPV-A	★ 559272	DSNU-20-40-PPS-A
	50	★ 19210	DSNU-20-50-P-A	★ 19237	DSNU-20-50-PPV-A	★ 559273	DSNU-20-50-PPS-A
	60	★ 1908286	DSNU-20-60-P-A	★ 1908294	DSNU-20-60-PPV-A	★ 1908302	DSNU-20-60-PPS-A
	70	★ 1908287	DSNU-20-70-P-A	★ 1908295	DSNU-20-70-PPV-A	★ 1908303	DSNU-20-70-PPS-A
	80	★ 19211	DSNU-20-80-P-A	★ 19238	DSNU-20-80-PPV-A	★ 559274	DSNU-20-80-PPS-A
	100	★ 19212	DSNU-20-100-P-A	★ 19239	DSNU-20-100-PPV-A	★ 559275	DSNU-20-100-PPS-A
	125	★ 19213	DSNU-20-125-P-A	★ 19240	DSNU-20-125-PPV-A	★ 559276	DSNU-20-125-PPS-A
	150	★ 1908288	DSNU-20-150-P-A	★ 1908296	DSNU-20-150-PPV-A	★ 1908304	DSNU-20-150-PPS-A
	160	★ 19214	DSNU-20-160-P-A	★ 19241	DSNU-20-160-PPV-A	★ 559277	DSNU-20-160-PPS-A
	200	★ 19215	DSNU-20-200-P-A	★ 19242	DSNU-20-200-PPV-A	★ 559278	DSNU-20-200-PPS-A
	250	★ 19216	DSNU-20-250-P-A	★ 19243	DSNU-20-250-PPV-A	★ 559279	DSNU-20-250-PPS-A
	300	★ 19217	DSNU-20-300-P-A	★ 19244	DSNU-20-300-PPV-A	★ 559280	DSNU-20-300-PPS-A
	320	★ 34718	DSNU-20-320-P-A	★ 34720	DSNU-20-320-PPV-A	★ 559281	DSNU-20-320-PPS-A

Ordering data – DSNU

Piston ∅	Stroke	P – Elastic cushioning rings/pads at both ends A – With position sensing		PPV – Pneumatic cushioning, adjustable at both ends A – With position sensing		PPS – Pneumatic cushioning, self-adjusting at both ends A – With position sensing	
[mm]	[mm]	Part no.	Type	Part no.	Type	Part no.	Type
25	10	★ 19218	DSNU-25-10-P-A	★ 1908312	DSNU-25-10-PPV-A	★ 1908320	DSNU-25-10-PPS-A
	15	★ 1908305	DSNU-25-15-P-A	★ 1908313	DSNU-25-15-PPV-A	★ 1908321	DSNU-25-15-PPS-A
	20	★ 1908306	DSNU-25-20-P-A	★ 1908314	DSNU-25-20-PPV-A	★ 1908322	DSNU-25-20-PPS-A
	25	★ 19219	DSNU-25-25-P-A	★ 33975	DSNU-25-25-PPV-A	★ 559282	DSNU-25-25-PPS-A
	30	★ 1908307	DSNU-25-30-P-A	★ 1908315	DSNU-25-30-PPV-A	★ 1908323	DSNU-25-30-PPS-A
	35	★ 1908308	DSNU-25-35-P-A	★ 1908316	DSNU-25-35-PPV-A	★ 1908324	DSNU-25-35-PPS-A
	40	★ 19220	DSNU-25-40-P-A	★ 19245	DSNU-25-40-PPV-A	★ 559283	DSNU-25-40-PPS-A
	50	★ 19221	DSNU-25-50-P-A	★ 19246	DSNU-25-50-PPV-A	★ 559284	DSNU-25-50-PPS-A
	60	★ 1908309	DSNU-25-60-P-A	★ 1908317	DSNU-25-60-PPV-A	★ 1908325	DSNU-25-60-PPS-A
	70	★ 1908310	DSNU-25-70-P-A	★ 1908318	DSNU-25-70-PPV-A	★ 1908326	DSNU-25-70-PPS-A
	80	★ 19222	DSNU-25-80-P-A	★ 19247	DSNU-25-80-PPV-A	★ 559285	DSNU-25-80-PPS-A
	100	★ 19223	DSNU-25-100-P-A	★ 19248	DSNU-25-100-PPV-A	★ 559286	DSNU-25-100-PPS-A
	125	★ 19224	DSNU-25-125-P-A	★ 19249	DSNU-25-125-PPV-A	★ 559287	DSNU-25-125-PPS-A
	150	★ 1908311	DSNU-25-150-P-A	★ 1908319	DSNU-25-150-PPV-A	★ 1908327	DSNU-25-150-PPS-A
	160	★ 19225	DSNU-25-160-P-A	★ 19250	DSNU-25-160-PPV-A	★ 559288	DSNU-25-160-PPS-A
	200	★ 19226	DSNU-25-200-P-A	★ 19251	DSNU-25-200-PPV-A	★ 559289	DSNU-25-200-PPS-A
	250	★ 19227	DSNU-25-250-P-A	★ 19252	DSNU-25-250-PPV-A	★ 559290	DSNU-25-250-PPS-A
	300	★ 19228	DSNU-25-300-P-A	★ 19253	DSNU-25-300-PPV-A	★ 559291	DSNU-25-300-PPS-A
	320	★ 34719	DSNU-25-320-P-A	★ 34721	DSNU-25-320-PPV-A	★ 559292	DSNU-25-320-PPS-A
	400	35191	DSNU-25-400-P-A	35193	DSNU-25-400-PPV-A	559293	DSNU-25-400-PPS-A
	500	35192	DSNU-25-500-P-A	35194	DSNU-25-500-PPV-A	559294	DSNU-25-500-PPS-A
32	25	195980	DSNU-32-25-P-A	196020	DSNU-32-25-PPV-A	559295	DSNU-32-25-PPS-A
	40	195981	DSNU-32-40-P-A	196021	DSNU-32-40-PPV-A	559296	DSNU-32-40-PPS-A
	50	195982	DSNU-32-50-P-A	196022	DSNU-32-50-PPV-A	559297	DSNU-32-50-PPS-A
	80	195983	DSNU-32-80-P-A	196023	DSNU-32-80-PPV-A	559298	DSNU-32-80-PPS-A
	100	195984	DSNU-32-100-P-A	196024	DSNU-32-100-PPV-A	559299	DSNU-32-100-PPS-A
	125	195985	DSNU-32-125-P-A	196025	DSNU-32-125-PPV-A	559300	DSNU-32-125-PPS-A
	160	195986	DSNU-32-160-P-A	196026	DSNU-32-160-PPV-A	559301	DSNU-32-160-PPS-A
	200	195987	DSNU-32-200-P-A	196027	DSNU-32-200-PPV-A	559302	DSNU-32-200-PPS-A
	250	195988	DSNU-32-250-P-A	196028	DSNU-32-250-PPV-A	559303	DSNU-32-250-PPS-A
	320	195989	DSNU-32-320-P-A	196029	DSNU-32-320-PPV-A	559304	DSNU-32-320-PPS-A
40	25	195990	DSNU-40-25-P-A	196030	DSNU-40-25-PPV-A	559305	DSNU-40-25-PPS-A
	40	195991	DSNU-40-40-P-A	196031	DSNU-40-40-PPV-A	559306	DSNU-40-40-PPS-A
	50	195992	DSNU-40-50-P-A	196032	DSNU-40-50-PPV-A	559307	DSNU-40-50-PPS-A
	80	195993	DSNU-40-80-P-A	196033	DSNU-40-80-PPV-A	559308	DSNU-40-80-PPS-A
	100	195994	DSNU-40-100-P-A	196034	DSNU-40-100-PPV-A	559309	DSNU-40-100-PPS-A
	125	195995	DSNU-40-125-P-A	196035	DSNU-40-125-PPV-A	559310	DSNU-40-125-PPS-A
	160	195996	DSNU-40-160-P-A	196036	DSNU-40-160-PPV-A	559311	DSNU-40-160-PPS-A
	200	195997	DSNU-40-200-P-A	196037	DSNU-40-200-PPV-A	559312	DSNU-40-200-PPS-A
	250	195998	DSNU-40-250-P-A	196038	DSNU-40-250-PPV-A	559313	DSNU-40-250-PPS-A
	320	195999	DSNU-40-320-P-A	196039	DSNU-40-320-PPV-A	559314	DSNU-40-320-PPS-A
50	25	196000	DSNU-50-25-P-A	196040	DSNU-50-25-PPV-A	559315	DSNU-50-25-PPS-A
	40	196001	DSNU-50-40-P-A	196041	DSNU-50-40-PPV-A	559316	DSNU-50-40-PPS-A
	50	196002	DSNU-50-50-P-A	196042	DSNU-50-50-PPV-A	559317	DSNU-50-50-PPS-A
	80	196003	DSNU-50-80-P-A	196043	DSNU-50-80-PPV-A	559318	DSNU-50-80-PPS-A
	100	196004	DSNU-50-100-P-A	196044	DSNU-50-100-PPV-A	559319	DSNU-50-100-PPS-A
	125	196005	DSNU-50-125-P-A	196045	DSNU-50-125-PPV-A	559320	DSNU-50-125-PPS-A
	160	196006	DSNU-50-160-P-A	196046	DSNU-50-160-PPV-A	559321	DSNU-50-160-PPS-A
	200	196007	DSNU-50-200-P-A	196047	DSNU-50-200-PPV-A	559322	DSNU-50-200-PPS-A
	250	196008	DSNU-50-250-P-A	196048	DSNU-50-250-PPV-A	559323	DSNU-50-250-PPS-A
	320	196009	DSNU-50-320-P-A	196049	DSNU-50-320-PPV-A	559324	DSNU-50-320-PPS-A

Round cylinders DSNU

Ordering data – DSNU

Piston ∅	Stroke	P – Elastic cushioning rings/pads at both ends A – With position sensing		PPV – Pneumatic cushioning, adjustable at both ends A – With position sensing		P – Elastic cushioning rings/pads at both ends A – With position sensing	
[mm]	[mm]	Part no.	Type	Part no.	Type	Part no.	Type
63	25	196010	DSNU-63-25-P-A	196050	DSNU-63-25-PPV-A	559325	DSNU-63-25-PPS-A
	40	196011	DSNU-63-40-P-A	196051	DSNU-63-40-PPV-A	559326	DSNU-63-40-PPS-A
	50	196012	DSNU-63-50-P-A	196052	DSNU-63-50-PPV-A	559327	DSNU-63-50-PPS-A
	80	196013	DSNU-63-80-P-A	196053	DSNU-63-80-PPV-A	559328	DSNU-63-80-PPS-A
	100	196014	DSNU-63-100-P-A	196054	DSNU-63-100-PPV-A	559329	DSNU-63-100-PPS-A
	125	196015	DSNU-63-125-P-A	196055	DSNU-63-125-PPV-A	559330	DSNU-63-125-PPS-A
	160	196016	DSNU-63-160-P-A	196056	DSNU-63-160-PPV-A	559331	DSNU-63-160-PPS-A
	200	196017	DSNU-63-200-P-A	196057	DSNU-63-200-PPV-A	559332	DSNU-63-200-PPS-A
	250	196018	DSNU-63-250-P-A	196058	DSNU-63-250-PPV-A	559333	DSNU-63-250-PPS-A
	320	196019	DSNU-63-320-P-A	196059	DSNU-63-320-PPV-A	559334	DSNU-63-320-PPS-A

Piston ∅	Stroke	P – Elastic cushioning rings/pads at both ends A – With position sensing		PPV – Pneumatic cushioning, adjustable at both ends A – With position sensing	
[mm]	[mm]	Part no.	Type	Part no.	Type
Variable stroke				**Variable stroke**	
8	10 ... 100	14326	DSNU-8-...-P-A	–	
10	10 ... 100	14325	DSNU-10-...-P-A		
12	10 ... 200	14324	DSNU-12-...-P-A		
16	10 ... 200	14323	DSNU-16-...-P-A	14320	DSNU-16-...-PPV-A
20	10 ... 320	14328	DSNU-20-...-P-A	14321	DSNU-20-...-PPV-A
25	10 ... 500	14327	DSNU-25-...-P-A	14322	DSNU-25-...-PPV-A

Data sheet – DSNU

General technical data Piston ∅		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 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				
Design		Piston/piston rod/cylinder barrel									
Cushioning											
DSNU-...-P		Elastic cushioning rings/pads at both ends									
DSNU-...-PPV		–		Cushioning, adjustable at both ends							
DSNU-...-PPS		–			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
Position sensing		Via proximity switch									
Type of mounting		Direct mounting (variant MH only)									
		Via accessories									
Mounting position		Any									

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

Data sheet – DSNU

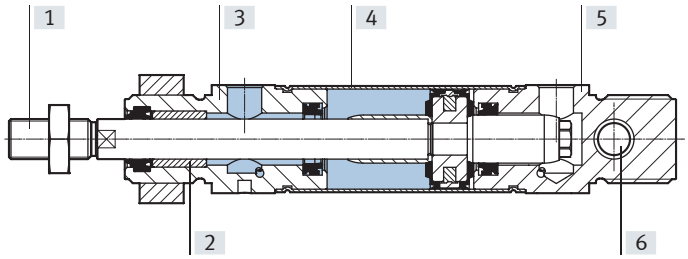
Operating and environmental conditions											
Piston ∅		8	10	12	16	20	25	32	40	50	63
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]									
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)									
Operating pressure	[bar]	1.5 ... 10[1]			1 ... 10						
Ambient temperature[2]	[°C]	–20 ... +80									
Corrosion resistance class CRC[3]		2									

1) For DSNU-12-... PPV (pneumatic cushioning adjustable at both ends): 2 ... 10 bar
2) Note operating range of proximity sensors
3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Forces [N] and impact energy [J]										
Piston ∅	8	10	12	16	20	25	32	40	50	63
Theoretical force at 6 bar, advancing	30	47	68	121	189	295	483	753	1178	1870
Theoretical force at 6 bar, retracting	23	40	51	104	158	247	415	633	990	1682
Impact energy in the end positions for P cushioning[1]	0.03	0.05	0.07	0.15	0.20	0.30	0.40	0.70	1.00	1.30

1) The values are reduced by approx. 50% at an ambient temperature of 80°C

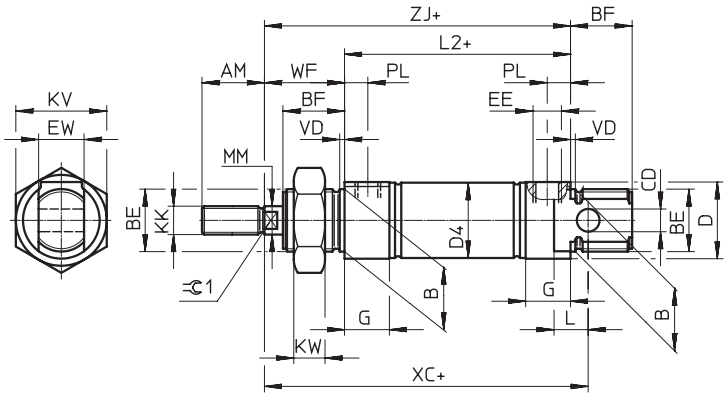
Materials



Round cylinder		8 ... 25	32 ... 63
[1]	Piston rod	High-alloy steel	
[2]	Piston rod bearing	Sintered bronze	
[3]	Bearing cap	Colourless anodised wrought aluminium alloy	
[4]	Cylinder barrel	High-alloy stainless steel	
[5]	End cap	Colourless anodised wrought aluminium alloy	
–	Seals	TPE-U(PU), NBR	
	Note on materials	RoHS-compliant	
[6]	Swivel bearing	Polymer	

Dimensions – DSNU

DSNU-8 ... 25

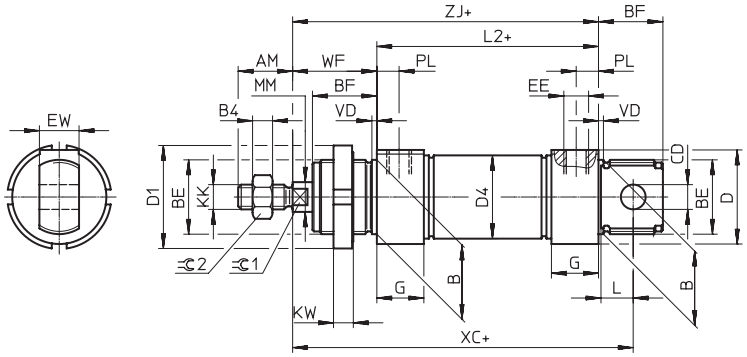


Note
Piston rod nut is not included in the scope of delivery for diameter 8 ... 20.
\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ H9	D ∅	D4 ∅	EE	EW	G	KK	KV
8	12	12	M12x1.25	12	4	15	9.3	M5	8	10	M4	19
10							11.3					
12	16	16	M16x1.5	17	6	20	13.3		12		M6	24
16							17.3					
20	20	22	M22x1.5	20	8	27	21.3	G1/8	16	16	M8	32
25	22			22			26.5				M10x1.25	

∅ [mm]	KW	L	L2	MM ∅	PL	VD	WF	XC ±1	ZJ	=⌀1
8	6	6	46	4	6	2	16	64	62	–
10										
12	8	9	50	6			22	75	72	5
16			56					82	78	
20	11	12	68	8	8.2		24	95	92	7
25			69.5	10			28	104	97.5	9

DSNU-32 ... 63



\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	B4	BE	BF	CD ∅ E10	D ∅	D1 ∅	D4 ∅	EE	EW	G
32	22	30	5	M30x1.5	26	10	38	42	33.6	G1/8	16	19
40	24	38	6	M38x1.5	30	12	46	50	41.6	G1/4	18	25
50	32	45	8	M45x1.5	33	16	57	60	52.4		21	
63							70		65.4	G3/8		28

∅ [mm]	KK	KW	L	L2	MM ∅	PL	VD	WF	XC ±1	ZJ	=⌀1	=⌀2
32	M10x1.25	8	13	69.5	12	9	2	34	117.5	103.5	10	16
40	M12x1.25	10	15	84.6	16	12	3	39	139.6	123.6	13	18
50	M16x1.5		16	86.2	20			44	147.2	130.2	17	24
63				94.2		13		45	156.2	139.2		

Compact cylinders ADN-S

Highlights

+ Minimal fitting space
+ High forces in a compact size
+ Piston rod with female or male thread
+ For position sensing

★	Festo core product range Solves the majority of your automation tasks
Worldwide:	Always in stock
Superb:	Festo quality at an attractive price
Easy:	Simplified procurement and warehousing

With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .

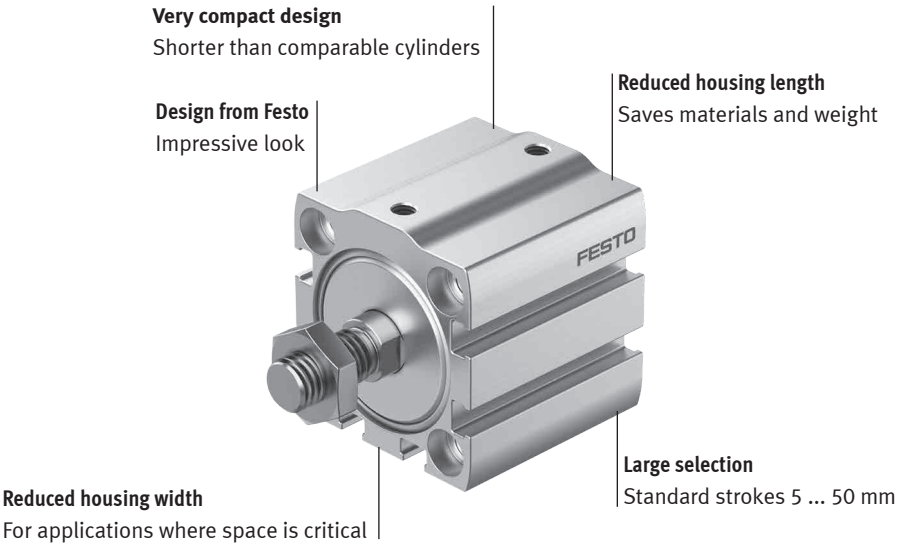
Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.

Just look for the star!

Compact cylinders ADN-S

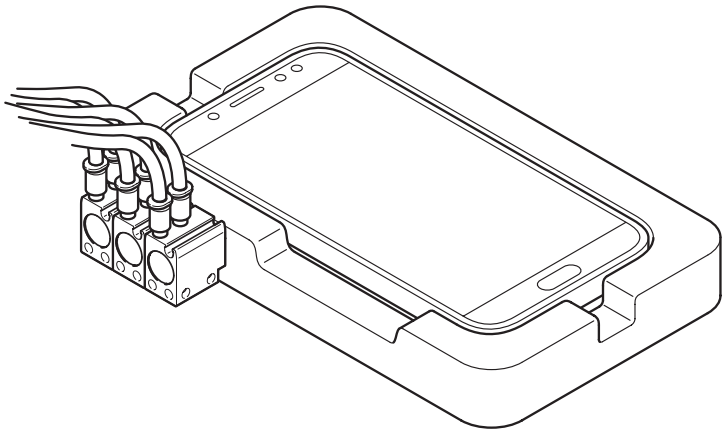
Features

At a glance

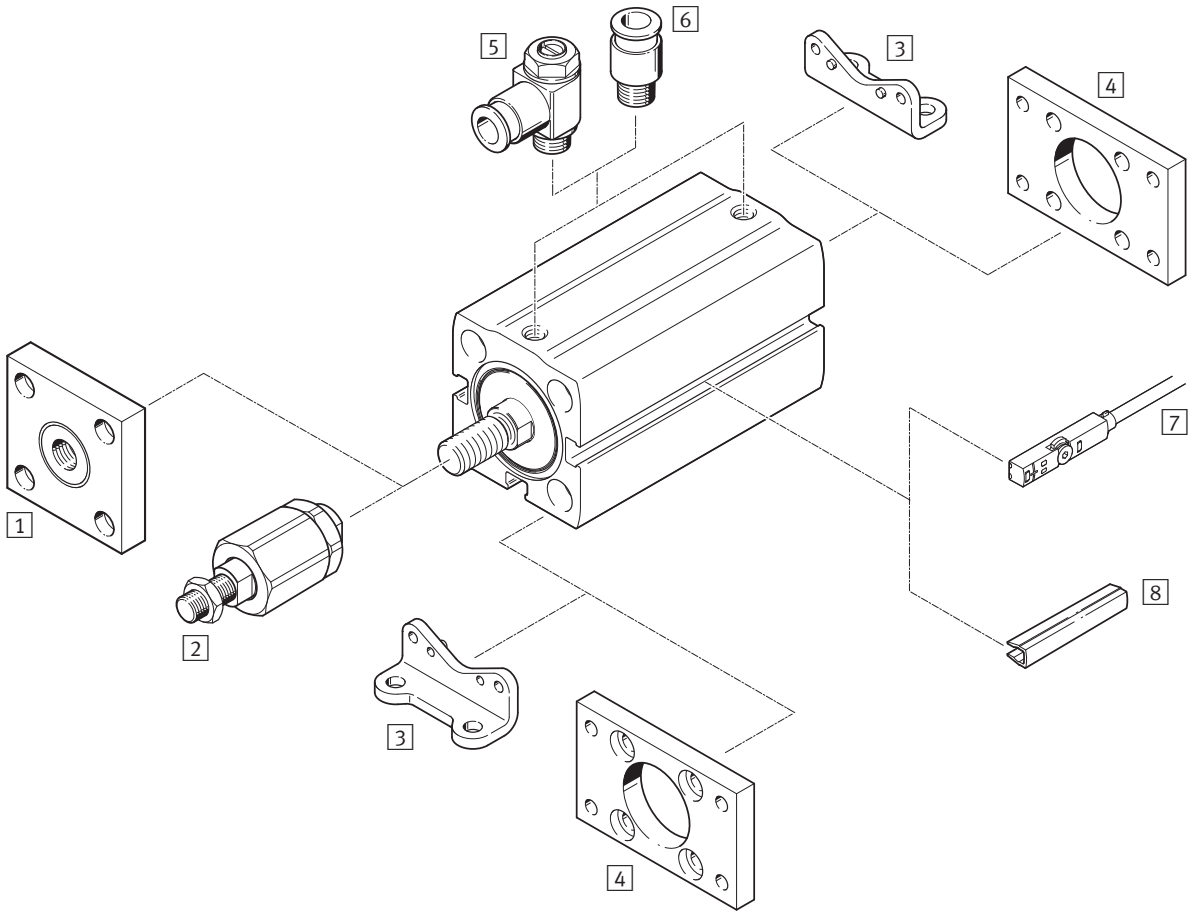


Example application

Long-term tests of smartphone keys



Peripherals overview



	Type/order code	➔ Page/Internet
[1]	Coupling piece KSG	71
[2]	Self-aligning rod coupler FK	
[3]	Foot mounting HNA	
[4]	Flange mounting FNC	
[5]	One-way flow control valve GRLA/GRLZ	
[6]	Push-in fitting NPQE	803

	Type/order code	➔ Page/Internet
[7]	Proximity sensor SME/SMT-10	691
	Proximity sensor SMT-8M, SDBT-MS	681, 701
	Position transmitter SDAS-MHS/SDAT-MHS, SMAT-8M	709, 715, smat-8m
[8]	Slot cover ABP-5	71

Type code explanation

001	Series
ADN	Compact cylinder, double-acting, based on ISO 21287

002	Design type
S	Short

003	Piston diameter
...	6, 10, 12, 16, 20, 25, 32, 40, 50, 63

004	Stroke
...	5, 10, 15, 20, 25, 30, 35, 40, 45, 50

005	Piston rod thread type
A	Male thread
I	Female thread

006	Cushioning
	No cushioning
P	Elastic cushioning rings/plates on both sides

007	Position sensing
	None
A	For proximity sensor

008	Special material properties
	None
F1A	Recommended for production plants for the manufacture of Li-Ion batteries (Cu ≤ 1%, Zn ≤ 1%, Ni ≤ 1%)

Ordering data

Without cushioning

Piston ∅ [mm]	Stroke [mm]	I – Piston rod with female thread Part no.	Type	A – Piston rod with male thread Part no.	Type
6	**Without position sensing**				
	5	★ 4886885	ADN-S-6-5-I	8080598	ADN-S-6-5-A
		8142509	ADN-S-6-5-I-F1A[1]	8142513	ADN-S-6-5-A-F1A[1]
	10	★ 4886886	ADN-S-6-10-I	8080596	ADN-S-6-10-A
		8142510	ADN-S-6-10-I-F1A[1]	8142514	ADN-S-6-10-A-F1A[1]
	With position sensing				
	5	★ 5173732	ADN-S-6-5-I-A	8080597	ADN-S-6-5-A-A
		8142511	ADN-S-6-5-I-A-F1A[1]	8142515	ADN-S-6-5-A-A-F1A[1]
	10	★ 5173733	ADN-S-6-10-I-A	8080595	ADN-S-6-10-A-A
		8142512	ADN-S-6-10-I-A-F1A[1]	8142516	ADN-S-6-10-A-A-F1A[1]
10	**Without position sensing**				
	5	★ 4887523	ADN-S-10-5-I	8080589	ADN-S-10-5-A
		8142518	ADN-S-10-5-I-F1A[1]	8142522	ADN-S-10-5-A-F1A[1]
	10	★ 4887524	ADN-S-10-10-I	8080588	ADN-S-10-10-A
		8142519	ADN-S-10-10-I-F1A[1]	8142523	ADN-S-10-10-A-F1A[1]
	With position sensing				
	5	★ 5177082	ADN-S-10-5-I-A	8080587	ADN-S-10-5-A-A
		8142520	ADN-S-10-5-I-A-F1A[1]	8142517	ADN-S-10-5-A-A-F1A[1]
	10	★ 5177085	ADN-S-10-10-I-A	8080590	ADN-S-10-10-A-A
		8142521	ADN-S-10-10-I-A-F1A[1]	8142524	ADN-S-10-10-A-A-F1A[1]

1) Recommended for production facilities for the manufacture of Li-ion batteries.

With elastic cushioning rings/plates at both ends

Piston ∅ [mm]	Stroke [mm]	I – Piston rod with female thread Part no.	Type	A – Piston rod with male thread Part no.	Type
12	**Without position sensing**				
	5	★ 8076407	ADN-S-12-5-I-P	8091419	ADN-S-12-5-A-P
	10	★ 8076419	ADN-S-12-10-I-P	8091428	ADN-S-12-10-A-P
	15	★ 8076417	ADN-S-12-15-I-P	8091416	ADN-S-12-15-A-P
	20	★ 8076415	ADN-S-12-20-I-P	8091420	ADN-S-12-20-A-P
	25	★ 8076413	ADN-S-12-25-I-P	8091426	ADN-S-12-25-A-P
	30	★ 8076411	ADN-S-12-30-I-P	8091423	ADN-S-12-30-A-P
	35	★ 8076409	ADN-S-12-35-I-P	8091418	ADN-S-12-35-A-P
	With position sensing				
	5	8076406	ADN-S-12-5-I-P-A	8091427	ADN-S-12-5-A-P-A
		8142562	ADN-S-12-5-I-P-A-F1A[1]	8142576	ADN-S-12-5-A-P-A-F1A[1]
	10	8076418	ADN-S-12-10-I-P-A	8091424	ADN-S-12-10-A-P-A
		8142563	ADN-S-12-10-I-P-A-F1A[1]	8142577	ADN-S-12-10-A-P-A-F1A[1]
	15	8076416	ADN-S-12-15-I-P-A	8091422	ADN-S-12-15-A-P-A
		8142564	ADN-S-12-15-I-P-A-F1A[1]	8142578	ADN-S-12-15-A-P-A-F1A[1]
	20	8076414	ADN-S-12-20-I-P-A	8091429	ADN-S-12-20-A-P-A
		8142565	ADN-S-12-20-I-P-A-F1A[1]	8142579	ADN-S-12-20-A-P-A-F1A[1]
	25	8076412	ADN-S-12-25-I-P-A	8091421	ADN-S-12-25-A-P-A
		8142566	ADN-S-12-25-I-P-A-F1A[1]	8142580	ADN-S-12-25-A-P-A-F1A[1]
	30	8076410	ADN-S-12-30-I-P-A	8091417	ADN-S-12-30-A-P-A
		8142567	ADN-S-12-30-I-P-A-F1A[1]	8142581	ADN-S-12-30-A-P-A-F1A[1]
	35	8076408	ADN-S-12-35-I-P-A	8091425	ADN-S-12-35-A-P-A
		8142568	ADN-S-12-35-I-P-A-F1A[1]	8142582	ADN-S-12-35-A-P-A-F1A[1]

1) Recommended for production facilities for the manufacture of Li-ion batteries.

Ordering data

With elastic cushioning rings/plates at both ends

Piston ∅ [mm]	Stroke [mm]	I – Piston rod with female thread		A – Piston rod with male thread	
		Part no.	Type	Part no.	Type
16	**Without position sensing**				
	5	★8076393	ADN-S-16-5-I-P	8091671	ADN-S-16-5-A-P
	10	★8076405	ADN-S-16-10-I-P	8091670	ADN-S-16-10-A-P
	15	★8076403	ADN-S-16-15-I-P	8091677	ADN-S-16-15-A-P
	20	★8076401	ADN-S-16-20-I-P	8091666	ADN-S-16-20-A-P
	25	★8076399	ADN-S-16-25-I-P	8091665	ADN-S-16-25-A-P
	30	★8076397	ADN-S-16-30-I-P	8091672	ADN-S-16-30-A-P
	35	★8076395	ADN-S-16-35-I-P	8091676	ADN-S-16-35-A-P
	With position sensing				
	5	8076392	ADN-S-16-5-I-P-A	8091668	ADN-S-16-5-A-P-A
		8142728	ADN-S-16-5-I-P-A-F1A[1]	8142735	ADN-S-16-5-A-P-A-F1A[1]
	10	8076404	ADN-S-16-10-I-P-A	8091678	ADN-S-16-10-A-P-A
		8142729	ADN-S-16-10-I-P-A-F1A[1]	8142736	ADN-S-16-10-A-P-A-F1A[1]
	15	8076402	ADN-S-16-15-I-P-A	8091667	ADN-S-16-15-A-P-A
		8142730	ADN-S-16-15-I-P-A-F1A[1]	8142737	ADN-S-16-15-A-P-A-F1A[1]
	20	8076400	ADN-S-16-20-I-P-A	8091674	ADN-S-16-20-A-P-A
		8142731	ADN-S-16-20-I-P-A-F1A[1]	8142738	ADN-S-16-20-A-P-A-F1A[1]
	25	8076398	ADN-S-16-25-I-P-A	8091675	ADN-S-16-25-A-P-A
		8142732	ADN-S-16-25-I-P-A-F1A[1]	8142739	ADN-S-16-25-A-P-A-F1A[1]
	30	8076396	ADN-S-16-30-I-P-A	8091669	ADN-S-16-30-A-P-A
		8142733	ADN-S-16-30-I-P-A-F1A[1]	8142740	ADN-S-16-30-A-P-A-F1A[1]
	35	8076394	ADN-S-16-35-I-P-A	8091673	ADN-S-16-35-A-P-A
		8142734	ADN-S-16-35-I-P-A-F1A[1]	8142741	ADN-S-16-35-A-P-A-F1A[1]
20	**Without position sensing**				
	5	★8076323	ADN-S-20-5-I-P	8091431	ADN-S-20-5-A-P
	10	★8076341	ADN-S-20-10-I-P	8091449	ADN-S-20-10-A-P
	15	★8076339	ADN-S-20-15-I-P	8091447	ADN-S-20-15-A-P
	20	★8076337	ADN-S-20-20-I-P	8091445	ADN-S-20-20-A-P
	25	★8076335	ADN-S-20-25-I-P	8091443	ADN-S-20-25-A-P
	30	★8076333	ADN-S-20-30-I-P	8091441	ADN-S-20-30-A-P
	35	★8076331	ADN-S-20-35-I-P	8091439	ADN-S-20-35-A-P
	40	★8076329	ADN-S-20-40-I-P	8091437	ADN-S-20-40-A-P
	45	★8076327	ADN-S-20-45-I-P	8091435	ADN-S-20-45-A-P
	50	★8076325	ADN-S-20-50-I-P	8091433	ADN-S-20-50-A-P
	With position sensing				
	5	8076322	ADN-S-20-5-I-P-A	8091430	ADN-S-20-5-A-P-A
		8142756	ADN-S-20-5-I-P-A-F1A[1]	8142766	ADN-S-20-5-A-P-A-F1A[1]
	10	8076340	ADN-S-20-10-I-P-A	8091448	ADN-S-20-10-A-P-A
		8142757	ADN-S-20-10-I-P-A-F1A[1]	8142767	ADN-S-20-10-A-P-A-F1A[1]
	15	8076338	ADN-S-20-15-I-P-A	8091446	ADN-S-20-15-A-P-A
		8142758	ADN-S-20-15-I-P-A-F1A[1]	8142768	ADN-S-20-15-A-P-A-F1A[1]
	20	8076336	ADN-S-20-20-I-P-A	8091444	ADN-S-20-20-A-P-A
		8142759	ADN-S-20-20-I-P-A-F1A[1]	8142769	ADN-S-20-20-A-P-A-F1A[1]
	25	8076334	ADN-S-20-25-I-P-A	8091442	ADN-S-20-25-A-P-A
		8142760	ADN-S-20-25-I-P-A-F1A[1]	8142770	ADN-S-20-25-A-P-A-F1A[1]
	30	8076332	ADN-S-20-30-I-P-A	8091440	ADN-S-20-30-A-P-A
		8142761	ADN-S-20-30-I-P-A-F1A[1]	8142771	ADN-S-20-30-A-P-A-F1A[1]
	35	8076330	ADN-S-20-35-I-P-A	8091438	ADN-S-20-35-A-P-A
		8142762	ADN-S-20-35-I-P-A-F1A[1]	8142772	ADN-S-20-35-A-P-A-F1A[1]
	40	8076328	ADN-S-20-40-I-P-A	8091436	ADN-S-20-40-A-P-A
		8142763	ADN-S-20-40-I-P-A-F1A[1]	8142773	ADN-S-20-40-A-P-A-F1A[1]
	45	8076326	ADN-S-20-45-I-P-A	8091434	ADN-S-20-45-A-P-A
		8142764	ADN-S-20-45-I-P-A-F1A[1]	8142774	ADN-S-20-45-A-P-A-F1A[1]
	50	8076324	ADN-S-20-50-I-P-A	8091432	ADN-S-20-50-A-P-A
		8142765	ADN-S-20-50-I-P-A-F1A[1]	8142775	ADN-S-20-50-A-P-A-F1A[1]

1) Recommended for production facilities for the manufacture of Li-ion batteries.

Compact cylinders ADN-S

Ordering data

With elastic cushioning rings/plates at both ends

Piston ∅ [mm]	Stroke [mm]	I – Piston rod with female thread		A – Piston rod with male thread	
		Part no.	Type	Part no.	Type
25	**Without position sensing**				
	5	★ 8076343	ADN-S-25-5-I-P	8092103	ADN-S-25-5-A-P
	10	★ 8076361	ADN-S-25-10-I-P	8092102	ADN-S-25-10-A-P
	15	★ 8076359	ADN-S-25-15-I-P	8092107	ADN-S-25-15-A-P
	20	★ 8076357	ADN-S-25-20-I-P	8092091	ADN-S-25-20-A-P
	25	★ 8076355	ADN-S-25-25-I-P	8092092	ADN-S-25-25-A-P
	30	★ 8076353	ADN-S-25-30-I-P	8092099	ADN-S-25-30-A-P
	35	★ 8076351	ADN-S-25-35-I-P	8092097	ADN-S-25-35-A-P
	40	★ 8076349	ADN-S-25-40-I-P	8092094	ADN-S-25-40-A-P
	45	★ 8076347	ADN-S-25-45-I-P	8092106	ADN-S-25-45-A-P
	50	★ 8076345	ADN-S-25-50-I-P	8092105	ADN-S-25-50-A-P
	With position sensing				
	5	8076342	ADN-S-25-5-I-P-A	8092104	ADN-S-25-5-A-P-A
		8142806	ADN-S-25-5-I-P-A-F1A[1)]	8142826	ADN-S-25-5-A-P-A-F1A[1)]
	10	8076360	ADN-S-25-10-I-P-A	8092093	ADN-S-25-10-A-P-A
		8142807	ADN-S-25-10-I-P-A-F1A[1)]	8142827	ADN-S-25-10-A-P-A-F1A[1)]
	15	8076358	ADN-S-25-15-I-P-A	8092096	ADN-S-25-15-A-P-A
		8142808	ADN-S-25-15-I-P-A-F1A[1)]	8142828	ADN-S-25-15-A-P-A-F1A[1)]
	20	8076356	ADN-S-25-20-I-P-A	8092109	ADN-S-25-20-A-P-A
		8142809	ADN-S-25-20-I-P-A-F1A[1)]	8142829	ADN-S-25-20-A-P-A-F1A[1)]
	25	8076354	ADN-S-25-25-I-P-A	8092100	ADN-S-25-25-A-P-A
		8142810	ADN-S-25-25-I-P-A-F1A[1)]	8142830	ADN-S-25-25-A-P-A-F1A[1)]
	30	8076352	ADN-S-25-30-I-P-A	8092098	ADN-S-25-30-A-P-A
		8142811	ADN-S-25-30-I-P-A-F1A[1)]	8142831	ADN-S-25-30-A-P-A-F1A[1)]
	35	8076350	ADN-S-25-35-I-P-A	8092108	ADN-S-25-35-A-P-A
		8142812	ADN-S-25-35-I-P-A-F1A[1)]	8142832	ADN-S-25-35-A-P-A-F1A[1)]
	40	8076348	ADN-S-25-40-I-P-A	8092095	ADN-S-25-40-A-P-A
		8142813	ADN-S-25-40-I-P-A-F1A[1)]	8142833	ADN-S-25-40-A-P-A-F1A[1)]
	45	8076346	ADN-S-25-45-I-P-A	8092110	ADN-S-25-45-A-P-A
		8142814	ADN-S-25-45-I-P-A-F1A[1)]	8142834	ADN-S-25-45-A-P-A-F1A[1)]
	50	8076344	ADN-S-25-50-I-P-A	8092101	ADN-S-25-50-A-P-A
		8142815	ADN-S-25-50-I-P-A-F1A[1)]	8142835	ADN-S-25-50-A-P-A-F1A[1)]

1) Recommended for production facilities for the manufacture of Li-ion batteries.

Ordering data

With elastic cushioning rings/plates at both ends

Piston ∅ [mm]	Stroke [mm]	I – Piston rod with female thread		A – Piston rod with male thread	
		Part no.	Type	Part no.	Type
32	**Without position sensing**				
	5	★8076364	ADN-S-32-5-I-P	8091452	ADN-S-32-5-A-P
	10	★8076382	ADN-S-32-10-I-P	8091461	ADN-S-32-10-A-P
	15	★807 6380	ADN-S-32-15-I-P	8091460	ADN-S-32-15-A-P
	20	★8076378	ADN-S-32-20-I-P	8091453	ADN-S-32-20-A-P
	25	★8076376	ADN-S-32-25-I-P	8091467	ADN-S-32-25-A-P
	30	★8076374	ADN-S-32-30-I-P	8091465	ADN-S-32-30-A-P
	35	★8076372	ADN-S-32-35-I-P	8091456	ADN-S-32-35-A-P
	40	★8076370	ADN-S-32-40-I-P	8091450	ADN-S-32-40-A-P
	45	★8076368	ADN-S-32-45-I-P	8091451	ADN-S-32-45-A-P
	50	★8076366	ADN-S-32-50-I-P	8091462	ADN-S-32-50-A-P
	With position sensing				
	5	8076363	ADN-S-32-5-I-P-A	8091464	ADN-S-32-5-A-P-A
		8142846	ADN-S-32-5-I-P-A-F1A[1)]	8142866	ADN-S-32-5-A-P-A-F1A[1)]
	10	8076381	ADN-S-32-10-I-P-A	8091457	ADN-S-32-10-A-P-A
		8142847	ADN-S-32-10-I-P-A-F1A[1)]	8142867	ADN-S-32-10-A-P-A-F1A[1)]
	15	8076379	ADN-S-32-15-I-P-A	8091469	ADN-S-32-15-A-P-A
		8142848	ADN-S-32-15-I-P-A-F1A[1)]	8142868	ADN-S-32-15-A-P-A-F1A[1)]
	20	8076377	ADN-S-32-20-I-P-A	8091468	ADN-S-32-20-A-P-A
		8142849	ADN-S-32-20-I-P-A-F1A[1)]	8142869	ADN-S-32-20-A-P-A-F1A[1)]
	25	8076375	ADN-S-32-25-I-P-A	8091459	ADN-S-32-25-A-P-A
		8142850	ADN-S-32-25-I-P-A-F1A[1)]	8142870	ADN-S-32-25-A-P-A-F1A[1)]
	30	8076373	ADN-S-32-30-I-P-A	8091454	ADN-S-32-30-A-P-A
		8142851	ADN-S-32-30-I-P-A-F1A[1)]	8142871	ADN-S-32-30-A-P-A-F1A[1)]
	35	8076371	ADN-S-32-35-I-P-A	8091463	ADN-S-32-35-A-P-A
		8142852	ADN-S-32-35-I-P-A-F1A[1)]	8142872	ADN-S-32-35-A-P-A-F1A[1)]
	40	8076369	ADN-S-32-40-I-P-A	8091455	ADN-S-32-40-A-P-A
		8142853	ADN-S-32-40-I-P-A-F1A[1)]	8142873	ADN-S-32-40-A-P-A-F1A[1)]
	45	8076367	ADN-S-32-45-I-P-A	8091466	ADN-S-32-45-A-P-A
		8142854	ADN-S-32-45-I-P-A-F1A[1)]	8142874	ADN-S-32-45-A-P-A-F1A[1)]
	50	8076365	ADN-S-32-50-I-P-A	8091458	ADN-S-32-50-A-P-A
		8142855	ADN-S-32-50-I-P-A-F1A[1)]	8142875	ADN-S-32-50-A-P-A-F1A[1)]
40	**With position sensing**				
	5	5138606	ADN-S-40-5-I-P-A	8092050	ADN-S-40-5-A-P-A
		8142876	ADN-S-40-5-I-P-A-F1A[1)]	8142886	ADN-S-40-5-A-P-A-F1A[1)]
	10	5138607	ADN-S-40-10-I-P-A	8092067	ADN-S-40-10-A-P-A
		8142877	ADN-S-40-10-I-P-A-F1A[1)]	8142887	ADN-S-40-10-A-P-A-F1A[1)]
	15	5138608	ADN-S-40-15-I-P-A	8092053	ADN-S-40-15-A-P-A
		8142878	ADN-S-40-15-I-P-A-F1A[1)]	8142888	ADN-S-40-15-A-P-A-F1A[1)]
	20	5138609	ADN-S-40-20-I-P-A	8092064	ADN-S-40-20-A-P-A
		8142879	ADN-S-40-20-I-P-A-F1A[1)]	8142889	ADN-S-40-20-A-P-A-F1A[1)]
	25	5138610	ADN-S-40-25-I-P-A	8092056	ADN-S-40-25-A-P-A
		8142880	ADN-S-40-25-I-P-A-F1A[1)]	8142890	ADN-S-40-25-A-P-A-F1A[1)]
	30	5138611	ADN-S-40-30-I-P-A	8092061	ADN-S-40-30-A-P-A
		8142881	ADN-S-40-30-I-P-A-F1A[1)]	8142891	ADN-S-40-30-A-P-A-F1A[1)]
	35	5138612	ADN-S-40-35-I-P-A	8092051	ADN-S-40-35-A-P-A
		8142882	ADN-S-40-35-I-P-A-F1A[1)]	8142892	ADN-S-40-35-A-P-A-F1A[1)]
	40	5138613	ADN-S-40-40-I-P-A	8092059	ADN-S-40-40-A-P-A
		8142883	ADN-S-40-40-I-P-A-F1A[1)]	8142893	ADN-S-40-40-A-P-A-F1A[1)]
	45	5138614	ADN-S-40-45-I-P-A	8092065	ADN-S-40-45-A-P-A
		8142884	ADN-S-40-45-I-P-A-F1A[1)]	8142894	ADN-S-40-45-A-P-A-F1A[1)]
	50	5138615	ADN-S-40-50-I-P-A	8092054	ADN-S-40-50-A-P-A
		8142885	ADN-S-40-50-I-P-A-F1A[1)]	8142895	ADN-S-40-50-A-P-A-F1A[1)]

1) Recommended for production facilities for the manufacture of Li-ion batteries.

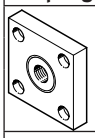
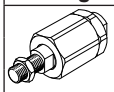
Ordering data

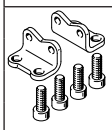
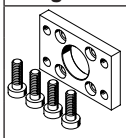
With elastic cushioning rings/plates at both ends

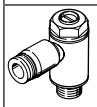
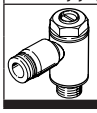
Piston ∅ [mm]	Stroke [mm]	I – Piston rod with female thread		A – Piston rod with male thread	
		Part no.	Type	Part no.	Type
50	**With position sensing**				
	5	5138188	ADN-S-50-5-I-P-A	8092081	ADN-S-50-5-A-P-A
		8142897	ADN-S-50-5-I-P-A-F1A[1]	8142907	ADN-S-50-5-A-P-A-F1A[1]
	10	5138189	ADN-S-50-10-I-P-A	8092073	ADN-S-50-10-A-P-A
		8142898	ADN-S-50-10-I-P-A-F1A[1]	8142908	ADN-S-50-10-A-P-A-F1A[1]
	15	5138190	ADN-S-50-15-I-P-A	8092085	ADN-S-50-15-A-P-A
		8142899	ADN-S-50-15-I-P-A-F1A[1]	8142909	ADN-S-50-15-A-P-A-F1A[1]
	20	5138191	ADN-S-50-20-I-P-A	8092076	ADN-S-50-20-A-P-A
		8142900	ADN-S-50-20-I-P-A-F1A[1]	8142910	ADN-S-50-20-A-P-A-F1A[1]
	25	5138192	ADN-S-50-25-I-P-A	8092075	ADN-S-50-25-A-P-A
		8142901	ADN-S-50-25-I-P-A-F1A[1]	8142911	ADN-S-50-25-A-P-A-F1A[1]
	30	5138193	ADN-S-50-30-I-P-A	8092074	ADN-S-50-30-A-P-A
		8142902	ADN-S-50-30-I-P-A-F1A[1]	8142912	ADN-S-50-30-A-P-A-F1A[1]
	35	5138194	ADN-S-50-35-I-P-A	8092071	ADN-S-50-35-A-P-A
		8142903	ADN-S-50-35-I-P-A-F1A[1]	8142913	ADN-S-50-35-A-P-A-F1A[1]
	40	5138195	ADN-S-50-40-I-P-A	8092087	ADN-S-50-40-A-P-A
		8142904	ADN-S-50-40-I-P-A-F1A[1]	8142914	ADN-S-50-40-A-P-A-F1A[1]
	45	5138196	ADN-S-50-45-I-P-A	8092079	ADN-S-50-45-A-P-A
		8142905	ADN-S-50-45-I-P-A-F1A[1]	8142915	ADN-S-50-45-A-P-A-F1A[1]
	50	5138197	ADN-S-50-50-I-P-A	8092086	ADN-S-50-50-A-P-A
		8142906	ADN-S-50-50-I-P-A-F1A[1]	8142916	ADN-S-50-50-A-P-A-F1A[1]
63	**With position sensing**				
	5	5132663	ADN-S-63-5-I-P-A	8092130	ADN-S-63-5-A-P-A
		8142917	ADN-S-63-5-I-P-A-F1A[1]	8142927	ADN-S-63-5-A-P-A-F1A[1]
	10	5132664	ADN-S-63-10-I-P-A	8092128	ADN-S-63-10-A-P-A
		8142918	ADN-S-63-10-I-P-A-F1A[1]	8142928	ADN-S-63-10-A-P-A-F1A[1]
	15	5132665	ADN-S-63-15-I-P-A	8092135	ADN-S-63-15-A-P-A
		8142919	ADN-S-63-15-I-P-A-F1A[1]	8142929	ADN-S-63-15-A-P-A-F1A[1]
	20	5132666	ADN-S-63-20-I-P-A	8092120	ADN-S-63-20-A-P-A
		8142920	ADN-S-63-20-I-P-A-F1A[1]	8142930	ADN-S-63-20-A-P-A-F1A[1]
	25	5132667	ADN-S-63-25-I-P-A	8092121	ADN-S-63-25-A-P-A
		8142921	ADN-S-63-25-I-P-A-F1A[1]	8142931	ADN-S-63-25-A-P-A-F1A[1]
	30	5132668	ADN-S-63-30-I-P-A	8092125	ADN-S-63-30-A-P-A
		8142922	ADN-S-63-30-I-P-A-F1A[1]	8142932	ADN-S-63-30-A-P-A-F1A[1]
	35	5132669	ADN-S-63-35-I-P-A	8092133	ADN-S-63-35-A-P-A
		8142923	ADN-S-63-35-I-P-A-F1A[1]	8142933	ADN-S-63-35-A-P-A-F1A[1]
	40	5132670	ADN-S-63-40-I-P-A	8092134	ADN-S-63-40-A-P-A
		8142924	ADN-S-63-40-I-P-A-F1A[1]	8142934	ADN-S-63-40-A-P-A-F1A[1]
	45	5132671	ADN-S-63-45-I-P-A	8092138	ADN-S-63-45-A-P-A
		8142925	ADN-S-63-45-I-P-A-F1A[1]	8142935	ADN-S-63-45-A-P-A-F1A[1]
	50	5132672	ADN-S-63-50-I-P-A	8092119	ADN-S-63-50-A-P-A
		8142926	ADN-S-63-50-I-P-A-F1A[1]	8142936	ADN-S-63-50-A-P-A-F1A[1]

1) Recommended for production facilities for the manufacture of Li-ion batteries.

Accessories – Ordering data

	For ∅	Part No.	Type
Coupling piece			
	32, 40	32963	KSG-M10x1,25
	50, 63	32964	KSG-M12x1,25
Self-aligning rod coupler			
	16	★2061	FK-M6
	20, 25	★2062	FK-M8
	32, 40	★6140	FK-M10x1,25
	50, 63	★6141	FK-M12x1,25

	For ∅	Part No.	Type
Foot mounting			
	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
Flange mounting			
	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

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1] for exhaust air flow control					
	12, 16	M5	3	★193137	GRLA-M5-QS-3-D
	20, 25	G1/8	4	★193143	GRLA-1/8-QS-4-D
	32, 40, 50	G1/8	6	★193144	GRLA-1/8-QS-6-D
	63	G3/8	8	★193150	GRLA-1/8-QS-8-D
For supply air flow control					
	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	6	★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.

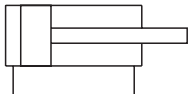
	Description	Part No.	Type
9	**Slot cover**		
		151681	ABP-5-S

Compact cylinders ADN-S

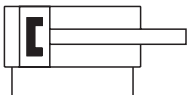
Data sheet

Function

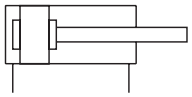
ADN-S



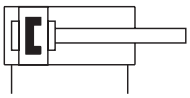
ADN-S-...-A



ADN-S-...-P



ADN-S-...-P-A



Diameter
6 ... 63 mm

Stroke length
5 ... 50 mm

General technical data

Piston ∅		6	10	12	16	20	25	32	40	50	63
Design		Piston									
		Piston rod									
Mode of operation		Double-acting									
Piston rod end		Male thread									
		Female thread									
Pneumatic connection		M3		M5						G1/8	
Stroke	[mm]	5, 10		5, 10, 15, 20, 25, 30, 35		5, 10, 15, 20, 25, 30, 35, 40, 45, 50					
Cushioning		–		Elastic cushioning rings/plates at both ends							
Position sensing		Via proximity sensor									
Type of mounting		Via through-hole									
		–		Via female thread							
		–		Via accessories							
Mounting position		Optional									

Operating and environmental conditions

Piston ∅		6	10	12	16	20	25	32	40	50	63
Operating pressure[1]	[bar]	1.5 ... 8	1 ... 8	1 ... 10		0.6 ... 10				0.4 ... 10	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]									
Note on the operating medium		Lubricated operation possible (in which case lubricated operation will always be required)									
Ambient temperature[2]	[°C]	–10 ... +60		0 ... +60							
Corrosion resistance class CRC[3]		2									

1) The minimum pressure values in the retracting direction may be slightly higher after an extended idle time.
2) Note operating range of proximity sensors.
3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

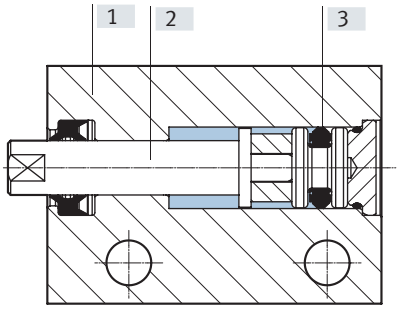
Forces [N] and impact energy [J]

Piston ∅	6	10	12	16	20	25	32	40	50	63
Theoretical force at 6 bar, advancing	17	47	68	121	188	295	483	754	1178	1870
Theoretical force at 6 bar, retracting	9.4	30.2	51	90	141	247	415	686	1057	1750
Impact energy in the end positions										
ADN-S	0.006	0.012	0.06	0.1	0.14	0.18	0.26	–		
ADN-S-...-A	0.006	0.012	0.07	0.15	0.2	0.3	0.4	0.7	1	1.3

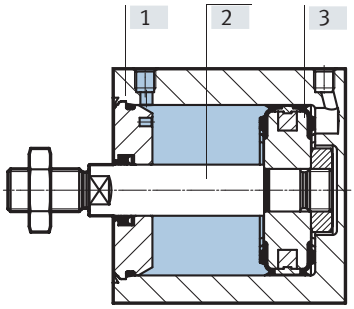
Data sheet

Materials

ø 6 ... 10



ø 12 ... 63

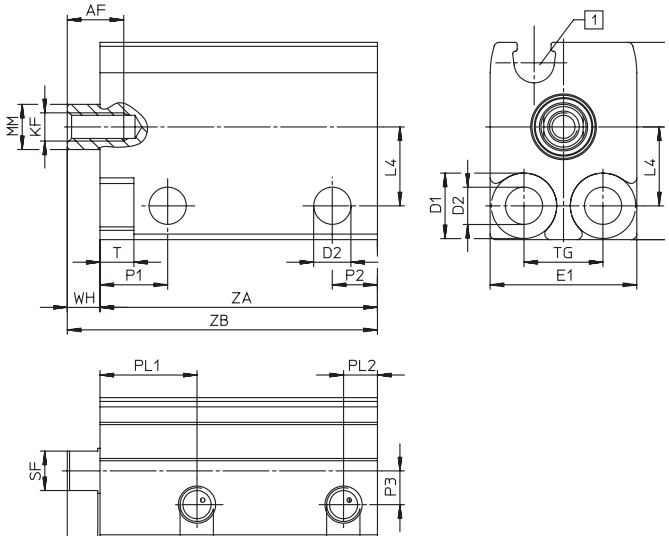


Compact cylinder		
[1]	Housing	Anodised wrought aluminium alloy
[2]	Piston rod	High-alloy stainless steel
[3]	Seals	NBR, TPE-U(PU)
–	Note on materials	RoHS-compliant
	ADN-S-...-F1A	Cylinders free of copper, zinc and nickel (≤ 1%)

Dimensions

ø 6 ... 10

With female thread



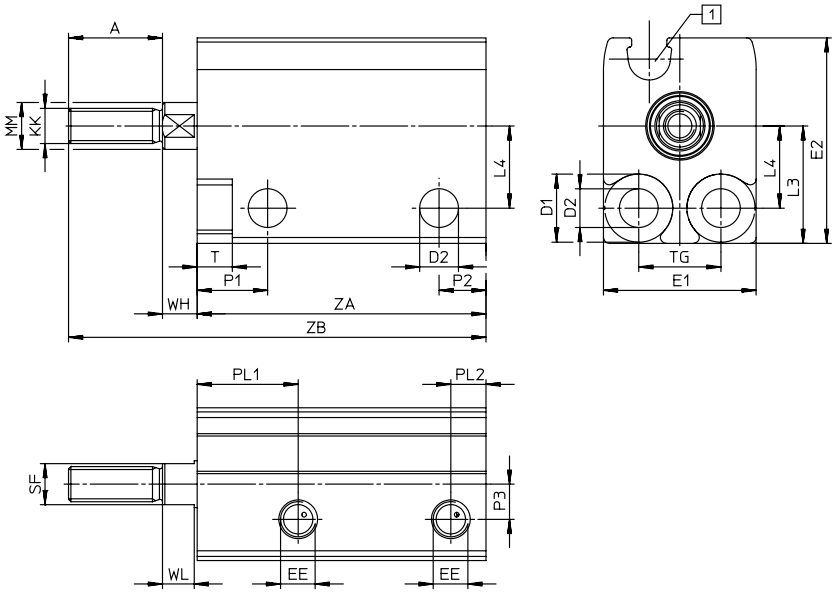
[1] C-slot for proximity sensor

∅ [mm]	AF min.	D1 ∅ H13	D2 ∅	EE	E1 max.	E2 max.	KF	L3	L4	MM ø	P1	P2	P3	PL2	SF	T	TG ±0.1	WH	WL
6	5	5.8	3.3	M3	13	17.5	M2.5	10	7	4	6	4	3	3	3.5	3	7	3	2.7
10	6				13.5	20.5	M3	11	8	6			3.2		5				

∅ [mm]	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

Dimensions

ø 6 ... 10
With male thread



[1] C-slot for proximity sensor

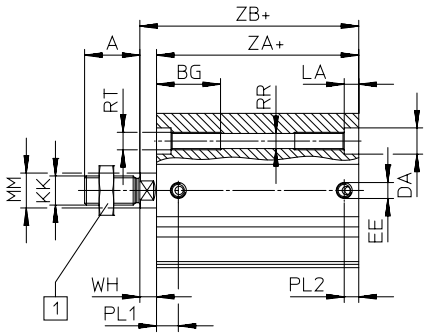
∅ [mm]	A	D1 ∅ H13	D2 ∅	EE	E1 max.	E2 max.	KK	L3	L4	MM ø
6	8	5.8	3.3	M3	13	17.5	M3	10	7	4
10	10				13.5	20.5	M4	11	8	6

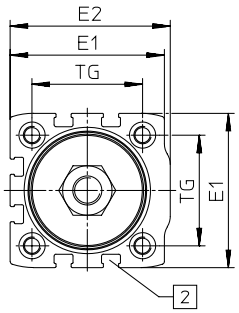
∅ [mm]	P1	P2	P3	PL2	SF	T	TG ±0.1	WH	WL
6	6	4	3	3	3.5	3	7	3	2.7
10			3.2		5				

∅ [mm]	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

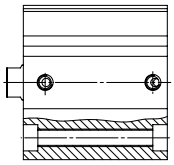
Dimensions

ø 12 ... 63

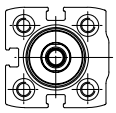




Through thread
ø 12 ... 25; ZA 0 ... 40
ø 32 ... 63; ZA 0 ... 50



ø 12 ... 25



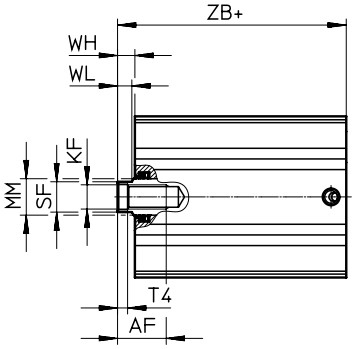
* = plus stroke length
[1] Hex nut DIN 439-B only from ø 32 upwards
[2] T-slot for proximity sensor

∅ [mm]	A -0.5	BG min.	DA ø F9	E1	E2	EE	KK	LA ±0.1	MM ø h8	PL1
12	10	19	6	$27_{+0.15}$	$27.5_{+0.15}$	M5	M5	3.5	6	5
16	12	19	6	$29_{+0.15}$	$30_{+0.15}$	M5	M6	3.5	8	6
20	16	20	7.5	$34.5_{+0.15}$	$35.5_{+0.15}$	M5	M8	5	10	6
25	16	20	7.5	$38.5_{+0.15}$	$39.5_{+0.15}$	M5	M8	5	10	5.5
32	19	22	9	$45_{+0.15}$	$47_{+0.15}$	M5	M10x1.25	5	12	6.1
40	19	22	9	$53_{+0.15}$	$55_{+0.15}$	M5	M10x1.25	5	12	7.5
50	22	23	11	$63_{+0.2}$	$66_{+0.2}$	G1/8	M12x1.25	5	16	8.2
63	22	23	11	$75_{+0.2}$	$78.5_{+0.2}$	G1/8	M12x1.25	5	16	8.5

∅ [mm]	PL2	RR ø	RT	TG	WH +1	ZA		ZB	
						+0.2	[A] +0.2	+1.2	[A] +1.2
12	5	3.5	M4	16	2.5	15.5	19.5	18	22
16	5	3.5	M4	18	3	16	20.5	19	23.5
20	5	4.2	M5	22	3	17.5	22	20.5	25
25	5	4.2	M5	26	3.5	19	23.5	22.5	27
32	5	5.2	M6	32.5	4	21.5	25	25.5	29
40	5	5.2	M6	38	5	26	29.5	31	34.5
50	7.5	6.8	M8	46.5	7	29	32	36	39
63	8	6.8	M8	56.5	7	32	35	39	42

Dimensions

ø 12 ... 63
With female thread



* = plus stroke length

∅ [mm]	AF min.	KF	MM ø h8	SF h13	T4	WH +1	WL -0.15	ZB +1.2	ZB [A] +1.2
12	8	M3	6	5	1.5	2.5	2.7	18	22
16	10	M4	8	7	1.5	3	3.5	19	23.5
20	11	M6	10	9	2.6	3	4	20.5	25
25	11	M6	10	9	2.6	3.5	4.2	22.5	27
32	12	M8	12	10	3.3	4	4.7	25.5	29
40	16	M8	12	10	3.3	5	4.7	31	34.5
50	16	M10	16	13	4.7	7	6.5	36	39
63	20	M10	16	13	4.7	7	6.5	39	42

Multimount cylinders DPDM

Highlights

+ Mounting using through-hole and female thread
+ Compact design
+ Piston rod variants
+ For position sensing

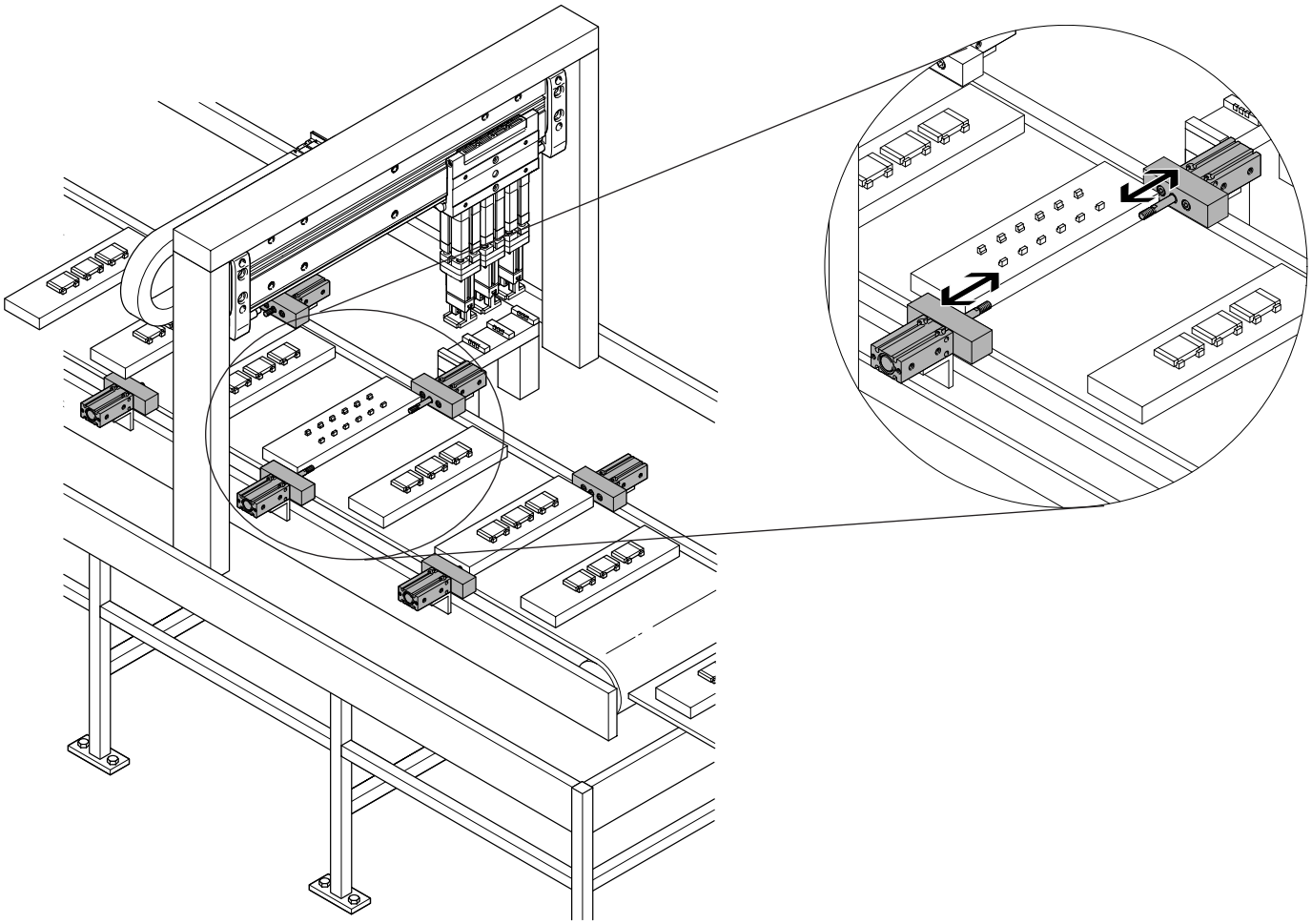
Multimount cylinders DPDM

Product range overview

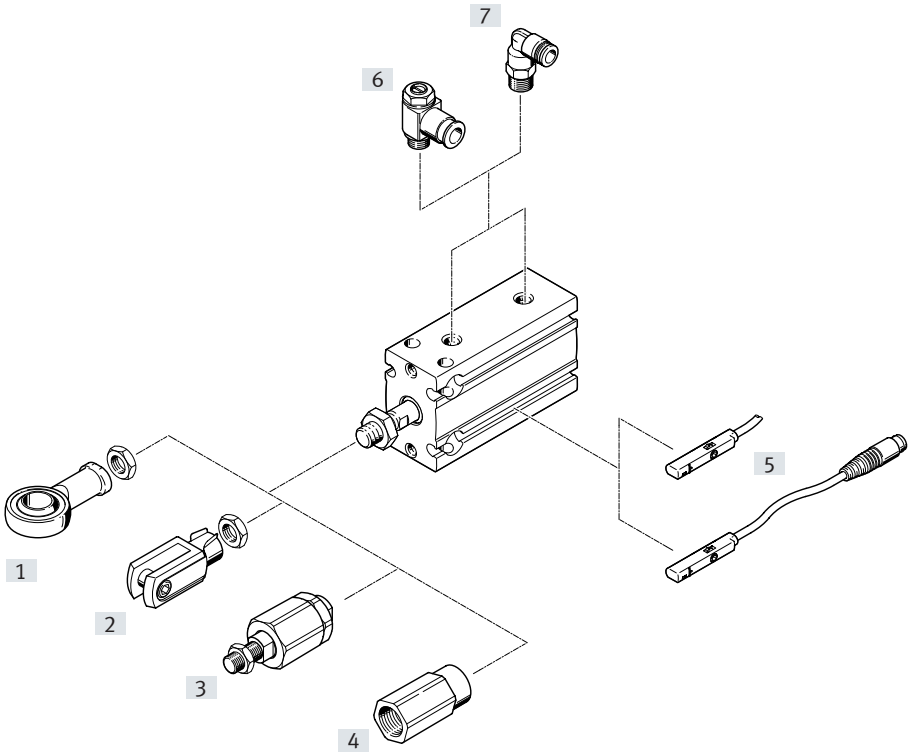
Function	Version	Type	Piston ∅ [mm]	Stroke [mm]	Temperature range 0 … +120 °C
Double-acting	Basic type				
		DPDM Piston rod at one end	6, 10	5, 10, 15, 20, 25, 30	■ From diameter 10
			16, 20, 25, 32	5, 10, 15, 20, 25, 30, 40, 50	
Single-acting	Basic type				
		DPDM-...-S Piston rod at one end, pushing	6, 10, 16, 20, 25, 32	5, 10, 15	–
		DPDM-...-P Piston rod at one end, pulling	6, 10, 16, 20, 25, 32	5, 10, 15	–

Example application

Stopping small parts



Peripherals overview



			➔ Page/Internet
[1]	Rod eye SGS	With spherical bearing	82
[2]	Rod clevis SG	Permits a swivelling movement of the cylinder in one plane	
[3]	Self-aligning rod coupler FK	For compensating radial and angular deviations	
[4]	Adapter AD	For suction cups with connection	
[5]	Proximity switch SME/SMT-8, SMT-10	Can be integrated in the cylinder profile barrel	691
[6]	One-way flow control valve GRLA/VFOH	For speed regulation	82
[7]	Push-in fitting NPQE	For connecting tubing with standard outside diameters	803

Ordering – Modular product system

		6	10	16	20	25	32	Conditi-ons	Code	Enter code
Module no.		4674228	4693549	4186566	4654766	4328892	4650681			
Function		Compact cylinder							DPDM	DPDM
Protection against rotation		None								
		With protection against rotation							-Q	
Piston diameter	[mm]	6	10	16	20	25	32		-...	
Stroke	[mm]	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30, 40, 50	5, 10, 15, 20, 25, 30, 40, 50	5, 10, 15, 20, 25, 30, 40, 50	5, 10, 15, 20, 25, 30, 40, 50		-...	
Function		Double-acting								
		Single-acting, pulling						[1]	-P	
		Single-acting, pushing						[1]	-S	
Piston rod type		At one end								
		–		Through, hollow piston rod				[2]	H	
		Through piston rod						[2]	T	
Cushioning		Elastic cushioning rings/plates at both ends							-P	-P
Position sensing		Via proximity switch							A	A

[1] P, S Only with stroke 5, 10, 15 mm
[2] H, T Not with P/S

Multimount cylinders DPDM

Ordering data

Double-acting

Piston diameter [mm]	Stroke [mm]	Without protection against rotation Part no.	Type	With protection against rotation Part no.	Type
6	5	4830900	DPDM-6-5-PA	4830961	DPDM-Q-6-5-PA
	10	4830901	DPDM-6-10-PA	4830962	DPDM-Q-6-10-PA
	15	4830902	DPDM-6-15-PA	4830963	DPDM-Q-6-15-PA
	20	4830903	DPDM-6-20-PA	4830964	DPDM-Q-6-20-PA
	25	4830904	DPDM-6-25-PA	4830965	DPDM-Q-6-25-PA
	30	4830905	DPDM-6-30-PA	4830966	DPDM-Q-6-30-PA
10	5	4831868	DPDM-10-5-PA	4832286	DPDM-Q-10-5-PA
	10	4831869	DPDM-10-10-PA	4832288	DPDM-Q-10-10-PA
	15	4831870	DPDM-10-15-PA	4832290	DPDM-Q-10-15-PA
	20	4831872	DPDM-10-20-PA	4832292	DPDM-Q-10-20-PA
	25	4831873	DPDM-10-25-PA	4832294	DPDM-Q-10-25-PA
	30	4831874	DPDM-10-30-PA	4832296	DPDM-Q-10-30-PA
16	5	4833185	DPDM-16-5-PA	4834260	DPDM-Q-16-5-PA
	10	4833186	DPDM-16-10-PA	4834261	DPDM-Q-16-10-PA
	15	4833187	DPDM-16-15-PA	4834262	DPDM-Q-16-15-PA
	20	4833188	DPDM-16-20-PA	4834263	DPDM-Q-16-20-PA
	25	4833189	DPDM-16-25-PA	4834264	DPDM-Q-16-25-PA
	30	4833190	DPDM-16-30-PA	4834265	DPDM-Q-16-30-PA
	40	4833191	DPDM-16-40-PA	4834266	DPDM-Q-16-40-PA
	40	4833192	DPDM-16-50-PA	4834267	DPDM-Q-16-50-PA
20	5	4840799	DPDM-20-5-PA	4840813	DPDM-Q-20-5-PA
	10	4840800	DPDM-20-10-PA	4840814	DPDM-Q-20-10-PA
	15	4840801	DPDM-20-15-PA	4840815	DPDM-Q-20-15-PA
	20	4840802	DPDM-20-20-PA	4840816	DPDM-Q-20-20-PA
	25	4840803	DPDM-20-25-PA	4840817	DPDM-Q-20-25-PA
	30	4840804	DPDM-20-30-PA	4840818	DPDM-Q-20-30-PA
	40	4840805	DPDM-20-40-PA	4840819	DPDM-Q-20-40-PA
	50	4840806	DPDM-20-50-PA	4840820	DPDM-Q-20-50-PA
25	5	4829570	DPDM-25-5-PA	4840824	DPDM-Q-25-5-PA
	10	4829571	DPDM-25-10-PA	4840825	DPDM-Q-25-10-PA
	15	4829572	DPDM-25-15-PA	4840826	DPDM-Q-25-15-PA
	20	4829573	DPDM-25-20-PA	4840827	DPDM-Q-25-20-PA
	25	4829574	DPDM-25-25-PA	4840828	DPDM-Q-25-25-PA
	30	4829575	DPDM-25-30-PA	4840829	DPDM-Q-25-30-PA
	40	4829576	DPDM-25-40-PA	4840830	DPDM-Q-25-40-PA
	50	4829577	DPDM-25-50-PA	4840831	DPDM-Q-25-50-PA
32	5	4828435	DPDM-32-5-PA	4828465	DPDM-Q-32-5-PA
	10	4828436	DPDM-32-10-PA	4828466	DPDM-Q-32-10-PA
	15	4828437	DPDM-32-15-PA	4828467	DPDM-Q-32-15-PA
	20	4828438	DPDM-32-20-PA	4828468	DPDM-Q-32-20-PA
	25	4828439	DPDM-32-25-PA	4828469	DPDM-Q-32-25-PA
	30	4828440	DPDM-32-30-PA	4828470	DPDM-Q-32-30-PA
	40	4828441	DPDM-32-40-PA	4828471	DPDM-Q-32-40-PA
	50	4828442	DPDM-32-50-PA	4828472	DPDM-Q-32-50-PA

Ordering data

Single-acting – Pushing

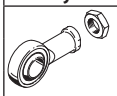
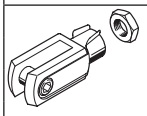
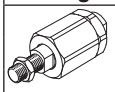
Piston diameter [mm]	Stroke [mm]	Without protection against rotation Part no.	Type	With protection against rotation Part no.	Type
6	5	4830909	DPDM-6-5-S-PA	4830970	DPDM-Q-6-5-S-PA
	10	4830910	DPDM-6-10-S-PA	4830971	DPDM-Q-6-10-S-PA
	15	4830911	DPDM-6-15-S-PA	4830972	DPDM-Q-6-15-S-PA
10	5	4832116	DPDM-10-5-S-PA	4833119	DPDM-Q-10-5-S-PA
	10	4832117	DPDM-10-10-S-PA	4833120	DPDM-Q-10-10-S-PA
	15	4832118	DPDM-10-15-S-PA	4833121	DPDM-Q-10-15-S-PA
16	5	4833272	DPDM-16-5-S-PA	4834367	DPDM-Q-16-5-S-PA
	10	4833273	DPDM-16-10-S-PA	4834368	DPDM-Q-16-10-S-PA
	15	4833274	DPDM-16-15-S-PA	4834369	DPDM-Q-16-15-S-PA
20	5	4840807	DPDM-20-5-S-PA	4840821	DPDM-Q-20-5-S-PA
	10	4840808	DPDM-20-10-S-PA	4840822	DPDM-Q-20-10-S-PA
	15	4840809	DPDM-20-15-S-PA	4840823	DPDM-Q-20-15-S-PA
25	5	4829799	DPDM-25-5-S-PA	4840835	DPDM-Q-25-5-S-PA
	10	4829800	DPDM-25-10-S-PA	4840836	DPDM-Q-25-10-S-PA
	15	4829801	DPDM-25-15-S-PA	4840837	DPDM-Q-25-15-S-PA
32	5	4828428	DPDM-32-5-S-PA	4828490	DPDM-Q-32-5-S-PA
	10	4828429	DPDM-32-10-S-PA	4828491	DPDM-Q-32-10-S-PA
	15	4828430	DPDM-32-15-S-PA	4828492	DPDM-Q-32-15-S-PA

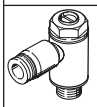
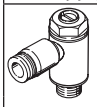
Single-acting – Pulling

Piston diameter [mm]	Stroke [mm]	Without protection against rotation Part no.	Type	With protection against rotation Part no.	Type
6	5	4830946	DPDM-6-5-P-PA	4830974	DPDM-Q-6-5-P-PA
	10	4830947	DPDM-6-10-P-PA	4830975	DPDM-Q-6-10-P-PA
	15	4830948	DPDM-6-15-P-PA	4830976	DPDM-Q-6-15-P-PA
10	5	4832170	DPDM-10-5-P-PA	4833140	DPDM-Q-10-5-P-PA
	10	4832171	DPDM-10-10-P-PA	4833141	DPDM-Q-10-10-P-PA
	15	4832172	DPDM-10-15-P-PA	4833142	DPDM-Q-10-15-P-PA
16	5	4833321	DPDM-16-5-P-PA	4834380	DPDM-Q-16-5-P-PA
	10	4833322	DPDM-16-10-P-PA	4834381	DPDM-Q-16-10-P-PA
	15	4833323	DPDM-16-15-P-PA	4834382	DPDM-Q-16-15-P-PA
20	5	4840810	DPDM-20-5-P-PA	4840832	DPDM-Q-20-5-P-PA
	10	4840811	DPDM-20-10-P-PA	4840833	DPDM-Q-20-10-P-PA
	15	4840812	DPDM-20-15-P-PA	4840834	DPDM-Q-20-15-P-PA
25	5	4829866	DPDM-25-5-P-PA	4840838	DPDM-Q-25-5-P-PA
	10	4829867	DPDM-25-10-P-PA	4840839	DPDM-Q-25-10-P-PA
	15	4829868	DPDM-25-15-P-PA	4840840	DPDM-Q-25-15-P-PA
32	5	4829129	DPDM-32-5-P-PA	4828499	DPDM-Q-32-5-P-PA
	10	4829130	DPDM-32-10-P-PA	4828500	DPDM-Q-32-10-P-PA
	15	4829131	DPDM-32-15-P-PA	4828501	DPDM-Q-32-15-P-PA

Multimount cylinders DPDM

Accessories – Ordering data

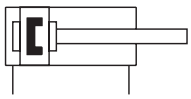
	For ∅	Part No.	Type
Rod eye			
	10	9253	SGS-M4
	16	★ 9254	SGS-M6
	20	★ 9255	SGS-M8
	25, 32	★ 9261	SGS-M10x1,25
Rod clevis			
	10	6532	SG-M4
	16	★ 3110	SG-M6
	20	★ 3111	SG-M8
	25, 32	★ 6144	SG-M10x1,25
Self-aligning rod coupler			
	10	6528	FK-M4
	16	★ 2061	FK-M6
	20	★ 2062	FK-M8
	25, 32	★ 6140	FK-M10x1,25
Adapter			
	10	–	
	16	157328	AD-M6-M5
		157329	AD-M6-1/8
		157330	AD-M6-1/4
	20	157331	AD-M8-1/8
		157332	AD-M8-1/4
	25, 32	157333	AD-M10x1,25-1/8
		157334	AD-M10x1,25-1/4

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1] for exhaust air flow control					
	6, 10, 16, 20, 25	M5	4	★ 193138	GRLA-M5-QS-4-D
	32	G1/8	4	★ 193143	GRLA-1/8-QS-4-D
		G1/8	6	★ 193144	GRLA-1/8-QS-6-D
For supply air flow control					
	6, 10, 16, 20, 25	M5	3	★ 193153	GRLZ-M5-QS-3-D
	32	G1/8	4	★ 193157	GRLZ-1/8-QS-4-D
		G1/8	6	★ 193158	GRLZ-1/8-QS-6-D

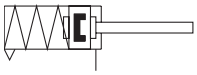
1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

Data sheet

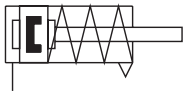
Function
DPDM



DPDM-...-P

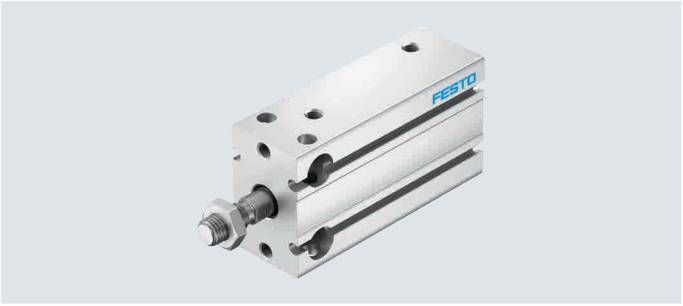


DPDM-...-S



Diameter
6 ... 32 mm

Stroke length
5 ... 50 mm



General technical data Piston diameter	6	10	16	20	25	32
Design	Piston					
	Piston rod					
	Profile barrel					
Mode of operation	Double- and single-acting					
Pneumatic connection	M5	M5	M5	M5	M5	G1/8
Piston rod thread	M3	M4	M6	M8	M10x1.25	M10x1.25
Stroke						
DPDM-...	5, 10, 15, 20, 25, 30		5, 10, 15, 20, 25, 30, 40, 50			
DPDM-...-S/-P	5, 10, 15					
Cushioning[1]	Elastic cushioning rings/plates at both ends					
Position sensing	Via proximity switch					
Type of mounting	With through-hole					
	Via female thread					

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

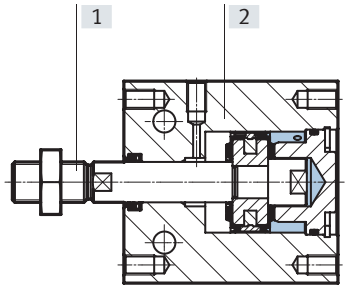
Data sheet

Operating and environmental conditions							
Piston diameter		6	10	16	20	25	32
Operating pressure							
DPDM-...	[bar]	1.8 ... 8	1.5 ... 8		1 ... 8		
DPDM-Q-...	[bar]	2 ... 8	1.5 ... 8		1 ... 8		
DPDM-...-S/-P	[bar]	2.5 ... 8	2 ... 8			1.5 ... 8	
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[1]							
DPDM-...	[°C]	–10 ... +80					
DPDM-...-T1	[°C]	–	0 ... +120				
Corrosion resistance CRC[2]		1					

1) Note operating range of proximity switches.

2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Forces [N] and impact energy [J]							
Piston diameter		6	10	16	20	25	32
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
Max. impact energy in the end positions		0.006	0.012	0.15	0.2	0.3	0.4



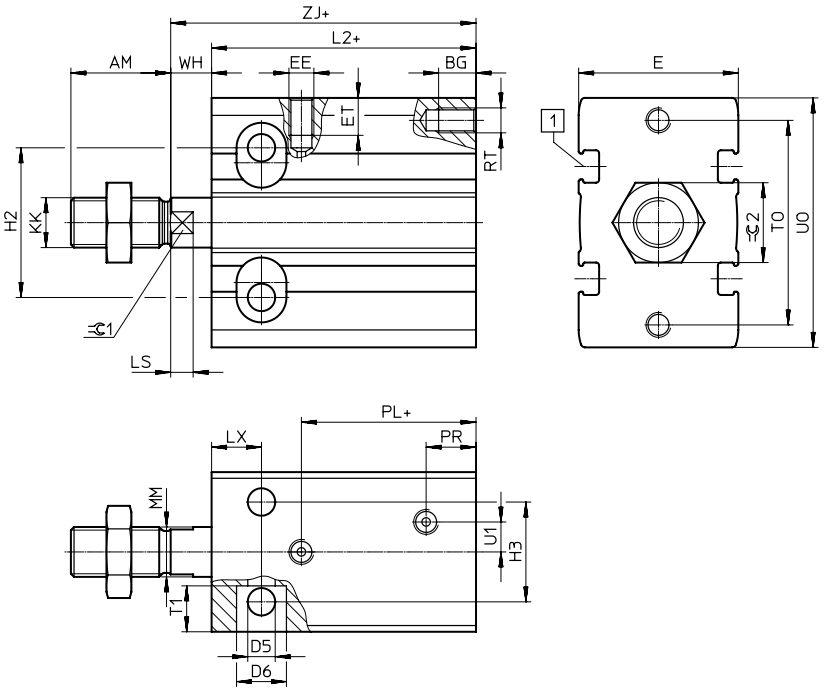
Materials

Sectional view

Compact cylinder		
[1]	Housing	Wrought aluminium alloy
[2]	Piston rod	High-alloy stainless steel
Seals		
	DPDM-...	NBR/TPE-U(PU)
	DPDM-...-T1	HNBR/FKM
–	Note on materials	RoHS-compliant

Multimount cylinders DPDM

Dimensions



[1] Sensor slot for proximity switch:
∅ 6 ... 20: SMT-10
∅ 25/32: SMT/SME-8

∅ [mm]	AM	BG	D5 ∅	D6	E +0.3	EE	ET	H2
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

∅ [mm]	H3	KK	L2	LS –0.1	LX	MM ∅	PL	PR
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

∅ [mm]	RT	T1	TO	U1	UO	WH[1)]	ZJ	=C1 h13	=C2
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

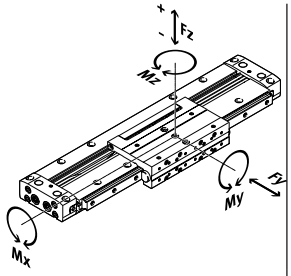
1) WH is measured when the piston rod is in the end position

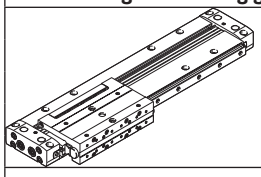
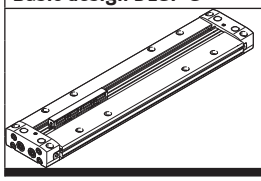
Linear drives DLGF

Highlights

+ 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

Product range overview



	Piston diameter [mm]	Theoretical force at 6 bar [N]	Guide characteristics Fy [N]	Fz+ [N]	Fz– [N]	Mx [Nm]	My [Nm]	Mz [Nm]
Recirculating ball bearing guide DLGF-KF								
	20	188	600	400	700	5.4	15	15
	25	295	1000	700	1200	12.3	30	30
	32	483	1300	950	1600	30	50	50
	40	754	1700	1150	2000	54	90	90
Basic design DLGF-G								
	20	188	–	54	98	0.6	2.2	0.7
	25	295	–	95	164	1.1	4.5	1.4
	32	483	–	138	276	1.8	7.6	2.9
	40	754	–	456	662	7.7	37.6	11.2

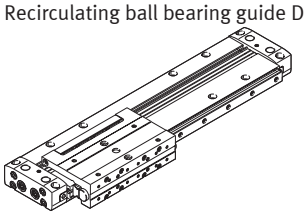
Features

At a glance

- Very flat, rodless drive
- Enabling very space-saving installation
- Three pneumatic connection options:
  - At the left
  - At the right
  - At both ends
  - Alternatively, also from below
- Two cushioning types can be selected:
  - PPS cushioning
  - External hydraulic shock absorbers
- Loads and devices can be directly mounted on the slide
- For DLGF-KF: two complete customer interfaces

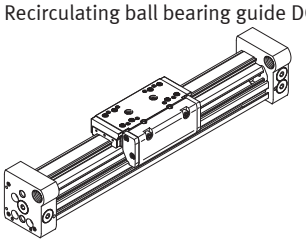
Comparison of linear drive DLGF and linear drive DGC

Recirculating ball bearing guide DLGF-KF



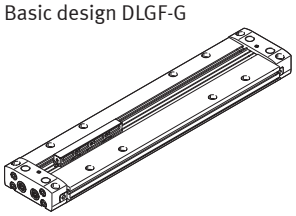
- Piston diameter 20 ... 40 mm
- Stroke lengths from 50 ... 1000 mm
- For small and medium loads
- Operating behaviour under torque load = very good
- Much smaller installation dimensions (approx. –46%)

Recirculating ball bearing guide DGC-KF



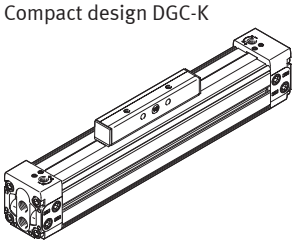
- Piston diameter 8 ... 63 mm
- Stroke lengths from 1 ... 8500 mm
- Guide backlash = 0 mm
- For medium and large loads
- Operating behaviour under torque load = very good

Basic design DLGF-G



- Piston diameter 20 ... 40 mm
- Stroke lengths from 50 ... 1000 mm
- Low moving dead weight
- Much smaller installation dimensions (approx. –42%)

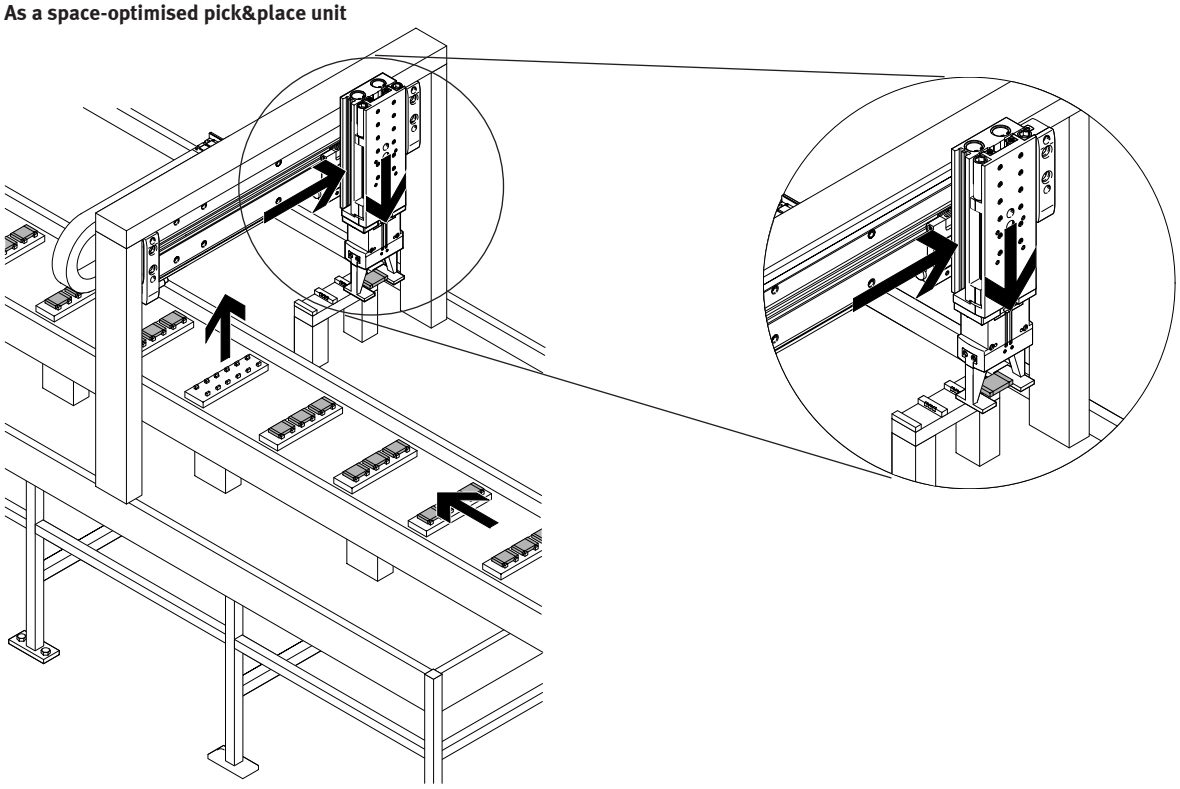
Compact design DGC-K



- Piston diameter 18 ... 80 mm
- Stroke lengths from 1 ... 8500 mm
- Low moving dead weight
- Symmetrical design

Example application

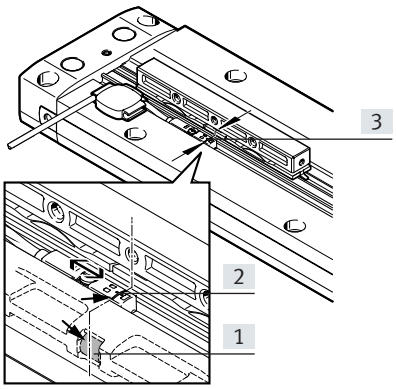
As a space-optimised pick&place unit



Sensor options

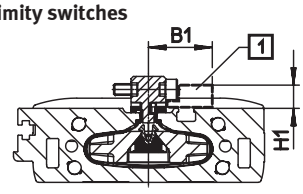
Easy preassembly of the proximity switches

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



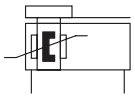
Influence of ferritic materials on proximity switches

Ferritic materials (steel parts or panels) in the immediate vicinity of the proximity switches can cause sensing malfunctions. The following safety distances must be observed. No ferritic materials should be used in the shaded area [1].



Piston diameter	B1	H1
20	22	8
25	22	8
32	27	13
40	27	13

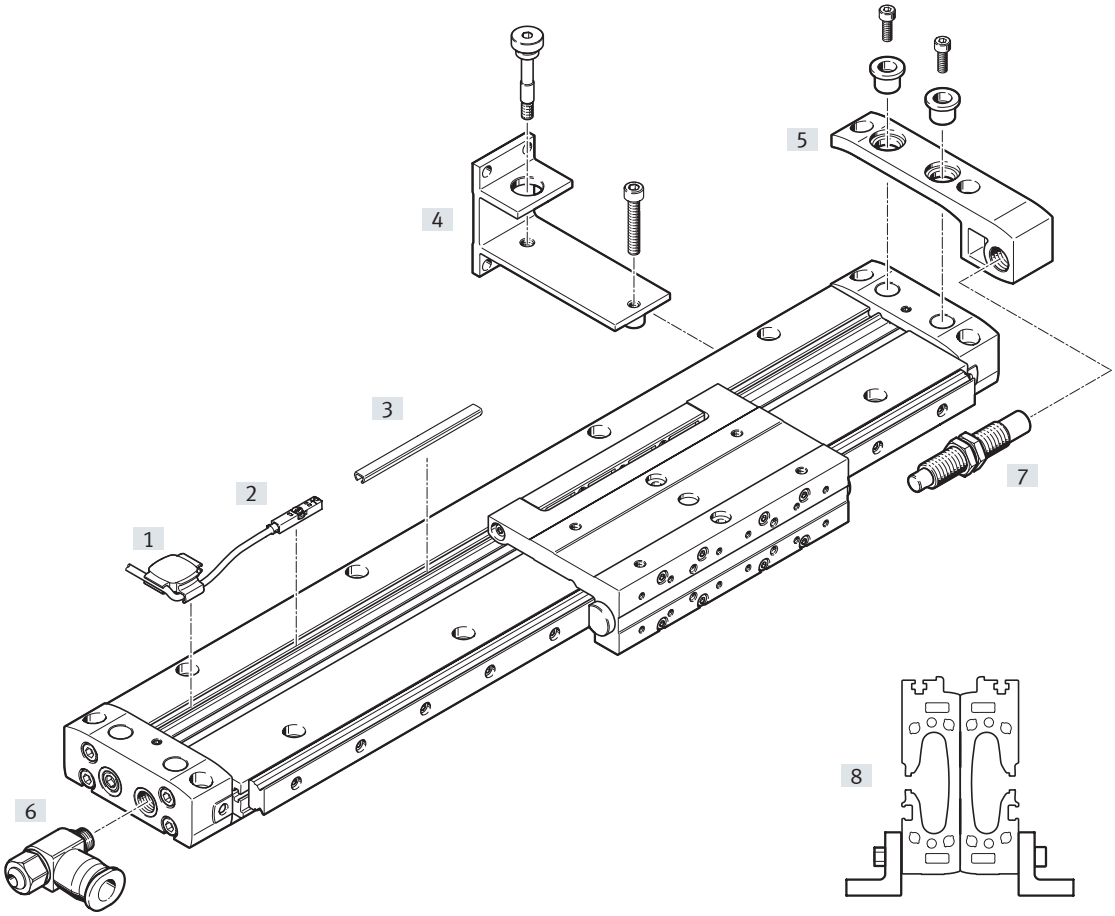
Linear drives DLGF-KF



Size
20 ... 40

Stroke length
50 ... 1000 mm

Peripherals overview



	Type/order code	Description	➔ Page/Internet
[1]	Cable holder DADG	For securing the proximity switch cable	89
[2]	Proximity switch SMT-8M	For sensing the position of the moment compensator	681
[3]	Slot cover ABP-5-S1	For protecting against contamination	89
[4]	Profile mounting DAMH-L8-P	For mounting the linear drive in a vertical position	
[5]	Shock absorber retainer DAYP-L8	For mounting the shock absorbers on the linear drive Must be ordered separately as an accessory	
[6]	One-way flow control valve GRLA	For speed regulation	
[7]	Shock absorber DYSS	Self-adjusting hydraulic shock absorber with spring return and progressive cushioning characteristics Must be ordered separately as an accessory	
[8]	Profile mounting DAMH-L8-PL	For mounting two linear drives back to back in a vertical position	

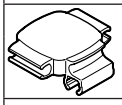
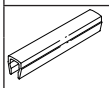
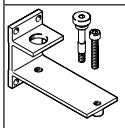
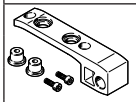
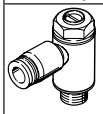
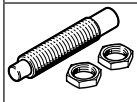
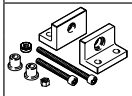
Ordering – Modular product system

	20	25	32	40	Code		Enter code
Module no.	8063799	8063800	8063801	8063802			
Function	Linear drives				DLGF		DLGF
Guide	Recirculating ball bearing guide				-KF		-KF
Piston diameter [mm]	20	25	32	40	-...		
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				-PPS		-PPS
Position sensing	For proximity switch				A		A
Profile design	With mounting holes						
	Without mounting holes				-W		

Ordering data

Piston ∅	Stroke [mm]	Part no.	Type
20	100	5074938	DLGF-KF-20-100-PPSA
	150	5074939	DLGF-KF-20-150-PPSA
	200	5074940	DLGF-KF-20-200-PPSA
	250	5074941	DLGF-KF-20-250-PPSA
	300	5074942	DLGF-KF-20-300-PPSA
	350	5074943	DLGF-KF-20-350-PPSA
	400	5074944	DLGF-KF-20-400-PPSA
	500	5074946	DLGF-KF-20-500-PPSA
	600	5074948	DLGF-KF-20-600-PPSA
25	100	5072370	DLGF-KF-25-100-PPSA
	150	5072371	DLGF-KF-25-150-PPSA
	200	5072372	DLGF-KF-25-200-PPSA
	250	5072373	DLGF-KF-25-250-PPSA
	300	5072374	DLGF-KF-25-300-PPSA
	350	5072375	DLGF-KF-25-350-PPSA
	400	5072376	DLGF-KF-25-400-PPSA
	500	5072378	DLGF-KF-25-500-PPSA
	600	5072380	DLGF-KF-25-600-PPSA
32	200	5074802	DLGF-KF-32-200-PPSA
	300	5074804	DLGF-KF-32-300-PPSA
	400	5074806	DLGF-KF-32-400-PPSA
	500	5074808	DLGF-KF-32-500-PPSA
	600	5074810	DLGF-KF-32-600-PPSA
40	200	5074756	DLGF-KF-40-200-PPSA
	300	5074758	DLGF-KF-40-300-PPSA
	400	5074760	DLGF-KF-40-400-PPSA
	500	5074762	DLGF-KF-40-500-PPSA
	600	5074764	DLGF-KF-40-600-PPSA

Accessories – Ordering data

	For ∅	Part no.	Type
Cable holder DADG			
	20 ... 40	8069000	DADG-HL-N8-P2
Slot cover ABP[1]			
	20 ... 40	563360	ABP-5-S1
Profile mounting DAMH-L8-P			
	20	8069009	DAMH-L8-20-P1
	25	8069010	DAMH-L8-25-P1
	32	8069011	DAMH-L8-32-P1
	40	8069012	DAMH-L8-40-P1
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
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-3D
		★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
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
Profile mounting DAMH-L8-PL			
	20	8069013	DAMH-L8-20-PL1
	25	8069014	DAMH-L8-25-PL1
	32	8069015	DAMH-L8-32-PL1
	40	8069016	DAMH-L8-40-PL1
Connector sleeve			
	25, 32	548005	ZBV-9-7
	40	548006	ZBV-12-9

1) Packaging unit 2x 0.5 m
2) For centring in combination with direct mounting of mini slides DGSL

Linear drives DLGF-KF

Data sheet

General technical data					
Piston diameter		20	25	32	40
Design		Rodless drive			
Moment compensator principle		Positive-locking (slot)			
Guide		Recirculating ball bearing guide			
Mode of operation		Double-acting			
Stroke					
Standard stroke	[mm]	100, 150, 200, 250, 300, 350, 400, 500, 600		200, 300, 400, 500, 600	
Modular product system[1]	[mm]	50 ... 1000			
Pneumatic connection		M5	G1/8	G1/8	G1/4
Cushioning		Pneumatic cushioning, self-adjusting at both ends			
Cushioning length	[mm]	9.6	9	11.6	12.9
Min. speed	[m/s]	0.07			
Max. speed	[m/s]	1.5			
Repetition accuracy	[mm]	±0.05			
Position sensing		For proximity switch			
Type of mounting		Direct mounting via through-hole			
		With accessories			
Mounting position		Any			

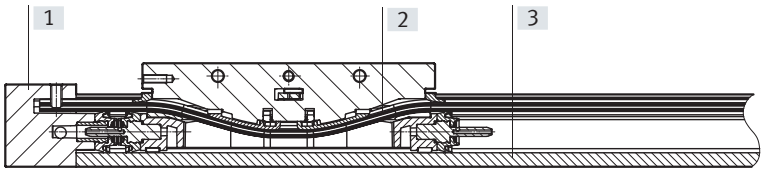
1) The drive can only be ordered in 50 mm increments.

Operating and environmental conditions					
Piston diameter		20	25	32	40
Operating pressure	[bar]	2 ... 8	1.5 ... 8		
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)			
Ambient temperature	[°C]	0 ... 60			
Corrosion resistance CRC[1]		1			

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Forces and impact energy					
Piston diameter		20	25	32	40
Theoretical force at 6 bar	[N]	188	295	483	754
Impact energy in the end positions					
DLGF-...-PPS	[J]	0.17	0.27	0.44	0.69
DLGF-... with shock absorber	[J]	2	3	6	10

Materials

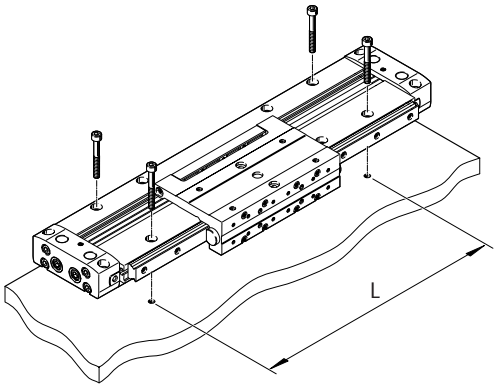


Linear drive		
[1]	Cover	Coated die-cast aluminium
[2]	Seals	NBR
		TPE-U(PU)
[3]	Housing	Anodised aluminium
	Note on materials	Free of copper and PTFE
		RoHS-compliant

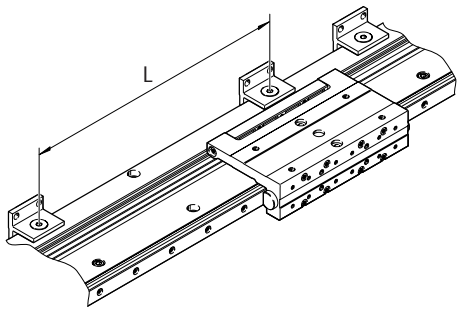
Data sheet

Direct mounting

In order to avoid strain, the drive must be mounted at varying intervals depending on the length. The maximum support spacing is 300 mm.



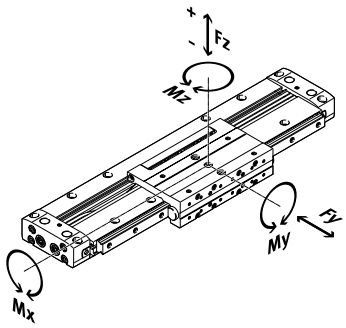
Appropriate support should therefore also be used for the variant without mounting holes (feature W).



Stroke [mm]	Number of pairs of screws DLGF-20	DLGF-25	DLGF-32	DLGF-40
50 ... 150	2	2	2	2
200	2	2	2	3
250	2	2	3	3
300	3	3	3	3
350 ... 450	3	3	3	4
500 ... 600	4	4	4	4
650 ... 750	4	4	4	5
800 ... 1000	5	5	5	5

Characteristic load values

The indicated forces and torques refer to the centre of the slide surface.
These values must not be exceeded during dynamic operation.
Special attention must be paid to the deceleration phase.



If the drive is simultaneously subjected to several of the forces and torques indicated below, the following equation must be satisfied in addition to the indicated maximum loads:

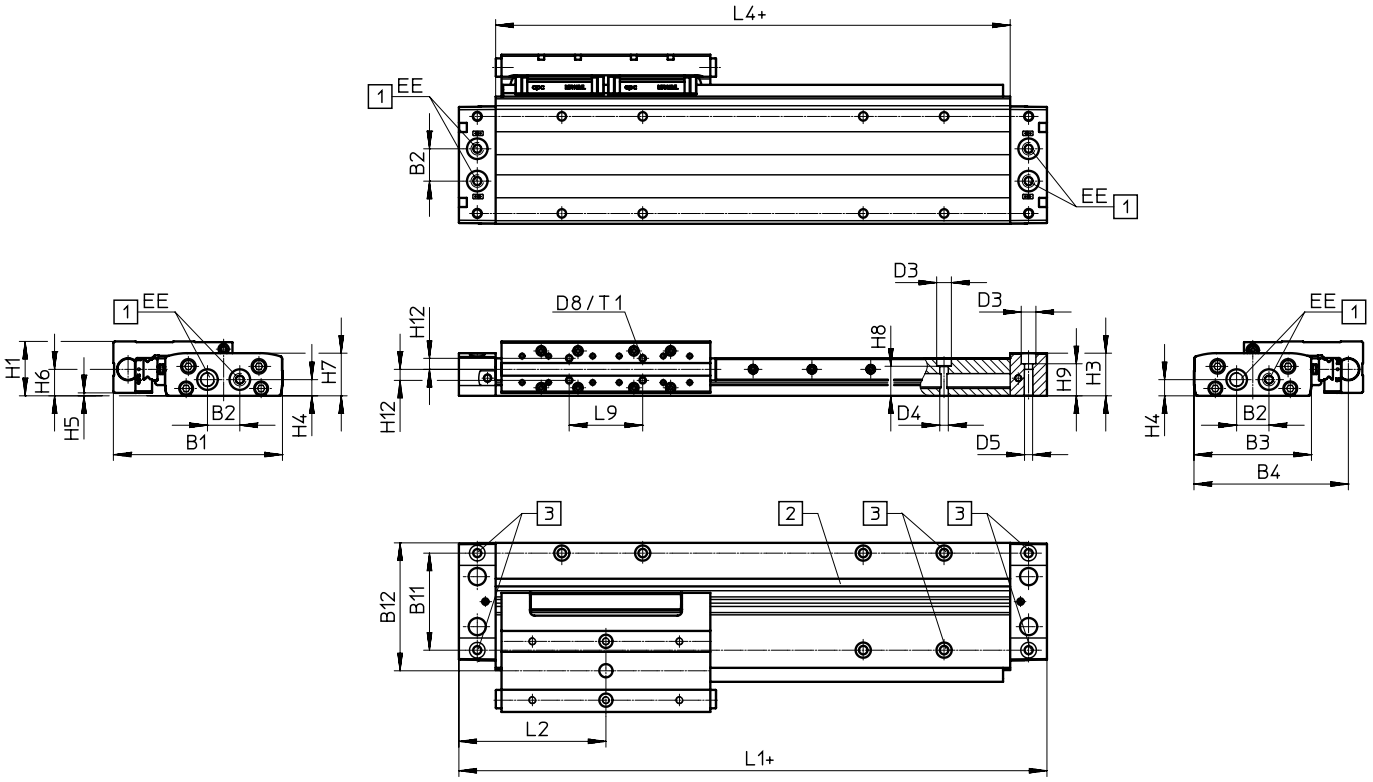
$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

F_1/M_1 = dynamic value
F_2/M_2 = maximum value

Permissible forces and torques

Piston diameter		20	25	32	40
$Fy_{max.}$	[N]	600	1000	1300	1700
$Fz_{max.}$ +	[N]	400	700	950	1150
$Fz_{max.}$ –	[N]	700	1200	1600	2000
$Mx_{max.}$	[Nm]	5.4	12.3	30	54
$My_{max.}$	[Nm]	15	30	50	90
$Mz_{max.}$	[Nm]	15	30	50	90

Dimensions



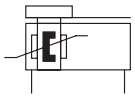
\+ = plus stroke length
[1] Supply ports
[2] Sensor slot for proximity switch
[3] Mounting holes for accessories
[4] Mounting holes

Suitable O-rings for supply ports below:
For piston diameter 20: ø 5x2
For piston diameter 25: ø 12x2
For piston diameter 32: ø 12x2
For piston diameter 40: ø 16x2

∅ [mm]	B1	B2	B3	B4	B11	B12	D3 ∅	D4 ∅
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

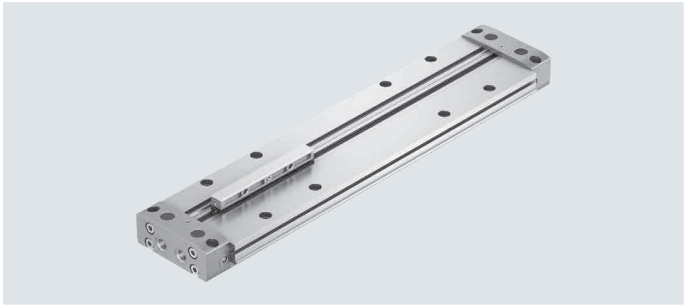
∅ [mm]	D5 ∅	D8	EE	H1	H3	H4	H5	H6	H7
20	4.5	M4	M5	32	21	9	1.5	15	24
25	5.5	M4	G1/8	37	25.5	11	2	18	29
32	6.5	M5	G1/8	45	32	14	2	19	35
40	6.6	M6	G1/4	52	39.5	19.5	3	24	42.7

∅ [mm]	H8	H9	H12	L1 ±0.35	L2	L4	L9	T1	Stroke tolerance
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	

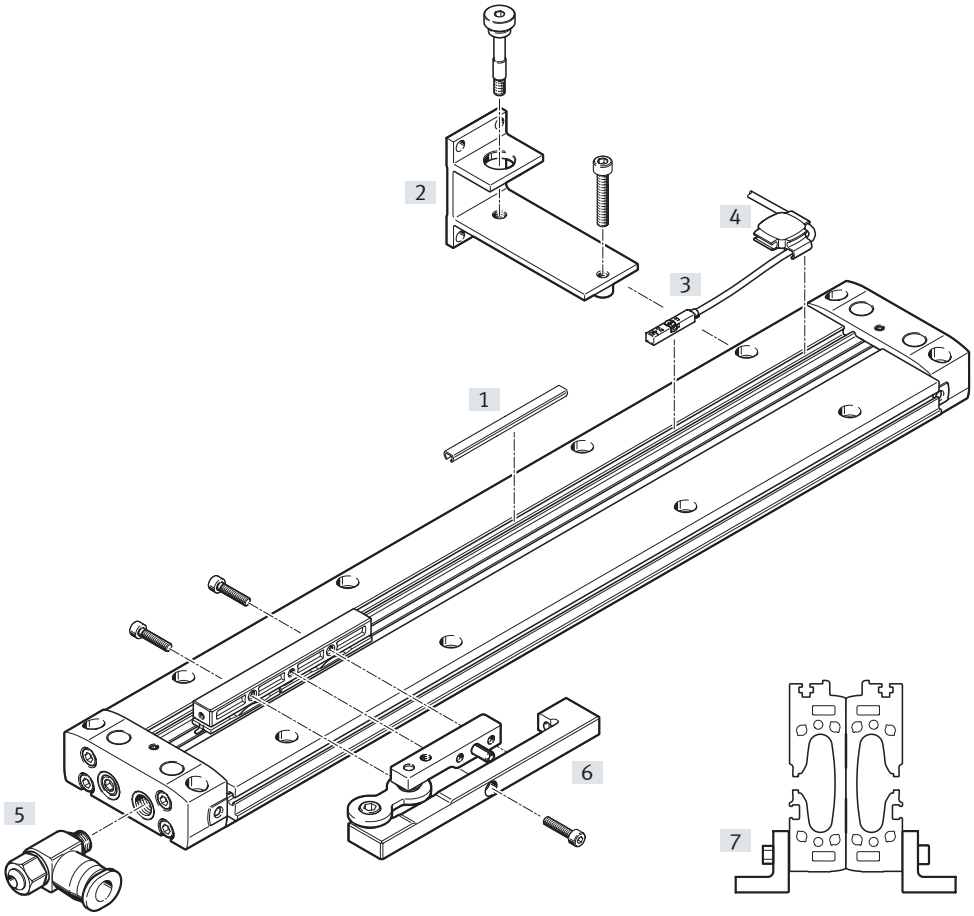


Size
20 ... 40

Stroke length
50 ... 1000 mm



Peripherals overview



	Type/order code	Description	➔ Page/Internet
[1]	Slot cover ABP-5-S1	For protecting against contamination	94
[2]	Profile mounting DAMH-L8-P	For mounting the linear drive in a vertical position	
[3]	Proximity switch SMT-8M	For sensing the position of the moment compensator	681
[4]	Cable holder DADG	For securing the proximity switch cable	94
[5]	One-way flow control valve GRLA	For speed regulation	
[6]	Moment compensator DARD-L8	For compensating misalignments when using external guides	
[7]	Profile mounting DAMH-L8-PL	For mounting two linear drives back to back in a vertical position	

Linear drives DLGF-G

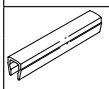
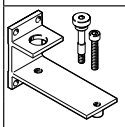
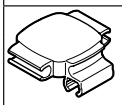
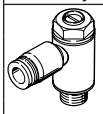
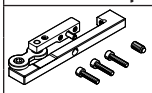
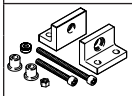
Ordering – Modular product system

	20	25	32	40	Code	Enter code
Module no.	8063799	8063800	8063801	8063802		
Function	Linear drives				DLGF	DLGF
Guide	Basic design				-G	-G
Piston diameter [mm]	20	25	32	40	-...	
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				-PPS	-PPS
Position sensing	For proximity switch				A	A
Profile design	With mounting holes					
	Without mounting holes				-W	

Ordering data

Piston ∅	Stroke [mm]	Part no.	Type
20	100	5074918	DLGF-G-20-100-PPSA
	150	5074919	DLGF-G-20-150-PPSA
	200	5074920	DLGF-G-20-200-PPSA
	250	5074921	DLGF-G-20-250-PPSA
	300	5074922	DLGF-G-20-300-PPSA
	350	5074923	DLGF-G-20-350-PPSA
	400	5074924	DLGF-G-20-400-PPSA
	500	5074926	DLGF-G-20-500-PPSA
	600	5074928	DLGF-G-20-600-PPSA
25	100	5072350	DLGF-G-25-100-PPSA
	150	5072351	DLGF-G-25-150-PPSA
	200	5072352	DLGF-G-25-200-PPSA
	250	5072353	DLGF-G-25-250-PPSA
	300	5072354	DLGF-G-25-300-PPSA
	350	5072355	DLGF-G-25-350-PPSA
	400	5072356	DLGF-G-25-400-PPSA
	500	5072358	DLGF-G-25-500-PPSA
	600	5072360	DLGF-G-25-600-PPSA
32	200	5074782	DLGF-G-32-200-PPSA
	300	5074784	DLGF-G-32-300-PPSA
	400	5074786	DLGF-G-32-400-PPSA
	500	5074788	DLGF-G-32-500-PPSA
	600	5074790	DLGF-G-32-600-PPSA
40	200	5074736	DLGF-G-40-200-PPSA
	300	5074738	DLGF-G-40-300-PPSA
	400	5074740	DLGF-G-40-400-PPSA
	500	5074742	DLGF-G-40-500-PPSA
	600	5074744	DLGF-G-40-600-PPSA

Accessories – Ordering data

	For ∅	Part no.	Type
Slot cover ABP[1]			
	20 ... 40	563360	ABP-5-S1
Profile mounting DAMH-L8-P			
	20	8069009	DAMH-L8-20-P1
	25	8069010	DAMH-L8-25-P1
	32	8069011	DAMH-L8-32-P1
	40	8069012	DAMH-L8-40-P1
Cable holder DADG			
	20 ... 40	8069000	DADG-HL-N8-P2
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-3D
		★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
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
Profile mounting DAMH-L8-PL			
	20	8069013	DAMH-L8-20-PL1
	25	8069014	DAMH-L8-25-PL1
	32	8069015	DAMH-L8-32-PL1
	40	8069016	DAMH-L8-40-PL1
Connector sleeve			
	25, 32	548005	ZBV-9-7
	40	548006	ZBV-12-9

1) Packaging unit 2x 0.5 m
2) For centring in combination with direct mounting of mini slides DGSL

Data sheet

General technical data					
Piston diameter		20	25	32	40
Design		Rodless drive			
Moment compensator principle		Positive-locking (slot)			
Guide		Basic design			
Mode of operation		Double-acting			
Stroke					
Standard stroke	[mm]	100, 150, 200, 250, 300, 350, 400, 500, 600		200, 300, 400, 500, 600	
Modular product system[1]	[mm]	50 ... 1000			
Pneumatic connection		M5	G1/8	G1/8	G1/4
Cushioning		Pneumatic cushioning, self-adjusting at both ends			
Cushioning length	[mm]	9.6	9	11.6	12.9
Min. speed	[m/s]	0.07			
Max. speed	[m/s]	1.5			
Repetition accuracy	[mm]	±0.05			
Position sensing		For proximity switch			
Type of mounting		Direct mounting via through-hole			
		With accessories			
Mounting position		Any			

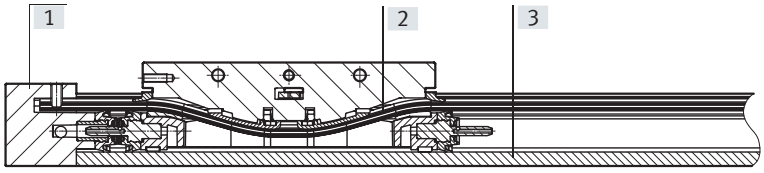
1) The drive can only be ordered in 50 mm increments.

Operating and environmental conditions					
Piston diameter		20	25	32	40
Operating pressure	[bar]	2 ... 8	1.5 ... 8		
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)			
Ambient temperature	[°C]	0 ... 60			
Corrosion resistance CRC[1]		1			

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Forces and impact energy					
Piston diameter		20	25	32	40
Theoretical force at 6 bar	[N]	188	295	483	754
Impact energy in the end positions	[J]	0.17	0.27	0.44	0.69

Materials

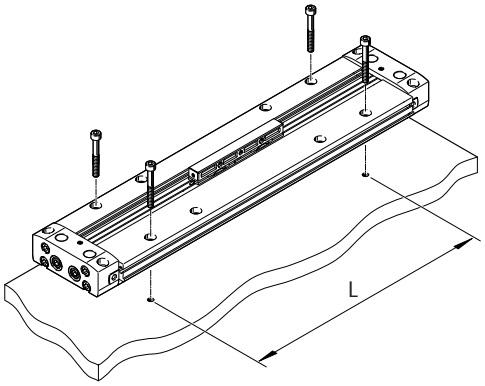


Linear drive		
[1]	Cover	Coated die-cast aluminium
[2]	Seals	NBR
		TPE-U(PU)
[3]	Housing	Anodised aluminium
	Note on materials	Free of copper and PTFE
		RoHS-compliant

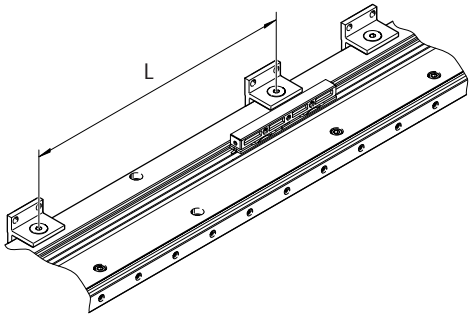
Data sheet

Direct mounting

In order to avoid strain, the drive must be mounted at varying intervals depending on the length. The maximum support spacing is 300 mm.



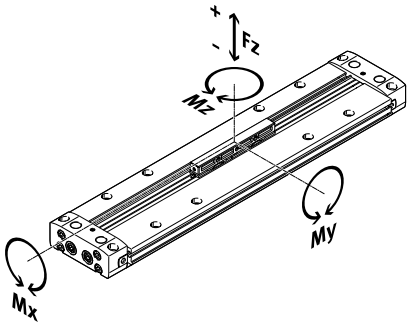
Appropriate support should therefore also be used for the variant without mounting holes (feature W).



Stroke [mm]	Number of pairs of screws			
	DLGF-20	DLGF-25	DLGF-32	DLGF-40
50 ... 150	2	2	2	2
200	2	2	2	3
250	2	2	3	3
300	3	3	3	3
350 ... 450	3	3	3	4
500 ... 600	4	4	4	4
650 ... 750	4	4	4	5
800 ... 1000	5	5	5	5

Characteristic load values

The indicated forces and torques refer to the centre of the moment compensator.
These values must not be exceeded during dynamic operation.
Special attention must be paid to the deceleration phase.



If the drive is simultaneously subjected to several of the forces and torques indicated below, the following equation must be satisfied in addition to the indicated maximum loads:

$$0{,}4 \cdot \frac{F_{z1}}{F_{z2}} + \frac{M_{x1}}{M_{x2}} + \frac{M_{y1}}{M_{y2}} + 0{,}2 \cdot \frac{M_{z1}}{M_{z2}} \leq 1$$

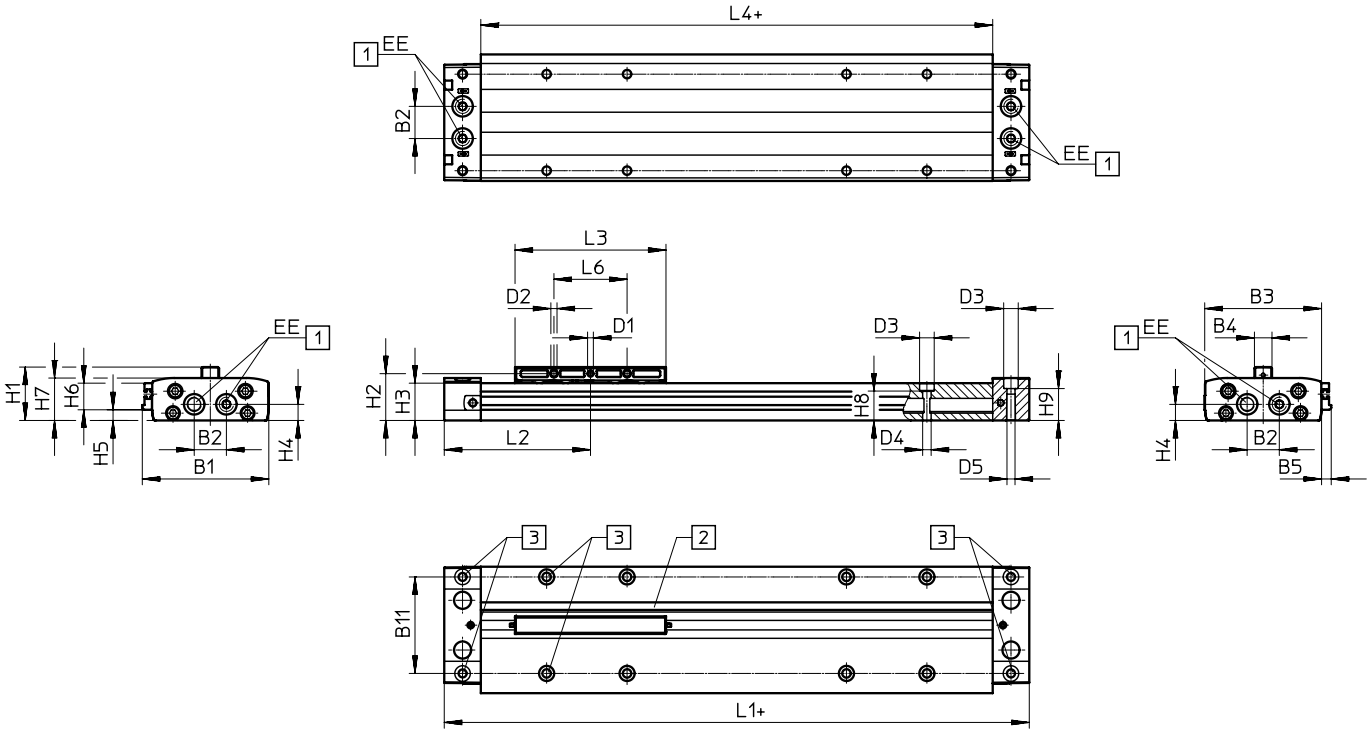
$$\frac{F_{z1}}{F_{z2}} \leq 1 \qquad \frac{M_{z1}}{M_{z2}} \leq 1$$

F_1/M_1 = dynamic value
F_2/M_2 = maximum value

Permissible forces and torques

Piston diameter		20	25	32	40
$Fz_{max.}+$	[N]	54	95	138	456
$Fz_{max.}-$	[N]	98	164	276	662
$Mx_{max.}$	[Nm]	0.6	1.1	1.8	7.7
$My_{max.}$	[Nm]	2.2	4.5	7.6	37.6
$Mz_{max.}$	[Nm]	0.7	1.4	2.9	11.2

Dimensions



\+ = plus stroke length
[1] Supply ports
[2] Sensor slot for proximity switch
[3] Mounting holes for accessories
[4] Mounting holes

Suitable O-rings for supply ports below:
For piston diameter 20: ø 5x2
For piston diameter 25: ø 12x2
For piston diameter 32: ø 12x2
For piston diameter 40: ø 16x2

∅ [mm]	B1	B2	B3	B4	B5	B11	D1	D2 ∅	D3 ∅
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

∅ [mm]	D4 ∅	D5 ∅	EE	H1	H2	H3	H4	H5	H6
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

∅ [mm]	H7	H8	H9	L1 ±0.35	L2	L3	L4	L6	Stroke tolerance
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	

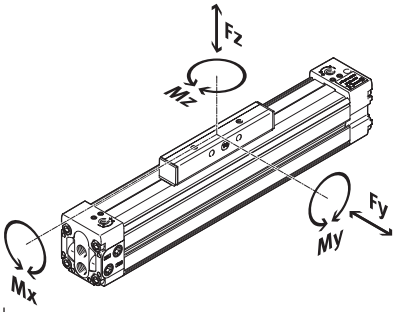
Linear drives DLGF-G

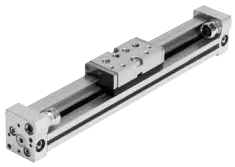
Linear drives DGC-K

Highlights

+ 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

Product range overview



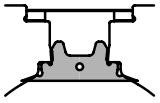
	Piston diameter [mm]	Theoretical force at 6 bar [N]	Guide characteristics Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]
Compact design DGC-K							
	18	153	–	120	0.8	11	1
	25	295	–	330	1.2	20	3
	32	483	–	480	1.9	40	5
	40	754	–	800	3.8	60	8
	50	1178	–	1200	6	120	15
	63	1870	–	1600	5.7	150	24
	80	3016	–	2500	30.6	400	100
Basic design DGC-G							
	8	30	150	150	0.5	2	2
	12	68	300	300	1.3	5	5
	18	153	70	340	1.9	12	4
	25	295	180	540	4	20	5
	32	483	250	800	9	40	12
	40	754	370	1100	12	60	25
	50	1178	480	1600	20	150	37
	63	1870	650	2000	26	150	48
Plain-bearing guide DGC-GF							
	18	153	440	540	3.4	20	8.5
	25	295	640	1300	8.5	40	20
	32	483	900	1800	15	70	33
	40	754	1380	2000	28	110	54
	50	1178	1500	2870	54	270	103
	63	1870	2300	4460	96	450	187
Recirculating ball bearing guide DGC-KF							
	8	30	300	300	1.7	4.5	4.5
	12	68	650	650	3.5	10	10
	18	153	1850	1850	16	51	51
	25	295	3050	3050	36	97	97
	32	483	3310	3310	54	150	150
	40	754	6890	6890	144	380	380
	50	1178	6890	6890	144	634	634
	63	1870	15200	15200	529	1157	1157

Features

At a glance

- Without external guide, for simple drive functions
- Compact – installation length relative to stroke
- Fully interchangeable with the linear drive DGP
- Easy assembly and installation
- Choice of:
  - Standard piston
  - Extended piston

Sealing system:



Cover strip

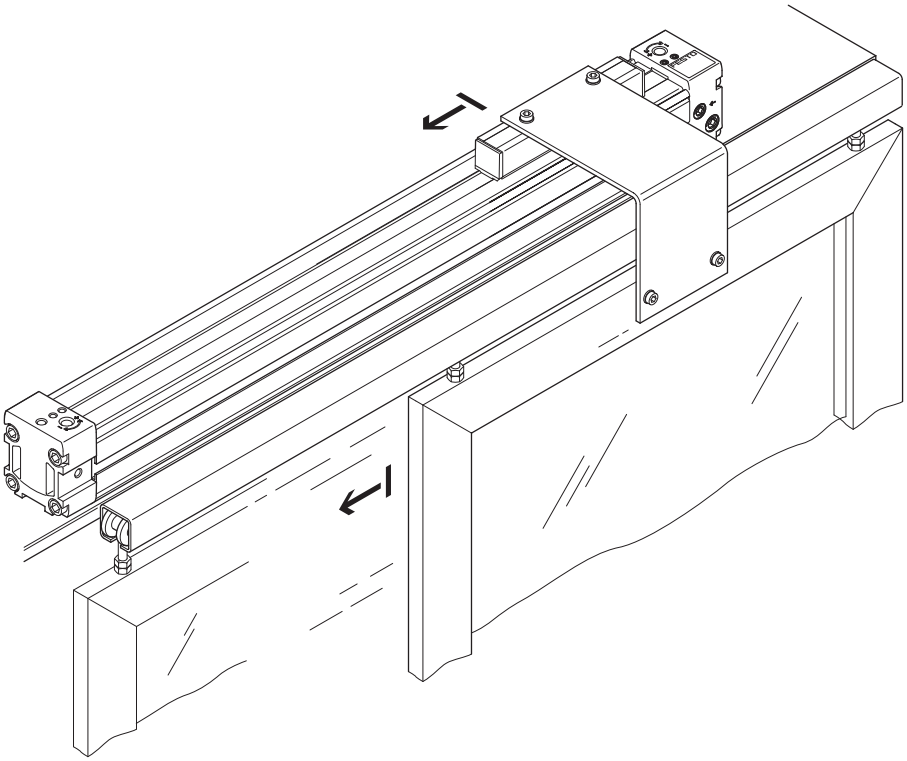
Sealing band

Advantages of the sealing system

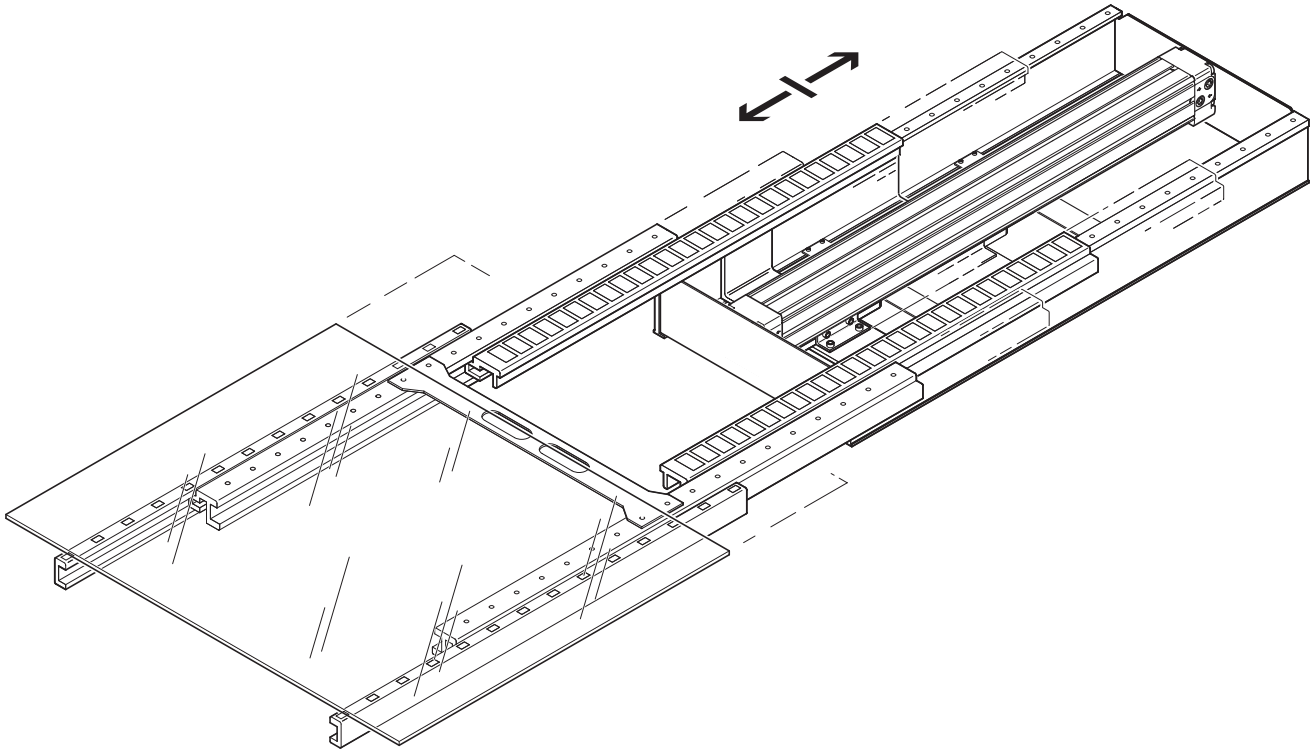
- Long strokes with no restrictions
- Virtually no leakage

Example application

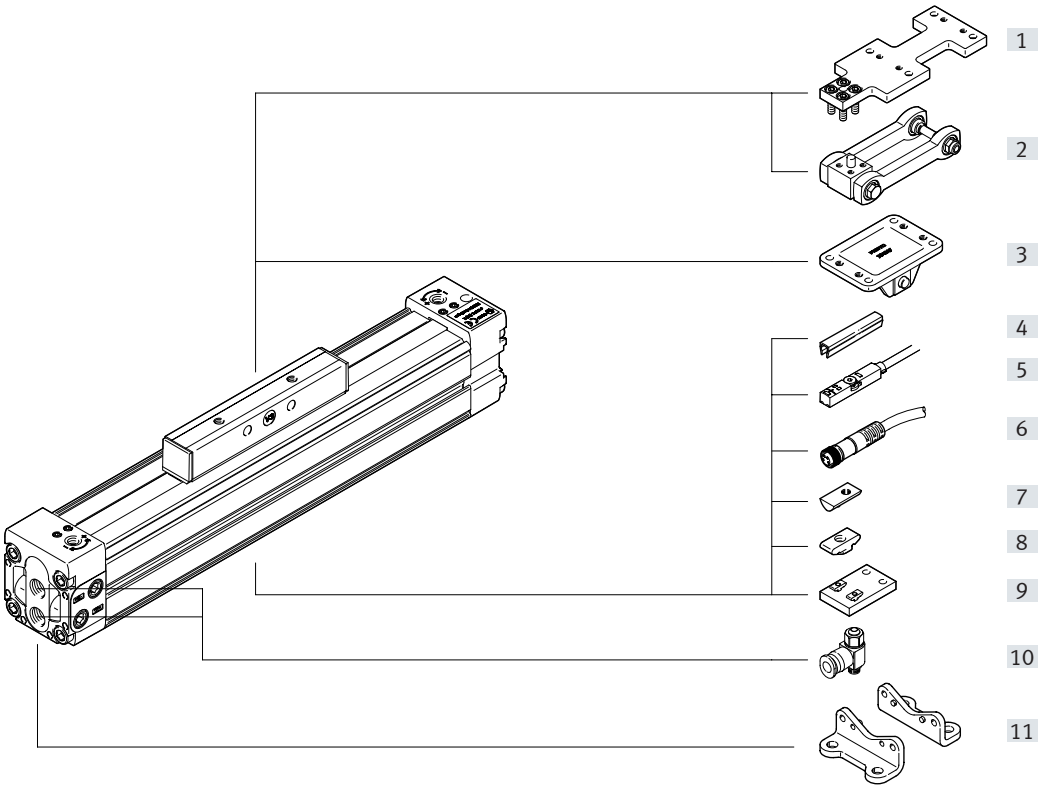
For opening and closing doors



For transporting glass plates



Peripherals overview



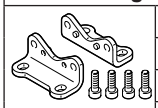
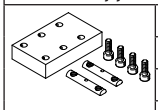
	Type/order code	Description	➔ Page/Internet
[1]	Adapter plate DAMF	Has the same interface as the moment compensator FKP for the linear drive DGP	103
[2]	Moment compensator DARD-...-M	For compensating misalignments when using external guides	
[3]	Moment compensator DARD-...-S	For compensating misalignments when using external guides. Has the same interface as the moment compensator FKP for the linear drive DGP	
[4]	Slot cover ABP	For protecting against contamination and securing the proximity sensor cable in place	94
[5]	Proximity sensor SMT-8	For sensing the position of the moment compensator	681
[6]	Connecting cable NEBU	For proximity sensor	nebu
[7]	Slot nut for mounting slot NST	For mounting attachments In the case of piston diameter 18 and 25, cannot be used with DGC-...-D2 (compressed air supply port at both ends)	104
[8]	Slot nut for mounting slot ABAN	For mounting attachments In the case of piston diameter 18 and 25, possible with all combinations	
[9]	Central support MUP	For mounting the axis, particularly for long stroke lengths	103
[10]	One-way flow control valve GRLA	For regulating speed	519
[11]	Foot mounting HP	For mounting the axis	103

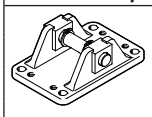
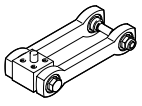
Ordering – Modular product system

Size		18	25	32	40	50	63	80	Conditi-ons	Code	Enter code
Module no.		1312500	1312501	1312502	1312503	1312504	1312505	1312506			
Function		Linear drive								DGC	DGC
Guide		Compact								-K	-K
Piston diameter	[mm]	18	25	32	40	50	63	80		-...	
Stroke	[mm]	1 ... 3000	1 ... 8500			1 ... 6000	1 ... 5000	1 ... 3000		-...	
Cushioning		Pneumatic cushioning, adjustable at both ends								-PPV	-PPV
Position sensing		Via proximity sensor								-A	-A
Basic design		Standard piston								-GK	
		Extended piston						–		-GV	
Compressed air supply port		At one end									
		At both ends							[1]	-D2	
Lubrication		Standard									
		Lubrication approved for use in food applications								-H1	
Moment compensator		Without									
		Moment compensator coupling								-FK	
EU certification		Without									
		II 3GD							[2]	-EX2	
		II 2G							[2]	-EX3	
Accessories		Enclosed separately (can be retrofitted)								ZUB-	ZUB-
Foot mounting		1								F	
Central support		1 ... 10								...M	
Slot nut for mounting slot		1 ... 10							[3] [1]	...Y	
Slot cover for mounting slot		–	–	1 ... 10						...B	
Proximity sensor, N/O contact	2.5 m cable	1 ... 10								...G	
	Plug M8	1 ... 10								...H	
Proximity sensor, N/O contact, contactless, PNP	2.5 m cable	1 ... 10								...I	
	Plug M8	1 ... 10								...J	
Proximity sensor, N/C contact	7.5 m cable	1 ... 10								...N	
Connecting cable	M8, 2.5 m	1 ... 10								...V	
Slot cover for sensor slot		1 ... 10								...S	

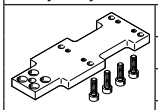
[1] Y + D2 The following applies to sizes 18 and 25: entry "1Y" = delivery quantity of 4 pieces
[2] EX2, EX3 Not with proximity sensor G, H, I, J, N or connecting cable V
[3] Y For sizes 18 and 25 there is just one slot for mounting and proximity sensor

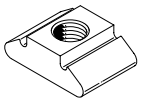
Accessories – Ordering data

	For ∅	Part No.	Type
Foot mounting HP			
	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
Central support MUP			
	18	150736	MUP-18/25
	25	150736	MUP-18/25
	32	150737	MUP-32
	40	150738	MUP-40
	50	150739	MUP-50
	63	150800	MUP-63
	80	158455	MUP-80

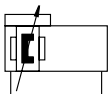
	For ∅	Part No.	Type
Moment compensator DARD-S			
	18	8001411	DARD-L1-18-S
	25	8001412	DARD-L1-32-S
	32	8001412	DARD-L1-32-S
	40	8001413	DARD-L1-40-S
	50	8001414	DARD-L1-63-S
	63	8001414	DARD-L1-63-S
	80	8001415	DARD-L1-80-S
Moment compensator DARD-M			
	18	2349274	DARD-L1-18-M
	25	2349275	DARD-L1-25-M
	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

Accessories – Ordering data

	For ∅	Part No.	Type
Adapter plate DAMF			
	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

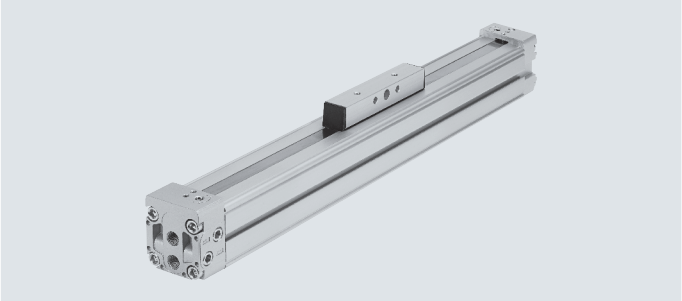
	For ∅	Part No.	Type
Slot nut ABAN/NST			
	18, 25	8003032	ABAN-1M4-5
		526091	NST-HMV-M4
	32, 40	150914	NST-5-M5
	50, 63, 80	150915	NST-8-M6

Data sheet



Diameter
18 ... 80 mm

Stroke length
1 ... 8500 mm



General technical data Piston diameter		18	25	32	40	50	63	80
Design		Pneumatic linear drive with slide						
Guide		Slotted cylinder barrel						
Mode of operation		Double-acting						
Stroke	[mm]	1 ... 3000	1 ... 8500			1 ... 6000	1 ... 5000	1 ... 3000[1]
Pneumatic connection		M5	G1/8		G1/4		G3/8	G1/2
Cushioning	[PPV]	Adjustable at both ends						
Cushioning length	[mm]	16	18	20	30	30	30	83
Max. speed								
With adjust. pneum. cushioning PPV	[m/s]	2						
With external cushioning	[m/s]	3						
Position sensing		Via proximity sensor						
Type of mounting		Via accessories						
Mounting position		Any						

1) Additional strokes on request.

Operating and environmental conditions Piston diameter		18	25	32	40	50	63	80
Operating pressure	[bar]	2 ... 8				1.5 ... 8		
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)						
Ambient temperature[1]	[°C]	–10 ... +60						
Food-safe[2]		→ supplementary information on materials						
Corrosion resistance class CRC[3]		1						

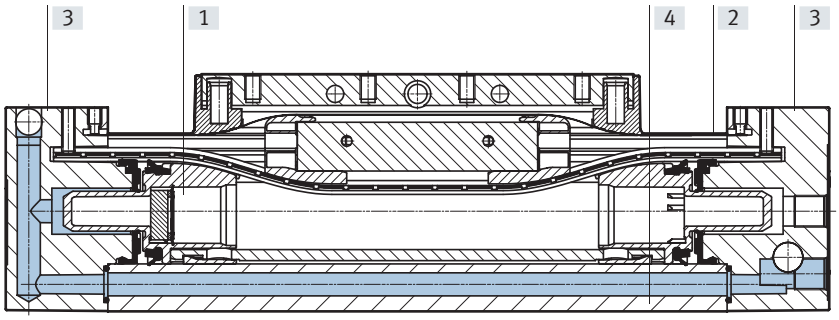
1) Note operating range of proximity sensors.
2) Additional information: www.festo.com/sp → Certificates.
3) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Forces [N] and impact energy [J] Piston diameter	18	25	32	40	50	63	80
Theoretical force at 6 bar	153	295	483	754	1178	1870	3016
Max. impact energy at the end positions[1]	0.04	0.05	0.12	0.25	0.5	0.5	3

1) Permissible residual impact energy following adjustable pneumatic cushioning PPV.

Data sheet

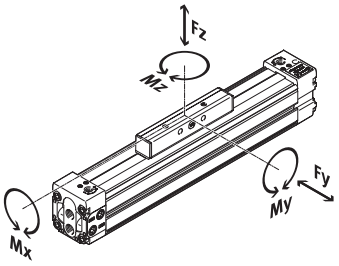
Materials



Linear drives		
[1]	Slide	Anodised aluminium
[2]	Sealing band/cover strip	Polyurethane/steel
[3]	Cover	Painted aluminium
[4]	Cylinder barrel	Anodised aluminium
–	Piston seal	Polyurethane
–	Slide elements	Polyacetal
	Note on materials	RoHS-compliant

Characteristic load values

The indicated forces and torques refer to the surface of the slide.
These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



If the drive is simultaneously subjected to several of the forces and torques indicated below, the following equations must be satisfied in addition to the indicated maximum loads:

$$0{,}4 \cdot \frac{F_{z1}}{F_{z2}} + \frac{M_{x1}}{M_{x2}} + \frac{M_{y1}}{M_{y2}} + 0{,}2 \cdot \frac{M_{z1}}{M_{z2}} \leq 1$$

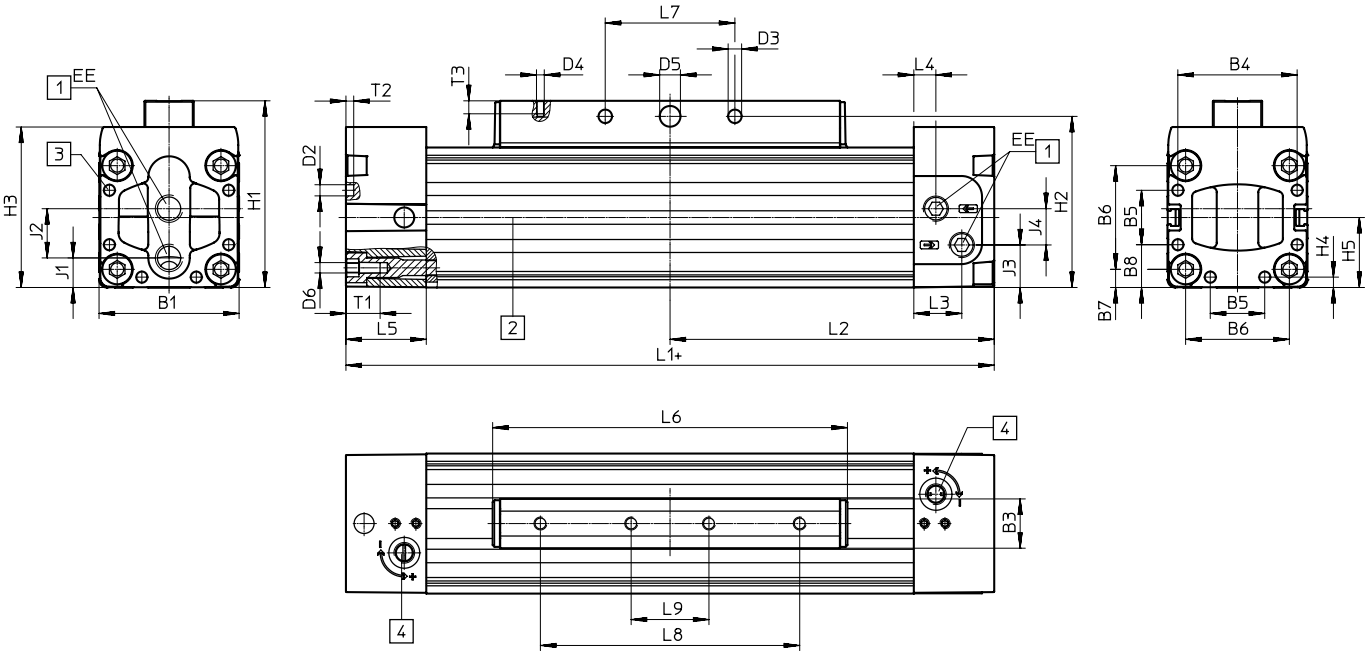
$$\frac{F_{z1}}{F_{z2}} \leq 1 \qquad \frac{M_{z1}}{M_{z2}} \leq 1$$

F1/M1 = dynamic value
F2/M2 = maximum value

Permissible forces and torques

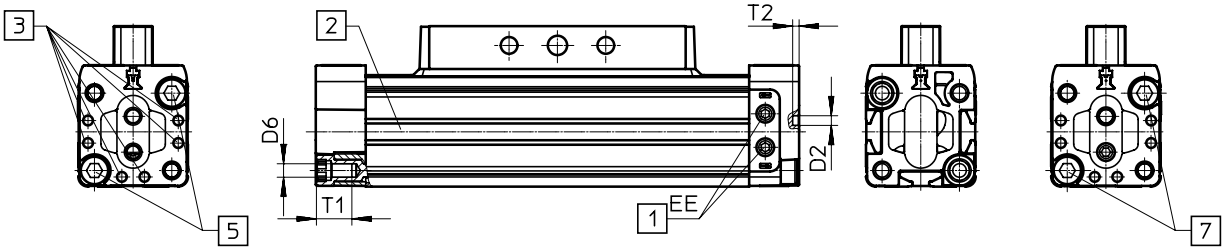
Piston diameter		18	25	32	40	50	63	80
$Fz_{max.}$								
DGC-...-GK	[N]	120	330	480	800	1200	1600	2500
DGC-...-GV	[N]	120	330	480	800	1200	1600	–
$Mx_{max.}$								
DGC-...-GK	[Nm]	0.8	1.2	1.9	3.8	6	5.7	30.6
DGC-...-GV	[Nm]	1.6	2.4	3.8	7.6	12	11.4	–
$My_{max.}$								
DGC-...-GK	[Nm]	11	20	40	60	120	150	400
DGC-...-GV	[Nm]	22	40	80	120	240	300	–
$Mz_{max.}$								
DGC-...-GK	[Nm]	1	3	5	8	15	24	100
DGC-...-GV	[Nm]	2	6	10	16	30	48	–

Dimensions

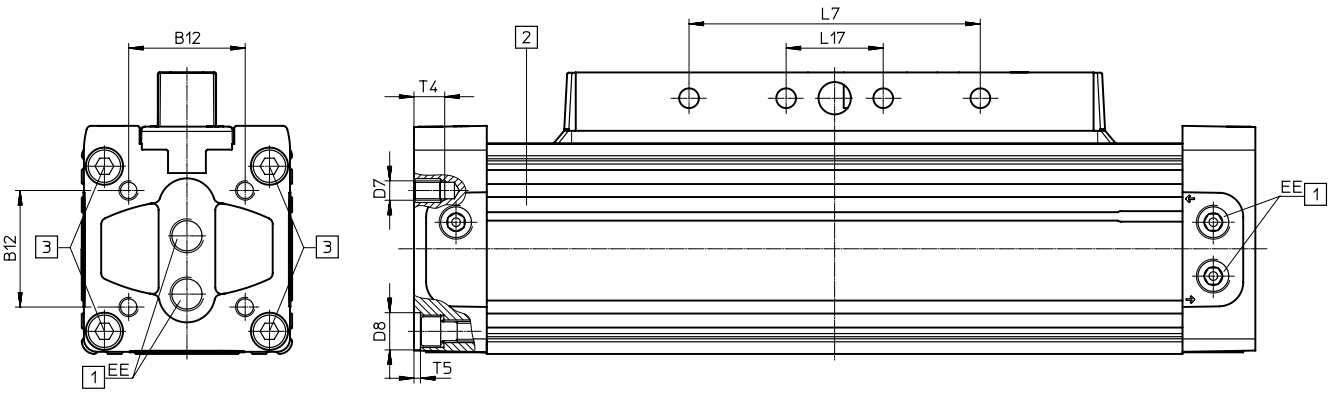


ø 18

DGC-...-D2



ø 80



\+ plus stroke length

[1] Compressed air supply port options on 3 sides

[2] Sensor slot for proximity sensor

[3] Mounting holes for foot mounting HP

[4] Adjusting screw for adjustable end-position cushioning

[5] No mounting thread here with ø 18

[7] No mounting thread here with ø 18, in combination with variant D2

Dimensions

∅ [mm]	B1	B3 ±0.2	B4	B5	B6	B7	B8	B12	D2 ∅	D3 ∅ +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

∅ [mm]	D4	D5 ∅	D6	D7	D8 ∅	EE	H1	H2	H3	H4	H5
18	M5	6H7	M5	–	–	M5	49.8	43.8	37.6	3	17
25	M5	8H7	M4	–	–	G1/8	63	57	51	3	22.5
32	M5	8H7	M5	–	–	G1/8	72	66	61.8	4	27
40	M6	10H7	M5	–	–	G1/4	86	78	71.8	5.5	32
50	M8	12H7	M6	–	–	G1/4	115	106	99	7	45
63	M8	12H7	M8	–	–	G3/8	131	122	115	8.5	53
80	M12	20H10	–	M12	23	G1/2	174	158	140.5	–	85

∅ [mm]	J1	J2	J3	J4	L1		L2		L3	L4	L5
					GK	GV	GK	GV			
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

∅ [mm]	L6		L7	L8	L9	L17 ±0.15	T1	T2	T3	T4	T5
	GK	GV									
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	–	–	19	18	4

Length tolerance For stroke [mm]	≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000	≤ 6000	≤ 7000	≤ 8000	≤ 9000
L1 [mm]	±0.45	±0.55	±0.70	±0.75	±0.80	±0.85	±1.10	±1.15	±1.20

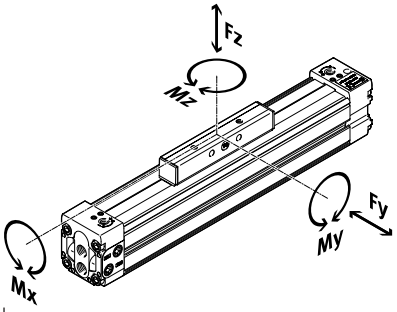
Linear drives DGC-K

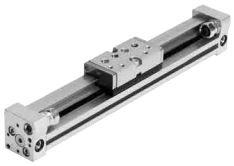
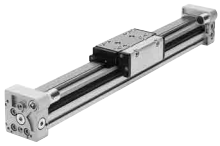
Linear drives DGC

Highlights

+ 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: clamping unit for holding loads

Product range overview

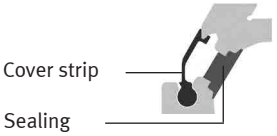


	Piston diameter [mm]	Theoretical force at 6 bar [N]	Guide characteristics Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]
Basic design DGC-G							
	8	30	150	150	0.5	2	2
	12	68	300	300	1.3	5	5
	18	153	70	340	1.9	12	4
	25	295	180	540	4	20	5
	32	483	250	800	9	40	12
	40	754	370	1100	12	60	25
	50	1178	480	1600	20	150	37
	63	1870	650	2000	26	150	48
Plain-bearing guide DGC-GF							
	18	153	440	540	3.4	20	8.5
	25	295	640	1300	8.5	40	20
	32	483	900	1800	15	70	33
	40	754	1380	2000	28	110	54
	50	1178	1500	2870	54	270	103
	63	1870	2300	4460	96	450	187
Recirculating ball bearing guide DGC-KF							
	8	30	300	300	1.7	4.5	4.5
	12	68	650	650	3.5	10	10
	18	153	1850	1850	16	51	51
	25	295	3050	3050	36	97	97
	32	483	3310	3310	54	150	150
	40	754	6890	6890	144	380	380
	50	1178	6890	6890	144	634	634
	63	1870	15200	15200	529	1157	1157
Compact design DGC-K							
	18	153	–	120	0.8	11	1
	25	295	–	330	1.2	20	3
	32	483	–	480	1.9	40	5
	40	754	–	800	3.8	60	8
	50	1178	–	1200	6	120	15
	63	1870	–	1600	5.7	150	24
	80	3016	–	2500	30.6	400	100

Features

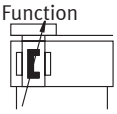
At a glance

- Compact – installation length relative to stroke
- Loads and devices can be directly mounted on the slide.
- Three types of cushioning available:
  - Elastic cushioning
  - Pneumatic cushioning
  - Hydraulic cushioning
- All settings accessible from one side:
  - Precision end-position adjustment
  - Position of proximity sensors
  - Mounting of drive
  - Regulating speed
  - Pneumatic end-position cushioning
- Sealing system



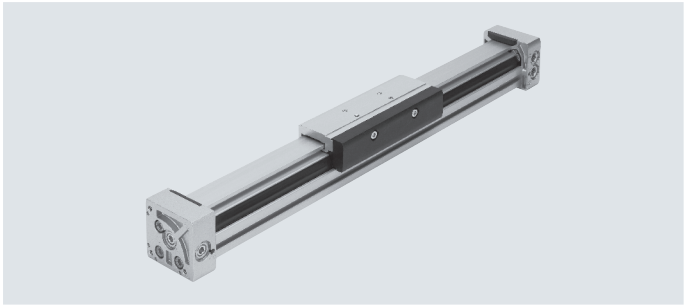
Advantages of the sealing system
- Long strokes with no restrictions
- Virtually no leakage

Function



Diameter
8 ... 63 mm

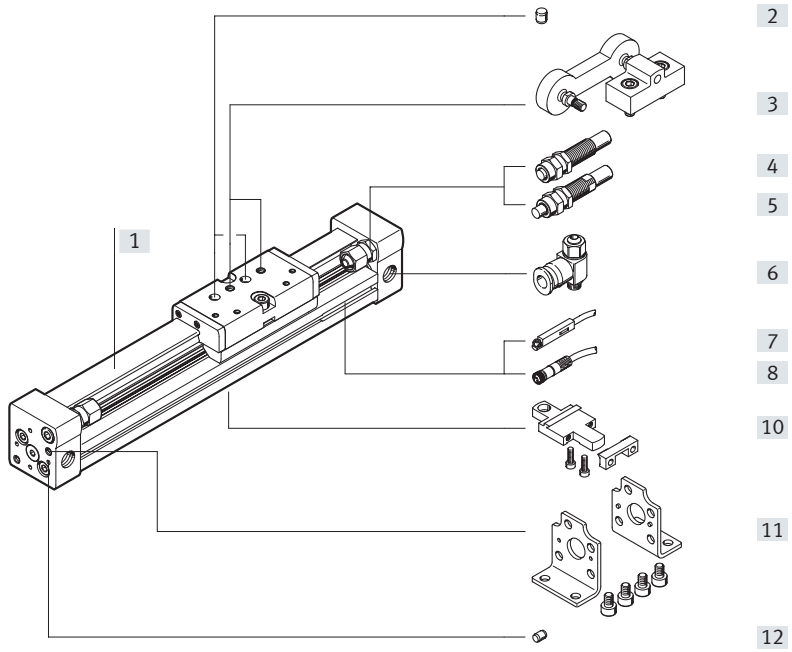
Stroke length
1 ... 8500 mm



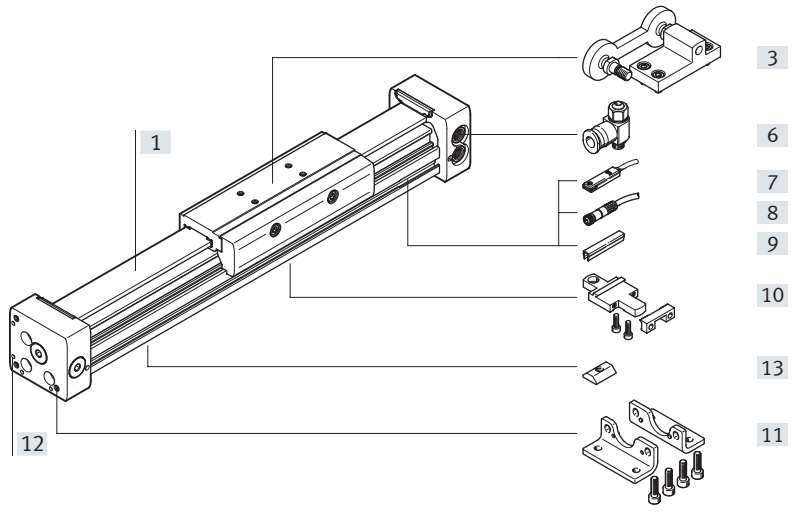
Peripherals overview

DGC-8/-12

Note
Operation without cushioning components is not permitted.



DGC-18 ... 63



Linear drives DGC-G

Peripherals overview

	Type/order code	For ∅	➔ Page/Internet
[1]	Linear drive DGC-G	8 ... 63	111
[2]	Centring pin ZBS[1)]	8, 12	113
[3]	Moment compensator FK	8 ... 63	
[4]	Shock absorber YSR	8, 12	ysr
[5]	Shock absorber YSRW	8, 12	113
[6]	One-way flow control valve GRLA	8 ... 63	

1) Included in the scope of delivery of the drive

	Type/order code	For ∅	➔ Page/Internet
[7]	Proximity sensor SMT-8	8 ... 63	681
[8]	Connecting cable NEBU	8 ... 63	nebu
[9]	Slot cover ABP	18 ... 63	113
[10]	Profile mounting MUC	8 ... 63	
[11]	Foot mounting HPC	8 ... 63	
[12]	Centring pin/sleeve ZBS/ZBH	8, 12, 50, 63	
[13]	Slot nut HMBN	25 ... 63	

Ordering – Modular product system

Ordering table

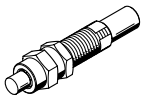
Size		8	12	18	25	32	40	50	63	Conditi-ons	Code	Enter code
Module no.		530906	530907	532446	532447	532448	532449	532450	532451			
Function		Linear drive									DGC	DGC
Piston diam.	[mm]	8	12	18	25	32	40	50	63		-...	
Stroke	[mm]	1 ... 1500	1 ... 2000	1 ... 3000	1 ... 8500			1 ... 5000			-...	
Guide		Basic design									-G	-G
Cushioning	At both ends	Elastic cushioning rings/plates		–	–	–	–	–	–		-P	
	Adjustable at both ends	–	–	Pneumatic cushioning							-PPV	
	Self-adju-sting	Shock absorber		–	–	–	–	–	–		-YSR	
		Shock absorber, progressive		–	–	–	–	–	–		-YSRW	
Position sensing		Via proximity sensor									-A	-A
Compressed air supply port		At the right end or at both ends										
		–	–	At the left end or at both ends							-DL	
Lubrication		–	–	Standard								
		–	–	Lubrication approved for use in food applications							-H1	
EU certification		Without										
		II 3GD								[1]	-EX2	
		II 2G								[1]	-EX3	
Accessories		Enclosed separately (can be retrofitted)									ZUB-	ZUB-
Foot mounting		1									F	
Profile mounting		1 ... 9									...M	
Moment compensator		Without										
		Moment compensator coupling									FK	
Slot nut for mounting slot		–	–	–	1 ... 9						...B	
Proximity sensor	2.5 m cable	1 ... 9									...G	
	Plug M8	1 ... 9									...H	
Proximity sensor, contactless, PNP	2.5 m cable	1 ... 9									...I	
	Plug M8	1 ... 9									...J	
Connecting cable	M8, 2.5 m	1 ... 9									...V	
Slot cover for sensor slot		–	–	1 ... 9							...L	
Operating instructions		Express waiver – no operating instructions to be included (already available)									-O	

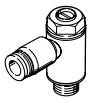
[1] EX2, EX3 Not with moment compensator FK, proximity sensor G, H, I, J, connecting cable V

Accessories – Ordering data

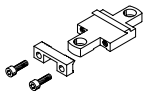
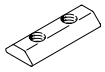
	For ∅	Description	Part No.	Type
Centring pin/sleeve[1]				
	For DGC-G			
	8, 12	For slide	150928	ZBS-5
	8, 12	For end cap	525273	ZBS-2
	50, 63		150927	ZBH-9
	For DGC-GF			
	18	For slide	150928	ZBS-5
	25 ... 63		150927	ZBH-9
	50, 63	For end cap	150927	ZBH-9
	For DGC-KF			
	8, 12, 18	For slide	150928	ZBS-5
	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.

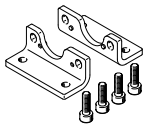
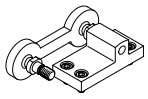
	For ∅	Part No.	Type
Shock absorber			
	For DGC-G		
	8	540344	YSRW-DGC-8
	12	540345	YSRW-DGC-12
	For DGC-GF		
	18	540346	YSRW-DGC-18-GF
	25	540348	YSRW-DGC-25-GF
	32	540350	YSRW-DGC-32-GF
	40	540352	YSRW-DGC-40-GF
	50	1232870	YSRW-DGC-40/50-B
	63	543069	YSRW-DGC-63
	For DGC-KF		
	18	540347	YSRW-DGC-18-KF
	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

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1] **for exhaust air flow control**					
	8, 12	M5	4	★ 193138	GRLA-M5-QS-4-D
	18		6	★ 193139	GRLA-M5-QS-6-D
	25, 32	G1/8	8	★ 193145	GRLA-1/8-QS-8-D
	40, 50	G1/4	8	★ 193147	GRLA-1/4-QS-8-D
	63	G3/8	8	★ 193150	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 ∅	Part No.	Type
Slot cover[1]			
	18, 25, 32, 40, 50, 63	151680	ABP-5-S
Profile mounting			
	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
Slot nut[2]			
	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 ∅	Part No.	Type
Foot mounting			
	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
Moment compensator			
	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

Data sheet

General technical data

Piston diameter		8	12	18	25	32	40	50	63
Design		Rodless drive							
Moment compensator principle		Slotted cylinder, mechanically coupled							
Guide		Basic design							
Mode of operation		Double-acting							
Stroke	[mm]	1 ... 1500	1 ... 2000	1 ... 3000	1 ... 8500			1 ... 5000	
Pneumatic connection		M5			G1/8		G1/4		G3/8
DGC-...-P		Non-adjustable at both ends		–					
DGC-...-PPV		–		Adjustable at both ends					
DGC-...-YSR...		Self-adjusting at both ends		–					
Cushioning length with cushioning PPV	[mm]	–		16.5	15.5	17.5	29.5	29.8	31.1
Max. speed	[m/s]	1	1.2	3					
Position sensing		Via proximity sensor							
Type of mounting		Profile mounting							
		Foot mounting							
		Direct mounting							
Mounting position		Any							

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Operating and environmental conditions

Piston diameter		8	12	18	25	32	40	50	63
Operating pressure	[bar]	2.5 ... 8		2 ... 8			1.5 ... 8		
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)							
Ambient temperature[1]	[°C]	+5 ... +60	–10 ... +60						
Corrosion resistance class CRC[3]		2							

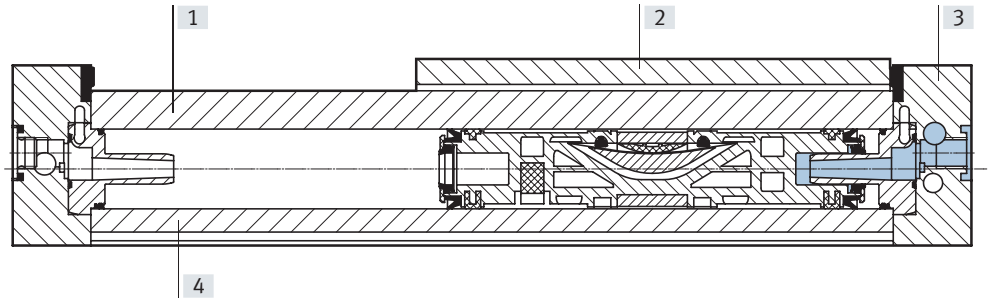
1) Note operating range of proximity sensors

3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Forces [N] and impact energy [J]

Piston diameter	8	12	18	25	32	40	50	63
Theoretical force at 6 bar	30	68	153	295	483	754	1178	1870
Impact energy at the end positions	→ online							

Materials

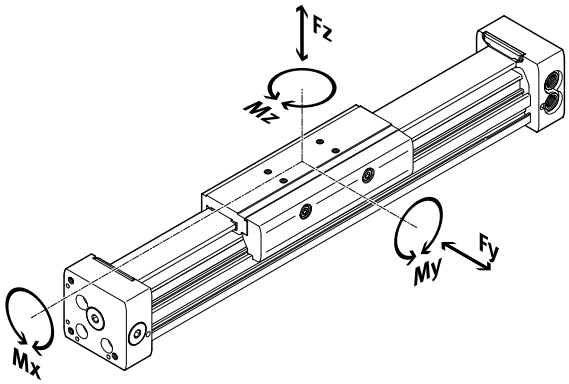


Linear drives		
[1]	Guide rail	Anodised aluminium
[2]	Slide	Anodised aluminium
[3]	End cap	Anodised aluminium
[4]	Cylinder barrel	Anodised aluminium
–	Piston seal	Polyurethane
	Sealing band/cover strip	Polyurethane
	Slide elements	Polyacetal
	Note on materials	RoHS-compliant

Data sheet

Characteristic load values

The indicated forces and torques refer to the centre of the slide surface. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



Note

To prevent the guide of the basic drive DGC-G from self-locking when used vertically and with a high torque load, the variant with the recirculating ball bearing guide DGC-KF is recommended.

If the drive is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

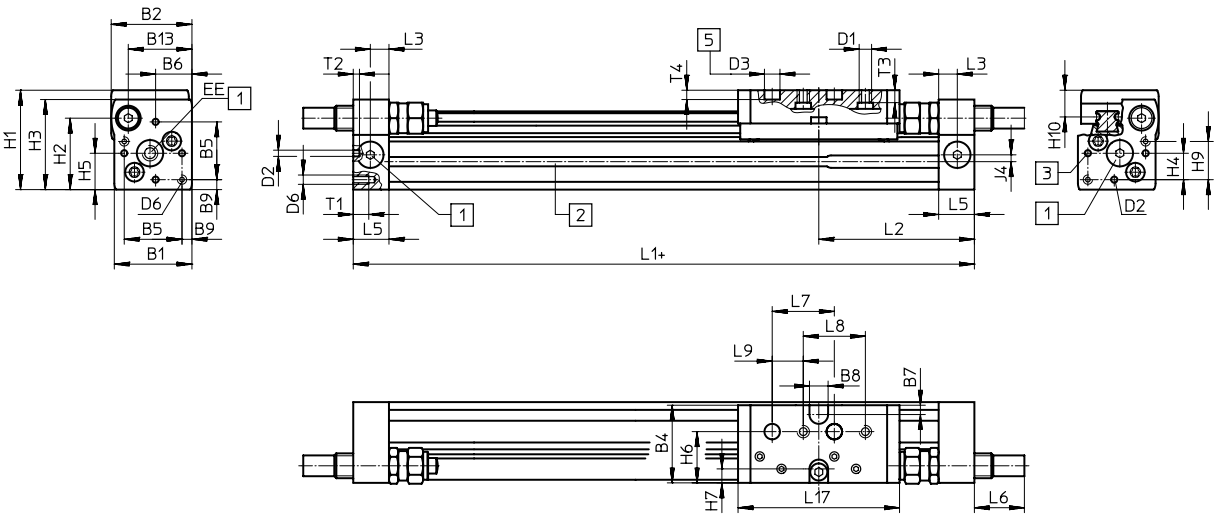
$$\frac{Fy}{Fy_{max.}} + \frac{Fz}{Fz_{max.}} + \frac{Mx}{Mx_{max.}} + \frac{My}{My_{max.}} + \frac{Mz}{Mz_{max.}} \leq 1$$

Permissible forces and torques

Piston diameter		8	12	18	25	32	40	50	63
$Fy_{max.}$	[N]	150	300	70	180	250	370	480	650
$Fz_{max.}$	[N]	150	300	340	540	800	1100	1600	2000
$Mx_{max.}$	[Nm]	0.5	1.3	1.9	4	9	12	20	26
$My_{max.}$	[Nm]	2	5	12	20	40	60	150	150
$Mz_{max.}$	[Nm]	2	5	4	5	12	25	37	48

Dimensions

ø 8 and 12



+ = plus stroke length
[5] Compressed air supply port options on 3 sides
[6] Sensor slot for proximity sensor
[7] Mounting hole for foot mounting or centring pin
[5] Drilled hole for centring pin ZBS

ø [mm]	B1	B2	B4	B5	B6	B7	B8 ±0.05	B9 ±0.1	B13	D1	D2 ø H8	D3 ø H7	D6
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

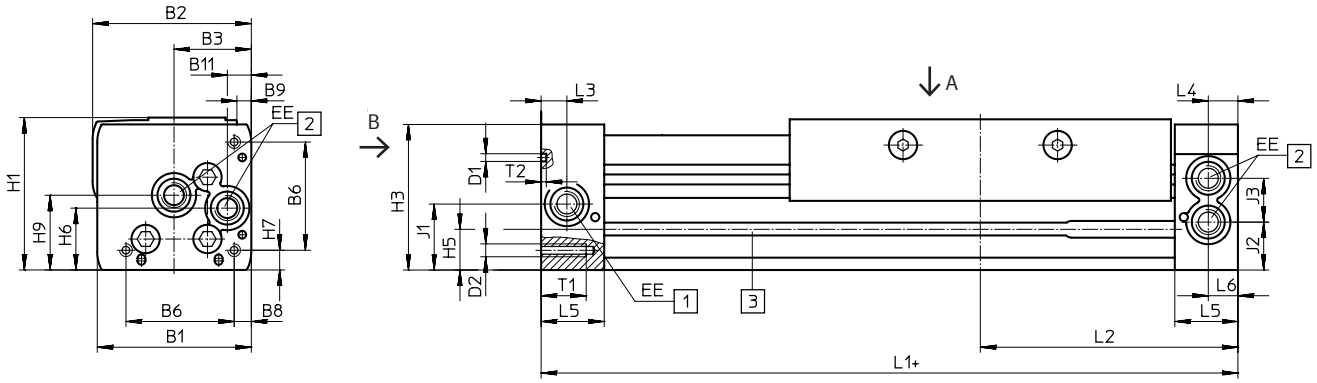
ø [mm]	EE	H1	H2	H3	H4	H5	H6	H7	H9	H10	J4	L1	L2
8	M5	32	23	29	8.5	11.7	16.5	4.5	12.3	8.7	2.2	100	50.1
12	M5	37.5	28.5	34.5	8.7	13.5	20.5	5	14.7	9.8	3	125	62.4

ø [mm]	L3	L5	L6			L7 ±0.03	L8 ±0.1	L9 ±0.1	L17	T1	T2	T3	T4 +0.2	Stroke tolerance
			P	YSR	YSRW									
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

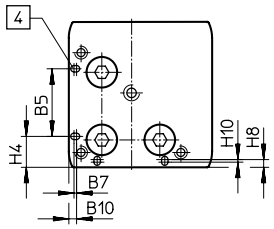
Dimensions

∅ 18 ... 40

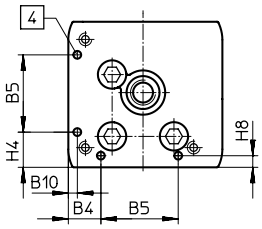


View B

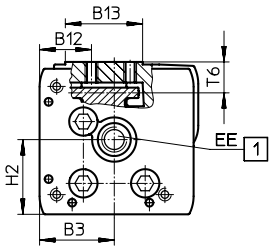
ø 18



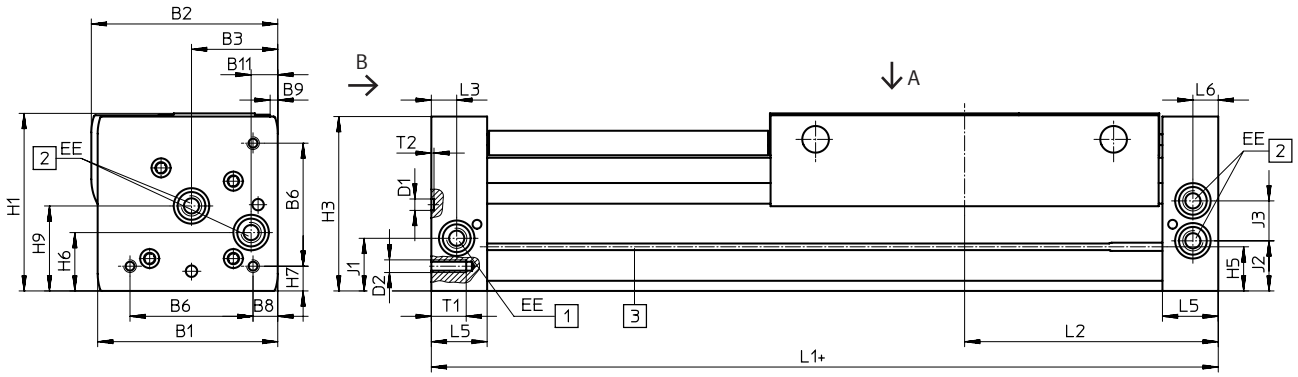
ø 25 ... 40

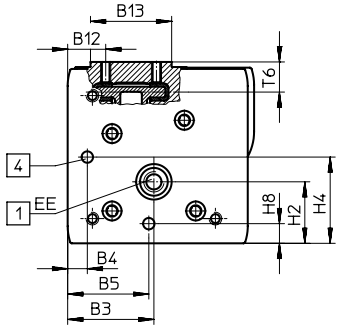


ø 18 ... 40



∅ 50/63





+ = plus stroke length

[1] Compressed air supply port options on 2 sides

[2] Compressed air supply port options on 2 sides, for compressed air supply port at one end

[3] Sensor slot for proximity sensor

[4] Mounting hole for foot mounting HPC

Note

The linear drive is actuated at the right end or at both ends by default.

The linear drive can be actuated at the left end or at both ends by specifying the order code DL in the modular product system.

Dimensions

∅ [mm]	B1	B2	B3	B4	B5 ±0.05	B6	B7	B8	B9	B10
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	–

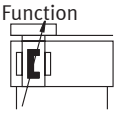
∅ [mm]	B11	B12	B13	D1 ∅	D2	EE	H1	H2	H3	H4 ±0.2
18	5.5	19.3	20	2±0.05	M4	M5	49.8	23.1	48.3	10.3
25	9.3	20.15	30	3±0.05	M5	G1/8	58.5	29	56.5	13
32	14.9	20.5	35	3±0.05	M6	G1/8	73	30	71.5	5.7
40	16.5	19.8	45	4±0.05	M6	G1/4	88	41.5	85	17.2
50	21	24	64	9^{H7}	M8	G1/4	120	38.5	116	52.8
63	21	30	64	9^{H7}	M10	G3/8	140	48.5	137.5	68

∅ [mm]	H5	H6	H7	H8	H9	H10	J1	J2	J3	L1
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

∅ [mm]	L2	L3	L4	L5	L6	T1	T2	T6	Stroke tolerance
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	

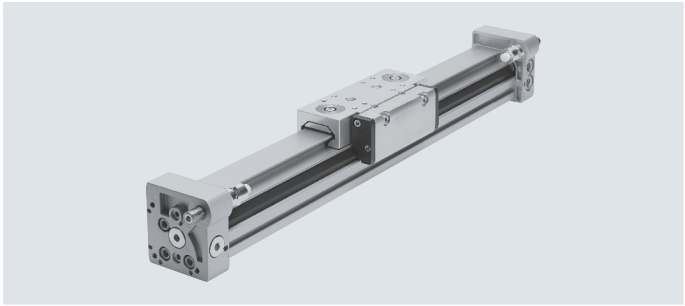
Length tolerance For stroke [mm]	≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000	≤ 6000	≤ 7000	≤ 8000	≤ 9000
L1 [mm]	+0.90	+1.10	+1.40	+1.50	+1.60	+1.70	+2.20	+2.30	+2.40

Function



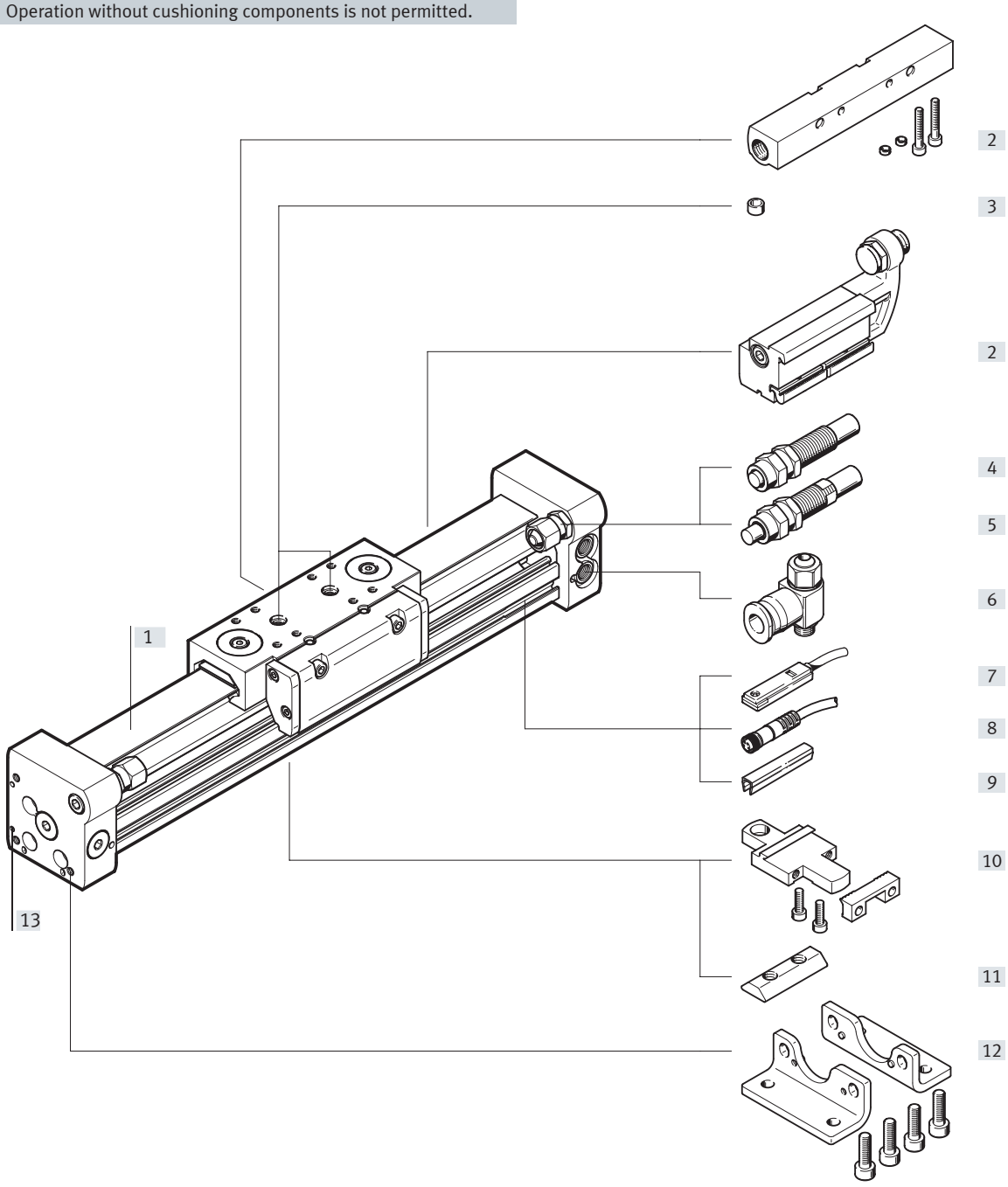
Diameter
18 ... 63 mm

Stroke length
1 ... 8500 mm



Peripherals overview

Note
Operation without cushioning components is not permitted.



Peripherals overview

	Type/order code	For ∅	→ Page/Internet
[1]	Linear drive DGC-GF	18 ... 63	119
[2]	Mechanical end-position limiter YWZ	18 ... 63	ywz
[3]	Centring pin/sleeve[1] ZBS/ZBH	18 ... 63	113
[4]	Shock absorber YSR	18 ... 63	ysr
[5]	Shock absorber YSRW	18 ... 63	113
[6]	One-way flow control valve GRLA	18 ... 63	

	Type/order code	For ∅	→ Page/Internet
[7]	Proximity sensor SMT/SME	18 ... 63	681
[8]	Connecting cable NEBU	18 ... 63	nebu
[9]	Slot cover ABP	18 ... 63	113
[10]	Profile mounting MUC	18 ... 63	
[11]	Slot nut HBMN	25 ... 63	
[12]	Foot mounting HPC	18 ... 63	
[13]	Centring sleeve ZBH	50, 63	

1) Included in the scope of delivery of the drive

Ordering – Modular product system

Size		18	25	32	40	50	63	Condi-tions	Code	Enter code
Module no.		532446	532447	532448	532449	532450	532451			
Function		Linear drive							DGC	DGC
Piston diameter	[mm]	18	25	32	40	50	63		-...	
Stroke	[mm]	1 ... 3000	1 ... 8500			1 ... 5000			-...	
Guide		Plain-bearing guide							-GF	-GF
Cushioning		Pneumatic cushioning, adjustable at both ends							-PPV	
		Shock absorber, self-adjusting							-YSR	
		Shock absorber, self-adjusting, progressive							-YSRW	
Position sensing		Via proximity sensor							-A	-A
Compressed air supply port		At the right end or at both ends								
		At the left end or at both ends							-DL	
Lubrication		Standard								
		Lubrication approved for use in food applications						[1]	-H1	
EU certification		Without								
		II 3GD						[2]	-EX2	
		II 2G						[2]	-EX3	
Accessories		Enclosed separately (can be retrofitted)							ZUB-	ZUB-
Foot mounting		1							F	
Profile mounting		1 ... 9							...M	
Slot nut for mounting slot		–	1 ... 9						...B	
Proximity sensor	2.5 m cable	1 ... 9							...G	
	Plug M8	1 ... 9							...H	
Proximity sensor, contactless, PNP	2.5 m cable	1 ... 9							...I	
	Plug M8	1 ... 9							...J	
Connecting cable	M8, 2.5 m	1 ... 9							...V	
Slot cover for sensor slot		1 ... 9							...L	
Mechanical end-position limiter		Without								
		Variable end position, at one end						[3]	YWZ1	
		Variable end position, at both ends						[3]	YWZ2	
Operating instructions		Express waiver – no operating instructions to be included (already available)							-0	

[1] H1 Not with cushioning YSR, YSRW
[2] EX2, EX3 Not with proximity sensor G, H, I, J, connecting cable V
[3] YWZ1, YWZ2 Only with cushioning YSR or YSRW

Data sheet

General technical data							
Piston diameter		18	25	32	40	50	63
Design		Rodless drive					
Moment compensator principle		Slotted cylinder, mechanically coupled					
Guide		Plain-bearing guide					
Mode of operation		Double-acting					
Stroke	[mm]	1 ... 3000	1 ... 8500			1 ... 5000	
Pneumatic connection		M5	G1/8		G1/4		G3/8
DGC-...-PPV		Adjustable at both ends					
DGC-...-YSR...		Self-adjusting at both ends					
Cushioning length with cushioning PPV	[mm]	16.5	15.5	17.5	29.5	29.8	31.1
Max. speed	[m/s]	3					
Position sensing		Via proximity sensor					
Type of mounting		Profile mounting					
		Foot mounting					
		Direct mounting					
Mounting position		Any					

Note: This product conforms to ISO 1179-1 and ISO 228-1.

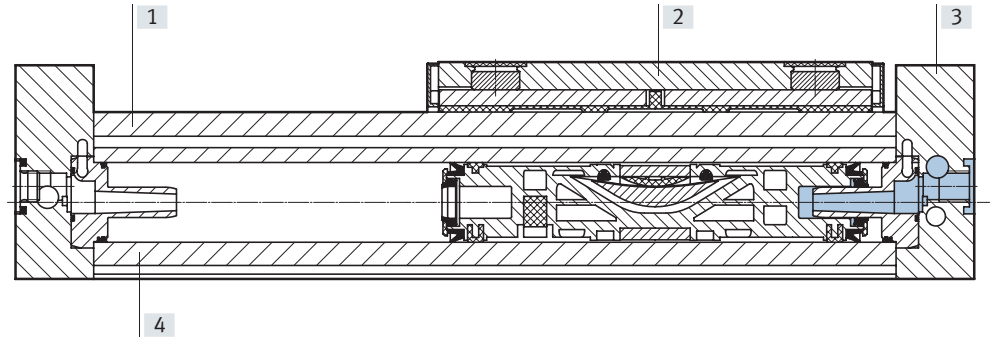
Operating and environmental conditions							
Piston diameter		18	25	32	40	50	63
Operating pressure	[bar]	2 ... 8			1.5 ... 8		
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]					
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature[1]	[°C]	–10 ... +60					
Corrosion resistance class CRC[3]		2					

1) Note operating range of proximity sensors

3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Forces [N] and impact energy [J]						
Piston diameter	18	25	32	40	50	63
Theoretical force at 6 bar	153	295	483	754	1178	1870
Impact energy at the end positions	→ online					

Materials



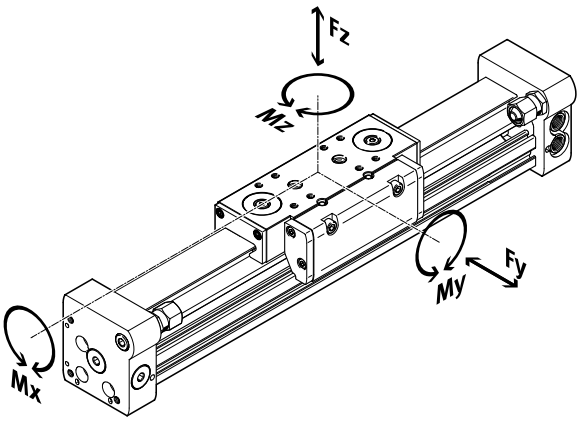
Linear drives		
[1]	Guide rail	Anodised aluminium
[2]	Slide	Anodised aluminium
[3]	End cap	Anodised aluminium
[4]	Cylinder barrel	Anodised aluminium
–	Piston seal	Polyurethane
	Sealing band/cover strip	Polyurethane
	Slide elements	Polyacetal
	Note on materials	RoHS-compliant

Linear drives DGC-GF

Data sheet

Characteristic load values

The indicated forces and torques refer to the centre of the slide surface. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



Note
To prevent the drive with plain-bearing guide DGC-GF from self-locking when used vertically and with a high torque load, the variant with the recirculating ball bearing guide DGC-KF is recommended.

If the drive is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

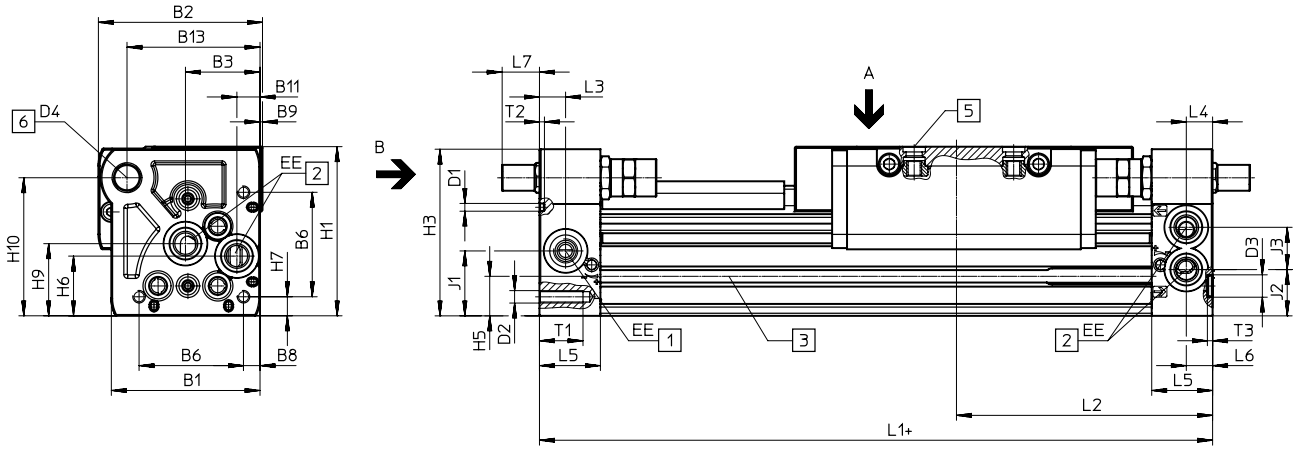
$$\frac{Fy}{Fy_{max.}} + \frac{Fz}{Fz_{max.}} + \frac{Mx}{Mx_{max.}} + \frac{My}{My_{max.}} + \frac{Mz}{Mz_{max.}} \leq 1$$

Permissible forces and torques in relation to a travel speed of 0.2 m/s

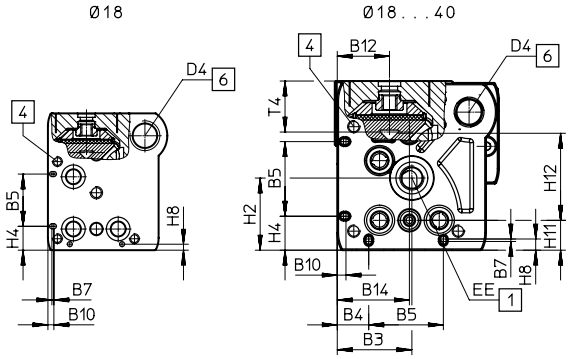
Piston diameter		18	25	32	40	50	63
$Fy_{max.}$	[N]	440	640	900	1380	1500	2300
$Fz_{max.}$	[N]	540	1300	1800	2000	2870	4460
$Mx_{max.}$	[Nm]	3.4	8.5	15	28	54	96
$My_{max.}$	[Nm]	20	40	70	110	270	450
$Mz_{max.}$	[Nm]	8.5	20	33	54	103	187

Dimensions

∅ 18 ... 40



View B



\+ plus stroke length
[1] Compressed air supply port options on 2 sides
[2] Compressed air supply port options on 2 sides, for compressed air supply port at one end
[3] Sensor slot for proximity sensor
[4] Mounting hole for foot mounting HPC
[5] Drilled hole for centring pin/sleeve
[6] Thread for end stop

-H- Note

The linear drive is actuated at the right end or at both ends by default. The linear drive can be actuated at the left end or at both ends by specifying the order code DL in the modular product system.

Linear drives DGC-GF

Dimensions

∅ [mm]	B1	B2	B3	B4	B5 ±0.05	B6	B7	B8	B9	B10	B11	B12
18	44.5	49.9	19.5	8.8	21	31	0.8	3.8	1	2.4	5.5	15.5
25	59.8	66	30	12.65	30	42	1	6.65	1	3.5	9.3	21
32	73	79	38.5	5.7	63.1	57.5	–	8.5	1.5	14	14.9	18
40	91	98.5	45	17.2	55	65	–	12.2	2	8	16.5	24.8

∅ [mm]	B13	B14	D1 ∅ ±0.05	D2	D3 ∅ H7	D4	EE	H1	H2	H3	H4 ±0.2	H5
18	39	19.5	2	M4	5	M12x1	M5	56.3	23.1	55	9.6	13.4
25	53.5	30	3	M5	9	M12x1	G1/8	68	29	67	13.65	15.8
32	66.5	38.5	3	M6	9	M14x1	G1/8	78.5	30	77	5.7	17
40	80.5	45	4	M6	9	M16x1	G1/4	99.5	41.5	97.5	17.2	25

∅ [mm]	H6	H7	H8	H9	H10	H11 ±0.15	H12 ±0.05	J1	J2	J3	L1	L2	L3
18	20	4.6	2.4	25.2	46	8.5	30	20	16.5	11	150	74.5	5.7
25	24	7.65	4.5	29	55.5	12	35	26.1	18.6	17	200	100	10.5
32	27.7	8.5	14	35.2	63.8	11.45	50	30	22	18.5	250	124.8	14.5
40	36.5	12.2	8	44	81.5	15	60	35	26	26	300	150	14.6

∅ [mm]	L4	L5	L6	L7			T1	T2	T3 +0.2	T4	Stroke tolerance
				PPV	YSR	YSRW					
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	

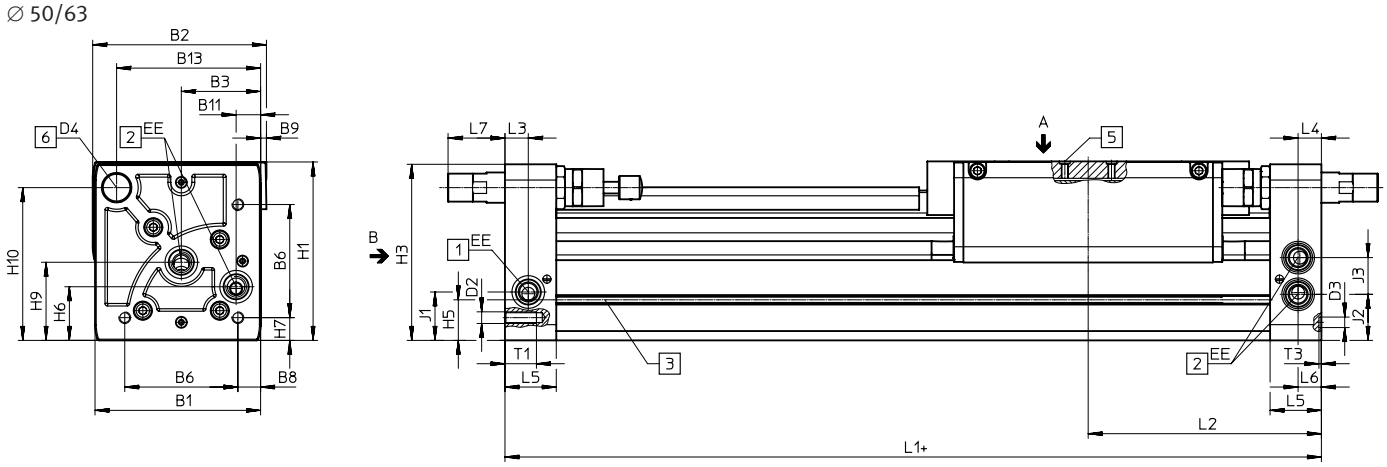
Note

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

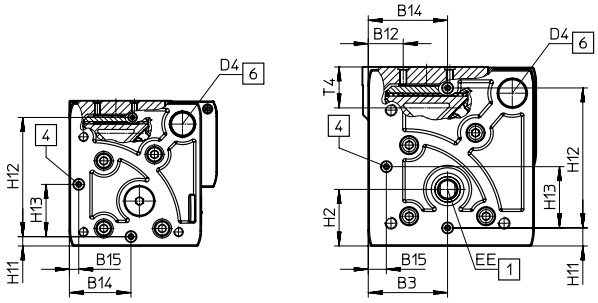
Dimensions

∅ 50/63



View B

Ø50 Ø50 . . . 63



\+ plus stroke length
[1] Compressed air supply port options on 2 sides
[2] Compressed air supply port options on 2 sides, for compressed air supply port at one end
[3] Sensor slot for proximity sensor
[4] Mounting hole for foot mounting HPC
[5] Drilled hole for centring pin/sleeve
[6] Thread for end stop

Note
The linear drive is actuated at the right end or at both ends by default. The linear drive can be actuated at the left end or at both ends by specifying the order code DL in the modular product system.

∅ [mm]	B1	B2	B3	B6	B8	B9	B11	B12	B13	B14 ±0.05	B15	D2	D3 ∅ H7	D4
50	113	126.5	60	81.6	12	–	21	24	97	52.8	8	M8	9	M22x1.5
63	142	149	68	97	19.5	5	21	30	123.5	68	15.5	M10	9	M26x1.5

∅ [mm]	EE	H1	H2	H3	H5	H6	H7	H9	H10	H11 ±0.2	H12 ±0.05	H13	J1	J2
50	G1/4	124.5	38.5	122.5	29.3	36	12	53	104.5	8	100	52.8	30.5	30.5
63	G3/8	153.5	48.5	151	34.8	46	19.5	67	131	15.5	120	68	41.5	39.5

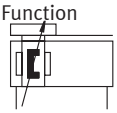
∅ [mm]	J3	L1	L2	L3	L4	L5	L6	L7			T1	T3 +0.2	T4	Stroke tolerance
								PPV	YSR	YSRW				
50	28	350	175	17	17	41	17	0	31	36.3	24	2.1	30.4	0 ... 2.5
63	31.5	400	200	20	20	44	20	0	38.3	48.3	27.5	2.1	36.2	

Note
This product conforms to ISO 1179-1 and ISO 228-1.

Length tolerance For stroke [mm]	≤ 1000	≤ 2000	≤ 3000	≤ 4000	≤ 5000
L1 [mm]	+0.90	+1.10	+1.40	+1.50	+1.60

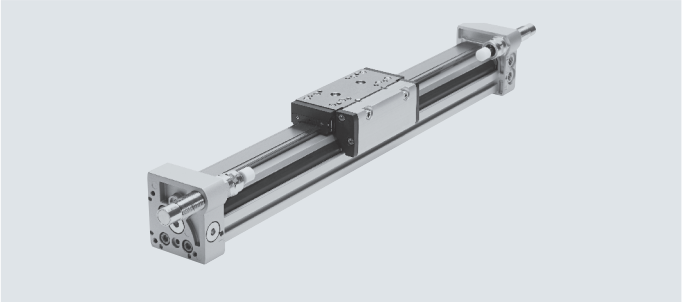
Linear drives DGC-KF

Function



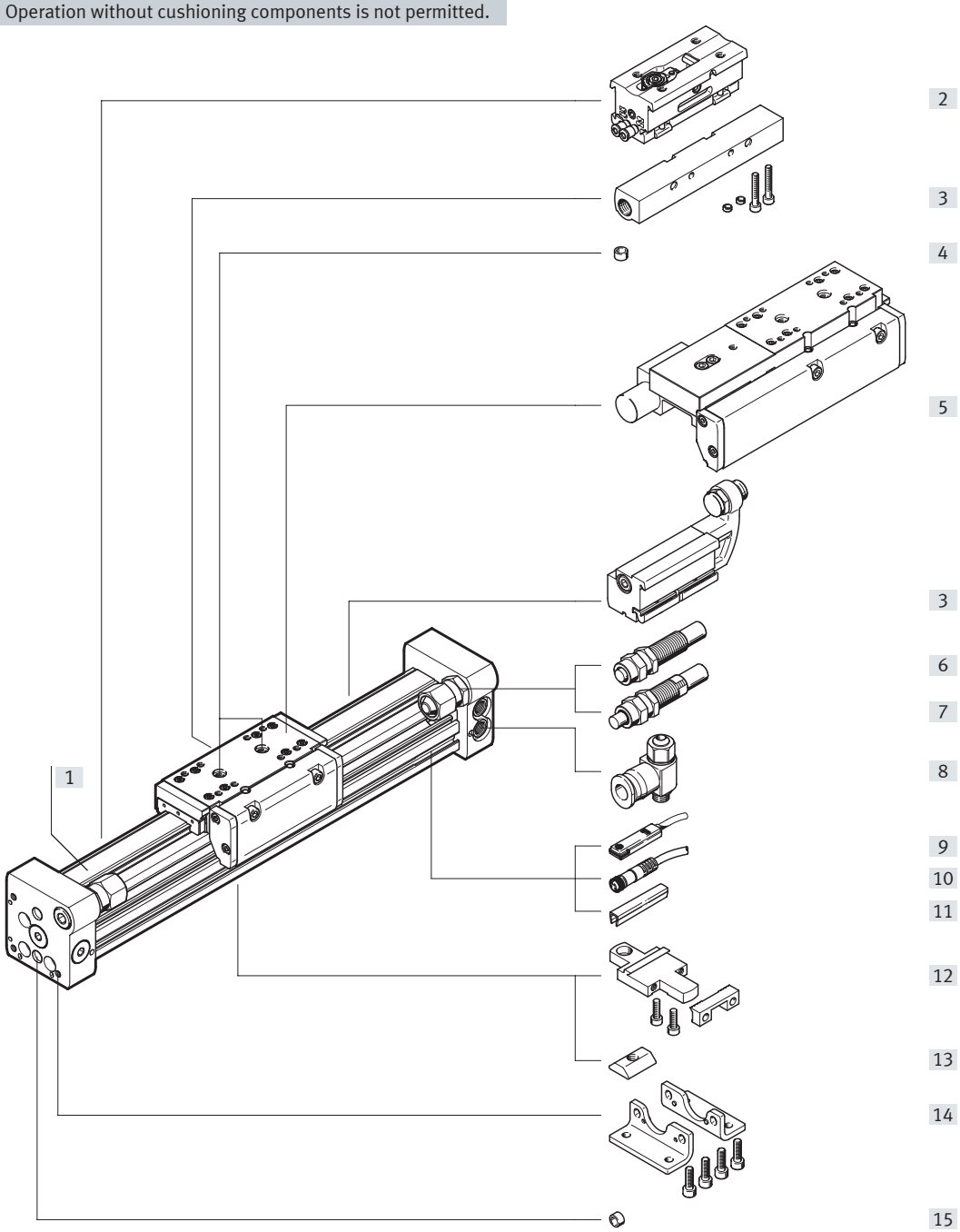
Diameter
8 ... 63 mm

Stroke length
1 ... 8500 mm



Peripherals overview

Note
Operation without cushioning components is not permitted.



Peripherals overview

	Type/order code	For ∅	➔ Page/Internet
[1]	Linear drive DGC-KF	8 ... 63	126
[2]	Intermediate-position module Z1/Z2/Z3	25, 32, 40	dgc-kf
[3]	Mechanical end-position limiter YWZ	18 ... 63	ywz
[4]	Centring pin/sleeve[1] ZBS/ZBH	8 ... 63	113
[5]	Clamping unit 1H-PN	25, 32, 40, 50	dgc-kf
[6]	Shock absorber YSR	8 ... 63	ysr
[7]	Shock absorber YSRW	8 ... 63	113
[8]	One-way flow control valve GRLA	8 ... 63	
[9]	Proximity sensor SMT-8	8 ... 63	681
[10]	Connecting cable NEBU	8 ... 63	nebu
[11]	Slot cover ABP	18 ... 63	113
[12]	Profile mounting MUC	8 ... 63	
[13]	Slot nut HBMN	25 ... 63	
[14]	Foot mounting HPC	8 ... 63	
[15]	Centring sleeve ZBH	8 ... 63	

1) Included in the scope of delivery of the drive

Ordering – Modular product system

Size	8	12	18	25	32	40	50	63	Condi-tions	Code	Enter code
Module no.	530906	530907	532446	532447	532448	532449	532450	532451			
Function	Linear drive									DGC	DGC
Piston diameter [mm]	8	12	18	25	32	40	50	63		-...	
Stroke [mm]	1 ... 1300	1 ... 1900	1 ... 3000	1 ... 8500			1 ... 5000			-...	
Guide	Recirculating ball bearing guide									-KF	-KF
Cushioning	Elastic cushioning rings/plates at both ends		–	–	–	–	–	–		-P	
	–	–	Pneumatic cushioning, adjustable at both ends							-PPV	
	Shock absorber, self-adjusting									-YSR	
	Shock absorber, self-adjusting, progressive									-YSRW	
Position sensing	Via proximity sensor									-A	-A
Compressed air supply port	At the right end or at both ends										
	–	–	At the left end or at both ends							-DL	
Slide	–	–	Protected recirculating ball bearing guide				–	–	[1]	-GP	
Lubrication	–	–	Standard								
	–	–	Lubrication approved for use in food applications						[2]	-H1	
Lubrication function	Standard										
	–	–	–	Lubrication adapter					[3]	-C	
Additional slide on left	Additional slide, standard, on left								[4]	-KL	
Additional slide on right	Additional slide, standard, on right								[4]	-KR	
Clamping unit	–	–	–	Without				–			
	–	–	–	1-channel				–	[5]	-1H	
Actuation type	–	–	–	Without				–			
	–	–	–	Pneumatic				–	[5]	-PN	
EU certification	Without										
	II 3GD								[6]	-EX2	
	II 2G								[6]	-EX3	

[1] GP — Not with cushioning YSR, YSRW
Not with additional slide KL, KR

[2] H1 — Not with protected version GP, cushioning YSR, YSRW or clamping unit 1H

[3] C — Not with slide GP
For size 50, only with clamping unit 1H

[4] KL, KR — For a linear drive DGC with additional slide, the working stroke is reduced by the length of the additional slide and the distance between both slides.
Not with cushioning PPV

[5] 1H, PN — Not with intermediate-position module Z1, Z2, Z3; end-position limiter YWZ1, YWZ2; protected version GP; additional slide KL, KR or lubrication H1
Only with cushioning YSRW
1H only with PN

[6] EX2, EX3 — Not with protected recirculating ball bearing guide GP, lubrication adapter C, clamping unit 1H-PN, proximity sensor G, H, I, J, connecting cable V, intermediate-position module Z1, Z2, Z3

Ordering – Modular product system

Size		8	12	18	25	32	40	50	63	Conditions	Code	Enter code
Accessories		Enclosed separately (can be retrofitted)									ZUB-	ZUB-
Foot mounting		1									F	
Profile mounting		1 ... 9									...M	
Slot nut for mounting slot		–	–	–	1 ... 9						...B	
Proximity sensor	2.5 m cable	1 ... 9									...G	
	Plug M8	1 ... 9									...H	
Proximity sensor, contactless, PNP	2.5 m cable	1 ... 9									...I	
	Plug M8	1 ... 9									...J	
Connecting cable	M8, 2.5 m	1 ... 9									...V	
Slot cover for sensor slot		–	–	1 ... 9							...L	
Mechanical end-position limiter		–	–	Variable end position, at one end						[7]	YWZ1	
		–	–	Variable end position, at both ends						[7]	YWZ2	
Intermediate-position module		–	–	–	1 intermediate position			–	–	[8]	-Z1	
		–	–	–	2 intermediate positions			–	–	[8]	-Z2	
		–	–	–	3 intermediate positions			–	–	[8]	-Z3	
Operating instructions		Express waiver – no operating instructions to be included (already available)									-O	

[7] YWZ1, YWZ2 Only with cushioning YSR or YSRW
[8] YWZ1, YWZ2 Only with cushioning YSR or YSRW and mechanical end-position limiter YWZ1 or YWZ2

Data sheet

General technical data Piston diameter		8	12	18	25	32	40	50	63
Design		Rodless drive							
Moment compensator principle		Slotted cylinder, mechanically coupled							
Guide		External recirculating ball bearing guide							
Mode of operation		Double-acting							
Stroke	[mm]	1 ... 1300	1 ... 1900	1 ... 3000	1 ... 8500			1 ... 5000	
Pneumatic connection		M5			G1/8		G1/4		G3/8
DGC-...-P		Non-adjustable at both ends		–					
DGC-...-PPV		–		Adjustable at both ends					
DGC-...-YSR...		Self-adjusting at both ends							
Cushioning length with cushioning PPV	[mm]	–		16.5	15.5	17.5	29.5	29.8	31.1
Max. speed	[m/s]	1	1.2	3					
Repetition accuracy	[mm]	0.02 (with shock absorber YSR/YSRW)							
Position sensing		Via proximity sensor							
Type of mounting		Profile mounting							
		Foot mounting							
		Direct mounting							
Mounting position		Any							

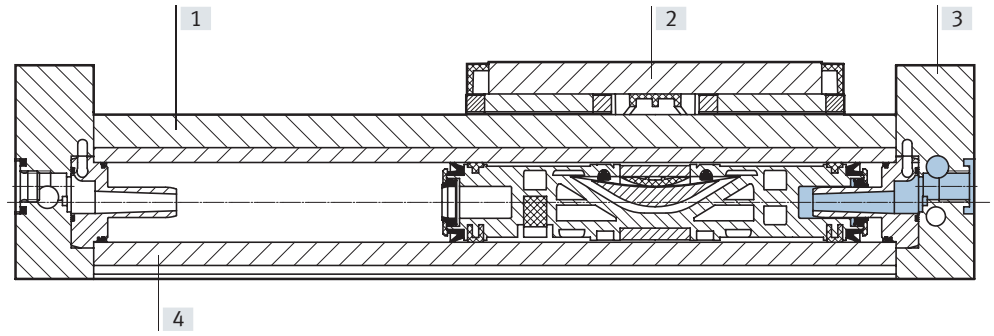
Operating and environmental conditions Piston diameter		8	12	18	25	32	40	50	63
Operating pressure	[bar]	2.5 ... 8		2 ... 8			1.5 ... 8		
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]							
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)							
Ambient temperature[1]	[°C]	–10 ... +60							
Food-safe[2]		–		→ supplementary information on materials					
Corrosion resistance class CRC[3]		1							

1) Note operating range of proximity sensors
2) Additional information is available at www.festo.com/sp → Certificates.
3) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Data sheet

Forces [N]								
Piston diameter	8	12	18	25	32	40	50	63
Theoretical force at 6 bar	30	68	153	295	483	754	1178	1870
Impact energy at the end positions	→ online							

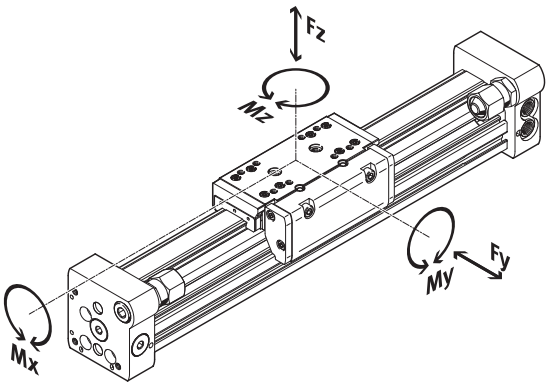
Materials



Linear drives		
[1]	Guide rail	High-alloy steel
[2]	Slide	High-alloy steel
[3]	End cap	Anodised aluminium
[4]	Cylinder barrel	Anodised aluminium
–	Piston seal	Polyurethane
–	Sealing band/cover strip	Polyurethane
	Note on materials	RoHS-compliant, free of copper and PTFE

Characteristic load values

The indicated forces and torques refer to the centre of the slide surface.
These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



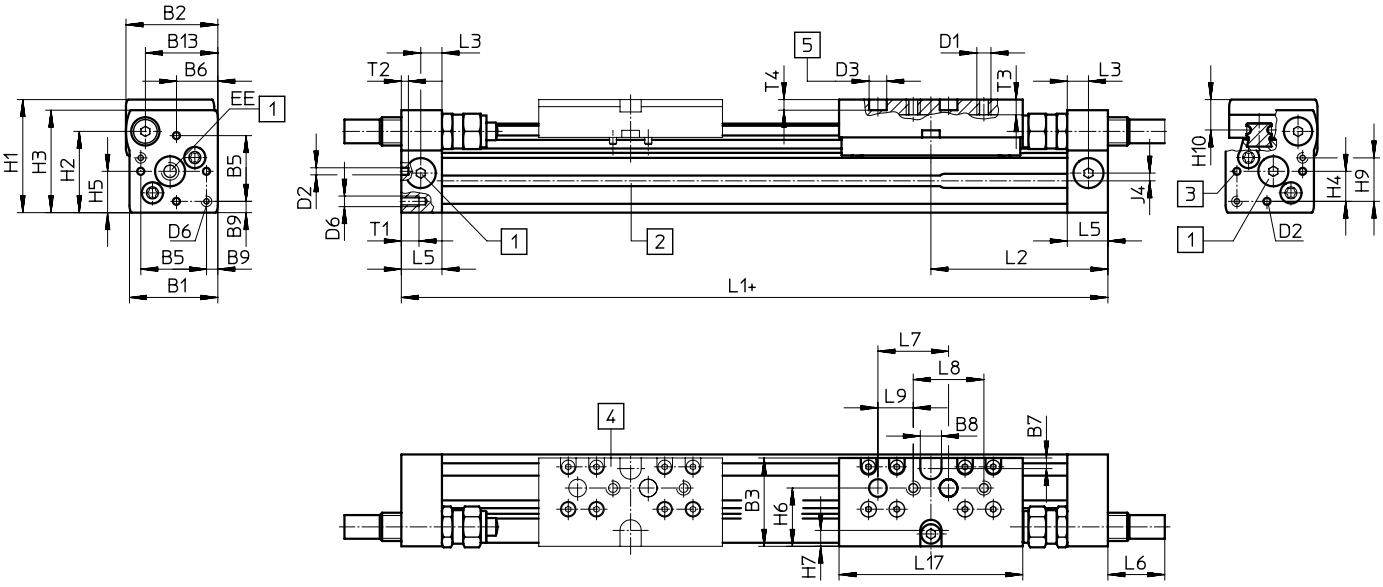
If the drive is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

$$\frac{Fy}{Fy_{max.}} + \frac{Fz}{Fz_{max.}} + \frac{Mx}{Mx_{max.}} + \frac{My}{My_{max.}} + \frac{Mz}{Mz_{max.}} \leq 1$$

Permissible forces and torques									
Piston diameter		8	12	18	25	32	40	50	63
$Fy_{max.}$	[N]	300	650	1850	3050	3310	6890	6890	15200
$Fz_{max.}$	[N]	300	650	1850	3050	3310	6890	6890	15200
$Mx_{max.}$	[Nm]	1.7	3.5	16	36	54	144	144	529
$My_{max.}$	[Nm]	4.5	10	51	97	150	380	634	1157
$Mz_{max.}$	[Nm]	4.5	10	51	97	150	380	634	1157

Dimensions

∅ 8 and 12



+ plus stroke length
[1] Compressed air 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] Drilled hole for centring pin ZBS

∅ [mm]	B1	B2	B3	B5	B6	B7	B8 ±0.05	B9 ±0.1	B13	D1	D2 ∅ H8	D3 ∅ H7	D6
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

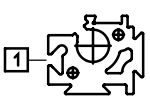
∅ [mm]	EE	H1	H2	H3	H4	H5	H6	H7	H9	H10	J4	L1	L2
8	M5	32	23	29	8.5	11.7	16.5	4.5	12.3	8.7	2.2	100	50.1
12	M5	37.5	28.5	34.5	8.7	13.5	20.5	5	14.7	9.8	3	125	62.4

∅ [mm]	L3	L5	L6			L7 ±0.03	L8 ±0.1	L9 ±0.1	L17	T1	T2	T3	T4 +0.2	Stroke tolerance
			P	YSR	YSRW									
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

∅ 8

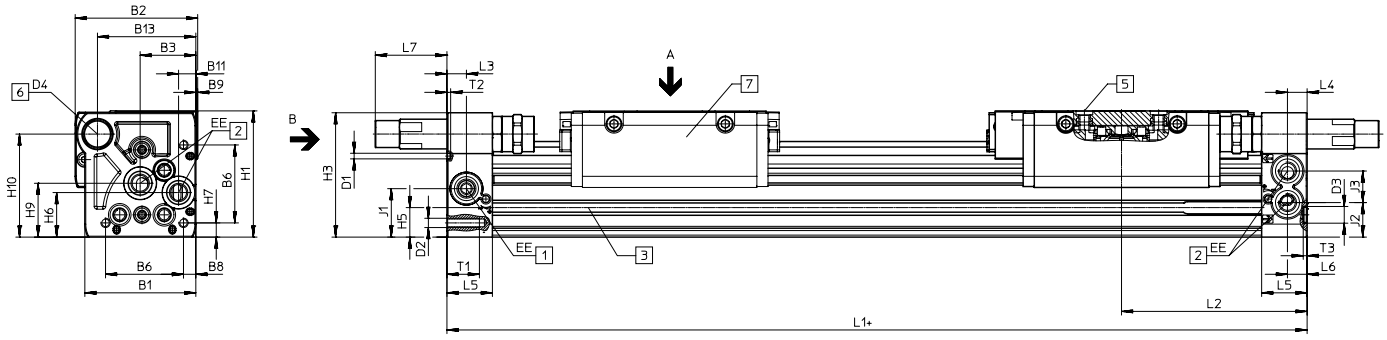


∅ 12

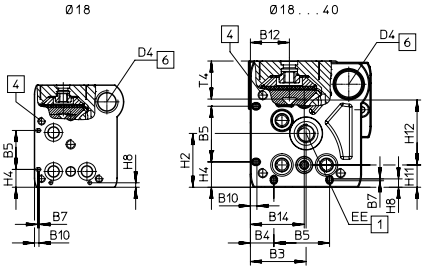
[1] Sensor slot for proximity sensor

Dimensions

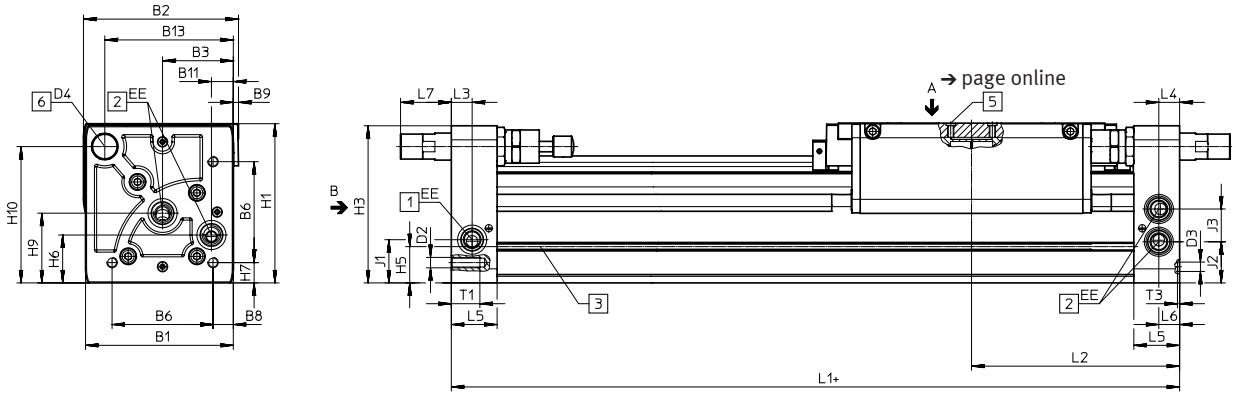
∅ 18 ... 40



View B

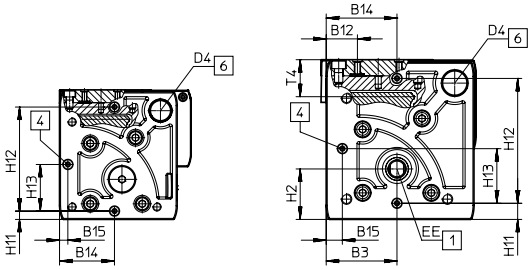


∅ 50/63



View B

Ø50 Ø50 . . . 63



\+ plus stroke length
[1] Compressed air supply port options on 2 sides
[2] Compressed air supply port options on 2 sides, for compressed air supply port at one end
[3] Sensor slot for proximity sensor
[4] Mounting hole for foot mounting HPC
[5] Drilled hole for centring pin/sleeve
[6] Thread for end stop
[7] Additional slide

Note
The linear drive is actuated at the right end or at both ends by default. The linear drive can be actuated at the left end or at both ends by specifying the order code DL in the modular product system.

Dimensions

∅ [mm]	B1	B2	B3 ±0.05	B4±0.1	B5 ±0.05	B6	B7	B8 ±0.1	B9	B10	B11
18	44.5	49.9	19.5	8.8	21	31	0.8	3.8	1	2.4	5.5
25	59.8	66	30	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	52.8	–	–	81.6	–	12	–	–	21
63	142	149	68	–	–	97	–	19.5	5	–	21

∅ [mm]	B12	B13	B14	B15	D1 ∅ ±0.05	D2	D3 ∅ H7	D4	EE	H1	H2
18	15.5	39	19.5	–	2	M4	5	M12x1	M5	56.3	23.1
25	21	53	29	–	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	60	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

∅ [mm]	H3	H4 ±0.2	H5	H6	H7	H8	H9	H10	H11	H12 ±0.05	H13
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

∅ [mm]	J1	J2	J3	L1			L2			L3	L4
				KF	KF-GP	1H-PN	KF	KF-GP	1H-PN		
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

∅ [mm]	L5	L6	L7			T1	T2	T3 +0.2	T6	Stroke tolerance
			PPV	YSR	YSRW					
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

Semi-rotary drives DRVS

Highlights

+ Modern and compact design
+ Swivel angle of 90°, 180° and 270°
+ Lighter than other semi-rotary drives
+ Housing protected against splash water and dust

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Semi-rotary drives DRVS

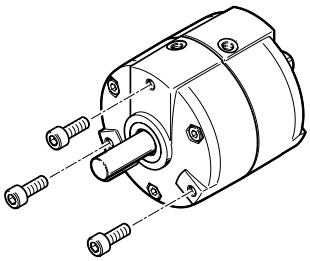
Features

Key features at a glance

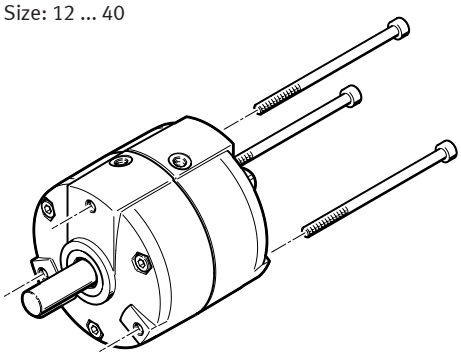
- Double-acting semi-rotary drive with vane
- Lighter than other semi-rotary drives
- Modern and compact design
- Fixed swivel angle
- Swivel angle can be adjusted with the help of accessories
- Housing protected against splash water and dust
- No metal fixed stop

Mounting options

With female thread
Size: 6 ... 40



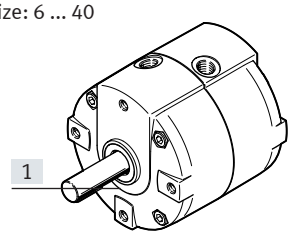
With through-hole
Size: 12 ... 40



Note

This type of mounting is not permissible in combination with accessories.

Centring via centring collar
Size: 6 ... 40

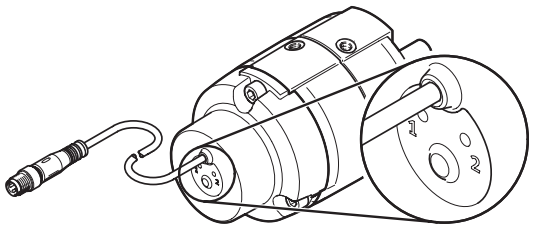


[1] Centring collar

Sensor options

Position sensor SRBS
The position sensor is used for sensing the end positions.

Sensing is carried out magnetically and without contact. Two switching points are output.



Key features:

- Quick installation
- Simple and reliable operation using one button
- The end positions of the swivel angle are taught in at the touch of a button

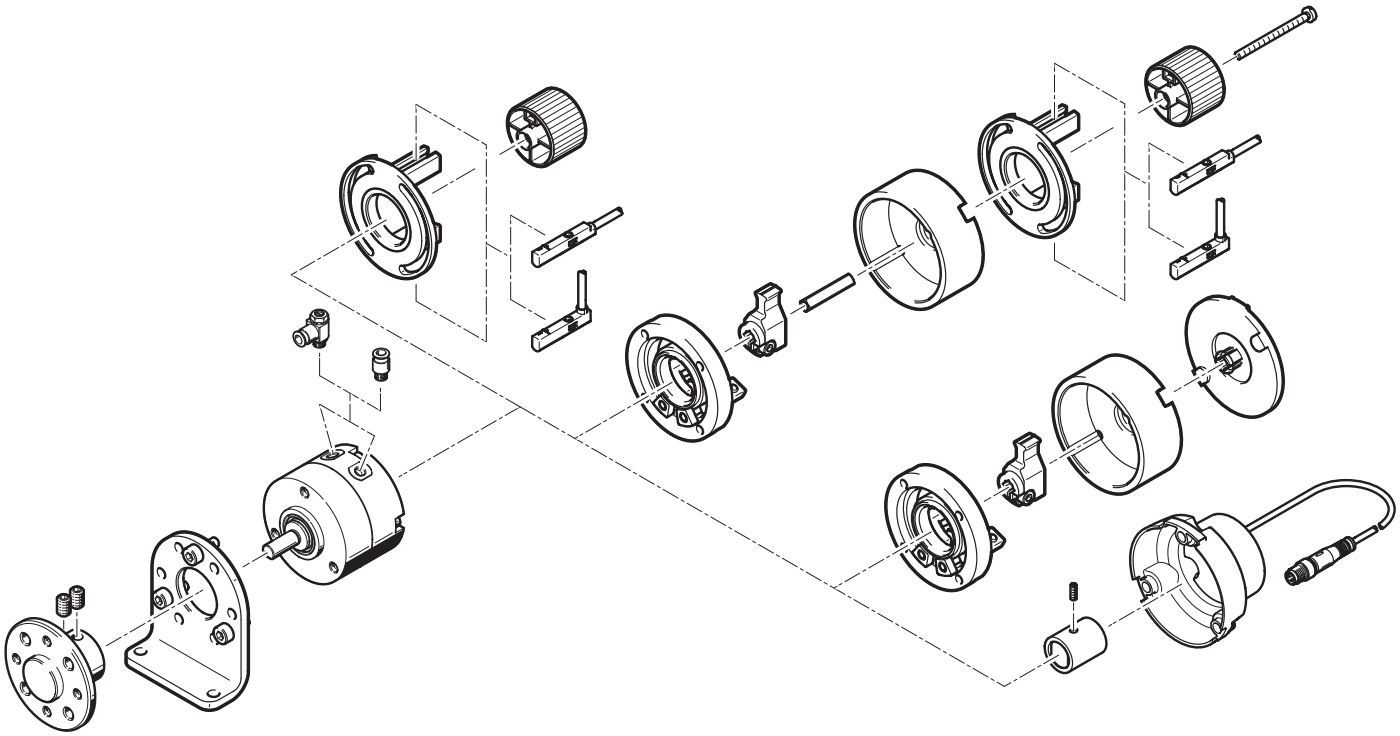
Only one connecting cable required
Long service life thanks to sturdy and non-contacting position sensing

Technical data:

- Sensing range: 0 ... 270°
- Repetition accuracy: ≤ 1°
- 2 switching outputs (24 V)
- Switching output: PNP or NPN programmable
- Switching element function: N/O contact or N/C contact programmable

Peripherals overview

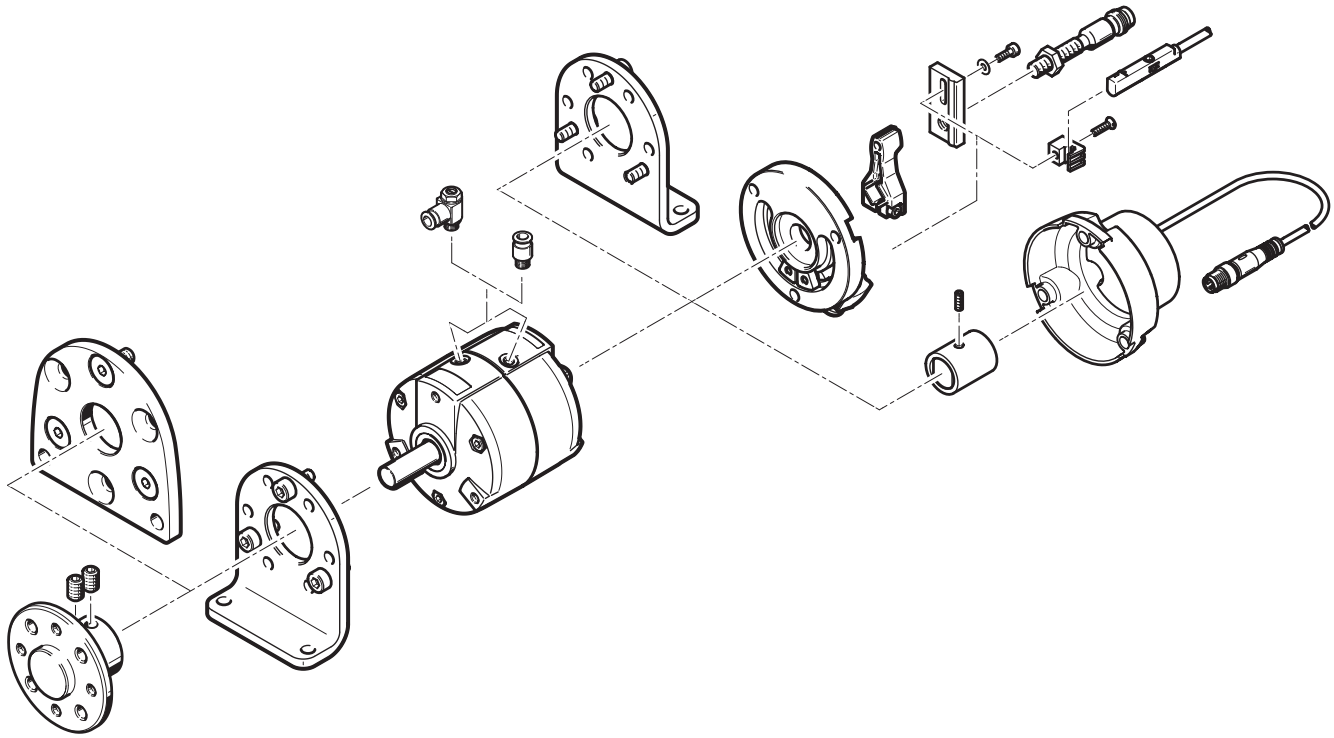
Size 6 and 8



Accessories		Description	➔ Page/ Internet
[1]	Push-on flange FWSR/DARF	For mounting attachments	138
[2]	Foot mounting DAMH	For mounting the semi-rotary drive Front mounting only	
[4]	Mounting kit WSM-...-SME-10	For sensing the swivel angle For mounting the proximity switches SME-/SMT-10 Must be ordered separately as an accessory Can be combined with stop kit KSM The adapter kit DADP-AK must also be ordered in combination with stop kit KSM ➔ online	
[5]	Stop kit KSM	For adjusting the swivel angle Must be ordered separately as an accessory Can be combined with mounting kit WSM The adapter kit DADP-AK must also be ordered in combination with mounting kit WSM ➔ online	
[6]	Adapter kit DADP-AK	For attaching mounting kit WSM to stop kit KSM	
[7]	Proximity switch SME/SMT-10	For sensing the end position	
[8]	Position sensor SRBS	For sensing the swivel angle Can only be mounted directly on the semi-rotary drive, without other accessories Must be ordered separately as an accessory The scope of delivery of the position sensor includes a magnet, which must be mounted on the shaft of the semi-rotary drive	
[13]	One-way flow control valve GRLA	For speed regulation	
[14]	Push-in fitting NPQE	For connecting tubing with standard outside diameters	803

Peripherals overview

Size: 12 ... 40



Accessories		Description	→ Page/ Internet
[1]	Push-on flange DARF	For mounting attachments	138
[2]	Foot mounting DAMH	For mounting the semi-rotary drive Mounting at one or both ends	
[3]	Flange mounting DAMF	For mounting the semi-rotary drive on the front using two mounting holes	
[7]	Proximity switch SME/SMT-10	For sensing the end position	
[8]	Position sensor SRBS	For sensing the swivel angle Can only be mounted directly on the semi-rotary drive, without other accessories Must be ordered separately as an accessory The scope of delivery of the position sensor includes a magnet, which must be mounted on the shaft of the semi-rotary drive	
[9]	Stop kit DADP-ES	For adjusting the swivel angle Must be ordered separately as an accessory	
[10]	Sensor bracket SL-DSM-S	For mounting the round inductive proximity switch SIEN	
[11]	Sensor bracket SL-DSM-B	For mounting the proximity switches SME/SMT-10	
[12]	Proximity switch SIEN	For sensing the end position	
[13]	One-way flow control valve GRLA	For speed regulation	
[14]	Push-in fitting NPQE	For connecting tubing with standard outside diameters	803

Type code explanation

001	Series
DRVS	Semi-rotary drive, double-acting

002	Size
...	6, 8, 12, 16, 25, 32, 40

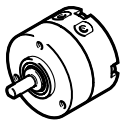
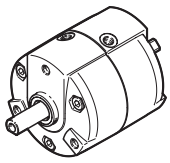
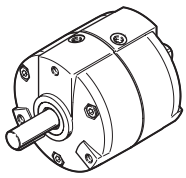
003	Nominal swivel angle [°]
90	90
180	180
270	270

004	Cushioning
P	Elastic cushioning rings/plates on both sides

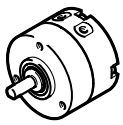
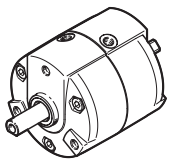
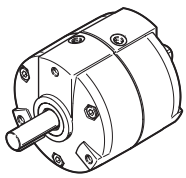
005	EU certification
	None
EX4	II 2GD

Ordering data

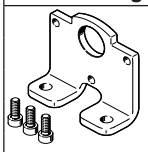
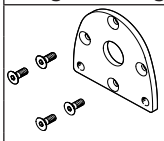
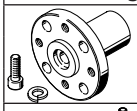
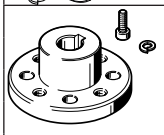
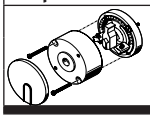
Without ATEX certification

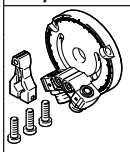
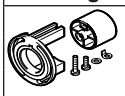
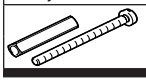
	Size	Swivel angle	Part no.	Type
	6	90°	★1845706	DRVS-6-90-P
		180°	★1845707	DRVS-6-180-P
	8	90°	★1845708	DRVS-8-90-P
		180°	★1845709	DRVS-8-180-P
	12	90°	★1845710	DRVS-12-90-P
		180°	★1845711	DRVS-12-180-P
		270°	★1845712	DRVS-12-270-P
	16	90°	★1845713	DRVS-16-90-P
		180°	★1845714	DRVS-16-180-P
		270°	★1845715	DRVS-16-270-P
	25	90°	★1845716	DRVS-25-90-P
		180°	★1845717	DRVS-25-180-P
		270°	★1845718	DRVS-25-270-P
	32	90°	★1845719	DRVS-32-90-P
		180°	★1845720	DRVS-32-180-P
		270°	★1845721	DRVS-32-270-P
	40	90°	★1845722	DRVS-40-90-P
		180°	★1845723	DRVS-40-180-P
		270°	★1845724	DRVS-40-270-P

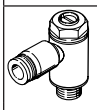
With ATEX certification

	Size	Swivel angle	Part no.	Type
	6	90°	★2536483	DRVS-6-90-P-EX4
		180°	★2536484	DRVS-6-180-P-EX4
	8	90°	★2536485	DRVS-8-90-P-EX4
		180°	★2536486	DRVS-8-180-P-EX4
	12	90°	★2536487	DRVS-12-90-P-EX4
		180°	★2536488	DRVS-12-180-P-EX4
		270°	★2536489	DRVS-12-270-P-EX4
	16	90°	★2536490	DRVS-16-90-P-EX4
		180°	★2536491	DRVS-16-180-P-EX4
		270°	★2536492	DRVS-16-270-P-EX4
	25	90°	★2536493	DRVS-25-90-P-EX4
		180°	★2536494	DRVS-25-180-P-EX4
		270°	★2536495	DRVS-25-270-P-EX4
	32	90°	★2536496	DRVS-32-90-P-EX4
		180°	★2536497	DRVS-32-180-P-EX4
		270°	★2536498	DRVS-32-270-P-EX4
	40	90°	★2536499	DRVS-40-90-P-EX4
		180°	★2536500	DRVS-40-180-P-EX4
		270°	★2536501	DRVS-40-270-P-EX4

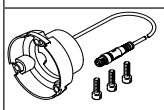
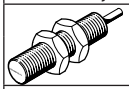
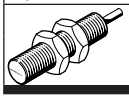
Accessories – Ordering data

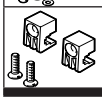
	For size	Part no.	Type
Foot mounting			
	6	3371840	DAMH-Q12-6
	8	3371841	DAMH-Q12-8
	12	3371842	DAMH-Q12-12
	16	3371843	DAMH-Q12-16
	25	3371844	DAMH-Q12-25
	32	3371845	DAMH-Q12-32
	40	3371846	DAMH-Q12-40
Flange mounting			
	12	4965018	DAMF-Q12-12
	16	4965019	DAMF-Q12-16
	25	4965020	DAMF-Q12-25
	32	4965021	DAMF-Q12-32
	40	4965022	DAMF-Q12-40
Push-on flange			
	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
Stop kit KSM			
	6	175833	KSM-6
	8	175834	KSM-8

	For size	Part no.	Type
Stop kit DADP			
	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
Mounting kit for proximity sensor SME/SMT-10			
	6	173205	WSM-6-SME-10
	8	173206	WSM-8-SME-10
Adapter kit			
	6	3617044	DADP-AK-Q1-6
	8	3617045	DADP-AK-Q1-8

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1] for exhaust air flow control					
	6, 8	M3	3	175041	GRLA-M3-QS-3
	12, 16, 25	M5	3	★193137	GRLA-M5-QS-3-D
			4	★193138	GRLA-M5-QS-4-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

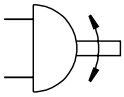
1) The recommended flow control valves are based on a tubing length to the valve of 1 m. For deviations of ±50%, flow control valves with a bigger or smaller flow rate must be selected to guarantee the optimum flow control function and cylinder speed.

	For size	Switching output, connection	Cable length [m]	Part no.	Type
Position sensor					
	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
Inductive proximity sensor – N/O contact, M5					
	12 ... 40	PNP, cable	2.5	★150370	SIEN-M5B-PS-K-L
		PNP, plug	–	★150371	SIEN-M5B-PS-S-L
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		Part no.	Type
Sensor bracket				
	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

Data sheet

Function



Size
6 ... 40

General technical data								
Size		6	8	12	16	25	32	40
Pneumatic connection		M3		M5			G1/8	
Design		Rotary vane						
Cushioning		Elastic cushioning at both ends						
Type of mounting		With female thread						
Mounting position		Any						
Swivel angle	[°]	90, 180		90, 180, 270				
Swivel angle with stop kit KSM, DADP		→ online						
Cushioning angle	[°]	0.5						
Repetition accuracy	[°]	1						
Swivel frequency at 6 bar								
Swivel angle 90°, 180°	[Hz]	3						
Swivel angle 270°	[Hz]	–		2				

Operating and environmental conditions								
Size		6	8	12	16	25	32	40
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 ... 8		2.5 ... 8		2 ... 8		
Ambient temperature[1]	[°C]	0 ... +60						
Storage temperature	[°C]	20						
Corrosion resistance CRC[2]		1						

1) Note operating range of proximity switches
2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e. g. drive trunnions).

ATEX[1]	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T4 Gb X
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T120°C Db X
Explosion-proof ambient temperature [°C]	0°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

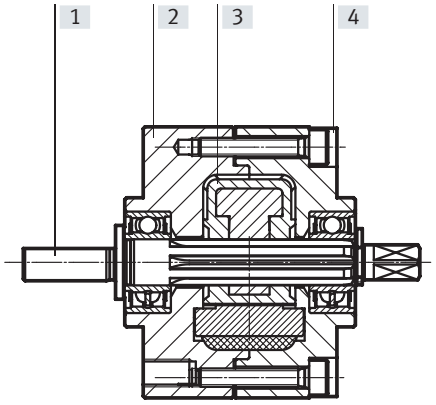
1) Note the ATEX certification of the accessories.

Semi-rotary drives DRVS

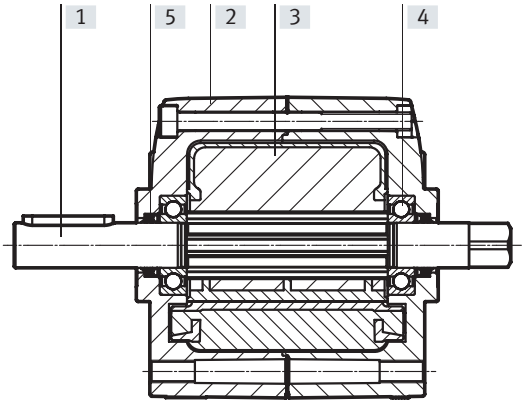
Data sheet

Materials

DRVS-6/8



DRVS-12 ... 40

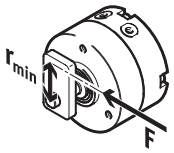


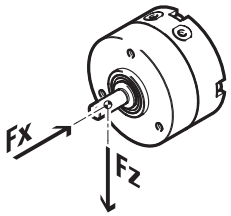
Size		6	8	12	16	25	32	40
[1]	Drive shaft	High-alloy stainless steel			Nickel-plated steel			
[2]	Housing	Anodised wrought aluminium alloy		Painted die-cast aluminium				
[3]	Rotary vane	Reinforced PET						
[4]	Ball bearing	Rolled steel						
[5]	Shaft seal	–		PU				NBR
–	Screws	Galvanised steel						
	Seals	TPE-U(PU)						
	Note on materials	RoHS-compliant						

Forces and torques

Size		6	8	12	16	25	32	40
Theoretical torque								
at 6 bar	[Nm]	0.15	0.35	1	2	5	10	20
per bar	[Nm]	0.025	0.058	0.166	0.33	0.83	1.66	3.33
Permissible stop radius r	[mm]	10	10	15	17	21	28	40
Permissible stop force F	[N]	15	30	90	160	320	480	650
Max. permissible dyn. axial force F_x 1)	[N]	10	10	20	25	40	75	120
Max. permissible dyn. radial force F_z 1)	[N]	15	20	25	30	60	200	350
Max. permissible mass moment of inertia	[kgm²x10⁻⁴]	6.5	13	50	100	120	200	350

1) The axis of rotation and the centre of the drive shaft are the point of reference for the forces



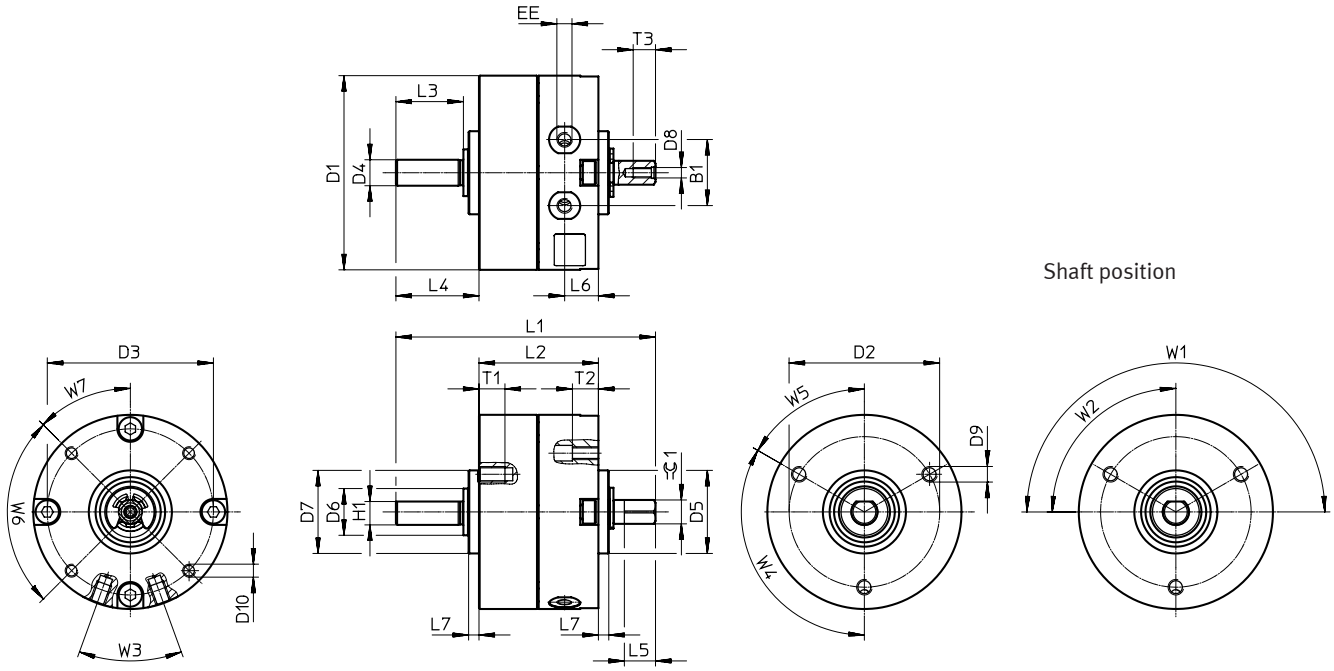


Note

If the semi-rotary drives DRVS are used without a stop system or the mass moment of inertia is exceeded, external stops must be used. A minimum radius relative to the drive shaft (r_{min}) must be observed. The stop force must not exceed the maximum force.

Dimensions

Size 6/8



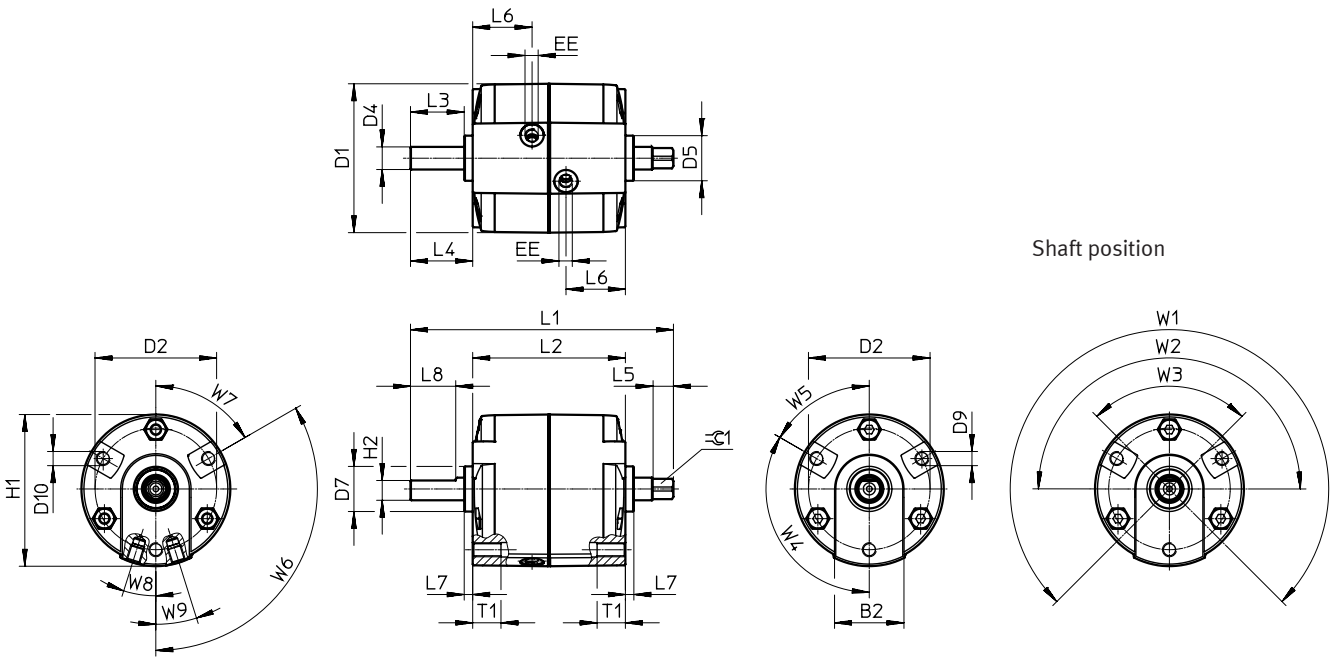
Size	B1	D1 ∅ ±0.2	D2 ∅ ±0.1	D3 ∅ ±0.1	D4 ∅ g7	D5 ∅ f8	D6 ∅	D7 ∅ f8	D8	D9
6	10	29.4	24	25	4	14	8	14	M2	M3
8	12.8	37.4	29	32	5	16	9	16	M2	M3

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

Dimensions

Size 12/16



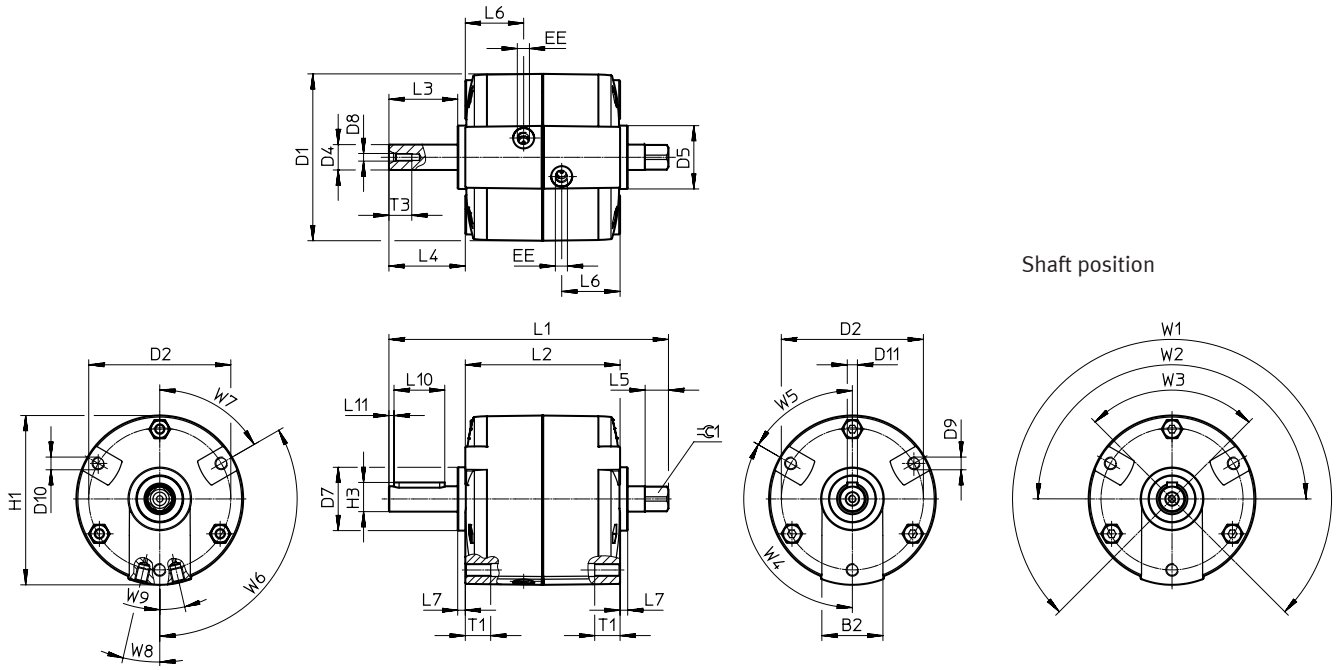
Size	B2	D1 ∅	D2 ∅ ±0.2	D4 ∅ g7	D5 ∅ –0.1	D7 ∅ –0.1	D9	EE	H1
12	24	45.5	36	6	14	14	M4	M5	46.3
16	24.5	52.7	43	8	16	16	M5	M5	53.7

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	$20^{+0.4/-0.6}$	$9^{\pm 0.1}$	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	=C 1
12	270°	180°	90°	120°	60°	120°	60°	19.5°	19.5°	4.5_{h11}
16								17.5°	17.5°	$6_{-0.1}$

Dimensions

Size 25



Size	B2	D1 ∅	D2 ∅ ±0.2	D4 ∅ g7	D5 ∅ –0.1	D7 ∅ –0.1	D8	D9	D11 N9
25	24	65.7	56	10	25	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

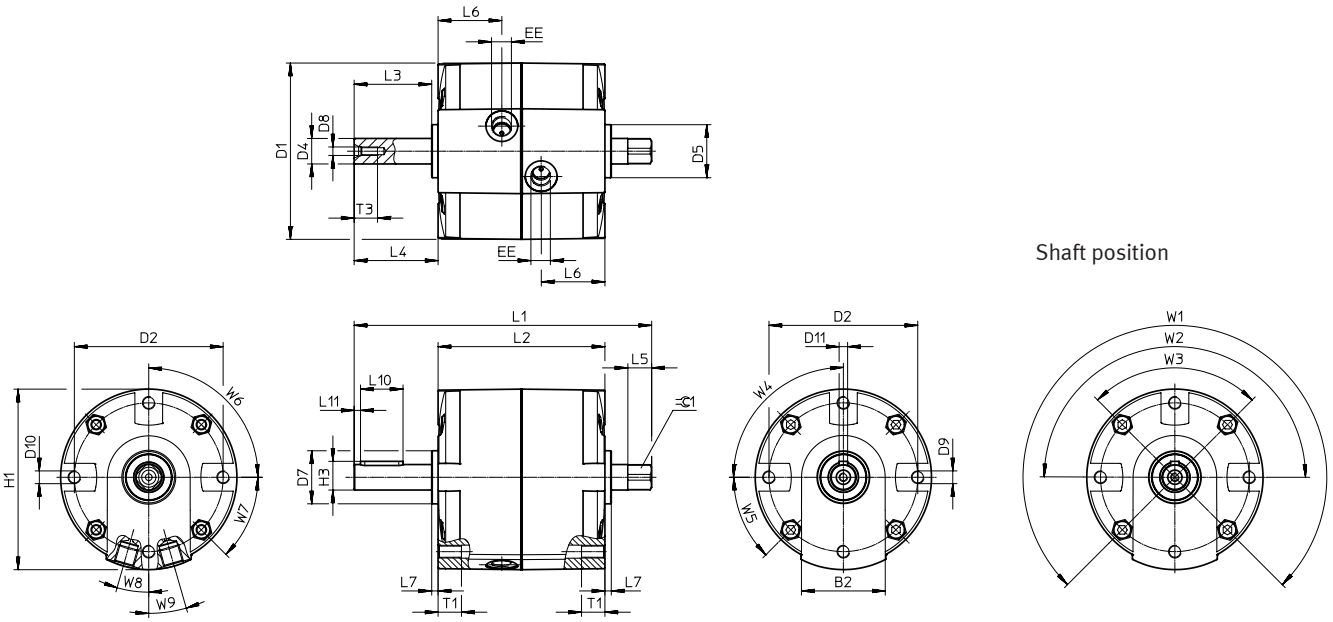
Size	L6	L7 +0.1/–0.1	L10 +0.1	L11	T1	T3 +3	W1 +7°	W2 +7°
25	23	3	20	2	10	9	270°	180°

Size	W3 +7°	W4	W5	W6	W7	W8	W9	⫩ 1 –0.1	Featherkey[1]
25	90°	120°	60°	120°	60°	13°	13°	8	A4x4x20

1) Included in the scope of delivery

Dimensions

Size 32/40



Size	B2	D1 ∅	D2 ∅ ±0.2	D4 ∅ g7	D5 ∅ –0.1	D7 ∅ –0.1	D8	D9	D11 N9
32	39	83	70	12	25	25	M4	M6	4
40	42	100.1	87	17	30	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	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	⊂ 1 h11	Featherkey 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

Semi-rotary drives DRRD

Highlights

+ 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

Semi-rotary drives DRRD

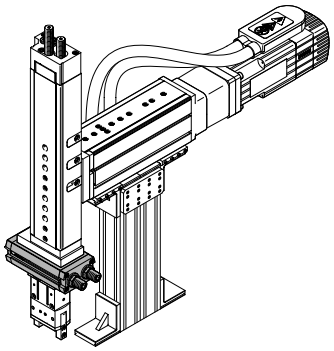
Features

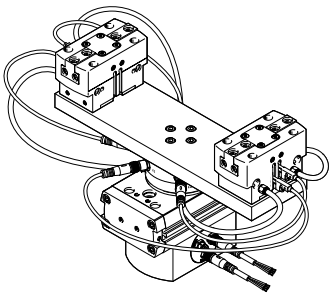
At a glance

- Rack and pinion principle
- Very high accuracy in the end positions
- Very high load bearing capacity
- Very good axial run-out at the flange shaft
- High mass moments of inertia
- Low backlash and good dynamic response
- Splash-proof design to IP65 based on EN 60529
- Defined interfaces
- Supply port at one end
- Choice of mounting options
- Ideal for use in handling applications

Example applications

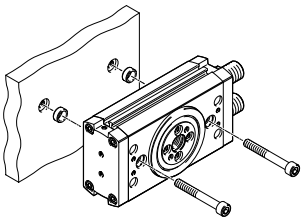
Pick- and place



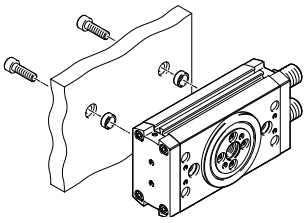


Mounting Options

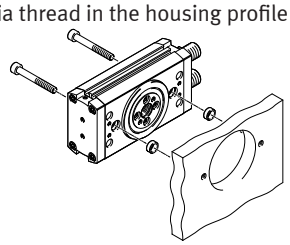
Via through-holes

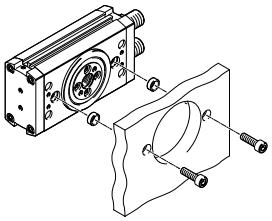


Direct mounting



Via thread in the housing profile



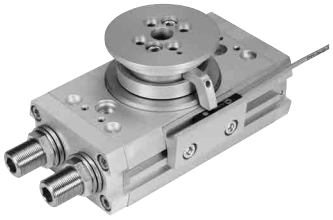


Sensor options

Position sensing

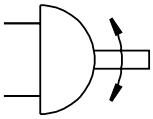
- Size: 8 ... 12
  - C-slot for proximity switch SMT/SME-10
- Size: 16 ... 63
  - T-slot for proximity switch SMT/SME-8

External position sensing (sensor mounting)



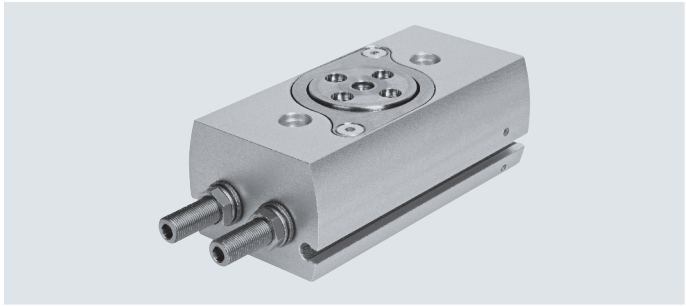
- Size: 16 ... 63
- Position sensing possible directly at the flange shaft
- Inductive proximity switches SIES can be used in combination with external position sensing

Function

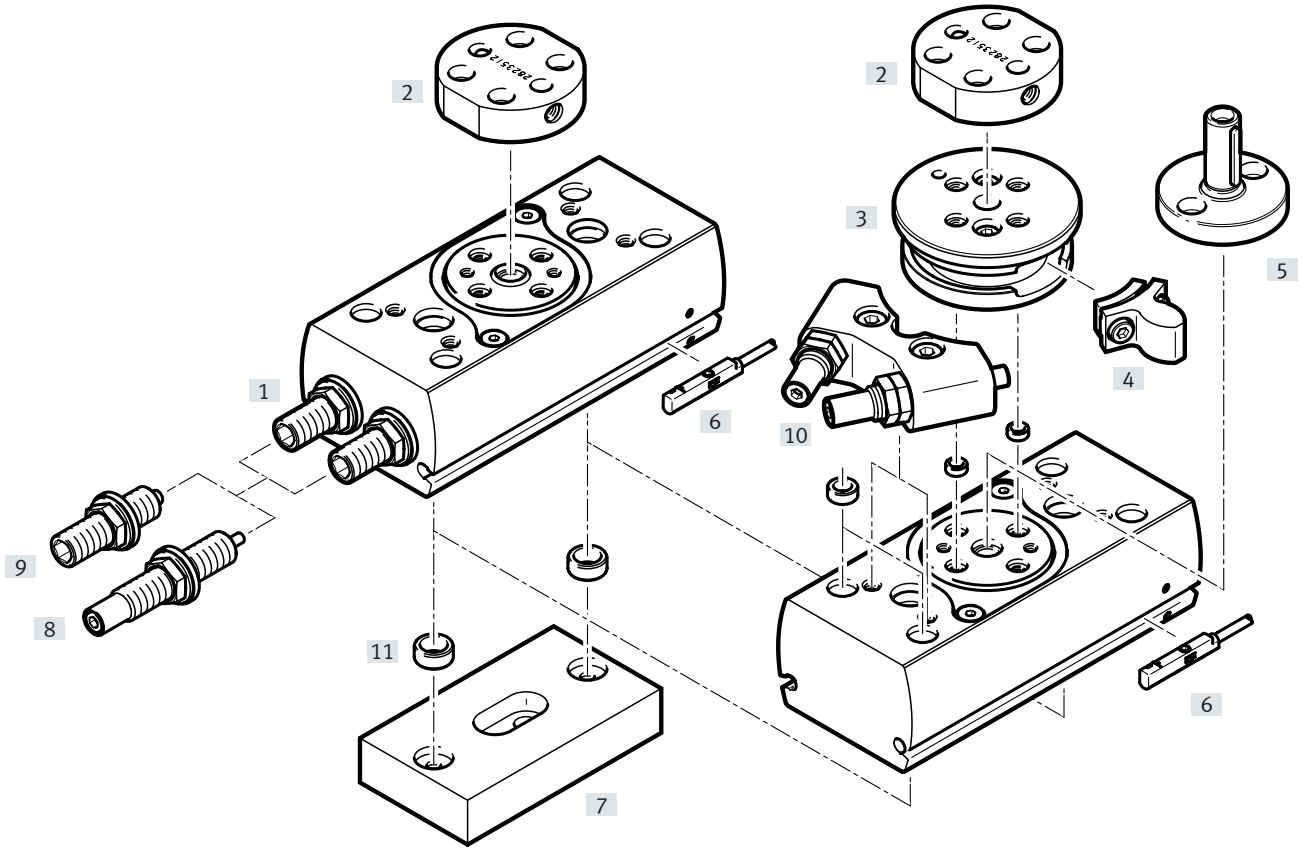


Diameter
8 ... 12 mm

Torque
0.2 ... 0.8 Nm



Peripherals overview – DRRD 8 ... 12



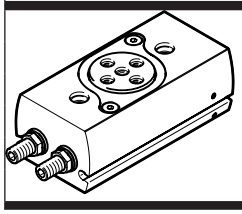
		Size			➔ Page/ Internet
		8	10	12	
[1]	Semi-rotary drive DRRD	■	■	■	147
[2]	Adapter kit DHAA	■	■	■	gripper
[3]	Flange module	–	–	■	drrd
[4]	Stop element	–	–	■	
[5]	Drive shaft DARF-Q11	–	–	■	148
[6]	Proximity switch SMT/SME-10	■	■	■	691
[7]	Adapter kit DHAA	■	■	■	adapter
[8]	Shock absorber Y9	–	–	■	148
[9]	Shock absorber P	■	■	■	ysr
[10]	Shock absorber, external Y12	–	–	■	ysrw
[11]	Centring sleeve ZBH	■	■	■	148

Semi-rotary drives DRRD 8 ... 12

Ordering – Modular product system

Size	12	Conditi-ons	Code		Enter code
Module no.	574398				
Function	Semi-rotary drive		DRRD		DRRD
Size	12		-12		-12
Nominal swivel angle	180°		-180		-180
Output shaft	Flange shaft, hollow		-FH		-FH
Cushioning	Elastic cushioning rings/plates at both ends		-P		
	Linear shock absorber, self-adjusting at both ends		-Y9		
	Linear shock absorber, self-adjusting at both ends, external		-Y12		
Position sensing	Via proximity switch		A		A
Operating instructions	With operating instructions				
	Without operating instructions		-DN		

Ordering data

DRRD	Size	Swivel angle [°]	Part no.	Type
	P – Elastic cushioning rings/plates at both ends			
	8	180	2223060	DRRD-8-180-FH-PA
	10		2350968	DRRD-10-180-FH-PA
	12		2282067	DRRD-12-180-FH-PA
	Y9 – Linear shock absorber, self-adjusting at both ends			
	12	180	2399248	DRRD-12-180-FH-Y9A

Accessories – Ordering data

	For ∅	Part No.	Type
Drive shaft DARF-Q11			
	12	4835942	DARF-Q11-12
Shock absorber DYSC			
	12	548011	DYSC-5-5-Y1F

	For ∅	Part No.	Type
Centring sleeve[1]			
For housing			
	8, 10	186717	ZBH-7
	12	150927	ZBH-9
For flanged shaft			
	8, 10, 12	189652	ZBH-5

1) Packaging unit 10 pieces
2 included in the scope of delivery of the semi-rotary drive or attachments.

Data sheet

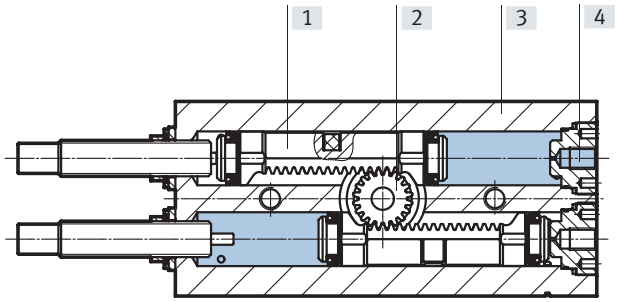
General technical data Size		8	10	12
Design		Gear rack/pinion		
Mode of operation		Double-acting		
Pneumatic connection		M3	M3	M5
Type of mounting		With through-hole		
		Via female thread		
Swivel angle	[°]	180 (→ page 10)		
Cushioning with fixed stop				
DRRD-...-P		Elastic cushioning at both ends		
DRRD-...-Y9		–		Linear shock absorber, self-adjusting at both ends
DRRD-...-Y12		–		External linear shock absorber, self-adjusting at both ends
Repetition accuracy	[°]	≤ 0.03		
Max. axial load (static)				
Pulling	[N]	260	260	330
Pushing	[N]	700	1100	1400
Mounting position		Any		

Data sheet

Operating and environmental 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		
DRRD-...-P	[bar]	3 ... 8
DRRD-...-Y9/-Y12	[bar]	2 ... 10
Ambient temperature	[°C]	–10 ... +60
Storage temperature	[°C]	–20 ... +60

Forces and torques				
Size		8	10	12
Theoretical torque at 6 bar	[Nm]	0.2	0.4	0.8
Max. permissible mass moment of inertia				
DRRD-...-P	[kgcm²]	15	20	80
DRRD-...-Y9	[kgcm²]	–	–	300
DRRD-...-Y12	[kgcm²]	–	–	300

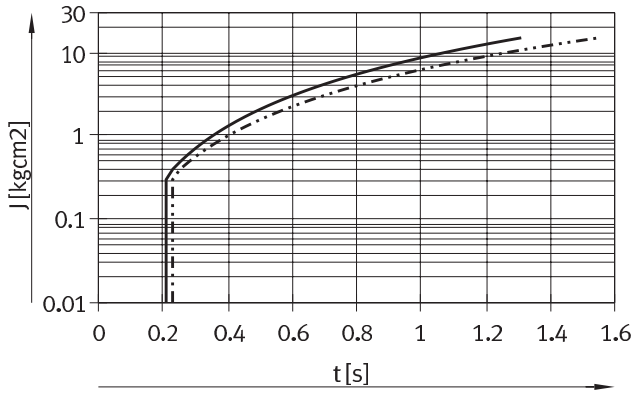
Materials



Semi-rotary drive		
[1]	Piston	Copper base alloy
[2]	Flange shaft	High-alloy stainless steel
[3]	Housing	Smooth-anodised wrought aluminium alloy
[4]	Port plug	High-alloy stainless steel
	Seals	NBR
	Piston seal	TPE-U(PU)
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

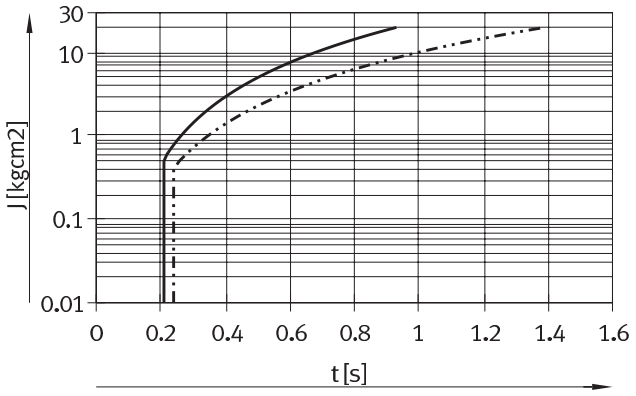
Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 8 with cushioning P
Swivel angle 90°/180°



Ranges
DRRD-8-...-P (90°) → 0 ... 15 kgcm²
DRRD-8- ...-P (180°) → 0 ... 15 kgcm²

Size 10 with cushioning P



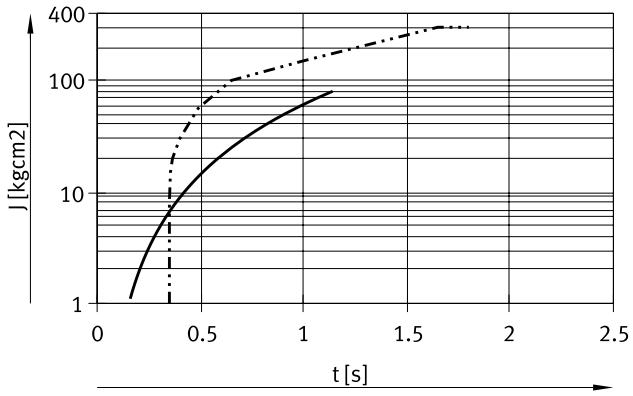
Ranges
DRRD-10-...-P (90°) → 0 ... 20 kgcm²
DRRD-10-...-P (180°) → 0 ... 20 kgcm²

Data sheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 12 with cushioning P/Y9

Swivel angle 90°

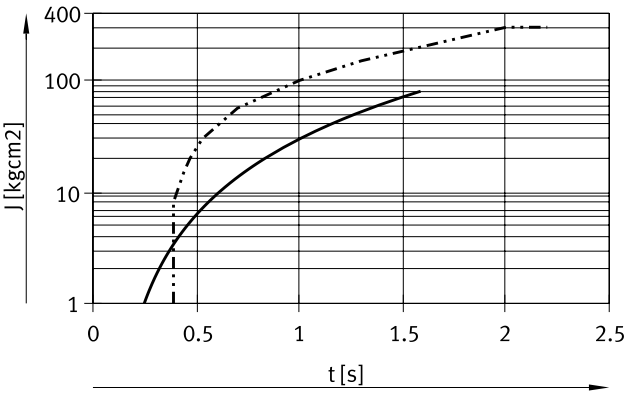


Ranges

DRRD-12-...-P (90°) → 0 ... 80 kgcm²

DRRD-12-...-Y9 (90°) → 0 ... 300 kgcm²

Swivel angle 180°



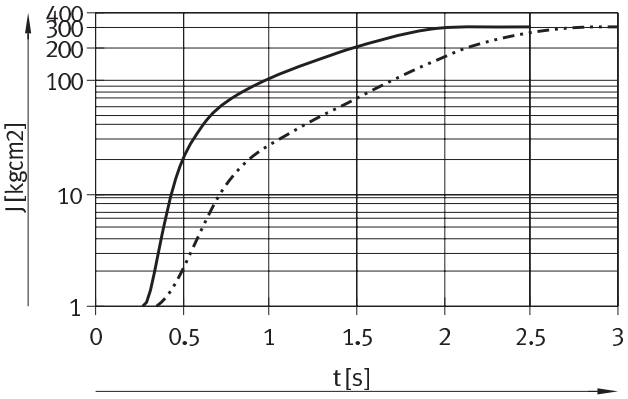
Ranges

DRRD-12-...-P (180°) → 0 ... 80 kgcm²

DRRD-12-...-Y9 (180°) → 0 ... 300 kgcm²

Size 12 with cushioning Y12

Swivel angle 90°/180°

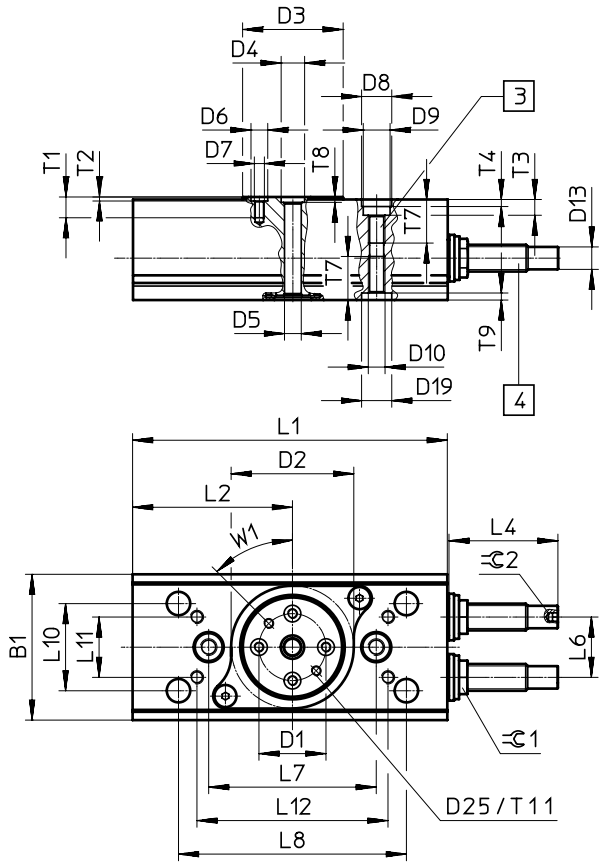


Ranges

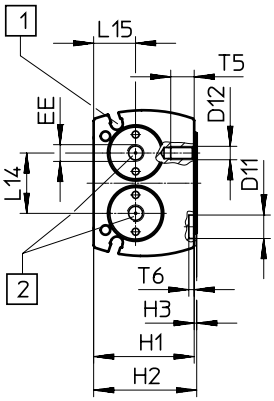
DRRD-12-...-Y12 (90°) → 1 ... 300 kgcm²

DRRD-12-...-Y12 (180°) → 1 ... 300 kgcm²

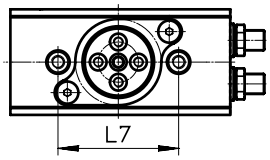
Dimensions

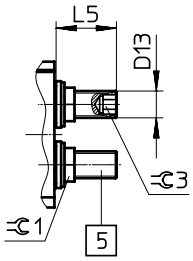


DRRD-8/10



DRRD-...-P





Note
Illustrated position of the flange shaft corresponds to the mid-position (swivel angle 90°).
Dimensions D25, T11 and W1 only for size 12

1 Sensor slots for proximity switch
2 Supply ports
3 Mounting thread
4 Shock absorber (DRRD-...-Y9)
5 Cushioning elements (DRRD-...-P)

Semi-rotary drives DRRD 8 ... 12

Dimensions

Size	B1 ±0.25	D1 ∅ ±0.025	D2 ∅ +0.1	D3 ∅	D4 ∅ H7	D5 ∅ ±0.1	D6 ∅ H7	D7	D8 ∅ H7	D9 ∅	D10
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

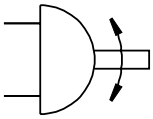
Size	D11 ∅ H7	D12	D13	D19 ∅ H7	D25	H1 +0.4	H2 ±0.2	H3 +0.2/–0.6	L1 ±0.1	L2 +0.1	L6
8	–	–	M6x0.5	7	–	24.5	25.25	0.75	65.6	32.2	$13_{-0.1}$
10	–	–	M6x0.5	7	–	27.5	28.25	0.75	74	38.3	$15.2_{-0.1}$
12	7	M4	M8x1	9	M3	30	30.75	0.75	93.9	47.7	$18^{+0.1}$

Size	L7 ±0.02	L8 ±0.2	L10 ±0.02	L11 ±0.15	L12 ±0.2	L14	L15 –0.1	T1	T2 +0.1	T3	T4 +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 +0.4/–0.1	T7	T8 +0.1	T9 +0.1	T11	EE	W1	⌯ 1	⌯ 2	⌯ 3
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

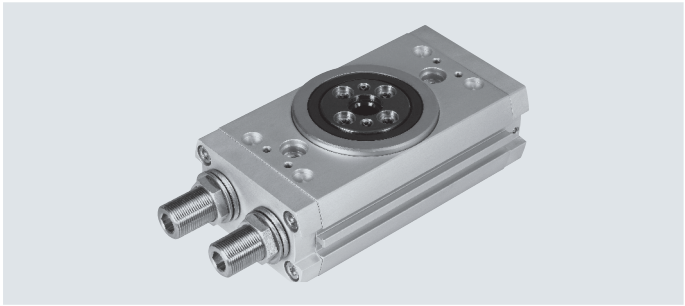
Size	Dimension with 180° swivel angle		Swivel angle adjustment range		
	L4	L5	L4 min./max.	L5 min./max.	1 mm = ...°
8	–	11.1	–	–6.1/+0.8	16.4
10	–	12.6	–	–7.6/+1.2	13.64
12	28	17	–1.9/+1.9	–11/+1.8	9.6

Function

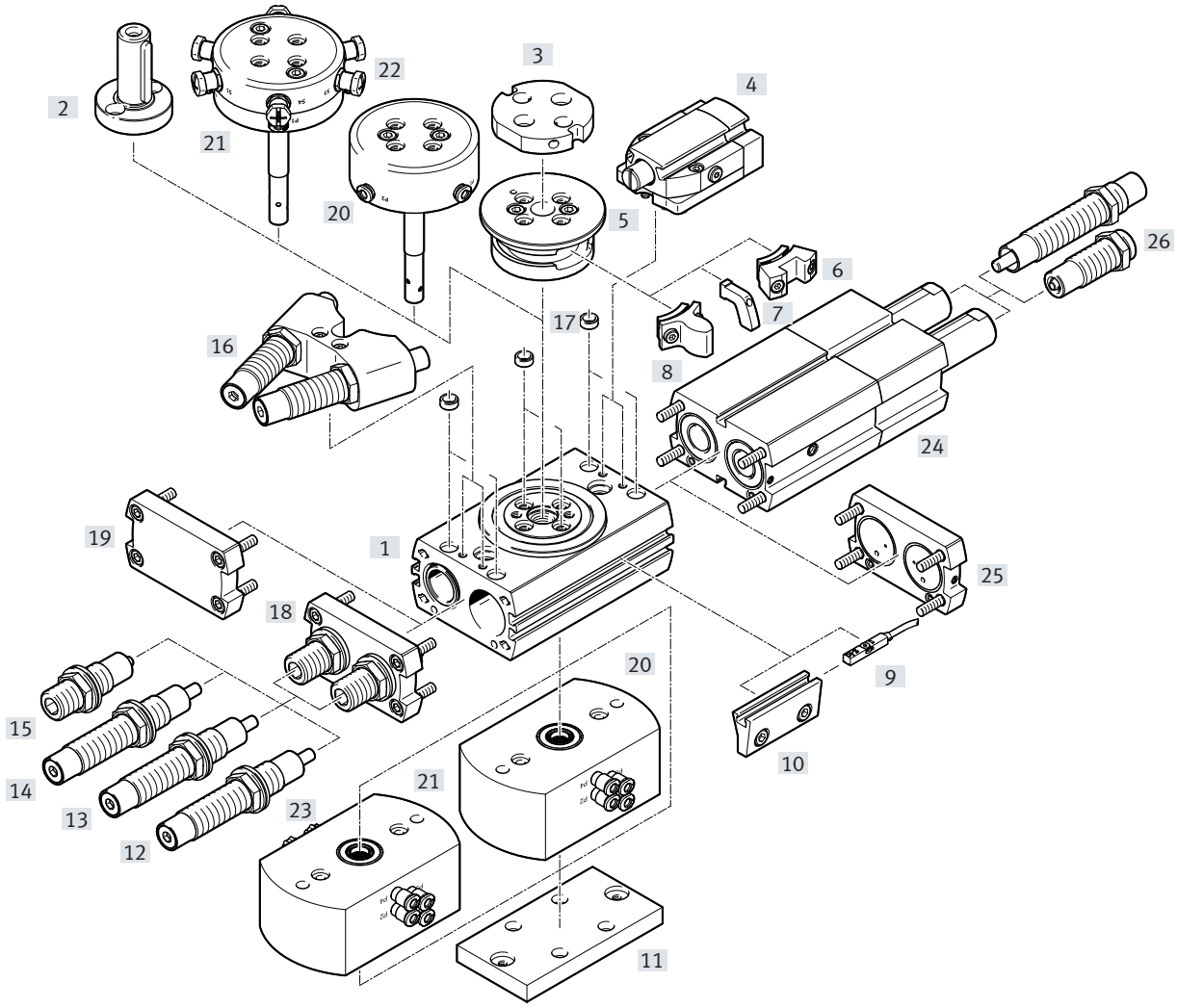


Diameter
16 ... 63 mm

Torque
1.6 ... 112 Nm



Peripherals overview – DRRD 16 ... 63



Peripherals overview – DRRD 16 ... 63

		➔ Page/Internet
[1]	Semi-rotary drive DRRD	153
[2]	Drive shaft[1)] DARF-Q11	155
[3]	Adapter kit DHAA	gripper
[4]	End-position locking E1[1)] (clamping unit DADL-...-EL as an accessory)	drrd
[5]	Flange module	155
[6]	Clamping component (Type: DADL-EC)	
[7]	Switch lug DASI-Q11-...-SL	
[8]	Stop element	

		➔ Page/Internet
[9]	Proximity switch SMT/SME-8	681
	Position transmitter SMAT-8M	smat-8m
[10]	Sensor mounting R (sensing kit DASI-...-KT as an accessory)	155
[11]	Adapter kit DHAA	adapter
[12]	Shock absorber Y9	148
[13]	Shock absorber, hard Y10	ysr
[14]	Shock absorber, soft Y14	ysrw
[15]	Shock absorber P	ysr
[16]	Shock absorber, external Y12	ysrw

Peripherals overview – DRRD 16 ... 63

		➔ Page/Internet
[17]	Centring sleeve ZBH	155
[18]	End cap	drrd
[19]	End cap	
[20]	Energy through-feed pneumatic	
[21]	Energy through-feed pneumatic/electrical	

		➔ Page/Internet
[22]	Connecting cable NEBU	nebu
[23]	Connecting cable NEBU	nebu
[24]	Intermediate position	drrd
[25]	Connection cap	
[26]	Shock absorber	ysr
–	One-way flow control valves GRLA	519

Ordering – Modular product system

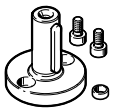
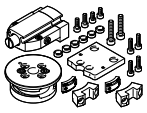
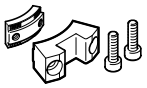
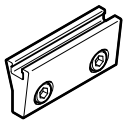
Size	16	20	25	32	35	40	50	63	Conditi-ons	Code	Enter code
Module no.	574399	574400	574401	574402	574403	574404	574405	574407			
Function	Semi-rotary drive									DRRD	DRRD
Size	16	20	25	32	35	40	50	63		-...	
Nominal swivel angle	180°									-180	-180
Output shaft	Flange shaft, hollow									-FH	-FH
Energy through-feed	None									–	
	Pneumatic, 2 ducts		–							P2	
	Pneumatic, 2 ducts; electric, 2 signals		–							P2E2	
	–		Pneumatic, 4 ducts			–				P4	
	–		Pneumatic, 4 ducts; electric, 6 signals			–				P4E6	
	–					Pneumatic, 8 ducts				P8	
	–					Pneumatic, 8 ducts; electric, 8 signals				P8E8	
Cushioning	Elastic cushioning rings/plates at both ends						–			-P	
	Linear shock absorber, self-adjusting at both ends									-Y9	
	–		Linear shock absorber, self-adjusting at both ends, hard		–			Linear shock absorber, self-adjusting at both ends, hard		-Y10	
	Linear shock absorber, self-adjusting at both ends, external								[1][5]	-Y12	
	Linear shock absorber, self-adjusting at both ends, soft						–			-Y14	
Position sensing	Via proximity switch									A	A
EU certification	None										
	II 2GD								[2]	-EX4	
Intermediate position	None							–			
	1 intermediate position							–	[3]	-PS1	
End-position locking	None										
	At both ends								[4][5]	-E1	
Sensor mounting, external	None										
	Mounting rail for proximity switch								[5]	-R	
Version	Standard										
	Splash-proof design									-SG	
Operating instructions	With operating instructions										
	Without operating instructions									-DN	

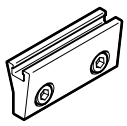
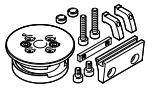
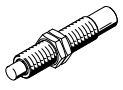
[1] **Y12** Not with end-position locking E1 and splash-proof design SG
[2] **EX4** Not with end-position locking E1, energy through-feed P2E2, P4E6, P8E8 and intermediate position PS1
[3] **PS1** Not with cushioning Y10, Y14 and with cushioning P only for size 16 ... 32
[4] **E1** Not with sensor mounting R and splash-proof design SG
[5] **Y12, E1, R** Not with energy through-feed P2, P2E2, P4, P4E6, P8, P8E8

Ordering data

DRRD	Size	Swivel angle [°]	Part no.	Type
P – Elastic cushioning rings/plates at both ends				
	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				
	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

Accessories – Ordering data

	For ∅	Part No.	Type
Drive shaft DARF-Q11			
	16	4835943	DARF-Q11-16
	20	4835941	DARF-Q11-20
	25	4835938	DARF-Q11-25
	32	4835940	DARF-Q11-32
	35, 40	4835939	DARF-Q11-35/40
Clamping unit DADL-EL			
	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, 40	1544900	DADL-EL-Q11-35/40
	50	1796637	DADL-EL-Q11-50
	63	1941568	DADL-EL-Q11-63
Clamping component DADL-EC			
	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
Switch lug DASI-...-SL			
	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
Sensor bracket DASI-...-SR[1]			
	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

	For ∅	Part No.	Type
Sensor bracket DASI-...-SR[1]			
	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
Sensing kit DASI-...-KT			
	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
Shock absorber DYSC			
	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
Centring sleeve[2]			
For housing			
	16, 20	150927	ZBH-9
	25	189653	ZBH-12
	32 ... 40	191409	ZBH-15
For flanged shaft			
	16, 20	186717	ZBH-7
	25 ... 40	150927	ZBH-9

1) Packaging unit 2 pieces
2) Packaging 10 pieces
2 included in the scope of delivery of the semi-rotary drive or attachments.

Semi-rotary drives DRRD 16 ... 63

Data sheet

General technical data									
Size		16	20	25	32	35	40	50	63
Design		Gear rack/pinion							
Mode of operation		Double-acting							
Pneumatic connection									
DRRD-...		M5			G1/8			G1/4	G3/8
DRRD-...-PS1		M5						G1/8	–
Type of mounting		With through-hole							
		Via female thread							
Swivel angle									
DRRD-...	[°]	180							
DRRD-...-PS1	[°]	90 ±10°							–
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[1]		–		Linear shock absorber, self-adjusting at both ends, hard	–	Linear shock absorber, self-adjusting at both ends, hard			
DRRD-...-Y12		External linear shock absorber, self-adjusting at both ends							
DRRD-...-Y14[1]		Linear shock absorber, self-adjusting at both ends, soft						–	
Repetition accuracy									
DRRD-...	[°]	< 0.05						≤0.03	
DRRD-...-PS1									
Approached from one end	[°]	0.1							–
Approached from both ends	[°]	0.7							–
Max. axial load (static)	[N]	1500	2400	2400	3750	6100	6100	9000	11000
Mounting position		Any							

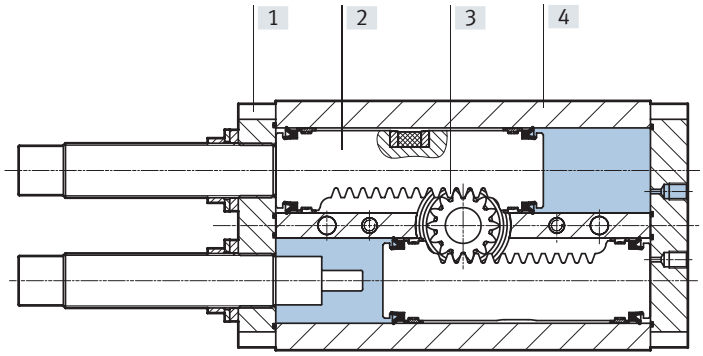
1) Not in combination with intermediate position DRRD-...-PS1

Operating and environmental 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		
DRRD-...		
DRRD-...-P	[bar]	3 ... 8
DRRD-...-Y9/-Y10/-Y12/-Y14	[bar]	2 ... 10
DRRD-...-PS1		
DRRD-...-P	[bar]	4 ... 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

Forces and torques									
Size		16	20	25	32	35	40	50	63
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									
Rotation from end position to end position									
DRRD-...-P	[kgcm²]	175	400	900	1500	2500	6700	–	–
DRRD-...-Y9	[kgcm²]	700	1250	1500	26000	15000	23000	40000	40000
DRRD-...-Y10	[kgcm²]	–	–	5500	–	45000	67000	200000	420000
DRRD-...-Y12	[kgcm²]	900	1500	5500	26000	45000	67000	200000	420000
DRRD-...-Y14	[kgcm²]	100	150	100	2000	2000	23000	–	–
Rotation with intermediate position									
DRRD-...-P	[kgcm²]	150	300	400	500	–	–	–	–
DRRD-...-Y9	[kgcm²]	500	900	1500	8000	15000	23000	40000	–
DRRD-...-Y12	[kgcm²]	500	900	1500	8000	15000	23000	40000	–

Data sheet

Materials

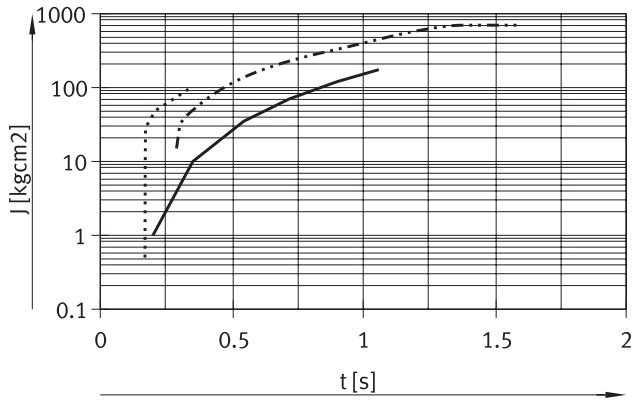


Semi-rotary drive		
[1]	Cover	Anodised wrought aluminium alloy
[2]	Piston	Stainless steel
[3]	Flange shaft	Tempered steel
[4]	Housing	Smooth-anodised wrought aluminium alloy
	Seals	NBR
	Piston seal	TPE-U(PU)
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

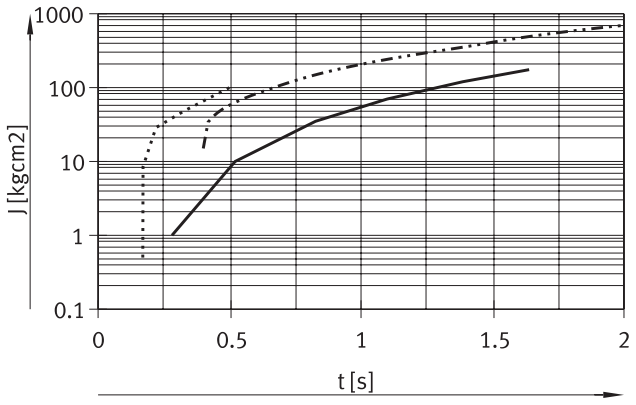
Size 16 with cushioning P/Y9/Y14

Swivel angle 90°



Ranges
DRRD-16-...-P (90°) → 1 ... 175 kgcm²
DRRD-16-...-Y9 (90°) → 15 ... 700 kgcm²
DRRD-16-...-Y14 (90°) → 0.5 ... 100 kgcm²

Swivel angle 180°



Ranges
DRRD-16-...-P (180°) → 1 ... 175 kgcm²
DRRD-16-...-Y9 (180°) → 15 ... 700 kgcm²
DRRD-16-...-Y14 (180°) → 0.5 ... 100 kgcm²

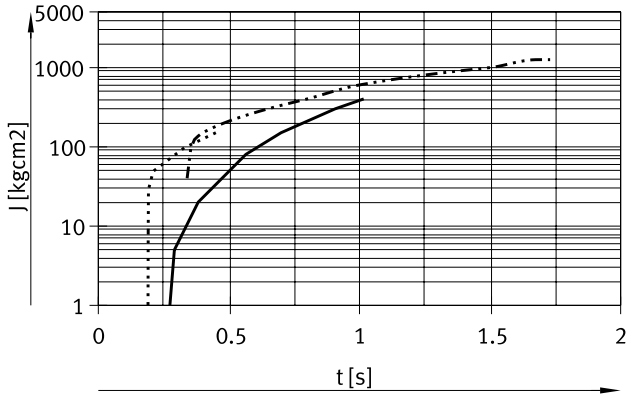
Semi-rotary drives DRRD 16 ... 63

Data sheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

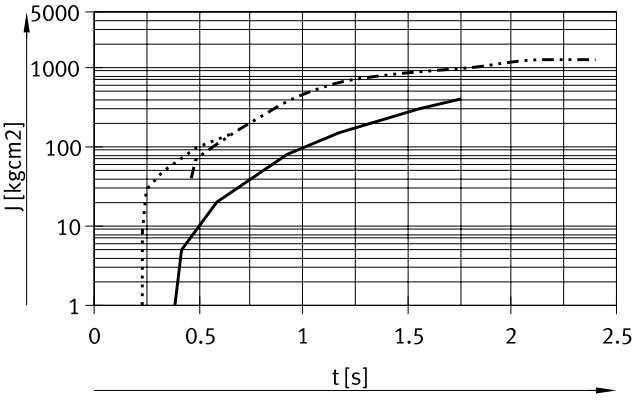
Size 20 with cushioning P/Y9/Y14

Swivel angle 90°



	Ranges
DRRD-20-...-P (90°)	→ 1 ... 400 kgcm²
DRRD-20-...-Y9 (90°)	→ 40 ... 1250 kgcm²
DRRD-20-...-Y14 (90°)	→ 1 ... 150 kgcm²

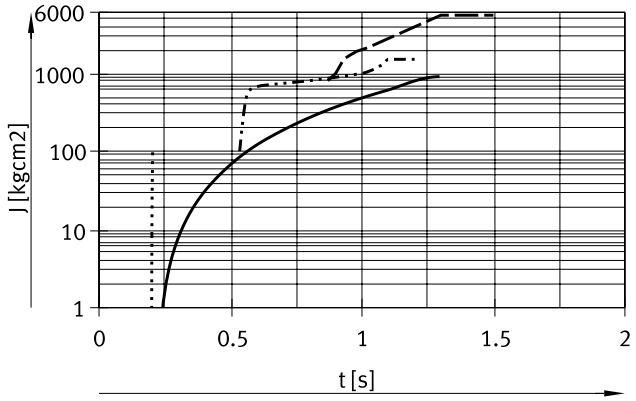
Swivel angle 180°



	Ranges
DRRD-20-...-P (180°)	→ 1 ... 400 kgcm²
DRRD-20-...-Y9 (180°)	→ 40 ... 1250 kgcm²
DRRD-20-...-Y14 (180°)	→ 1 ... 150 kgcm²

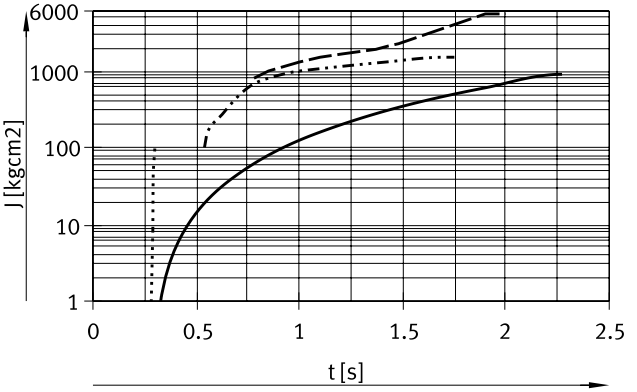
Size 25 with cushioning P/Y9/Y10/Y14

Swivel angle 90°



	Ranges
DRRD-25-...-P (90°)	→ 1 ... 900 kgcm²
DRRD-25-...-Y9 (90°)	→ 100 ... 1500 kgcm²
DRRD-25-...-Y10 (90°)	→ 800 ... 5500 kgcm²
DRRD-25-...-Y14 (90°)	→ 1 ... 100 kgcm²

Swivel angle 180°



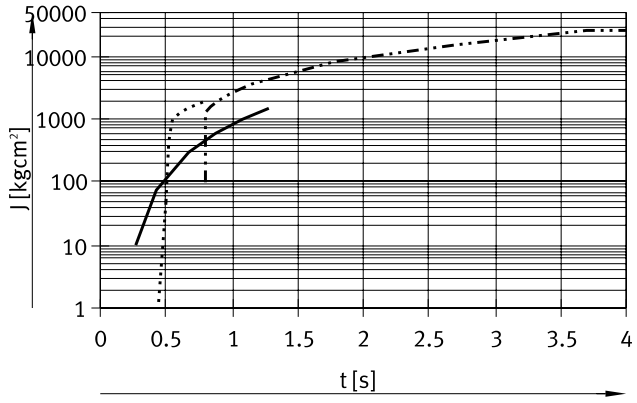
	Ranges
DRRD-25-...-P (180°)	→ 1 ... 900 kgcm²
DRRD-25-...-Y9 (180°)	→ 100 ... 1500 kgcm²
DRRD-25-...-Y10 (180°)	→ 800 ... 5500 kgcm²
DRRD-25-...-Y14 (180°)	→ 1 ... 100 kgcm²

Data sheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

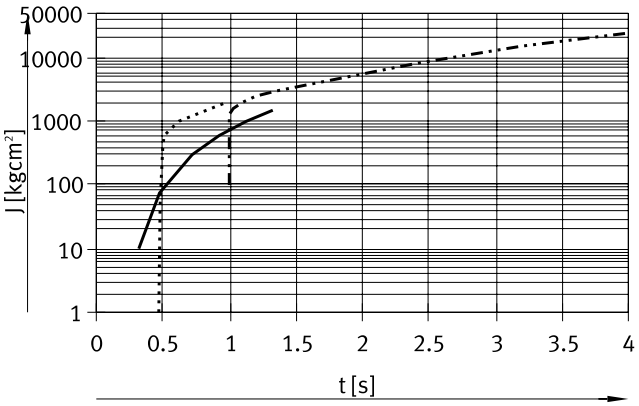
Size 32 with cushioning P/Y9/Y14

Swivel angle 90°



	Ranges
DRRD-32-...-P (90°)	→ 10 ... 1500 kgcm²
DRRD-32-...-Y9 (90°)	→ 100 ... 26000 kgcm²
DRRD-32-...-Y14 (90°)	→ 1 ... 2000 kgcm²

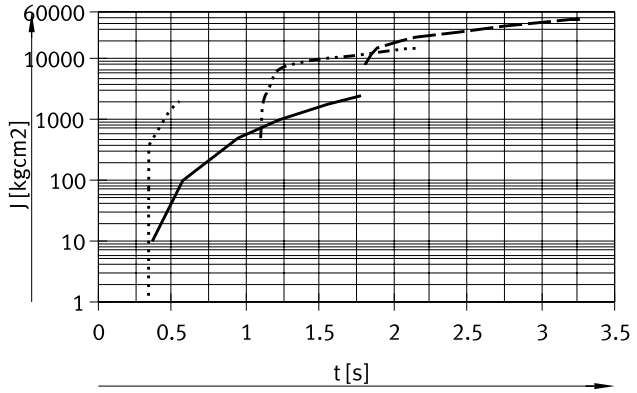
Swivel angle 180°



	Ranges
DRRD-32-...-P (180°)	→ 10 ... 1500 kgcm²
DRRD-32-...-Y9 (180°)	→ 100 ... 26000 kgcm²
DRRD-32-...-Y14 (180°)	→ 1 ... 2000 kgcm²

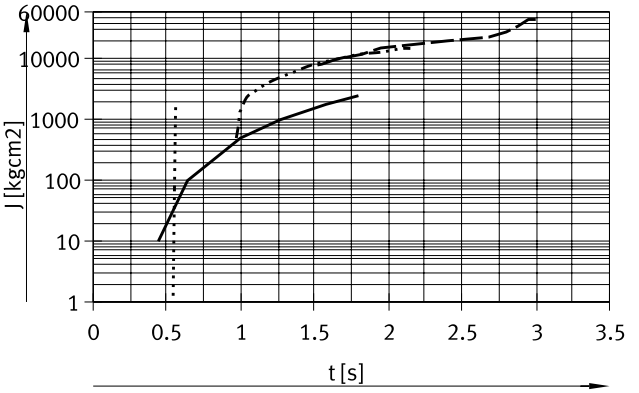
Size 35 with cushioning P/Y9/Y10/Y14

Swivel angle 90°



	Ranges
DRRD-35-...-P (90°)	→ 10 ... 2500 kgcm²
DRRD-35-...-Y9 (90°)	→ 500 ... 15000 kgcm²
DRRD-35-...-Y10 (90°)	→ 8000 ... 45000 kgcm²
DRRD-35-...-Y14 (90°)	→ 1 ... 2000 kgcm²

Swivel angle 180°



	Ranges
DRRD-35-...-P (180°)	→ 10 ... 2500 kgcm²
DRRD-35-...-Y9 (180°)	→ 500 ... 1500 kgcm²
DRRD-35-...-Y10 (180°)	→ 8000 ... 45000 kgcm²
DRRD-35-...-Y14 (180°)	→ 1 ... 2000 kgcm²

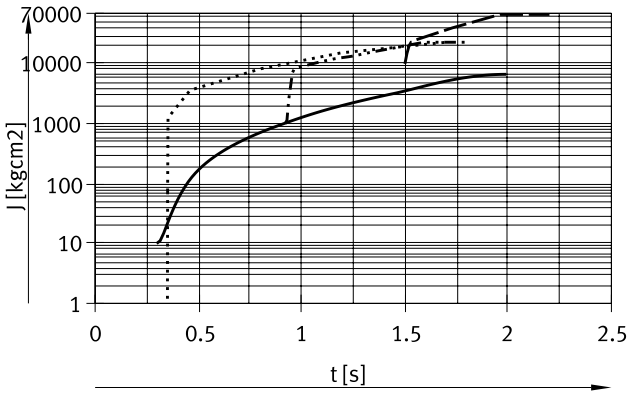
Semi-rotary drives DRRD 16 ... 63

Data sheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 40 with cushioning P/Y9/Y10/Y14

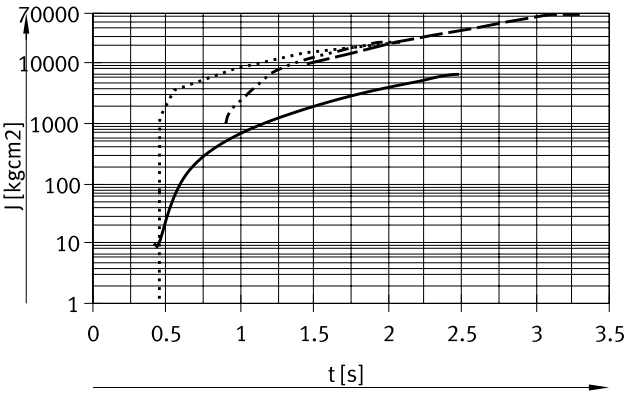
Swivel angle 90°



Ranges

- DRRD-40-...-P (90°) → 10 ... 6700 kgcm²
- DRRD-40-...-Y9 (90°) → 1000 ... 23000 kgcm²
- DRRD-40-...-Y10 (90°) → 10000 ... 67000 kgcm²
- DRRD-40-...-Y14 (90°) → 1 ... 23000 kgcm²

Swivel angle 180°

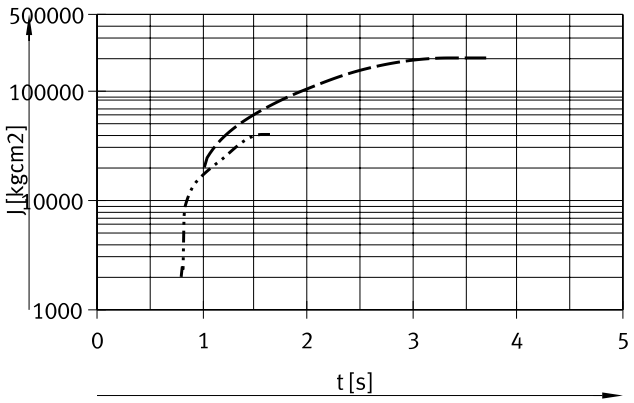


Ranges

- DRRD-40-...-P (180°) → 10 ... 6700 kgcm²
- DRRD-40-...-Y9 (180°) → 1000 ... 23000 kgcm²
- DRRD-40-...-Y10 (180°) → 10000 ... 67000 kgcm²
- DRRD-40-...-Y14 (180°) → 1 ... 23000 kgcm²

Size 50 with cushioning Y9/Y10

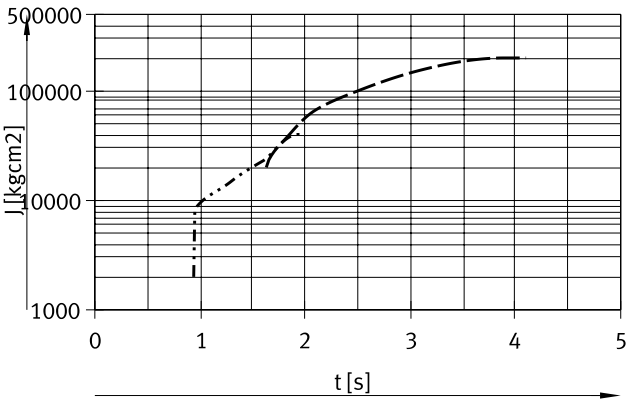
Swivel angle 90°



Ranges

- DRRD-50-...-Y9 (90°) → 2000 ... 40000 kgcm²
- DRRD-50-...-Y10 (90°) → 20000 ... 200000 kgcm²

Swivel angle 180°



Ranges

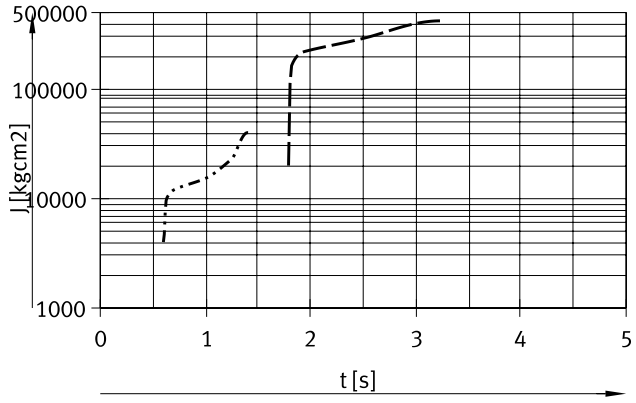
- DRRD-50-...-Y9 (180°) → 2000 ... 40000 kgcm²
- DRRD-50-...-Y10 (180°) → 20000 ... 200000 kgcm²

Data sheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 63 with cushioning Y9/Y10

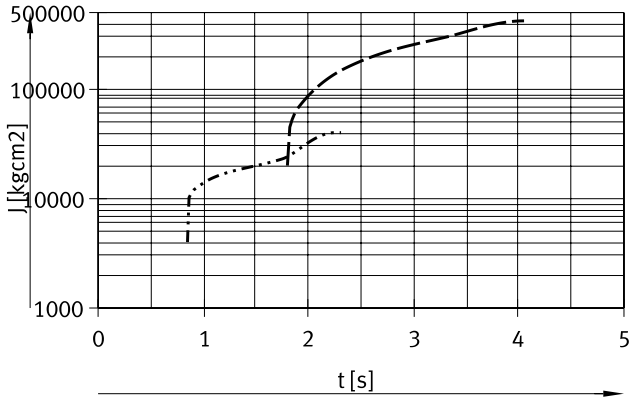
Swivel angle 90°



Ranges

DRRD-63-...-Y9 (90°) → 4000 ... 40000 kgcm²
DRRD-63-...-Y10 (90°) → 20000 ... 420000 kgcm²

Swivel angle 180°

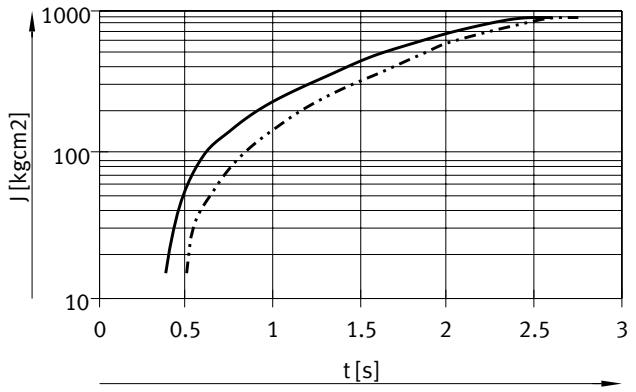


Ranges

DRRD-63-...-Y9 (180°) → 4000 ... 40000 kgcm²
DRRD-63-...-Y10 (180°) → 20000 ... 420000 kgcm²

Size 16 with cushioning Y12

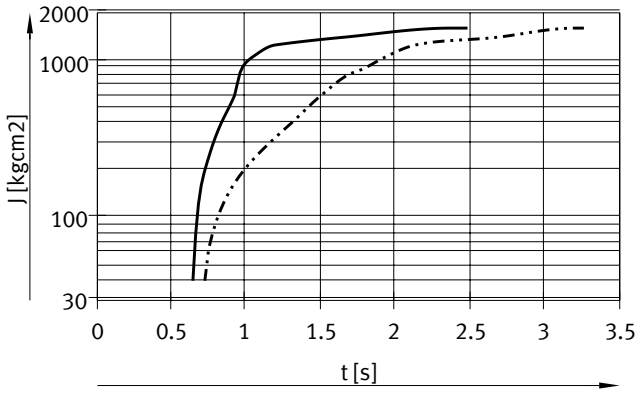
Swivel angle 90°/180°



Ranges

DRRD-16-...-Y12 (90°) → 15 ... 900 kgcm²
DRRD-16-...-Y12 (180°) → 15 ... 900 kgcm²

Size 20 with cushioning Y12

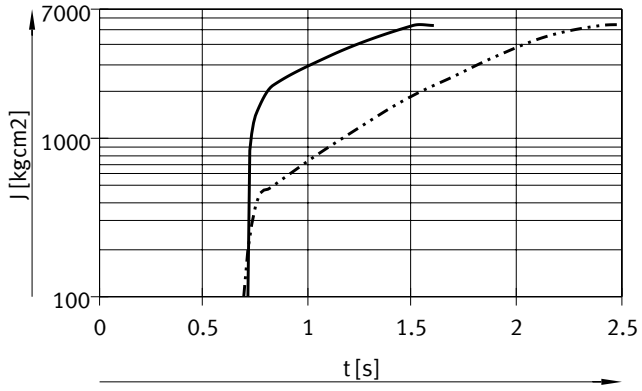


Ranges

DRRD-20-...-Y12 (90°) → 40 ... 1600 kgcm²
DRRD-20-...-Y12 (180°) → 40 ... 1600 kgcm²

Size 25 with cushioning Y12

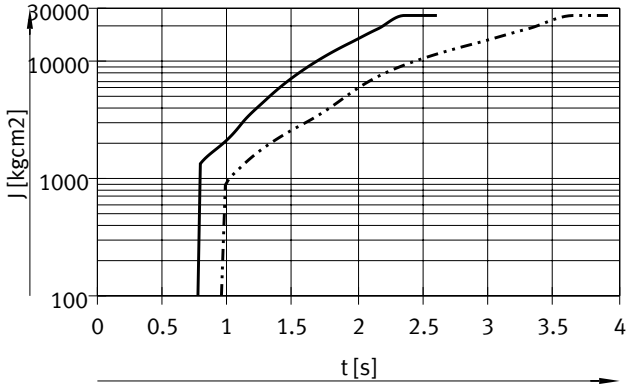
Swivel angle 90°/180°



Ranges

DRRD-25-...-Y12 (90°) → 100 ... 5500 kgcm²
DRRD-25-...-Y12 (180°) → 100 ... 5500 kgcm²

Size 32 with cushioning Y12



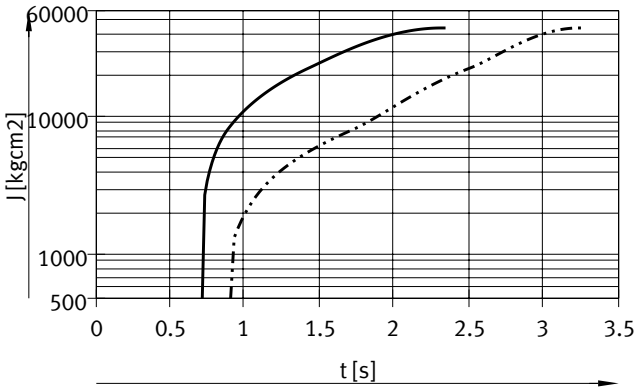
Ranges

DRRD-32-...-Y12 (90°) → 100 ... 26000 kgcm²
DRRD-32-...-Y12 (180°) → 100 ... 26000 kgcm²

Data sheet

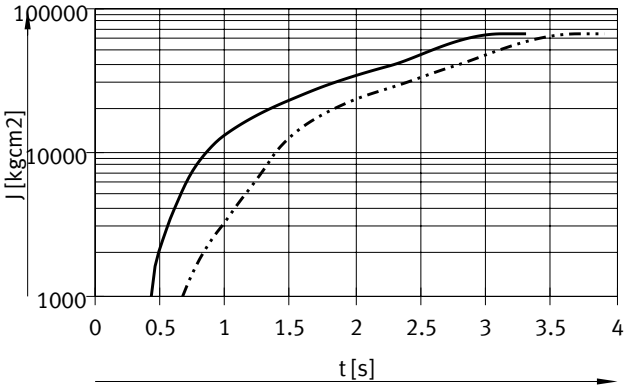
Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 35 with cushioning Y12
Swivel angle 90°/180°



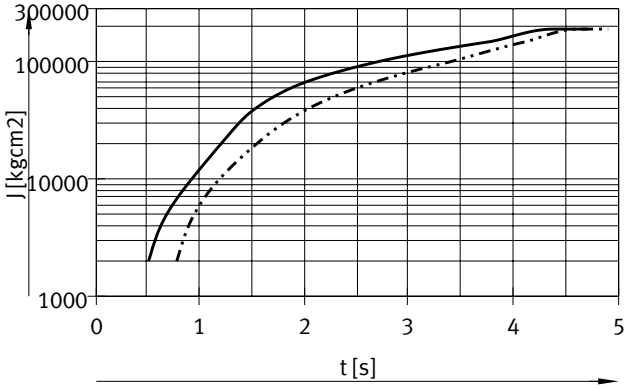
Ranges
DRRD-35-...-Y12 (90°) → 500 ... 45000 kgcm²
DRRD-35-...-Y12 (180°) → 500 ... 45000 kgcm²

Size 40 with cushioning Y12



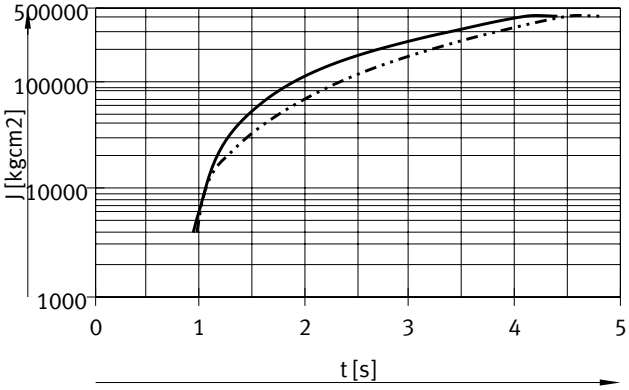
Ranges
DRRD-40-...-Y12 (90°) → 1000 ... 67000 kgcm²
DRRD-40-...-Y12 (180°) → 1000 ... 67000 kgcm²

Size 50 with cushioning Y12
Swivel angle 90°/180°



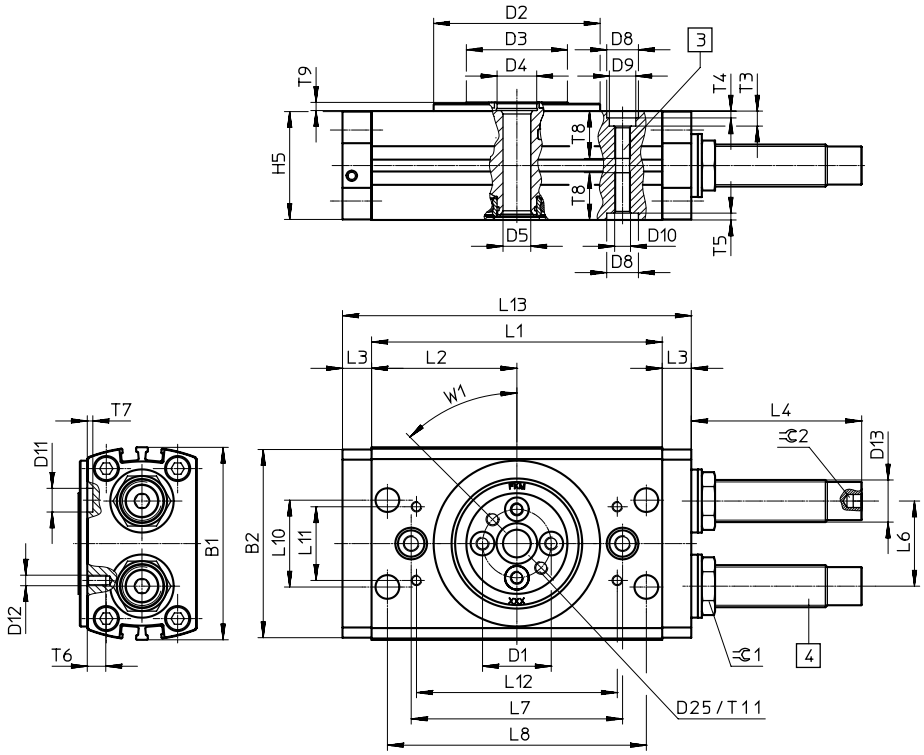
Ranges
DRRD-50-...-Y12 (90°) → 2000 ... 200000 kgcm²
DRRD-50-...-Y12 (180°) → 2000 ... 200000 kgcm²

Size 63 with cushioning Y12



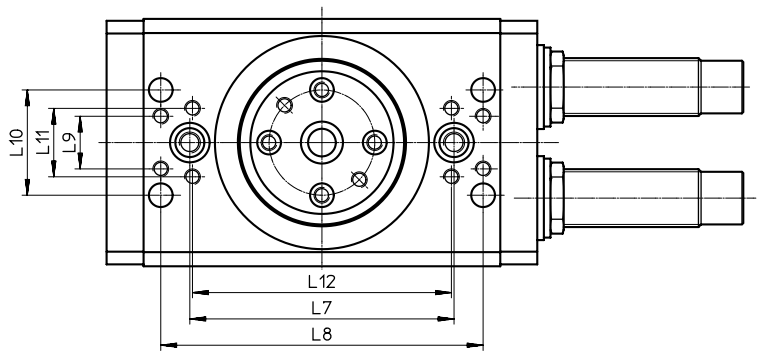
Ranges
DRRD-63-...-Y12 (90°) → 4000 ... 420000 kgcm²
DRRD-63-...-Y12 (180°) → 4000 ... 420000 kgcm²

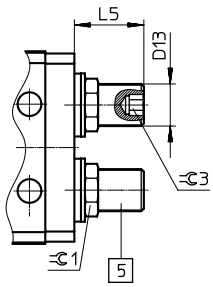
Dimensions



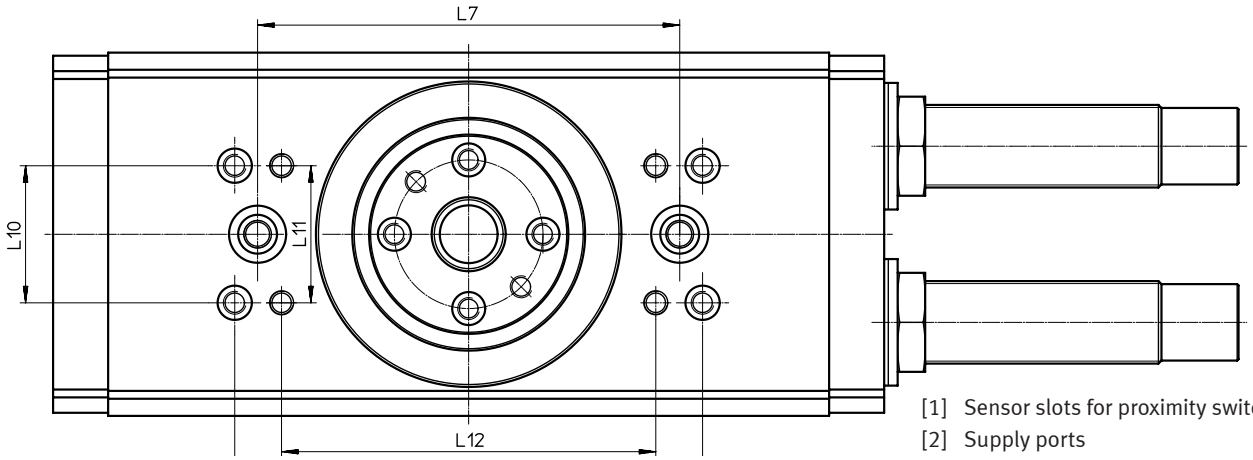
DRRD-32 ... -40

DRRD- ... -P





DRRD-50/63



The semi-rotary drive must only be operated with controlled air flow. The flow control should be connected as close as possible to the semi-rotary drive (e.g. one-way flow control valve GRLA-...) Illustrated position of the flange shaft corresponds to the mid-position (swivel angle 90°).

[1] Sensor slots for proximity switch
[2] Supply ports
[3] Mounting thread
[4] Shock absorber (DRRD-...-Y9/-Y10/-Y14)
[5] Cushioning elements (DRRD-...-P)

Semi-rotary drives DRRD 16 ... 63

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	38.25	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	15	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 ±0.1	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	32.25	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

Mini slides DGST

Highlights

+ Shortest mini slide on the market
+ Very compact design
+ Powerful twin-piston drive
+ Very precise recirculating ball bearing guide
+ Yoke plate and slide manufactured from a single piece
+ Easy end position adjustment

★	Festo core product range Solves the majority of your automation tasks
Worldwide:	Always in stock
Superb:	Festo quality at an attractive price
Easy:	Simplified procurement and warehousing

With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .

Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.

Just look for the star!

Mini slides DGST

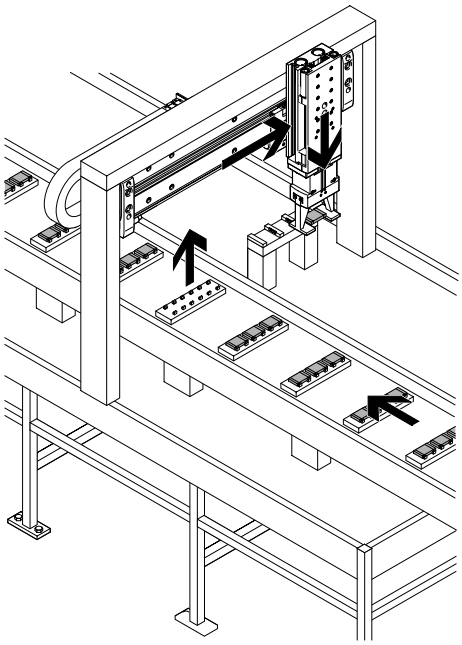
Features

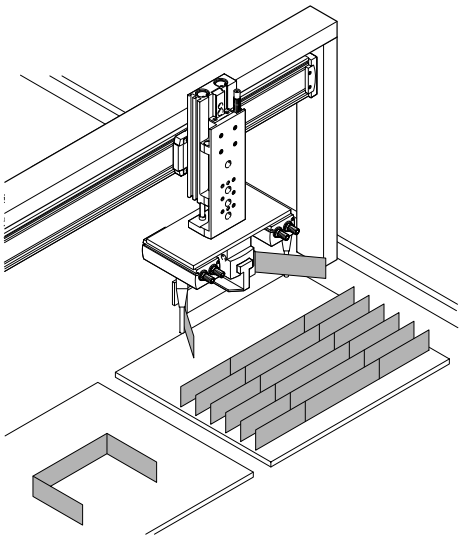
At a glance

- Compact mini slide
- Slide and yoke plate as a single component
- Excellent price/performance ratio
- High feed forces
- Symmetrical mounting interfaces
- Precise and resilient roller bearing guide
- Simple design with symmetrical mounting interfaces
- Can be operated without additional cushioning components

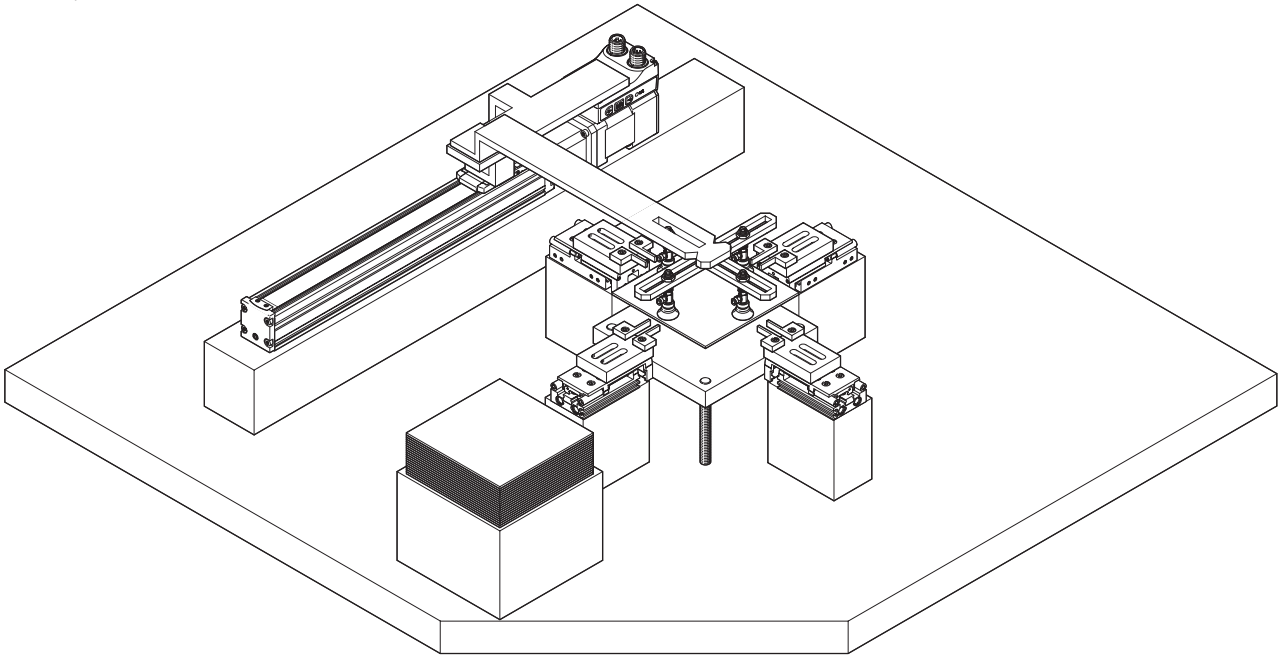
Example application

Pick & Place handling unit

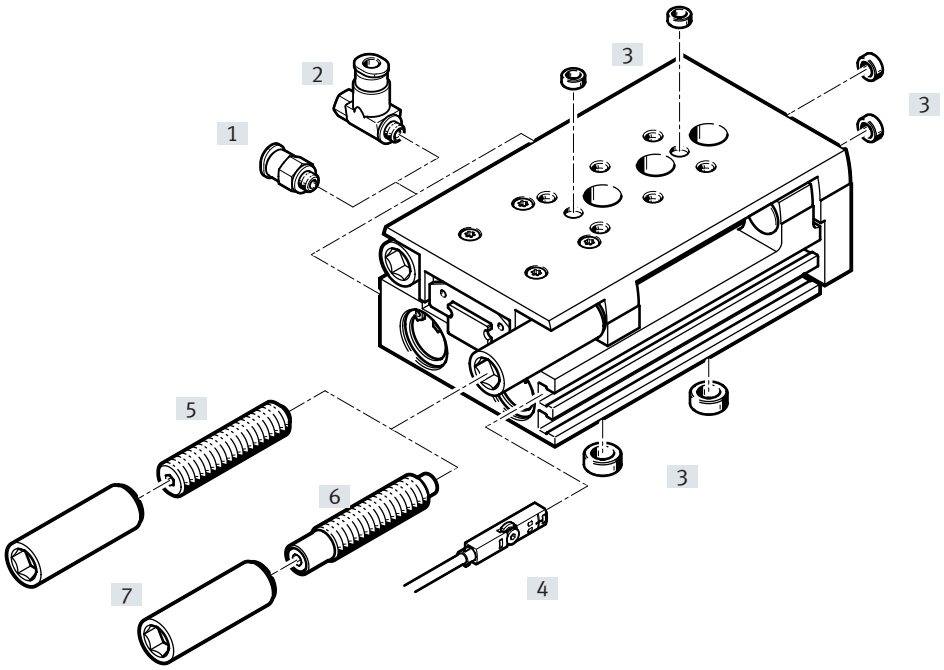




Precise positioning



Peripherals overview



		→ Page/Internet
[1]	Push-in fitting QSM	155
[2]	One-way flow control valve GRLA	
[3]	Centring sleeve ZBH	
[4]	Proximity sensor SMT-8/-10	681, 691
	Position transmitter SMAT-8M, SDAT	smat-8m, 715

		→ Page/Internet
[5]	Cushioning P	155
[6]	Cushioning Y12	
[7]	Threaded sleeve	

Ordering – Modular product system

Piston diameter		6	8	10	12	16	20	25	Conditions	Code		Entercode
Module no.		8073891	8073892	8073893	8073894	8073895	8073896	8073897				
Function		Mini slide								DGST		DGST
Piston diameter	[mm]	6	8	10	12	16	20	25		-...		
Stroke	[mm]	10	10	10	10	10	10	10		-...		
		20	20	20	20	20	20	20		-...		
		30	30	30	30	30	30	30		-...		
		40	40	40	40	40	40	40		-...		
		50	50	50	50	50	50	50		-...		
		–	80	80	80	80	80	80		-...		
		–	–	100	100	100	100	100		-...		
		–	–	–	–	125	125	125		-...		
		–	–	–	–	150	150	150		-...		
		–	–	–	–	–	200	200		-...		
Version		Standard										
		Mirror-inverted								-L		
Cushioning		Elastic cushioning rings/pads at both ends								-P		
		Elastomer cushioning, at both ends, stroke not adjustable								-E1		
		Shock absorber, self-adjusting, linear, at both ends, external							[1]	-Y12		
Position sensing		Via proximity sensor								A		
Special material properties		None										
		Recommended for production plants for the manufacture of Li-Ion batteries (Cu ≤ 1%, Zn ≤ 1%, Ni ≤ 1%)							[2]	F1A		

[1] Y12 Only in combination with a stroke of min. 30 mm
[2] F1A Not in combination with Y12
Not in combination with P

Ordering data

Size	Stroke [mm]	Part no.	Type
With cushioning E1			
6	10	8078828	DGST-6-10-E1A
	20	8078829	DGST-6-20-E1A
	30	8078830	DGST-6-30-E1A
	40	8078831	DGST-6-40-E1A
	50	8078832	DGST-6-50-E1A
8	10	★8078833	DGST-8-10-E1A
	20	★8078834	DGST-8-20-E1A
	30	★8078835	DGST-8-30-E1A
	40	★8078836	DGST-8-40-E1A
	50	★8078837	DGST-8-50-E1A
	80	★8078838	DGST-8-80-E1A
10	10	★8078839	DGST-10-10-E1A
	20	★8078840	DGST-10-20-E1A
	30	★8078841	DGST-10-30-E1A
	40	★8078842	DGST-10-40-E1A
	50	★8078843	DGST-10-50-E1A
	80	★8078844	DGST-10-80-E1A
	100	★8078845	DGST-10-100-E1A
12	10	★8078846	DGST-12-10-E1A
	20	★8078847	DGST-12-20-E1A
	30	★8078848	DGST-12-30-E1A
	40	★8078849	DGST-12-40-E1A
	50	★8078850	DGST-12-50-E1A
	80	★8078851	DGST-12-80-E1A
	100	★8078852	DGST-12-100-E1A
16	10	★8078853	DGST-16-10-E1A
	20	★8078854	DGST-16-20-E1A
	30	★8078855	DGST-16-30-E1A
	40	★8078856	DGST-16-40-E1A
	50	★8078857	DGST-16-50-E1A
	80	★8078858	DGST-16-80-E1A
	100	★8078859	DGST-16-100-E1A
	125	8078860	DGST-16-125-E1A
	150	8078861	DGST-16-150-E1A
20	10	★8078862	DGST-20-10-E1A
	20	★8078863	DGST-20-20-E1A
	30	★8078864	DGST-20-30-E1A
	40	★8078865	DGST-20-40-E1A
	50	★8078866	DGST-20-50-E1A
	80	★8078867	DGST-20-80-E1A
	100	★8078868	DGST-20-100-E1A
	125	8078869	DGST-20-125-E1A
	150	8078870	DGST-20-150-E1A
	200	8078871	DGST-20-200-E1A
25	10	8078872	DGST-25-10-E1A
	20	8078873	DGST-25-20-E1A
	30	8078874	DGST-25-30-E1A
	40	8078875	DGST-25-40-E1A
	50	8078876	DGST-25-50-E1A
	80	8078877	DGST-25-80-E1A
	100	8078878	DGST-25-100-E1A
	125	8078879	DGST-25-125-E1A
	150	8078880	DGST-25-150-E1A
	200	8078881	DGST-25-200-E1A

Size	Stroke [mm]	Part no.	Type
With cushioning P			
6	10	8085105	DGST-6-10-PA
	20	8085106	DGST-6-20-PA
	30	8085107	DGST-6-30-PA
	40	8085108	DGST-6-40-PA
	50	8085109	DGST-6-50-PA
8	10	8085110	DGST-8-10-PA
	20	8085111	DGST-8-20-PA
	30	8085112	DGST-8-30-PA
	40	8085113	DGST-8-40-PA
	50	8085114	DGST-8-50-PA
	80	8085115	DGST-8-80-PA
10	10	8085116	DGST-10-10-PA
	20	8085117	DGST-10-20-PA
	30	8085118	DGST-10-30-PA
	40	8085119	DGST-10-40-PA
	50	8085120	DGST-10-50-PA
	80	8085121	DGST-10-80-PA
	100	8085122	DGST-10-100-PA
12	10	8085123	DGST-12-10-PA
	20	8085124	DGST-12-20-PA
	30	8085125	DGST-12-30-PA
	40	8085126	DGST-12-40-PA
	50	8085127	DGST-12-50-PA
	80	8085128	DGST-12-80-PA
	100	8085129	DGST-12-100-PA
16	10	8085130	DGST-16-10-PA
	20	8085131	DGST-16-20-PA
	30	8085132	DGST-16-30-PA
	40	8085133	DGST-16-40-PA
	50	8085134	DGST-16-50-PA
	80	8085135	DGST-16-80-PA
	100	8085136	DGST-16-100-PA
	125	8085137	DGST-16-125-PA
	150	8085138	DGST-16-150-PA
20	10	8085139	DGST-20-10-PA
	20	8085140	DGST-20-20-PA
	30	8085141	DGST-20-30-PA
	40	8085142	DGST-20-40-PA
	50	8085143	DGST-20-50-PA
	80	8085144	DGST-20-80-PA
	100	8085145	DGST-20-100-PA
	125	8085146	DGST-20-125-PA
	150	8085147	DGST-20-150-PA
	200	8085148	DGST-20-200-PA
25	10	8085149	DGST-25-10-PA
	20	8085150	DGST-25-20-PA
	30	8085151	DGST-25-30-PA
	40	8085152	DGST-25-40-PA
	50	8085153	DGST-25-50-PA
	80	8085154	DGST-25-80-PA
	100	8085155	DGST-25-100-PA
	125	8085156	DGST-25-125-PA
	150	8085157	DGST-25-150-PA
	200	8085158	DGST-25-200-PA

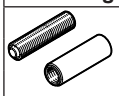
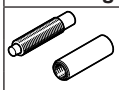
Ordering data

Size	Stroke [mm]	Part no.	Type
With cushioning Y12			
6	30	8085159	DGST-6-30-Y12A
	40	8085160	DGST-6-40-Y12A
	50	8085161	DGST-6-50-Y12A
8	30	8085162	DGST-8-30-Y12A
	40	8085163	DGST-8-40-Y12A
	50	8085164	DGST-8-50-Y12A
	80	8085165	DGST-8-80-Y12A
10	30	8085166	DGST-10-30-Y12A
	40	8085167	DGST-10-40-Y12A
	50	8085168	DGST-10-50-Y12A
	80	8085169	DGST-10-80-Y12A
	100	8085170	DGST-10-100-Y12A
12	30	8085171	DGST-12-30-Y12A
	40	8085172	DGST-12-40-Y12A
	50	8085173	DGST-12-50-Y12A
	80	8085174	DGST-12-80-Y12A
	100	8085175	DGST-12-100-Y12A
16	30	8085176	DGST-16-30-Y12A
	40	8085177	DGST-16-40-Y12A
	50	8085178	DGST-16-50-Y12A
	80	8085179	DGST-16-80-Y12A
	100	8085180	DGST-16-100-Y12A
	125	8085181	DGST-16-125-Y12A
	150	8085182	DGST-16-150-Y12A
20	30	8085183	DGST-20-30-Y12A
	40	8085184	DGST-20-40-Y12A
	50	8085185	DGST-20-50-Y12A
	80	8085186	DGST-20-80-Y12A
	100	8085187	DGST-20-100-Y12A
	125	8085188	DGST-20-125-Y12A
	150	8085189	DGST-20-150-Y12A
	200	8085190	DGST-20-200-Y12A
25	30	8085191	DGST-25-30-Y12A
	40	8085192	DGST-25-40-Y12A
	50	8085193	DGST-25-50-Y12A
	80	8085194	DGST-25-80-Y12A
	100	8085195	DGST-25-100-Y12A
	125	8085196	DGST-25-125-Y12A
	150	8085197	DGST-25-150-Y12A
	200	8085198	DGST-25-200-Y12A

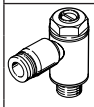
Accessories – Ordering data

	For size	Part no.	Type
Push-in fitting[1]			
	6	★ 153303	QSM-M3-4
	8, 10, 12, 16	★ 153304	QSM-M5-4
	20, 25	★ 153307	QSM-1/8-6
Centring sleeve/centring pin[1]			
	For centring the mini slide during mounting		
	6, 8	8119593	ZBH-5-M4
	10, 12	186717	ZBH-7
	16	150927	ZBH-9
	20, 25	189653	ZBH-12
	For centring loads and attachments on the slide		
	6, 8, 10, 12, 16	189652	ZBH-5
	20, 25	189653	ZBH-12
	For centring loads and attachments on the yoke plate		
	6	525273	ZBS-2
	8, 10	189652	ZBH-5
	12, 16	186717	ZBH-7
	20, 25	189653	ZBH-12
Connector sleeve[1]			
	20	548806	ZBV-12-9

1) Packaging unit 10 pieces

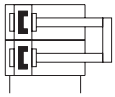
	For size	Part no.	Type
Cushioning variant for DGST-...-P[2]			
	6	★ 8073902	DYEF-G8-M4-Y1
	8	★ 8073903	DYEF-G8-M5-Y1
	10	★ 8073904	DYEF-G8-M6-Y1
	12	★ 8073905	DYEF-G8-M8-Y1
	16	★ 8073906	DYEF-G8-M10-Y1
	20	★ 8073907	DYEF-G8-M12-Y1
	25	★ 8073908	DYEF-G8-M14-Y1
Cushioning variant for DGST-...-Y12[2]			
	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 ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal, for exhaust air flow control					
	6	M3	3	175041	GRLA-M3-QS-3
	8, 10, 12, 16	M5	3	★ 193137	GRLA-M5-QS-3-D
			4	★ 193138	GRLA-M5-QS-4-D
	20, 25	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

Mini slides DGST

Data sheet



Size
6 ... 25

Stroke length
10 ... 200 mm

General technical data

Size		6	8	10	12	16	20	25
Design		Twin piston, piston rod, slide, yoke						
Guide		Recirculating ball bearing guide					Three-part cage guide	
Mode of operation		Double-acting						
Type of mounting		Via through-hole						
		Via female thread						
Pneumatic connection		M3	M5				G1/8	
Stroke[1]	[mm]	10 ... 50	10 ... 80	10 ... 100	10 ... 100	10 ... 150	10 ... 200	10 ... 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		Shock absorbers at both ends, self-adjusting, with end-position adjustment (available from strokes of 30 mm)						
Max. cushioning length								
DGST-...-E1[2]	[mm]	0.25/0.9	0.5/1.5	0.6/1.6	0.5/1.1	0.6/0.8	0.5/1	0.5/1.2
DGST-...-P	[mm]	0.9	1.8	1.8	2	1.8	2	2
DGST-...-Y12	[mm]	4	4	4	5	5	8	10
Position sensing		Via proximity sensor						
Mounting position		Any						
Max. speed								
DGST-...-E1	[m/s]	0.5						
DGST-...-P	[m/s]	0.5	0.8					
DGST-...-Y12	[m/s]	0.5						
Repetition accuracy								
DGST-...-E1	[mm]	≤ 0.3						
DGST-...-P	[mm]	≤ 0.3						
DGST-...-Y12	[mm]	≤ 0.02						

1) For variant DGST...-E1, the actual stroke is slightly longer ➔ page 18
2) Advanced end position/retracted end position

Operating and environmental conditions

Size		6	8	10	12	16	20	25
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]						
Information on the operating medium		Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure[1]	[MPa]	0.15 ... 0.8		0.1 ... 0.8				
	[bar]	1.5 ... 8		1 ... 8				
Ambient temperature	[°C]	–10 ... +60						
Corrosion resistance class CRC[2]		1						

1) For sizes 6/8/10/12, the min. operating pressure can increase slightly after a rest period > 24 h.
2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Data sheet

Forces and impact energy								
Size		6	8	10	12	16	20	25
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
Impact energy in the end positions								
DGST-...-E1	[Nm]	0.005	0.03	0.05	0.07	0.15	0.2	0.3
DGST-...-P	[Nm]	0.018	0.05	0.08	0.12	0.25	0.35	0.45
DGST-...-Y12, per stroke	[Nm]	0.09	0.18	0.28	0.48	0.85	1.9	3.6
Max. operating frequency								
DGST-...-Y12	[Cycles/min]	50	80	80	80	70	50	50

For cushioning DGST...-E1/-P, the following applies:

$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

Note
These specifications represent the maximum values that can be achieved. Observe the maximum permissible impact energy.

For cushioning DGST...-Y12, the following applies:

Permissible impact velocity:

$$v = \sqrt{\frac{2 \cdot (E - (F + (m_1 + m_2) \cdot g \cdot \sin(\alpha)) \cdot s)}{m_1 + m_2}}$$

Maximum permissible mass:

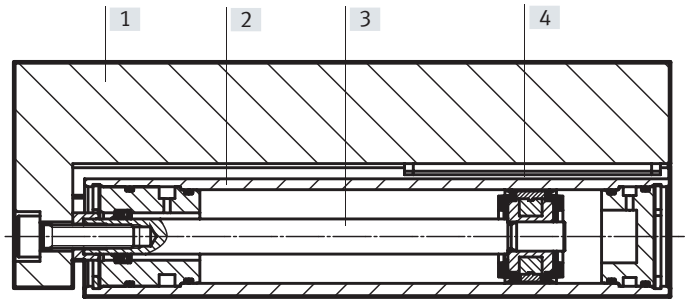
$$m_2 = \frac{E - F \cdot s}{\frac{1}{2} \cdot v^2 + g \cdot s \cdot \sin(\alpha)} - m_1$$

Note
These specifications represent the maximum values that can be achieved. Observe the maximum permissible impact energy.

v	Permissible impact velocity	g	Gravitational acceleration
E	Kinetic impact energy	s	Shock absorber stroke
F	Cylinder force minus friction force	a	Impact angle
m_1	Moving mass (drive)	v	Impact velocity
m_2	Moving payload		

1) Add 1x for moving mass and 2x for total mass.

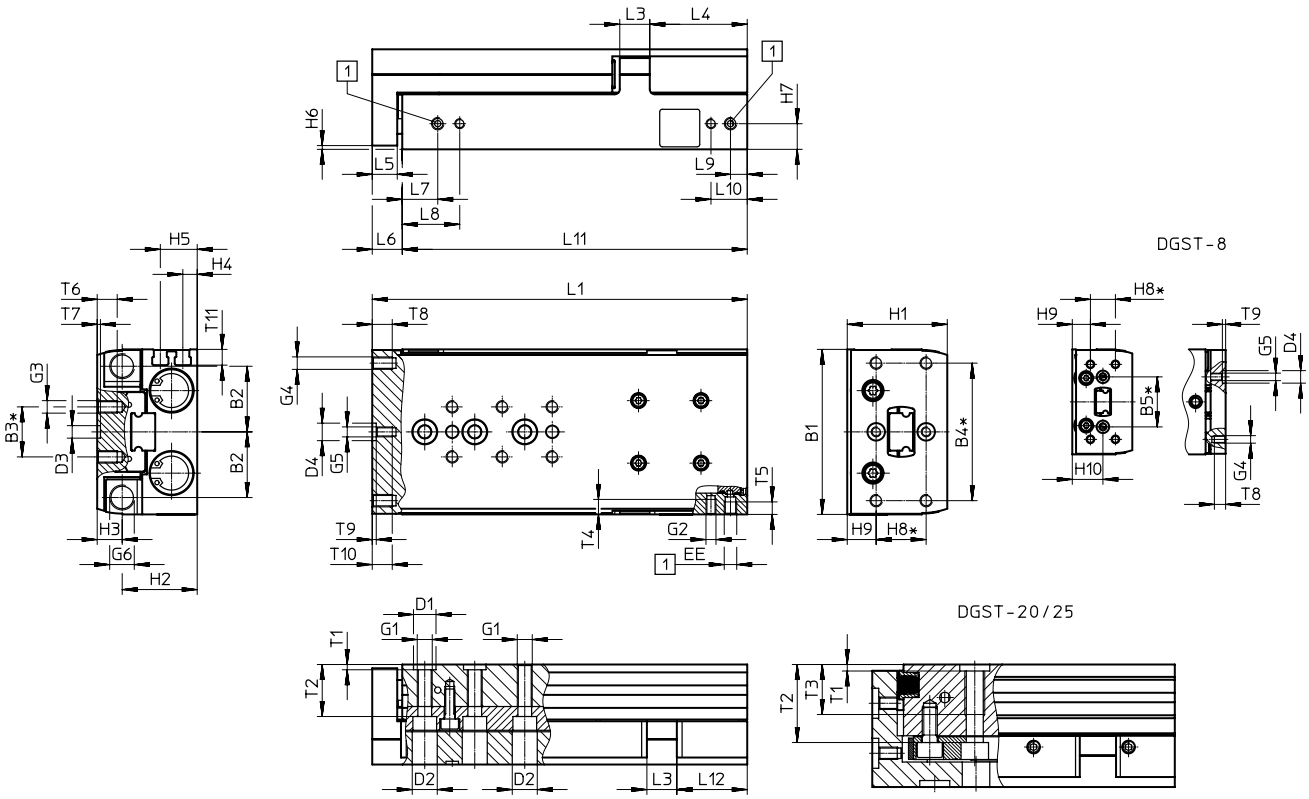
Materials



Mini slide		
[1]	Slide	Anodised wrought aluminium alloy
[2]	Housing	Anodised wrought aluminium alloy
[3]	Piston rod	High-alloy stainless steel
[4]	Guide	High-alloy stainless steel, POM, TPE
–	Seals	HNBR
	Note on materials	Free of copper and PTFE
		RoHS-compliant
	DGST-...-F1A	Cylinders free of copper, zinc and nickel (≤ 1%)

Dimensions

[ ] Standard



Actual stroke with variant DGST-...-E1 = stroke + additional stroke without cushioning + cushioning stroke (values ➔ page Se

[1] = supply ports
* = ±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

Dimensions

Size	L5	L6[1]	L7	L8[2]	L9	L10[2]	T1	T2	T3[3] max.	T4[3] max.	T5[3] 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

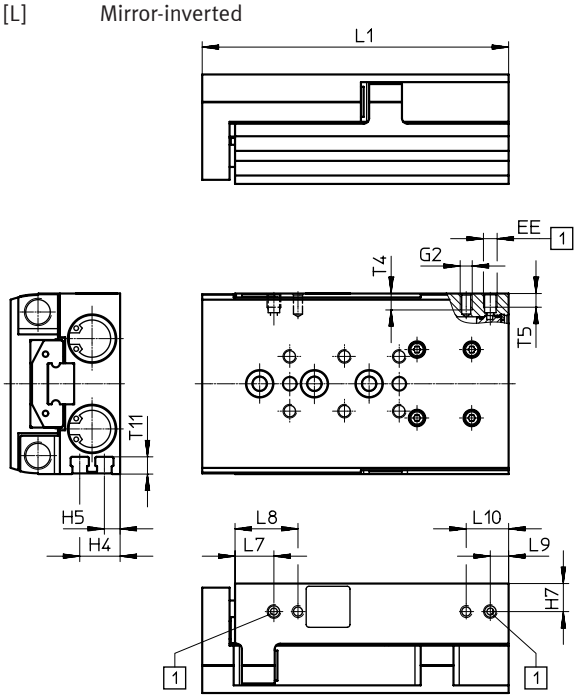
Size	T7	T8[3] max.	T9	T10[3] max.	T11	Additional stroke without cushioning with variant DGST-...-E1		Max. cushioning stroke in the end positions with variant DGST-...-E1	
						min.	max.	Front	Rear
6	$1.3^{+0.1}$	4.5	–	–	4.6	0.65	1.3	0.25	0.9
8	$1.3^{+0.1}$	4.5	$1.3^{+0.1}$	–	5	0	0.7	0.5	1.6
10	$1.3^{+0.1}$	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

Stroke [mm] / Size	10	20	30	40	50	80	100	125	150	200
	L1[1]									
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.)[3]									
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

1) At an operating pressure of 6 bar for the "E1" version. For the other damping variants LD1 → online
2) Not available in sizes 6 and 8 with stroke 10 mm. For size 16 with stroke of 80 ... 150 mm, the measurement is 14.5 mm
3) Max. screw-in depth

Dimensions

[L] Mirror-inverted



Note

In the mirror-inverted version, the supply ports and sensor slots are located on the opposite side when compared with the standard version. This enables the space-saving mounting of mini-slides next to one another.

All further dimensions correspond to the standard version a page 172

+ = plus stroke length

[1] Supply ports

Size	EE	G2	H4	H5	H7	L7	L8[2]	L9	L10[2]	T4[3] max.	T5[3] max.	T11
6	M3	M3	2.5	7	4.5	8.5	15.4	5.8	12.7	4	4	4.6
8	M5	M3	3.1	8.1	5.6	8.5	16.5	5.5	13.5	5	4.5	5
10	M5	M4	4	10	7	8.9	17.9	6.6	15.6	6.2	5	5.9
12	M5	M4	5.9	11.9	8.9	10.7	19.5	7	15.8	7	5.5	7
16	M5	M4	5.8	14.8	10.3	14.2	23	6.7	15.5	6	5	6.3
20	G1/8	M5	8.7	17.7	13.2	16.5	30.5	8	22	8	8.5	9.1
25	G1/8	M6	11	21	16	16.5	31.5	10.5	25.5	9.5	8	8.8

Stroke [mm]	10	20	30	40	50	80	100	125	150	200
Size										
	L1[1]									
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

1) At an operating pressure of 6 bar
2) Not available in sizes 6 and 8 with stroke 10 mm. For size 16 with stroke of 80 ... 150 mm, the measurement is 14.5 mm
3) Max. screw-in depth

Guided drives DFM

Highlights

+ Drive and guide unit in a single housing
+ Sturdy and precise
+ Plain or recirculating ball bearing guide
+ High resistance to torques and lateral forces

★	Festo core product range Solves the majority of your automation tasks
Worldwide:	Always in stock
Superb:	Festo quality at an attractive price
Easy:	Simplified procurement and warehousing

With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .

Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.

Just look for the star!

Guided drives DFM/DFM-B

Product range overview

Piston diameter [mm]	Stroke [mm]	Variable stroke [mm]	Position sensing A	Recommended for production plants for the manufacture of Li-Ion batteries F1A	Cushioning			Heat-resistant seals S6	Precision end-position adjustment	
					Non-adjustable P	Adjustable for heavy loads PPV	Self-adjusting end position adjustable for heavy loads YSRW		Advanced end position, elastic cushioning AJ	Retracted end position, elastic cushioning EJ
DFM basic version with recirculating ball bearing guide										
6, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80, 100	10 ... 200	–	■	■ ∅ 12 ... 63	■	–	–	–	–	–
DFM basic version with plain-bearing guide										
6, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5 ... 200	–	■	■ ∅ 12, 32	■	–	–	–	–	–
DFM-B with recirculating ball bearing guide										
12, 16, 20, 25, 32, 40, 50, 63	10 ... 400	10 ... 400	■	–	■	■ From ∅ 16	■ From ∅ 20	–	■	■ From ∅ 20
DFM-B with plain-bearing guide										
12, 16, 20, 25, 32, 40, 50, 63	10 ... 400	10 ... 400	■	–	■	■ From ∅ 16	–	■	■	■ From ∅ 20

Features

At a glance

Drive and guide unit in a single housing

- Minimal space requirement
- Minimal mounting time
- Choice of compressed air supply ports
- Wide range of mounting options

Sturdy and precise

- Good protection against torsion
- High rigidity
- Maintenance-free

High resistance to torques and transverse loads

- With plain-bearing guide: high rigidity thanks to large-diameter guide rods and four plain-bearing bushes
- With recirculating ball bearing guide: for applications involving torque loads

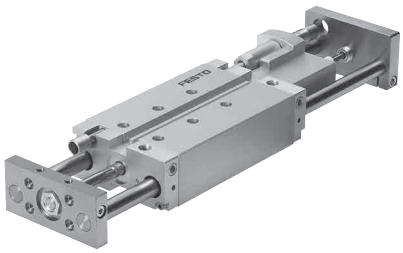
Wide choice of variants

Guided drive DFM

- Basic drive with strokes of up to 200 mm

Guided drive DFM-B

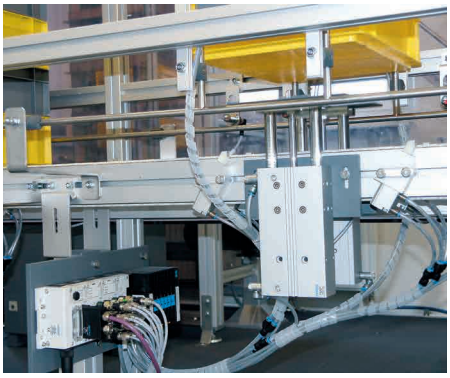
- Drive with strokes of up to 400 mm
- With precision adjustment of end positions
- With pneumatic cushioning, adjustable PPV
- With shock absorber, self-adjusting, progressive



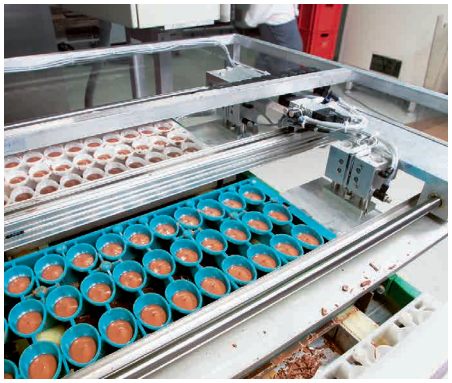
Example application

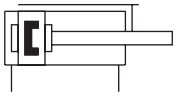
Clamping
The guided drive is perfectly suited to clamping components for reliable further processing.

Lifting
The guided drive effortlessly transports and lifts loads of over 200 kg, powerfully and dynamically.



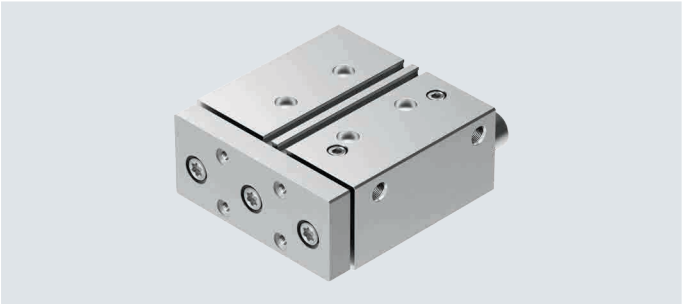
Stopping
Loads of up to 150 kg are stopped reliably and safely, making the guided drive a resilient and sturdy stopper cylinder.





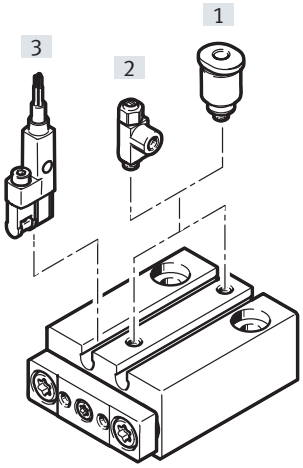
Diameter
6 ... 100 mm

Stroke length
5 ... 200 mm

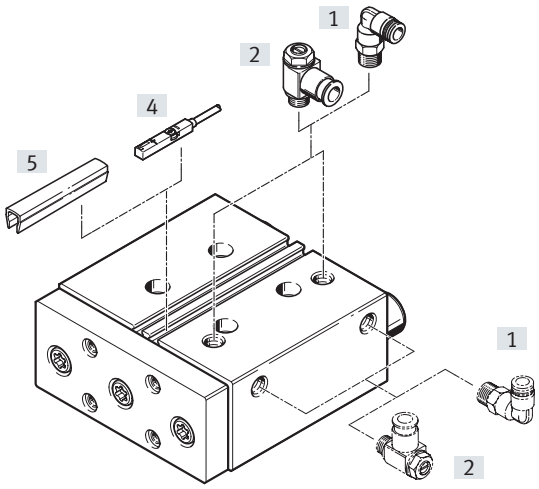


Peripherals overview

Piston ∅ 6, 10



Piston ∅ 12 ... 100



		For piston ∅	Description	→ Page/Internet
[1]	Push-in fitting NPQE	6 ... 100	For connecting compressed air tubing with standard O.D.	803
[2]	One-way flow control valve GRLA	6 ... 100	For speed regulation	519
[3]	Proximity switch SMT-10G	6, 10	Insertable in the slot lengthwise	691
[4]	Proximity switch SME-/SMT-8	12 ... 100	Can be integrated in the profile barrel	681
[5]	Slot cover ABP-5-S	12 ... 100	For protecting the sensor cable and the sensor slots from contamination	113
–	Centring sleeves ZBH	12 ... 100	4 or 6 pieces included in the scope of delivery	182
–	Adapter	12 ... 100	For drive/drive connections	adapter
		12 ... 100	For drive/gripper connections	grippers

Guided drives DFM

Type code explanation

001	Series
DFM	Guided drive, double-acting

002	Piston diameter
...	6, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80, 100

003	Stroke
...	10 ... 400

004	Generation
B	Function-optimised

005	Cushioning
P	Elastic cushioning rings/plates on both sides
PPV	Pneumatic cushioning, adjustable at both ends
YSRW	Shock absorber, self-adjusting, progressive

006	Position sensing
A	For proximity sensor

007	Guide
GF	Plain bearing
KF	Recirculating ball bearing guide

008	Special material properties
	None
F1A	Recommended for production plants for the manufacture of Li-Ion batteries (Cu ≤ 1%, Zn ≤ 1%, Ni ≤ 1%)

Ordering data

Plain-bearing guide GF

	Part no.	Type	Part no.	Type	Part no.	Type
Stroke [mm]	∅ **6 mm**		∅ **10 mm**			
5	★ 4149944	DFM-6-5-P-A-GF	★ 4154768	DFM-10-5-P-A-GF	–	
10	★ 4149945	DFM-6-10-P-A-GF	★ 4154769	DFM-10-10-P-A-GF		
15	★ 4149946	DFM-6-15-P-A-GF	★ 4154770	DFM-10-15-P-A-GF		
20	★ 4149947	DFM-6-20-P-A-GF	★ 4154799	DFM-10-20-P-A-GF		
Stroke [mm]	∅ **12 mm**		∅ **16 mm**		∅ **20 mm**	
10	★ 170824	DFM-12-10-P-A-GF	★ 170832	DFM-16-10-P-A-GF	–	
20	★ 170825	DFM-12-20-P-A-GF	★ 170833	DFM-16-20-P-A-GF	★ 170840	DFM-20-20-P-A-GF
25	★ 170826	DFM-12-25-P-A-GF	★ 170834	DFM-16-25-P-A-GF	★ 170841	DFM-20-25-P-A-GF
30	★ 170827	DFM-12-30-P-A-GF	★ 170835	DFM-16-30-P-A-GF	★ 170842	DFM-20-30-P-A-GF
40	★ 170828	DFM-12-40-P-A-GF	★ 170836	DFM-16-40-P-A-GF	★ 170843	DFM-20-40-P-A-GF
50	★ 170829	DFM-12-50-P-A-GF	★ 170837	DFM-16-50-P-A-GF	★ 170844	DFM-20-50-P-A-GF
80	★ 170830	DFM-12-80-P-A-GF	★ 170838	DFM-16-80-P-A-GF	★ 170845	DFM-20-80-P-A-GF
100	★ 170831	DFM-12-100-P-A-GF	★ 170839	DFM-16-100-P-A-GF	★ 170846	DFM-20-100-P-A-GF
Stroke [mm]	∅ **25 mm**		∅ **32 mm**		∅ **40 mm**	
20	★ 170847	DFM-25-20-P-A-GF	★ 170854	DFM-32-20-P-A-GF	–	
25	★ 170848	DFM-25-25-P-A-GF	★ 170855	DFM-32-25-P-A-GF	★ 170864	DFM-40-25-P-A-GF
30	★ 170849	DFM-25-30-P-A-GF	★ 170856	DFM-32-30-P-A-GF	–	
40	★ 170850	DFM-25-40-P-A-GF	★ 170857	DFM-32-40-P-A-GF		
50	★ 170851	DFM-25-50-P-A-GF	★ 170858	DFM-32-50-P-A-GF	★ 170865	DFM-40-50-P-A-GF
80	★ 170852	DFM-25-80-P-A-GF	★ 170859	DFM-32-80-P-A-GF	★ 170866	DFM-40-80-P-A-GF
100	★ 170853	DFM-25-100-P-A-GF	★ 170860	DFM-32-100-P-A-GF	★ 170867	DFM-40-100-P-A-GF
125	–		★ 170861	DFM-32-125-P-A-GF	★ 170868	DFM-40-125-P-A-GF
160			★ 170862	DFM-32-160-P-A-GF	★ 170869	DFM-40-160-P-A-GF
200			★ 170863	DFM-32-200-P-A-GF	★ 170870	DFM-40-200-P-A-GF

Ordering data

Plain-bearing guide GF

	Part no.	Type	Part no.	Type	Part no.	Type
Stroke [mm]	∅ **50 mm**		∅ **63 mm**		∅ **80 mm**	
25	★ 170871	DFM-50-25-P-A-GF	★ 170878	DFM-63-25-P-A-GF	170885	DFM-80-25-P-A-GF
50	★ 170872	DFM-50-50-P-A-GF	★ 170879	DFM-63-50-P-A-GF	170886	DFM-80-50-P-A-GF
80	★ 170873	DFM-50-80-P-A-GF	★ 170880	DFM-63-80-P-A-GF	170887	DFM-80-80-P-A-GF
100	★ 170874	DFM-50-100-P-A-GF	★ 170881	DFM-63-100-P-A-GF	170888	DFM-80-100-P-A-GF
125	★ 170875	DFM-50-125-P-A-GF	★ 170882	DFM-63-125-P-A-GF	170889	DFM-80-125-P-A-GF
160	★ 170876	DFM-50-160-P-A-GF	★ 170883	DFM-63-160-P-A-GF	170890	DFM-80-160-P-A-GF
200	★ 170877	DFM-50-200-P-A-GF	★ 170884	DFM-63-200-P-A-GF	170891	DFM-80-200-P-A-GF
Stroke [mm]	∅ **100 mm**					
25	170892	DFM-100-25-P-A-GF	–		–	
50	170893	DFM-100-50-P-A-GF				
80	170894	DFM-100-80-P-A-GF				
100	170895	DFM-100-100-P-A-GF				
125	170896	DFM-100-125-P-A-GF				
160	170897	DFM-100-160-P-A-GF				
200	170898	DFM-100-200-P-A-GF				

Plain-bearing guide GF – F1A variant (Recommended for production plants for the manufacture of Li-Ion batteries)

	Part no.	Type	Part no.	Type
Stroke [mm]	∅ **12 mm**		∅ **32 mm**	
10	8118623	DFM-12-10-P-A-GF-F1A	–	
20	8118624	DFM-12-20-P-A-GF-F1A	8118881	DFM-32-20-P-A-GF-F1A
25	8118625	DFM-12-25-P-A-GF-F1A	8118882	DFM-32-25-P-A-GF-F1A
30	8118626	DFM-12-30-P-A-GF-F1A	8118883	DFM-32-30-P-A-GF-F1A
40	8118627	DFM-12-40-P-A-GF-F1A	8118884	DFM-32-40-P-A-GF-F1A
50	8118628	DFM-12-50-P-A-GF-F1A	8118885	DFM-32-50-P-A-GF-F1A
80	8118629	DFM-12-80-P-A-GF-F1A	8118886	DFM-32-80-P-A-GF-F1A
100	8118630	DFM-12-100-P-A-GF-F1A	8118887	DFM-32-100-P-A-GF-F1A
125	–		8118888	DFM-32-125-P-A-GF-F1A
160			8118889	DFM-32-160-P-A-GF-F1A
200			8118890	DFM-32-200-P-A-GF-F1A

Guided drives DFM

Ordering data

Recirculating ball bearing guide KF

	Part no.	Type	Part no.	Type	Part no.	Type
Stroke [mm]	∅ **12 mm**		∅ **16 mm**		∅ **20 mm**	
10	★ 170899	DFM-12-10-P-A-KF	★ 170907	DFM-16-10-P-A-KF	–	
20	★ 170900	DFM-12-20-P-A-KF	★ 170908	DFM-16-20-P-A-KF	★ 170915	DFM-20-20-P-A-KF
25	★ 170901	DFM-12-25-P-A-KF	★ 170909	DFM-16-25-P-A-KF	★ 170916	DFM-20-25-P-A-KF
30	★ 170902	DFM-12-30-P-A-KF	★ 170910	DFM-16-30-P-A-KF	★ 170917	DFM-20-30-P-A-KF
40	★ 170903	DFM-12-40-P-A-KF	★ 170911	DFM-16-40-P-A-KF	★ 170918	DFM-20-40-P-A-KF
50	★ 170904	DFM-12-50-P-A-KF	★ 170912	DFM-16-50-P-A-KF	★ 170919	DFM-20-50-P-A-KF
80	★ 170905	DFM-12-80-P-A-KF	★ 170913	DFM-16-80-P-A-KF	★ 170920	DFM-20-80-P-A-KF
100	★ 170906	DFM-12-100-P-A-KF	★ 170914	DFM-16-100-P-A-KF	★ 170921	DFM-20-100-P-A-KF
Stroke [mm]	∅ **25 mm**		∅ **32 mm**		∅ **40 mm**	
20	★ 170922	DFM-25-20-P-A-KF	★ 170929	DFM-32-20-P-A-KF	–	
25	★ 170923	DFM-25-25-P-A-KF	★ 170930	DFM-32-25-P-A-KF	★ 170939	DFM-40-25-P-A-KF
30	★ 170924	DFM-25-30-P-A-KF	★ 170931	DFM-32-30-P-A-KF	–	
40	★ 170925	DFM-25-40-P-A-KF	★ 170932	DFM-32-40-P-A-KF	–	
50	★ 170926	DFM-25-50-P-A-KF	★ 170933	DFM-32-50-P-A-KF	★ 170940	DFM-40-50-P-A-KF
80	★ 170927	DFM-25-80-P-A-KF	★ 170934	DFM-32-80-P-A-KF	★ 170941	DFM-40-80-P-A-KF
100	★ 170928	DFM-25-100-P-A-KF	★ 170935	DFM-32-100-P-A-KF	★ 170942	DFM-40-100-P-A-KF
125	–		★ 170936	DFM-32-125-P-A-KF	★ 170943	DFM-40-125-P-A-KF
160	–		★ 170937	DFM-32-160-P-A-KF	★ 170944	DFM-40-160-P-A-KF
200	–		★ 170938	DFM-32-200-P-A-KF	★ 170945	DFM-40-200-P-A-KF
Stroke [mm]	∅ **50 mm**		∅ **63 mm**		∅ **80 mm**	
25	★ 170946	DFM-50-25-P-A-KF	★ 170953	DFM-63-25-P-A-KF	170960	DFM-80-25-P-A-KF
50	★ 170947	DFM-50-50-P-A-KF	★ 170954	DFM-63-50-P-A-KF	170961	DFM-80-50-P-A-KF
80	★ 170948	DFM-50-80-P-A-KF	★ 170955	DFM-63-80-P-A-KF	170962	DFM-80-80-P-A-KF
100	★ 170949	DFM-50-100-P-A-KF	★ 170956	DFM-63-100-P-A-KF	170963	DFM-80-100-P-A-KF
125	★ 170950	DFM-50-125-P-A-KF	★ 170957	DFM-63-125-P-A-KF	170964	DFM-80-125-P-A-KF
160	★ 170951	DFM-50-160-P-A-KF	★ 170958	DFM-63-160-P-A-KF	170965	DFM-80-160-P-A-KF
200	★ 170952	DFM-50-200-P-A-KF	★ 170959	DFM-63-200-P-A-KF	170966	DFM-80-200-P-A-KF
Stroke [mm]	∅ **100 mm**					
25	170967	DFM-100-25-P-A-KF	–		–	
50	170968	DFM-100-50-P-A-KF				
80	170969	DFM-100-80-P-A-KF				
100	170970	DFM-100-100-P-A-KF				
125	170971	DFM-100-125-P-A-KF				
160	170972	DFM-100-160-P-A-KF				
200	170973	DFM-100-200-P-A-KF				

Ordering data

Recirculating ball bearing guide KF – F1A variant (Recommended for production plants for the manufacture of Li-Ion batteries)

	Part no.	Type	Part no.	Type	Part no.	Type
Stroke [mm]	**∅ 12 mm**		**∅ 16 mm**		**∅ 20 mm**	
10	8118631	DFM-12-10-P-A-KF-F1A	8118830	DFM-16-10-P-A-KF-F1A	–	
20	8118632	DFM-12-20-P-A-KF-F1A	8118831	DFM-16-20-P-A-KF-F1A	8118850	DFM-20-20-P-A-KF-F1A
25	8118633	DFM-12-25-P-A-KF-F1A	8118832	DFM-16-25-P-A-KF-F1A	8118851	DFM-20-25-P-A-KF-F1A
30	8118634	DFM-12-30-P-A-KF-F1A	8118833	DFM-16-30-P-A-KF-F1A	8118852	DFM-20-30-P-A-KF-F1A
40	8118635	DFM-12-40-P-A-KF-F1A	8118834	DFM-16-40-P-A-KF-F1A	8118853	DFM-20-40-P-A-KF-F1A
50	8118636	DFM-12-50-P-A-KF-F1A	8118835	DFM-16-50-P-A-KF-F1A	8118854	DFM-20-50-P-A-KF-F1A
80	8118637	DFM-12-80-P-A-KF-F1A	8118836	DFM-16-80-P-A-KF-F1A	8118855	DFM-20-80-P-A-KF-F1A
100	8118638	DFM-12-100-P-A-KF-F1A	8118837	DFM-16-100-P-A-KF-F1A	8118856	DFM-20-100-P-A-KF-F1A
Stroke [mm]	**∅ 25 mm**		**∅ 32 mm**		**∅ 40 mm**	
20	8118869	DFM-25-20-P-A-KF-F1A	8118891	DFM-32-20-P-A-KF-F1A	–	
25	8118870	DFM-25-25-P-A-KF-F1A	8118892	DFM-32-25-P-A-KF-F1A	8118914	DFM-40-25-P-A-KF-F1A
30	8118871	DFM-25-30-P-A-KF-F1A	8118893	DFM-32-30-P-A-KF-F1A	–	
40	8118872	DFM-25-40-P-A-KF-F1A	8118894	DFM-32-40-P-A-KF-F1A	–	
50	8118873	DFM-25-50-P-A-KF-F1A	8118895	DFM-32-50-P-A-KF-F1A	8118915	DFM-40-50-P-A-KF-F1A
80	8118874	DFM-25-80-P-A-KF-F1A	8118896	DFM-32-80-P-A-KF-F1A	8118916	DFM-40-80-P-A-KF-F1A
100	8118875	DFM-25-100-P-A-KF-F1A	8118897	DFM-32-100-P-A-KF-F1A	8118917	DFM-40-100-P-A-KF-F1A
125	–		8118898	DFM-32-125-P-A-KF-F1A	8118918	DFM-40-125-P-A-KF-F1A
160	–		8118899	DFM-32-160-P-A-KF-F1A	8118919	DFM-40-160-P-A-KF-F1A
200	–		8118900	DFM-32-200-P-A-KF-F1A	8118920	DFM-40-200-P-A-KF-F1A
Stroke [mm]	**∅ 50 mm**		**∅ 63 mm**			
25	8118934	DFM-50-25-P-A-KF-F1A	8118954	DFM-63-25-P-A-KF-F1A		
50	8118935	DFM-50-50-P-A-KF-F1A	8118955	DFM-63-50-P-A-KF-F1A		
80	8118936	DFM-50-80-P-A-KF-F1A	8118956	DFM-63-80-P-A-KF-F1A		
100	8118937	DFM-50-100-P-A-KF-F1A	8118957	DFM-63-100-P-A-KF-F1A		
125	8118938	DFM-50-125-P-A-KF-F1A	8118958	DFM-63-125-P-A-KF-F1A		
160	8118939	DFM-50-160-P-A-KF-F1A	8118959	DFM-63-160-P-A-KF-F1A		
200	8118940	DFM-50-200-P-A-KF-F1A	8118960	DFM-63-200-P-A-KF-F1A		

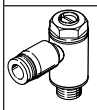
Accessories – Ordering data

Centring sleeves included in the scope of delivery

Piston diameter [mm]	Centring sleeves	
	For housing	For yoke plate
12	2x ZBH-5, 2x ZBH-9	2x ZBH-5
16	2x ZBH-5, 2x ZBH-9	2x ZBH-5
20	2x ZBH-7, 2x ZBH-9	2x ZBH-9
25	2x ZBH-7, 2x ZBH-9	2x ZBH-9
32	2x ZBH-9, 2x ZBH-12	2x ZBH-9
40	2x ZBH-9, 2x ZBH-12	2x ZBH-9
50	2x ZBH-12	2x ZBH-12
63	2x ZBH-12	2x ZBH-12
80	2x ZBH-12	2x ZBH-12
100	2x ZBH-15	2x ZBH-15

	For size	Part no.	Type
Centring sleeve/centring pin[1]			
	For centring the mini slide during mounting		
	6, 8	8119593	ZBH-5-M4
	10, 12	186717	ZBH-7
	16	150927	ZBH-9
	20, 25	189653	ZBH-12
	For centring loads and attachments on the slide		
	6, 8, 10, 12, 16	189652	ZBH-5
	20, 25	189653	ZBH-12
	For centring loads and attachments on the yoke plate		
	6	525273	ZBS-2
	8, 10	189652	ZBH-5
	12, 16	186717	ZBH-7
	20, 25	189653	ZBH-12
Connector sleeve[1]			
	20	548806	ZBV-12-9

1) Packaging unit 10 pieces

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1], **for exhaust air flow control**					
	6, 10	M3	–	175038	GRLA-M3
			3	175041	GRLA-M3-QS-3
	12, 16, 20	M5	3	★193137	GRLA-M5-QS-3-D
			4	★193138	GRLA-M5-QS-4-D
			6	★193139	GRLA-M5-QS-6-D
	25, 32, 40	G1/8	3	★193142	GRLA-1/8-QS-3-D
			4	★193143	GRLA-1/8-QS-4-D
			6	★193144	GRLA-1/8-QS-6-D
			8	★193145	GRLA-1/8-QS-8-D
	50, 63	G1/4	6	★193146	GRLA-1/4-QS-6-D
			8	★193147	GRLA-1/4-QS-8-D
			10	★193148	GRLA-1/4-QS-10-D
	80, 100	G3/8	6	★193149	GRLA-3/8-QS-6-D
			8	★193150	GRLA-3/8-QS-8-D
			10	★193151	GRLA-3/8-QS-10-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.

Data sheet

General technical data

Piston diameter	6	10	12	16	20	25	32	40	50	63	80	100
Pneumatic connection	M3	M3	M5	M5	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
Design	Piston											
	Piston rod											
	Guide rods with yoke											
Cushioning	Elastic cushioning rings/plates at both ends											
Position sensing	Via proximity switch											
Type of mounting	With through-hole											
	With female thread											
Protection against torsion/guide	Guide rod with yoke/with plain-bearing or ball bearing guide											

Operating and environmental conditions

Piston diameter		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	
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[1]													
DFM-...-GF	[°C]	–10 … +60		–20 … +80									
DFM-...-KF	[°C]	–		–5 … +60									
Corrosion resistance CRC[2]		1											

1) Note operating range of proximity switches

2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

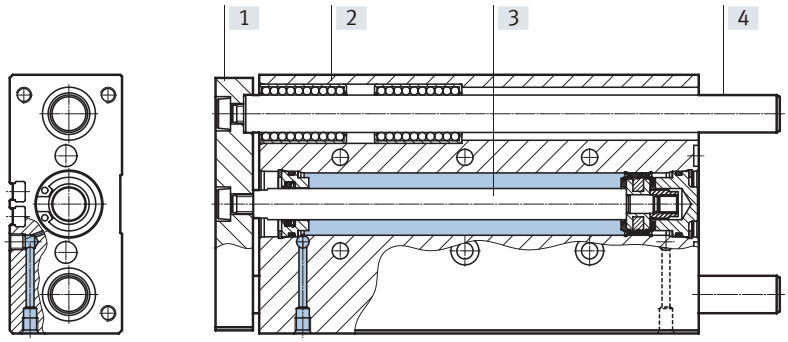
Data sheet

Speeds [m/s]												
Piston diameter	6	10	12	16	20	25	32	40	50	63	80	100
Cushioning P												
Maximum speed, advancing	1.3	1.7	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.6	0.4	0.4
Maximum speed, retracting	1.1	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.6	0.4	0.4

Forces [N]												
Piston diameter	6	10	12	16	20	25	32	40	50	63	80	100
Theoretical force at 6 bar, advancing	17	47	68	121	188	295	482	754	1178	1870	3016	4712
Theoretical force at 6 bar, retracting	13	40	51	90	141	247	415	686	1057	1750	2827	4418

Impact energy [J]												
Piston diameter	6	10	12	16	20	25	32	40	50	63	80	100
Max. impact energy in the end positions	0.012	0.035	0.07	0.15	0.20	0.30	0.40	0.70	1.00	1.30	0.75	1.00

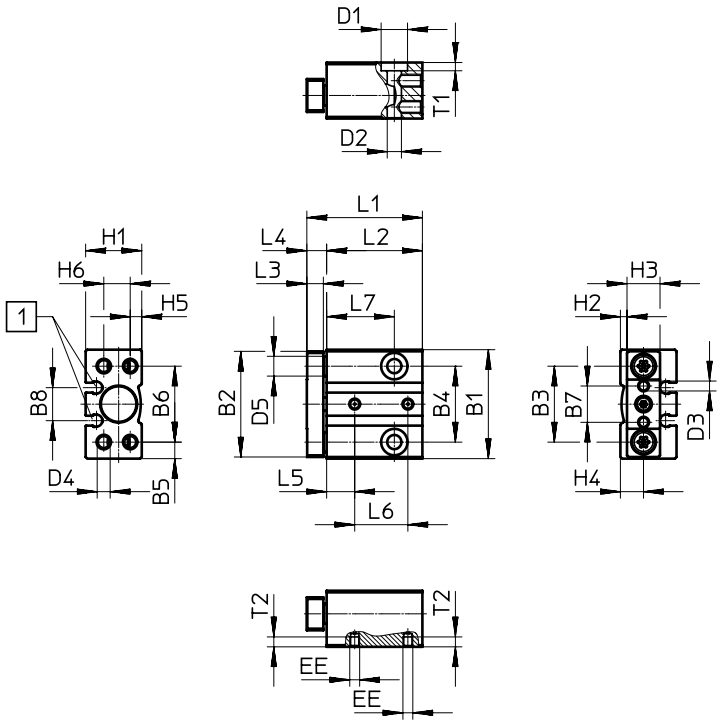
Materials



Guided drive			
Piston diameter		6, 10	12 ... 100
[1]	Yoke plate	Aluminium	Tempered steel
[2]	Housing	Anodised wrought aluminium alloy	
[3]	Piston rod	High-alloy stainless steel	
[4]	Guide rods		
	DFM-...-GF	High-alloy stainless steel	
	DFM-...-KF	Hard-chromium plated tempered steel	
–	Static seals	Nitrile rubber	
	Dynamic seals	Polyurethane, HNBR	Polyurethane
	Note on materials	RoHS-compliant	
	DFM-...-F1A	Cylinders free of copper, zinc and nickel (≤ 1%)	

Dimensions

∅ 6, 10 mm



[1] Mounting slot for proximity switch SMT-10G

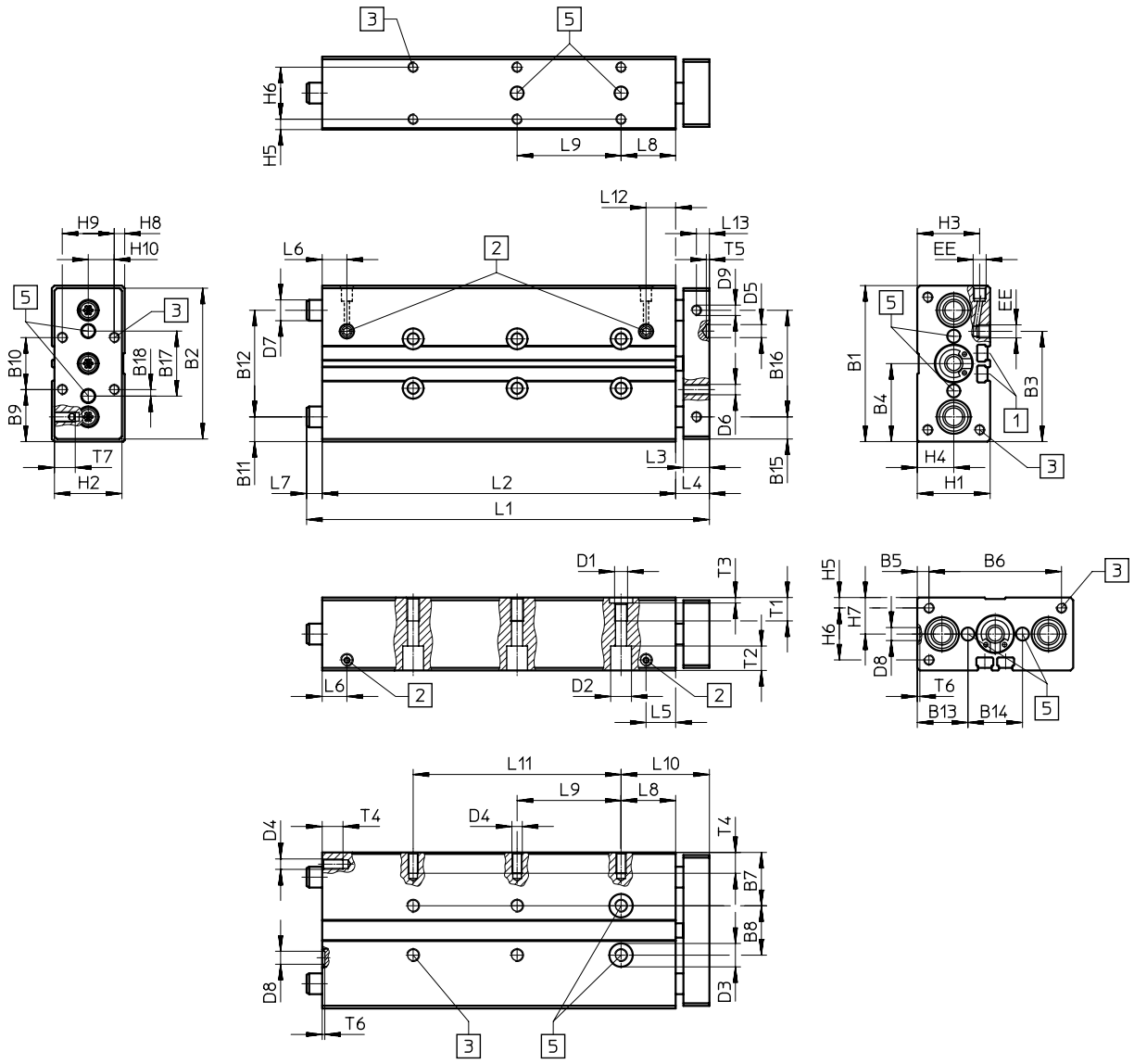
∅ [mm]	B1	B2	B3	B4	B5	B6	B7	B8	D1 ∅	D2 ∅
6	29	28	20.5	20.5	4.3	20.5	9	9.7	6.2	3.3
10	33	32	23	23	5	23	11	10	8	4.3

∅ [mm]	D3	D4	D5 ∅ h8	EE	H1	H2	H3	H4	H5	H6
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

∅ [mm]	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	T1	T2
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		

Dimensions

∅ 12 ... 16 mm



[1] Mounting slot for proximity switches SME/SMT-8

[2] Compressed air supply port optionally at the side or on top

[3] Mounting thread

[5] Tolerance between the centring holes ± 0.02 mm

Note

If the guide rods project beyond the contour of the housing in the retracted end position (→ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

Dimensions

∅ [mm]	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	D1	D2 ∅
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

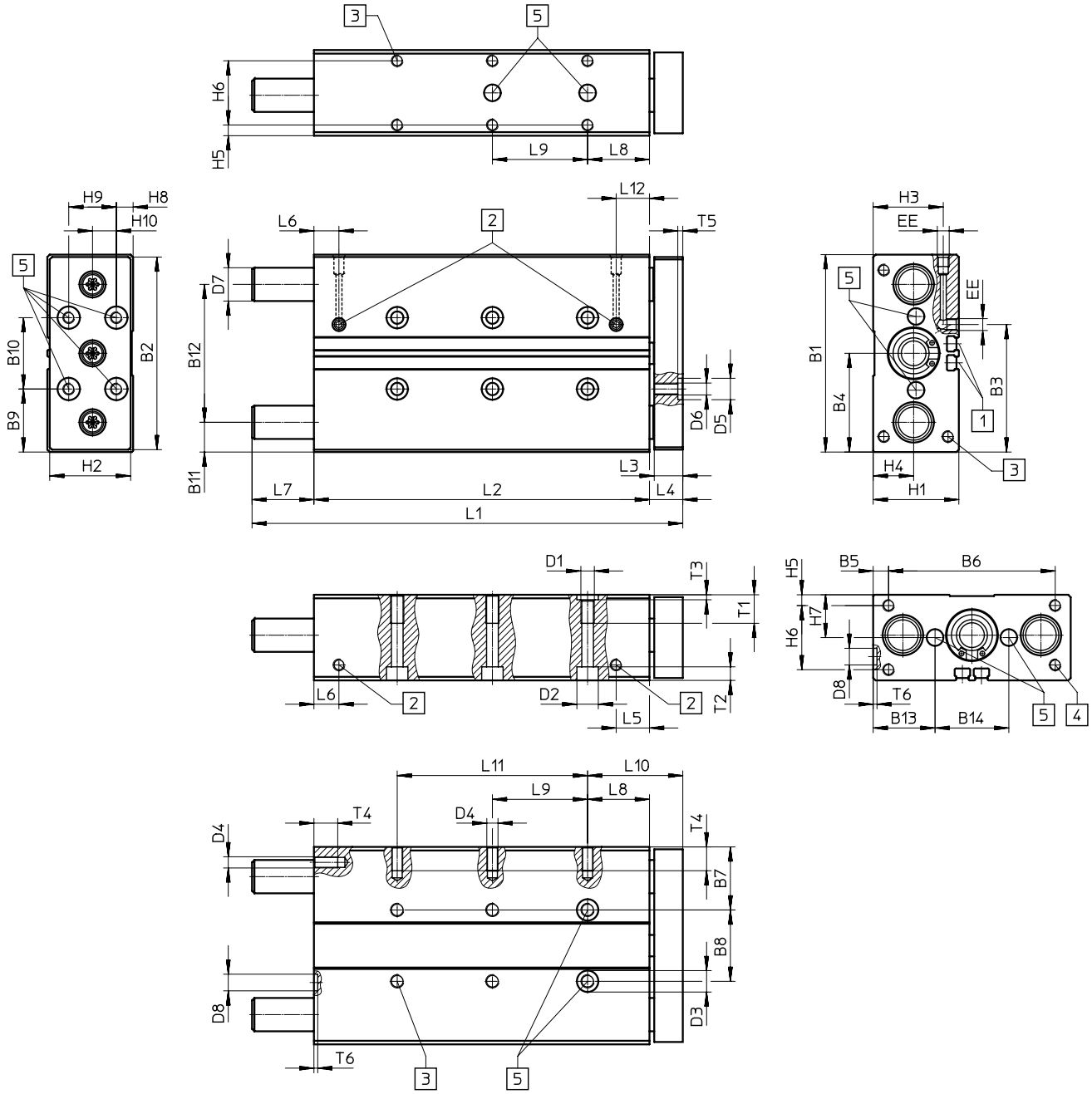
∅ [mm]	D3 ∅ H8	D4	D5 ∅ H8	D6	D7 ∅ GF	D7 ∅ KF	D8 ∅ H8	D9	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
12	9	M4	5	M4	10_{h8}	8_{h7}	5	M4	M5	28	26	24	14	4	20	14	4	20	10
16	9	M5	5	M5	12_{h8}	10_{h7}	5	–	M5	32	30	26.5	16	4	24	16	7.4	20	10

∅ [mm]	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
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	
	100	155	136					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	

∅ [mm]	Stroke [mm]	L11	L12	L13	T1	T2	T3	T4	T5	T6	T7
12	10	–	11.4	5	9	9.4	2.1	8	1.2	1	8
	20	–									
	25	–									
	30	–									
	40	–									
	50	–									
	80	–									
	100	80									
16	10	–	11.9	–	9	4.6	2.1	10	1.2	1	–
	20	–									
	25	–									
	30	–									
	40	–									
	50	–									
	80	–									
	100	80									

Dimensions

∅ 20 ... 25 mm



[1] Mounting slot for proximity switches SME-/SMT-8

[2] Compressed air supply port optionally at the side or on top

[3] Mounting thread

[4] Mounting thread (not with diameter 20)

[5] Tolerance between the centring holes ± 0.02 mm

Note

If the guide rods project beyond the contour of the housing in the retracted end position (→ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

Dimensions

∅ [mm]	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1	D2 ∅	D3 ∅ H8	D4
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

∅ [mm]	D5 ∅ H8	D6	D7 ∅ GF	D7 ∅ KF	D8 ∅ H8	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
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

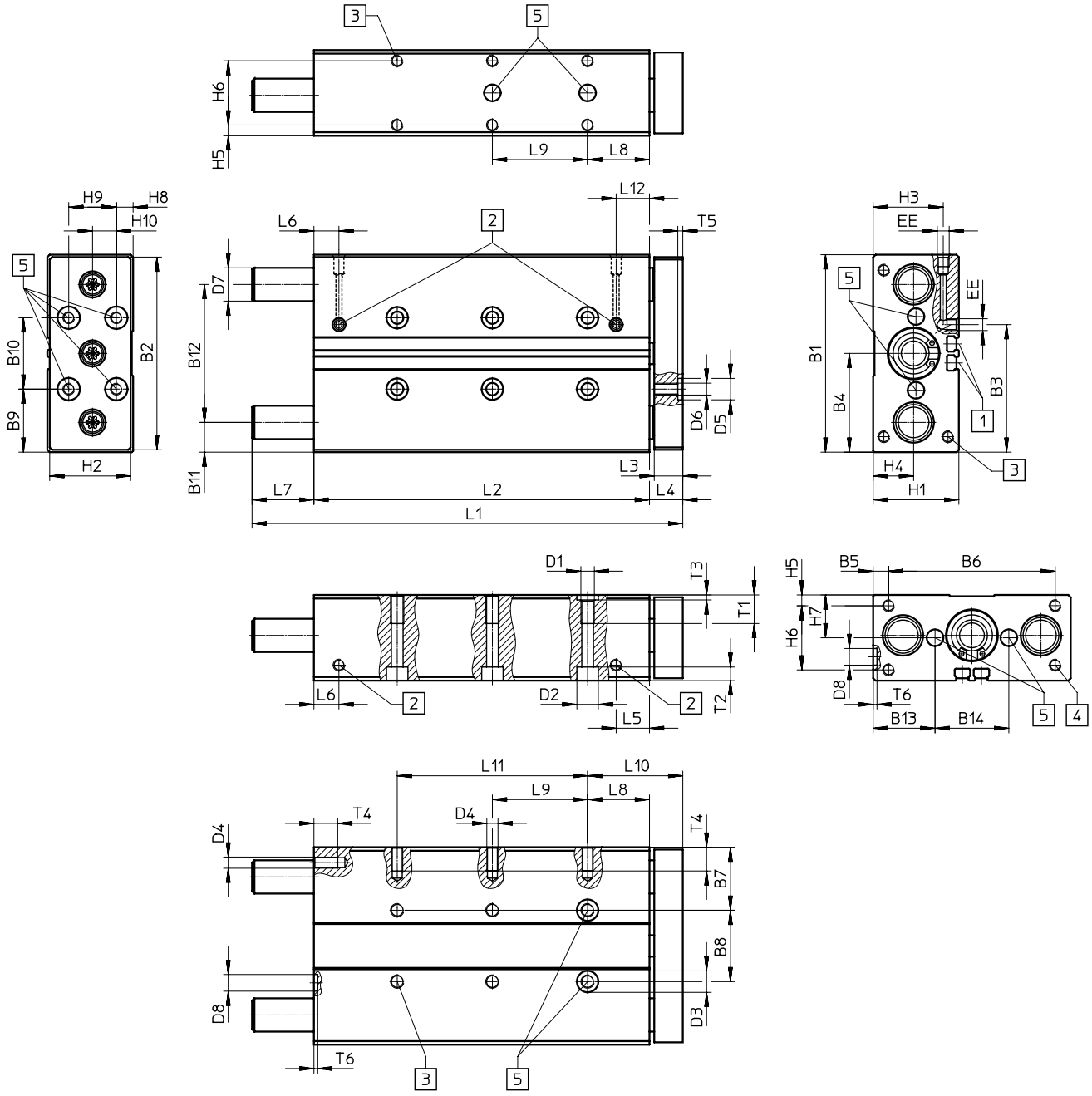
∅ [mm]	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8	L9
20	20	75	61	12	14	14	10.5	–	26	–
	25	80	66					–		20
	30	85	71					–		20
	40	121	81					26		20
	50	131	91					26		40
	80	161	121					26		40
	100	181	141					26		40
25	20	93	65.6	12	14	17.5	9.5	13.4	26	–
	25	98	70.6					13.4		20
	30	103	75.6					13.4		20
	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

∅ [mm]	Stroke [mm]	L10	L11	L12	T1	T2	T3	T4	T5	T6
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							

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Dimensions

∅ 32 ... 63 mm



[1] Mounting slot for proximity switches SME-/SMT-8

[2] Compressed air supply port optionally at the side or on top

[3] Mounting thread

[4] Mounting thread

[5] Tolerance between the centring holes ± 0.02 mm

Note

Because the guide rods project beyond the contour of the housing in the retracted end position (➔ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

Dimensions

∅ [mm]	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1	D2 ∅	D3 ∅ H8
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

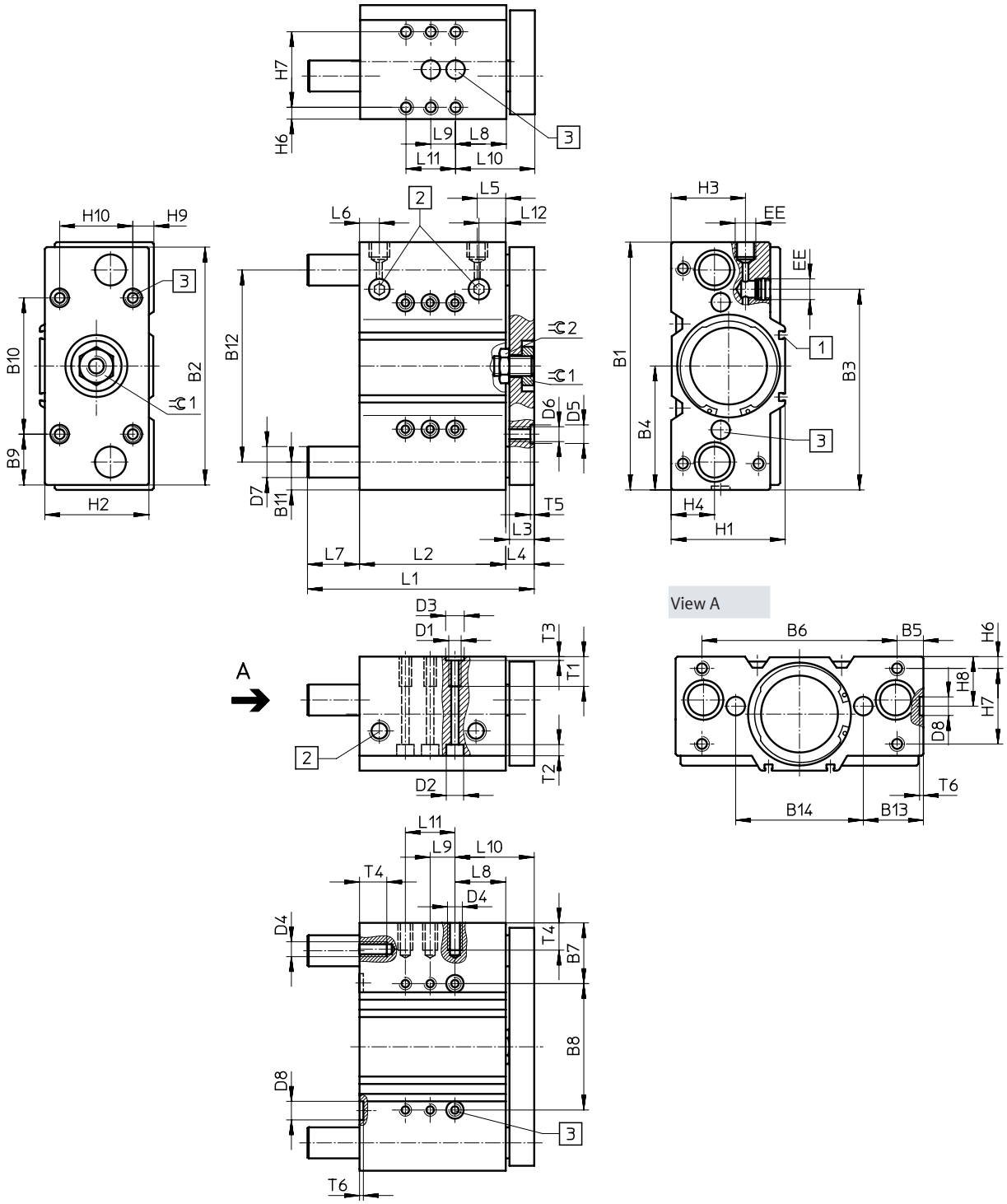
∅ [mm]	D4	D5 ∅ H8	D6	D7 ∅ GF	D7 ∅ KF	D8 ∅ H8	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
32	M6	9	M6	20_{h8}	16_{h7}	9	G1/8	49	47	38.5	22	6	37	24.5	8.5	30	15
40	M8	9	M6	20_{h8}	16_{h7}	9	G1/8	54	52	40.5	24	6	42	27	10	30	15
50	M8	12	M8	25_{h8}	20_{h7}	12	G1/4	64	62	50.5	29.5	7	50	32	12	40	20
63	M10	12	M8	25_{h8}	20_{h7}	12	G1/4	78	76	55	32	9	60	39	19	40	20

∅ [mm]	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	13.1	14	29	20	45	–	17.8	15	6.8	2.6	16	2.1	2.1
	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							

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Dimensions

∅ 80 ... 100 mm



[1] Mounting slot for proximity switches SME-/SMT-8

[2] Compressed air supply port optionally at the side or on top

[3] Tolerance between the centring holes ± 0.02 mm

Note

Because the guide rods project beyond the contour of the housing in the retracted end position (→ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

Dimensions

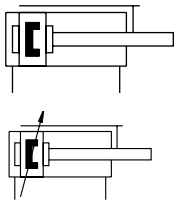
∅ [mm]	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	D1	D2 ∅	D3 ∅ H8
80	200	192	162.5	100	21.5	157	48.5	103	41	110	22.5	155	48.5	103	M10	15	12
100	240	232	201	120	21	198	54	132	56	120	26	188	57	126	M12	18	15

∅ [mm]	D4	D5 ∅ H8	D6	D7 ∅ GF	D7 ∅ KF	D8 ∅ H8	EE	H1	H2	H3	H4	H6	H7	H8	H9	H10
80	M10	12	M10	30h8	25h6	12	G3/8	92	84	61	35	9	62	40	16	60
100	M12	15	M12	35h8	30h6	15	G3/8	112	104	66	39.5	10	68	44	16	80

∅ [mm]	Stroke [mm]	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10 ±0.1	L11	L12	T1	T2	T3	T4	T5	T6	⌯1	⌯2
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									

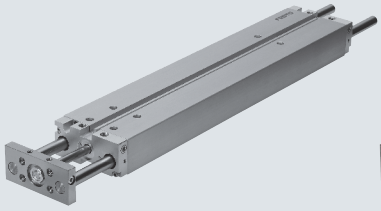
Note: This product conforms to ISO 1179-1 and ISO 228-1.

Function

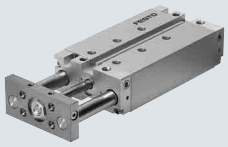


Diameter
12 ... 63 mm

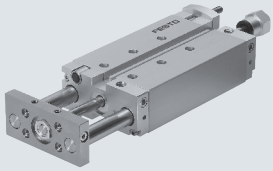
Stroke length
10 ... 400 mm



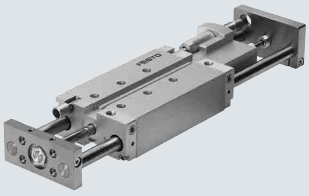
DFM-B-...-P (stroke 400 mm)



DFM-B-...-PPV

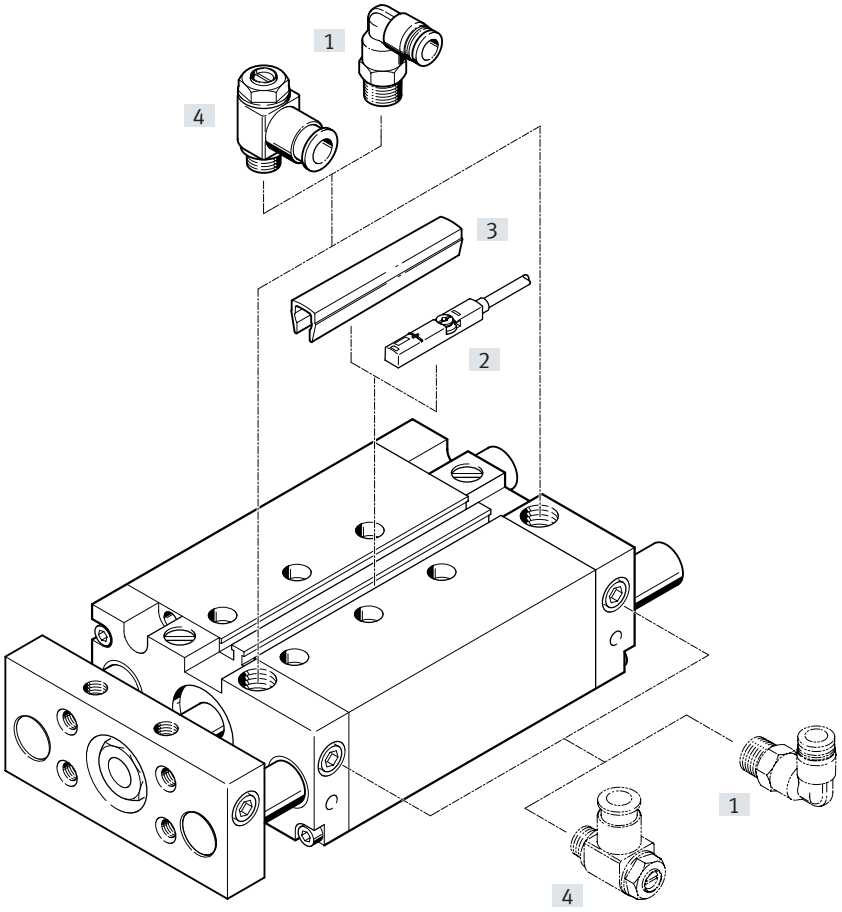


DFM-B-...-AJ-EJ

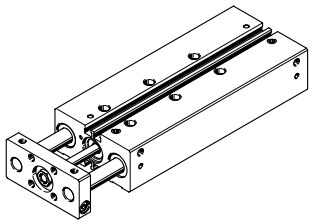


DFM-B-...-YSRW

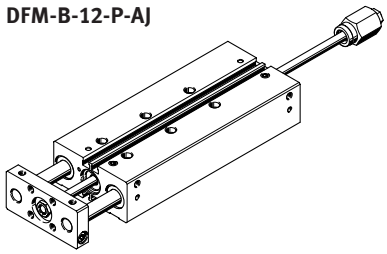
Peripherals overview



DFM-B-12-P



DFM-B-12-P-AJ



		Description	→ Page/Internet
[1]	Push-in fitting NPQE	For connecting compressed air tubing with standard O.D.	803
[2]	Proximity switches SME-/SMT-8/10	Can be integrated in the profile barrel	681, 691
[3]	Slot cover ABP-5-S	For protecting the sensor cable and the sensor slots from contamination	113
[4]	One-way flow control valve GRLA	For speed regulation	196
–	Centring sleeves ZBH	4 or 6 pieces included in the scope of delivery	

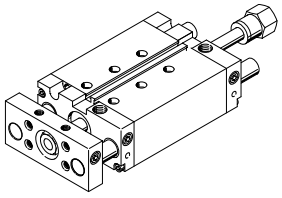
Ordering – Modular product system DFM-B-GF

Size		12	16	20	25	32	40	50	63	Conditi-ons	Code	Enter code
Module no.		529119	529120	532316	532317	532318	532319	534769	534770			
Function		Guided drive									DFM	DFM
Piston diameter	[mm]	12	16	20	25	32	40	50	63		-...	
Stroke	[mm]	10	10	–	–	–	–	–	–		-...	
		20	20	20	20	20	–	–	–		-...	
		25	25	25	25	25	25	25	25		-...	
		30	30	30	30	30	–	–	–		-...	
		40	40	40	40	40	–	–	–		-...	
		50	50	50	50	50	50	50	50		-...	
		80	80	80	80	80	80	80	80		-...	
		100	100	100	100	100	100	100	100		-...	
		125	125	125	125	125	125	125	125		-...	
		160	160	160	160	160	160	160	160		-...	
		200	200	200	200	200	200	200	200		-...	
		–	–	250	250	250	250	250	250		-...	
		–	–	320	320	320	320	320	320		-...	
		–	–	400	400	400	400	400	400		-...	
Variable stroke	[mm]	10 ... 200		20 ... 400			25 ... 400			[1]	-...	
Generation		B series									-B	-B
Cushioning		Elastic cushioning rings/plates at both ends									-P	
		–	Pneumatic cushioning, adjustable at both ends							[2]	-PPV	
Position sensing		Via proximity switch									-A	-A
Guide		Plain-bearing guide									-GF	-GF
Temperature resistance		Heat-resistant seals up to max. 120°C								[3]	S6	
Precision adjustment, advanced		Precision adjustment in the end positions, advanced									-AJ	
Precision adjustment, retracted		–	–	Precision adjustment in the end positions, retracted							-EJ	
Accessories		Supplied loose									ZUB-	ZUB-
Slot cover for sensor slot		1 ... 10									...S	
Proximity switches	With cable, 2.5 m	1 ... 10									...G	
	Non-contacting with cable, 2.5 m	1 ... 10									...I	

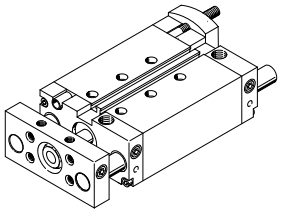
[1] ... Not with precision adjustment AJ
[2] **PPV** Not with precision adjustment AJ, EJ.
[3] **S6** Not with precision adjustment AJ, EJ

Variants

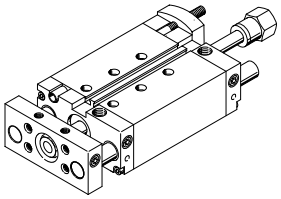
AJ



EJ



AJ + EJ



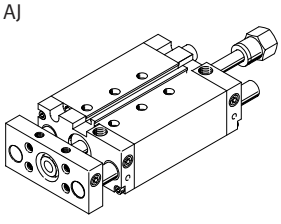
Ordering – Modular product system DFM-B-KF

Size		12	16	20	25	32	40	50	63	Conditi-ons	Code		Enter code
Module no.		529119	529120	532316	532317	532318	532319	534769	534770				
Function		Guided drive									DFM		DFM
Piston diameter	[mm]	12	16	20	25	32	40	50	63		-...		
Stroke	[mm]	10	10	–	–	–	–	–	–		-...		
		20	20	20	20	20	–	–	–		-...		
		25	25	25	25	25	25	25	25		-...		
		30	30	30	30	30	–	–	–		-...		
		40	40	40	40	40	–	–	–		-...		
		50	50	50	50	50	50	50	50		-...		
		80	80	80	80	80	80	80	80		-...		
		100	100	100	100	100	100	100	100		-...		
		125	125	125	125	125	125	125	125		-...		
		160	160	160	160	160	160	160	160		-...		
		200	200	200	200	200	200	200	200		-...		
		–	–	250	250	250	250	250	250		-...		
		–	–	320	320	320	320	320	320		-...		
		–	–	400	400	400	400	400	400		-...		
Variable stroke	[mm]	10 ... 200		20 ... 400			25 ... 400			[1]	-...		
Generation		B series									-B		-B
Cushioning		Elastic cushioning rings/plates at both ends									-P		
		–	Pneumatic cushioning, adjustable at both ends							[2]	-PPV		
		–	–	Shock absorber, self-adjusting, progressive						[3]	-YSRW		
Position sensing		Via proximity switch									-A		-A
Guide		Recirculating ball bearing guide									-KF		-KF
Precision adjustment, advanced		Precision adjustment in the end positions, advanced									-AJ		
Precision adjustment, retracted		–	–	Precision adjustment in the end positions, retracted							-EJ		
Accessories		Supplied loose									ZUB-		ZUB-
Slot cover for sensor slot		1 ... 10									...S		
Proximity switches	With cable, 2.5 m	1 ... 10									...G		
	Non-contacting with cable, 2.5 m	1 ... 10									...I		

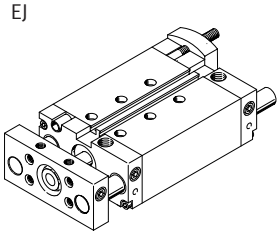
[1] ... Not with precision adjustment AJ
[2] **PPV** Not with precision adjustment AJ, EJ.
[3] YSRW Not with precision adjustment AJ, EJ, as already integrated.

Variants

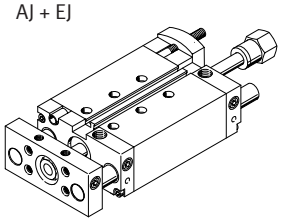
AJ



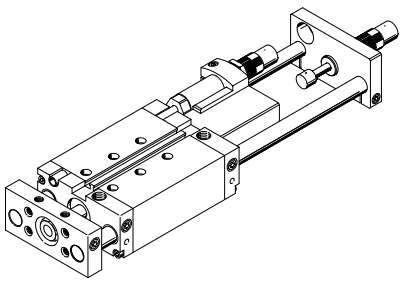
EJ



AJ + EJ



YSRW



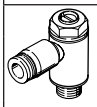
Accessories – Ordering data

Centring sleeves included in the scope of delivery

Piston diameter [mm]	Centring sleeves	
	For housing	For yoke plate
12	2x ZBH-5, 2x ZBH-9	2x ZBH-5
16	2x ZBH-5, 2x ZBH-9	2x ZBH-5
20	2x ZBH-7, 2x ZBH-9	2x ZBH-9
25	2x ZBH-7, 2x ZBH-9	2x ZBH-9
32	2x ZBH-9, 2x ZBH-12	2x ZBH-9
40	2x ZBH-9, 2x ZBH-12	2x ZBH-9
50	2x ZBH-12	2x ZBH-12
63	2x ZBH-12	2x ZBH-12

	For size	Part no.	Type
Centring sleeve/centring pin[1]			
	For centring the mini slide during mounting		
	12	186717	ZBH-7
	16	150927	ZBH-9
	20, 25	189653	ZBH-12
	For centring loads and attachments on the slide		
	12, 16	189652	ZBH-5
	20, 25	189653	ZBH-12
	For centring loads and attachments on the yoke plate		
	12, 16	186717	ZBH-7
	20, 25	189653	ZBH-12
Connector sleeve[1]			
	20	548806	ZBV-12-9

1) Packaging unit 10 pieces

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1], **for exhaust air flow control**					
	12, 16, 20	M5	3	★193137	GRLA-M5-QS-3-D
			4	★193138	GRLA-M5-QS-4-D
			6	★193139	GRLA-M5-QS-6-D
	25, 32, 40	G1/8	3	★193142	GRLA-1/8-QS-3-D
			4	★193143	GRLA-1/8-QS-4-D
			6	★193144	GRLA-1/8-QS-6-D
			8	★193145	GRLA-1/8-QS-8-D
	50, 63	G1/4	6	★193146	GRLA-1/4-QS-6-D
			8	★193147	GRLA-1/4-QS-8-D
			10	★193148	GRLA-1/4-QS-10-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.

Data sheet

General technical data Piston diameter		12	16	20	25	32	40	50	63
Pneumatic connection		M5	M5	M5	G1/8	G1/8	G1/8	G1/4	G1/4
Design		Piston							
		Piston rod							
		Guide rods with yoke							
Cushioning									
DFM-...-P		Elastic cushioning rings/plates at both ends							
DFM-...-PPV		–	Pneumatic cushioning, adjustable at both ends						
DFM-...-YSRW		–		Self-adjusting at both ends					
Cushioning length									
DFM-...-PPV	[mm]	–	12	15	15	16	17	19	19
Position sensing		Via proximity switch							
Type of mounting		With through-hole							
		With female thread							
Mounting position		Any							
Protection against torsion/guide		Guide rod with yoke/plain-bearing or recirculating ball bearing guide							
Variant AJ									
Setting range	[mm]	0 ... 10							
Variant EJ and YSRW									
Setting range	[mm]	–	–	0 ... 10					
Variant YSRW with shock absorber									
Repetition accuracy	[mm]	–	–	max. 0.05					

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Data sheet

Operating and environmental conditions									
Piston diameter		12	16	20	25	32	40	50	63
Operating pressure	[bar]	2 ... 10			1.5 ... 10			1 ... 10	
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[1]									
DFM-...-GF	[°C]	–20 ... +80							
DFM-...-KF	[°C]	–5 ... +60							
DFM-...-YSRW	[°C]	0 ... +60							
DFM-...-S6	[°C]	0 ... +120							
Corrosion resistance CRC[2]									
DFM-...-GF		2							
DFM-...-S6		2							
ATEX		Selected types → www.festo.com							

1) Note operating range of proximity switches

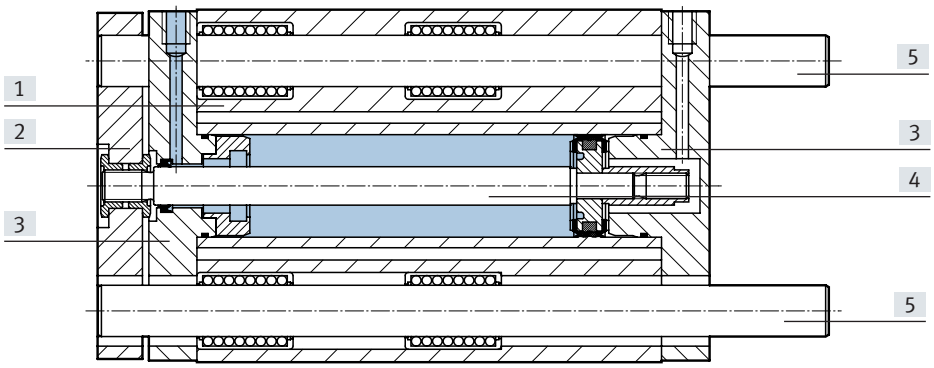
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Forces [N]								
Piston diameter	12	16	20	25	32	40	50	63
Cushioning P, PPV, YSRW, precision stroke adjustment EJ								
Theoretical force at 6 bar, advancing	68	121	188	295	482	754	1178	1870
Theoretical force at 6 bar, retracting	51	90	141	247	415	686	1057	1750
Precision stroke adjustment AJ and AJ+EJ								
Theoretical force at 6 bar, advancing	51	90	141	247	415	686	1057	1750
Theoretical force at 6 bar, retracting	51	90	141	247	415	686	1057	1750

Impact energy [J]								
Piston diameter	12	16	20	25	32	40	50	63
Cushioning P								
Max. impact energy in the end positions	0.09	0.15	0.2	0.35	0.40	0.7	1.0	1.3
Max. impact energy in the end positions S6	0.035	0.075	0.1	0.15	0.2	0.35	0.5	0.65
Cushioning YSRW								
Max. energy absorption per stroke	–	–	4	8	12	35	35	70
Max. energy absorption per hour	–	–	21000	30000	41000	68000	68000	100000

Data sheet

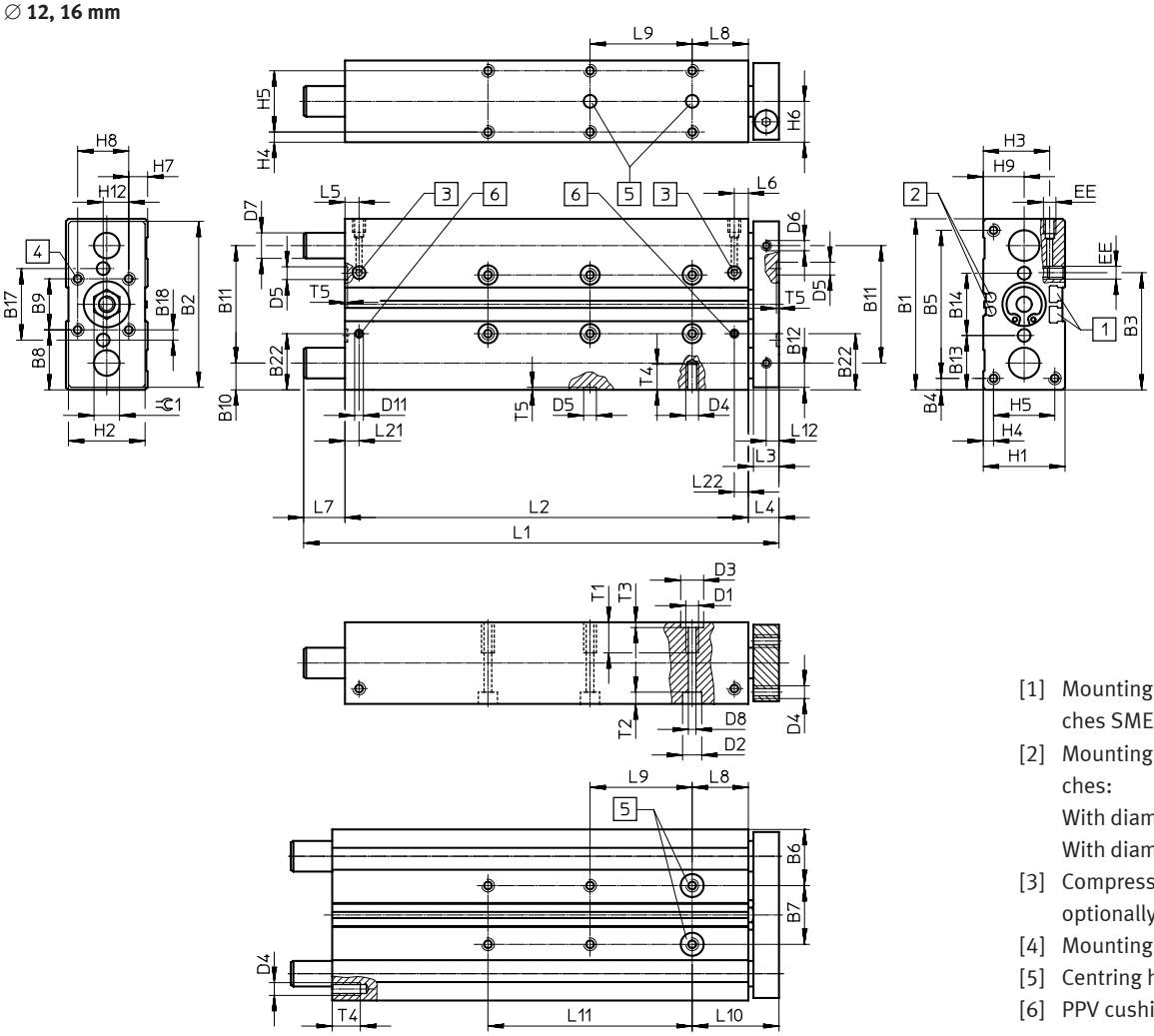
Materials



Guided drive		Plain-bearing guide GF	Recirculating ball bearing guide KF	S6
[1]	Housing	Anodised wrought aluminium alloy	Anodised wrought aluminium alloy	Anodised wrought aluminium alloy
[2]	Yoke plate	Tempered steel	Tempered steel	Wrought aluminium alloy
[3]	Bearing and end caps	Anodised wrought aluminium alloy	Anodised wrought aluminium alloy	Anodised wrought aluminium alloy
[4]	Piston rod	High-alloy stainless steel	High-alloy stainless steel	High-alloy stainless steel
[5]	Guide rods	High-alloy steel	Hard-chromium plated tempered steel	High-alloy steel
–	Static seals	Nitrile rubber	Nitrile rubber	Fluoro rubber
–	Dynamic seals	Polyurethane	Polyurethane	Fluoro rubber
	Note on materials	RoHS-compliant		

Dimensions

∅ 12, 16 mm



[1] Mounting slot for proximity switches SME/SMT-8
[2] Mounting slot for proximity switches:
With diameter 12: SME/SMT-10
With diameter 16: SME/SMT-8
[3] Compressed air supply port optionally at the side or on top
[4] Mounting thread
[5] Centring holes
[6] PPV cushioning

Dimensions

∅ [mm]	B1	B2	B3	B4	B5	B6	B7 ±0.02[1]	B8	B9	B10	B11	B12	B13	B14 ±0.02[1]	B17	B22	D1
12	60	58	41	4.5	51	20.5	19	20	20	9.5	41	8.5	19.5	21	25	–	M5
16	67	65	45	4.5	58	22	23	23.5	20	10.5	46	9.5	21.3	24.4	28	22.5	M5

1) Tolerance between the centring holes

∅ [mm]	D2 ∅	D3 ∅ H8	D4	D5 ∅ H8	D6 ∅	D7 ∅ GF	D7 ∅ KF	D8 ∅ H8	D11 ∅	EE	H1	H2	H3	H4	H5	H6	H7
12	8	9	M4	5	M4	10_{h8}	8_{h6}	4.3	–	M5	28	26	24	4	20	14	4
16	7.5	9	M5	5	M4	12_{h8}	10_{h6}	4.3	3.3	M5	32	30	26.5	4	24	16	7.4

∅ [mm]	H8	H9	H12	L3	L4	L5	L6	L8	L10	L12	L21	L22	T1	T2	T3	T4	T5	⌀G1
12	20	14	10	10	13	14.6	10.8	21	34	5	–	–	10	9.4	2.1	8	1.2	10
16	20	16	10	10	12	9.8	9.3	22	34	5	9.8	9.3	12	4.6	2.1	10	1.2	10

Stroke [mm]	Piston diameter [mm] 12 L1	L2	L7	L9 ±0.02[1]	L11	16 L1	L2	L7	L9 ±0.02[1]	L11
10	74	50	11	–	–	80	68	–	–	–
20	84	60	11	–	–	90	78	–	–	–
25	89	65	11	20	–	95	83	–	20	–
30	94	70	11	20	–	100	88	–	20	–
40	104	80	11	20	–	110	98	–	20	–
50	114	90	11	40	–	120	108	–	40	–
80	144	120	11	40	–	150	138	–	40	–
100	164	140	11	40	80	170	158	–	40	80
125	230	165	52	40	80	229	183	34	40	80
160	265	200	52	40	120	264	218	34	40	120
200	305	240	52	40	160	304	258	34	40	160

1) Tolerance between the centring holes

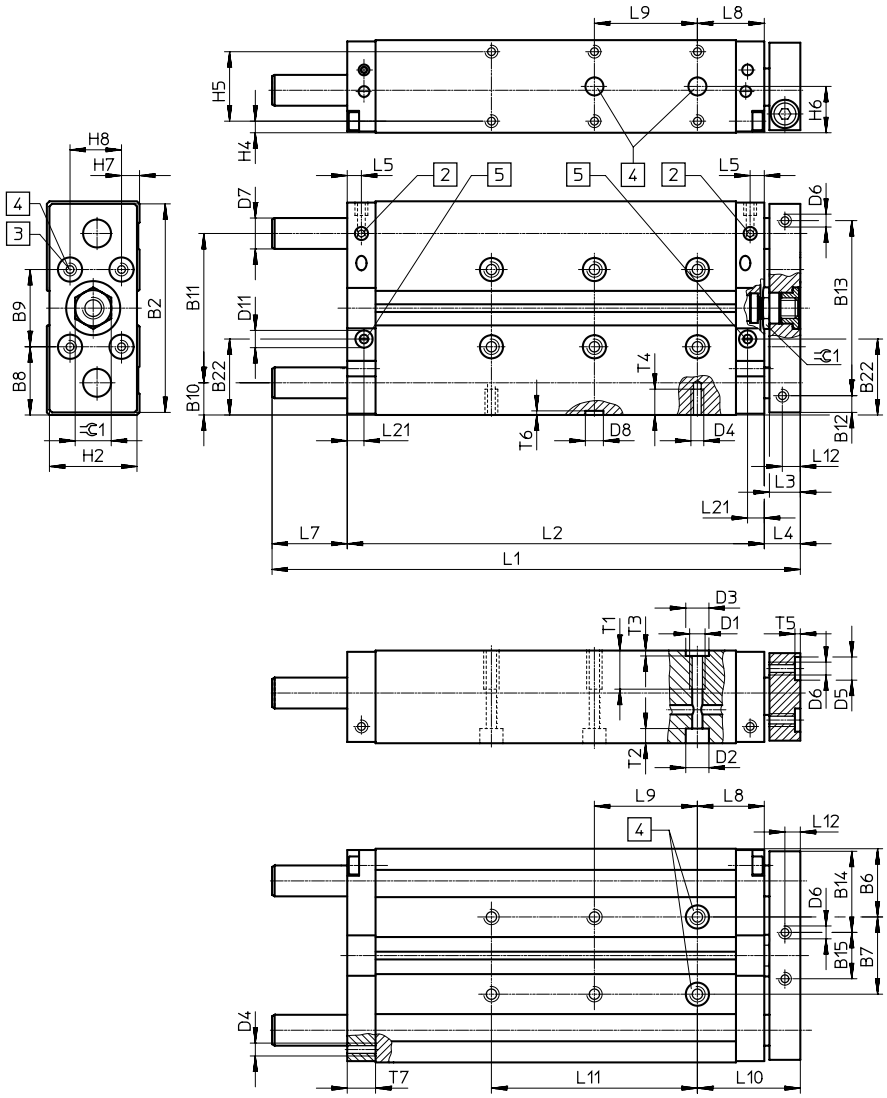
Note

If the guide rods project beyond the contour of the housing in the retracted end position (→ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

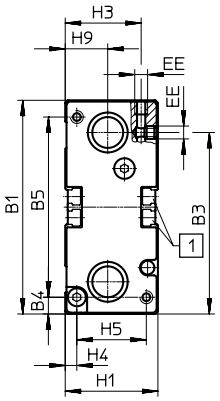
When using a variable stroke, the dimensions L1, L2, L7, L9 and L11 correspond to the next longest standard stroke.

Dimensions

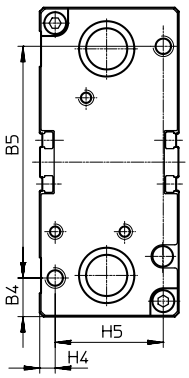
Diameter 20 ... 40 mm



Diameter 20



Diameter 25 ... 40



[1] Mounting slot for proximity switches SME/SMT-8
[2] Compressed air supply port optionally at the side or on top
[3] Mounting thread
[4] Centring holes
[5] PPV cushioning

Dimensions

∅ [mm]	B1	B2	B3	B4	B5	B6	B7 ±0.02[1]	B8	B9 ±0.02[1]	B10	B11	B12	B13	B14	B15	B22	D1
20	83	81	70	6.5	70	26.5	30	26.5	30	12.5	58	6.5	68	31.5	18	28	M6
25	95	93	69	15.5	64	30	35	27.5	40	13.5	68	12.5	68	32.5	28	32	M6
32	110	108	79.5	20	70	33.5	43	35	40	16	78	15	78	41	26	38	M8
40	120	118	85.5	15	90	34.5	51	35	50	16	88	15	88	41	36	41.5	M8

1) Tolerance between the centring holes

∅ [mm]	D2 ∅	D3 ∅ H8	D4	D5 ∅ H8	D6 ∅	D7 ∅ GF	D7 ∅ KF	D8 ∅ H8	D11 ∅	EE	H1	H2	H3	H4	H5	H6	H7
20	9	9	M5	9	M5	14	12	7	8.5	M5	36	34	28.5	4.5	27	18	7
25	9	9	M6	9	M6	16	14	7	8.8	G1/8	44	42	34	4.5	35	22	12
32	11	12	M6	9	M6	20	16	9	8.8	G1/8	49	47	37	6	37	24.5	8.5
40	11	12	M8	9	M6	20	16	9	8.8	G1/8	54	52	41.5	6	42	27	10

∅ [mm]	H8	H9	L3	L4	L5	L8	L10	L12	L21	T1	T2	T3	T4	T5	T6	T7	⌀G1
20	20	16.5	12	14	6	26	40	6	6	12	5.7	2.1	10	2.1	1.6	11	14
25	20	19	12	14	8.5	26	40	6	8.5	15	5.7	2.1	12	2.1	1.6	15	17
32	30	21	14	16	9	29	45	7	9	20	6.8	2.6	11	2.1	2.1	15	17
40	30	26	14	16	8.5	29	45	7	9.5	20	6.8	2.6	16	2.1	2.1	15	17

Stroke [mm]	Piston diameter [mm]																			
	20					25					32					40				
	L1	L2	L7	L9 ±0.02[1]	L11	L1	L2	L7	L9 ±0.02[1]	L11	L1	L2	L7	L9 ±0.02[1]	L11	L1	L2	L7	L9 ±0.02[1]	L11
20	105	82	9	20	–	111	90	7	20	–	118	95	7	20	–	–	–	–	–	–
25	110	87				116	95				123	100				123	101	6	20	
30	115	92				121	100				133	105	12			–	–	–	–	–
40	135	102	19			141	110	17			143	115								
50	145	112		40		151	120		40		153	125		40		153	126	11	40	
80	185	142	29			196	150	32			208	155	37			208	156	36		
100	205	162			80	216	170			80	228	175			80	228	176			80
125	257	187	56			271	195	62			283	200	67			283	201	66		
160	292	222			120	306	230			120	318	235			120	318	236			120
200	332	262			160	346	270			160	358	275			160	358	276			160
250	472	312	146		200	476	320	142		200	483	325	142		200	483	326	141		200
320	542	382			240	546	390			240	553	395			240	553	396			240
400	622	462			320	626	470			320	633	475			320	633	476			320

1) Tolerance between the centring holes

Note: This product conforms to ISO 1179-1 and ISO 228-1.

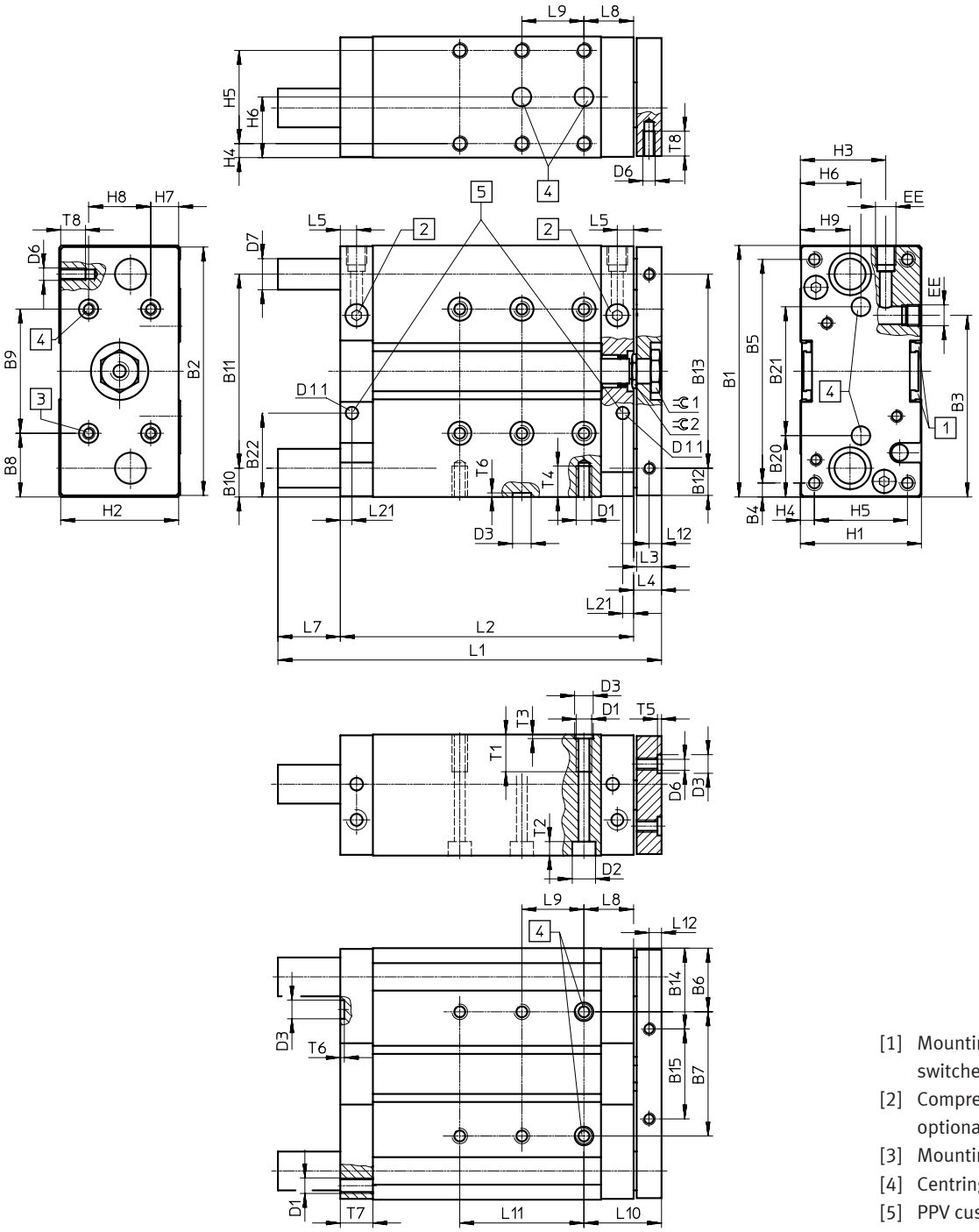
Note

If the guide rods project beyond the contour of the housing in the retracted end position (→ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

When using a variable stroke, the dimensions L1, L2, L7, L9 and L11 correspond to the next longest standard stroke.

Dimensions

Diameter 50 ... 63 mm



[1] Mounting slot for proximity switches SME/SMT-8
[2] Compressed air supply port optionally at the side or on top
[3] Mounting thread
[4] Centring holes
[5] PPV cushioning

Dimensions

∅ [mm]	B1	B2	B3	B4	B5	B6	B7 ±0.02[1]	B8	B9 ±0.02[1]	B10	B11	B12	B13	B14	B15	B20	B21 ±0.02[1]
50	148	146	104	19	110	42	64	44	60	19	110	18	110	52	42	40	68
63	162	160	116.5	9	144	41	80	41	80	18.5	125	17.5	125	51	58	39.5	83

∅ [mm]	B22	D1	D2 ∅	D3 ∅ H8	D6 ∅	D7 ∅ GF	D7 ∅ KF	D11 ∅	EE	H1	H2	H3	H4	H5	H6	H7	H8
50	52	M8	11	12	M8	25	20	8.8	G1/4	64	62	48.5	7	50	32	12	40
63	53.5	M10	15	12	M8	25	20	8.8	G1/4	78	76	54.5	9	60	39	19	40

∅ [mm]	H9	L3	L4	L5	L8	L10	L12	L21	T1	T2	T3	T4	T5	T6	T7	T8	⌀C1	⌀C2
50	29	16	18	11.5	32	50	8	11.5	20	6.8	2.6	16	2.6	2.6	21	16	24	19
63	32	16	18	10.5	32	50	8	10.5	24	9	2.6	20	2.6	2.6	21	16	24	19

Stroke [mm]	Piston diameter [mm] 50 L1	L2	L7	L9 ±0.02[1]	L11	63 L1	L2	L7	L9 ±0.02[1]	L11
25	137	113	6	20	–	137	114	5	20	–
50	177	138	21	40		177	139	20	40	
80	227	168	41			227	169	40		80
100	247	188			80	247	189			
125	293	213	62			293	214	61		120
160	328	248			120	328	249			160
200	368	288			160	368	289			200
250	495	338	139		200	495	339	138		240
320	565	408			240	565	409			320
400	645	488			320	645	489			

1) Tolerance between the centring holes

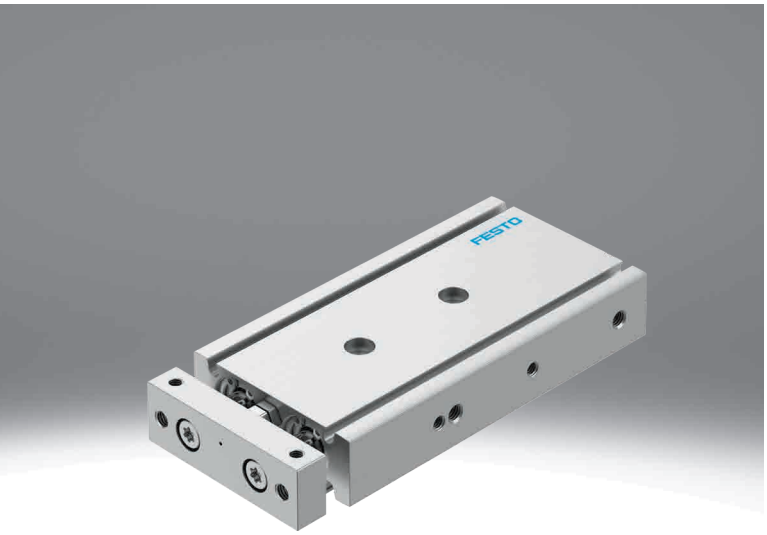
Note: This product conforms to ISO 1179-1 and ISO 228-1.

Note

Because the guide rods project beyond the contour of the housing in the retracted end position (→ dimension L7), an appropriate recess must be provided in the mounting surface when the unit is mounted on its end face so that the guide rods can move freely.

When using a variable stroke, the dimensions L1, L2, L7, L9 and L11 correspond to the next longest standard stroke.

Twin-piston drives DGTZ



Highlights

+ Minimal space requirement
+ Minimal mounting time
+ Wide range of mounting options
+ Good protection against torsion
+ High rigidity
+ Maintenance-free

Twin-piston drives DGTZ

Mounting options, Features

At a glance

Drive and guide unit in a single housing

- Minimal space requirement
- Minimal mounting time
- Wide range of mounting options

Sturdy and precise

- Good protection against torsion
- High rigidity
- Maintenance-free

High resistance to torques and transverse loads

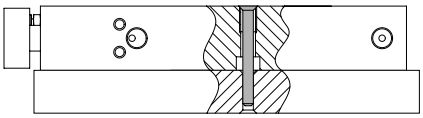
- Plain-bearing guide: high rigidity thanks to large-diameter guide rods and two plain-bearing bushes

Stroke range

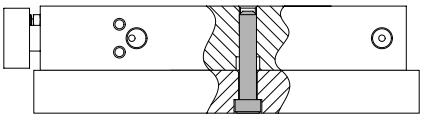
- Standard strokes 10 ... 100 mm

Mounting options

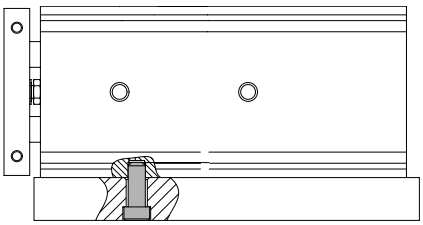
Flat from above



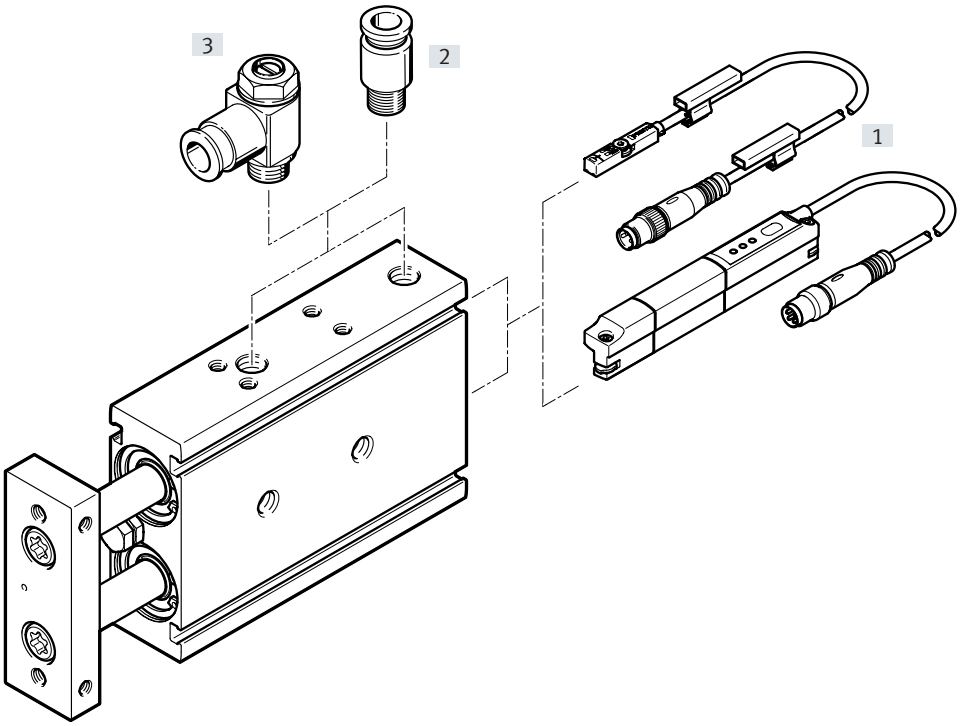
Flat from underneath



Flat from the side



Peripherals overview



	Type/order code	Description	Piston diameter (ø)		→ Page/Internet
			10, 16, 20	25, 32	
[1]	Proximity switch SME/SMT-10	For position sensing	■	–	691
	Proximity switch SME/SMT-8		–	■	681
	Position transmitter SMAT/SDAT	For detecting the current position	–	■	smat-8, 715
[2]	Push-in fitting NPQE	For connecting compressed air tubing with standard O.D.	■	■	803
[3]	One-way flow control valve GRLA	For regulating speed	■	■	207

Type code explanation

001	Series
DGTZ	Twin cylinder

002	Guide
GF	Plain bearing

003	Piston diameter
...	10, 16, 20, 25, 32

004	Stroke
...	10, 20, 30, 40, 50, 60, 70, 80, 90, 100

005	Cushioning
P	Elastic cushioning rings/plates on both sides

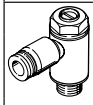
006	Position sensing
A	For proximity sensor

Ordering data

	Part no.	Type
Stroke [mm]	∅ **10 mm**	
10	8100554	DGTZ-GF-10-10-P-A
20	8100555	DGTZ-GF-10-20-P-A
30	8100556	DGTZ-GF-10-30-P-A
40	8100557	DGTZ-GF-10-40-P-A
50	8100558	DGTZ-GF-10-50-P-A
60	8100559	DGTZ-GF-10-60-P-A
70	8100560	DGTZ-GF-10-70-P-A
80	8100561	DGTZ-GF-10-80-P-A
Stroke [mm]	∅ **16 mm**	
10	8100570	DGTZ-GF-16-10-P-A
20	8100571	DGTZ-GF-16-20-P-A
30	8100572	DGTZ-GF-16-30-P-A
40	8100573	DGTZ-GF-16-40-P-A
50	8100574	DGTZ-GF-16-50-P-A
60	8100575	DGTZ-GF-16-60-P-A
70	8100576	DGTZ-GF-16-70-P-A
80	8100577	DGTZ-GF-16-80-P-A
90	8100578	DGTZ-GF-16-90-P-A
100	8100579	DGTZ-GF-16-100-P-A
Stroke [mm]	∅ **25 mm**	
10	8100637	DGTZ-GF-25-10-P-A
20	8100638	DGTZ-GF-25-20-P-A
30	8100639	DGTZ-GF-25-30-P-A
40	8100640	DGTZ-GF-25-40-P-A
50	8100641	DGTZ-GF-25-50-P-A
60	8100642	DGTZ-GF-25-60-P-A
70	8100643	DGTZ-GF-25-70-P-A
80	8100644	DGTZ-GF-25-80-P-A
90	8100645	DGTZ-GF-25-90-P-A
100	8100646	DGTZ-GF-25-100-P-A

Part no.	Type
∅ **20 mm**	
8100607	DGTZ-GF-20-10-P-A
8100608	DGTZ-GF-20-20-P-A
8100609	DGTZ-GF-20-30-P-A
8100610	DGTZ-GF-20-40-P-A
8100611	DGTZ-GF-20-50-P-A
8100612	DGTZ-GF-20-60-P-A
8100613	DGTZ-GF-20-70-P-A
8100614	DGTZ-GF-20-80-P-A
8100615	DGTZ-GF-20-90-P-A
8100616	DGTZ-GF-20-100-P-A
∅ **32 mm**	
8100657	DGTZ-GF-32-10-P-A
8100658	DGTZ-GF-32-20-P-A
8100659	DGTZ-GF-32-30-P-A
8100660	DGTZ-GF-32-40-P-A
8100661	DGTZ-GF-32-50-P-A
8100662	DGTZ-GF-32-60-P-A
8100663	DGTZ-GF-32-70-P-A
8100664	DGTZ-GF-32-80-P-A
8100665	DGTZ-GF-32-90-P-A
8100666	DGTZ-GF-32-100-P-A

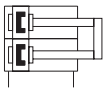
Accessories – Ordering data

Function	For ∅	Connection		Part No.	Type
		Thread	O.D.		
One-way flow control valve with slotted head screw, metal[1] **for exhaust air flow control**					
	10, 16, 20	M5	3	★193137	GRLA-M5-QS-3-D
			4	★193138	GRLA-M5-QS-4-D
			6	★193139	GRLA-M5-QS-6-D
	25, 32	G1/8	3	★193142	GRLA-1/8-QS-3-D
			4	★193143	GRLA-1/8-QS-4-D
			6	★193144	GRLA-1/8-QS-6-D
			8	★193145	GRLA-1/8-QS-8-D

Twin-piston drives DGTZ

Data sheet

Function



Diameter
10 ... 32 mm

Stroke length
10 ... 100 mm

General technical data						
Piston diameter (ø)		10	16	20	25	32
Design		Guide				
Mode of operation		Double-acting				
Guide		Plain-bearing guide				
Pneumatic connection		M5			G1/8	
Stroke	[mm]	10 ... 80	10 ... 100			
Adjustable end-position range/length	[mm]	10				
Cushioning		Elastic cushioning rings/plates at both ends				
Position sensing		Via proximity switch				
Mounting position		Any				

Operating and environmental conditions						
Piston diameter (ø)		10	16	20	25	32
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]	1.5 ... 8	1 ... 8			
	[MPa]	0.15 ... 0.8	0.1 ... 0.8			
Ambient temperature	[°C]	–10 ... +80				
Drive unit operating mode		Yoke				
Corrosion resistance class CRC[1)]		0				

1) Corrosion resistance class CRC 0 to Festo standard FN 940070
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.

Forces [N] and impact energy [J]					
Piston diameter (∅)	10	16	20	25	32
Theoretical force at 6 bar, advancing	94	242	376	590	966
Theoretical force at 6 bar, retracting	60	181	283	454	724
Max. impact energy at the end positions	0.08	0.15	0.2	0.3	0.4

Permissible impact velocity:

$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

Maximum permissible mass:

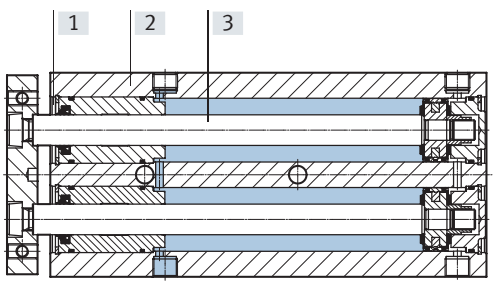
$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

v	Perm. impact speed
E	Max. impact energy
m_1	Moving mass (drive)
m_2	Moving payload

Note

These specifications represent the maximum values that can be achieved. Observe the maximum permissible impact energy.

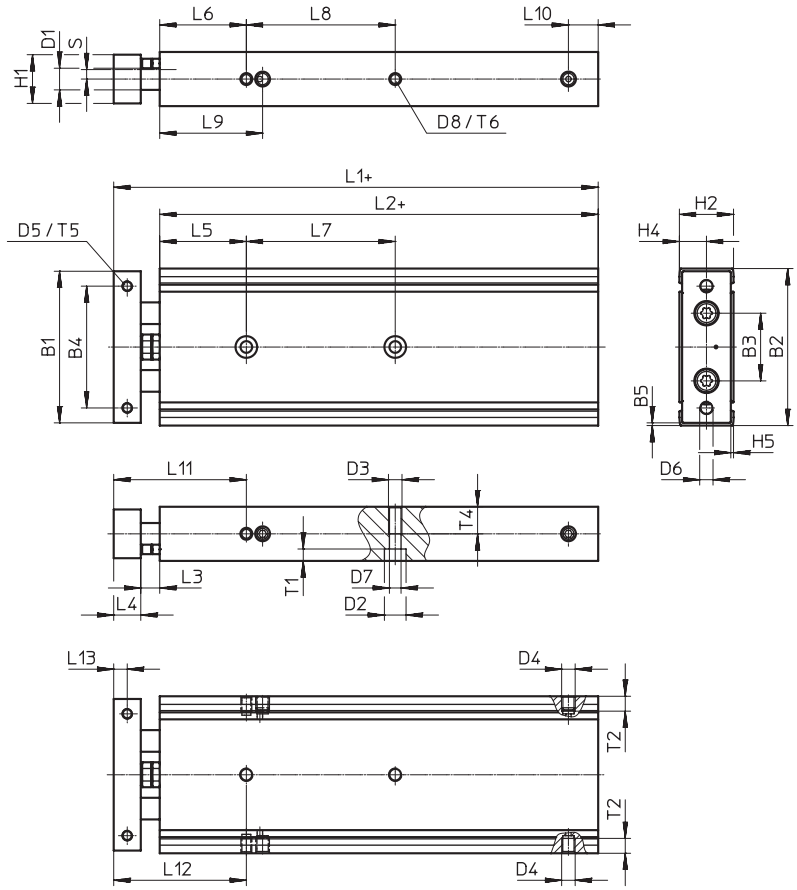
Materials



Linear drives		
[1]	Cover	Wrought aluminium alloy
[2]	Housing	Anodised wrought aluminium alloy
[3]	Piston rod	High-alloy stainless steel
–	Seals	NBR
		HNBR
		TPE-U
	Note on materials	RoHS-compliant
		PWIS-free

Dimensions

∅ **10 ... 16**



ø [mm]	Stroke [mm]	B1	B2	B3	B4	B5	D1 ø	D2 ø	D3	D4	D5	D6	D7 ø	D8	H1	H2	H4	H5
10	10 ... 80	44	46	20	35	1	6	6.5	M4	M5	M3	M4	3.4	M3	15	17	8.5	1
16	10 ... 100	56	58	25	45	1	8	8	M5	M5	M4	M5	4.3	M4	18	20	10	1

ø [mm]	Stroke [mm]	L1	L2	L3	L4	L5	L6	L9	L10	L11	L12	L13	S	T1	T2	T4	T5	T6
10	10 ... 80	60[1)]	46[1)]	6	8	23	23	34	5	37	37	4	3.5	3.3	5.5	7	6	4.5
16	10 ... 100	79[1)]	62[1)]	7	10	32	32	38	11	49	49	5	3.5	4.4	5.5	9	7	5.5

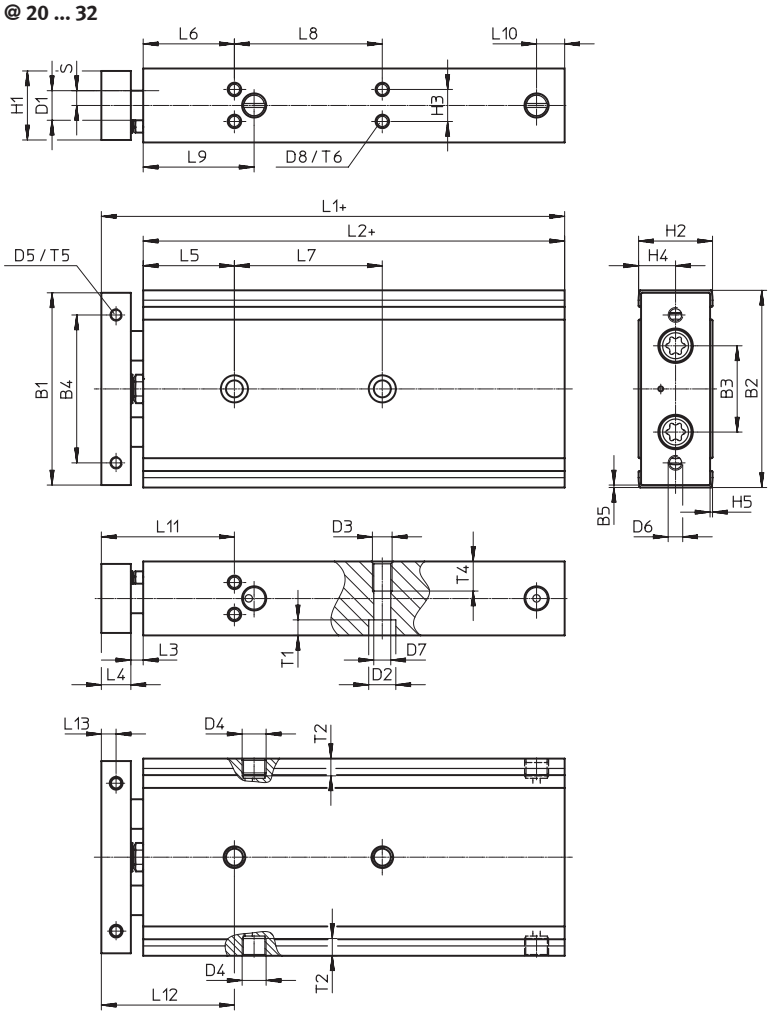
1) Plus stroke length

Piston diameter (∅) 10	
Stroke [mm]	L7	L8
10	20
20	30
30	40
40	40
50	40
60	50
70	50
80	50

Piston diameter (∅) 16	
Stroke [mm]	L7	L8
10	20
20	25
30	35
40	35
50	35
60	45
70	45
80	45
90	55
100	55

Dimensions

@ 20 ... 32



ø [mm]	Stroke [mm]	B1	B2	B3	B4	B5	D1 ø	D2 ø	D3	D4	D5	D6	D7 ø
20	10 ... 100	62	64	29	50	1	10	9.5	M6	M5	M4	M5	5.5
25		78	80	35	60	1	12	11	M8	G1/8	M5	M6	6.9
32		94	96	45	75	1	16	11	M8	G1/8	M5	M6	6.9

ø [mm]	Stroke [mm]	D8	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
20	10 ... 100	M4	23	25	9.5	12.5	1	86.5[1)]	69.5[1)]	5	12	37	37
25		M5	28	30	13	15	1	88[1)]	71[1)]	5	12	37	37
32		M5	36	38	20	19	1	97[1)]	76[1)]	5	16	39	39

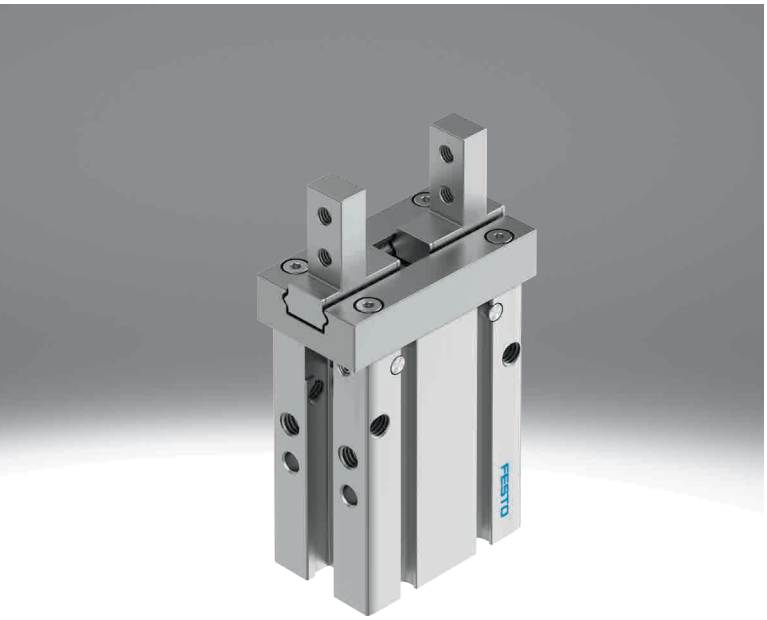
1) Plus stroke length

ø [mm]	Stroke [mm]	L9	L10	L11	L12	L13	S	T1	T2	T4	T5	T6
20	10 ... 100	42.5	12	54	54	6	6	5.3	5.5	10	8	5.5
25		45	11.4	54	54	6	6	6.3	7	12	9	7.5
32		49.5	11.6	60	60	8	8	6.3	7	12	10	7.5

Piston diameter (∅) 20, 25	
Stroke [mm]	L7 / L8
10	25
20	30
30, 40, 50	40
60, 70, 80, 90, 100	60

Piston diameter (∅) 32	
Stroke [mm]	L7 / L8
10	30
20	40
30, 40, 50	50
60, 70, 80, 90, 100	70

Parallel grippers DHPC



Highlights

+ Resilient and precise ball guide
+ High gripping force and compact size
+ Max. repetition accuracy
+ Wide range of adaptation options on the drives

Parallel grippers DHPC

Features

At a glance

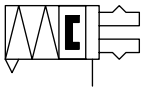
- Resilient and precise ball guide
- High gripping forces with compact dimensions
- Max. repetition accuracy
- Wide range of mounting and connection options
- Compressed air regulation
- Sensor technology:
  - Proximity sensors for sensing piston position at the end positions
  - Position transmitter for sensing the piston position at any location
  - Large sizes have T-slots and C-slots
- Can be used as a double-acting or single-acting gripper
- Suitable for external and internal gripping

Gripping force backup

[NC] Normally closed

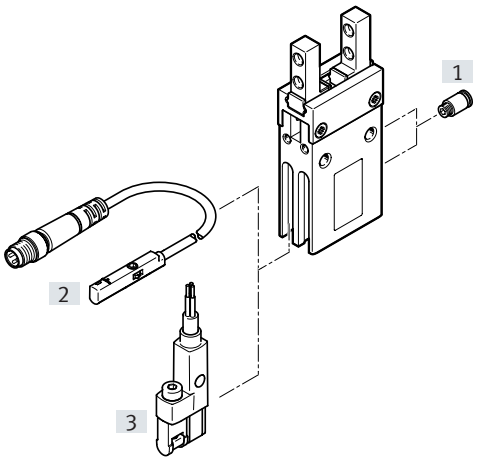
Gripping force backup

[NO] Normally open



Peripherals overview

Size: 6



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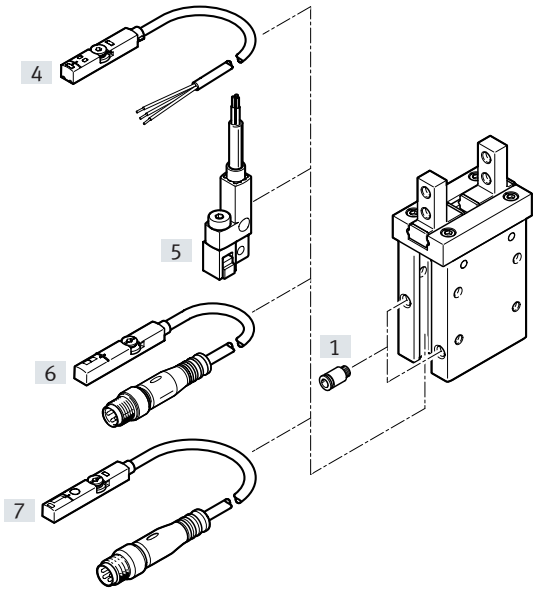

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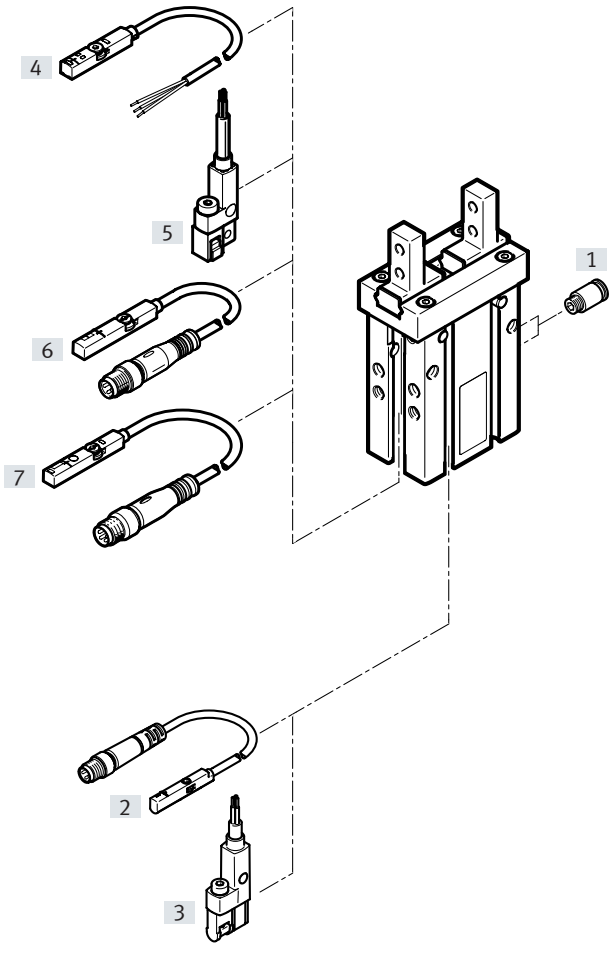


	Type/Order code	For size	→ Page/Internet
[1]	Push-in fitting NPQE	6, 10, 16	803
[2]	Proximity sensor SMT-10M	6, 16	691
[3]	Proximity sensor SMT-10G	6, 16	
[4]	Proximity sensor SMT-8M	10, 16	681

	Type/Order code	For size	→ Page/Internet
[5]	Proximity sensor SMT-8G	10, 16	681
[6]	Position transmitter SMAT-8M	10, 16	smat-8m
[7]	Position transmitter SDAS-MHS	10, 16	709

Ordering – Modular product system

Size	6	10	16	Conditions	Code	Enter code
Module no.	8116728	8116729	8116730			
Design	Parallel gripper				DHPC	DHPC
Gripper characteristic	Standard					
	–	Long stroke			-L	
Size [mm]	6	10	16		-...	
Position sensing	Via proximity sensor				-A	-A
Gripping force backup	None					
	Closing			[1]	-NC	
	Opening			[1]	-NO	
Pneumatic connection	Underneath				-B	
	On the side				-S	
	Via mounting spigot				-Z	
Type of mounting gripper finger	Standard					
	Mounting holes on the side				-1	
	Flat gripper fingers				-2	

1) Mandatory data with pneumatic port via mounting spigot

Ordering data

Pneumatic port underneath

Size [mm]	Double-acting	
	Part no.	Type
6	Standard gripper characteristic	
	Standard mounting of gripper fingers	
	8116738	DHPC-6-A-B
	Mounting of gripper fingers, mounting holes on the side	
	8116739	DHPC-6-A-B-1
	Mounting of flat gripper fingers	
	8116740	DHPC-6-A-B-2

Pneumatic port underneath

Size [mm]	Double-acting	
	Part no.	Type
10	Standard gripper characteristic	
	Standard mounting of gripper fingers	
	8116756	DHPC-10-A-B
	Mounting of gripper fingers, mounting holes on the side	
	8116757	DHPC-10-A-B-1
	Mounting of flat gripper fingers	
	8116758	DHPC-10-A-B-2
	Long stroke gripper characteristic	
	Standard mounting of gripper fingers	
	8116774	DHPC-L-10-A-B
	Mounting of gripper fingers, mounting holes on the side	
	8116775	DHPC-L-10-A-B-1
	Mounting of flat gripper fingers	
	8116776	DHPC-L-10-A-B-2

Pneumatic port underneath

Size [mm]	Double-acting	
	Part no.	Type
16	Standard gripper characteristic	
	Standard mounting of gripper fingers	
	8116788	DHPC-16-A-B
	Mounting of gripper fingers, mounting holes on the side	
	8116789	DHPC-16-A-B-1
	Mounting of flat gripper fingers	
	8116790	DHPC-16-A-B-2
	Long stroke gripper characteristic	
	Standard mounting of gripper fingers	
	8116806	DHPC-L-16-A-B
	Mounting of gripper fingers, mounting holes on the side	
	8116807	DHPC-L-16-A-B-1
	Mounting of flat gripper fingers	
	8116808	DHPC-L-16-A-B-2

Pneumatic port on the side

Size [mm]	Double-acting		Single-acting with gripping force retention			
			Opening		Closing	
	Part no.	Type	Part no.	Type	Part no.	Type
6	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116735	DHPC-6-A-S	8116741	DHPC-6-A-NO-S	8116747	DHPC-6-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116736	DHPC-6-A-S-1	8116742	DHPC-6-A-NO-S-1	8116748	DHPC-6-A-NC-S-1
	Mounting of flat gripper fingers					
	8116737	DHPC-6-A-S-2	8116743	DHPC-6-A-NO-S-2	8116749	DHPC-6-A-NC-S-2

Parallel grippers DHPC

Ordering data

Pneumatic port on the side

Size	Double-acting		Single-acting with gripping force retention			
			Opening		Closing	
[mm]	Part no.	Type	Part no.	Type	Part no.	Type
10	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116753	DHPC-10-A-S	8116759	DHPC-10-A-NO-S	8116765	DHPC-10-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116754	DHPC-10-A-S-1	8116760	DHPC-10-A-NO-S-1	8116766	DHPC-10-A-NC-S-1
	Mounting of flat gripper fingers					
	8116755	DHPC-10-A-S-2	8116761	DHPC-10-A-NO-S-2	8116767	DHPC-10-A-NC-S-2
	Long stroke gripper characteristic					
	Standard mounting of gripper fingers					
	8116771	DHPC-L-10-A-S	8116777	DHPC-L-10-A-NO-S	8116780	DHPC-L-10-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116772	DHPC-L-10-A-S-1	8116778	DHPC-L-10-A-NO-S-1	8116781	DHPC-L-10-A-NC-S-1
	Mounting of flat gripper fingers					
	8116773	DHPC-L-10-A-S-2	8116779	DHPC-L-10-A-NO-S-2	8116782	DHPC-L-10-A-NC-S-2
16	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116785	DHPC-16-A-S	8116791	DHPC-16-A-NO-S	8116797	DHPC-16-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116786	DHPC-16-A-S-1	8116792	DHPC-16-A-NO-S-1	8116798	DHPC-16-A-NC-S-1
	Mounting of flat gripper fingers					
	8116787	DHPC-16-A-S-2	8116793	DHPC-16-A-NO-S-2	8116799	DHPC-16-A-NC-S-2
	Long stroke gripper characteristic					
	Standard mounting of gripper fingers					
	8116803	DHPC-L-16-A-S	8116809	DHPC-L-16-A-NO-S	8116812	DHPC-L-16-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116804	DHPC-L-16-A-S-1	8116810	DHPC-L-16-A-NO-S-1	8116813	DHPC-L-16-A-NC-S-1
	Mounting of flat gripper fingers					
	8116805	DHPC-L-16-A-S-2	8116811	DHPC-L-16-A-NO-S-2	8116814	DHPC-L-16-A-NC-S-2

Pneumatic port via mounting spigot

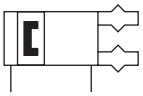
Size	Single-acting with gripping force retention			
	Opening		Closing	
[mm]	Part no.	Type	Part no.	Type
6	Standard gripper characteristic			
	Standard mounting of gripper fingers			
	8116744	DHPC-6-A-NO-Z	8116750	DHPC-6-A-NC-Z
	Mounting of gripper fingers, mounting holes on the side			
	8116745	DHPC-6-A-NO-Z-1	8116751	DHPC-6-A-NC-Z-1
	Mounting of flat gripper fingers			
	8116746	DHPC-6-A-NO-Z-2	8116752	DHPC-6-A-NC-Z-2
10	Standard gripper characteristic			
	Standard mounting of gripper fingers			
	8116762	DHPC-10-A-NO-Z	8116768	DHPC-10-A-NC-Z
	Mounting of gripper fingers, mounting holes on the side			
	8116763	DHPC-10-A-NO-Z-1	8116769	DHPC-10-A-NC-Z-1
	Mounting of flat gripper fingers			
	8116764	DHPC-10-A-NO-Z-2	8116770	DHPC-10-A-NC-Z-2

Pneumatic port via mounting spigot

Size	Single-acting with gripping force retention			
	Opening		Closing	
[mm]	Part no.	Type	Part no.	Type
16	Standard gripper characteristic			
	Standard mounting of gripper fingers			
	8116794	DHPC-16-A-NO-Z	8116800	DHPC-16-A-NC-Z
	Mounting of gripper fingers, mounting holes on the side			
	8116795	DHPC-16-A-NO-Z-1	8116801	DHPC-16-A-NC-Z-1
	Mounting of flat gripper fingers			
	8116796	DHPC-16-A-NO-Z-2	8116802	DHPC-16-A-NC-Z-2

Data sheet

Function
Double-acting
DHPC -...- A

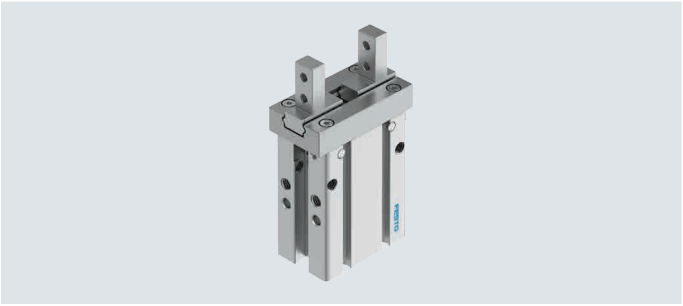


Size
6 ... 16 mm

Total stroke
4 ... 12 mm

Function
Single-acting with gripping force retention
Normally closed: DHPC-...-NC

Normally open: DHPC-...-NO



General technical data				
Size		6	10	16
Design		Lever		
		Force pilot operated motion sequence		
		Connection direction underneath		
		Connection direction on the side		
		Connection via mounting spigot		
		Standard mounting of gripper fingers		
		Sideways mounting of gripper fingers		
		Flat mounting of gripper fingers		
Mode of operation		Double-acting		
		Single-acting		
		Closed		
		Open		
Gripper function		Parallel		
Guide		Ball guide		
Number of gripper jaws		2		
Max. load per gripper finger[1]	[g]	18	120	360
Stroke per gripper jaw				
Standard gripper characteristic	[mm]	2	2	3
Long stroke gripper characteristic	[mm]	–	4	6
Pneumatic connection		M3		
Gripper repetition accuracy[2]	[mm]	≤ 0.02		
Max. interchangeability	[mm]	0.2		
Max. operating frequency of gripper	[Hz]	3		
Rotational symmetry	[mm]	≤ 0.2		
Position sensing		Via proximity sensor		
Type of mounting		Direct mounting via through-hole		
		Direct mounting via thread		
		–	With through-hole and dowel pin	
		–	With female thread and dowel pin	
		On mounting frame		
Mounting position		optional		

1) Valid for unthrottled operation
2) End-position drift under constant operating conditions with 100 consecutive strokes in the direction of movement of the gripper jaws

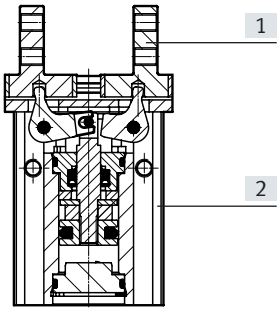
Data sheet

Operating and environmental conditions

Size		6	10	16
Min. operating pressure				
Double-acting	[MPa]	0.15	0.2	0.1
Single-acting	[MPa]	0.35	0.35	0.25
Double-acting	[bar]	1.5	2	1
Single-acting	[bar]	3.5	3.5	2.5
Max. operating pressure				
	[MPa]	0.8	0.8	0.8
	[bar]	8	8	8
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		

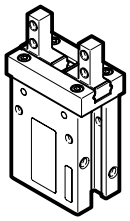
1) Note operating range of proximity sensors

Materials



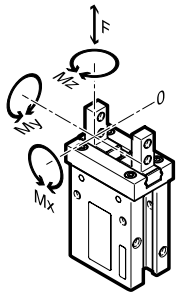
Parallel gripper		
[1]	Gripper jaw	High-alloy stainless steel
[2]	Housing	Anodised aluminium
–	Note on materials	PWIS-free
		RoHS-compliant

Gripping force [N] at 6 bar



Size		6	10	16
Gripping force per gripper jaw				
DHPC -...- A	Opening	7.3	25.6	62.7
	Closing	5.5	21.5	53.9
DHPC-...-NO	Opening	–	–	–
	Closing	3.9	16.4	43.4
DHPC-...-NC	Opening	–	–	–
	Closing	5.2	19.6	50.5

Characteristic load values at the gripper jaws

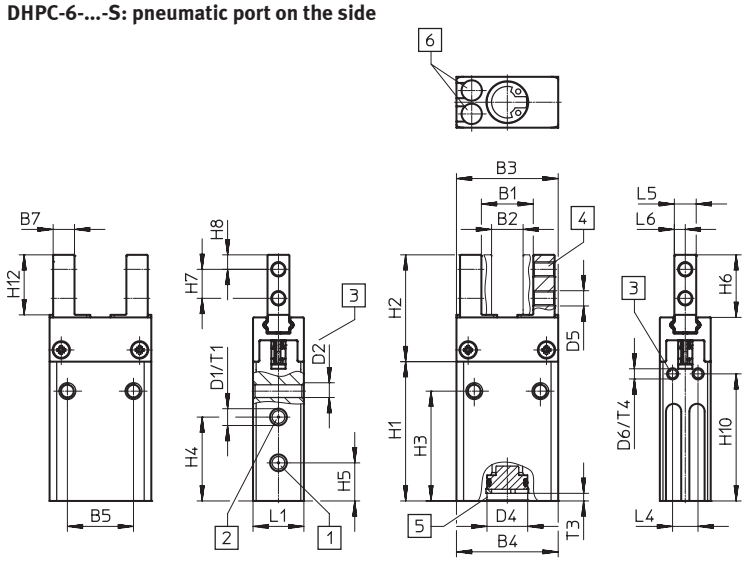


The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during movement. The zero coordinate line (gripper jaw guide) must be taken into consideration when calculating torques.

Size		6	10	16
Max. permitted force F	[N]	5	29	49
Max. permissible torque M_x	[Nm]	0.02	0.13	0.34
Max. permissible torque M_y	[Nm]	0.04	0.15	0.68
Max. permissible torque M_z	[Nm]	0.02	0.13	0.34

Dimensions

DHPC-6-...-S: pneumatic port on the side

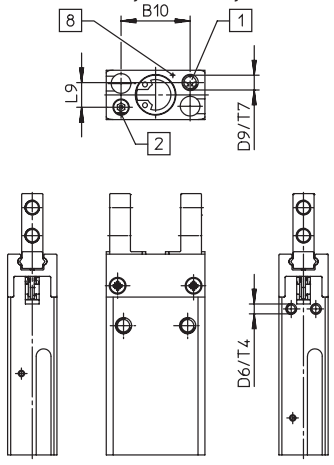


[1] Pneumatic port, opening
[2] Pneumatic port, closing
[3] Threaded hole for mounting the gripper
[4] Threaded hole for mounting gripper fingers
[5] Centring hole
[6] C-slot for proximity sensor

Size [mm]	B1	B2	B3 -0,2	B4 +0,3	B5	B7 -0.1	D1	D2	D4 ø H9	D5	D6	H1	H2	H3
DHPC-6-A-S	10.2	6.2	20	20	13	4.2	M3	M3	8	M3	M2	27.4	21	21.6
DHPC-6-A-NO/NC-S												32		24.8

Size [mm]	H4	H5	H6	H7	H8	H10	H12	L1 +0,25	L4	L5 -0.05	L6	T1	T3	T4
DHPC-6-A-S	16.5	7.5	12.3	5.7	2.85	25	11.8	10	5	4.3	2.15	4.5	1.5	4.5
DHPC-6-A-NO/NC-S						28								

DHPC-6-...-B: pneumatic port underneath



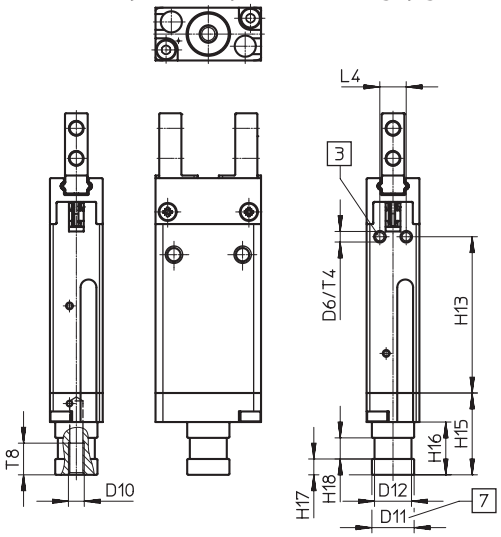
[1] Pneumatic port, opening
[2] Pneumatic port, closing
[8] Marking: pneumatic port, opening

Size [mm]	B10	D6	D9	L9	T4	T7
DHPC-6-A-B	14	M2	M3	5	4.5	4
DHPC-6-A-NO/NC-B						

Parallel grippers DHPC

Dimensions

DHPC-6-...-Z: pneumatic port via mounting spigot



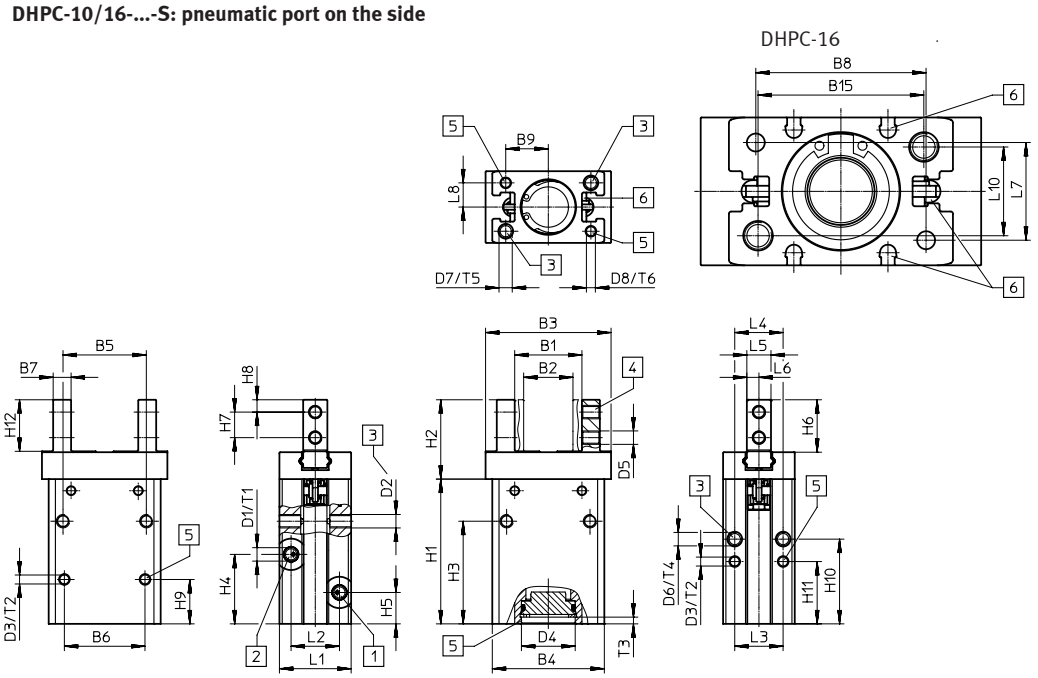
[3] Threaded hole for mounting the gripper

[7] Mounting spigot

Size [mm]	D6	D10	D11 ø f8	D12 ø	H13	H15	H16	H17	H18	L4	T4	T8
DHPC-6-A-NO/NC-Z	M2	M3	8	7	28	15.5	10	3	4	5	4.5	6

Dimensions

DHPC-10/16-...-S: pneumatic port on the side



[1] Pneumatic port, opening
[2] Pneumatic port, closing
[3] Threaded hole for mounting the gripper
[4] Threaded hole for mounting gripper fingers
[5] Centring hole
[6] DHPC-10: T-slot for proximity sensor
DHPC-16: C-slot for proximity sensor

Size	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1	D2	D3 ø H9	D4 ø	D5
[mm]			-0,2	+0,3		±0.02	-0.1	±0.02	±0.02					
DHPC-10-A-S	15	11	28	25	18.6	18	4	19	9.5	M3	M3	2	12 H9	M3
DHPC-L-10-A-S	19		34											
DHPC-10-A-NO/NC-S	15		28											
DHPC-L-10-A-NO/NC-S	19		34											
DHPC-16-A-S	19.8	13.8	37.4	32	27	24.4	5	25	12.5		M4	3	17 H8	
DHPC-L-16-A-S	25.8		46.4											
DHPC-16-A-NO/NC-S	19.8		37.4											
DHPC-L-16-A-NO/NC-S	25.8		46.4											

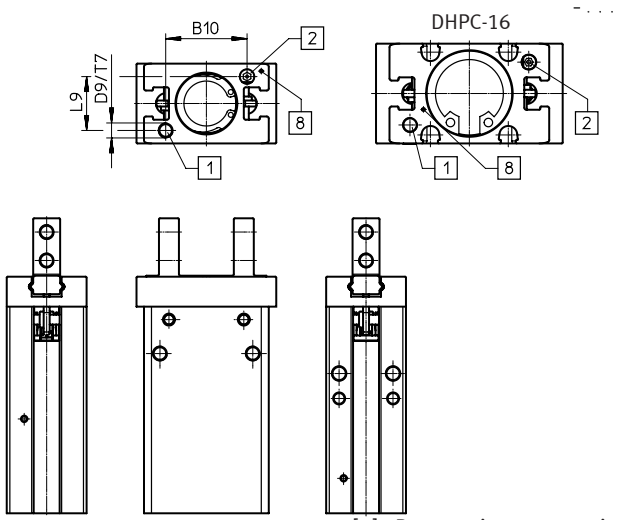
Size	D6	D7	D8 ø H9	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11
[mm]												+0.1		+0.1
DHPC-10-A-S	M3	M3	2	32.3	17.7	22.9	15.5	7	11.7	5.7	2.75	9.9	18.9	13.9
DHPC-L-10-A-S				39.9		26	18.9					12	21	16
DHPC-10-A-NO/NC-S				41.4		32						19	28	23
DHPC-L-10-A-NO/NC-S				48.06		34.16	21					20.16	29.16	24.16
DHPC-16-A-S	M4	M4	3	43.1	24.3	31.7	26.5	9	16.3	7	4	14	25.6	19
DHPC-L-16-A-S				46.8		34.3	30.2						29.3	
DHPC-16-A-NO/NC-S				43.1		31.7	26.5						25.6	
DHPC-L-16-A-NO/NC-S				51.1		38.6	33.4					18.3	33.6	23.3

Size	H12	L1	L2	L3	L4	L5	L6	L7[1]	L8	T1	T2	T3	T4	T5	T6
[mm]	+0,3			±0.02		-0.05		±0.02	±0.02						
DHPC-10-A-S	11.5	16	10.8	10.8	10.8	5.4	2.7	10.8	5.4	4	3	1.5	4	4	3
DHPC-L-10-A-S															
DHPC-10-A-NO/NC-S															
DHPC-L-10-A-NO/NC-S															
DHPC-16-A-S	15	20	11.9	12	12	7	3.5	13	6.5	4.5		2	4.5	6	
DHPC-L-16-A-S															
DHPC-16-A-NO/NC-S															
DHPC-L-16-A-NO/NC-S															

1) Dimension L7 refers exclusively to the distance between the centring hole [5] and the threaded hole for mounting the gripper [3]

Dimensions

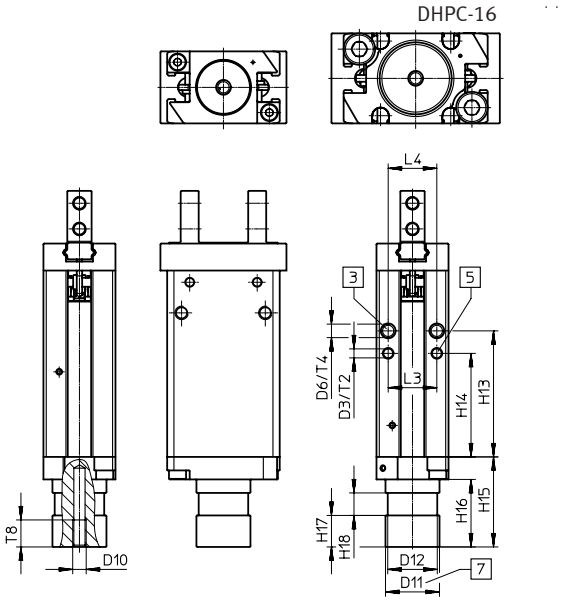
DHPC-10/16-...-B: pneumatic port underneath



[1] Pneumatic port, opening
[2] Pneumatic port, closing
[8] Marking: close pneumatic port

Size [mm]	B10	D9	L9	T7
DHPC-10-A-B	16.3	M3	10.8	4
DHPC-L-10-A-B				
DHPC-10-A-NO/NC-B				
DHPC-L-10-A-NO/NC-B				
DHPC-16-A-B	23.8		12.6	4.5
DHPC-L-16-A-B				
DHPC-16-A-NO/NC-B				
DHPC-L-16-A-NO/NC-B				

DHPC-10/16-...-Z: pneumatic port via mounting spigot



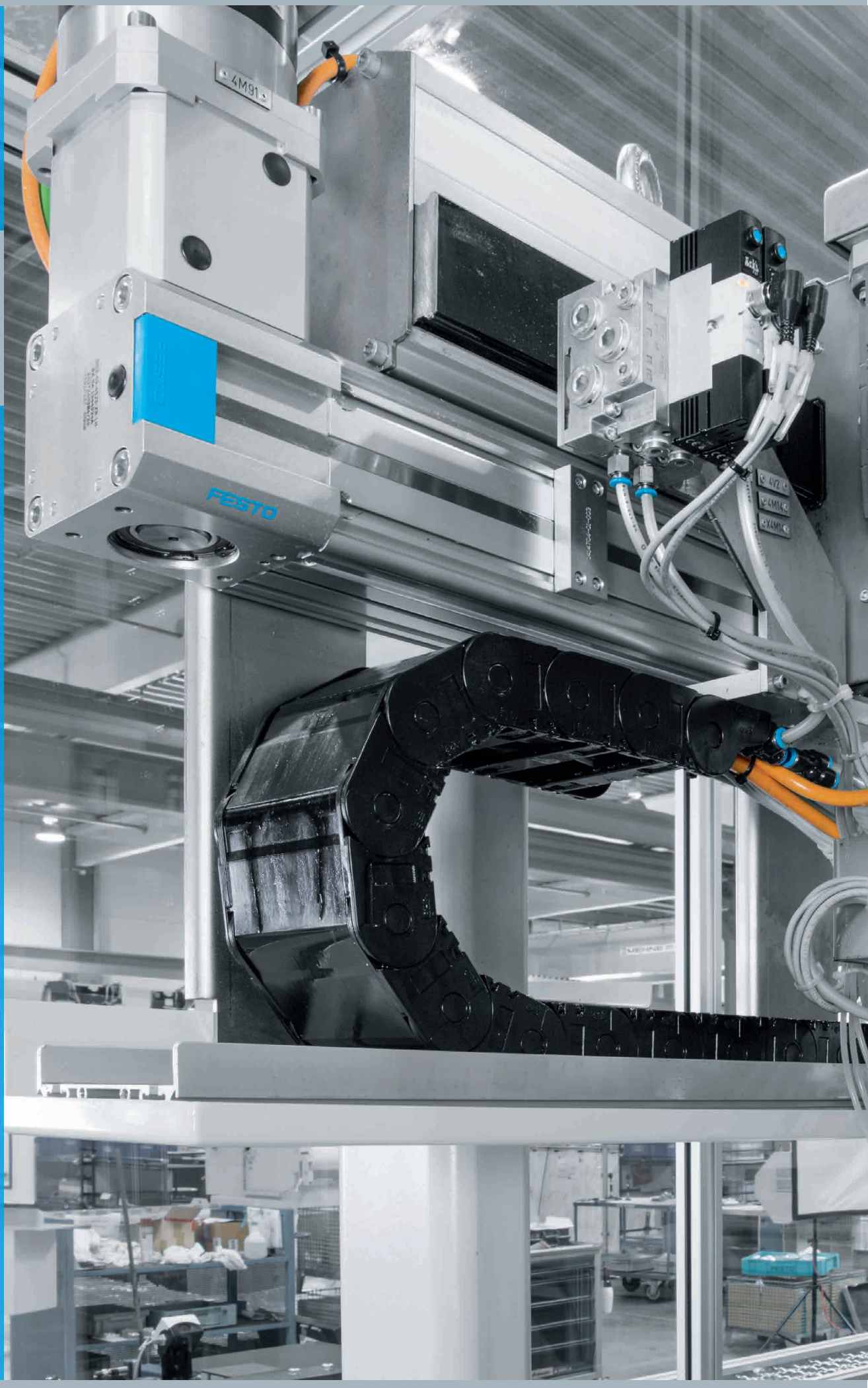
[3] Threaded hole for mounting the gripper
[5] Centring hole
[7] Mounting spigot

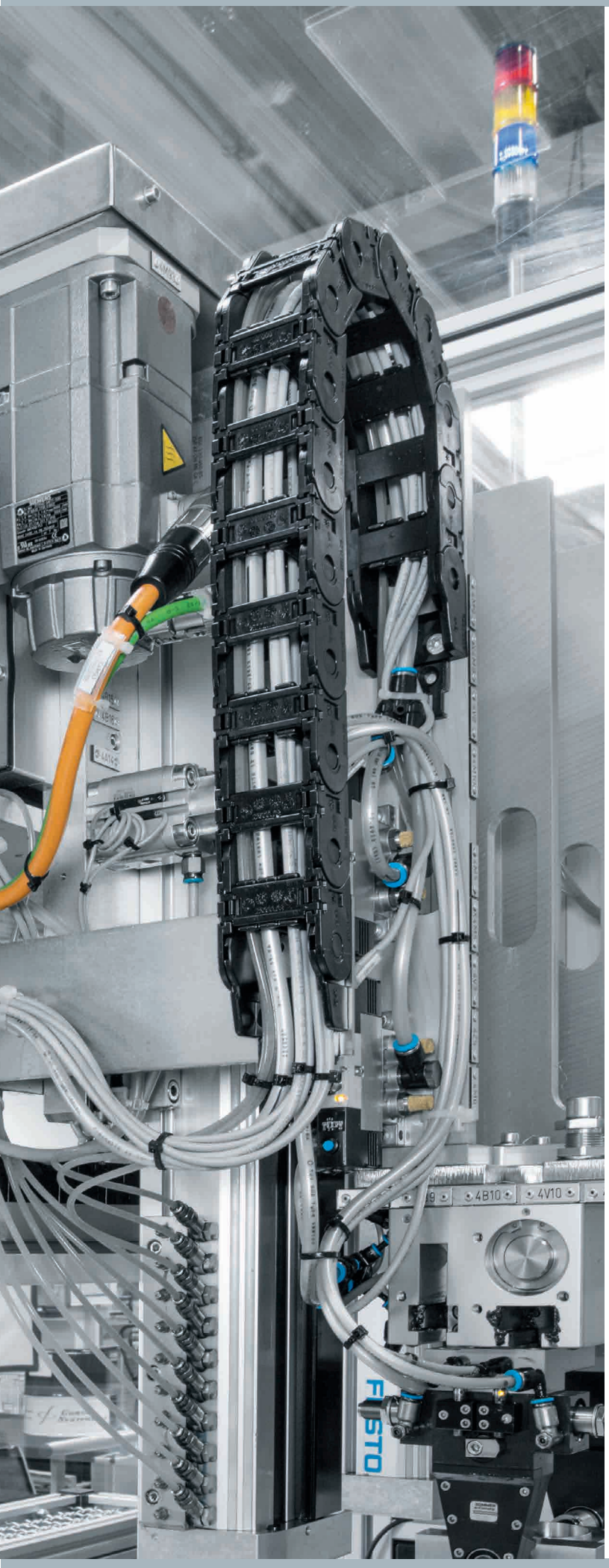
Size [mm]	D3 ø H9	D6	D10	D11 ø f8	D12 ø	H13	H14	H15	H16	H17	H18	L3 ±0.02	L4	T2	T4	T8
DHPC-10-A-Z	2	M3	–	–	–	–	–	–	–	–	–	10.8	10.8	3	4	–
DHPC-L-10-A-Z																
DHPC-10-A-NO/NC-Z			M3	12	11	28	23	20.5	15	7	5					6
DHPC-L-10-A-NO/NC-Z						29.16	24.16									
DHPC-16-A-Z	3	M4	–	–	–	–	–	–	–	–	–	12	12		4.5	–
DHPC-L-16-A-Z																
DHPC-16-A-NO/NC-Z			M3	16	14	25.6	19	28	18	8	5					6
DHPC-L-16-A-NO/NC-Z						33.6	23.3									

Parallel grippers DHPC

02

Electromechanical drives

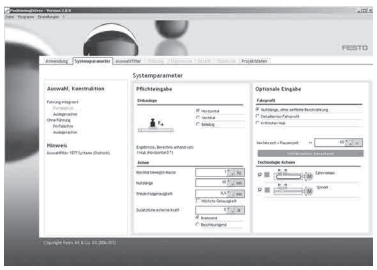




Contents

Software tools

PositioningDrives: for selecting and sizing electromechanical linear drives, motors, and gear units



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 will suggest several solutions.

This tool can be found
- on our website under www.festo.com/catalogue by clicking on the blue icon “Product Finder”.

Linear drives, actuators and slides

	 **Electric cylinders EPCC** ★	 **Electric cylinders ESBF** ★	 **Spindle axes EGC-BS-KF** ★	 **Toothed belt axes EGC-TB-KF** ★
Size	45, 25, 60, 32	32, 40, 50, 63, 80, 100	70, 80, 120, 185	50, 70, 80, 120, 185
Max. feed force Fx	75 … 1000 N	1000 … 17000 N	400 … 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	25 … 500 mm	30 … 1500 mm	50 … 3000 mm	50 … 8500 mm
Description	• Low-cost: optimum price/performance ratio • Flexible: wide range of mounting options for the motor • Dynamic due to low internal friction • Short positioning times • Weight-optimised design – ideal for handling systems • Unique “one-size-down” assembly system for optimal use of space	• Available with ball screw drive (size 32 … 100) or lead screw (size 32 … 50) • Optional: high corrosion protection, degree of protection IP65, food-safe (see www.festo.com/sp/esbf -› “Certificates” tab), piston rod extension • Ball screw: with three spindle pitches for selecting the optimal force-speed ratio • Axial or parallel motor mounting • 68 types in stock with short delivery times and modular products for custom variants	• Axis for high repeat accuracy • 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	• Axis for high speeds and acceleration • 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 products for custom variants
→ Page/online	239	247	263	275

Linear drives, actuators and slides

	 **Spindle axes EGC-HD-BS**	 **Toothed belt axes EGC-HD-TB**	 **Spindle axes ELGA-BS-KF**	 **Toothed belt axes ELGA-TB-KF**
Size	125, 160, 220	125, 160, 220	70, 80, 120, 150	70, 80, 120, 150
Max. feed force Fx	400 ... 1500 N	450 ... 1800 N	650 ... 6400 N	260 ... 2000 N
Repetition accuracy	+/-0.02 mm		+/-0.02 mm	+/-0.08 mm
Stroke	50 ... 2400 mm	50 ... 5000 mm	50 ... 3000 mm	50 ... 8500 mm
Description	• With heavy-duty guide • Axis for high repeat accuracy • With integrated ball screw • For maximum loads and torques • Precise and resilient DUO guide rail • For maximum lateral load up to 900 Nm • Ideal as a basic axis for linear gantries and cantilever axes • The spindle support enables maximum travel speed	• With heavy-duty guide • Axis for high speeds and acceleration • For high loads and torques, high feed forces • Precise and resilient DUO guide rail • Motor can be mounted on 4 sides • For maximum lateral load up to 900 Nm	• 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	• Recirculating ball bearing guide for high loads and torques • High feed forces • Precision guide rail with high load capacity • Speeds up to 5 m/s with high acceleration up to 50 m/s² • Flexible motor mounting • Guide and toothed belt protected by cover band • 22 types in stock with short delivery times and modular products for custom variants
→ **Page/online**	**287**	**299**	**307**	**317**

Linear drives, actuators and slides

	 **Spindle axes ELGC-BS-KF** ★	 **Toothed belt axes ELGC-TB-KF** ★	 **Mini slides EGSL**	 **Spindle axes ELGT**
Size	32, 45, 60, 80	45, 60, 80	35, 45, 55, 75	90, 120, 160
Max. feed force Fx	40 ... 350 N	75 ... 250 N	75 ... 450 N	505 ... 1575
Repetition accuracy	+/-0.01 mm, +/-0.015 mm	+/-0.1 mm	+/–0.015 mm	+/–0.02
Stroke	100 ... 1000 mm	200 ... 2000 mm	50 ... 300 mm	50 ... 1000
Description	• Internal guide and ball screw drive • 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	• Precision guide rail with high load capacity • 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	• 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	• Compact design • Optimised for use in the electronics and automotive industry: materials include less than 1% copper and zinc • Optimal ratio between installation space and working space due to the optimised axis design • Simple integration of motors with motor mounting kits
→ **Page/online**	**327**	**335**	**egsl**	**343**

Product overview

Semi-rotary drives

Rotary drives
ERMO

Size	12, 16, 25, 32
Max. driving torque	0.15 ... 5 Nm
Max. input speed	50 ... 100 rpm
Rotation angle	Infinite
Description	• 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)
→ Page/online	ermo

Stopper cylinders

Stopper cylinders, electric
EFSD

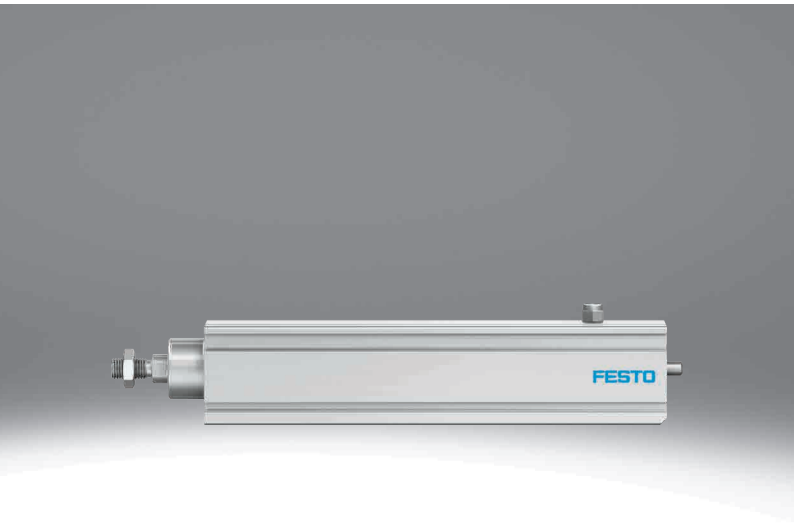
Design	Electric stopper cylinder
Size	20, 50, 100
Position sensing	With Hall sensor
Cushioning length	11.5 mm, 17.5 mm, 18.2 mm
Description	• Quick and simple equipping of transfer systems without compressed air • For stopping transported material weighing from 0.25 kg to 100 kg • Status and error messages 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	efsd

Parallel grippers

Parallel grippers, electric
EHPS

Total gripping force at 6 bar, closing	see documentation on our website
Stroke per gripper jaw	10 ... 16 mm
Position sensing	Via IO-Link interface, With Hall sensor, With integrated displacement encoder, Via proximity switch
Description	• Electric version of the pneumatically actuated parallel gripper DHPS • Ideal for use as a front-end actuator thanks to its low dead weight • Controller-free actuation using digital signals • Adjustable gripping force (4 settings)
→ Page/online	ehps

Electric cylinders EPCC



Highlights

+ Low-cost: optimum price/performance ratio
+ Flexible: wide range of mounting options for the motor
+ Dynamic due to low internal friction
+ Short positioning times
+ Weight-optimised design - ideal for handling systems
+ Unique „one-size-down“ assembly system for optimal use of space

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Electric cylinders EPCC

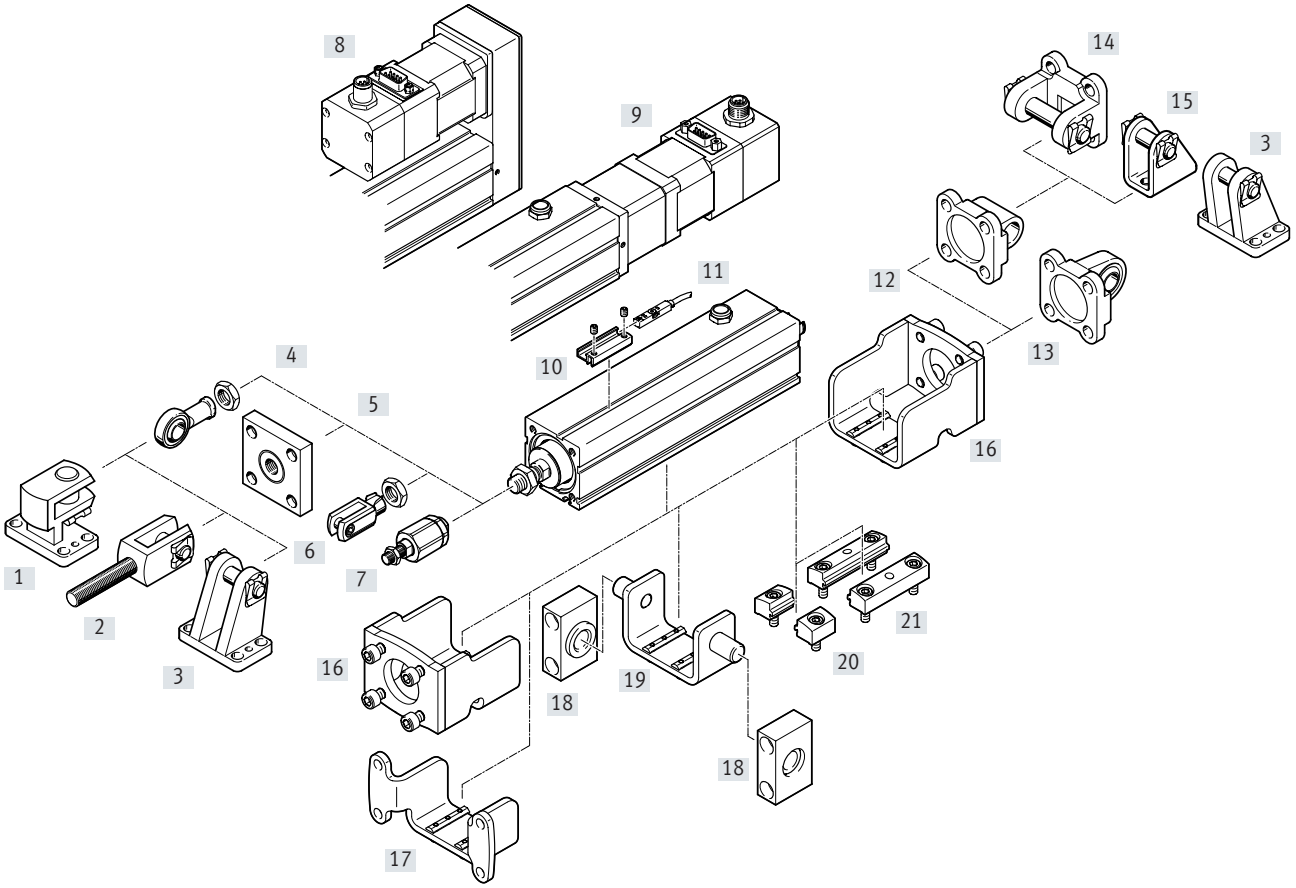
Features

At a glance

The electric cylinder EPCC is a mechanical linear drive with piston rod. The driving component consists of an electrically actuated spindle that converts the rotary motion of the motor into linear motion of the piston rod.

- With ball screw drive
- Degree of protection IP40
- Compact dimensions
- Extensive mounting accessories for various installation situations
- Suitable for simple applications in factory automation that in the past were mostly carried out using pneumatic solutions

Peripherals overview



		→ Page/Internet
[1]	Right angle clevis foot LQG	243
[2]	Rod clevis SGA	
[3]	Clevis foot LBG/LBG-...-R3	
[4]	Rod eye SGS/CRSGS	
[5]	Coupling piece KSG	
[6]	Rod clevis SG/CRSG	
[7]	Self-aligning rod coupler FK/CRFK	
[8]	Parallel kit EAMM-U	
[9]	Axial kit EAMM-A	
[10]	Sensor bracket EAPM-L2	
[11]	Proximity sensor SMT-8M	681

		→ Page/Internet
[12]	Swivel flange SNCL	243
[13]	Swivel flange SNCS	
[14]	Swivel flange SNCB	
[15]	Clevis foot LBN	
[16]	Adapter kit EAHA-P2	
[17]	Flange mounting EAHH-P2	
[18]	Trunnion support LNZG	
[19]	Swivel mounting EAHS-P2	
[20]	Profile mounting EAHF-L2-P-S	
[21]	Profile mounting EAHF-L2-P	

Type code explanation

001	Series	
EPCC	Electric cylinder	

002	Drive system	
BS	Ball screw drive	

003	Size	
25	25	
32	32	
45	45	
60	60	

004	Stroke	
...	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 500	

005	Spindle pitch	
2P	2 mm	
3P	3 mm	
5P	5 mm	
6P	6 mm	
8P	8 mm	
10P	10 mm	
12P	12 mm	

006	Position sensing	
A	For proximity sensor	

Ordering data

EPCC-BS-25

Stroke [mm]	Part no.	Type	Stroke [mm]	Part no.	Type
Spindle pitch 2 mm/rev			**Spindle pitch 6 mm/rev**		
25	5428805	EPCC-BS-25-25-2P-A	25	5428813	EPCC-BS-25-25-6P-A
50	5428806	EPCC-BS-25-50-2P-A	50	5428814	EPCC-BS-25-50-6P-A
75	5428807	EPCC-BS-25-75-2P-A	75	5428815	EPCC-BS-25-75-6P-A
100	5428808	EPCC-BS-25-100-2P-A	100	5428816	EPCC-BS-25-100-6P-A
125	5428809	EPCC-BS-25-125-2P-A	125	5428817	EPCC-BS-25-125-6P-A
150	5428810	EPCC-BS-25-150-2P-A	150	5428818	EPCC-BS-25-150-6P-A
175	5428811	EPCC-BS-25-175-2P-A	175	5428819	EPCC-BS-25-175-6P-A
200	5428812	EPCC-BS-25-200-2P-A	200	5428820	EPCC-BS-25-200-6P-A

EPCC-BS-32

Stroke [mm]	Part no.	Type	Stroke [mm]	Part no.	Type
Spindle pitch 3 mm/rev			**Spindle pitch 8 mm/rev**		
25	5428833	EPCC-BS-32-25-3P-A	25	5428841	EPCC-BS-32-25-8P-A
50	5428834	EPCC-BS-32-50-3P-A	50	5428842	EPCC-BS-32-50-8P-A
75	5428835	EPCC-BS-32-75-3P-A	75	5428843	EPCC-BS-32-75-8P-A
100	5428836	EPCC-BS-32-100-3P-A	100	5428844	EPCC-BS-32-100-8P-A
125	5428837	EPCC-BS-32-125-3P-A	125	5428845	EPCC-BS-32-125-8P-A
150	5428838	EPCC-BS-32-150-3P-A	150	5428846	EPCC-BS-32-150-8P-A
175	5428839	EPCC-BS-32-175-3P-A	175	5428847	EPCC-BS-32-175-8P-A
200	5428840	EPCC-BS-32-200-3P-A	200	5428848	EPCC-BS-32-200-8P-A

EPCC-BS-45

Stroke [mm]	Part no.	Type	Stroke [mm]	Part no.	Type
Spindle pitch 3 mm/rev			**Spindle pitch 10 mm/rev**		
25	5428858	EPCC-BS-45-25-3P-A	25	5428868	EPCC-BS-45-25-10P-A
50	5428859	EPCC-BS-45-50-3P-A	50	5428869	EPCC-BS-45-50-10P-A
75	5428860	EPCC-BS-45-75-3P-A	75	5428870	EPCC-BS-45-75-10P-A
100	5428861	EPCC-BS-45-100-3P-A	100	5428871	EPCC-BS-45-100-10P-A
125	5428862	EPCC-BS-45-125-3P-A	125	5428872	EPCC-BS-45-125-10P-A
150	5428863	EPCC-BS-45-150-3P-A	150	5428873	EPCC-BS-45-150-10P-A
175	5428864	EPCC-BS-45-175-3P-A	175	5428874	EPCC-BS-45-175-10P-A
200	5428865	EPCC-BS-45-200-3P-A	200	5428875	EPCC-BS-45-200-10P-A
250	5428866	EPCC-BS-45-250-3P-A	250	5428876	EPCC-BS-45-250-10P-A
300	5428867	EPCC-BS-45-300-3P-A	300	5428877	EPCC-BS-45-300-10P-A

Electric cylinders EPCC

Ordering data

EPCC-BS-60

Stroke [mm]	Part no.	Type
Spindle pitch 5 mm/rev		
25	5428888	EPCC-BS-60-25-5P-A
50	5428889	EPCC-BS-60-50-5P-A
75	5428890	EPCC-BS-60-75-5P-A
100	5428891	EPCC-BS-60-100-5P-A
125	5428892	EPCC-BS-60-125-5P-A
150	5428893	EPCC-BS-60-150-5P-A
175	5428894	EPCC-BS-60-175-5P-A
200	5428895	EPCC-BS-60-200-5P-A
250	5428896	EPCC-BS-60-250-5P-A
300	5428897	EPCC-BS-60-300-5P-A
350	5428898	EPCC-BS-60-350-5P-A
400	5428899	EPCC-BS-60-400-5P-A
500	5428900	EPCC-BS-60-500-5P-A

Stroke [mm]	Part no.	Type
Spindle pitch 12 mm/rev		
25	5428901	EPCC-BS-60-25-12P-A
50	5428902	EPCC-BS-60-50-12P-A
75	5428903	EPCC-BS-60-75-12P-A
100	5428904	EPCC-BS-60-100-12P-A
125	5428905	EPCC-BS-60-125-12P-A
150	5428906	EPCC-BS-60-150-12P-A
175	5428907	EPCC-BS-60-175-12P-A
200	5428908	EPCC-BS-60-200-12P-A
250	5428909	EPCC-BS-60-250-12P-A
300	5428910	EPCC-BS-60-300-12P-A
350	5428911	EPCC-BS-60-350-12P-A
400	5428912	EPCC-BS-60-400-12P-A
500	5428913	EPCC-BS-60-500-12P-A

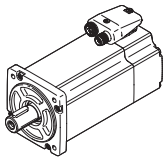
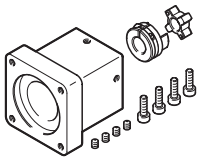
Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

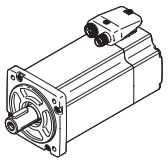
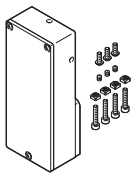
When using parallel kits, the no-load driving torque of the particular kit must be taken into consideration.

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EPCC-25		
With stepper motor		
EMMS-ST-28-...	4505258	EAMM-A-V20-28A
EPCC-32		
With servo motor		
EMME-AS-40-...	4491059	EAMM-A-V25-40P
With stepper motor		
EMMS-ST-42-...	4582608	EAMM-A-V25-42A
EPCC-45		
With servo motor		
EMME-AS-40-...	4595742	EAMM-A-V32-40P
EMMT-AS-60-..., 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
EPCC-60		
With servo motor		
EMMT-AS-60-..., EMME-AS-60-...	4133487	EAMM-A-T42-60P
EMMT-AS-80-..., 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.

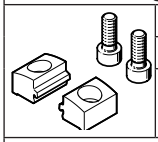
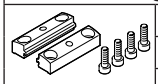
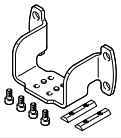
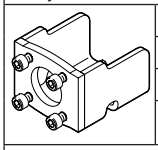
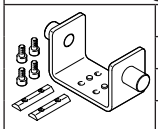
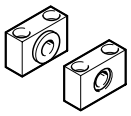
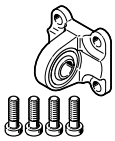
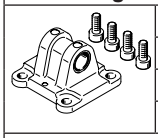
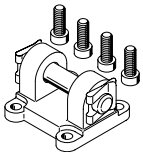
Permissible axis/motor combinations with parallel kit

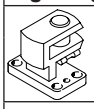
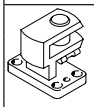
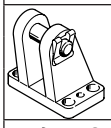
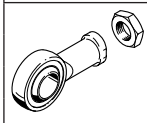
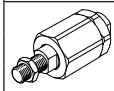
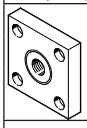
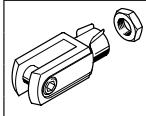
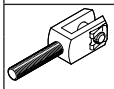
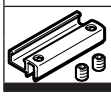
Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
EPCC-25		
With stepper motor		
EMMS-ST-28-...	4767125	EAMM-U-30-V20-28A-44
EPCC-32		
With servo motor		
EMME-AS-40-...	4782056	EAMM-U-45-V25-40P-63
With stepper motor		
EMMS-ST-42-...	4825645	EAMM-U-45-V25-42A-63
EPCC-45		
With servo motor		
EMME-AS-40-...	4718297	EAMM-U-45-V32-40P-63
With stepper motor		
EMMS-ST-42-...	4280674	EAMM-U-45-V32-42A-63
EPCC-60		
With servo motor		
EMMT-AS-60-..., 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 max. permissible transferable torque of the parallel kit.

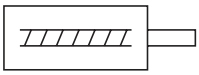
- The parallel kit can be mounted in all directions

Accessories – Ordering data

	For ∅	Part No.	Type
Profile mounting EAHF-L2-...-P-S			
	25, 32	5183153	EAHF-L2-25-P-S
	45, 60	5184133	EAHF-L2-45-P-S
Profile mounting EAHF-L2-...-P			
	25, 32	4835684	EAHF-L2-25-P
	45, 60	4835728	EAHF-L2-45-P
Flange mounting EAHH			
	25	5127286	EAHH-P2-25
	32	5126157	EAHH-P2-32
	45	5126669	EAHH-P2-45
	60	5127005	EAHH-P2-60
Adapter kit EAHA			
	25	5172843	EAHA-P2-25
	32	5173020	EAHA-P2-32
	45	5172353	EAHA-P2-45
	60	5173082	EAHA-P2-60
Swivel mounting EAHS			
	25	5125383	EAHS-P2-25
	32	5125041	EAHS-P2-32
	45	5125167	EAHS-P2-45
	60	5125281	EAHS-P2-60
Trunnion support LNZG			
	25, 32	1434912	LNZG-16
	45	32959	LNZG-32
	60	32960	LNZG-40/50
Swivel flange SNCS			
	45	★174397	SNCS-32
	60	★174398	SNCS-40
Swivel flange SNCL			
		537791	SNCL-16
		537792	SNCL-20
		★174404	SNCL-32
		★174405	SNCL-40
Swivel flange SNCB			
	45	★174390	SNCB-32
	60	★174391	SNCB-40

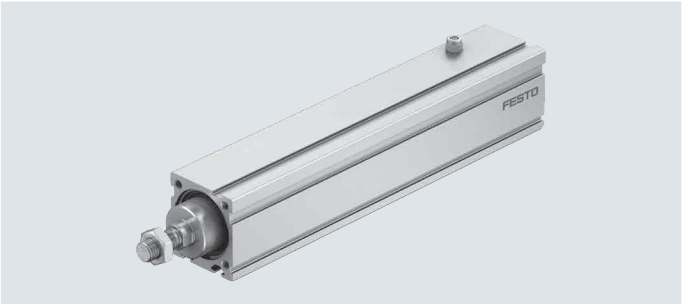
	For ∅	Part No.	Type
Right-angle clevis foot LQG			
	45	31768	LQG-32
	60	31769	LQG-40
Clevis foot LBN			
	25	★6058	LBN-12/16
	32	★6059	LBN-20/25
	45	195860	LBN-32
	60	195861	LBN-40
Clevis foot LBG			
	45	31761	LBG-32
	60	31762	LBG-40
Rod eye SGS			
	25	★9254	SGS-M6
	32	★9255	SGS-M8
	45	★9261	SGS-M10x1,25
	60	★9262	SGS-M12x1,25
Self-aligning rod coupler FK			
	25	★2061	FK-M6
	32	★2062	FK-M8
	45	6140	FK-M10x1,25
	60	6141	FK-M12x1,25
Coupling piece KSG			
	45	32963	KSG-M10x1,25
	60	32964	KSG-M12x1,25
Rod clevis SG			
	25	★3110	SG-M6
	32	★3111	SG-M8
	45	★6144	SG-M10x1,25
	60	★6145	SG-M12x1,25
Rod clevis SGA			
	45	32954	SGA-M10x1,25
	60	10767	SGA-M12x1,25
Sensor bracket EAPM			
	25, 32, 45, 60	4759852	EAPM-L2-SH

Data sheet



Size
25 ... 60

Stroke length
25 ... 500 mm



General technical data					
Size		25	32	45	60
Design		Electric cylinder with ball screw drive			
Piston rod thread		M6	M8	M10x1.25	M12x1.25
Piston rod end		Male thread			
Working stroke	[mm]	25 ... 200	25 ... 200	25 ... 300	25 ... 500
Stroke reserve	[mm]	0			
Protection against rotation/guide		With plain-bearing guide			
Max. angle of rotation at the piston rod	[°]	≤ ±1			
Position sensing		Via proximity sensor			
Type of mounting		–	Via female thread		
		Via accessories			

Mechanical data									
Size		25		32		45		60	
Spindle design		2P	6P	3P	8P	3P	10P	5P	12P
Spindle pitch	[mm/rev]	2	6	3	8	3	10	5	12
Spindle diameter	[mm]	6	6	8	8	10	10	12	12
Max. payload									
Horizontal	[kg]	12	12	24	24	60	60	120	120
Vertical	[kg]	6	6	12	12	30	30	60	60
Max. feed force F_x	[N]	75	75	150	150	450	450	1000	1000
Max. radial force[1]	[N]	30	30	75	75	180	180	230	230
Max. driving torque	[Nm]	0.05	0.1	0.15	0.3	0.4	0.9	1.2	2.4
No-load driving torque[2]	[Nm]	0.02	0.055	0.065	0.095	0.08	0.16	0.235	0.325
Max. speed[3]	[m/s]	0.133	0.4	0.188	0.5	0.18	0.6	0.25	0.6
Max. acceleration	[m/s²]	5	15	5	15	5	15	5	15
Max. rotational speed	[rpm]	4000	4000	3750	3750	3600	3600	3000	3000
Reversing backlash[4]	[mm]	≤ 0.1							
Repetition accuracy	[mm]	±0.02							

1) At the driving shaft
2) Corresponds to the required driving torque without load, at a spindle speed of 200 rpm.
3) The speed is stroke-dependent ➔ online
4) When new

Operating and environmental conditions		
Ambient temperature[1]	[°C]	0 ... +60
Storage temperature	[°C]	–20 ... +60
Relative humidity	[%]	0 ... 95 (non-condensing)
Degree of protection to IEC 60529		IP40
Duty cycle	[%]	100
Maintenance interval		Life-time lubrication

1) Note operating range of proximity sensors

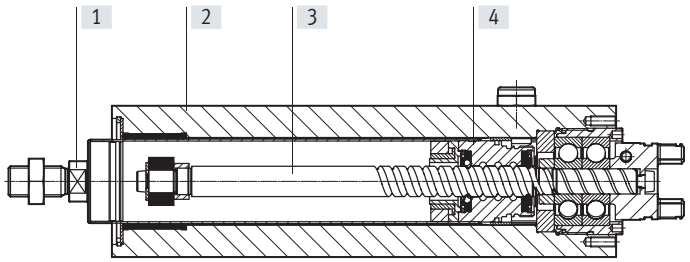
Mass moments of inertia									
Size		25		32		45		60	
Spindle design		2P	6P	3P	8P	3P	10P	5P	12P
J_0 with 0 mm stroke	[kg mm²]	0.09	0.14	0.42	0.55	1.09	1.53	6.82	7.79
j_S per metre stroke	[kg mm²/m]	0.56	0.95	2.56	3.11	5.03	7.11	11.95	15.19
j_L per kg payload	[kg mm²/kg]	0.1	0.91	0.23	1.62	0.28	2.53	0.63	3.65

The mass moment of inertia J_A of the electric cylinder is calculated as follows:

$$J_A = J_0 + j_S \times \text{working stroke [m]} + j_L \times m_{\text{moving payload}} \text{ [kg]}$$

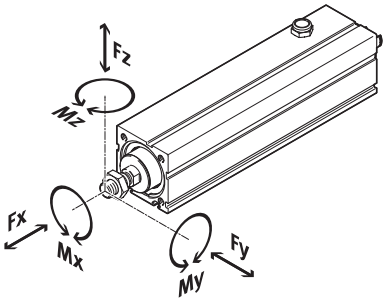
Data sheet

Materials

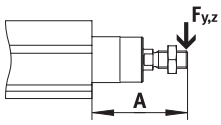


Electric cylinder		
[1]	Piston rod	High-alloy stainless steel
[2]	Housing	Smooth-anodised wrought aluminium alloy
[3]	Spindle	Rolled steel
[4]	Spindle nut	Steel
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Maximum permissible loads on the piston rod



If there are two or more forces and torques simultaneously acting on the piston rod, the following equations must be satisfied:
F_1/M_1 = dynamic value
F_2/M_2 = maximum value

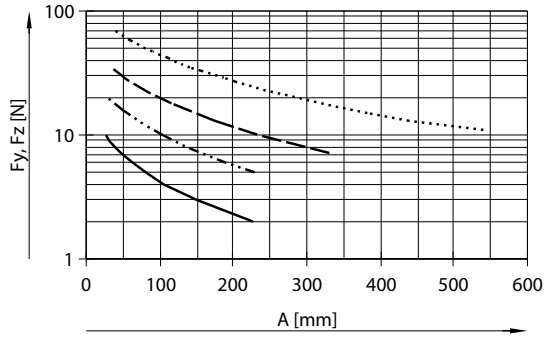


$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

$$|Fx| \leq Fx_{max}$$

$$|Mx| \leq Mx_{max}$$

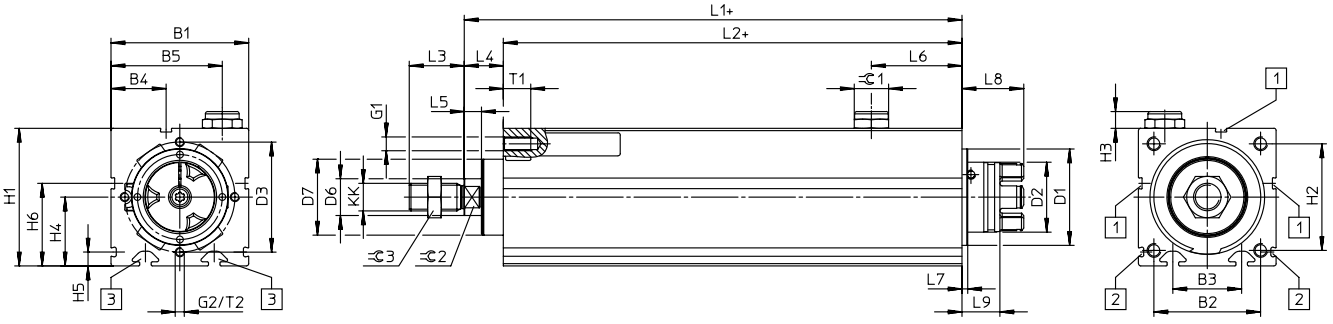
Maximum permissible lateral force Fy_{max} and Fz_{max} on the piston rod as a function of projection A



Size		25		32		45		60	
Spindle design		2P	6P	3P	8P	3P	10P	5P	12P
Fx_{max} (static)	[N]	75	75	150	150	450	450	1000	1000
Mx_{max}	[Nm]	0							
My_{max}, Mz_{max}	[Nm]	0.6		1.5		2.9		6.4	

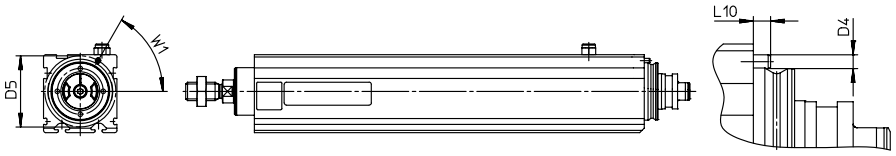
Note
Engineering software
PositioningDrives
➔ www.festo.com

Dimensions



EPCC-BS-25/32/45-...

Scale (3:1)



Size	B1 ±0.15	B2	B3	B4	B5	D1 ø	D2[1] ø	D3 ø	D4 ø
25	25	–	14	5.8	20	20.5	10.8	–	2
32	32	24	16	8.1	25.5	25	15.5	–	2
45	45	32.5	24	16.5	35	32	16.3	–	3
60	60	46.5	30	24	48.5	42	31.4	48	–

Size	D5 ø	D6 ø	D7 ø	G1	G2	H1 ±0.15	H2	H3	H4
25	25	8	17.3	–	–	27	–	4.7	–
32	31	10	21.3	M4	–	34	24	4.7	–
45	41	12	26.5	M5	–	45	32.5	6.3	–
60	–	16	33.6	M6	M4	60	46.5	7.3	30

Size	H5	H6 +0.15	KK	L1	L2	L3	L4	L5	L6
25	4.9	22.5	M6	74.5	60	12	14.5	4.7	21.2
32	4.9	26	M8	82.9	70	16	12.9	5.2	24.2
45	6.1	28.5	M10x1.25	99.9	83	20	16.9	5.7	30.5
60	6.1	36	M12x1.25	116	100	24	16	7.5	39.5

Size	L7	L8	L9	L10	T1	T2	W1	⫧1	⫧2	⫧3
25	5	15	10.5	2.5	–	–	60°	6	7	10
32	6	19.9	14.5	2.5	8	–	60°	6	9	13
45	6	19.9	14.5	3	10	–	60°	12	10	16
60	2.5	26.9	16.5	–	12	10	–	15	13	18

1) Coupling diameter or interference diameter of locking screw

Electric cylinders ESBF

Highlights

+ 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

★ Festo core product range
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With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .

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Just look for the star!

Electric cylinders ESBF

A complete System: Optimized Motion Series

At a glance

The electric cylinder ESBF is a mechanical linear drive unit with piston rod. The driving component consists of an electrically actuated spindle that converts the rotary motion of the motor into a linear motion of the piston rod.

The electric cylinder is based on the ISO 15552 standard. The mechanical interfaces are largely compatible with the standards-based cylinder DSBF.
The lead screws have lifetime lubrication and are thus maintenance-free.

Two spindle types to choose from:
Size 32 ... 50:
- Ball screw (BS)
- Lead screw (LS)

Size 63 ... 100:
- Ball screw (BS)

Options:
- High corrosion protection
- Protection class IP65
- Piston rod extension
- NSF-H1 lubricant
- Wide range of accessories

Complete system consisting of electric cylinder, motor and motor mounting kit

Electric cylinder

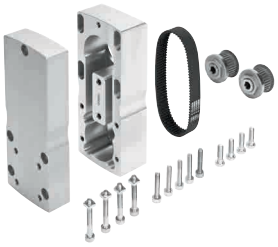
Motor

Note
A range of specially adapted complete solutions is available for the electric cylinder ESBF and the motors.

Motor mounting kit

Axial kit

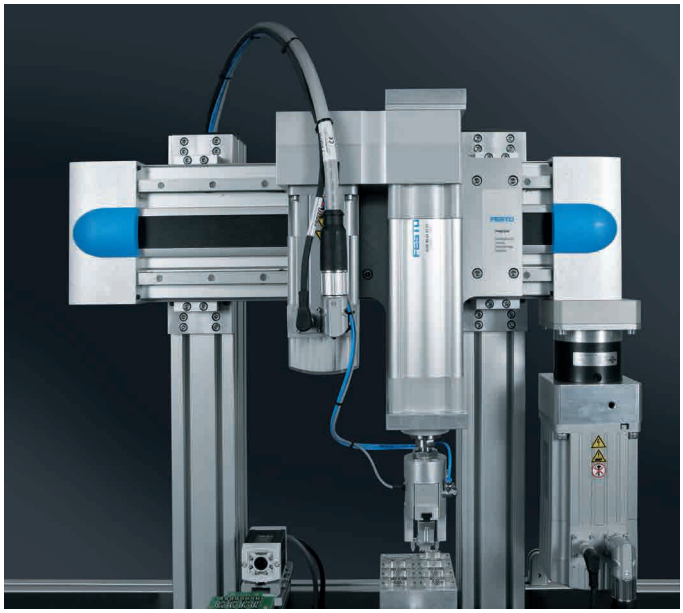
Parallel kit



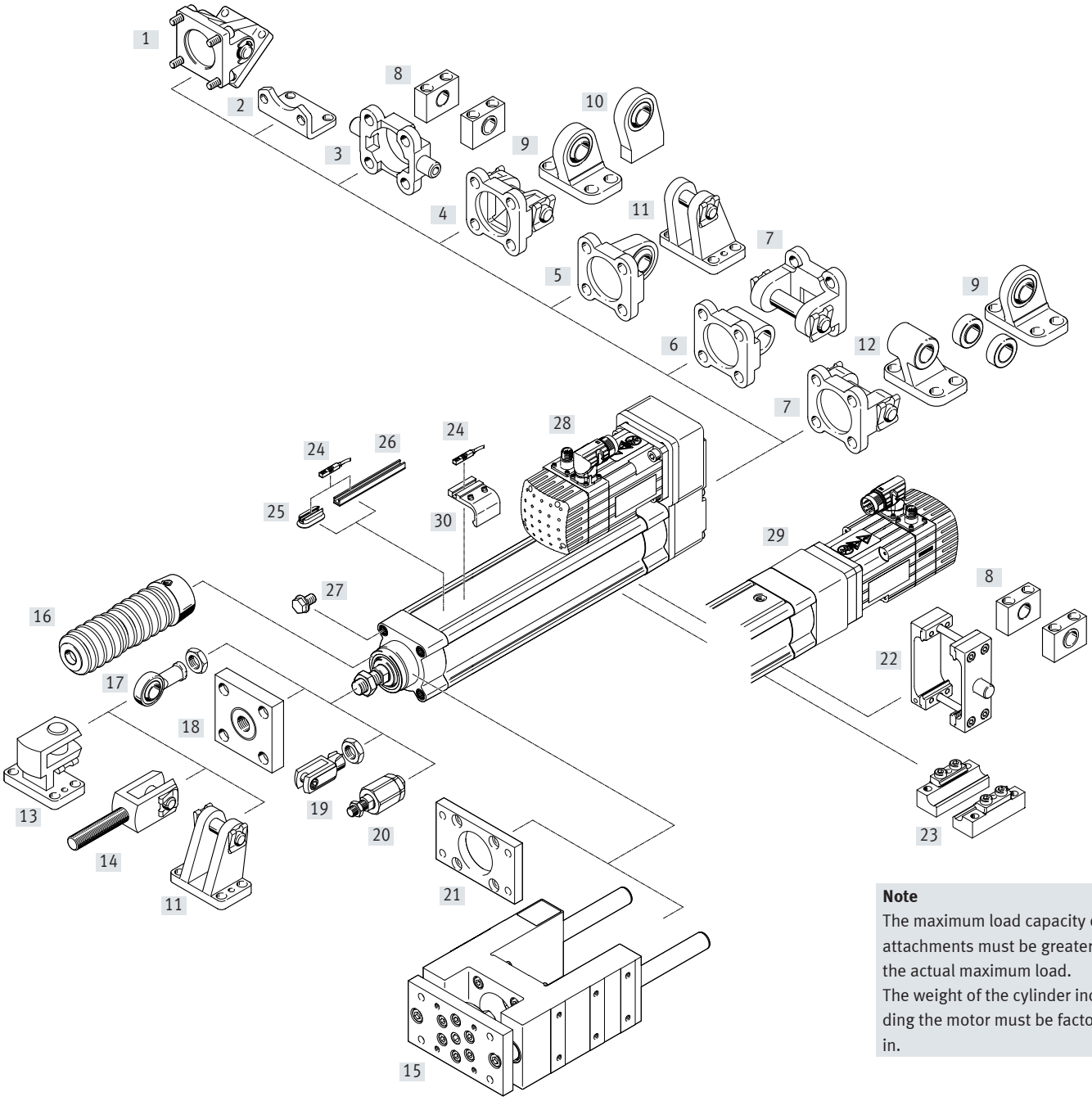
A range of complete kits is available for both parallel and axial motor mounting.

Example Applications

Press fitting plugs



Peripherals overview



Note
The maximum load capacity of the attachments must be greater than the actual maximum load.
The weight of the cylinder including the motor must be factored in.

Electric cylinders ESBF

Peripherals overview

		Suitable for high forces[1]	➔ Page/ Internet
[1]	Swivel flange DAMS	■	257
[2]	Foot mounting HNC	–	
[3]	Trunnion flange ZNCF	–	
[4]	Swivel flange SNC	–	
[5]	Swivel flange SNCS	–	
[6]	Swivel flange SNCL	–	
[7]	Swivel flange SNCB	–	
[8]	Trunnion support LNZG	–	
[9]	Clevis foot LSNG	–	
[10]	Clevis foot LSNSG	–	258
[11]	Clevis foot LBG	–	
[12]	Clevis foot LNG	–	
[13]	Right angle clevis foot LQG	–	
[14]	Rod clevis SGA	■	
[15]	Guide unit EAGF	■	

		Suitable for high forces[1]	➔ Page/ Internet
[16]	Bellows kit EADB	■	eadb
[17]	Rod eye SGS	■	258
[18]	Coupling piece KSZ	–	
[19]	Rod clevis SG	■	
[20]	Self-aligning rod coupler FK	–	
[21]	Flange mounting EAHH	■	
[22]	Trunnion flange kit DAMT	–	
[23]	Profile mounting EAHF-...-P	■	
[24]	Proximity sensors SMT	■	
[25]	Mounting kit CRSMB	■	
[26]	Sensor rail SAMH	■	
[27]	Plug screw DAMD-PS	■	
[28]	Parallel kit EAMM-U	■	
[29]	Axial kit EAMM-A	■	
[30]	Mounting kit SMB-8-FENG	■	

1) Indicates which accessories can be used within the entire force range. For restricted force ranges see the relevant accessory part.

Ordering – Modular product system

Size		32	40	50	63	80	100	Conditions	Code	Enter code
Module no.		8022569	8022585	8022601	574090	574091	574092			
Function		Electric cylinder							ESBF	ESBF
Drive type		Ball screw						[1]	-BS	
		Lead screw			–			[2]	-LS	
Size		32	40	50	63	80	100		-...	
Stroke	[mm]	100							-...	
		200								
		300								
		400								
		30 ... 800	30 ... 800	30 ... 1000	30 ... 1200	30 ... 1500	30 ... 1500			
Spindle pitch	[mm]	2.5	–	–	–	–	–		-...P	
		–	3	–	–	–	–			
		–	–	4	–	–	–			
		5	5	5	5	5	5			
		10	10	10	10	–	–			
		–	–	–	–	15	–			
		–	16	–	–	–	–			
		–	–	20	–	–	20			
		–	–	–	25	–	–			
		–	–	–	–	32	–			
		–	–	–	–	–	40			
Piston rod thread type		Male thread								
		Female thread							-F	
Degree of protection, electrical system		Standard								
		IP65							-S1	
Corrosion protection		Standard								
		High corrosion protection						[3]	-R3	
Additional features		None								
		Food-safe as per supplementary material information						[4]	-F1	
Extended piston rod		None								
		1 ... 200							-...E	

[1] **BS** Only with spindle pitch 5P, 10P, 15P, 16P, 20P, 25P, 32P, 40P
[2] **LS** Only with spindle pitch 2.5P, 3P, 4P
[3] **R3** Only with S1
[4] **F1** Only with R3
Not with LS

Ordering data

Ball screw

Spindle pitch [mm/rev]	Stroke [mm]	Part no.	Type
ESBF-32			
5	100	8022562	ESBF-BS-32-100-5P
	200	2215384	ESBF-BS-32-200-5P
	300	8022563	ESBF-BS-32-300-5P
	400	8022564	ESBF-BS-32-400-5P
10	100	8022565	ESBF-BS-32-100-10P
	200	8022566	ESBF-BS-32-200-10P
	300	8022567	ESBF-BS-32-300-10P
	400	8022568	ESBF-BS-32-400-10P
ESBF-40			
5	100	8022574	ESBF-BS-40-100-5P
	200	2215385	ESBF-BS-40-200-5P
	300	8022575	ESBF-BS-40-300-5P
	400	8022576	ESBF-BS-40-400-5P
10	100	8022577	ESBF-BS-40-100-10P
	200	8022578	ESBF-BS-40-200-10P
	300	8022579	ESBF-BS-40-300-10P
	400	8022580	ESBF-BS-40-400-10P
16	100	8022581	ESBF-BS-40-100-16P
	200	8022582	ESBF-BS-40-200-16P
	300	8022583	ESBF-BS-40-300-16P
	400	8022584	ESBF-BS-40-400-16P
ESBF-50			
5	100	8022590	ESBF-BS-50-100-5P
	200	2215386	ESBF-BS-50-200-5P
	300	8022591	ESBF-BS-50-300-5P
	400	8022592	ESBF-BS-50-400-5P
10	100	8022593	ESBF-BS-50-100-10P
	200	8022594	ESBF-BS-50-200-10P
	300	8022595	ESBF-BS-50-300-10P
	400	8022596	ESBF-BS-50-400-10P
20	100	8022597	ESBF-BS-50-100-20P
	200	8022598	ESBF-BS-50-200-20P
	300	8022599	ESBF-BS-50-300-20P
	400	8022600	ESBF-BS-50-400-20P

Ball screw

Spindle pitch [mm/rev]	Stroke [mm]	Part no.	Type
ESBF-63			
5	100	574093	ESBF-BS-63-100-5P
	200	1347390	ESBF-BS-63-200-5P
	300	574094	ESBF-BS-63-300-5P
	400	574095	ESBF-BS-63-400-5P
10	100	574096	ESBF-BS-63-100-10P
	200	574097	ESBF-BS-63-200-10P
	300	574098	ESBF-BS-63-300-10P
	400	574099	ESBF-BS-63-400-10P
25	100	574100	ESBF-BS-63-100-25P
	200	574101	ESBF-BS-63-200-25P
	300	574102	ESBF-BS-63-300-25P
	400	574103	ESBF-BS-63-400-25P
ESBF-80			
5	100	574104	ESBF-BS-80-100-5P
	200	1347391	ESBF-BS-80-200-5P
	300	574105	ESBF-BS-80-300-5P
	400	574106	ESBF-BS-80-400-5P
15	100	574107	ESBF-BS-80-100-15P
	200	574108	ESBF-BS-80-200-15P
	300	574109	ESBF-BS-80-300-15P
	400	574110	ESBF-BS-80-400-15P
32	100	574111	ESBF-BS-80-100-32P
	200	574112	ESBF-BS-80-200-32P
	300	574113	ESBF-BS-80-300-32P
	400	574114	ESBF-BS-80-400-32P
ESBF-100			
5	100	574115	ESBF-BS-100-100-5P
	200	1347393	ESBF-BS-100-200-5P
	300	574116	ESBF-BS-100-300-5P
	400	574117	ESBF-BS-100-400-5P
20	100	574118	ESBF-BS-100-100-20P
	200	574119	ESBF-BS-100-200-20P
	300	574120	ESBF-BS-100-300-20P
	400	574121	ESBF-BS-100-400-20P
40	100	574122	ESBF-BS-100-100-40P
	200	574123	ESBF-BS-100-200-40P
	300	574124	ESBF-BS-100-300-40P
	400	574125	ESBF-BS-100-400-40P

Lead screw

Spindle pitch [mm/rev]	Stroke [mm]	Part no.	Type
ESBF-32			
2.5	100	8022570	ESBF-LS-32-100-2.5P
	200	2295381	ESBF-LS-32-200-2.5P
	300	8022571	ESBF-LS-32-300-2.5P
	400	8022572	ESBF-LS-32-400-2.5P
ESBF-40			
3	100	8022586	ESBF-LS-40-100-3P
	200	2295382	ESBF-LS-40-200-3P
	300	8022587	ESBF-LS-40-300-3P
	400	8022588	ESBF-LS-40-400-3P

Lead screw

Spindle pitch [mm/rev]	Stroke [mm]	Part no.	Type
ESBF-50			
4	100	8022602	ESBF-LS-50-100-4P
	200	2295383	ESBF-LS-50-200-4P
	300	8022603	ESBF-LS-50-300-4P
	400	8022604	ESBF-LS-50-400-4P

Note
Order variable strokes and variants via the modular product system

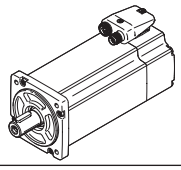
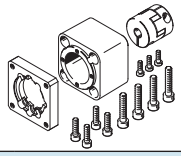
Accessories – Ordering data

Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

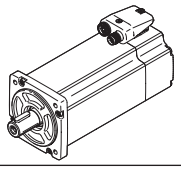
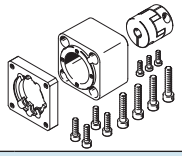
When using parallel kits, the no-load driving torque of the particular kit must be taken into consideration.

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
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]
EMMT-AS-60-..., EMME-AS-60-...	1956054	EAMM-A-D32-60P
	2234020	EAMM-A-D32-60P-S1[2]
With servo motor and gear unit		
EMME-AS-40-... EMGA-40-P-G...-EAS-40	1454238	EAMM-A-D32-40G
	2256396	EAMM-A-D32-40G-S1[2]
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1454238	EAMM-A-D32-40G
	2256396	EAMM-A-D32-40G-S1[2]
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2946758	EAMM-A-D32-60G
	2946759	EAMM-A-D32-60G-S1[2]
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	2946760	EAMM-A-D32-60H
	2946761	EAMM-A-D32-60H-S1[2]
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2946758	EAMM-A-D32-60G
	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-... EMGA-40-P-G...-SST-42	1454238	EAMM-A-D32-40G
	2256396	EAMM-A-D32-40G-S1[2]
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2946758	EAMM-A-D32-60G
	2946759	EAMM-A-D32-60G-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-... EMGC-40-...	1454238	EAMM-A-D32-40G
	2256396	EAMM-A-D32-40G-S1[2]
EMCA-EC-67-... EMGC-60-...	2946760	EAMM-A-D32-60H
	2946761	EAMM-A-D32-60H-S1[2]

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.
2) With degree of protection IP65

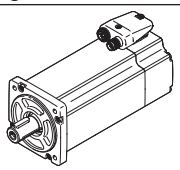
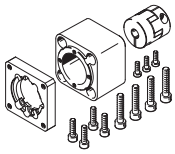
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
ESBF-40		
With servo motor		
EMMS-AS-55-...	543153	EAMM-A-D40-55A
	1322182	EAMM-A-D40-55A-S1[2]
EMMT-AS-60-..., 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-... EMGA-40-P-G...-EAS-40	560282	EAMM-A-D40-40G
	2256398	EAMM-A-D40-40G-G2[3]
	2256399	EAMM-A-D40-40G-S1[2]
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	560282	EAMM-A-D40-40G
	2256398	EAMM-A-D40-40G-G2[3]
	2256399	EAMM-A-D40-40G-S1[2]
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2256400	EAMM-A-D40-60G
	2256409	EAMM-A-D40-60G-S1[2]
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1454242	EAMM-A-D40-60H
	2256401	EAMM-A-D40-60H-S1[2]
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2256400	EAMM-A-D40-60G
	2256409	EAMM-A-D40-60G-S1[2]
EMMS-AS-70-...	550981	EAMM-A-D40-70A
	1322185	EAMM-A-D40-70A-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-... EMGA-40-P-G...-SST-42	560282	EAMM-A-D40-40G
	2256398	EAMM-A-D40-40G-G2[3]
	2256399	EAMM-A-D40-40G-S1[2]
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2256400	EAMM-A-D40-60G
	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-... EMGC-40-...	560282	EAMM-A-D40-40G
	2256398	EAMM-A-D40-40G-G2[3]
	2256399	EAMM-A-D40-40G-S1[2]
EMCA-EC-67-... EMGC-60-...	1454242	EAMM-A-D40-60H
	2256401	EAMM-A-D40-60H-S1[2]

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.
2) With degree of protection IP65
3) The axial kit can be retrofitted from IP40 to IP65 with the help of a seal set EADS-F.

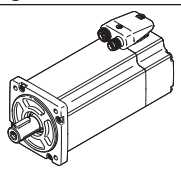
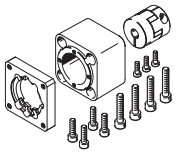
Accessories – Ordering data

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit		
			
Type	Part no.	Type	
ESBF-50			
With servo motor			
EMMS-AS-70-...	2733783	EAMM-A-D50-70A	
	2734287	EAMM-A-D50-70A-S1[2]	
EMMT-AS-80-..., EMME-AS-80-...	2733785	EAMM-A-D50-80P	
	2734289	EAMM-A-D50-80P-S1[2]	
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	2733784	EAMM-A-D50-100A	
	2734288	EAMM-A-D50-100A-S1[2]	
With servo motor and gear unit			
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2733786	EAMM-A-D50-60G	
	2734290	EAMM-A-D50-60G-S1[2]	
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	2733796	EAMM-A-D50-60H	
	2907418	EAMM-A-D50-60H-S1[2]	
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2733786	EAMM-A-D50-60G	
	2734290	EAMM-A-D50-60G-S1[2]	
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	2733787	EAMM-A-D50-80G	
	2734291	EAMM-A-D50-80G-S1[2]	
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	2733787	EAMM-A-D50-80G	
	2734291	EAMM-A-D50-80G-S1[2]	
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	2733787	EAMM-A-D50-80G	
	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-... EMGA-60-P-G...-SST-57	2733786	EAMM-A-D50-60G	
	2734290	EAMM-A-D50-60G-S1[2]	
EMMS-ST-87-... EMGA-80-P-G...-SST-87	2733787	EAMM-A-D50-80G	
	2734291	EAMM-A-D50-80G-S1[2]	
With integrated drive and gear unit			
EMCA-EC-67-... EMGC-60-...	2733796	EAMM-A-D50-60H	
	2907418	EAMM-A-D50-60H-S1[2]	

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.
2) With degree of protection IP65
3) The axial kit can be retrofitted from IP40 to IP65 with the help of a seal set EADS-F.

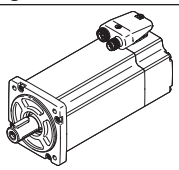
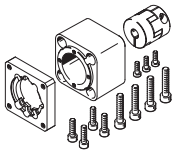
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit		
			
Type	Part no.	Type	
ESBF-63			
With servo motor			
EMMS-AS-70-...	543161	EAMM-A-D60-70A	
	2256699	EAMM-A-D60-70A-S1[2]	
EMMT-AS-80-..., EMME-AS-80-...	1977073	EAMM-A-D60-80P	
	2218564	EAMM-A-D60-80P-S1[2]	
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	550983	EAMM-A-D60-100A	
	2256700	EAMM-A-D60-100A-S1[2]	
With servo motor and gear unit			
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	560283	EAMM-A-D60-60G	
	2256696	EAMM-A-D60-60G-G2[3]	
	2256698	EAMM-A-D60-60G-S1[2]	
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1454245	EAMM-A-D60-60H	
	2256697	EAMM-A-D60-60H-S1[2]	
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	560283	EAMM-A-D60-60G	
	2256696	EAMM-A-D60-60G-G2[3]	
	2256698	EAMM-A-D60-60G-S1[2]	
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	1499402	EAMM-A-D60-80G	
	2946762	EAMM-A-D60-80G-S1[2]	
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	1499402	EAMM-A-D60-80G	
	2946762	EAMM-A-D60-80G-S1[2]	
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	1499402	EAMM-A-D60-80G	
	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-... EMGA-60-P-G...-SST-57	560283	EAMM-A-D60-60G	
	2256696	EAMM-A-D60-60G-G2[3]	
	2256698	EAMM-A-D60-60G-S1[2]	
EMMS-ST-87-... EMGA-80-P-G...-SST-87	1499402	EAMM-A-D60-80G	
	2946762	EAMM-A-D60-80G-S1[2]	
With integrated drive and gear unit			
EMCA-EC-67-... EMGC-60-...	1454245	EAMM-A-D60-60H	
	2256697	EAMM-A-D60-60H-S1[2]	

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.
2) With degree of protection IP65
3) The axial kit can be retrofitted from IP40 to IP65 with the help of a seal set EADS-F.

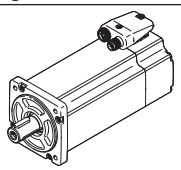
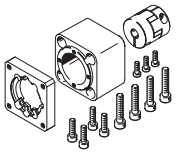
Accessories – Ordering data

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
ESBF-80		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., 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-... EMGA-80-P-G...-SAS-70	2946763	EAMM-A-D80-80G
	2946764	EAMM-A-D80-80G-S1[2]
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	2946763	EAMM-A-D80-80G
	2946764	EAMM-A-D80-80G-S1[2]
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	2946763	EAMM-A-D80-80G
	2946764	EAMM-A-D80-80G-S1[2]
With stepper motor and gear unit		
EMMS-ST-87-... EMGA-80-P-G...-SST-87	2946763	EAMM-A-D80-80G
	2946764	EAMM-A-D80-80G-S1[2]

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.
2) With degree of protection IP65
3) The axial kit can be retrofitted from IP40 to IP65 with the help of a seal set EADS-F.

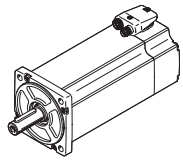
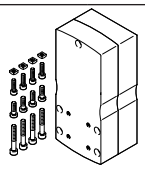
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
ESBF-100		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., 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		
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-120-P-G...-SAS-100	2449341	EAMM-A-D100-120G
	2946765	EAMM-A-D100-120G-S1[2]
EMMS-AS-140-... EMGA-120-P-G...-SAS-140	2449341	EAMM-A-D100-120G
	2946765	EAMM-A-D100-120G-S1[2]

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.
2) With degree of protection IP65

Accessories – Ordering data

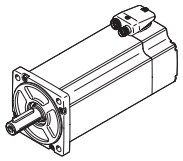
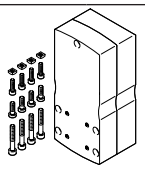
Permissible axis/motor combinations with parallel kit

Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
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]
EMMT-AS-60-..., 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 integrated drive		
EMCA-EC-67-...	1577063	EAMM-U-60-D32-67A-91
	1529422	EAMM-U-60-D32-67A-91-S1
With servo motor and gear unit		
EMME-AS-40-..., EMMS-AS-40-..., EMGA-40-P-...	1577358	EAMM-U-60-D32-40G-91
	1577346	EAMM-U-60-D32-40G-91-S1[2]
EMMS-AS-55-..., EMMS-AS-70-... EMGA-60-P-...-SAS[3]	2748181	EAMM-U-70-D32-60G-96
	2778302	EAMM-U-70-D32-60G-96-S1[2]
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-...-EAS[3]	2778393	EAMM-U-70-D32-60H-96
	2781450	EAMM-U-70-D32-60H-96-S1[2]
With stepper motor and gear unit		
EMMS-ST-42-... EMGA-40-P-...-SST	1577358	EAMM-U-60-D32-40G-91
	1577346	EAMM-U-60-D32-40G-91-S1[2]
EMMS-ST-57-... EMGA-60-P-...-SST[3]	2748181	EAMM-U-70-D32-60G-96
	2778302	EAMM-U-70-D32-60G-96-S1[2]
With integrated drive and gear unit		
EMCA-EC-67-... EMGC-40-P-...	1577358	EAMM-U-60-D32-40G-91
	1577346	EAMM-U-60-D32-40G-91-S1[2]
EMCA-EC-67-... EMGC-60-P-...[3]	2778393	EAMM-U-70-D32-60H-96
	2781450	EAMM-U-70-D32-60H-96-S1[2]

1) The input torque must not exceed the max. permissible 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 kit can be mounted in all directions
- Optionally with degree of protection IP65
- Use in combination with third-party motors on request

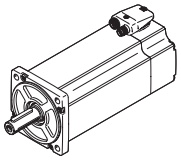
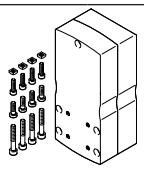
Permissible axis/motor combinations with parallel kit

Motor/gear unit[1]	Parallel kit	
		
Type	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]
EMMT-AS-60-..., 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]
	1212826	EAMM-U-86-D40-70A-102
	1212854	EAMM-U-86-D40-70A-102-S1[2]
EMMT-AS-80-..., 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 integrated drive		
EMCA-EC-67-...	1577083	EAMM-U-60-D40-67A-91
	1435249	EAMM-U-60-D40-67A-91-S1
With servo motor and gear unit		
EMME-AS-40-..., EMMS-AS-40-..., EMGA-40-P-...	1577165	EAMM-U-60-D40-40G-91
	1435968	EAMM-U-60-D40-40G-91-S1[2]
EMMS-AS-55-..., EMMS-AS-70-... EMGA-60-P-...-SAS[3]	2785471	EAMM-U-70-D40-60G-96
	2785542	EAMM-U-70-D40-60G-96-S1[2]
	1586445	EAMM-U-86-D40-60G-102
	1586429	EAMM-U-86-D40-60G-102-S1[2]
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-...-EAS[3]	2786101	EAMM-U-70-D40-60H-96
	2786137	EAMM-U-70-D40-60H-96-S1[2]
	1586496	EAMM-U-86-D40-60H-102
	1586372	EAMM-U-86-D40-60H-102-S1[2]
With stepper motor and gear unit		
EMMS-ST-42-... EMGA-40-P-...-SST	1577165	EAMM-U-60-D40-40G-91
	1435968	EAMM-U-60-D40-40G-91-S1[2]
EMMS-ST-57-... EMGA-60-P-...-SST[3]	2785471	EAMM-U-70-D40-60G-96
	2785542	EAMM-U-70-D40-60G-96-S1[2]
	1586445	EAMM-U-86-D40-60G-102
	1586429	EAMM-U-86-D40-60G-102-S1[2]
With integrated drive and gear unit		
EMCA-EC-67-... EMGC-40-P-...	1577165	EAMM-U-60-D40-40G-91
	1435968	EAMM-U-60-D40-40G-91-S1[2]
EMCA-EC-67-... EMGC-60-P-...[3]	2786101	EAMM-U-70-D40-60H-96
	2786137	EAMM-U-70-D40-60H-96-S1[2]
	1586496	EAMM-U-86-D40-60H-102
	1586372	EAMM-U-86-D40-60H-102-S1[2]

1) The input torque must not exceed the max. permissible 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.

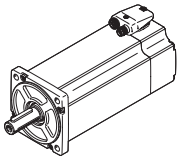
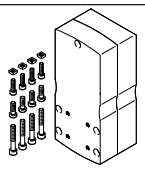
Accessories – Ordering data

Permissible axis/motor combinations with parallel kit

Motor/gear unit[1]	Parallel kit		
			
Type	Part no.	Type	
ESBF-50			
With servo motor			
EMMS-AS-70-...	2786899	EAMM-U-70-D50-70A-96	
	2756078	EAMM-U-70-D50-70A-96-S1[2]	
EMMT-AS-80-..., EMME-AS-80-...	2803053	EAMM-U-86-D50-80P-102	
	2803073	EAMM-U-86-D50-80P-102-S1[2]	
EMMT-AS-100-..., EMME-AS-100-..., 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 servo motor and gear unit			
EMMS-AS-55-..., EMMS-AS-70-... EMGA-60-P-...-SAS[3]	2803125	EAMM-U-86-D50-60G-102	
	2803197	EAMM-U-86-D50-60G-102-S1[2]	
	2797368	EAMM-U-110-D50-60G-120	
	2798665	EAMM-U-110-D50-60G-120-S1[2]	
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-...-EAS[3]	2803326	EAMM-U-86-D50-60H-102	
	2803325	EAMM-U-86-D50-60H-102-S1[2]	
	2798760	EAMM-U-110-D50-60H-120	
	2799150	EAMM-U-110-D50-60H-120-S1[2]	
EMMT-AS-80-..., EMMT-AS-100-..., EMME-AS-80-..., EMME-AS-100-..., EMGA-80-P-...	2799196	EAMM-U-110-D50-80G-120	
	2799281	EAMM-U-110-D50-80G-120-S1[2]	
With stepper motor and gear unit			
EMMS-ST-57-... EMGA-60-P-...-SST[3]	2803125	EAMM-U-86-D50-60G-102	
	2803197	EAMM-U-86-D50-60G-102-S1[2]	
	2797368	EAMM-U-110-D50-60G-120	
	2798665	EAMM-U-110-D50-60G-120-S1[2]	
EMMS-ST-87-... EMGA-80-P-...-SST	2799196	EAMM-U-110-D50-80G-120	
	2799281	EAMM-U-110-D50-80G-120-S1[2]	
With integrated drive and gear unit			
EMCA-EC-67-... EMGC-60-P-...[3]	2803326	EAMM-U-86-D50-60H-102	
	2803325	EAMM-U-86-D50-60H-102-S1[2]	
	2798760	EAMM-U-110-D50-60H-120	
	2799150	EAMM-U-110-D50-60H-120-S1[2]	

1) The input torque must not exceed the max. permissible 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.

Permissible axis/motor combinations with parallel kit

Motor/gear unit[1]	Parallel kit		
			
Type	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]	
EMMT-AS-80-..., EMME-AS-80-...	2155875	EAMM-U-86-D60-80P-102	
	2156527	EAMM-U-86-D60-80P-102-S1[2]	
EMMT-AS-100-..., EMME-AS-100-..., 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 servo motor and gear unit			
EMMS-AS-55-..., EMMS-AS-70-... EMGA-60-P-...-SAS[3]	1586347	EAMM-U-86-D60-60G-102	
	1437163	EAMM-U-86-D60-60G-102-S1[2]	
	1543240	EAMM-U-110-D60-60G-120	
	1436183	EAMM-U-110-D60-60G-120-S1[2]	
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-...-EAS[3]	1586276	EAMM-U-86-D60-60H-102	
	1530837	EAMM-U-86-D60-60H-102-S1[2]	
	1542264	EAMM-U-110-D60-60H-120	
	1530621	EAMM-U-110-D60-60H-120-S1[2]	
EMMT-AS-80-..., EMMT-AS-100-..., EMME-AS-80-..., EMME-AS-100-..., EMGA-80-P-...	1532949	EAMM-U-110-D60-80G-120	
	1530875	EAMM-U-110-D60-80G-120-S1[2]	
With stepper motor and gear unit			
EMMS-ST-57-... EMGA-60-P-...-SST[3]	1586347	EAMM-U-86-D60-60G-102	
	1437163	EAMM-U-86-D60-60G-102-S1[2]	
	1543240	EAMM-U-110-D60-60G-120	
	1436183	EAMM-U-110-D60-60G-120-S1[2]	
EMMS-ST-87-... EMGA-80-P-...-SST	1532949	EAMM-U-110-D60-80G-120	
	1530875	EAMM-U-110-D60-80G-120-S1[2]	
With integrated drive and gear unit			
EMCA-EC-67-... EMGC-60-P-...[3]	1586276	EAMM-U-86-D60-60H-102	
	1530837	EAMM-U-86-D60-60H-102-S1[2]	
	1542264	EAMM-U-110-D60-60H-120	
	1530621	EAMM-U-110-D60-60H-120-S1[2]	

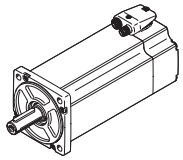
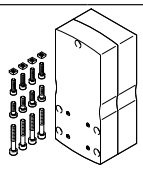
1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) With degree of protection IP65
3) Gear unit drive shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm.

Note

- The clamping element EADT is required to adjust the toothed belt pre-tensioning for EAMM-U-110.
- The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.
- Additional information ➔ eamm-u

Accessories – Ordering data

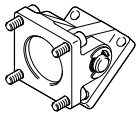
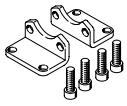
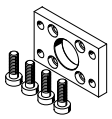
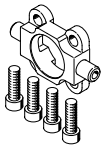
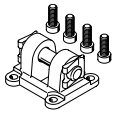
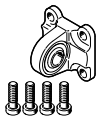
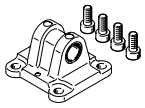
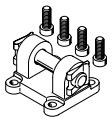
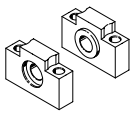
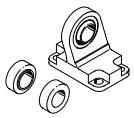
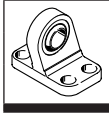
Permissible axis/motor combinations with parallel kit

Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
ESBF-80		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., 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 servo motor and gear unit		
EMMT-AS-80-..., EMMT-AS-100-..., EMME-AS-80-..., EMME-AS-100-... EMGA-80-P-...	1589614	EAMM-U-110-D80-80G-120
	1589706	EAMM-U-110-D80-80G-120-S1[2]
With stepper motor and gear unit		
EMMS-ST-87-... EMGA-80-P-...-SST	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 servo motor and gear unit		
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-..., EMMS-AS-140-... 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. permissible 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.

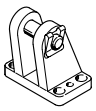
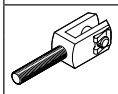
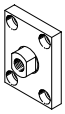
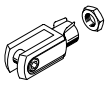
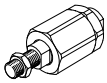
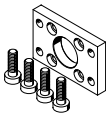
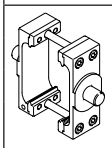
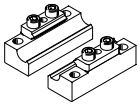
Note

- The clamping element EADT is required to adjust the toothed belt pre-tensioning for EAMM-U-110.
- The motor and/or axis shaft can optionally be supported with a counter bearing EAMG.
- Additional information ➔ eamm-u

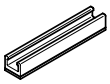
	For size	1) [kN]	Part No.	Type
Swivel flange				
	63	7	★1555443	DAMS-K-V1-63-V-R3
	80	12	★1556588	DAMS-K-V1-80-V-R3
	100	17	★1560237	DAMS-K-V1-100-V-R3
Foot mounting				
	63	4	174372	HNC-63
	80	6	174373	HNC-80
	100	9	174374	HNC-100
Flange mounting				
	63	7	174379	FNC-63
	80	12	174380	FNC-80
	100	17	174381	FNC-100
Trunnion flange				
	63	4	174414	ZNCF-63
	80	6	174415	ZNCF-80
	100	9	174416	ZNCF-100
Swivel flange				
	63	4	★174386	SNC-63
	80	6	174387	SNC-80
	100	9	174388	SNC-100
Swivel flange				
	63	4	★174400	SNCS-63
	80	6	174401	SNCS-80
	100	9	174402	SNCS-100
Swivel flange				
	63	4	★174407	SNCL-63
	80	6	174408	SNCL-80
	100	9	174409	SNCL-100
Swivel flange				
	63	4	★174393	SNCB-63
	80	6	174394	SNCB-80
	100	9	174395	SNCB-100
Trunnion support				
	63, 80	–	32961	LNZG-63/80
	100	–	32962	LNZG-100/125
Clevis foot				
	63	–	5564	LSN-63
	80	–	5565	LSN-80
	100	–	5566	LSN-100
Clevis foot				
	63	–	31743	LSNG-63
	80	–	31744	LSNG-80
	100	–	31745	LSNG-100

1) Max. load capacity.

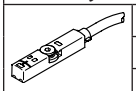
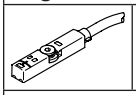
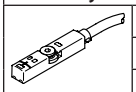
Accessories – Ordering data

	For size	1) [kN]	Part No.	Type
Clevis foot				
	63	–	31750	LSNSG-63
	80	–	31751	LSNSG-80
	100	–	31752	LSNSG-100
Clevis foot				
	63	–	31764	LBG-63
	80	–	31765	LBG-80
	100	–	31766	LBG-100
Clevis foot				
	63	–	★ 33893	LNG-63
	80	–	33894	LNG-80
	100	–	33895	LNG-100
Right-angle clevis foot				
	63	–	31771	LQG-63
	80	–	31772	LQG-80
	100	–	31773	LQG-100
Rod clevis				
	63	10	10768	SGA-M16x1,5
	80, 100	10	10769	SGA-M20x1,5
Rod eye				
	63	10	★ 9263	SGS-M16x1,5
	80, 100	10	9264	SGS-M20x1,5
Coupling piece				
	63	10	36127	KSZ-M16x1,5
	80, 100	10	36128	KSZ-M20x1,5
Rod clevis				
	63	10	★ 6146	SG-M16x1,5
	80, 100	10	6147	SG-M20x1,5
Self-aligning rod coupler				
	63	10	★ 6142	FK-M16x1,5
	80, 100	10	6143	FK-M20x1,5
Flange mounting				
	63	7	★ 1502305	EAHH-V2-63-R1
	80	12	★ 1502306	EAHH-V2-80-R1
	100	17	★ 1502307	EAHH-V2-100-R1
Trunnion mounting kit				
	63	4	2214971	DAMT-V1-63-A
	80	6	163529	DAMT-V1-80-A
	100	9	163530	DAMT-V1-100-A
Profile mounting				
	63	3,5	★ 1547781	EAHF-V2-50/63-P
	80, 100	6	★ 1547780	EAHF-V2-80/100-P

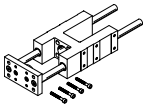
1) Max. load capacity.

	For size	1) [kN]	Part No.	Type
Mounting kit				
	63, 80, 100	–	525565	CRSMB-8-32/100
Sensor rail[2]				
	63, 80, 100	–	1600118	SAMH-N8-SR-100
Blanking screw[3]				
	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.

		Part No.	Type
Proximity sensor for T-slot, magneto-resistive – N/O contact			
	PNP, cable	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
	PNP, plug	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
	PNP, plug	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
	NPN, cable	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
	NPN, plug	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
Magneto-resistive – N/C contact			
	PNP, cable	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Proximity sensor for T-slot, magnetic reed – N/O contact			
	Cable	★ 543862	SME-8M-DS-24V-K-2,5-OE
	Cable	★ 543863	SME-8M-DS-24V-K-5,0-OE
	Cable	★ 543872	SME-8M-ZS-24V-K-2,2,5-OE
	Plug	★ 543861	SME-8M-DS-24V-K-0,3-M8D

	Cable length	Part No.	Type
Connecting cable, straight socket			
	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

	Stroke [mm]	Part No.	Type
Guide unit for fixed strokes, with recirculating ball bearing guide			
	**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

Data sheet

Size
32 ... 100

Stroke length
30 ... 1500 mm

General technical data							
Size		32	40	50	63	80	100
Based on standard		ISO 15552					
Design		Electric cylinder with ball screw or lead screw			Electric cylinder with ball screw		
Piston rod thread							
Male thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5
Female thread		M6	M8	M10	M10	M12	M12
Working stroke	[mm]	30 ... 800	30 ... 800	30 ... 1000	30 ... 1200	30 ... 1500	30 ... 1500
Protection against rotation/guide		Piston rod protected against rotation, with plain-bearing guide					
Duty cycle	[%]	100					
Position sensing		For proximity sensor					
Type of mounting		With female thread/accessories					
Mounting position		Any					

Mechanical data – Ball screw									
Size		32		40			50		
Spindle pitch	[mm/rev]	5	10	5	10	16	5	10	20
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/s²]	5	15	5	15	25	5	15	25
Max. angle of rotation of piston rod[3]	[°]	±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
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/s²]	5	15	25	5	15	25	5	15	25
Max. angle of rotation of piston rod[3]	[°]	±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 ➔ online

2) On the drive shaft

3) In new condition

4) At a rotational speed of the spindle of 200 rpm

Electric cylinders ESBF

Data sheet

Mechanical data – Lead screw				
Size		32	40	50
Spindle pitch	[mm/rev]	2.5	3	4
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/s²]	2.5	2.5	2.5
Max. angle of rotation of the piston rod	[°]	±0.25	±0.2	±0.15
Reversing backlash[3]	[mm]	< 0.1	< 0.1	< 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 at max. force over the entire stroke range.

2) On the drive shaft

3) In new condition

4) At a rotational speed of the spindle of 200 rpm

Operating and environmental conditions		
Ambient temperature[1]		
ESBF-BS-...	[°C]	0 ... +60
ESBF-LS-...	[°C]	0 ... +50
Storage temperature	[°C]	–20 ... +60
Degree of protection to IEC 60529		
ESBF-...		IP40
ESBF-...-S1		IP65
Relative humidity	[%]	0 ... 95 (non-condensing)
Duty cycle	[%]	100
Maintenance interval		Lifetime lubrication (for integrated lead screw)
Food-safe with ESBF-...-F1[2]		Supplementary material information
Corrosion resistance class CRC[3]		
ESBF-...		2
ESBF-...-R3		3

1) Note operating range of proximity sensors and motors

2) Additional information: www.festo.com/sp ➔ Certificates
Only in combination with ESBF-BS-... (ball screw)

3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. Externally visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

Data sheet

Mass moment of inertia – Ball screw

Size		32		40			50		
Spindle pitch	[mm/rev]	5	10	5	10	16	5	10	20
J_0 with 0 mm stroke	[kg cm²]	0.023	0.036	0.050	0.078	0.125	0.145	0.187	0.329
J_H per metre stroke	[kg cm²/m]	0.122	0.139	0.460	0.480	0.523	1.019	1.043	1.139
J_L per kg payload	[kg cm²/kg]	0.006	0.025	0.006	0.025	0.065	0.006	0.025	0.101

Size		63			80			100		
Spindle pitch	[mm/rev]	5	10	25	5	15	32	5	20	40
J_0 with 0 mm stroke	[kg cm²]	0.491	0.486	0.650	1.529	1.648	2.119	4.696	5.050	6.710
J_H per metre stroke	[kg cm²/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 cm²/kg]	0.006	0.025	0.158	0.006	0.057	0.259	0.006	0.101	0.405

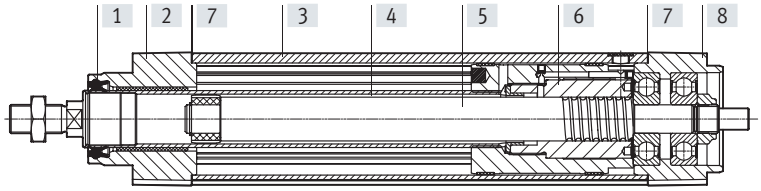
Mass moment of inertia – Lead screw

Size		32	40	50
Spindle pitch	[mm/rev]	2.5	3	4
J_0 with 0 mm stroke	[kg cm²]	0.016	0.045	0.141
J_H per metre stroke	[kg cm²/m]	0.161	0.508	1.238
J_L per kg payload	[kg cm²/kg]	0.002	0.002	0.004

The mass moment of inertia J_A of the electric cylinder is calculated as follows:

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{moving payload}} \text{ [kg]}$$

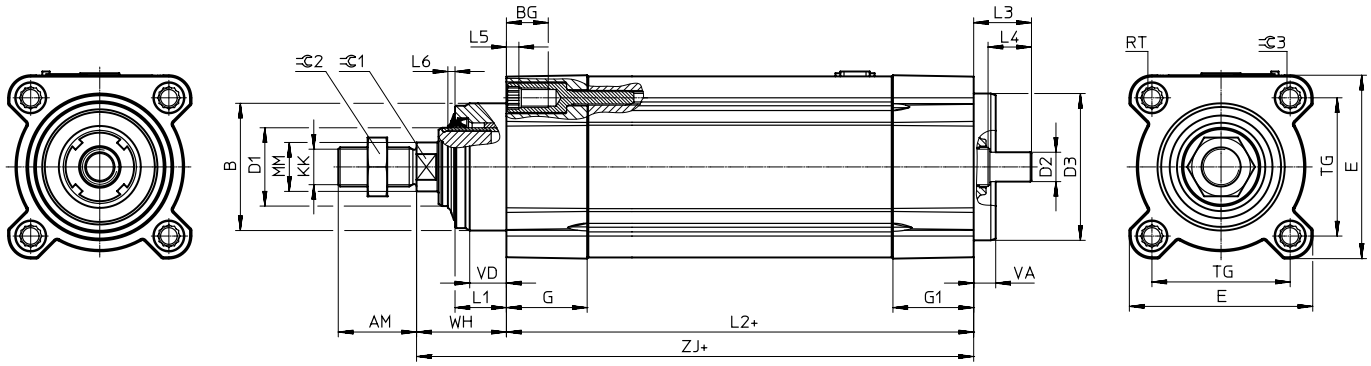
Materials



Size		32 ... 50	63 ... 100
[1]	Wiper	TPE-U	
[2]	Bearing cap	Coated wrought aluminium alloy	Coated gravity die-cast aluminium
[3]	Cylinder barrel	Smooth-anodised wrought aluminium alloy	
[4]	Piston rod	High-alloy stainless steel	
[5]	Spindle		
	ESBF-BS-...	Rolled steel	
	ESBF-LS-...	High-strength steel	
[6]	Spindle nut		
	ESBF-BS-...	Rolled steel	
	ESBF-LS-...	POM with PTFE	
[7]	Flat seal (with ESBF-...-S1)	Fibre-reinforced thermoplastic	
[8]	Drive cover	Coated wrought aluminium alloy	Coated gravity die-cast aluminium
–	Note on materials	RoHS-compliant	
		Contains paint-wetting impairment substances	

Electric cylinders ESBF

Dimensions



\+ = plus stroke length

Size	AM −0.5	B ⌀ d11	BG min.	D1 ⌀ h9	D2 ⌀ h6	D3 ⌀ f7	E	G
32	22	34	16	20	6	32	$45^{+0.5}$	$25.5_{-0.1}$
40	24	39	16	24	8	40	$54^{+0.5}$	$30_{-0.1}$
50	32	45	17	28	12	50	$64^{+0.5}$	$30_{-0.1}$
63	32	52	17	32	12	60	75+0.5/−0.1	33±0.1
80	40	60	17	40	19	80	93+0.5/−0.1	39±0.1
100	40	70	17	50	24	100	110+0.5/−0.1	39±0.1

Size	G1	L1	L2	L3	L4 ±0.2	L5 min.	L6	KK	MM ⌀ −0.1
32	$25.5_{-0.1}$	$12^{+0.2}$	122.5+0.2/−1.4	15.9+0.8/−0.3	8	4	4	M10x1.25	14
40	$30_{-0.1}$	$14^{+0.2}$	144+0.2/−1.4	18.4+0.8/−0.3	14	4	4	M12x1.25	16
50	$34_{-0.1}$	$20^{+0.2}$	163+0.2/−1.4	27+0.8/−0.3	17	5	4	M16x1.5	20
63	33±0.1	$21_{-0.5}$	171+0.7/−1.2	23.5±0.5	17	5	5	M16x1.5	20
80	39±0.1	$28_{-0.5}$	204+0.7/−1.2	33.5±0.5	26	25.9	5	M20x1.5	25
100	39±0.1	$33_{-0.5}$	224+0.7/−1.2	39.5±0.5	30	25.9	5	M20x1.5	25

Size	RT	TG	VA	VD	WH	ZJ	⌀C1	⌀C2	⌀C3
32	M6	32.5	$7_{-0.2}$	8±0.1	25.5+1.9/−0.8	148+2.1/−1.1	10	17	6
40	M6	38	$7_{-0.2}$	9±0.1	29.5+1.9/−0.8	173.5+2.1/−1.1	13	19	6
50	M8	46.5	$9_{-0.2}$	11.5±0.1	36.5+1.9/−0.8	199.5+2.1/−1.1	17	24	8
63	M8	56.5±0.5	9±0.2	15±0.2	37+1.8/−1.7	208	17	24	8
80	M10	72±0.5	10±0.2	18±0.2	46+1.8/−1.7	250	22	30	6
100	M10	89±0.5	12±0.2	20±0.2	51+1.8/−1.7	275	22	30	6

Note
Spanner flat ⌀C1 can be aligned either way.

Spindle axes EGC-BS-KF

Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Spindle axes EGC-BS-KF

Special features

At a glance

Powerful
- Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity
- Speed, acceleration and torque resistance set a new standard

Economical
- In addition to its technical data, the spindle axis also offers an excellent price/performance ratio
- Due to the EGC's high performance it is often possible to use a smaller size

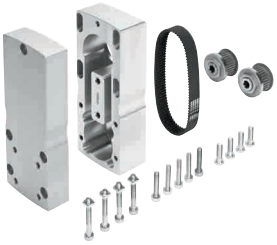
Versatile
- Different spindle pitches, numerous sizes and variants such as protected guides open up a broad range of applications
- Space-saving position sensing with proximity sensors in the profile slot is possible
- Wide range of options for mounting on drives
- Comprehensive range of mounting accessories for multi-axis combinations
- Spindle support enables maximum travel speed with all stroke lengths

Complete system comprising spindle axis, motor, motor controller and motor mounting kit

Spindle axis with recirculating ball bearing guide

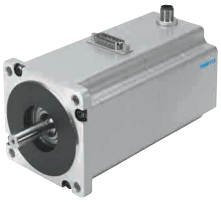
Axial kit

Parallel kit



Motor

Servo motor EMME-AS, EMMS-AS



Stepper motor EMMS-ST

Motor controller

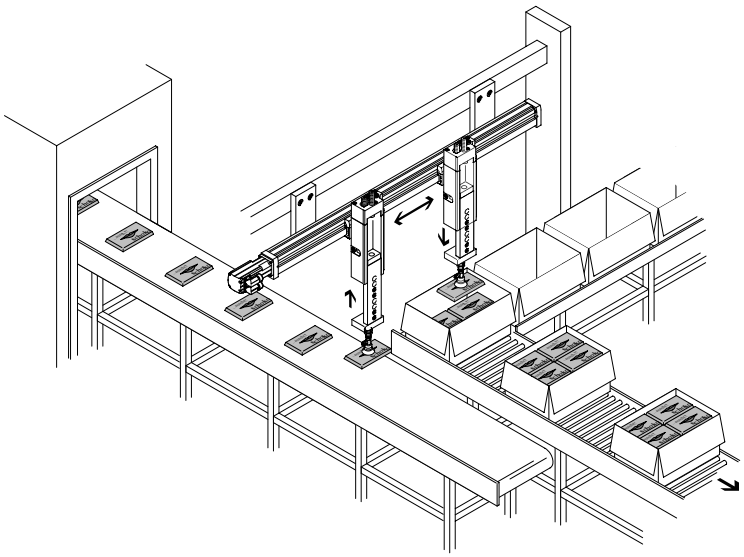
Servo motor controller CMMP-AS, CMMS-AS

Stepper motor controller CMMS-ST

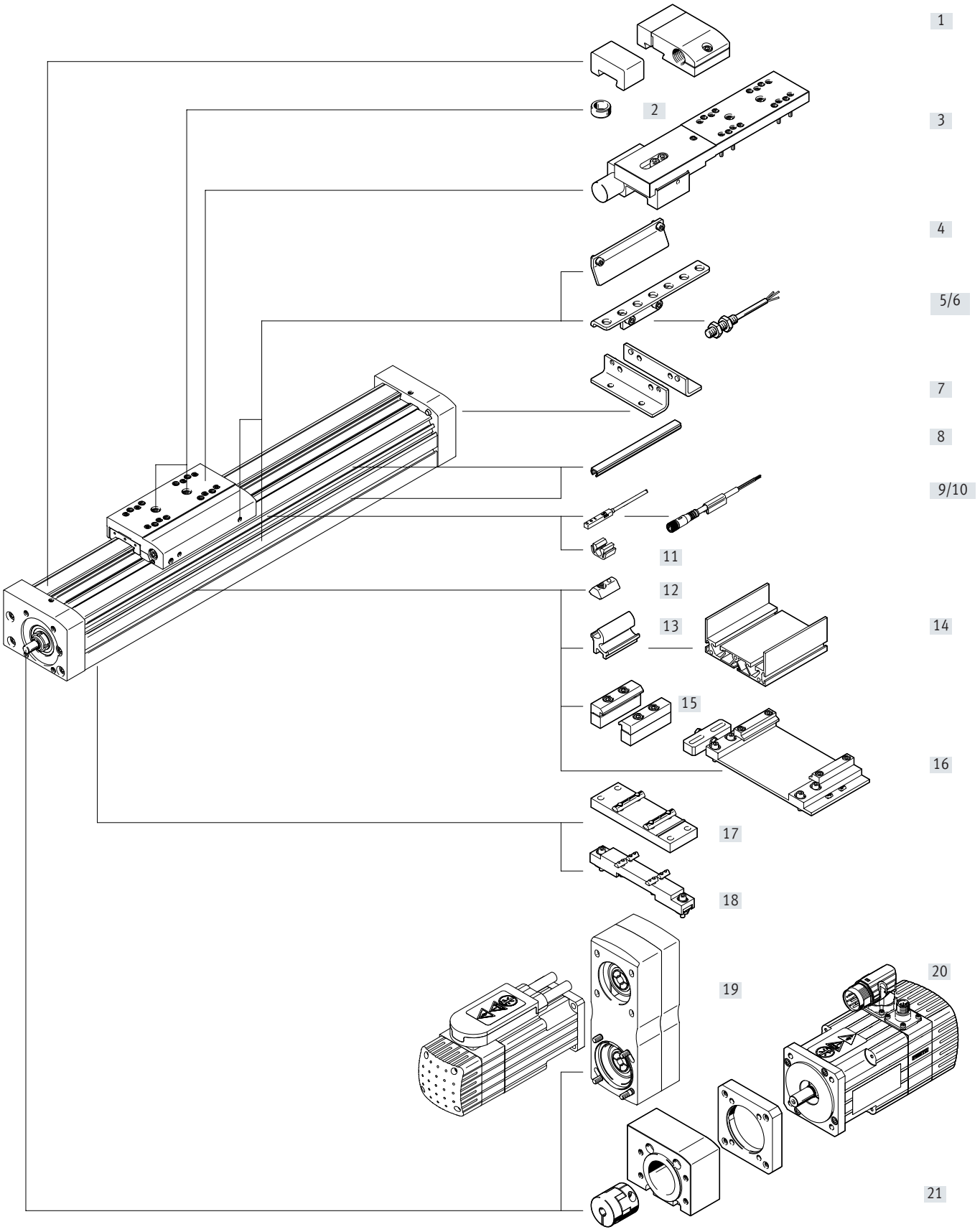
Note
A range of specially adapted complete solutions is available for the spindle axis EGC and the motors.

Example Application

Handling chocolate bars



Peripherals overview



Spindle axes EGC-BS-KF

Peripherals overview

	Type/order code	➔ Page/Internet
[1]	Emergency buffer with retaining bracket A	271
[2]	Centring pin/sleeve ZBS, ZBH	
[3]	Clamping unit 1H...-PN, 2H-PN	
[4]	Switch lug X, Z, O, P, W, R	
[5]	Sensor bracket O, P, W, R	
[6]	Proximity switch, M8 O, P, W, R	
[7]	Foot mounting F	
[8]	Slot cover B, S	
[9]	Proximity switch, T-slot X, Z	
[10]	Connecting cable V	
[11]	Clip CL	

	Type/order code	➔ Page/Internet
[12]	Slot nut Y	271
[13]	Adapter kit DHAM	
[14]	Support profile HMIA	
[15]	Profile mounting M	
[16]	Adjusting kit EADC-E16	
[17]	Central support EAHF-L5	
[18]	Adjusting kit EADC-E15	
[19]	Parallel kit EAMM-U	270
[20]	Motor EMME, EMMS	361, 367, emme
[21]	Axial kit EAMM-A	268
–	Guide axis EGC-FA	egc-fa

Ordering – Modular product system

Size		70	80	120	185	Conditions	Code	Enter code
Module no.		556807	556808	556809	556811			
Design		Linear axis					EGC	EGC
Size		70	80	120	185		-...	
Stroke length for GK, GP (without stroke reserve)	Standard [mm]	100, 200, 300, 400, 500, 600, 700, 800, 1000	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1400, 1500, 1800, 2000	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1400, 1500, 2000, 2500	300, 500, 600, 1000, 1500, 2000, 2500, 3000		-...	-...
	Variable [mm]	50 ... 980	50 ... 1980	50 ... 2480	50 ... 2980			
Stroke length for GV, GQ (without stroke reserve)	Standard [mm]	100, 200, 300, 400, 500, 600, 700, 900	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1700, 1900	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1900, 2400	200, 400, 500, 900, 1400, 1900, 2400, 2900		-...	
	Variable [mm]	50 ... 880	50 ... 1880	50 ... 2380	50 ... 2880			
Function		Ball screw					-BS	-BS
Spindle pitch		10	10	10	–		-10P	
		–	20	–	–		-20P	
		–	–	25	–		-25P	
		–	–	–	40		-40P	
Spindle support		None						
		With spindle support				[1]	-S	
		> 705 mm[1] > 605 mm[2]	> 780 mm[1] > 680 mm[2]	> 883 mm[1] > 783 mm[2]	> 1224 mm[1] > 1124 mm[2]			
Guide		Recirculating ball bearing guide					-KF	-KF
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)				[2]	-...H	
Motor attachment position		Motor on left					-ML	
		Motor on right					-MR	
Slide		Standard slide					-GK	
		Extended slide, protected			–		-GQ	
		Standard slide, protected			–		-GP	
		Extended slide					-GV	

[1] S Only available at or above the specified strokes
1) In combination with slide GK, GP
2) In combination with slide GQ, GV

[2] ...H The sum of nominal stroke and 2x stroke reserve must not exceed the maximum stroke length

Note
Spindle support enables maximum travel speed with all stroke lengths

Ordering – Modular product system

Size		70	80	120	185	Conditi-ons	Code	Enter code
Additional slide	Left	Additional slide, standard, left				[3]	-KL	
	Right	Additional slide, standard, right				[3]	-KR	
Lubrication function		Standard						
		–	Lubrication adapter			[4]	-C	
Displacement encoder, incremental		None						
		Resolution: 2.5 ìm					-M1	
		Resolution: 10 ìm					-M2	
Clamping unit		–	None					
		–	1-channel, left			[5]	-1HL	
		–	1-channel, right			[5]	-1HR	
		–	2-channel			[5]	-2H	
Actuation type		–	None					
		–	Pneumatic				-PN	
Accessories		Accessories enclosed separately					ZUB-	ZUB-
Foot mounting		1					F	
Profile mounting		1 ... 50					...M	
Cover	Mounting slot	1 ... 50 (1 = 2 units, 500 mm)					...B	
	Sensor slot	1 ... 50 (1 = 2 units, 500 mm)					...S	
Slot nut for mounting slot		1 ... 99					...Y	
Proximity switch (SIES), inductive, slot type 8, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6					...X	
	N/C contact, 7.5 m cable	1 ... 6					...Z	
Emergency buffer with retaining bracket		1 ... 2				[6]	...A	
Proximity switch (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99					...O	
	N/C contact, 2.5 m cable	1 ... 99					...P	
	N/O contact, M8 plug	1 ... 99					...W	
	N/C contact, M8 plug	1 ... 99					...R	
Connecting cable 2.5 m M8, 3-wire		1 ... 99					...V	
Cable clip		10, 20, 30, 40, 50, 60, 70, 80, 90					...CL	
Operating instructions		Express waiver – no operating instructions to be included as already available (operating instructions in PDF format are available free of charge on our website at www.festo.com)					-DN	

[3] KL, KR
If the protected slide variant (GQ, GP) is selected, the additional slide (KL, KR) is also protected
If the extended slide variant (GQ, GV) is selected, the additional slide (KL, KR) is not extended
If the slide with lubrication adapter (GK-C, GV-C) is selected, the additional slide (KL, KR) is also supplied with lubrication adapter
Working stroke reduction in combination with additional slide (KL, KR) → online

[4] C
Not standard slide, protected GP and extended slide, protected GQ

[5] 1HL, 1HR, 2H
Not with slide GQ, GV nor with additional slide KL, KR
Only with PN
Working stroke reduction in combination with clamping unit (1HL, 1HR, 2H) → online

[6] ... A
Emergency buffer with retaining bracket A cannot be combined with slide GP, GQ, GK-C, GV-C and clamping unit 1H...-PN, 2H-PN

Note
The code X, Z includes a switch lug in the scope of delivery.
The code O, P, W, R includes one switch lug and max. two sensor brackets in the scope of delivery.

Spindle axes EGC-BS-KF

Ordering data

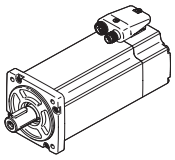
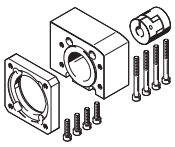
Size	Stroke [mm]	Part no.	Type
70	**Spindle pitch 10 mm/rev**		
	100	3013388	EGC-70-100-BS-10P-KF-0H-ML-GK
	200	3013389	EGC-70-200-BS-10P-KF-0H-ML-GK
	300	3013390	EGC-70-300-BS-10P-KF-0H-ML-GK
	400	3013391	EGC-70-400-BS-10P-KF-0H-ML-GK
	500	3013392	EGC-70-500-BS-10P-KF-0H-ML-GK
	600	3013393	EGC-70-600-BS-10P-KF-0H-ML-GK
80	**Spindle pitch 10 mm/rev**		
	100	3013532	EGC-80-100-BS-10P-KF-0H-ML-GK
	200	3013533	EGC-80-200-BS-10P-KF-0H-ML-GK
	300	3013534	EGC-80-300-BS-10P-KF-0H-ML-GK
	400	3013535	EGC-80-400-BS-10P-KF-0H-ML-GK
	500	3013536	EGC-80-500-BS-10P-KF-0H-ML-GK
	600	3013537	EGC-80-600-BS-10P-KF-0H-ML-GK
	800	3013538	EGC-80-800-BS-10P-KF-0H-ML-GK
	Spindle pitch 20 mm/rev		
	100	3013539	EGC-80-100-BS-20P-KF-0H-ML-GK
	200	3013540	EGC-80-200-BS-20P-KF-0H-ML-GK
	300	3013541	EGC-80-300-BS-20P-KF-0H-ML-GK
	400	3013542	EGC-80-400-BS-20P-KF-0H-ML-GK
	500	3013543	EGC-80-500-BS-20P-KF-0H-ML-GK
	600	3013544	EGC-80-600-BS-20P-KF-0H-ML-GK
	800	3013545	EGC-80-800-BS-20P-KF-0H-ML-GK

Size	Stroke [mm]	Part no.	Type
120	**Spindle pitch 10 mm/rev**		
	100	3013571	EGC-120-100-BS-10P-KF-0H-ML-GK
	200	3013572	EGC-120-200-BS-10P-KF-0H-ML-GK
	300	3013573	EGC-120-300-BS-10P-KF-0H-ML-GK
	400	3013574	EGC-120-400-BS-10P-KF-0H-ML-GK
	500	3013575	EGC-120-500-BS-10P-KF-0H-ML-GK
	600	3013576	EGC-120-600-BS-10P-KF-0H-ML-GK
	800	3013577	EGC-120-800-BS-10P-KF-0H-ML-GK
	Spindle pitch 25 mm/rev		
	100	3013578	EGC-120-100-BS-25P-KF-0H-ML-GK
	200	3013579	EGC-120-200-BS-25P-KF-0H-ML-GK
	300	3013580	EGC-120-300-BS-25P-KF-0H-ML-GK
	400	3013581	EGC-120-400-BS-25P-KF-0H-ML-GK
	500	3013582	EGC-120-500-BS-25P-KF-0H-ML-GK
	600	3013583	EGC-120-600-BS-25P-KF-0H-ML-GK
	800	3013584	EGC-120-800-BS-25P-KF-0H-ML-GK

Key features:
- Stroke reserve: 0 mm
- Motor attachment position: left
- Standard slide

Accessories – Ordering data

Permissible axis/motor combinations with axial kit

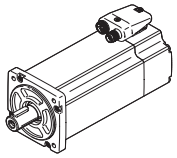
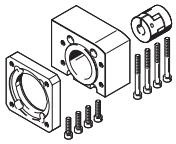
Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-70		
With servo motor		
EMME-AS-40-...	3637972	EAMM-A-S38-40P-G2
EMMS-AS-40-...	3637971	EAMM-A-S38-40A-G2
EMMS-AS-55-...	3637967	EAMM-A-S38-55A-G2
EMMT-AS-60-..., EMME-AS-60-...	3637958	EAMM-A-S38-60P-G2
With servo motor and gear unit		
EMME-AS-40-..., EMGA-40-P-G...-EAS-40	1456647	EAMM-A-S38-40G-G2
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456647	EAMM-A-S38-40G-G2
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-... EMGA-40-P-G...-SST-42	1456647	EAMM-A-S38-40G-G2
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

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

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 particular kit must be taken into consideration.

Accessories – Ordering data

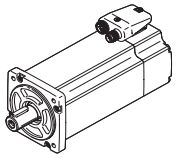
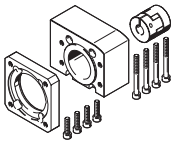
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-80		
With servo motor		
EMMS-AS-55-...	3637961	EAMM-A-S48-55A-G2
EMMT-AS-60-..., 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-... EMGA-40-P-G...-EAS-40	1456650	EAMM-A-S48-40G-G2
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456650	EAMM-A-S48-40G-G2
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2256701	EAMM-A-S48-60G-G2
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456652	EAMM-A-S48-60H-G2
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2256701	EAMM-A-S48-60G-G2
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-... EMGA-40-P-G...-SST-42	1456650	EAMM-A-S48-40G-G2
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2256701	EAMM-A-S48-60G-G2
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

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

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 particular kit must be taken into consideration.

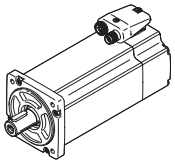
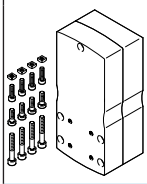
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-120		
With servo motor		
EMMS-AS-70-...	3637959	EAMM-A-S62-70A-G2
EMMT-AS-80-..., EMME-AS-80-...	3637970	EAMM-A-S62-80P-G2
EMMT-AS-100-..., EMME-AS-100-..., 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-... EMGA-60-P-G...-SAS-55	2297649	EAMM-A-S62-60G-G2
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456654	EAMM-A-S62-60H-G2
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2297649	EAMM-A-S62-60G-G2
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	1972530	EAMM-A-S62-80G-G2
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	1972530	EAMM-A-S62-80G-G2
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	1972530	EAMM-A-S62-80G-G2
With stepper motor		
EMMS-ST-87-...	3637966	EAMM-A-S62-87A-G2
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2297649	EAMM-A-S62-60G-G2
EMMS-ST-87-... EMGA-80-P-G...-SST-87	1972530	EAMM-A-S62-80G-G2
With integrated drive and gear unit		
EMCA-EC-67-... EMGC-60-...	1456654	EAMM-A-S62-60H-G2
EGC-185		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., 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 max. permissible transferable torque of the axial kit.

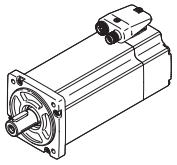
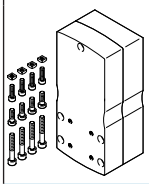
Accessories – Ordering data

Permissible axis/motor combinations with parallel kit

Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
EGC-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 servo motor and gear unit		
EMME-AS-40-..., EMMS-AS-40-..., EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
With stepper motor and gear unit		
EMMS-ST-42-..., EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-40-P-...	2283732	EAMM-U-60-S38-40G-91
EGC		
With servo motor		
EMMS-AS-55-...	1219370	EAMM-U-60-S48-55A-91
EMMT-AS-60-..., EMME-AS-60-...	2629253	EAMM-U-70-S48-60P-96
EMMS-AS-70-...	2787320	EAMM-U-70-S48-70A-96
EMMS-AS-70-...	1217689	EAMM-U-86-S48-70A-102
With stepper motor		
EMMS-ST-57-...	1219379	EAMM-U-60-S48-57A-91
EMMS-ST-87-...	1217604	EAMM-U-86-S48-87A-177
With servo motor and gear unit		
EMME-AS-40-..., EMMS-AS-40-..., EMGA-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMMS-AS-55-..., EMMS-AS-70-..., EMGA-60-P-...-SAS[2]	2801627	EAMM-U-70-S48-60G-96
	1587251	EAMM-U-86-S48-60G-102
EMMT-AS-60-..., EMME-AS-60-..., EMGA-60-P-...-EAS[2]	2801715	EAMM-U-70-S48-60H-96
	1587338	EAMM-U-86-S48-60H-102
With stepper motor and gear unit		
EMMS-ST-42-... EMGA-40-P-...-SST[2]	2283760	EAMM-U-60-S48-40G-91
EMMS-ST-57-... EMGA-60-P-...-SST[2]	2801627	EAMM-U-70-S48-60G-96
	1587251	EAMM-U-86-S48-60G-102
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMCA-EC-67-..., EMGC-60-P-...[2]	2801715	EAMM-U-70-S48-60H-96
	1587338	EAMM-U-86-S48-60H-102

1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) Gear unit output shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Permissible axis/motor combinations with parallel kit

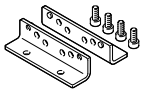
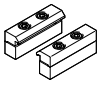
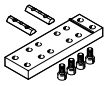
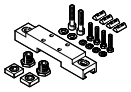
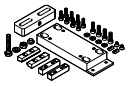
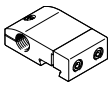
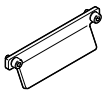
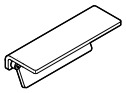
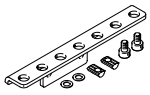
Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
EGC-120		
With servo motor		
EMMS-AS-70-...	1217543	EAMM-U-86-S62-70A-177
EMMT-AS-80-..., EMME-AS-80-...	2157004	EAMM-U-86-S62-80P-177
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207
EMMS-AS-140-...	1219440	EAMM-U-145-S62-140A-288
With stepper motor		
EMMS-ST-87-...	1217373	EAMM-U-86-S62-87A-177
With servo motor and gear unit		
EMMS-AS-55-..., EMMS-AS-70-..., EMGA-60-P-...-SAS[2]	1587411	EAMM-U-86-S62-60G-177
EMMT-AS-60-..., EMME-AS-60-..., EMGA-60-P-...-EAS[2]	1587453	EAMM-U-86-S62-60H-177
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-...-SST[2]	1587411	EAMM-U-86-S62-60G-177
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-60-P-...[2]	1587453	EAMM-U-86-S62-60H-177
EGC-185		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	1220656	EAMM-U-110-S95-100A-207
EMMS-AS-140-...	1220582	EAMM-U-145-S95-140A-288
With servo motor and gear unit		
EMMT-AS-80-..., EMMT-AS-100-..., EMME-AS-80-..., EMME-AS-100-..., EMMS-AS-70-..., EMMS-AS-100-... EMGA-80-P-...	1589544	EAMM-U-110-S95-80G-207
With stepper motor and gear unit		
EMMS-ST-87-..., EMGA-80-P-...	1589544	EAMM-U-110-S95-80G-207

1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) Gear unit output shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

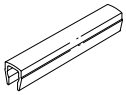
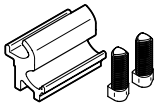
Note

- The kit can be mounted in all directions
- A counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit to provide support for the axis shaft. Additional information → eamm-u
- Use in combination with third-party motors on request
- The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.

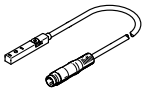
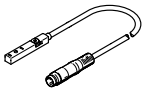
Accessories – Ordering data

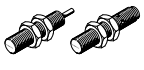
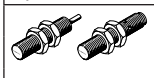
	For size	Part No.	Type
Foot mounting HPE			
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	185	558325	HPE-185
Profile mounting MUE			
	70, 80	★558043	MUE-70/80
	120, 185	★558044	MUE-120/185
Central support EAHF			
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
Adjusting kit EADC-E15			
	70, 80	8047566	EADC-E15-80-E7
	120	8047567	EADC-E15-120-E7
	185	8047568	EADC-E15-185-E7
Adjusting kit EADC-E16			
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
	185	8047579	EADC-E16-185-E7
Shock absorber retainer KYE			
	70	557584	KYE-70
	80	557585	KYE-80
	120	557586	KYE-120
	185	557587	KYE-185
Switch lug[1]			
	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	185	558051	SF-EGC-1-185
Switch lug[2]			
	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	185	558056	SF-EGC-2-185
Sensor bracket[3]			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	185	560517	HWS-EGC-M8:KURZ
Emergency buffer NPE			
	70	562581	NPE-70
	80	562582	NPE-80
	120	562583	NPE-120
	185	562584	NPE-185
Slot nut NST			
	70, 80	150914	NST-5-M5
	120, 185	150915	NST-8-M6

1) For sensing via proximity sensor SIES-8M.
2) For sensing via proximity sensor SIEN-M8B or SIES-8M.
3) For proximity sensor SIEN-M8B.

	For size	Part No.	Type
Centring pin[4]			
	70	150928	ZBS-5
Centring sleeve[4]			
	80, 120	150927	ZBH-9
Slot cover[5]			
	For mounting slot		
	70, 80	151681	ABP-5
	120, 185	151682	ABP-8
	For sensor slot		
	50 ... 185	563360	ABP-5-S1
Adapter kit DHAM			
	70, 80	562241	DHAM-ME-N1-CL
	120, 185	562242	DHAM-ME-N2-CL
	70, 80	574560	DHAM-ME-N1-50-CL
	120, 185	574561	DHAM-ME-N2-50-CL
	70 ... 185	539379	HMIA-E07- -
Clip			
	70 ... 185	534254	SMBK-8

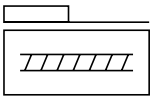
4) Packaging unit 10 pieces.
5) Packaging unit 2x 0.5 m

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★150386	SIEN-M8B-PS-K-L
	PNP, plug	★150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

Spindle axes EGC-BS-KF

Data sheet



Size
70 ... 185

Stroke length
50 ... 3000 mm

General technical data							
Size		70	80		120		185
Spindle pitch	[mm/rev]	10	10	20	10	25	40
Design		Electromechanical axis with ball screw					
Guide		Recirculating ball bearing guide					
Mounting position		Any					
Working stroke							
EGC-...-GK/-GP	[mm]	50 ... 1000	50 ... 2000		50 ... 2500		50 ... 3000
EGC-...-GV/-GQ	[mm]	50 ... 900	50 ... 1900		50 ... 2400		50 ... 2900
Max. feed force F_x [1]	[N]	400	650		1500		3000
No-load torque	[Nm]	0.17	0.3	0.35	1.0	1.0	2.2
at low 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 [2]	[N]	220	250		500		4000
Max. rotational speed [3]	[rpm]	3000	3000		3600		3000
Max. acceleration	[m/s²]	15					
Repetition accuracy	[mm]	±0.02					

1) The feed force affects the service life.
2) At the drive shaft
3) Rotational speed and speed are stroke-dependent

Operating and environmental conditions		
Ambient temperature	[°C]	–10 ... +60
Degree of protection		IP40
Duty cycle	[%]	100

Spindle							
Size		70	80		120		185
Diameter	[mm]	12	15		25		40
Pitch	[mm/rev]	10	10	20	10	25	40

Mass moment of inertia							
Size		70	80		120		185
Spindle pitch	[mm/rev]	10	10	20	10	25	40
J_O							
EGC-...-GK	[kg mm²]	1.99	5.2	5.2	64.46	64.46	594
EGC-...-GV	[kg mm²]	3.41	8.67	8.68	92	92	774.71
J_H per metre stroke	[kg mm²/m]	14.2	34.6	34.6	275.6	275.6	1803.1
J_L per kg payload	[kg mm²/kg]	2.53	2.53	10.13	2.53	15.83	40.53
J_W slide							
EGC-...-GK	[kg mm²]	1.04	1.86	7.46	6.09	38.06	348.87
EGC-...-GV	[kg mm²]	1.48	2.34	9.35	7.34	45.85	399.08
J_F Clamping unit							
EGC-...-1H...-PN	[kg mm²]	–	1.78	7.1	5.8	36.4	198.5
EGC-...-2H-PN	[kg mm²]	–	3.3	13.2	10	63.3	336.4

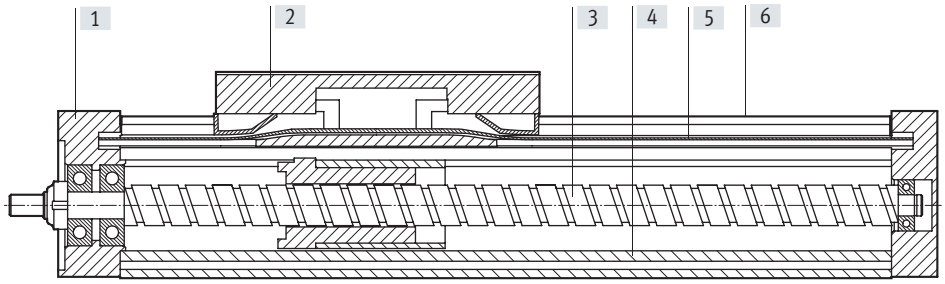
The mass moment of inertia J_A of the entire axis is calculated as follows:

$$J_A = J_O + \Sigma J_W + J_H \times \text{working stroke [m]} + J_L \times m_{payload} [kg] + J_F$$

ΣJ_W = Total mass moment of inertia of all slides, including the first slide

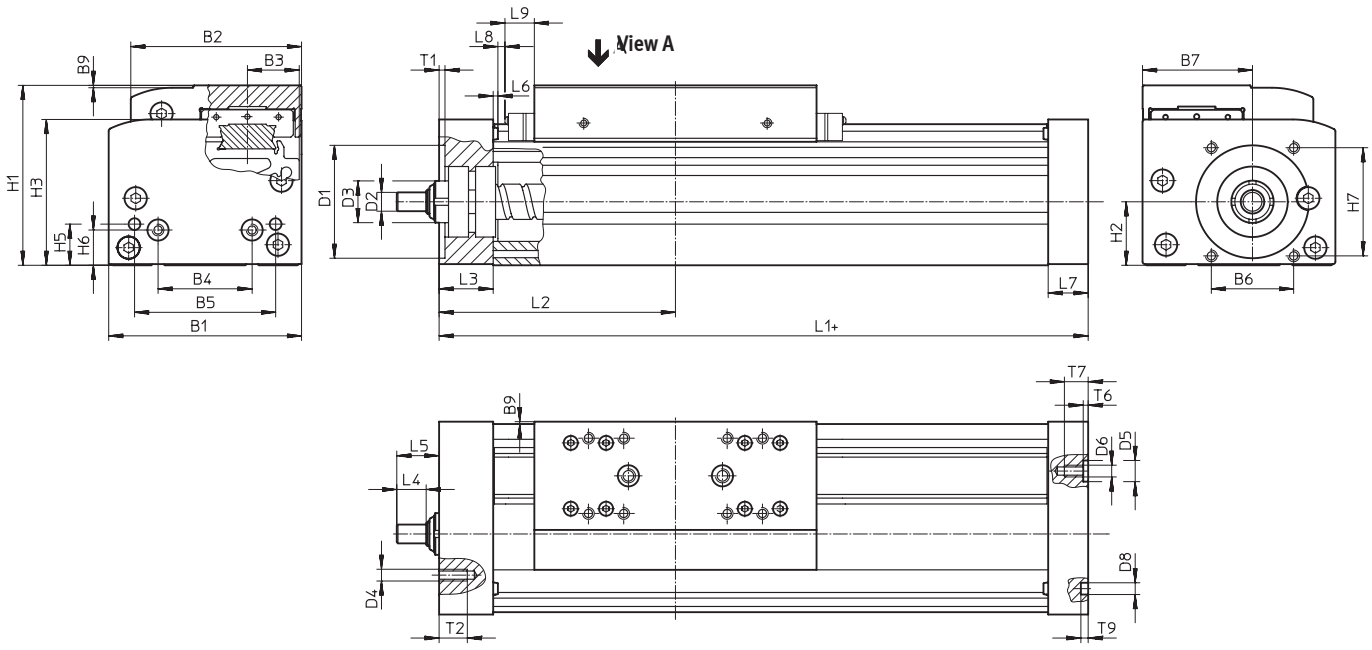
Data sheet

Materials



Axis		
[1]	End cap	Anodised wrought aluminium alloy
[2]	Slide	Anodised wrought aluminium alloy
[3]	Spindle	Steel
[4]	Profile	Anodised aluminium
[5]	Cover strip	Polyurethane
[6]	Guide rail	High-alloy steel
	Note on materials	RoHS-compliant

Dimensions



\+ = plus stroke length + 2x stroke reserve

L9 For GK/GV: safety distance per end position
For GP/GQ: dimension for wiper seal ➔ online
For GK-C/GV-C: dimension for adapter ➔ online

Working stroke reduction in combination with additional slide ➔ online

Spindle axes EGC-BS-KF

Dimensions

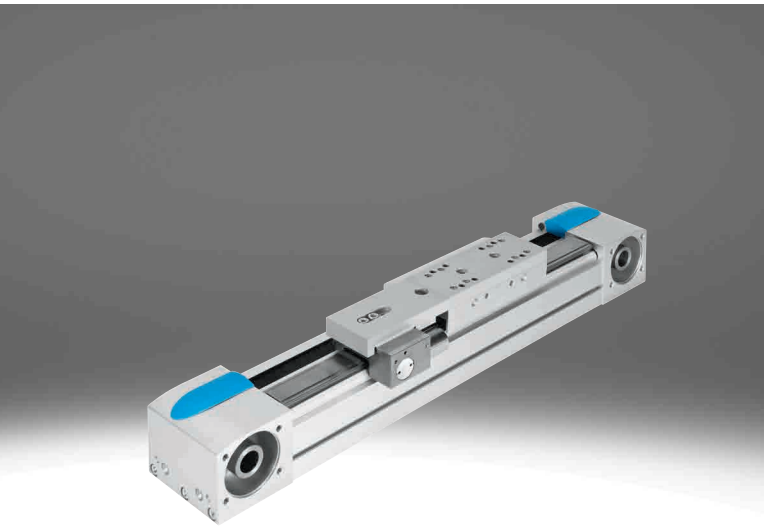
Size	Variant	Stroke	B1	B2	B3	B4	B5	B6	B7	B9	D1 ø H7	D2 ø h7	D3
70	GK/GP	50 ... 1000	69	58.6	16.5	30	45	29	39	1	38	6	⌀13
	GV/GQ	50 ... 900											
80	GK/GP	. 1477	82	72.6	22	40	60	35	46.75	1	48	8	ø18
		≥ 1477											
	GV/GQ	. 1377											
		≥ 1377											
120	GK/GP	. 1704	120	107	33	40	80	64	78	1	62	12	ø28
		≥ 1704											
	GV/GQ	. 1604											
		≥ 1604											
185	GK/GP	. 2361	186	169	53	120	80	80	114	1	95	25	ø44
		≥ 2361											
	GV/GQ	. 2261											
		≥ 2261											

Size	Variant	Stroke	D4	D5 ø H7	D6	D8 ø H7	H1	H2	H3	H5	H6	H7	L1	L2
70	GK/GP	50 ... 1000	M5	–	M5	5	64	22.5	50.5	13	13	36	168	86.5
	GV/GQ	50 ... 900											268	136.5
80	GK/GP	. 1477	M5	9	M5	5	76.5	27	62	17.5	15	46	196	101
		≥ 1477											236	121
	GV/GQ	. 1377											296	151
		≥ 1377											336	171
120	GK/GP	. 1704	M6	–	M8	9	111.5	42.5	89.5	22	22	54	309	156
		≥ 1704											369	186
	GV/GQ	. 1604											409	206
		≥ 1604											469	236
185	GK/GP	. 2361	M8	–	M10	9	172.5	65.2	141.5	25	25	80	412	209
		≥ 2361											512	259
	GV/GQ	. 2261											512	259
		≥ 2261											612	309

Size	Variant	Stroke	L3	L4	L5	L6	L7	L8	L9	T1	T2	T6	T7	T9
70	GK/GP	50 ... 1000	21	8	14	1.8	16	3	10.5	2.5	12	–	10	3.1
	GV/GQ	50 ... 900												
80	GK/GP	. 1477	23	12.5	18	2	17	3	13	2.5	12	2.1	10	3.1
		≥ 1477												
	GV/GQ	. 1377												
		≥ 1377												
120	GK/GP	. 1704	33	17.5	25.5	2	30	3	18	3	15	–	16	2.1
		≥ 1704												
	GV/GQ	. 1604												
		≥ 1604												
185	GK/GP	. 2361	43	23	30.5	2	37	3	21	3	20	–	20	2.1
		≥ 2361												
	GV/GQ	. 2261												
		≥ 2261												

Note
Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures
➔ www.festo.com/sp User documentation

Toothed belt axes EGC-TB-KF



Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Toothed belt axes EGC-TB-KF

Features

At a glance

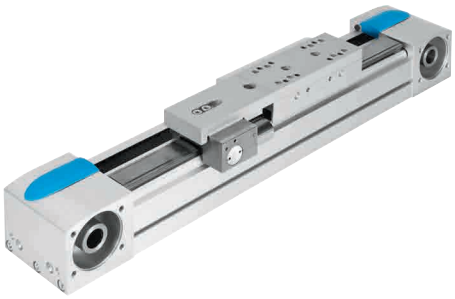
Powerful
- Generously sized profiles with an optimised cross section afford maximum rigidity and load capacity
- Speed, acceleration and torque resistance set a new standard

Economical
- In addition to its technical data, the toothed belt axis also offers an excellent price/performance ratio
- Due to the EGC's high performance it is often possible to use a smaller size

Versatile
- Numerous sizes and variants such as protected guides open up a broad range of applications
- Space-saving position sensing with proximity sensors in the profile slot is possible
- Wide range of options for mounting on drives
- Comprehensive range of mounting accessories for multi-axis combinations

Complete system comprising toothed belt axis, motor, motor controller and motor mounting kit

Toothed belt axis with recirculating ball bearing guide

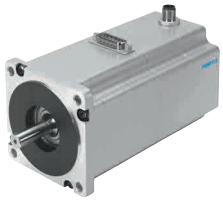


Axial kit

Kit comprising:
- Motor flange
- Coupling housing
- Coupling
- Screws

Motor

Servo motor EMME-AS, EMMS-AS



Stepper motor EMMS-ST

Motor controller

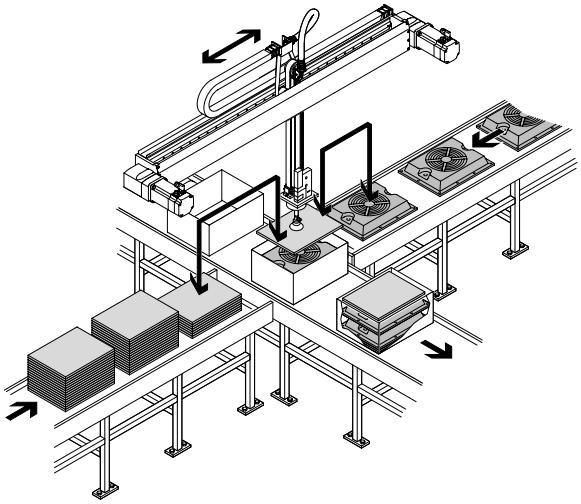
Servo motor controller CMMP-AS, CMMS-AS

Stepper motor controller CMMS-ST

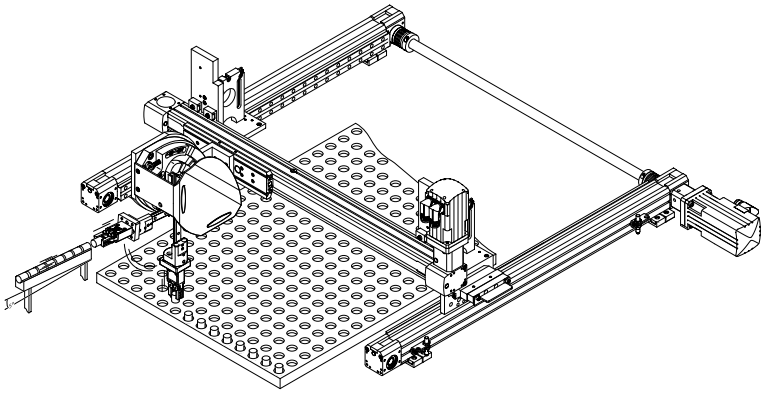
Note
A range of specially adapted complete solutions is available for the toothed belt axis EGC and the motors.

Example applications

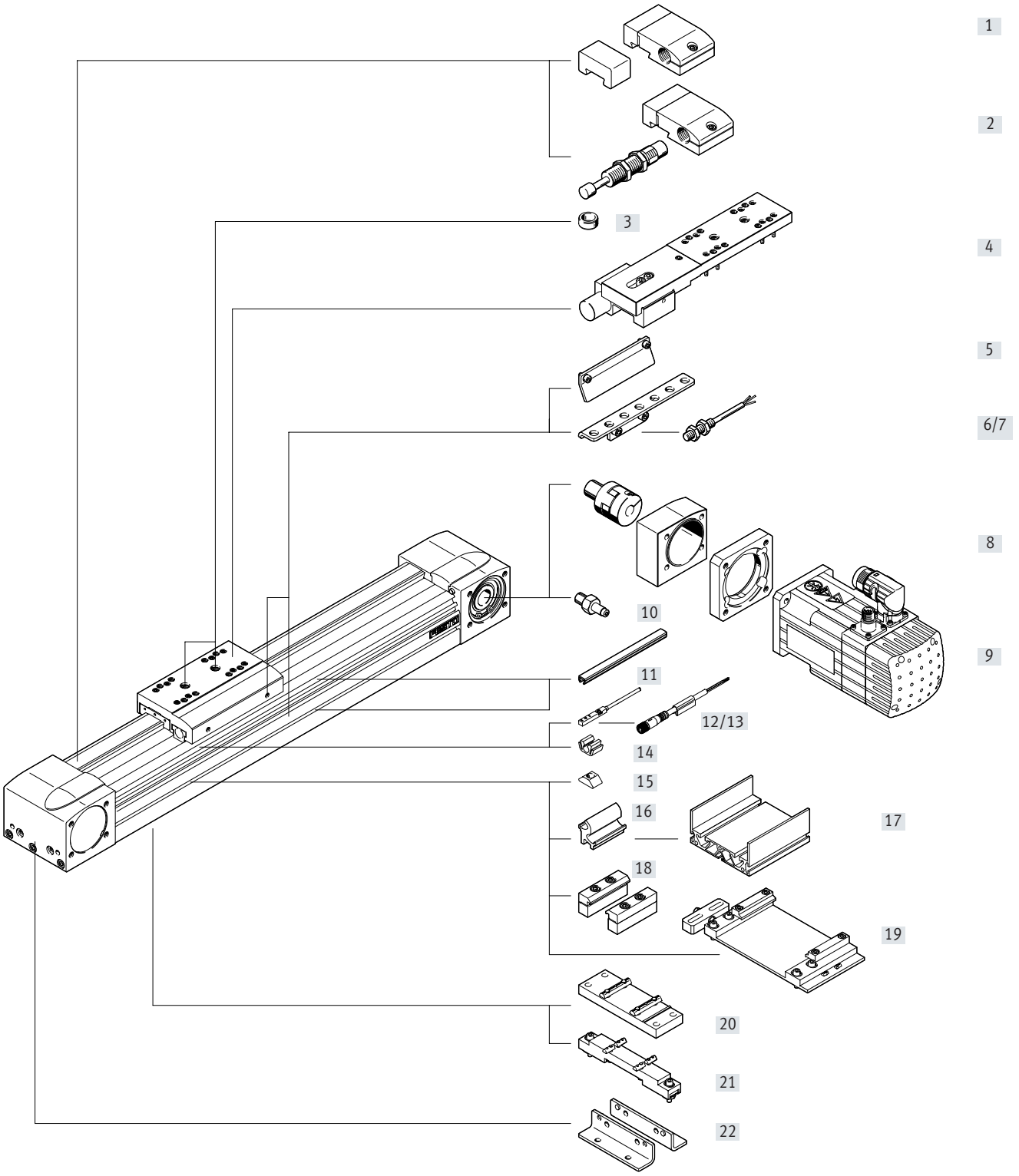
Commissioning/Packaging



Pick and Place



Peripherals overview



Toothed belt axes EGC-TB-KF

Peripherals overview

	Type/order code	➔ Page/Internet
[1]	Emergency buffer with retaining bracket A	281
[2]	Shock absorber with retaining bracket C	
[3]	Centring pin/sleeve ZBS, ZBH	
[4]	Clamping unit 1H...-PN, 2H-PN	
[5]	Switch lug X, Z, O, P, W, R	
[6]	Sensor bracket O, P, W, R	
[7]	Proximity switch, M8 O, P, W, R	
[8]	Axial kit EAMM	280
[9]	Motor EMME, EMMS	361, 367, emme
[10]	Drive shaft K	281
[11]	Slot cover B, S	282
[12]	Proximity switch, T-slot X, Z	

	Type/order code	➔ Page/Internet
[13]	Connecting cable V	nebu
[14]	Clip CL	282
[15]	Slot nut Y	
[16]	Adapter kit DHAM	
[17]	Support profile HMIA	
[18]	Profile mounting M	
[19]	Adjusting kit EADC-E16	
[20]	Central support EAHF-L5	
[21]	Adjusting kit EADC-E15	
[22]	Foot mounting F	
–	Guide axis EGC-FA	egc-fa
–	Connecting shaft KSK	ksk

Ordering – Modular product system

Size		50	70	80	120	185	Conditions	Code	Enter code
Module no.		556812	556813	556814	556815	556817			
Design		Linear axis						EGC	EGC
Size		50	70	80	120	185		-...	-...
Stroke length	[mm]	50 ... 1900	50 ... 5000	50 ... 8500	50 ... 8500 (50 ... 8400 with GV, GQ)	50 ... 8500 (50 ... 8400 with GV, GQ)	[1]	-...	-...
Function		Toothed belt						-TB	-TB
Guide		Recirculating ball bearing guide						-KF	-KF
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)					[1]	-...H	
Slide		Standard slide						-GK	
		–	Extended slide, protected			–		-GQ	
		–	Standard slide, protected			–		-GP	
		–	Extended slide					-GV	
Additional slide	Left	Additional slide, standard, left					[2]	-KL	
	Right	Additional slide, standard, right					[2]	-KR	
Lubrication function		Standard							
		–	–	Lubrication adapter				-C	
Displacement encoder, incremental		–	None						
		–	Resolution: 2.5 ìm					-M1	
		–	Resolution: 10 ìm					-M2	
Clamping unit		–		None					
		–		1-channel, left			[3]	-1HL	
		–		1-channel, right			[3]	-1HR	
		–		2-channel			[3]	-2H	
Actuation type		–		None					
		–		Pneumatic				-PN	
Material of toothed belt		Chloroprene rubber							
		–	Coated PU					-PU2	
EU certification		II 2G				–	[4]	-EX3	

[1] **-...** The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum stroke length

[2] **KL, KR** If the protected slide variant (GQ, GP) is selected, the additional slide (KL, KR) is also protected
If the extended slide variant (GQ, GV) is selected, the additional slide (KL, KR) is not extended
If the slide with lubrication adapter (GK-C) is selected, the additional slide (KL, KR) is also supplied with lubrication adapter
Working stroke reduction in combination with additional slide (KL, KR) ➔ Online

[3] **1HL, 1HR, 2H** Not with slide GQ, GV as well as additional slide KL, KR
Only with PN
Working stroke reduction in combination with clamping unit (1HL, 1HR, 2H) ➔ Online

[4] **EX3** Not with M1, M2, 1HL, 1HR, 2H, PN, Z, ...X, ...Z, ...O, ...P, ...W, ...R, ...V, ...CL

Ordering – Modular product system

		50	70	80	120	185	Conditions	Code	Enter code
Accessories		Accessories enclosed separately						ZUB-	ZUB-
Foot mounting		1						F	
Profile mounting		1 ... 50						...M	
Covering	Mounting slot	–	1 ... 50 (1 = 2 units, 500 mm long)					...B	
	Sensor slot	1 ... 50 (1 = 2 units, 500 mm long)						...S	
Slot nut for mounting slot		1 ... 99						...Y	
Proximity switch (SIES), inductive, slot type 8, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6						...X	
	N/C contact, 7.5 m cable	1 ... 6						...Z	
Emergency buffer with retaining bracket		–	1 ... 2				[5]	...A	
Shock absorber with retaining bracket		1 ... 2					[6]	...C	
Proximity switch (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	–	1 ... 99					...O	
	N/C contact, 2.5 m cable	–	1 ... 99					...P	
	N/O contact, M8 plug	–	1 ... 99					...W	
	N/C contact, M8 plug	–	1 ... 99					...R	
Connecting cable 2.5 m M8, 3-wire		1 ... 99						...V	
Drive shaft		1 ... 4					[7]	...K	
Cable clip		10, 20, 30, 40, 50, 60, 70, 80, 90						...CL	
Operating instructions		Express waiver – no operating instructions to be included as already available (operating instructions in PDF format are available free of charge on our website at www.festo.com)						-DN	

[5] ... **A** Emergency buffer with retaining bracket A cannot be combined with slide GP, GQ, GK-C, GV-C, shock absorber with retaining bracket C and clamping unit 1H...-PN, 2H-PN

[6] ... **C** Shock absorber with retaining bracket C cannot be combined with slide GP, GQ, GK-C, GV-C, emergency buffer with retaining bracket A and clamping unit 1H...-PN, 2H-PN

[7] ... **K** No drive shaft is required for the axis/motor combinations ➔ online

Note

The code X, Z includes a switch lug in the scope of delivery. The code O, P, W, R includes one switch lug and max. two sensor brackets in the scope of delivery.

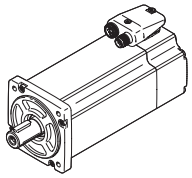
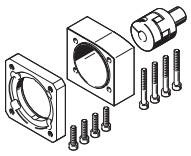
Ordering data

Size	Stroke [mm]	Part no.	Type
70	300	3012492	EGC-70-300-TB-KF-0H-GK
	400	3012493	EGC-70-400-TB-KF-0H-GK
	500	3012494	EGC-70-500-TB-KF-0H-GK
	600	3012495	EGC-70-600-TB-KF-0H-GK
	800	3012496	EGC-70-800-TB-KF-0H-GK
	1000	3012497	EGC-70-1000-TB-KF-0H-GK
	1200	3012498	EGC-70-1200-TB-KF-0H-GK
80	400	575832	EGC-80-400-TB-KF-0H-GK
	500	3013354	EGC-80-500-TB-KF-0H-GK
	600	3013355	EGC-80-600-TB-KF-0H-GK
	800	3013356	EGC-80-800-TB-KF-0H-GK
	1000	3013357	EGC-80-1000-TB-KF-0H-GK
	1200	3013359	EGC-80-1200-TB-KF-0H-GK
120	400	3013364	EGC-120-400-TB-KF-0H-GK
	500	3013365	EGC-120-500-TB-KF-0H-GK
	600	3013366	EGC-120-600-TB-KF-0H-GK
	800	3013367	EGC-120-800-TB-KF-0H-GK
	1000	3013368	EGC-120-1000-TB-KF-0H-GK
	1200	3013369	EGC-120-1200-TB-KF-0H-GK
	1500	3013370	EGC-120-1500-TB-KF-0H-GK

Key features:
- Stroke reserve: 0 mm
- Standard slide

Accessories – Ordering data

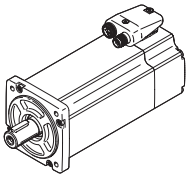
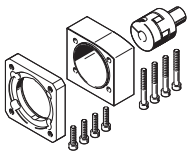
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-50		
With servo motor		
EMMS-AS-55-...	557975	EAMM-A-L27-55A
With servo motor and gear unit		
EMME-AS-40-... EMGA-40-P-G...-EAS-40	557974	EAMM-A-L27-40G
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	557974	EAMM-A-L27-40G
With stepper motor		
EMMS-ST-57-...	560678	EAMM-A-L27-57A
With stepper motor and gear unit		
EMMS-ST-42-... EMGA-40-P-G...-SST-42	557974	EAMM-A-L27-40G
With integrated drive		
EMCA-EC-67-...	1454261	EAMM-A-L27-67A
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-40	557974	EAMM-A-L27-40G
EGC-70		
With servo motor		
EMMS-AS-55-...	3683331	EAMM-A-L38-55A
EMMT-AS-60-..., 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-... EMGA-60-P-G...-SAS-55	557978	EAMM-A-L38-60G
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456610	EAMM-A-L38-60H
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	557978	EAMM-A-L38-60G
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-... EMGA-60-P-G...-SST-57	557978	EAMM-A-L38-60G
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-60-...	1456610	EAMM-A-L38-60H

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

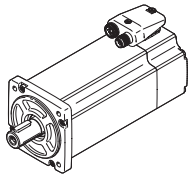
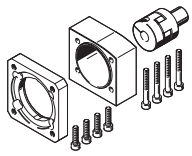
Note
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-80		
With servo motor		
EMMS-AS-70-...	557982	EAMM-A-L48-70A
EMMT-AS-80-..., EMME-AS-80-...	2042616	EAMM-A-L48-80P
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	557984	EAMM-A-L48-100A
With servo motor and gear unit		
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	557983	EAMM-A-L48-60G
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456611	EAMM-A-L48-60H
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	557983	EAMM-A-L48-60G
With stepper motor		
EMMS-ST-87-...	560683	EAMM-A-L48-87A
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	557983	EAMM-A-L48-60G
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-60-...	1456611	EAMM-A-L48-60H

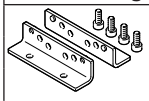
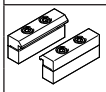
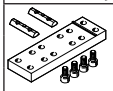
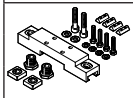
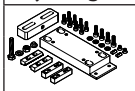
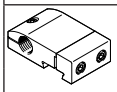
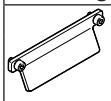
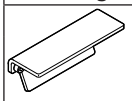
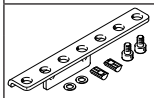
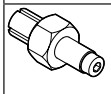
1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

Accessories – Ordering data

Permissible axis/motor combinations with axial kit		
Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-120		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., 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-... EMGA-80-P-G...-SAS-70	557989	EAMM-A-L62-80G
EMME-AS-80-... EMGA-80-P-G...-EAS-80	557989	EAMM-A-L62-80G
EMME-AS-100-... EMGA-80-P-G...-SAS-100	557989	EAMM-A-L62-80G
With servo motor and right-angle gear unit		
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-A-G...-80P	557989	EAMM-A-L62-80G
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-A-G...-100A	557989	EAMM-A-L62-80G
With stepper motor and gear unit		
EMMS-ST-87-... EMGA-80-P-G...-SST-87	557989	EAMM-A-L62-80G
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-... EMGA-80-P-G...-SAS-70	3660191	EAMM-A-L95-80G-G2
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	3660191	EAMM-A-L95-80G-G2
T-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	3660191	EAMM-A-L95-80G-G2
T-AS-100-..., EMME-AS-100-..., 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

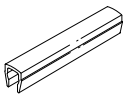
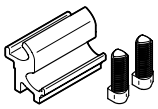
1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

Note
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

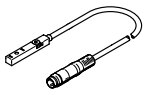
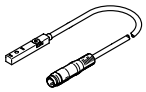
	For size	Part No.	Type
Foot mounting			
	50	558320	HPE-50
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	185	558325	HPE-185
Profile mounting			
	50	★ 558042	MUE-50
	70	★ 558043	MUE-70/80
	80	★ 558043	MUE-70/80
	120, 185	★ 558044	MUE-120/185
Central support EAHF			
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
Adjusting kit EADC-E15			
	50	8047565	EADC-E15-50-E7
	70, 80	8047566	EADC-E15-80-E7
	120	8047567	EADC-E15-120-E7
	185	8047568	EADC-E15-185-E7
Adjusting kit EADC-E16			
	50	8047576	EADC-E16-50-E7
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
	185	8047579	EADC-E16-185-E7
Shock absorber retainer			
	50	557583	KYE-50
	70	557584	KYE-70
	80	557585	KYE-80
	120	557586	KYE-120
	185	557587	KYE-185
Switch lug[1]			
	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
Switch lug[2]			
	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	185	558056	SF-EGC-2-185
Sensor bracket[3]			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	185	560517	HWS-EGC-M8:KURZ
Drive shaft EAMB			
	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

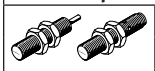
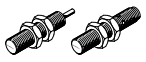
1) For sensing via proximity sensor SIES-8M.
2) For sensing via proximity sensor SIEN-M8B or SIES-8M.
3) For proximity sensor SIEN-M8B.

Accessories – Ordering data

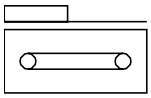
	For size	Part No.	Type
Emergency buffer			
	50	564897	NPE-50
	70	562581	NPE-70
	80	562582	NPE-80
	120	562583	NPE-120
	185	562584	NPE-185
Slot nut			
	50	558045	NST-3-M3
	70, 80	150914	NST-5-M5
	120, 185	150915	NST-8-M6
Centring pin[4]			
	50, 70	150928	ZBS-5
Centring sleeve[4]			
	80, 120, 185	150927	ZBH-9
Slot cover[5]			
	For mounting slot		
	70, 80	151681	ABP-5
	120, 185	151682	ABP-8
	For sensor slot		
	50 ... 185	563360	ABP-5-S1
Adapter kit DHAM			
	70, 80	562241	DHAM-ME-N1-CL
	120, 185	562242	DHAM-ME-N2-CL
	70, 80	574560	DHAM-ME-N1-50-CL
	120, 185	574561	DHAM-ME-N2-50-CL
	70 ... 185	539379	HMIA-E07- -
Clip			
	50 ... 185	534254	SMBK-8

4) Packaging unit 10 pieces.
5) Packaging unit 2x 0.5 m

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

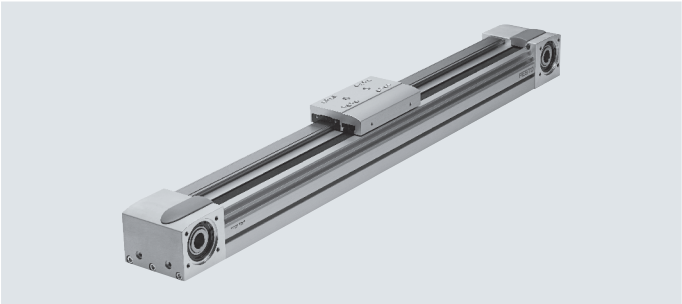
		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

Data sheet



Size
50 ... 185

Stroke length
50 ... 8500 mm



General technical data						
Size		50	70	80	120	185
Design		Electromechanical axis with toothed belt				
Guide		Recirculating ball bearing guide				
Mounting position		Any				
Working stroke						
EGC-...-GK/-GP	[mm]	50 ... 1900	50 ... 5000	50 ... 8500	50 ... 8500	50 ... 8500
EGC-...-GV/-GQ	[mm]	50 ... 1900	50 ... 5000	50 ... 8500	50 ... 8400	50 ... 8400
Max. feed force F_x	[N]	50	100	350	800	2500
Max. no-load torque[1]	[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/s²]	50				
Repetition accuracy	[mm]	±0.08				±0.1

1) At 0.2 m/s, with variant GK or GV

Operating and environmental conditions		
Ambient temperature	[°C]	–10 ... +60
Degree of protection		IP40
Duty cycle	[%]	100

Toothed belt						
Size		50	70	80	120	185
Pitch	[mm]	2	3	3	5	8
Elongation[1]						
EGC-...	[%]	0.125	0.08	0.213	0.168	0.24
EGC-...-PU2	[%]	–	0.041	0.105	0.1	0.095
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/rev]	58	78	90	125	232

1) At max. feed force

Mass moment of inertia						
Size		50	70	80	120	185
J_O						
EGC-...-GK	[kg mm²]	16.94	83.34	205.9	1241	17976
EGC-...-GV	[kg mm²]	–	110	265	1465	19690
J_H per metre stroke	[kg mm²/m]	2.6	10.6	18.8	93	760
J_L per kg payload	[kg mm²/kg]	85	154	205	396	1363.5
J_W Additional slide	[kg mm²]	3.56	56.32	126.73	861	8846
J_F Clamping unit						
EGC-...-1H...-PN	[kg mm²]	–	–	143.5	911	6681
EGC-...-2H-PN	[kg mm²]	–	–	266.5	1584	11317

The mass moment of inertia J_A of the entire axis is calculated as follows:

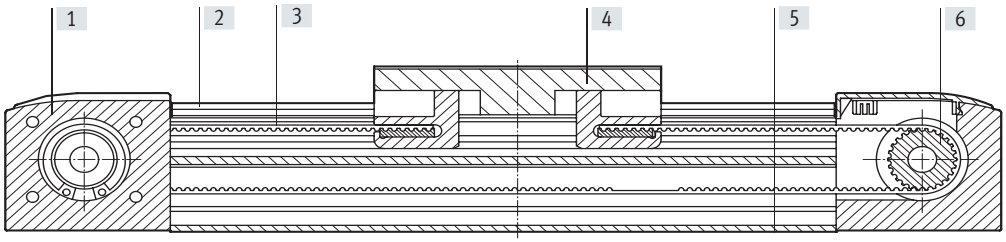
$J_A = J_O + K \times J_W + J_H \times \text{working stroke [m]} + J_L \times m_{payload}\,[kg] + J_F$

K= Number of additional slides

Toothed belt axes EGC-TB-KF

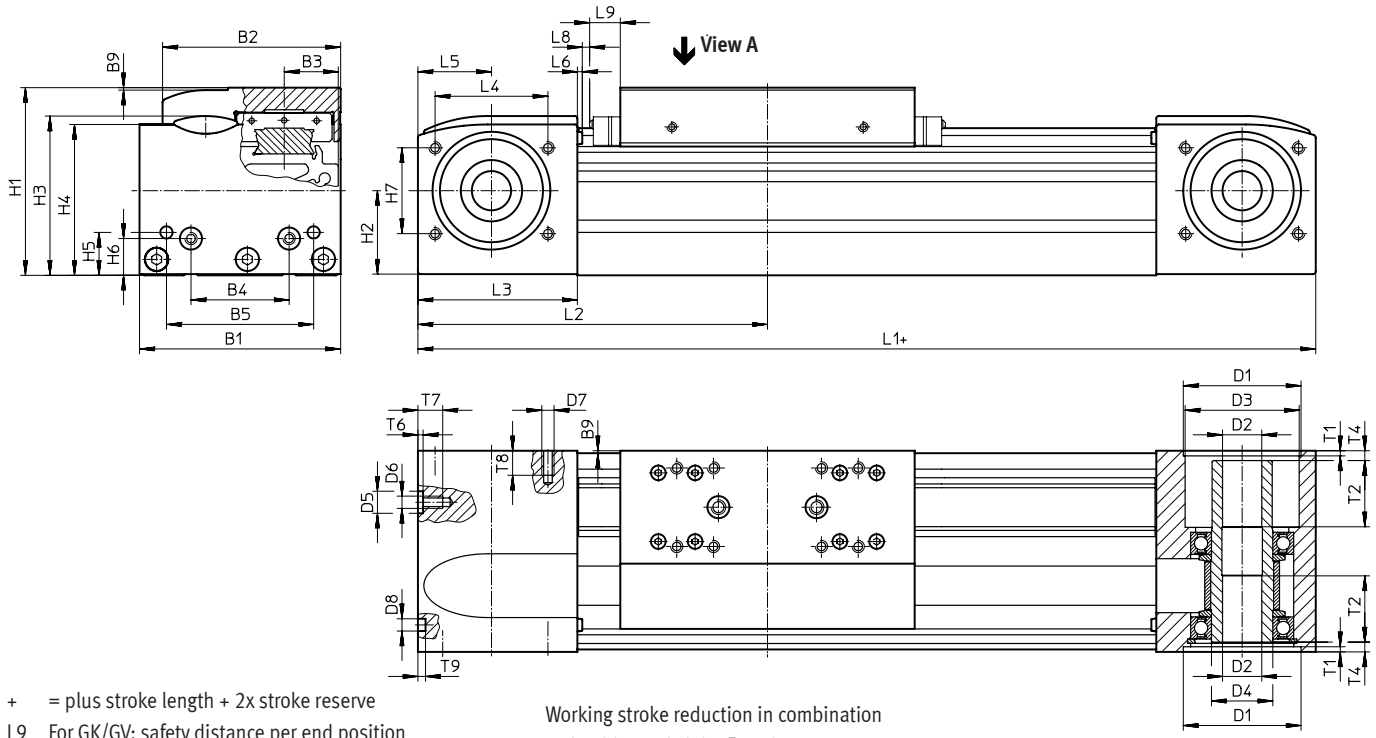
Data sheet

Materials



Size		50	70	80	120	185
[1]	Drive cover	Anodised wrought aluminium alloy				Painted wrought aluminium alloy
[2]	Guide rail	High-alloy steel				
[3]	Toothed belt					
	EGC-...	Polychloroprene with glass cord and nylon coating				
	EGC-...-PU2	Polyurethane with steel cord and nylon covering				
[4]	Slide	Anodised wrought aluminium alloy				
[5]	Profile	Anodised wrought aluminium alloy				
[6]	Toothed belt pulley	High-alloy stainless steel				
	Note on materials	RoHS-compliant				
		Contains paint-wetting impairment substances				

Dimensions



\+ = plus stroke length + 2x stroke reserve

L9 For GK/GV: safety distance per end position
For GP/GQ: dimension for wiper seal ➔ online
For GK-C/GV-C: dimension for adapter ➔ online

Working stroke reduction in combination with additional slide ➔ online

Size	B1	B2	B3	B4	B5	B9	D1 H7	D2 ø H7	D3 ø	D4 ø	D5 ø H7	D6
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 ø H7	H1	H2	H3	H4	H5	H6	H7	L1		L2	
										GK	GV	GK	GV
50	M3	5	42.5	16.5	37.6	35.5	10.5	10.5	18	155	–	77.5	–
70	M5	5	64	28	53.7	50.8	13	13	29	246	346	123	173
80	M5	5	76.5	34.5	65	61.5	17.5	15	35	286	386	143	193
120	M6	9	111.5	51.6	95.9	91.1	22	22	54	446	546	223	273
185	M8	9	172.5	80.5	152.6	143	25	25	80	612	712	306	356

Size	L3	L4	L5	L6	L8	L9	T1	T2	T4	T6	T7	T8	T9
50	40	26	20	1.8	3	–	1.5	–	5.9	–	7	8	3.1
70	57.5	36	27.5	1.8	3	10.5	2.1	18	7.15	–	10	12	3.1
80	65	46	30	2	3	13	2.1	27	4	2.1	10	10	3.1
120	100	64	50	2	3	18	3.1	29.5	4	–	16	14	2.1
185	140	80	70	2	3	21	2.8	34.5	4	–	20	17	2.1

Toothed belt axes EGC-TB-KF

Spindle axes EGC-HD-BS

Highlights

+ With heavy-duty guide
+ Axis for high repeat accuracy
+ With integrated ball screw
+ For maximum loads and torques
+ Precise and resilient DUO guide rail
+ For maximum lateral load up to 900 Nm
+ Ideal as a basic axis for linear gantries and cantilever axes
+ The spindle support enables maximum travel speed

Spindle axes EGC-HD-BS

Features

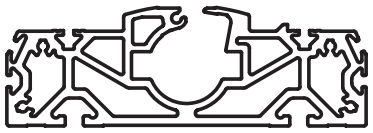
At a glance

- New heavy-duty design for:
  - Maximum loads and torques
  - High feed forces and velocities
  - 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
- In addition to its technical data, the spindle axis also offers an excellent price/performance ratio
- Space-saving position sensing possible via proximity switch in the profile slot
- Wide range of options for mounting on drives
- Spindle support enables maximum travel speed with all stroke lengths

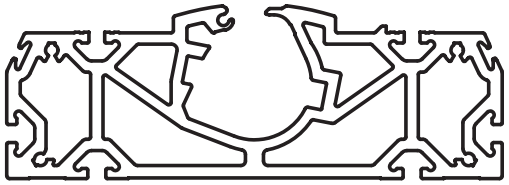
Flat unit with rigid, closed profile

EGC-HD-125

EGC-HD-160



EGC-HD-220



Complete system comprising spindle axis, motor, motor controller and motor mounting kit

Spindle axis with recirculating ball bearing guide

Servo drive

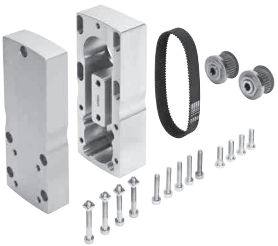
Servo drive:
CMMT-AS
Servo drive for extra-low voltage:
CMMT-ST

Motor

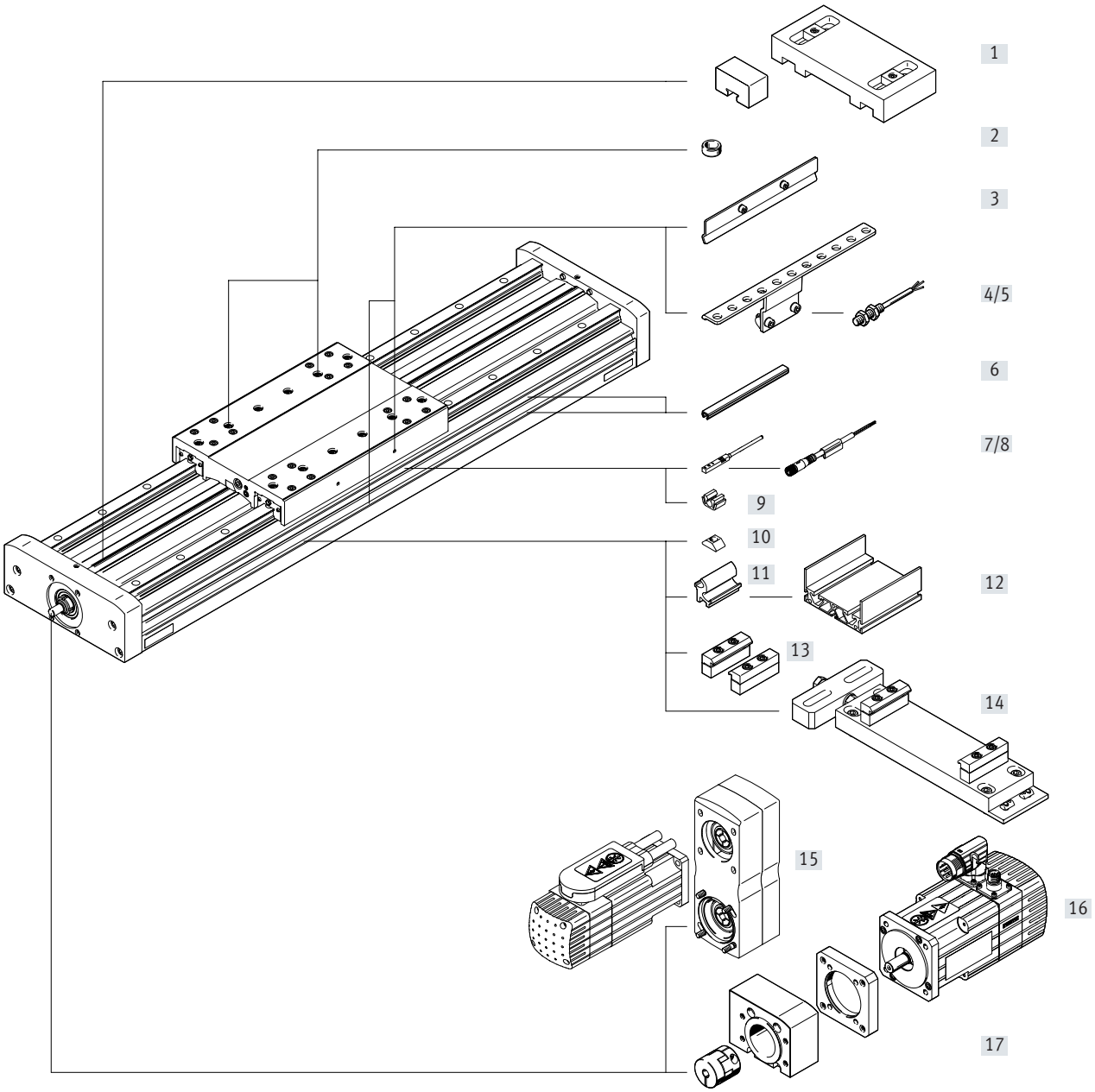
Servo motors:
EMMT-AS, EMME-AS, EMMS-AS
Stepper motors:
EMMS-ST

Axial motor mounting kit

Parallel motor mounting kit



Peripherals overview



	Type/order code	➔ Page/Internet
[1]	Emergency buffer with retaining bracket A	293
[2]	Centring pin/sleeve ZBS, ZBH	
[3]	Switch lug X, Z, O, P, W, R	
[4]	Sensor bracket O, P, W, R	
[5]	Proximity switch, M8 O, P, W, R	294
[6]	Slot cover B, S	293
[7]	Proximity switch, T-slot X, Z	294
[8]	Connecting cable V	nebu
[9]	Clip CL	293

	Type/order code	➔ Page/Internet
[10]	Slot nut Y	293
[11]	Adapter kit DHAM	
[12]	Support profile HMIA	
[13]	Profile mounting M	
[14]	Adjusting kit EADC-E16	
[15]	Parallel kit EAMM-U	292
[16]	Motor EMME, EMMS	361, 367, emme
[17]	Axial kit EAMM-A	291

Ordering – Modular product system

Size		125	160	220	Conditi-ons	Code	Enter code
Module no.		556819	556820	556821			
Design		Linear axis				EGC	EGC
Guide		Heavy-duty guide				-HD	-HD
Size		125	160	220		-...	-...
Stroke length (without stroke reserve)	Standard [mm]	100, 200, 300, 400, 500, 600, 700, 900	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1700, 1900	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1900, 2400	[1]	-...	-...
	Variable [mm]	50 ... 880	50 ... 1880	50 ... 2380			
Function		Ball screw				-BS	-BS
Spindle pitch		10	10	10		-10P	
		–	20	–		-20P	
		–		25		-25P	
Spindle support		None					
		With spindle support			[4]	-S	
		> 605 mm	> 680 mm	> 783 mm			
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)			[1]	-...H	
Slide		Standard slide				-GK	
		–	Standard slide, protected			-GP	
Additional slide	Left	Additional slide, standard, left			[2]	-KL	
	Right	Additional slide, standard, right			[2]	-KR	
Accessories		Accessories enclosed separately				ZUB-	ZUB-
Profile mounting		1 ... 50				...M	
Slot cover	Mounting slot	1 ... 50 (1 = 2 units, 500 mm)			[5]	...B	
	Sensor slot	1 ... 50 (1 = 2 units, 500 mm)				...S	
Slot nut for mounting slot		1 ... 99			[5]	...Y	
Proximity switch (SIES) inductive, slot type 8, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6				...X	
	N/C contact, 7.5 m cable	1 ... 6				...Z	
Emergency buffer with retaining bracket		1 ... 2			[3]	...A	
Proximity switch (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99				...O	
	N/C contact, 2.5 m cable	1 ... 99				...P	
	N/O contact, M8 plug	1 ... 99				...W	
	N/C contact, M8 plug	1 ... 99				...R	
Connecting cable, M8, 3-wire, 2.5 m		1 ... 99				...V	
Cable clip		10, 20, 30, 40, 50, 60, 70, 80, 90				...CL	
Operating instructions		Express waiver – no operating instructions to be included as already available (operating instructions in PDF format are available free of charge on our website at www.festo.com)				-DN	

[1] -... The sum of nominal stroke and 2x stroke reserve must not exceed the maximum stroke length.

[2] KL, KR If the protected slide variant (GP) is selected, the additional slide (KL, KR) is also protected.

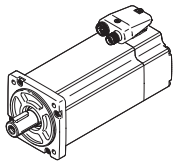
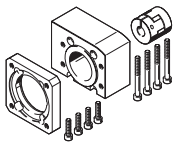
[3] ... A Cannot be combined with slide GP.

[4] S Only available at or above the specified strokes.

[5] B, Y Included in the scope of delivery with size 160 for both slot sizes (➔ online).

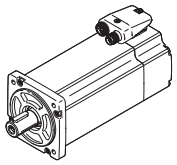
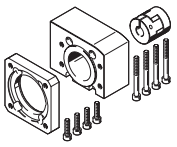
Accessories – Ordering data

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
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
EMMT-AS-60-..., EMME-AS-60-...	3637958	EAMM-A-S38-60P-G2
With servo motor and gear unit		
EMME-AS-40-... EMGA-40-P-G...-EAS-40	1456647	EAMM-A-S38-40G-G2
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456647	EAMM-A-S38-40G-G2
With servo motor and right-angle gear unit		
EMME-AS-40-... EMGA-40-A-G...-40P	1456647	EAMM-A-S38-40G-G2
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-... EMGA-40-P-G...-SST-42	1456647	EAMM-A-S38-40G-G2
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

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-HD-160		
With servo motor		
EMMS-AS-55-...	3637961	EAMM-A-S48-55A-G2
EMMT-AS-60-..., 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-... EMGA-40-P-G...-EAS-40	1456650	EAMM-A-S48-40G-G2
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456650	EAMM-A-S48-40G-G2
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2256701	EAMM-A-S48-60G-G2
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456652	EAMM-A-S48-60H-G2
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2256701	EAMM-A-S48-60G-G2
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-... EMGA-40-P-G...-SST-42	1456650	EAMM-A-S48-40G-G2
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2256701	EAMM-A-S48-60G-G2
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

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

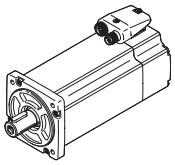
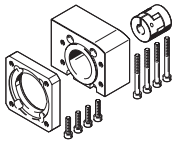
Note

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 particular kit must be taken into consideration.

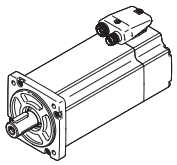
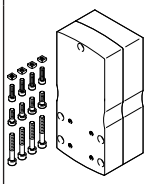
Accessories – Ordering data

Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
EGC-HD-220		
With servo motor		
EMMS-AS-70-...	3637959	EAMM-A-S62-70A-G2
EMMT-AS-80-..., EMME-AS-80-...	3637970	EAMM-A-S62-80P-G2
EMMT-AS-100-..., EMME-AS-100-..., 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-... EMGA-60-P-G...-SAS-55	2297649	EAMM-A-S62-60G-G2
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456654	EAMM-A-S62-60H-G2
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2297649	EAMM-A-S62-60G-G2
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	1972530	EAMM-A-S62-80G-G2
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	1972530	EAMM-A-S62-80G-G2
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	1972530	EAMM-A-S62-80G-G2
With stepper motor		
EMMS-ST-87-...	3637966	EAMM-A-S62-87A-G2
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2297649	EAMM-A-S62-60G-G2
EMMS-ST-87-... EMGA-80-P-G...-SST-87	1972530	EAMM-A-S62-80G-G2
With integrated drive and gear unit		
EMCA-EC-67-... EMGC-60-...	1456654	EAMM-A-S62-60H-G2
EMCA-EC-67-... EMGC-80-...	1972530	EAMM-A-S62-80G-G2

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

Permissible axis/motor combinations with parallel kit

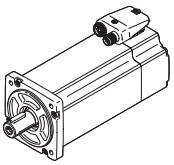
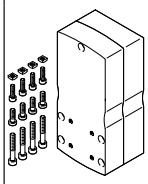
Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
EGC-HD-125		
With servo motor		
EMME-AS-40-...	2155239	EAMM-U-50-S38-40P-78
EMMS-AS-40-...	1217708	EAMM-U-50-S38-40A-78
EMMS-AS-55-...	1218538	EAMM-U-60-S38-55A-91
EMMS-AS-70-...	1217543	EAMM-U-86-S62-70A-177
EMMT-AS-80-..., EMME-AS-80-...	2157004	EAMM-U-86-S62-80P-177
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207
EMMS-AS-140-...	1219440	EAMM-U-145-S62-140A-288
With stepper motor		
EMMS-ST-42-...	1217945	EAMM-U-50-S38-42A-78
EMMS-ST-57-...	1218568	EAMM-U-60-S38-57A-91
EMMS-ST-87-...	1217373	EAMM-U-86-S62-87A-177
With servo motor and gear unit		
EMME-AS-40-..., EMMS-AS-40-..., EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
EMMS-AS-55-..., EMMS-AS-70-... EMGA-60-P-...-SAS[2]	1587411	EAMM-U-86-S62-60G-177
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-...-EAS[2]	1587453	EAMM-U-86-S62-60H-177
With stepper motor and gear unit		
EMMS-ST-42-..., EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
EMMS-ST-57-... EMGA-60-P-...-SST[2]	1587411	EAMM-U-86-S62-60G-177
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-40-P-...	2283732	EAMM-U-60-S38-40G-91
EMCA-EC-67-... EMGC-60-P-.....[2]	1587453	EAMM-U-86-S62-60H-177

1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) Gear unit output shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

- A counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit to provide support for the axis shaft. Additional information → eamm-u
- Use in combination with third-party motors on request
- The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.

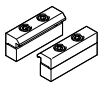
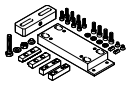
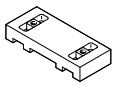
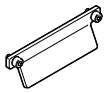
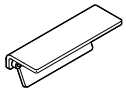
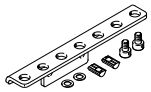
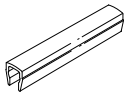
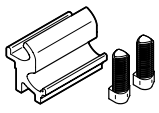
Accessories – Ordering data

Permissible axis/motor combinations with parallel kit		
Motor/gear unit[1] 	Parallel kit 	
Type	Part no.	Type
EGC-HD-160		
With servo motor		
EMMS-AS-55-...	1219370	EAMM-U-60-S48-55A-91
EMMT-AS-60-..., EMME-AS-60-...	2629253	EAMM-U-70-S48-60P-96
EMMS-AS-70-...	2787320	EAMM-U-70-S48-70A-96
EMMS-AS-70-...	1217689	EAMM-U-86-S48-70A-102
With stepper motor		
EMMS-ST-57-...	1219379	EAMM-U-60-S48-57A-91
EMMS-ST-87-...	1217604	EAMM-U-86-S48-87A-177
With servo motor and gear unit		
EMME-AS-40-..., EMMS-AS-40-..., EMGA-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMMS-AS-55-..., EMMS-AS-70-..., EMGA-60-P-...-SAS[2]	2801627	EAMM-U-70-S48-60G-96
	1587251	EAMM-U-86-S48-60G-102
EMMT-AS-60-..., EMME-AS-60-..., EMGA-60-P-...-EAS[2]	2801715	EAMM-U-70-S48-60H-96
	1587338	EAMM-U-86-S48-60H-102
With stepper motor and gear unit		
EMMS-ST-42-..., EMGA-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMMS-ST-57-..., EMGA-60-P-...-SST[2]	2801627	EAMM-U-70-S48-60G-96
	1587251	EAMM-U-86-S48-60G-102
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMCA-EC-67-..., EMGC-60-P-...[2]	2801715	EAMM-U-70-S48-60H-96
	1587338	EAMM-U-86-S48-60H-102

1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) Gear unit output shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

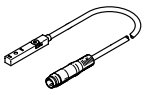
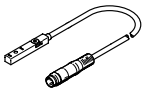
- A counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit to provide support for the axis shaft. Additional information → eamm-u
- Use in combination with third-party motors on request

	For size	Part No.	Type
Profile mounting MUE			
	125	★ 558043	MUE-70/80
	160	★ 558043	MUE-70/80
	220	★ 558044	MUE-120/185
Adjusting kit EADC-E16			
	125	8047580	EADC-E16-125-E14
	160	8047581	EADC-E16-160-E14
	220	8047582	EADC-E16-220-E14
Retaining bracket EAYH			
	125	1662803	EAYH-L2-125-N
	160	1669259	EAYH-L2-160-N
	220	1669260	EAYH-L2-220-N
Switch lug SF-EGC-HD-1[1]			
	125	570027	SF-EGC-HD-1-125
	160	1645872	SF-EGC-HD-1-160
	220	1645866	SF-EGC-HD-1-220
Switch lug SF-EGC-HD-2[2]			
	125	570030	SF-EGC-HD-2-125
	160	1645865	SF-EGC-HD-2-160
	220	1645868	SF-EGC-HD-2-220
Sensor bracket[3]			
	125	558057	HWS-EGC-M5
	160	558057	HWS-EGC-M5
	220	570365	HWS-EGC-M8-B
Emergency buffer			
	125	562581	NPE-70
	160	562582	NPE-80
	220	562583	NPE-120
Slot nut			
	125, 160	150914	NST-5-M5
	160, 220	150915	NST-8-M6
Centring sleeve[4]			
	125	150928	ZBS-5
	125 ... 220	150927	ZBH-9
Slot cover[5]			
	For mounting slot		
	125, 160	151681	ABP-5
	160, 220	151682	ABP-8
	For sensor slot		
	125 ... 220	563360	ABP-5-S1
Clip			
	125 ... 220	534254	SMBK-8
Adapter kit DHAM			
	160	562241	DHAM-ME-N1-CL
	220	562242	DHAM-ME-N2-CL
	125, 160	574560	DHAM-ME-N1-50-CL
	220	574561	DHAM-ME-N2-50-CL
	125 ... 220	539379	HMIA-E07- -

1) For sensing via proximity sensor SIES-8M.
2) For sensing via proximity sensor SIEN-M8B or SIES-8M.
3) For proximity sensor SIEN-M8B.
4) Packaging unit 10 pieces.
5) Packaging unit 2x 0.5 m

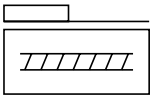
Spindle axes EGC-HD-BS

Accessories – Ordering data

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

Data sheet



Size
125 ... 220

Stroke length
0 ... 2400 mm

General technical data						
Size		125	160		220	
Spindle pitch	[mm/rev]	10	10	20	10	25
Design		Electromechanical axis with ball screw				
Guide		Recirculating ball bearing guide				
Mounting position		Any				
Working stroke	[mm]	50 ... 900	50 ... 1900		50 ... 2400	
Max. feed force F_x [1]	[N]	400	650		1500	
No-load torque at min. travel speed						
EGC-...-	[Nm]	0.3	0.5	0.5	1.5	1.5
EGC-...-S	[Nm]	0.3	0.5	0.5	1.5	1.5
	[m/s]	0.05	0.1	0.1	0.2	0.2
No-load torque at max. travel speed						
EGC-...-	[Nm]	0.45	0.75	0.75	2.25	2.25
EGC-...-S	[Nm]	0.45	0.75	0.75	2.25	2.25
	[m/s]	0.5	0.5	1.0	0.6	1.5
Max. radial force [2]	[N]	220	250	250	500	500
Max. rotational speed [3]	[rpm]	3000	3000	3000	3600	3600
Max. acceleration	[m/s²]	15				
Repetition accuracy	[mm]	±0.02				

1) The feed force affects the service life. (➔ online)
2) At the drive shaft
3) Rotational speed and speed are stroke-dependent

Data sheet

Operating and environmental conditions		
Ambient temperature	[°C]	–10 ... +60
Degree of protection		IP40
Duty cycle	[%]	100

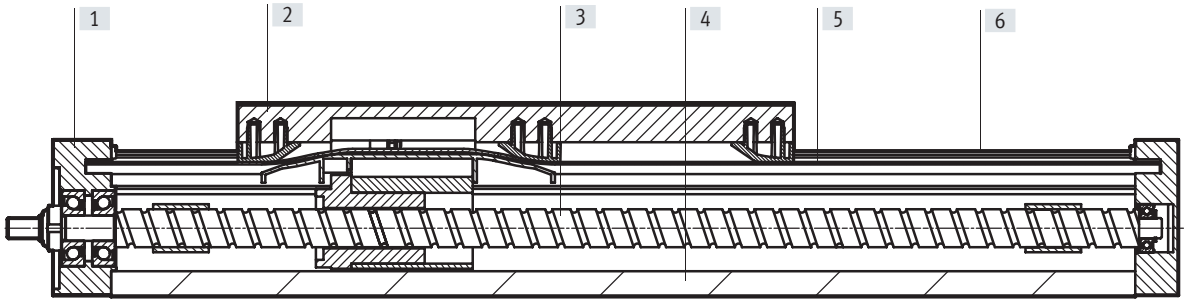
Spindle						
Size		125	160		220	
Diameter	[mm]	12	15		25	
Pitch	[mm/rev]	10	10	20	10	25

Mass moment of inertia						
Size		125	160		220	
Spindle pitch	[mm/rev]	10	10	20	10	25
J_O	[kg mm²]	6.06	13.94	29.74	106.78	184.26
J_H per metre stroke	[kg mm²/m]	14.20	34.59	34.59	275.64	275.64
J_L per kg payload	[kg mm²/kg]	2.53	2.53	10.13	2.53	15.83
J_W Additional slide	[kg mm²]	2.25	4.69	18.77	13.20	82.48

The mass moment of inertia J_A of the entire axis is calculated as follows:

$$J_A = J_O + J_W + J_H \times \text{working stroke [m]} + J_L \times m_{payload} \text{ [kg]}$$

Materials



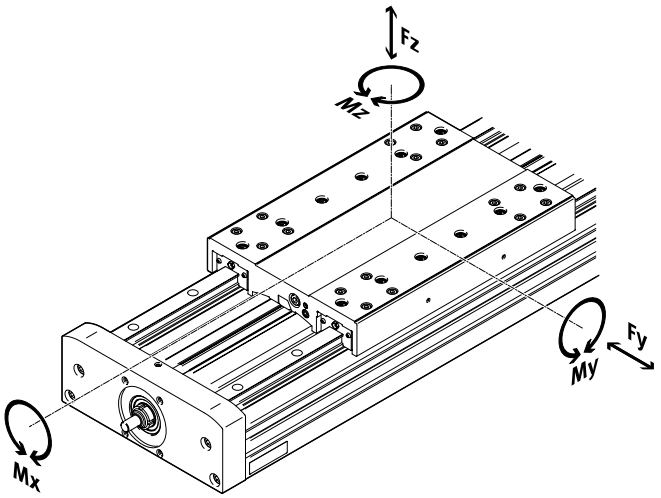
Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Slide	Anodised wrought aluminium alloy
[3]	Spindle	Steel
[4]	Profile	Anodised wrought aluminium alloy
[5]	Cover strip	Polyurethane
[6]	Guide rail	Coated and corrosion-resistant steel
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Spindle axes EGC-HD-BS

Data sheet

Characteristic load values

The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



Max. permissible forces and torques for a service life of 5000 km				
Size		125	160	220
$Fy_{max.}$	[N]	3650	5600	13000
$Fz_{max.}$	[N]	3650	5600	13000
$Mx_{max.}$	[Nm]	140	300	900
$My_{max.}$	[Nm]	275	500	1450
$Mz_{max.}$	[Nm]	275	500	1450

Basic load ratings						
Size		125	160		220	
Spindle pitch	[mm/rev]	10	10	20	10	25
Ball screw						
Dynamic $c_{dyn,KGT}$	[N]	4000	6800	5700	14100	12700

Note

For a guide system to have a service life of 5000 km, the load comparison factor must have a value of fv ≤ 1, based on the maximum permissible forces and torques for a service life of 5000 km.

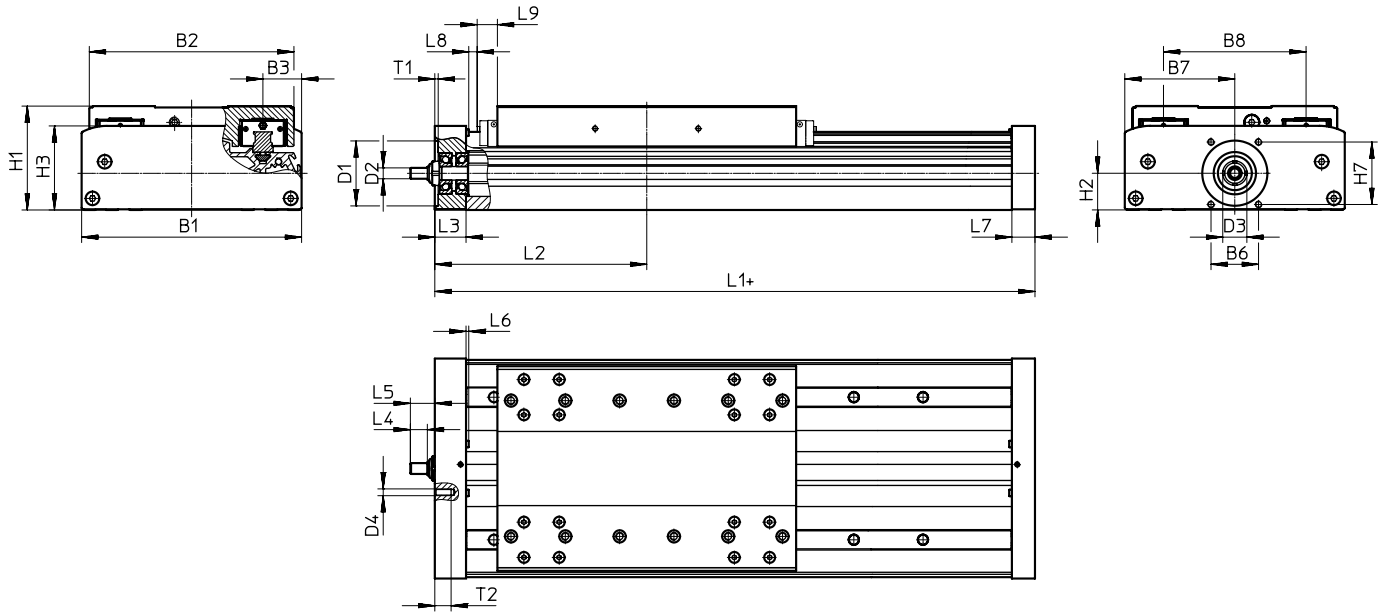
If the axis is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

F_1/M_1 = dynamic value
F_2/M_2 = maximum value

Dimensions



\+ = plus stroke length + 2x stroke reserve

L9 With GP: dimension for long-term lubrication unit

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

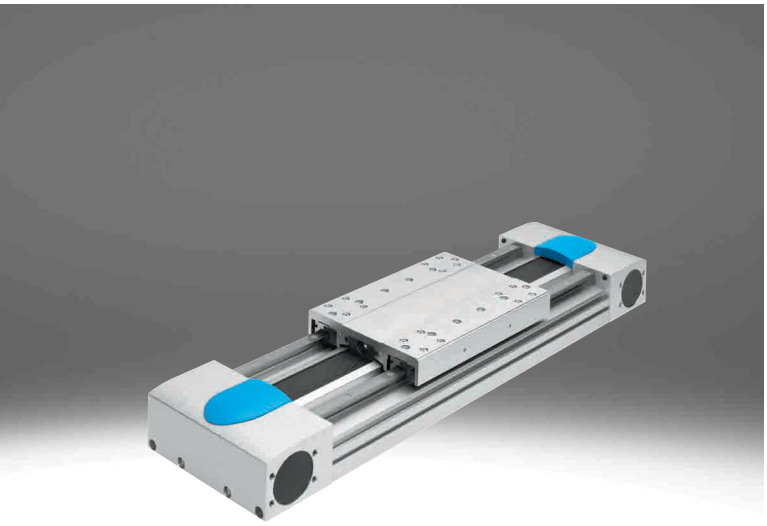
Size	D3	D4	H1	H2	H3	H7	L3	L4
125	15	M5	64	22.5	50.4	36	21	8
160	18	M5	76.5	27	62	46	23	12.5
220	28	M6	111.5	42.5	91	54	33	17.5

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

Spindle axes EGC-HD-BS

Toothed belt axes EGC-HD-TB



Highlights

+ With heavy-duty guide
+ Axis for high speeds and acceleration
+ For high loads and torques, high feed forces
+ Precise and resilient DUO guide rail
+ Motor can be mounted on 4 sides
+ For maximum lateral load up to 900 Nm

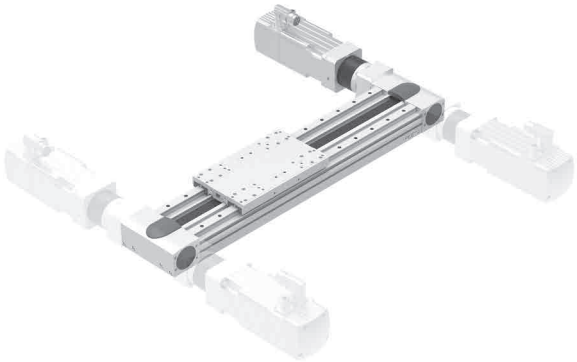
Toothed belt axes EGC-HD-TB

Features

At a glance

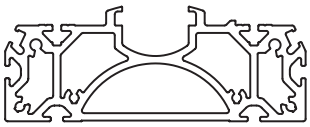
- New heavy-duty design for:
  - Maximum loads and torques
  - High feed forces and velocities
  - Long service life
- Precision DUO guide rail with high load capacity
- Ideal as a base axis for linear gantries and cantilever axes
- Space-saving position sensing possible via proximity switch in the profile slot
- Toothed belt material can be selected from:
  - Chloroprene rubber for long service life
  - Coated PU with steel reinforcement cords for long service life and resilience to certain cooling lubricants
- Wide range of options for mounting on drives
- In addition to the technical data, the toothed belt axis impresses with its excellent price/performance ratio

Flexible motor mounting
The motor position can be freely selected on 4 sides and can be changed at any time.

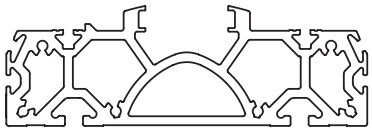


Flat unit with rigid, closed profile

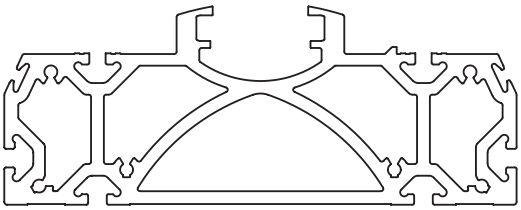
EGC-HD-125



EGC-HD-160

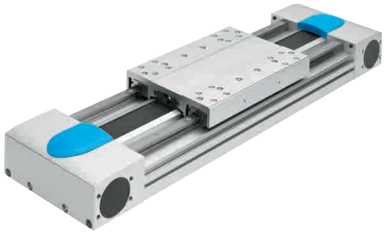


EGC-HD-220



Complete system comprising toothed belt axis, motor, motor controller and motor mounting kit

Toothed belt axis with recirculating ball bearing guide



Servo drive

Servo drive:
CMMT-AS
Servo drive for extra-low voltage:
CMMT-ST

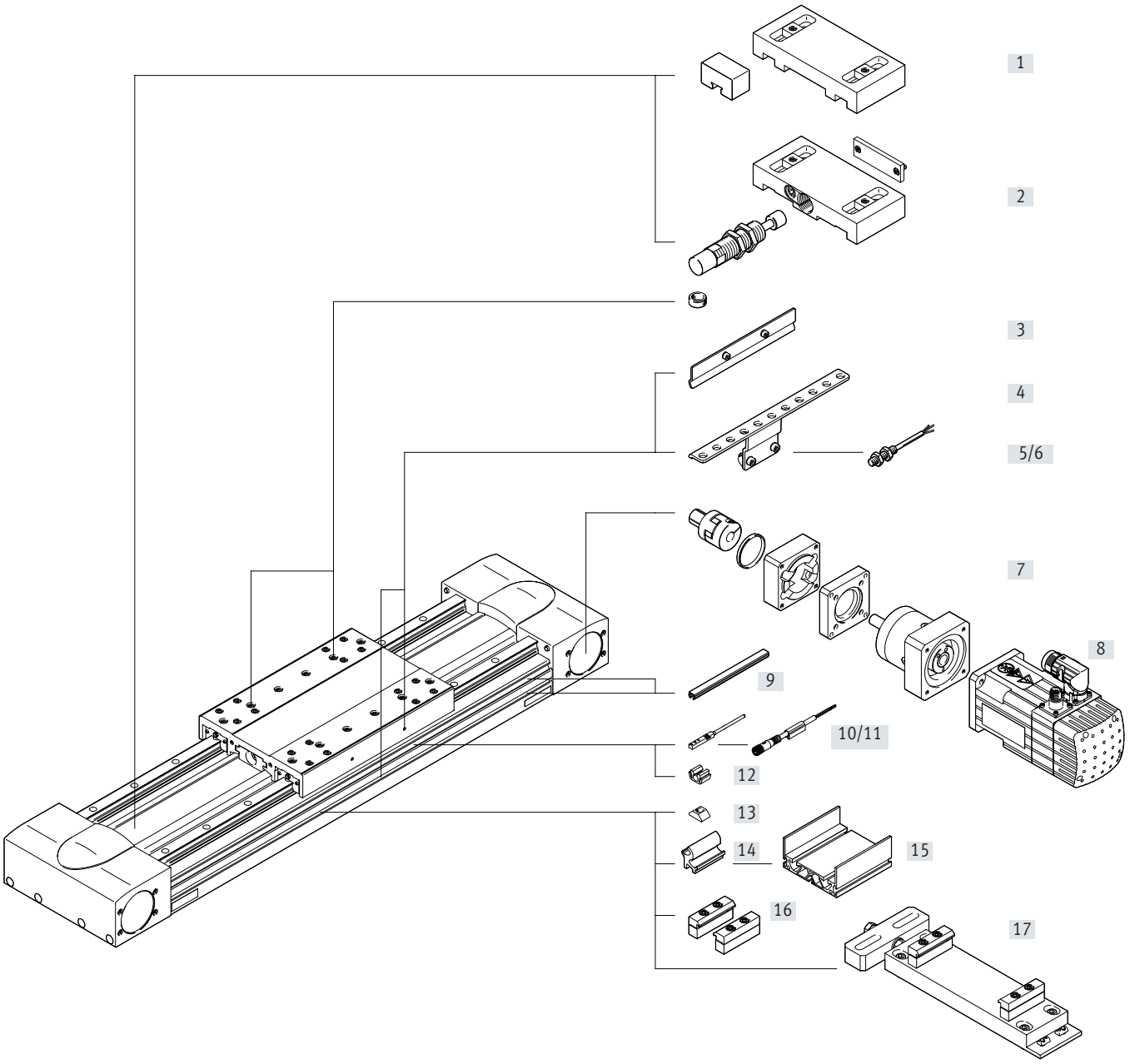
Motor

Servo motor:
EMMT-AS, EMME-AS, EMMS-AS
Stepper motor:
EMMS-ST

Axial motor mounting kit

Kit comprising:
- Motor flange
- Coupling housing
- Coupling
- Screws

Peripherals overview



	Type/order code	➔ Page/Internet
[1]	Emergency buffer with retaining bracket A	303
[2]	Shock absorber with retaining bracket C	
[3]	Centring pin/sleeve ZBS, ZBH	
[4]	Switch lug X, Z, O, P, W, R	
[5]	Sensor bracket O, P, W, R	
[6]	Proximity switch, M8 O, P, W, R	
[7]	Axial kit EAMM	
[8]	Motor EMME, EMMS	361, 367, emme
[9]	Slot cover B, S	303

	Type/order code	➔ Page/Internet
[10]	Proximity switch, T-slot X, Z	304
[11]	Connecting cable V	nebu
[12]	Clip CL	303
[13]	Slot nut Y	
[14]	Adapter kit DHAM	
[15]	Support profile HMIA	
[16]	Profile mounting M	
[17]	Adjusting kit EADC-E16	

Ordering – Modular product system

Size		125	160	220	Conditi-ons	Code		Enter code
Module no.		556823	556824	556825				
Design		Linear axis				EGC		EGC
Guide		Heavy-duty guide				-HD		-HD
Size		125	160	220		-...		-...
Stroke length	[mm]	50 ... 3000	50 ... 5000	50 ... 4750	[1]	-...		-...
Function		Toothed belt				-TB		-TB
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)			[1]	-...H		
Slide		Standard slide				-GK		
		–	Standard slide, protected			-GP		
Additional slide	Left	Additional slide, standard, left			[2]	-KL		
	Right	Additional slide, standard, right			[2]	-KR		
Material of toothed belt		Chloroprene rubber						
		Coated PU				-PU2		
Accessories		Accessories enclosed separately				ZUB-		ZUB-
Profile mounting		1 ... 50				...M		
Slot cover	Mounting slot	1 ... 50 (1 = 2 units, 500 mm long)			[4]	...B		
	Sensor slot	1 ... 50 (1 = 2 units, 500 mm long)				...S		
Slot nut for mounting slot		1 ... 99			[4]	...Y		
Proximity switch (SIES) inductive, slot type 8, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6				...X		
	N/C contact, 7.5 m cable	1 ... 6				...Z		
Emergency buffer with retaining bracket		1 ... 2			[3]	...A		
Shock absorber with retaining bracket		1 ... 2			[3]	...C		
Proximity switch (SIEN) inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99				...O		
	N/C contact, 2.5 m cable	1 ... 99				...P		
	N/O contact, M8 plug	1 ... 99				...W		
	N/C contact, M8 plug	1 ... 99				...R		
Connecting cable, M8, 3-wire, 2.5 m		1 ... 99				...V		
Cable clip		10, 20, 30, 40, 50, 60, 70, 80, 90				...CL		
Operating instructions		Express waiver – no operating instructions to be included as already available (operating instructions in PDF format are available free of charge on our website at www.festo.com)				-DN		

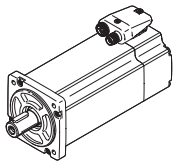
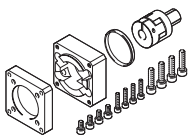
[1] -... The sum of nominal stroke and 2x stroke reserve must not exceed the maximum stroke length.

[2] KL, KR If the protected slide variant (GP) is selected, the additional slide (KL, KR) is also protected.

[3] ... A, ... C Cannot be combined with slide GP.

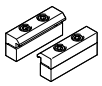
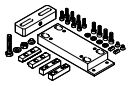
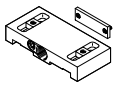
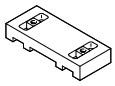
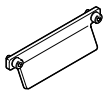
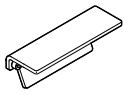
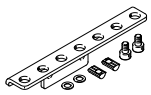
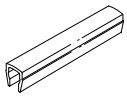
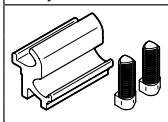
[4] B, Y Scope of delivery with size 160 for both slot sizes (➔ online).

Accessories – Ordering data

Permissible axis/motor combinations with axial kit		
Motor/gear unit[1]  Type	Axial kit  Part no.	Type
EGC-HD-125		
With servo motor and gear unit		
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	1190076	EAMM-A-M43-60G
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456612	EAMM-A-M43-60H
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	1190076	EAMM-A-M43-60G
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	1190076	EAMM-A-M43-60G
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-60-...	1456612	EAMM-A-M43-60H
EGC-HD-160		
With servo motor and gear unit		
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456614	EAMM-A-M48-60H
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	1190421	EAMM-A-M48-80G
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	1190421	EAMM-A-M48-80G
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	1190421	EAMM-A-M48-80G
With stepper motor and gear unit		
EMMS-ST-87-... EMGA-80-P-G...-SST-87	1190421	EAMM-A-M48-80G
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-60-...	1456614	EAMM-A-M48-60H
EGC-HD-220		
With servo motor and gear unit		
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-120-P-G...-SAS-100	1190774	EAMM-A-M80-120G
EMMS-AS-140-... EMGA-120-P-G...-SAS-140	1190774	EAMM-A-M80-120G

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

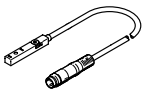
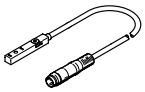
Note
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

	For size	Part No.	Type
Profile mounting MUE			
	125	★ 558043	MUE-70/80
	160	★ 558043	MUE-70/80
	220	★ 558044	MUE-120/185
Adjusting kit EADC-E16			
	125	8047580	EADC-E16-125-E14
	160	8047581	EADC-E16-160-E14
	220	8047582	EADC-E16-220-E14
Shock absorber retainer EAYH			
	125	1653251	EAYH-L2-125
	160	1653250	EAYH-L2-160
	220	1653253	EAYH-L2-220
Retaining bracket EAYH			
	125	1662803	EAYH-L2-125-N
	160	1669259	EAYH-L2-160-N
	220	1669260	EAYH-L2-220-N
Switch lug SF-EGC-HD-1[1]			
	125	570027	SF-EGC-HD-1-125
	160	1645872	SF-EGC-HD-1-160
	220	1645866	SF-EGC-HD-1-220
Switch lug SF-EGC-HD-2[2]			
	125	570030	SF-EGC-HD-2-125
	160	1645865	SF-EGC-HD-2-160
	220	1645868	SF-EGC-HD-2-220
Sensor bracket[3]			
	125	558057	HWS-EGC-M5
	160	558057	HWS-EGC-M5
	220	570365	HWS-EGC-M8-B
Emergency buffer			
	125	562581	NPE-70
	160	562582	NPE-80
	220	562583	NPE-120
Slot nut			
	125, 160	150914	NST-5-M5
	160, 220	150915	NST-8-M6
Centring sleeve[4]			
	125	150928	ZBS-5
	125 ... 220	150927	ZBH-9
Slot cover[5]			
	For mounting slot		
	125, 160	151681	ABP-5
	160, 220	151682	ABP-8
	For sensor slot		
	125 ... 220	563360	ABP-5-S1
Clip			
	125 ... 220	534254	SMBK-8
Adapter kit DHAM			
	160	562241	DHAM-ME-N1-CL
	220	562242	DHAM-ME-N2-CL
	125, 160	574560	DHAM-ME-N1-50-CL
	220	574561	DHAM-ME-N2-50-CL
	125 ... 220	539379	HMIA-E07- -

1) For sensing via proximity sensor SIES-8M.
2) For sensing via proximity sensor SIEN-M8B or SIES-8M.
3) For proximity sensor SIEN-M8B.
4) Packaging unit 10 pieces.
5) Packaging unit 2x 0.5 m

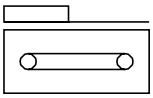
Toothed belt axes EGC-HD-TB

Accessories – Ordering data

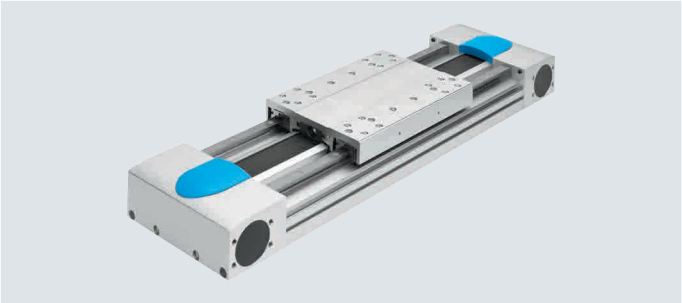
		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

Data sheet



- Size
  125 … 220
- Stroke length
  50 … 5000 mm
- www.festo.com



General technical data				
Size		125	160	220
Design		Electromechanical axis with toothed belt		
Guide		Recirculating ball bearing guide		
Mounting position		Any		
Working stroke	[mm]	50 … 3000	50 … 5000	50 … 4750
Max. feed force F_x	[N]	450	1000	1800
Max. no-load torque[1]	[Nm]	1.1	2.1	4.1
Max. no-load resistance to shifting[1]	[N]	67.75	105.5	123.8
Max. driving torque	[Nm]	7.2	20	59.58
Max. speed				
EGC-…-GK	[m/s]	3	5	
EGC-…-GP	[m/s]	–	3	
Max. acceleration	[m/s²]	40	50	
Repetition accuracy	[mm]	±0.08		±0.1

1) At 0.2 m/s

Operating and environmental conditions		
Ambient temperature	[°C]	–10 … +60
Degree of protection		IP40
Duty cycle	[%]	100

Toothed belt				
Size		125	160	220
Pitch	[mm]	3	5	8
Width	[mm]	30.3	40.0	50.5
Elongation[1]				
EGC-…	[%]	0.178	0.161	0.173
EGC-…-PU2	[%]	0.085	0.094	0.068
Effective diameter	[mm]	32.47	39.79	66.21
Feed constant	[mm/rev]	102	125	208

1) At max. feed force

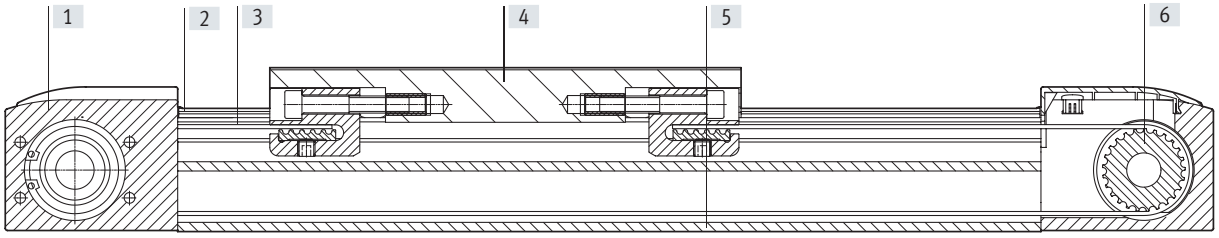
Data sheet

Mass moment of inertia

Size		125	160	220
J_O	[kg cm²]	4.639	14.49	108.99
J_H per metre stroke	[kg cm²/m]	0.38	1.267	6.269
J_L per kg payload	[kg cm²/kg]	2.635	3.96	10.96
J_W Additional slide	[kg cm²]	3.3	11.734	80.66

The mass moment of inertia J_A of the entire axis is calculated as follows: $J_A = J_O + J_W + J_H \times \text{working stroke [m]} + J_L \times m_{payload}$ [kg]

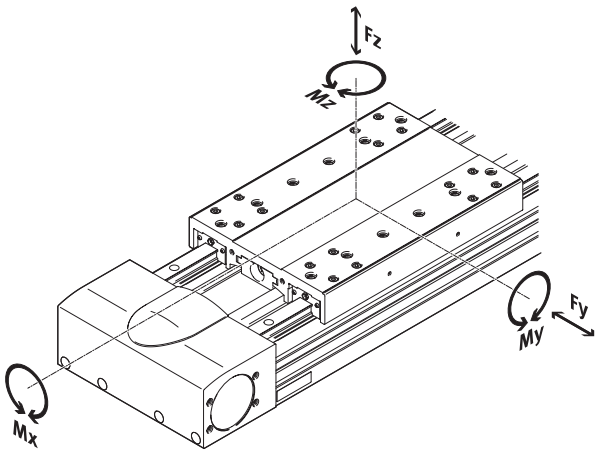
Materials



Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Guide rail	Coated and corrosion-resistant steel
[3]	Toothed belt	
	EGC-...	Polychloroprene with glass cord and nylon coating
	EGC-...-PU2	Polyurethane with steel cord and nylon covering
[4]	Slide	Anodised wrought aluminium alloy
[5]	Profile	Anodised wrought aluminium alloy
[6]	Toothed belt pulley	High-alloy stainless steel
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Characteristic load values

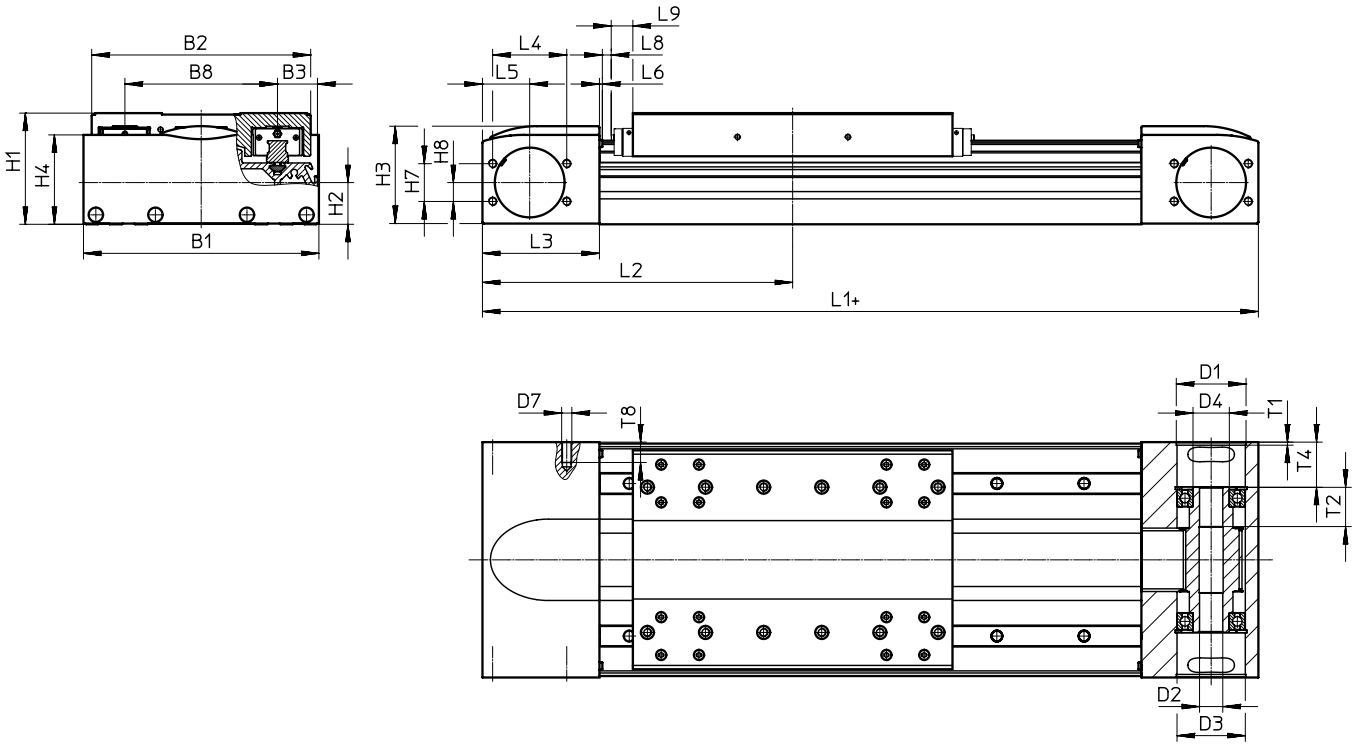
The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



Max. permissible forces and torques for a service life of 5000 km

Size		125	160	220
$Fy_{max.}$	[N]	3650	5600	13000
$Fz_{max.}$	[N]	3650	5600	13000
$Mx_{max.}$	[Nm]	140	300	900
$My_{max.}$	[Nm]	275	500	1450
$Mz_{max.}$	[Nm]	275	500	1450

Dimensions



\+ = plus stroke length + 2x stroke reserve

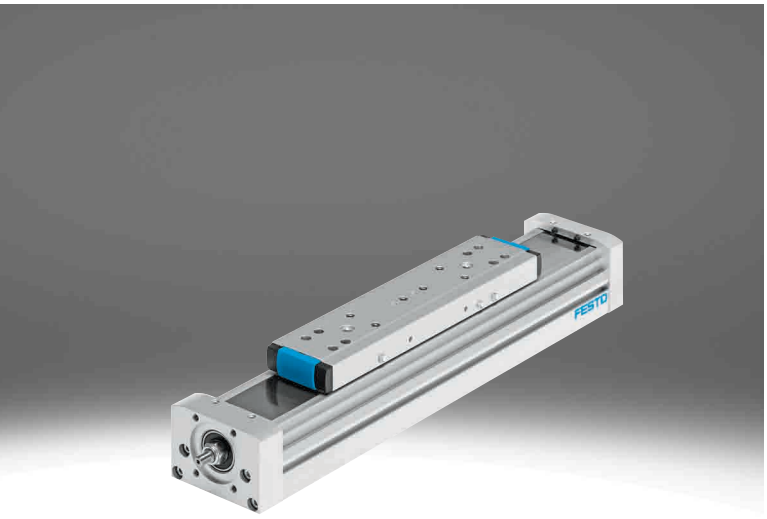
L9 With GP: dimension for long-term lubrication unit ➔ Online

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	150.7	27.5	105	48	16	47	25	M6
220	224	204.2	40	140	80	23	75	45	M8

Size	H1	H2	H3	H4	H7	H8	L1	L2 min.	L3
125	64	26.1	55.8	50.8	24	12	346	173	57.5
160	76.5	28.7	67.5	61.5	26	13	417	208.5	80.5
220	111.5	45.2	98	91.1	59	27	576	288	115

Size	L4	L5	L6	L8	L9	T1	T2	T4	T8
125	46	27.5	1.8	2	–	2.1	27	23.65	13
160	51	32.5	2	0.55	14.9	3.1	27	31.1	14
220	76	50	2	2	18	3.1	29.5	47.5	16

Spindle axes ELGA-BS-KF



Highlights

+ 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

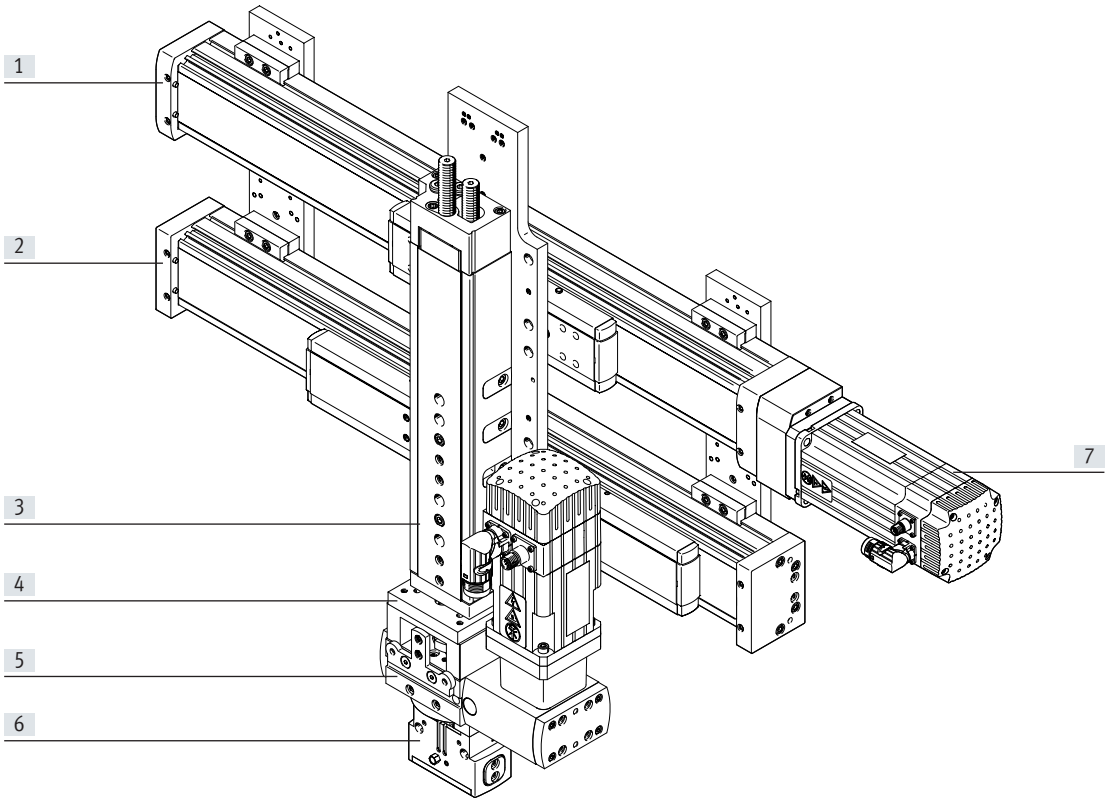
Spindle axes ELGA-BS-KF

Features

At a glance

- Stainless steel cover strip with magnetic seal provides basic protection for guide and spindle. This also minimises particulate emissions for use in clean environments
- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- Easy maintenance thanks to easily accessible lubrication connections

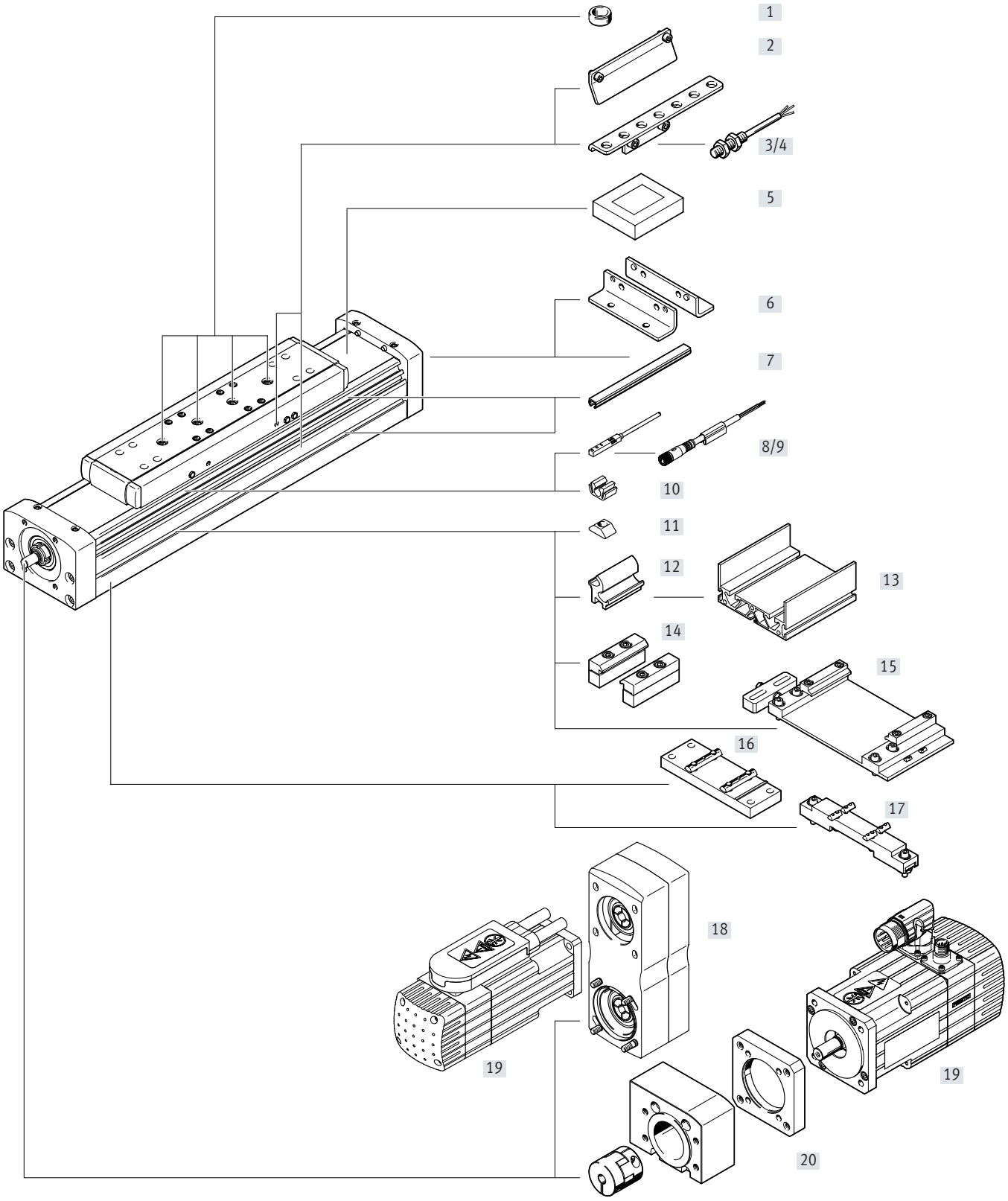
System product for handling and assembly technology



System components and accessories

		Description	→ Page/Internet
[1]	Axes	Wide range of combinations possible within handling and assembly technology	axis
[2]	Guide axes	To support force and torque capacity in multi-axis applications	guide axis
[3]	Drives	Wide range of combinations possible within handling and assembly technology	drive
[4]	Adapters	For drive/drive and drive/gripper connections	gripper
[5]	Semi-rotary drives	Wide range of variations possible within handling and assembly technology	semi-rotary drive
[6]	Grippers	Wide range of variations possible within handling and assembly technology	gripper
[7]	Motors	Servo and stepper motors, with or without gear unit	motor

Peripherals overview



Spindle axes ELGA-BS-KF

Peripherals overview

	Type	➔ Page/Internet
[1]	Centring pin/sleeve ZBS, ZBH	313
[2]	Switch lug SF-EGC	
[3]	Sensor bracket HWS-EGC	
[4]	Proximity sensor, M8 SIEN-M8	314
[5]	Clamping element EADT	313
[6]	Foot mounting HPE	
[7]	Slot cover ABP	
[8]	Proximity sensor, T-slot SIES-8M	314
[9]	Connecting cable NEBU, SIM	nebu
[10]	Clip SMBK	314

	Type	➔ Page/Internet
[11]	Slot nut NST	313
[12]	Adapter kit DHAM	314
[13]	Support profile HMIA	
[14]	Profile mounting MUE	313
[15]	Adjusting kit EADC-E16	
[16]	Central support EAHF-L5	
[17]	Adjusting kit EADC-E15	
[18]	Parallel kit EAMM-U	312
[19]	Motor EMME, EMMT, EMMS	361, 367, emme
[20]	Axial kit EAMM-A	311

Ordering – Modular product system

Size		70	80	120	150	Conditi-ons	Code	Enter code
Module no.		8024918	8024919	8024920	8024921			
Design		Linear axis					ELGA	ELGA
Function		Ball screw					-BS	-BS
Guide		Recirculating ball bearing guide					-KF	-KF
Size	[mm]	70	80	120	150		-...	
Stroke length (without stroke reserve)	Standard [mm]	100, 200, 300, 400, 500, 600, 700, 900	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1440, 1740, 1940	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1960, 2460	200, 400, 500, 900, 1400, 1900, 2500, 3000			
	Variable [mm]	50 ... 880	50 ... 1920	50 ... 2440	50 ... 2980		-...	
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)				[1]	-...H	
Spindle pitch		10	10	10	–		-10P	
		–	20	–	–		-20P	
		–	–	25	–		-25P	
		–	–	–	40		-40P	
Motor attachment position		Left					-ML	
		Right					-MR	
Additional slide		Without						
		1 slide on left					-ZL	
		1 slide on right					-ZR	
Displacement encoder, incremental		Without						
		Resolution 2.5 µm					-M1	
		Resolution 10 µm					-M2	
Displacement encoder attachment position		Without						
		Rear				[2]	B	
		Front				[2]	F	
Operating instructions		With operating instructions						
		Without operating instructions					-DN	

[1] ... H The sum of nominal stroke and 2x stroke reserve must not exceed the maximum stroke length

[2] B, F Only with displacement encoder M1, M2

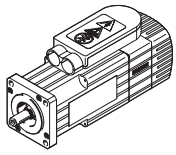
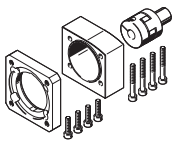
Ordering data

Size	Pitch [mm/rev]	Stroke [mm]	Part no.	Type
70	10	100	8041816	ELGA-BS-KF-70-100-0H-10P-ML
		200	8041817	ELGA-BS-KF-70-200-0H-10P-ML
		300	8041818	ELGA-BS-KF-70-300-0H-10P-ML
		400	8041819	ELGA-BS-KF-70-400-0H-10P-ML
		500	8041820	ELGA-BS-KF-70-500-0H-10P-ML
		600	8041821	ELGA-BS-KF-70-600-0H-10P-ML
80	10	100	8041822	ELGA-BS-KF-80-100-0H-10P-ML
		200	8041823	ELGA-BS-KF-80-200-0H-10P-ML
		300	8041824	ELGA-BS-KF-80-300-0H-10P-ML
		400	8041825	ELGA-BS-KF-80-400-0H-10P-ML
		500	8041826	ELGA-BS-KF-80-500-0H-10P-ML
		600	8041827	ELGA-BS-KF-80-600-0H-10P-ML
		800	8041828	ELGA-BS-KF-80-800-0H-10P-ML
	20	100	8041829	ELGA-BS-KF-80-100-0H-20P-ML
		200	8041830	ELGA-BS-KF-80-200-0H-20P-ML
		300	8041831	ELGA-BS-KF-80-300-0H-20P-ML
		400	8041832	ELGA-BS-KF-80-400-0H-20P-ML
		500	8041833	ELGA-BS-KF-80-500-0H-20P-ML
		600	8041834	ELGA-BS-KF-80-600-0H-20P-ML
		800	8041835	ELGA-BS-KF-80-800-0H-20P-ML
120	10	100	8041836	ELGA-BS-KF-120-100-0H-10P-ML
		200	8041837	ELGA-BS-KF-120-200-0H-10P-ML
		300	8041838	ELGA-BS-KF-120-300-0H-10P-ML
		400	8041839	ELGA-BS-KF-120-400-0H-10P-ML
		500	8041840	ELGA-BS-KF-120-500-0H-10P-ML
		600	8041841	ELGA-BS-KF-120-600-0H-10P-ML
		800	8041842	ELGA-BS-KF-120-800-0H-10P-ML
	25	100	8041843	ELGA-BS-KF-120-100-0H-25P-ML
		200	8041844	ELGA-BS-KF-120-200-0H-25P-ML
		300	8041845	ELGA-BS-KF-120-300-0H-25P-ML
		400	8041846	ELGA-BS-KF-120-400-0H-25P-ML
		500	8041847	ELGA-BS-KF-120-500-0H-25P-ML
		600	8041848	ELGA-BS-KF-120-600-0H-25P-ML
		800	8041849	ELGA-BS-KF-120-800-0H-25P-ML

Key features:
- Stroke reserve: 0 mm
- Motor attachment position: left
- Standard slide

Accessories – Ordering data

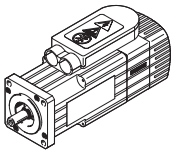
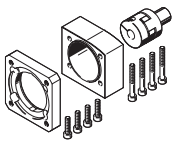
Permissible axis/motor combinations with axial kit

Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
ELGA-BS-...-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
EMMT-AS-60-..., EMME-AS-60-...	3637958	EAMM-A-S38-60P-G2
With servo motor and gear unit		
EMME-AS-40-... EMGA-40-P-G...-EAS-40	1456647	EAMM-A-S38-40G-G2
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456647	EAMM-A-S38-40G-G2
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-... EMGA-40-P-G...-SST-42	1456647	EAMM-A-S38-40G-G2
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-...-80		
With servo motor		
EMMS-AS-55-...	3637961	EAMM-A-S48-55A-G2
EMMT-AS-60-..., 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-... EMGA-40-P-G...-EAS-40	1456650	EAMM-A-S48-40G-G2
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456650	EAMM-A-S48-40G-G2
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2256701	EAMM-A-S48-60G-G2
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456652	EAMM-A-S48-60H-G2
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2256701	EAMM-A-S48-60G-G2
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-... EMGA-40-P-G...-SST-42	1456650	EAMM-A-S48-40G-G2
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2256701	EAMM-A-S48-60G-G2
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

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

Accessories – Ordering data

Permissible axis/motor combinations with axial kit

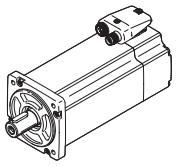
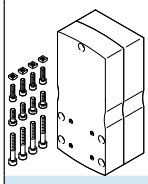
Motor/gear unit[1]	Axial kit	
		
Type	Part no.	Type
ELGA-BS-...-120		
With servo motor		
EMMS-AS-70-...	3637959	EAMM-A-S62-70A-G2
EMMT-AS-80-..., EMME-AS-80-...	3637970	EAMM-A-S62-80P-G2
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-...	3637960	EAMM-A-S62-100A-G2
EMMS-AS-140-...	3637969	EAMM-A-S62-140A-G2
With servo motor and gear unit		
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2297649	EAMM-A-S62-60G-G2
EMMT-AS-60-..., EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456654	EAMM-A-S62-60H-G2
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2297649	EAMM-A-S62-60G-G2
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	1972530	EAMM-A-S62-80G-G2
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	1972530	EAMM-A-S62-80G-G2
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	1972530	EAMM-A-S62-80G-G2
With stepper motor		
EMMS-ST-87-...	3637966	EAMM-A-S62-87A-G2
With stepper motor and gear unit		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2297649	EAMM-A-S62-60G-G2
EMMS-ST-87-... EMGA-80-P-G...-SST-87	1972530	EAMM-A-S62-80G-G2
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-60-...	1456654	EAMM-A-S62-60H-G2
ELGA-BS-...-150		
With servo motor		
EMMT-AS-100-..., EMME-AS-100-..., 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 max. permissible transferable torque of the axial kit.

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 particular kit must be taken into consideration.

Permissible axis/motor combinations with parallel kit

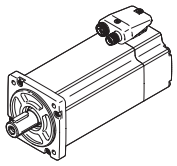
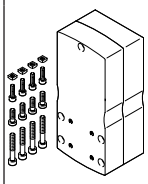
Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
ELGA-BS-KF-70		
With servo motor		
EMME-AS-40-...	2155239	EAMM-U-50-S38-40P-78
EMMS-AS-40-...	1217708	EAMM-U-50-S38-40A-78
EMMS-AS-55-...	1218538	EAMM-U-60-S38-55A-91
With stepper motor		
EMMS-ST-42-...	1217945	EAMM-U-50-S38-42A-78
EMMS-ST-57-...	1218568	EAMM-U-60-S38-57A-91
Servo motor with gear unit		
EMME-AS-40-..., EMMS-AS-40-... EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
Stepper motor with gear unit		
EMMS-ST-42-..., EMGA-40-P-...	2283732	EAMM-U-60-S38-40G-91
With integrated drive and gear unit		
EMCA-EC-67-..., 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
EMMT-AS-60-...	2629253	EAMM-U-70-S48-60P-96
EMME-AS-60-...	2629253	EAMM-U-70-S48-60P-96
EMMS-AS-70-...	2787320	EAMM-U-70-S48-70A-96
EMMS-AS-70-...	1217689	EAMM-U-86-S48-70A-102
With stepper motor		
EMMS-ST-57-...	1219379	EAMM-U-60-S48-57A-91
EMMS-ST-87-...	1217604	EAMM-U-86-S48-87A-177
Servo motor with gear unit		
EMME-AS-40-..., EMMS-AS-40-... EMGA-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMMS-AS-55-..., EMMS-AS-70-...	2801627	EAMM-U-70-S48-60G-96
EMGA-60-P-...-SAS[2]	1587251	EAMM-U-86-S48-60G-102
EMMT-AS-60-..., EMME-AS-60-...	2801715	EAMM-U-70-S48-60H-96
EMGA-60-P-...-EAS[2]	1587338	EAMM-U-86-S48-60H-102
Stepper motor with gear unit		
EMMS-ST-57-...	2801627	EAMM-U-70-S48-60G-96
EMGA-60-P-...-SST[2]	1587251	EAMM-U-86-S48-60G-102
With integrated drive and gear unit		
EMCA-EC-67-..., EMGC-40-P-...	2283760	EAMM-U-60-S48-40G-91
EMCA-EC-67-..., EMGC-60-P-...[2]	2801715	EAMM-U-70-S48-60H-96
	1587338	EAMM-U-86-S48-60H-102

1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) Gear unit output shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

- The kit can be mounted in all directions
- A counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit to provide support for the axis shaft. Additional information → eamm-u
- Use in combination with third-party motors on request

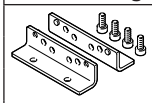
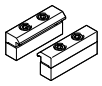
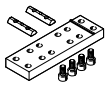
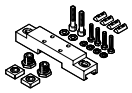
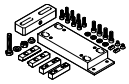
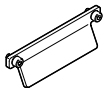
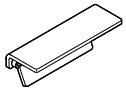
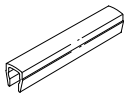
Accessories – Ordering data

Permissible axis/motor combinations with parallel kit		
Motor/gear unit[1] 	Parallel kit 	
Type	Part no.	Type
ELGA-BS-KF-120		
With servo motor		
EMMS-AS-70-...	1217543	EAMM-U-86-S62-70A-177
EMMT-AS-80-...	2157004	EAMM-U-86-S62-80P-177
EMME-AS-80-...	2157004	EAMM-U-86-S62-80P-177
EMMT-AS-100-...	1217381	EAMM-U-110-S62-100A-207
EMME-AS-100-...	1217381	EAMM-U-110-S62-100A-207
EMMS-AS-100-...	1217381	EAMM-U-110-S62-100A-207
EMMS-AS-140-...	1219440	EAMM-U-145-S62-140A-288
With stepper motor		
EMMS-ST-87-...	1217373	EAMM-U-86-S62-87A-177
Servo motor with gear unit		
EMMS-AS-55-..., EMMS-AS-70-..., EMGA-60-P-...-SAS[2]	1587411	EAMM-U-86-S62-60G-177
EMMT-AS-60-..., EMME-AS-60-..., EMGA-60-P-...-EAS[2]	1587453	EAMM-U-86-S62-60H-177
Stepper motor with gear unit		
EMMS-ST-57-... EMGA-60-P-...-SST[2]	1587411	EAMM-U-86-S62-60G-177
With integrated drive and gear unit		
EMCA-EC-67-... EMGC-60-P-...[2]	1587453	EAMM-U-86-S62-60H-177
ELGA-BS-KF-150		
With servo motor		
EMMT-AS-100-...	1220656	EAMM-U-110-S95-100A-207
EMME-AS-100-...	1220656	EAMM-U-110-S95-100A-207
EMMS-AS-100-...	1220656	EAMM-U-110-S95-100A-207
EMMS-AS-140-...	1220582	EAMM-U-145-S95-140A-288
Servo motor with gear unit		
EMMT-AS-80-..., EMMT-AS-100-..., EMME-AS-80-..., EMME-AS-100-..., EMMS-AS-70-..., EMMS-AS-100-..., EMGA-80-P-...	1589544	EAMM-U-110-S95-80G-207
Stepper motor with gear unit		
EMMS-ST-87-..., EMGA-80-P-...	1589544	EAMM-U-110-S95-80G-207

1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.
2) Gear unit output shaft diameter: EMGA-60-P-...-SAS/-SST: 11 mm; EMGA-60-P-...-EAS, EMGC-60-P: 14 mm

Note

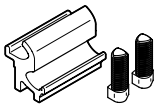
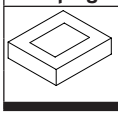
- The kit can be mounted in all directions
- A counter bearing EAMG and a clamping sleeve EAMH-...-P with integrated trunnion are included in the scope of delivery of the parallel kit to provide support for the axis shaft. Additional information → eamm-u
- Use in combination with third-party motors on request
- The clamping element EADT is required to adjust the toothed belt pretensioning for EAMM-U-110 and EAMM-U-145.

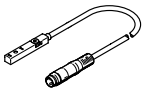
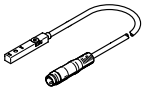
	For size	Part No.	Type
Foot mounting HPE 	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	150	3002636	HPE-150
Profile mounting MUE 	70, 80	★ 558043	MUE-70/80
	120, 150	★ 558044	MUE-120/185
Central support EAHF 	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
	150	3535189	EAHF-L5-150-P
Adjusting kit EADC-E15 	70, 80	8047566	EADC-E15-80-E7
	120, 150	8047568	EADC-E15-185-E7
Adjusting kit EADC-E16 	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
Switch lug[1] 	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	150	558051	SF-EGC-1-185
Switch lug[2] 	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	185	558056	SF-EGC-2-185
Slot nut NST 	70, 80	150914	NST-5-M5
	120, 185	150915	NST-8-M6
Centring pin[4] 	70	150928	ZBS-5
Centring sleeve[4] 	80, 120	150927	ZBH-9
Slot cover[5] 	For mounting slot		
	70, 80	151681	ABP-5
	120, 185	151682	ABP-8
	For sensor slot		
	50 ... 185	563360	ABP-5-S1

1) For sensing via proximity sensor SIES-8M.
2) For sensing via proximity sensor SIEN-M8B or SIES-8M.
3) For proximity sensor SIEN-M8B.
4) Packaging unit 10 pieces.
5) Packaging unit 2x 0.5 m

Spindle axes ELGA-BS-KF

Accessories – Ordering data

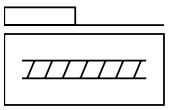
	For size	Part No.	Type
Adapter kit DHAM			
	70, 80	562241	DHAM-ME-N1-CL
	120, 185	562242	DHAM-ME-N2-CL
	70, 80	574560	DHAM-ME-N1-50-CL
	120, 185	574561	DHAM-ME-N2-50-CL
	70 ... 185	539379	HMIA-E07- -
Clip			
	70 ... 185	534254	SMBK-8
Clamping component			
	70, 80	8058451	EADT-S-L5-70
	120, 150	8058450	EADT-S-L5-120

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

Data sheet

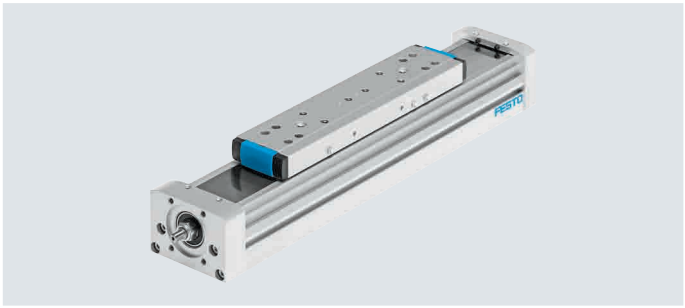
Function



Size
70 ... 150

Stroke length
50 ... 3000 mm

www.festo.com



General technical data							
Size		70	80		120		150
Spindle pitch	[mm/rev]	10	10	20	10	25	40
Design		Electromechanical axis with ball screw					
Guide		Recirculating ball bearing guide					
Mounting position		Any					
Working stroke	[mm]	50 ... 900	50 ... 1940		50 ... 2460		50 ... 3000
Max. feed force F_x [1]	[N]	650	1600		3400		6400
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		0.2		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 [2]	[N]	220	250		500		4000
Max. speed	[m/s]	0.5	0.5	1	0.6	1.5	2
Max. rotational speed [3]	[rpm]	3000	3000		3600		3000
Max. acceleration	[m/s²]	15					
Repetition accuracy	[mm]	±0.02					

1) The feed force affects the service life. (➔ online)
2) At the driving shaft
3) Rotational speed and speed are stroke-dependent

Data sheet

Operating and environmental conditions		
Ambient temperature	[°C]	–10 ... +60
Degree of protection		IP40
Duty cycle	[%]	100

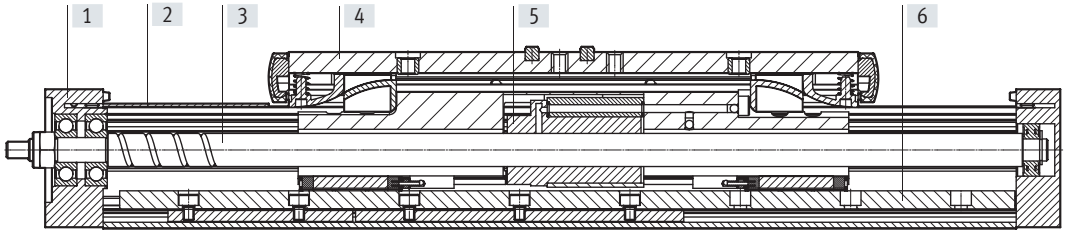
Spindle							
Size		70	80		120		150
Diameter	[mm]	12	15		25		40
Pitch	[mm/rev]	10	10	20	10	25	40

Mass moment of inertia							
Size		70	80		120		150
Spindle pitch	[mm/rev]	10	10	20	10	25	40
J_0	[kg mm²]	3.8	9.7	9.7	103.8	103.8	863
J_S per metre stroke	[kg mm²/m]	14.2	34.6	34.6	275.6	275.6	1803.1
J_L per kg payload	[kg mm²/kg]	2.53	2.53	10.13	2.53	15.83	40.53

The mass moment of inertia J_{rot} of the rotating parts of the axis is calculated as follows:

$J_{rot} = J_0 + J_S \times$ working stroke [m]

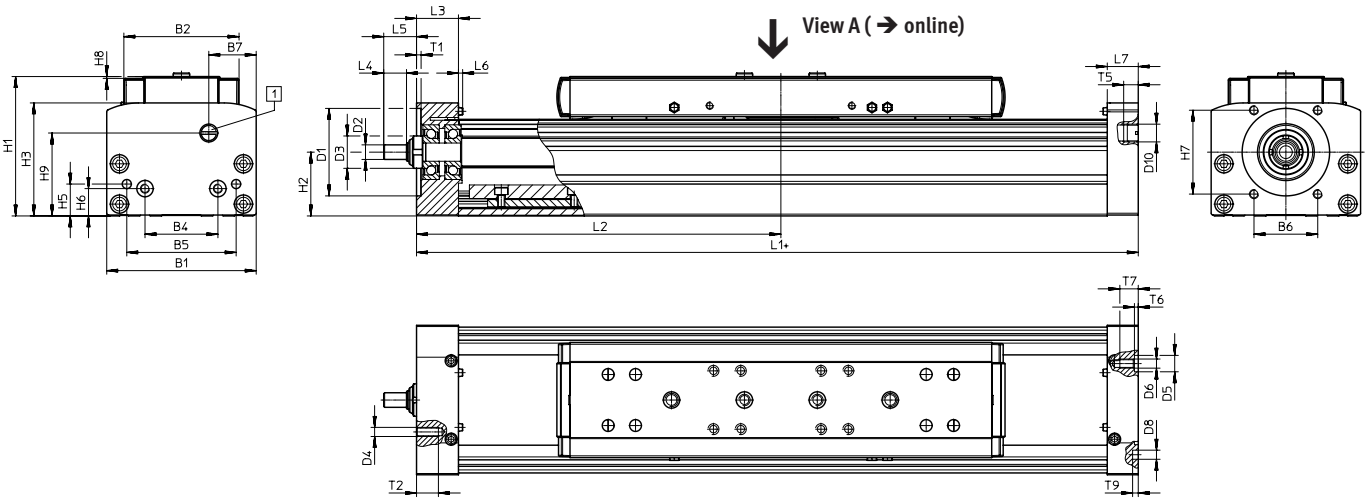
Materials



Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Cover strip	Stainless steel strip, non-corroding
[3]	Spindle	Steel
[4]	Slide	Anodised wrought aluminium alloy
[5]	Spindle nut	Steel
[6]	Profile with integrated guide	Anodised wrought aluminium alloy
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Spindle axes ELGA-BS-KF

Dimensions



\+ = plus stroke length + 2x stroke reserve

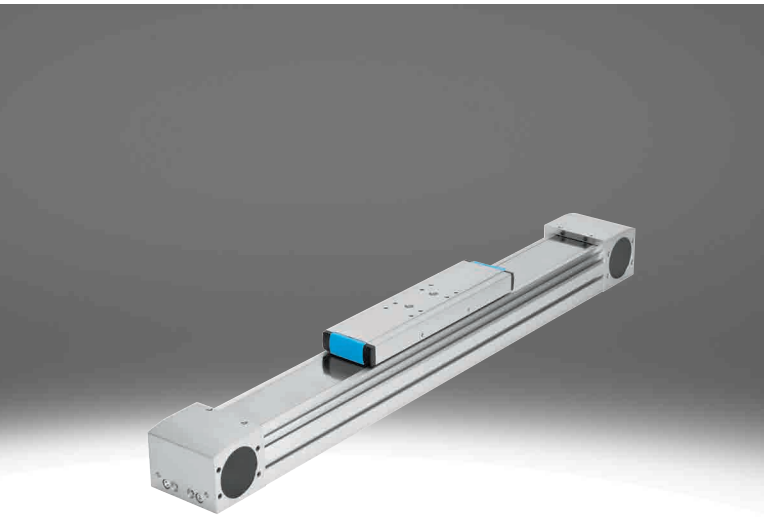
[1] Sealing air connection

Size	B1	B2	B4	B5	B6	B7	D1 ø	D2 ø	D3 ø	D4	D5 ø H7
70	69	48.2	30	45	29	21.5	38	6	A/F 13 mm	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 ø 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 min.	L3	L4	L5	L6	L7	T1	T2	T5	T6	T7	T9
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

Toothed belt axes ELGA-TB-KF



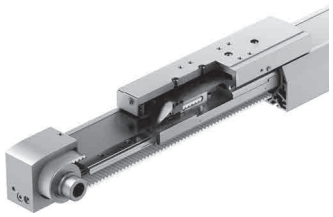
Highlights

+ 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

Toothed belt axes ELGA-TB-KF

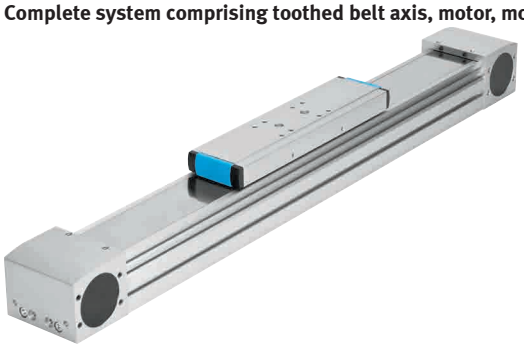
Features

At a glance



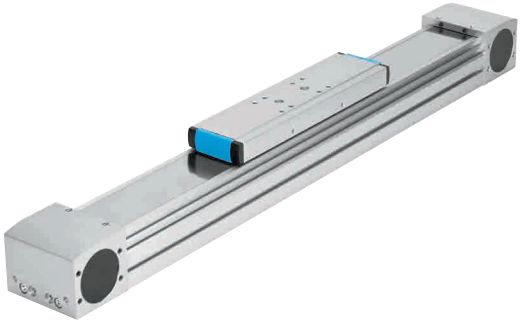
- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- Stainless steel cover strip provides basic protection for guide and toothed belt
- Easy maintenance thanks to easily accessible lubrication connections
- One additional slide can be selected
- Suitable for use in the food zone (ELGA-...-F1)
- Toothed belt material can be selected from:
  - Chloroprene rubber for long service life
- Coated PU with steel reinforcements for long service life and resilience to certain cooling lubricants
- Uncoated PU, FDA-compliant

Complete system comprising toothed belt axis, motor, motor controller and motor mounting kit

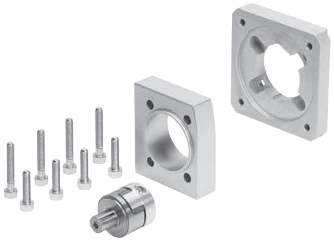


Complete system comprising toothed belt axis, motor, motor controller and motor mounting kit

Toothed belt axis with recirculating ball bearing guide



Axial kit



Kit comprising:
- Motor flange
- Coupling housing
- Coupling
- Screws

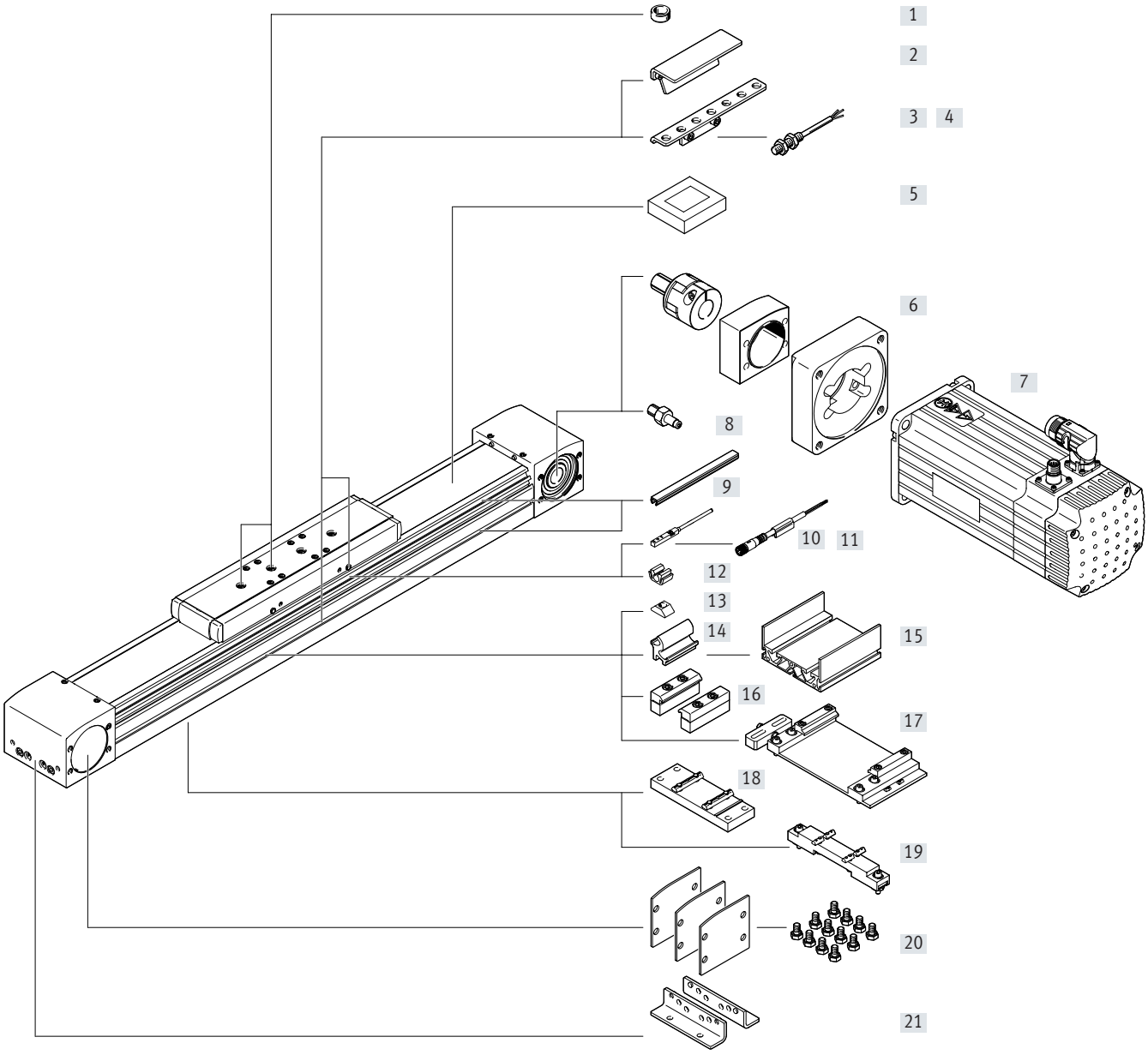
Motor

Servo motor EMME-AS, EMMS-AS

Motor controller

Servo drive:
CMMT-AS
Servo drive for extra-low voltage:
CMMT-ST

Peripherals overview



	Type	→ Page/Internet
[1]	Centring pin/sleeve ZBS, ZBH	322
[2]	Switch lug SF-EGC	
[3]	Sensor bracket HWS-EGC	
[4]	Proximity switch, M8 SIEN-M8	
[5]	Clamping element EADT	
[6]	Axial kit EAMM	321
[7]	Motor EMME, EMMS	361, 367, emme
[8]	Drive shaft EAMB	322
[9]	Slot cover ABP	
[10]	Proximity switch, T-slot SIES-8M	
[11]	Connecting cable NEBU, SIM	nebu

	Type	→ Page/Internet
[12]	Clip SMBK	322
[13]	Slot nut NST	
[14]	Adapter kit DHAM	
[15]	Support profile HMIA	
[16]	Profile mounting MUE	
[17]	Adjusting kit EADC-E16	
[18]	Central support EAHF-L5	
[19]	Adjusting kit EADC-E15	
[20]	Cover kit EASC-L5	
[21]	Foot mounting HPE	

Toothed belt axes ELGA-TB-KF

Ordering – Modular product system

Size		70	80	120	150	Conditi-ons	Code		Enter code
Module no.		8024914	8024915	8024916	8024917				
Design		Linear axis					ELGA		ELGA
Function		Toothed belt					-TB		-TB
Guide		Recirculating ball bearing guide					-KF		-KF
Size	[mm]	70	80	120	150		-...		
Stroke length	[mm]	1 ... 5000	1 ... 8500	1 ... 8500	1 ... 7000		-...		
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)				[1]	-...H		
Additional slide		None							
		1 slide left					-ZL		
		1 slide right					-ZR		
Displacement encoder, incremental		None							
		Resolution 2.5 µm					-M1		
		Resolution 10 µm					-M2		
Displacement encoder attachment position		None							
		Rear				[2]	B		
		Front				[2]	F		
Material of toothed belt		Chloroprene rubber							
		Coated PU					-PU2		
Operating instructions		With operating instructions							
		Without operating instructions					-DN		

[1] ... **H** The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

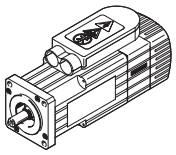
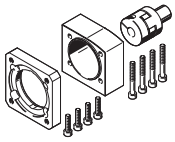
[2] **B, F** Only with displacement encoder M1, M2

Ordering data

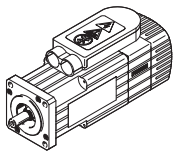
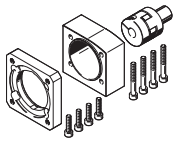
Size	Stroke [mm]	Part no.	Type
70	300	8041851	ELGA-TB-KF-70-300-0H
	400	8041852	ELGA-TB-KF-70-400-0H
	500	8041853	ELGA-TB-KF-70-500-0H
	600	8041854	ELGA-TB-KF-70-600-0H
	800	8041855	ELGA-TB-KF-70-800-0H
	1000	8041856	ELGA-TB-KF-70-1000-0H
	1200	8041857	ELGA-TB-KF-70-1200-0H
80	400	8041858	ELGA-TB-KF-80-400-0H
	500	8041859	ELGA-TB-KF-80-500-0H
	600	8041860	ELGA-TB-KF-80-600-0H
	800	8041861	ELGA-TB-KF-80-800-0H
	1000	8041862	ELGA-TB-KF-80-1000-0H
	1200	8041863	ELGA-TB-KF-80-1200-0H
120	400	8041864	ELGA-TB-KF-120-400-0H
	500	8041865	ELGA-TB-KF-120-500-0H
	600	8041866	ELGA-TB-KF-120-600-0H
	800	8041867	ELGA-TB-KF-120-800-0H
	1000	8041868	ELGA-TB-KF-120-1000-0H
	1200	8041869	ELGA-TB-KF-120-1200-0H
	1500	8041870	ELGA-TB-KF-120-1500-0H

Key features:
- Stroke reserve: 0 mm
- Standard slide

Accessories – Ordering data

Permissible axis/motor combinations with axial kit		
Motor/gear unit[1] 	Axial kit 	
Type	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
EMMT-AS-60-..., 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		
EMMT-AS-100-..., 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
EMMT-AS-60-..., 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
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	1258793	EAMM-A-N48-80G
EMMT-AS-100-..., EMME-AS-100-..., 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

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

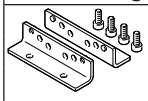
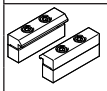
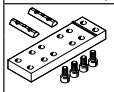
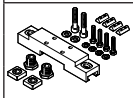
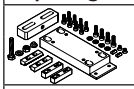
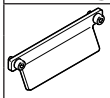
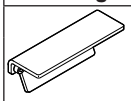
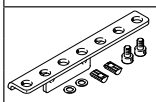
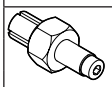
Permissible axis/motor combinations with axial kit		
Motor/gear unit[1] 	Axial kit 	
Type	Part no.	Type
ELGA-TB-...-120		
With servo motor		
EMMS-AS-140-...	1201691	EAMM-A-N80-140A
With servo motor and gear unit		
EMMS-AS-70-... EMGA-80-P-G...-SAS-70	2372096	EAMM-A-N80-80G
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	2372096	EAMM-A-N80-80G
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	2372096	EAMM-A-N80-80G
EMMT-AS-100-..., EMME-AS-100-..., 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-...	3657226	EAMM-A-L95-140A-G2
EMMS-AS-190-...	3659562	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
EMMT-AS-80-..., EMME-AS-80-... EMGA-80-P-G...-EAS-80	3660191	EAMM-A-L95-80G-G2
EMMT-AS-100-..., EMME-AS-100-..., EMMS-AS-100-... EMGA-80-P-G...-SAS-100	3660191	EAMM-A-L95-80G-G2
EMMT-AS-100-..., EMME-AS-100-..., 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-L95-80G2

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

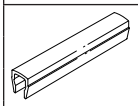
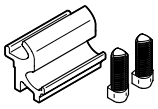
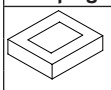
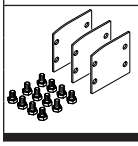
Note

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

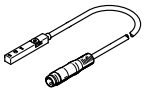
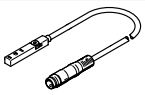
Accessories – Ordering data

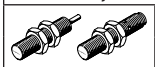
	For size	Part No.	Type
Foot mounting			
	70	558321	HPE-70
	80	558322	HPE-80
	120	558323	HPE-120
	150	3002636	HPE-150
Profile mounting			
	70	558043	MUE-70/80
	80	558043	MUE-70/80
	120	558044	MUE-120/185
	150	558044	MUE-120/185
Central support EAHF			
	70	2349256	EAHF-L5-70-P
	80	3535188	EAHF-L5-80-P
	120	2410274	EAHF-L5-120-P
	150	3535189	EAHF-L5-150-P
Adjusting kit EADC-E15			
	70	8047566	EADC-E15-80-E7
	80	8047566	EADC-E15-80-E7
	120	8047567	EADC-E15-120-E7
	150	8047568	EADC-E15-185-E7
Adjusting kit EADC-E16			
	80	8047577	EADC-E16-80-E7
	120	8047578	EADC-E16-120-E7
Switch lug[1]			
	70	558047	SF-EGC-1-70
	80	558048	SF-EGC-1-80
	120	558049	SF-EGC-1-120
	150	558051	SF-EGC-1-185
Switch lug[2]			
	70	558052	SF-EGC-2-70
	80	558053	SF-EGC-2-80
	120	558054	SF-EGC-2-120
	150	558056	SF-EGC-2-185
Sensor bracket[3]			
	70	558057	HWS-EGC-M5
	80	558057	HWS-EGC-M5
	120	570365	HWS-EGC-M8-B
	150	560517	HWS-EGC-M8:KURZ
Drive shaft EAMB			
	70	1344642	EAMB-24-9-15X21-16X20
	80	558036	EAMB-24-6-15X21-16X20
	120	558037	EAMB-34-6-25X26-23X27
	150	558038	EAMB-44-7-35X30-32X32
Slot nut			
	70, 80	150914	NST-5-M5
	120, 150	150915	NST-8-M6

1) For sensing via proximity sensor SIES-8M.
2) For sensing via proximity sensor SIEN-M8B or SIES-8M.
3) For proximity sensor SIEN-M8B.

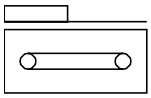
	For size	Part No.	Type
Centring pin[4]			
	70	150928	ZBS-5
Centring sleeve[4]			
	70 ... 150	150927	ZBH-9
Slot cover[5]			
	For mounting slot		
	70, 80	151681	ABP-5
	120, 150	151682	ABP-8
	For sensor slot		
	70 ... 150	563360	ABP-5-S1
Adapter kit DHAM			
	80	562241	DHAM-ME-N1-CL
	120, 150	562242	DHAM-ME-N2-CL
	70, 80	574560	DHAM-ME-N1-50-CL
	120, 150	574561	DHAM-ME-N2-50-CL
	70 ... 150	539379	HMIA-E07- -
Clip			
	50 ... 185	534254	SMBK-8
Clamping component			
	70, 80	8058451	EADT-S-L5-70
	120, 150	8058451	EADT-S-L5-120
Cover kit			
	70	8049255	EASC-L5-70
	80	8049254	EASC-L5-80
	120	8049253	EASC-L5-120
	150	8049244	EASC-L5-150

4) Packaging unit 10 pieces.
5) Packaging unit 2x 0.5 m

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

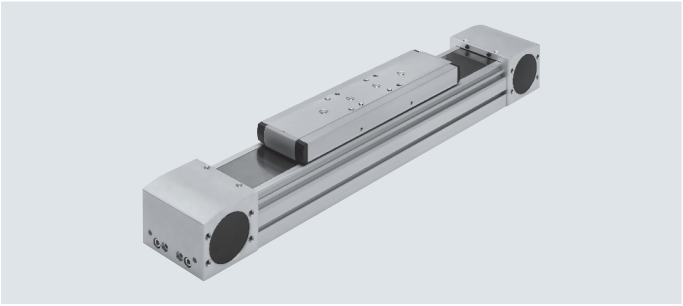
		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

Data sheet



Size
70 ... 150

Stroke length
50 ... 8500 mm



General technical data					
Size		70	80	120	150
Design		Electromechanical axis with toothed belt			
Guide		Recirculating ball bearing guide			
Mounting position		Any			
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. no-load resistance to shifting[1]	[N]	41.9	50.3	76.2	108.3
Max. driving torque	[Nm]	5.02	15.92	34.1	73.85
Max. speed	[m/s]	5			
Max. acceleration	[m/s²]	50			
Repetition accuracy	[mm]	±0.08			

1) At 0.2 m/s

Operating and environmental conditions		
Ambient temperature[1]	[°C]	–10 ... +60
Degree of protection		IP40
Duty cycle	[%]	100

1) Note operating range of proximity switches

Toothed belt					
Size		70	80	120	150
Pitch	[mm]	3	5	5	8
Elongation[1]					
ELGA-...	[%]	0.213	0.168	0.21	0.258
ELGA-...-PU2	[%]	0.105	0.1	0.122	0.083
Effective diameter	[mm]	28.65	39.79	52.52	73.85
Feed constant	[mm/rev]	90	125	165	232

1) At max. feed force

Mass moment of inertia					
Size		70	80	120	150
J_O	[kg mm²]	243	982	4099	15426
J_H per metre stroke	[kg mm²/m]	19	93	215	586
J_L per kg payload	[kg mm²/kg]	205	396	690	1363
J_W for additional slide	[kg mm²]	186	761	2891	9869

The mass moment of inertia J_A of the entire axis is calculated as follows:

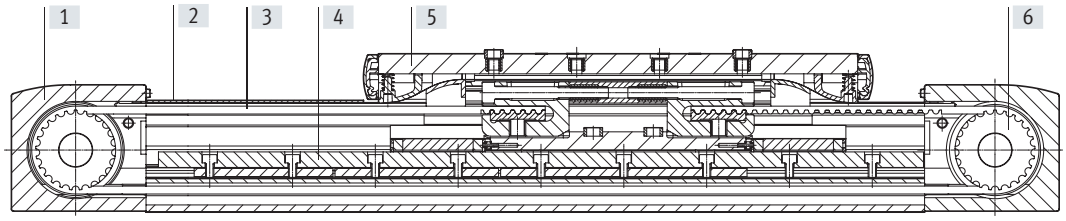
$J_A = J_O + K \times J_W + J_H \times \text{working stroke [m]} + J_L \times m_{payload}$ [kg]

K = Number of additional slides

Toothed belt axes ELGA-TB-KF

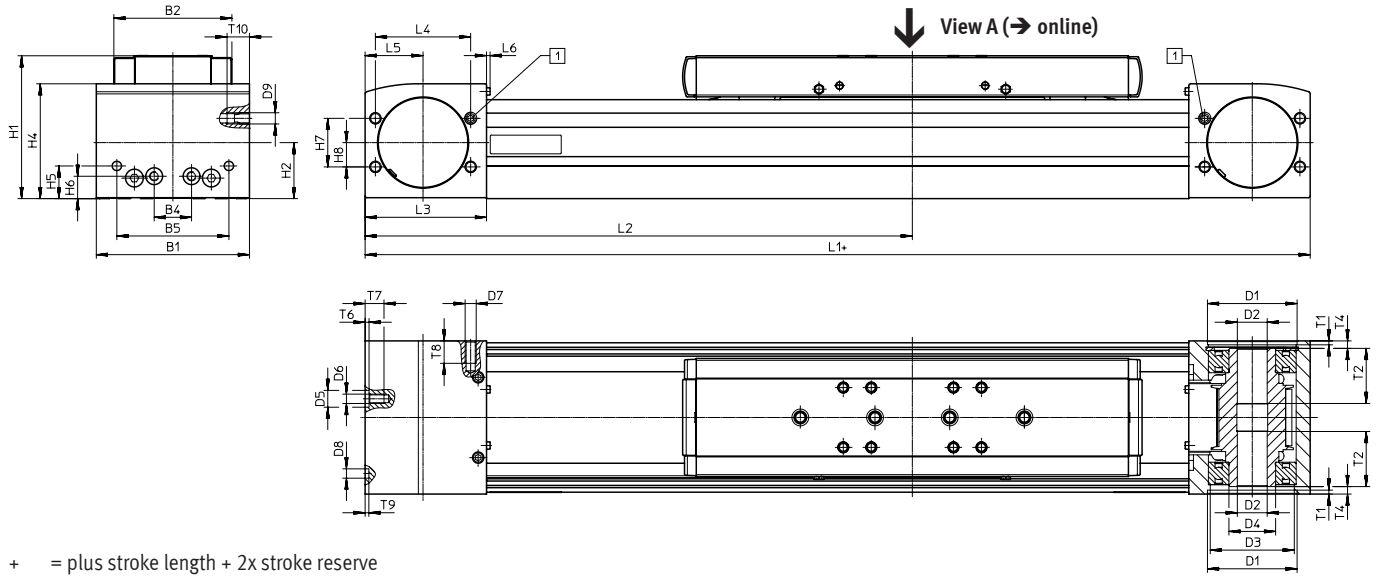
Data sheet

Materials



Axis					
Size		70	80	120	150
[1]	Drive cover	Anodised wrought aluminium alloy			
[2]	Cover strip	Stainless steel strip, non-corroding			
[3]	Toothed belt				
	ELGA-...	Polychloroprene with glass cord and nylon coating			
	ELGA-...-PU2	Polyurethane with steel cord and nylon covering			
[4]	Guide rail	Stainless steel		Tempered steel	
[5]	Slide	Anodised wrought aluminium alloy			
[6]	Belt pulley	High-alloy stainless steel			
	Note on materials	RoHS-compliant			
		Contains paint-wetting impairment substances			

Dimensions



\+ = plus stroke length + 2x stroke reserve

[1] Sealing air connection

Size	B1	B2	B4	B5	D1 ø H7	D2 ø H7	D3 ø	D4 ø	D5 ø 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 ø 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

Toothed belt axes ELGA-TB-KF

Spindle axes ELGC-BS-KF

Highlights

+ 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

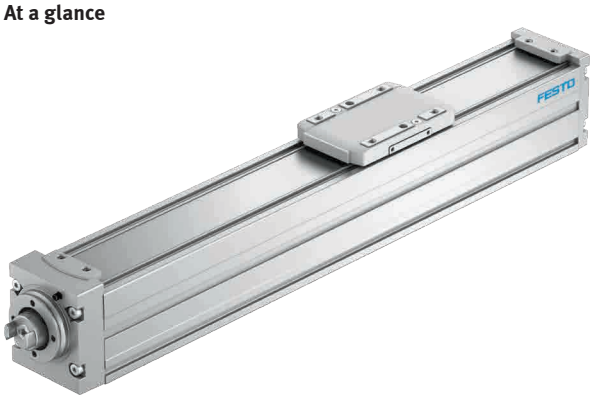
★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Spindle axes ELGC-BS-KF

Features

At a glance



- Optimal installation space to working space ratio
- Protected against external influences by internal guide
- Unique assembly system
- Compact double bearing integrated in the axis to save space
- Stainless steel cover strip kept in place with magnetic strips
- Wide range of mounting options for optimum machine integration

Compact
Optimum dimensions thanks to the integrated compact coupling and a very short slide

Flexible
Adapterless combination of ELGC and EGSC using the innovative "one size down" assembly system

Integrated
Simple position sensing with proximity switch SMT-8M and integrated positioning magnet

Protected
The cover strip and the optional vacuum connection provide protection against particle immissions and emissions

Modular and flexible with motor, motor mounting kit and servo drive

Motor

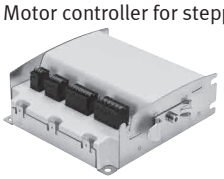
Servo motor

Stepper motor

Servo drive

Servo drive

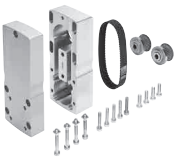
Motor controller for stepper motor



Motor mounting kit

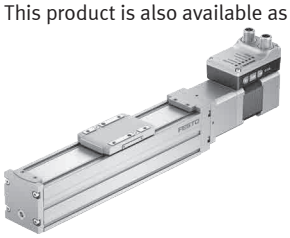
Axial kit

Parallel kit



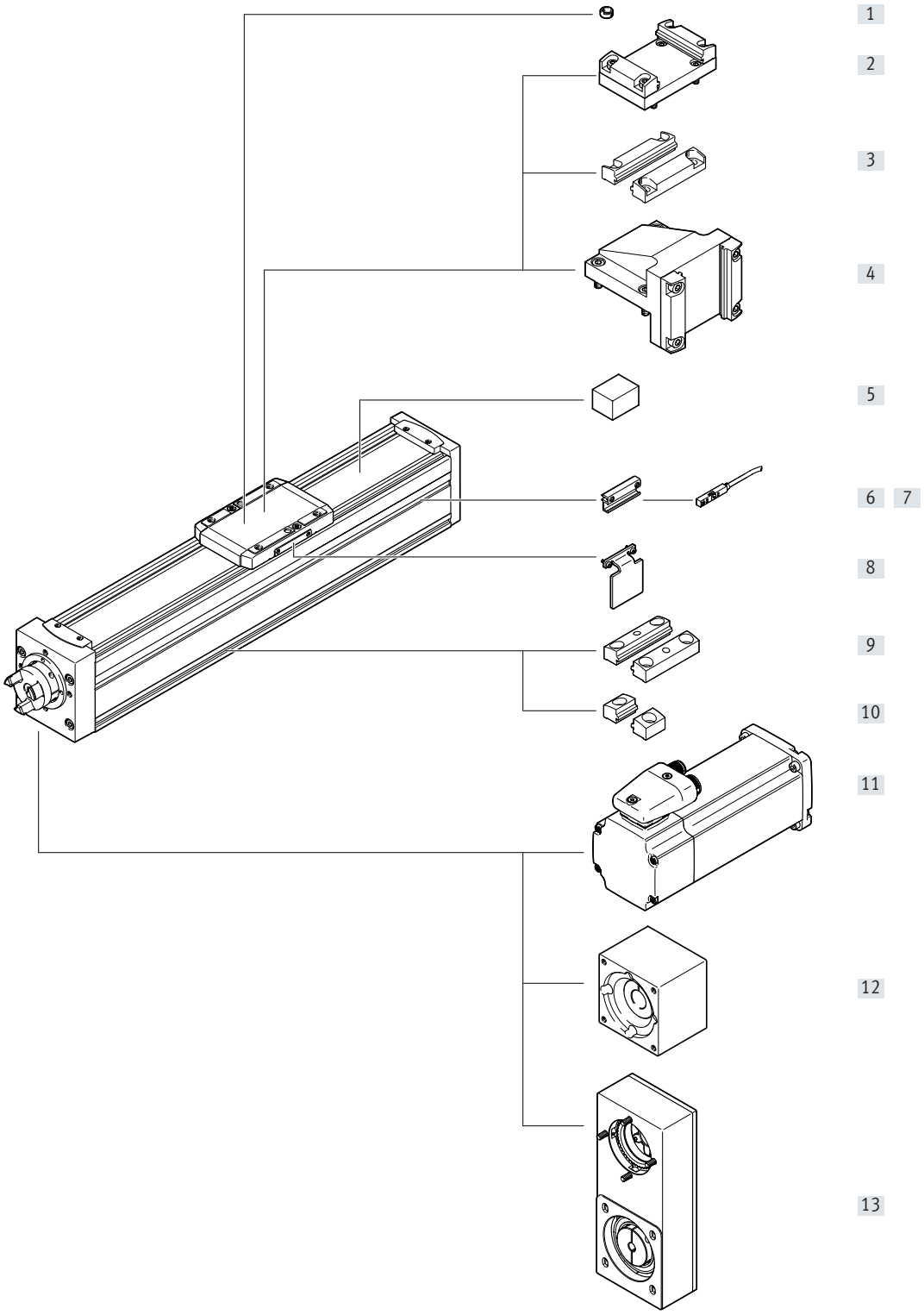
Simplicity in one unit

This product is also available as a product unit as part of the Simplified Motion Series:



- The Simplified Motion Series combines the simplicity of pneumatics with the benefits of electric automation. The perfect solution for all users who are looking for an electric alternative for very simple movement and positioning tasks, but don't want the commissioning process for traditional electric drive systems that can often be quite complex.
- Simplified functionality for simple movements between two end positions
- A variety of movements with different mechanical systems
- Integrated products eliminate the need for a control cabinet
- Quick and easy commissioning without software or special expertise
- Digital I/O and IO-Link integrated as standard

Peripherals overview



	Type	➔ Page/Internet
[1]	Centring pin/sleeve ZBS/ZBH	331
[2]	Adapter kit EHAA-D-L2	
[3]	Profile mounting EAHF-L2-...-P-D...	
[4]	Angle kit EHAA-D-L2-...-AP	
[5]	Clamping element EADT-S-L5-32	
[6]	Sensor bracket EAPM-L2-SH	
[7]	Proximity switches SIES-8M	
	Proximity switches SMT-8M	

	Type	➔ Page/Internet
[8]	Switch lug EAPM-L2-...-SLS	331
[9]	Profile mounting EAHF-L2-...-P	
[10]	Profile mounting EAHF-L2-...-P-S	
[11]	Motor EMME-AS, EMMS-ST	361, 367, emme , emms
[12]	Axial kit EAMM-A	330
[13]	Parallel kit EAMM-U	331

Spindle axes ELGC-BS-KF

Type code explanation

001	Series
ELGC	Gantry axis

002	Drive system
BS	Ball screw drive

003	Guide
KF	Recirculating ball bearing guide

004	Size
32	32
45	45
60	60
80	80

005	Stroke
...	100, 200, 300, 400, 500, 600, 800, 1000

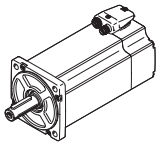
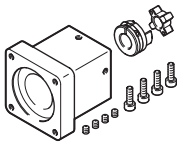
006	Spindle pitch
8P	8 mm
10P	10 mm
12P	12 mm
16P	16 mm

Ordering data

Size	Pitch [mm/rev]	Stroke [mm]	Part no.	Type
32	8	100	8061477	ELGC-BS-KF-32-100-8P
		200	8061478	ELGC-BS-KF-32-200-8P
		300	8061479	ELGC-BS-KF-32-300-8P
		400	8061480	ELGC-BS-KF-32-400-8P
		500	8061481	ELGC-BS-KF-32-500-8P
		600	8061482	ELGC-BS-KF-32-600-8P
		800	8061483	ELGC-BS-KF-32-800-8P
45	10	100	8061484	ELGC-BS-KF-45-100-10P
		200	8061485	ELGC-BS-KF-45-200-10P
		300	8061486	ELGC-BS-KF-45-300-10P
		400	8061487	ELGC-BS-KF-45-400-10P
		500	8061488	ELGC-BS-KF-45-500-10P
		600	8061489	ELGC-BS-KF-45-600-10P
		800	8061490	ELGC-BS-KF-45-800-10P
60	12	100	8061491	ELGC-BS-KF-60-100-12P
		200	8061492	ELGC-BS-KF-60-200-12P
		300	8061493	ELGC-BS-KF-60-300-12P
		400	8061494	ELGC-BS-KF-60-400-12P
		500	8061495	ELGC-BS-KF-60-500-12P
		600	8061496	ELGC-BS-KF-60-600-12P
		800	8061497	ELGC-BS-KF-60-800-12P
80	16	100	8061498	ELGC-BS-KF-80-100-16P
		200	8061499	ELGC-BS-KF-80-200-16P
		300	8061500	ELGC-BS-KF-80-300-16P
		400	8061501	ELGC-BS-KF-80-400-16P
		500	8061502	ELGC-BS-KF-80-500-16P
		600	8061503	ELGC-BS-KF-80-600-16P
		800	8061504	ELGC-BS-KF-80-800-16P
		1000	8061505	ELGC-BS-KF-80-1000-16P

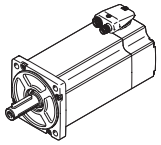
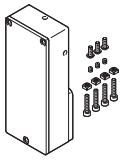
Accessories – Ordering data

Permissible axis/motor combinations with axial kit – Without gear unit

Motor[1]	Axial kit	
		
Type	Part no.	Type
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		
EMMT-AS-60-...	4133487	EAMM-A-T42-60P
EMME-AS-60-...	4133487	EAMM-A-T42-60P
EMMT-AS-80-...	4623788	EAMM-A-T42-80P
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		
EMMT-AS-60-...	4824833	EAMM-A-T46-60P
EMME-AS-60-...	4824833	EAMM-A-T46-60P
EMMT-AS-80-...	4624170	EAMM-A-T46-80P
EMME-AS-80-...	4624170	EAMM-A-T46-80P
EMMT-AS-100-...	4624227	EAMM-A-T46-100A
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 max. permissible transferable torque of the axial kit.

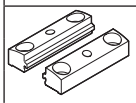
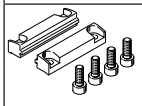
Accessories – Ordering data

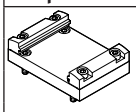
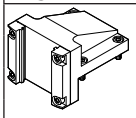
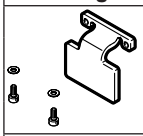
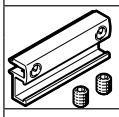
Permissible axis/motor combinations with parallel kit		
Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
ELGC-BS-KF-32		
With servo motor		
EMME-AS-40-...	4782056	EAMM-U-45-V25-40P-63
With stepper motor		
EMMS-ST-42-...	4825645	EAMM-U-45-V25-42A-63
ELGC-BS-KF-45		
With servo motor		
EMME-AS-40-...	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		
EMMS-AS-55-...	8092868	EAMM-U-65-T42-55A-87
EMMT-AS-60-...	4784301	EAMM-U-65-T42-60P-87
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		
EMMT-AS-60-...	4824069	EAMM-U-87-T46-60P-114
EMME-AS-60-...	4824069	EAMM-U-87-T46-60P-114
EMMT-AS-80-...	4822696	EAMM-U-87-T46-80P-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 max. permissible transferable torque of the axial kit.

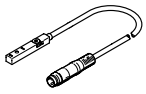
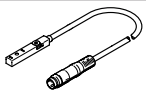
Note

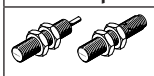
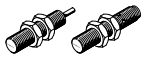
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.
When using parallel kits, the no-load driving torque of the particular kit must be taken into consideration.
The parallel kit can be mounted in all directions.

	For size	Part no.	Type
Profile mounting			
	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
Profile mounting			
	32	4835684	EAHF-L2-25-P
	45	4835728	EAHF-L2-45-P
	60	4835728	EAHF-L2-45-P
	80	4835728	EAHF-L2-45-P
Profile mounting			
	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

	For size	Part no.	Type
Adapter kit			
	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
Angle kit			
	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
Switch lug			
	32	8067259	EAPM-L2-32-SLS
	45	8067260	EAPM-L2-45-SLS
	60	8067261	EAPM-L2-60-SLS
	80	8067262	EAPM-L2-80-SLS
Sensor bracket			
	32 ... 80	4759852	EAPM-L2-SH
Centring pin ZBS/centring sleeve ZBH[1]			
	32	525273	ZBS-2
	45	562959	ZBS-4
	60	189652	ZBH-5
	80	186717	ZBH-7
Clamping component			
	32, 45	8065818	EADT-S-L5-32
	60, 80	8058451	EADT-S-L5-70

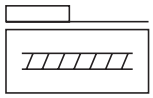
1) Packaging unit 10 pieces.

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

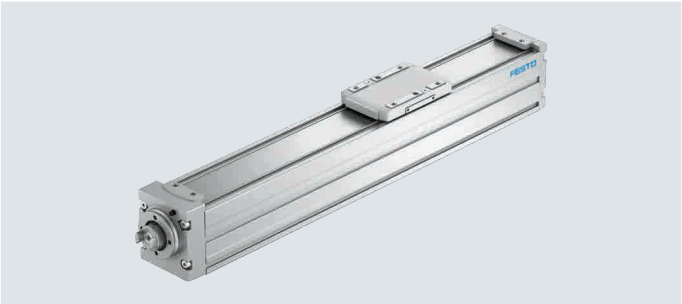
Spindle axes ELGC-BS-KF

Data sheet



Size
32 ... 80

Stroke length
100 ... 1000 mm



General technical data					
Size		32	45	60	80
Design		Electromechanical axis with ball screw drive			
Guide		Recirculating ball bearing guide			
Mounting position		Any			
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	[Nm]	0.02	0.032	0.042	0.095
Low travel speed	[m/s]	0.05	0.05	0.05	0.05
No-load torque at	[Nm]	0.04	0.12	0.25	0.40
Max. travel speed	[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/s²]	15			
Repetition accuracy	[mm]	±0.015	±0.015	±0.01	±0.01
Reversing backlash	[mm]	≤ 0.15			
Position sensing		Magneto-resistive, inductive			

1) At the driving shaft
2) Rotational speed and travel speed are stroke-dependent

Operating and environmental conditions		
Ambient temperature[1]	[°C]	0 ... +50
Degree of protection		IP40
Duty cycle	[%]	100
Maintenance interval		Life-time lubrication

1) Note operating range of proximity switches

Spindle					
Size		32	45	60	80
Diameter	[mm]	8	10	12	16
Pitch	[mm/rev]	8	10	12	16

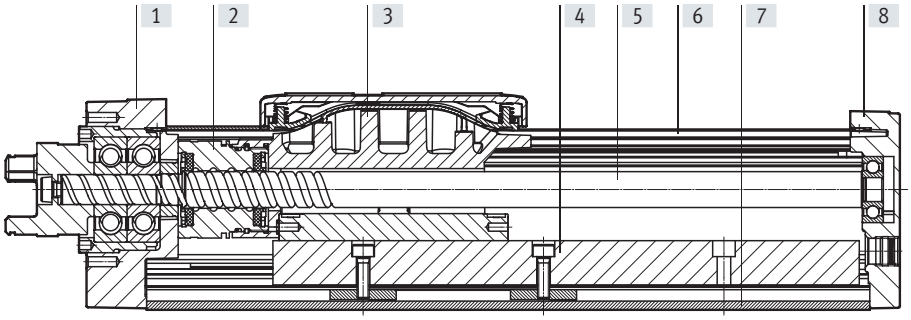
Mass moment of inertia					
Size		32	45	60	80
J_O	[kg mm²]	0.274	0.820	2.235	7.856
J_H per metre stroke	[kg mm²/m]	2.218	5.056	10.779	35.257
J_L per kg payload	[kg mm²/kg]	1.621	2.533	3.648	6.485

The mass moment of inertia J_{rot} of the rotating parts of the axis is calculated as follows:

$J_{rot} = J_O + J_H \times \text{working stroke [m]}$

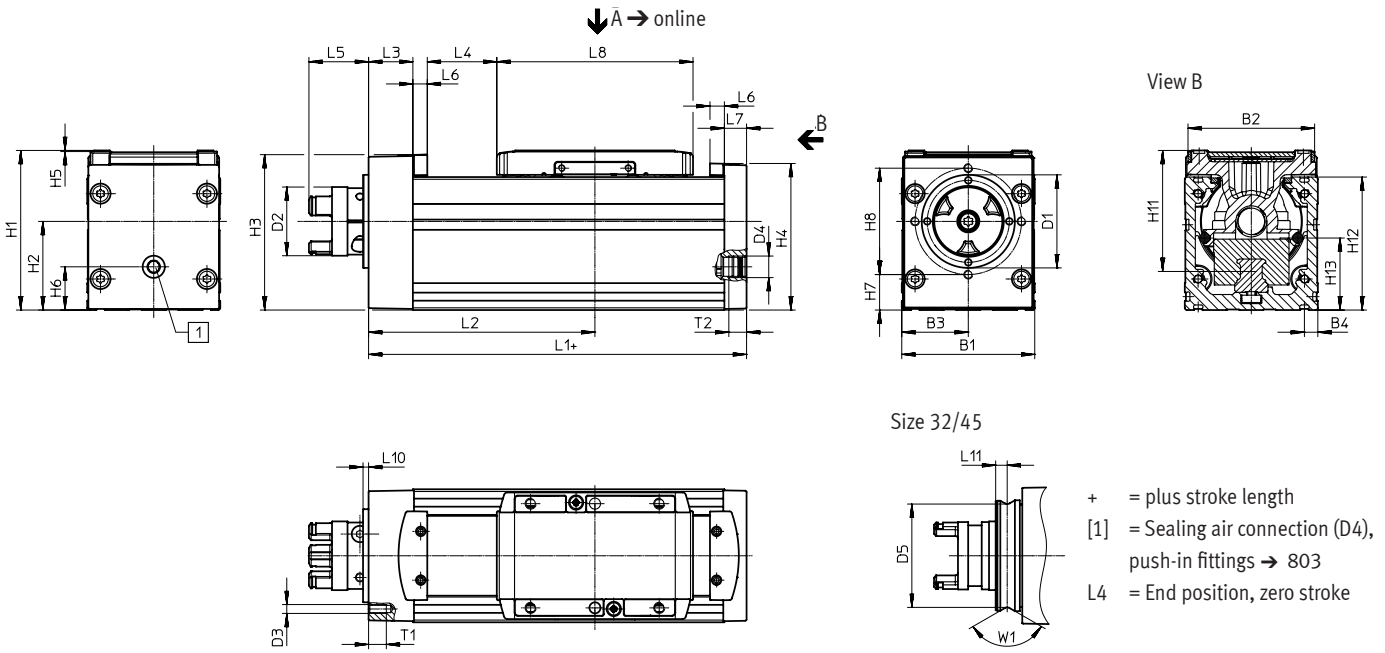
Data sheet

Materials



Axis		
[1]	Drive cover	Painted die-cast aluminium
[2]	Spindle nut	Steel
[3]	Slide	Die-cast aluminium
[4]	Guide	Steel
[5]	Spindle	Steel
[6]	Cover strip	High-alloy stainless steel
[7]	Profile	Anodised wrought aluminium alloy
[8]	End cap	Painted die-cast aluminium
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Dimensions



\+ = plus stroke length
[1] = Sealing air connection (D4), push-in fittings → 803
L4 = End position, zero stroke

Size	B1	B2	B3	B4	D1 Ø	D2[1] Ø	D3	D4	D5 Ø	H1	H2
32	32	29.6	16	4.9	25	15.5	–	M5	23	38.5	20
45	45	42.6	22.5	6.1	32	16.3	–	G1/8	29.6	54	27.9
60	60	57.1	30	6.1	42	31.4	M4	G1/8	–	72	40
80	80	77.1	40	6.1	46	31.4	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	–

1) Coupling diameter or interference diameter of locking screw

Toothed belt axes ELGC-TB-KF

Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Toothed belt axes ELGC-TB-KF

Features

At a glance

- Optimal installation space to working space ratio
- Protected against external influences by internal guide
- Compact, integrated coupling, easy to service
- Unique assembly system
- Compact double bearing integrated in the axis to save space
- Stainless steel cover strip kept in place with magnetic strips
- Easy to clean and less susceptible to contamination

Compact
Optimum dimensions thanks to the integrated compact coupling and a very short slide

Flexible
Adapterless combination of ELGC and EGSC using the innovative "one size down" assembly system

Integrated
Simple position sensing with proximity switch SMT-8M and integrated positioning magnet

Protected
The cover strip and optional vacuum connection protect against particle emissions and atmospheric pollution

Modular and flexible with motor, motor mounting kit and servo drive

Motor

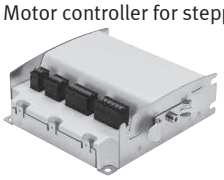
Servo motor

Stepper motor

Servo drive

Servo drive

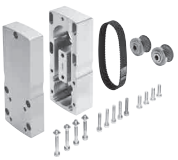
Motor controller for stepper motor



Motor mounting kit

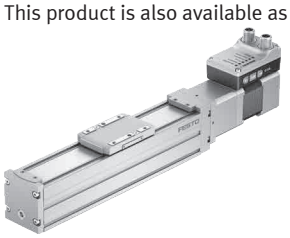
Axial kit

Parallel kit



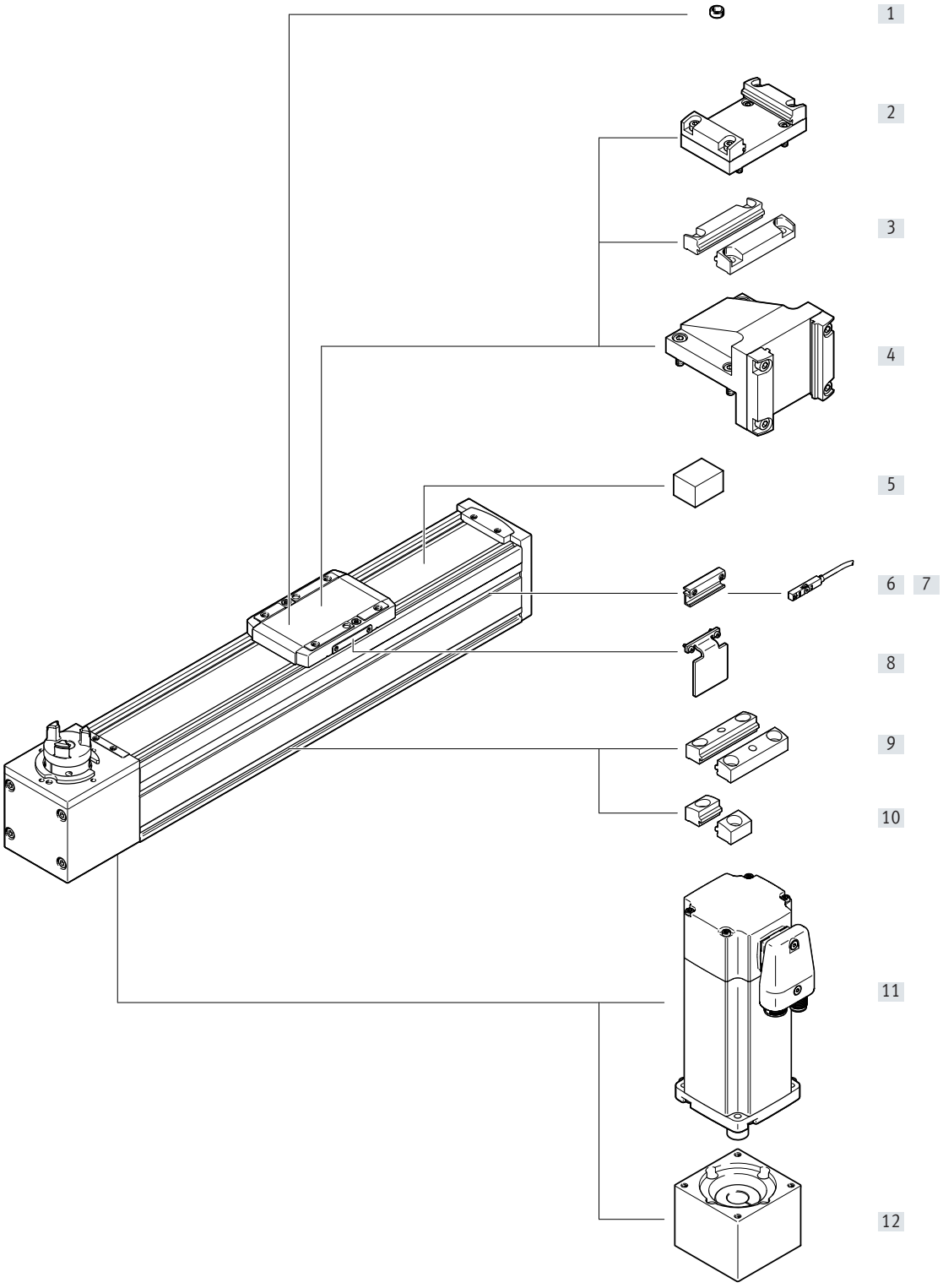
Simplicity in one unit

This product is also available as a product unit as part of the Simplified Motion Series:



- The Simplified Motion Series combines the simplicity of pneumatics with the benefits of electric automation. The perfect solution for all users who are looking for an electric alternative for very simple movement and positioning tasks, but don't want the commissioning process for traditional electric drive systems that can often be quite complex.
- Simplified functionality for simple movements between two end positions
- A variety of movements with different mechanical systems
- Integrated products eliminate the need for a control cabinet
- Quick and easy commissioning without software or special expertise
- Digital I/O and IO-Link integrated as standard

Peripherals overview



	Type	→ Page/Internet
[1]	Centring pin/sleeve ZBS/ZBH	339
[2]	Adapter kit EHAA-D-L2	
[3]	Profile mounting EAHF-L2-...-P-D...	
[4]	Angle kit EHAA-D-L2-...-AP	
[5]	Clamping element EADT-S-L5-32	
[6]	Sensor bracket EAPM-L2-SH	
[7]	Proximity switches SIES-8M	
	Proximity switches SMT-8M	

	Type	→ Page/Internet
[8]	Switch lug EAPM-L2-...-SHS	339
[9]	Profile mounting EAHF-L2-...-P	
[10]	Profile mounting EAHF-L2-...-P-S	
[11]	Motor EMME-AS, EMMS-ST	361, 367, emme , emms
[12]	Axial kit EAMM-A	338

Toothed belt axes ELGC-TB-KF

Type code explanation

001	Series
ELGC	Gantry axis

002	Drive system
TB	Toothed belt

003	Guide
KF	Recirculating ball bearing guide

004	Size
45	45
60	60
80	80

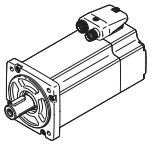
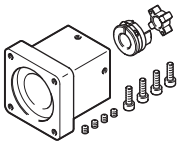
005	Stroke
200	200
300	300
500	500
600	600
800	800
1000	1000
1200	1200
1500	1500
1800	1800
2000	2000

Ordering data

Size	Stroke [mm]	Part no.	Type
45	200	8062768	ELGC-TB-KF-45-200
	300	8062769	ELGC-TB-KF-45-300
	500	8062770	ELGC-TB-KF-45-500
	600	8062771	ELGC-TB-KF-45-600
	800	8062772	ELGC-TB-KF-45-800
	1000	8062773	ELGC-TB-KF-45-1000
	1200	8062774	ELGC-TB-KF-45-1200
	1500	8062775	ELGC-TB-KF-45-1500
60	200	8062776	ELGC-TB-KF-60-200
	300	8062777	ELGC-TB-KF-60-300
	500	8062778	ELGC-TB-KF-60-500
	600	8062779	ELGC-TB-KF-60-600
	800	8062780	ELGC-TB-KF-60-800
	1000	8062781	ELGC-TB-KF-60-1000
	1200	8062782	ELGC-TB-KF-60-1200
	1500	8062783	ELGC-TB-KF-60-1500
	1800	8062784	ELGC-TB-KF-60-1800
	2000	8062785	ELGC-TB-KF-60-2000
80	200	8062786	ELGC-TB-KF-80-200
	300	8062787	ELGC-TB-KF-80-300
	500	8062788	ELGC-TB-KF-80-500
	600	8062789	ELGC-TB-KF-80-600
	800	8062790	ELGC-TB-KF-80-800
	1000	8062791	ELGC-TB-KF-80-1000
	1200	8062792	ELGC-TB-KF-80-1200
	1500	8062793	ELGC-TB-KF-80-1500
	1800	8062794	ELGC-TB-KF-80-1800
	2000	8062795	ELGC-TB-KF-80-2000

Accessories – Ordering data

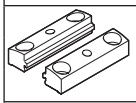
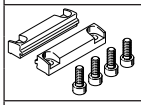
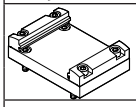
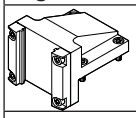
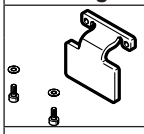
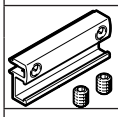
Permissible axis/motor combinations with axial kit

Motor[1]	Axial kit
	
Type	Part no. Type
ELGC-TB-KF-45	
With servo motor	
EMME-AS-40-...	4595742 EAMM-A-V32-40P
EMMT-AS-60-...	4608750 EAMM-A-V32-60P
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	
EMMT-AS-60-...	4133487 EAMM-A-T42-60P
EMME-AS-60-...	4133487 EAMM-A-T42-60P
EMMT-AS-80-...	4623788 EAMM-A-T42-80P
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	
EMMT-AS-60-...	4824833 EAMM-A-T46-60P
EMME-AS-60-...	4824833 EAMM-A-T46-60P
EMMT-AS-80-...	4624170 EAMM-A-T46-80P
EMME-AS-80-...	4624170 EAMM-A-T46-80P
EMMT-AS-100-...	4624227 EAMM-A-T46-100A
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

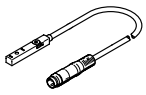
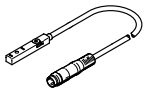
1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

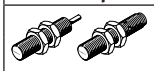
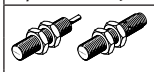
Note
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

Accessories – Ordering data

	For size	Part no.	Type
Profile mounting			
	45	5183133	EAHF-L2-45-P-S
	60	5183133	EAHF-L2-45-P-S
	80	5183133	EAHF-L2-45-P-S
Profile mounting			
	45	4835728	EAHF-L2-45-P
	60	4835728	EAHF-L2-45-P
	80	4835728	EAHF-L2-45-P
Profile mounting			
	45	4759748	EAHF-L2-25-P-D2
	60	4759739	EAHF-L2-45-P-D3
	80	4759726	EAHF-L2-45-P-D4
Adapter kit			
	45	8066714	EHAA-D-L2-45-L2-45
	60	8066715	EHAA-D-L2-60-L2-60
	80	8066716	EHAA-D-L2-80-L2-80
Angle kit			
	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
Switch lug			
	45	8067260	EAPM-L2-45-SLS
	60	8067261	EAPM-L2-60-SLS
	80	8067262	EAPM-L2-80-SLS
Sensor bracket			
	45 ... 80	4759852	EAPM-L2-SH
Centring pin ZBS/centring sleeve ZBH[1]			
	45	562959	ZBS-4
	60	189652	ZBH-5
	80	186717	ZBH-7
Clamping component			
	45	8065818	EADT-S-L5-32
	60, 80	8058451	EADT-S-L5-70

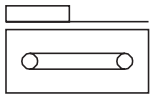
1) Packaging unit 10 pieces.

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Inductive proximity sensor, N/O contact, M8			
	PNP, cable	★ 150386	SIEN-M8B-PS-K-L
	PNP, plug	★ 150387	SIEN-M8B-PS-S-L
	NPN, cable	150384	SIEN-M8B-NS-K-L
	NPN, plug	150385	SIEN-M8B-NS-S-L
N/C contact, M8			
	PNP, cable	150390	SIEN-M8B-PO-K-L
	PNP, plug	150391	SIEN-M8B-PO-S-L
	NPN, cable	150388	SIEN-M8B-NO-K-L
	NPN, plug	150389	SIEN-M8B-NO-S-L

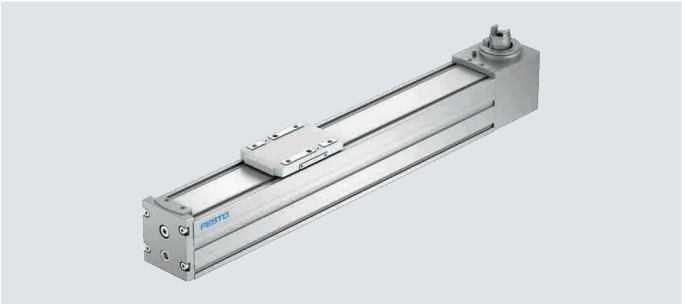
Toothed belt axes ELGC-TB-KF

Data sheet



Size
45 ... 80

Stroke length
200 ... 2000 mm



General technical data				
Size		45	60	80
Design		Electromechanical axis with toothed belt		
Guide		Recirculating ball bearing guide		
Mounting position		Any		
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/s²]	15		
Repetition accuracy	[mm]	±0.1		
Position sensing		Magneto-resistive, inductive		

1) At 0.2 m/s

Operating and environmental conditions		
Ambient temperature[1]	[°C]	0 ... +50
Degree of protection		IP40
Duty cycle	[%]	100
Maintenance interval		Life-time lubrication

1) Note operating range of proximity switches

Toothed belt				
Size		45	60	80
Indexing	[mm]	2	3	3
Elongation[1]	[%]	0.187	0.124	0.200
Effective diameter	[mm]	19.1	24.83	33.42
Feed constant	[mm/rev]	60	78	105

1) At max. feed force

Mass moment of inertia				
Size		45	60	80
J_O	[kg mm²]	18.62	88.04	291.2
J_H per metre stroke	[kg mm²/m]	2.81	8.51	19.27
J_L per kg payload	[kg mm²/kg]	91.19	154.11	279.3

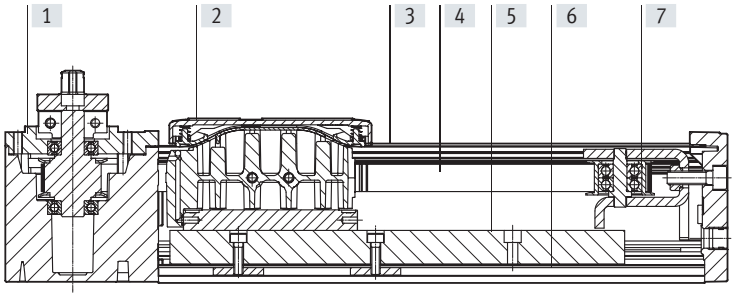
The mass moment of inertia J_A of the entire axis is calculated as follows:

$J_A = J_O + J_H \times \text{working stroke [m]} + J_L \times m_{payload}$ [kg]

Size		45	60	80
Max. impact energy	[J]	0.5×10^{-3}	1×10^{-3}	2×10^{-3}
At max. homing speed	[m/s]	0.01		

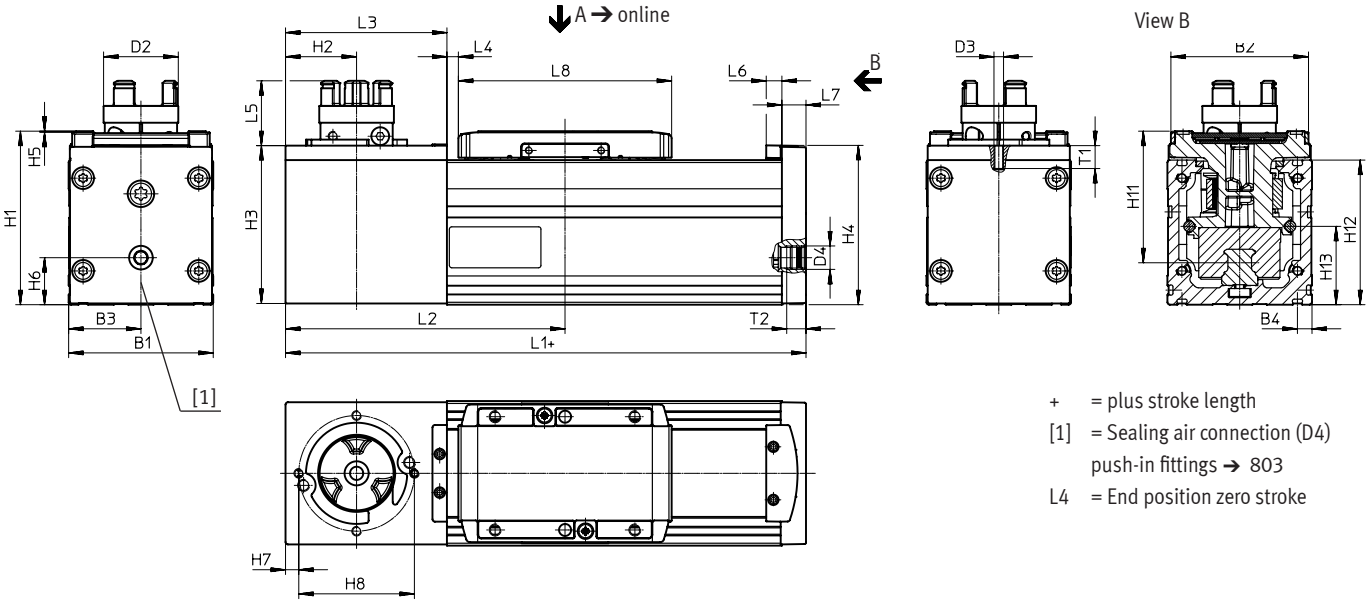
Data sheet

Materials



Axis		
[1]	Drive cover	Painted die-cast aluminium
[2]	Slide	Die-cast aluminium
[3]	Cover strip	High-alloy stainless steel
[4]	Toothed belt	Polychloroprene with glass cord and nylon coating
[5]	Guide	Steel
[6]	Profile	Anodised wrought aluminium alloy
[7]	Guide pulley	Aluminium
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Dimensions



\+ = plus stroke length
[1] = Sealing air connection (D4) push-in fittings → 803
L4 = End position zero stroke

Size	B1	B2	B3	B4	D2[1] ø	D3	D4	H1	H2
45	45	42.6	22.5	6.1	16.3	–	G1/8	54	22
60	60	57.1	30	6.1	31.4	M4	G1/8	72	29.5
80	80	77.1	40	6.1	31.4	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 min.	L3	L4[2] min.	L5	L6	L7	L8	T1	T2
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) Coupling diameter or interference diameter of locking screw
2) Includes a stroke reserve of approx. 3 mm

Spindle axes ELGT-BS

Highlights

+ Compact design
+ Optimised for use in the electronics and automotive industry: materials include less than 1% copper and zinc
+ Optimal ratio between installation space and working space due to the optimised axis design
+ Simple integration of motors with motor mounting kits
+ Position detection with inductive proximity switches SIES-8M and magne-to-resistive proximity switches SMT-8M

Spindle axes ELGT-BS

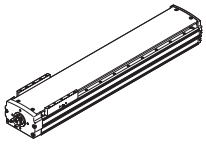
Product range overview

At a glance

- Compact design
- Optimised for use in the electronics and automotive industry: materials include less than 1% copper and zinc
- Optimal ratio between installation space and working space due to the optimised axis design
- Simple integration of motors with motor mounting kits
- Position detection with inductive proximity switches SIES-8M and magne-to-resistive proximity switches SMT-8M

Characteristic values of the axes

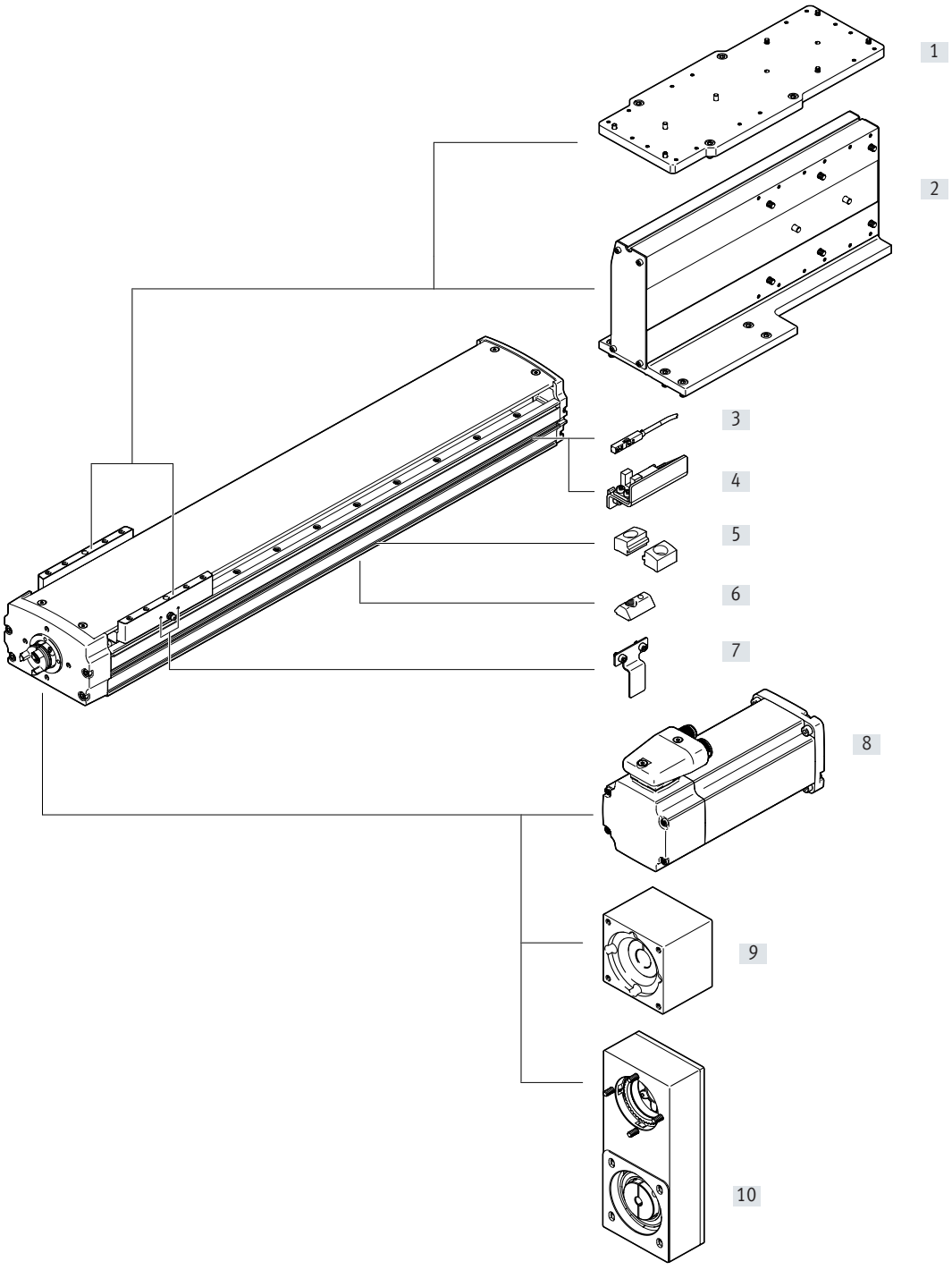
The specifications shown in the table are maximum values.
The precise values for each of the variants can be found in the relevant data sheet in the catalogue.

Design	Size	Spindle pitch	Working stroke	Max. speed	Repetition accuracy	Max. feed force	Guide characteristics				
							Forces and torques				
						Fx	Fy	Fz	Mx	My	Mz
		[mm/rev]	[mm]	[m/s]	[mm]	[N]	[N]	[N]	[Nm]	[Nm]	[Nm]
Recirculating ball bearing guide											
	90	10	50 ... 1000	0.5	±0.02	1270	4710	5600	65	51	51
		20	50 ... 1000	1	±0.02	810	4710	5600	65	51	51
	120	10	300 ... 1000	0.5	±0.02	1265	6830	8130	300	310	310
		20	300 ... 1000	1	±0.02	805	6830	8130	300	310	310
	160	10	300 ... 1000	0.5	±0.02	1575	9550	11370	600	560	560
		20	300 ... 1000	1	±0.02	1045	9550	11370	600	560	560

Ordering – Modular product system

Size	90	120	160	Conditions	Code		Enter code
Module no.	8121224	8121225	8121226				
Series	ELGT				ELGT		ELGT
Drive system	Ball screw				-BS		-BS
Size	90	120	160		-...		
Stroke	50	–			-50		
	100				-100		
	150				-150		
	200				-200		
	250				-250		
	300	300	300		-300		
	350	350	350		-350		
	400	400	400		-400		
	450	450	450		-450		
	500	500	500		-500		
	550	550	550		-550		
	600	600	600		-600		
	650	650	650		-650		
	700	700	700		-700		
	750	750	750		-750		
	800	800	800		-800		
	900	900	900		-900		
	1000	1000	1000		-1000		
Spindle pitch	10 mm				-10P		
	20 mm				-20P		

Peripherals overview



	Type/order code	Description	→ Page/Internet
[1]	Adapter kit EHAM-MA-L9	For axis/axis mounting	349
[2]	Angle kit EHAM-AK-L9	For mounting vertical axes (assembly axes)	348
[3]	Proximity switch SIES-8M	Inductive proximity switches, for T-slot	350
	Proximity switch SMT-8M	Magnetic proximity switches, for T-slot	
[4]	Sensor bracket EAPM-L9-SHE	For mounting third-party sensors on the axis	
[5]	Profile mounting EAHF-L2-...-P-S	For mounting the axis on the side of the profile	
[6]	Slot nut NST	For mounting attachments	
[7]	Switch lug EAPM-L9	For sensing the slide position in conjunction with inductive proximity switches SIES-8M	
[8]	Motor EMMB-AS, EMMT-AS	Motors specially matched to the axis, with or without brake	361, 367, emme , emms
[9]	Axial kit EAMM-A	For axial motor mounting	350
[10]	Parallel kit EAMM-U	For parallel motor mounting	

Spindle axes ELGT-BS

Ordering data

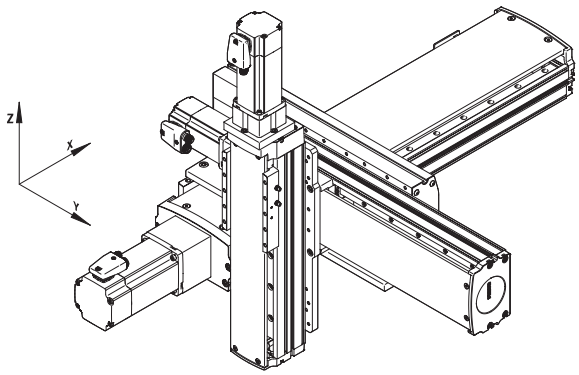
Size	Spindle pitch	Stroke	Part no.	Type
90	10	50	8124410	ELGT-BS-90-50-10P
		100	8124401	ELGT-BS-90-100-10P
		150	8124402	ELGT-BS-90-150-10P
		200	8124403	ELGT-BS-90-200-10P
		250	8124404	ELGT-BS-90-250-10P
		300	8124405	ELGT-BS-90-300-10P
		350	8124406	ELGT-BS-90-350-10P
		400	8124407	ELGT-BS-90-400-10P
		450	8124408	ELGT-BS-90-450-10P
		500	8124409	ELGT-BS-90-500-10P
		550	8124411	ELGT-BS-90-550-10P
		600	8124412	ELGT-BS-90-600-10P
		650	8124413	ELGT-BS-90-650-10P
		700	8124414	ELGT-BS-90-700-10P
		750	8124415	ELGT-BS-90-750-10P
		800	8124416	ELGT-BS-90-800-10P
		900	8124417	ELGT-BS-90-900-10P
		1000	8124400	ELGT-BS-90-1000-10P
	20	50	8124418	ELGT-BS-90-50-20P
		100	8124419	ELGT-BS-90-100-20P
		150	8124420	ELGT-BS-90-150-20P
		200	8124421	ELGT-BS-90-200-20P
		250	8124422	ELGT-BS-90-250-20P
		300	8124423	ELGT-BS-90-300-20P
		350	8124424	ELGT-BS-90-350-20P
		400	8124425	ELGT-BS-90-400-20P
		450	8124426	ELGT-BS-90-450-20P
		500	8124427	ELGT-BS-90-500-20P
		550	8124428	ELGT-BS-90-550-20P
		600	8124429	ELGT-BS-90-600-20P
		650	8124430	ELGT-BS-90-650-20P
		700	8124431	ELGT-BS-90-700-20P
		750	8124432	ELGT-BS-90-750-20P
		800	8124433	ELGT-BS-90-800-20P
		900	8124434	ELGT-BS-90-900-20P
		1000	8124435	ELGT-BS-90-1000-20P

Size	Spindle pitch	Stroke	Part no.	Type
120	10	300	8124451	ELGT-BS-120-300-10P
		350	8124452	ELGT-BS-120-350-10P
		400	8124453	ELGT-BS-120-400-10P
		450	8124454	ELGT-BS-120-450-10P
		500	8124455	ELGT-BS-120-500-10P
		550	8124456	ELGT-BS-120-550-10P
		600	8124457	ELGT-BS-120-600-10P
		650	8124458	ELGT-BS-120-650-10P
		700	8124459	ELGT-BS-120-700-10P
		750	8124460	ELGT-BS-120-750-10P
		800	8124461	ELGT-BS-120-800-10P
		900	8124462	ELGT-BS-120-900-10P
		1000	8124463	ELGT-BS-120-1000-10P
	20	300	8124496	ELGT-BS-120-300-20P
		350	8124497	ELGT-BS-120-350-20P
		400	8124498	ELGT-BS-120-400-20P
		450	8124499	ELGT-BS-120-450-20P
		500	8124500	ELGT-BS-120-500-20P
		550	8124501	ELGT-BS-120-550-20P
		600	8124502	ELGT-BS-120-600-20P
		650	8124503	ELGT-BS-120-650-20P
		700	8124504	ELGT-BS-120-700-20P
		750	8124505	ELGT-BS-120-750-20P
		800	8124506	ELGT-BS-120-800-20P
		900	8124507	ELGT-BS-120-900-20P
		1000	8124508	ELGT-BS-120-1000-20P
160	10	300	8124513	ELGT-BS-160-300-10P
		350	8124514	ELGT-BS-160-350-10P
		400	8124515	ELGT-BS-160-400-10P
		450	8124516	ELGT-BS-160-450-10P
		500	8124517	ELGT-BS-160-500-10P
		550	8124518	ELGT-BS-160-550-10P
		600	8124519	ELGT-BS-160-600-10P
		650	8124520	ELGT-BS-160-650-10P
		700	8124521	ELGT-BS-160-700-10P
		750	8124522	ELGT-BS-160-750-10P
		800	8124523	ELGT-BS-160-800-10P
		900	8124524	ELGT-BS-160-900-10P
		1000	8124525	ELGT-BS-160-1000-10P
	20	300	8124526	ELGT-BS-160-300-20P
		350	8124527	ELGT-BS-160-350-20P
		400	8124528	ELGT-BS-160-400-20P
		450	8124529	ELGT-BS-160-450-20P
		500	8124530	ELGT-BS-160-500-20P
		550	8124531	ELGT-BS-160-550-20P
		600	8124532	ELGT-BS-160-600-20P
		650	8124533	ELGT-BS-160-650-20P
		700	8124534	ELGT-BS-160-700-20P
		750	8124535	ELGT-BS-160-750-20P
		800	8124536	ELGT-BS-160-800-20P
		900	8124537	ELGT-BS-160-900-20P
		1000	8124538	ELGT-BS-160-1000-20P

Accessories – Ordering data

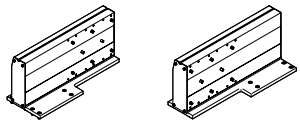
Overview of mounting options

Mounting of spindle axes ELGT-BS and axes ELGC/mini slide EGSC

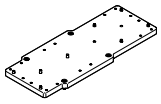


Angle and adapter kits

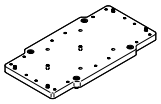
Type A
X-Y: Angle kit for maximum stroke 700 mm in Y direction



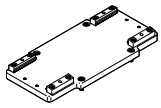
Type B
Y-Z: Adapter kit for maximum stroke 500 mm in Z direction



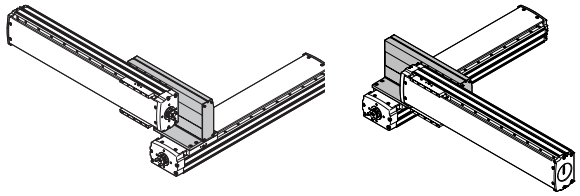
Type C
Y-Z: Adapter kit for maximum stroke 200 mm in Z direction



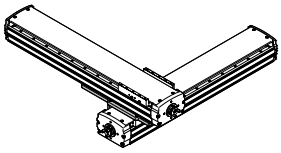
Type D
Y-Z: Adapter kit for ELGT/ELGC in Z direction



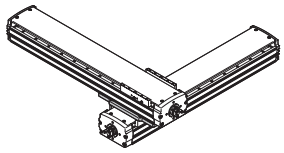
Type A
ELGT with ELGT



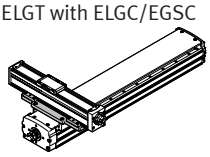
Type B
ELGT with ELGT



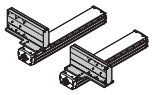
Type C
ELGT with ELGT



Type D
ELGT with ELGC/EGSC

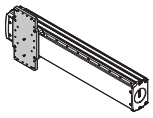


Angle kit



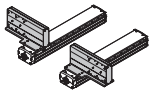
Size		Y-axis ELGT-BS 90	120	160
X-axis	90	■	–	–
ELGT-BS	120	■	■	–
	160	–	■	■

Adapter kit



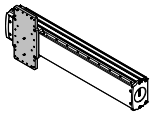
Size		Z-axis ELGT-BS 90	120	160	ELGC 60	80	EGSC 60
Y-axis	90	–	–	–	■	■	■
ELGT-BS	120	■	–	–	–	■	–
	160	–	■	–	–	–	–

Angle kit



Size		Y-axis Working stroke [mm] 100	200	300	400	500	600	700
X-axis/ Y-axis	90/90	A	A	A	A	A	A	–
	120/90	A	A	A	A	A	A	–
	120/120	A	A	A	A	A	A	–
	160/120	A	A	A	A	A	A	A
	160/160	A	A	A	A	A	A	A

Adapter kit



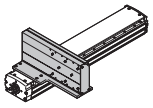
Size		Z-axis Working stroke [mm] 100	200	300	400	500
Y-axis/ Z-axis	90/60	D	D	D	D	D
	90/80	D	D	D	D	D
	120/80	D	D	D	D	D
	120/90	C	B	B	B	B
	160/120	C	C	B	B	B

Accessories – Ordering data

Angle kit EHAM-AK-L9-...-ML
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For mounting one-size-down vertical axes (assembly axes) on base axes
- Overview of mounting options ➔ online

Combination matrix – Type A
X-Y



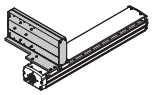
	Size	Y-axis: Assembly axis ELGT-BS 90	120	160
X axis: Base axis ELGT-BS	90	8128210	–	–
	120	8128209	8128208	–
	160	–	8128207	8128206

For combination (size)	Part no.	Type
90/90	8128210	EHAM-AK-L9-90-L9-90-ML
120/90	8128209	EHAM-AK-L9-120-L9-90-ML
120/120	8128208	EHAM-AK-L9-120-L9-120-ML
160/120	8128207	EHAM-AK-l9-160-L9-120-ML
160/160	8128206	EHAM-AK-L9-160-L9-160-ML

Angle kit EHAM-AK-L9-...-MR
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For mounting one-size-down vertical axes (assembly axes) on base axes
- Overview of mounting options ➔ online

Combination matrix – Type A
X-Y



	Size	Y-axis: Assembly axis ELGT-BS 90	120	160
X axis: Base axis ELGT-BS	90	8128215	–	–
	120	8128214	8128213	–
	160	–	8128212	8128211

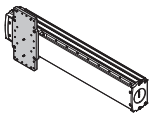
For combination (size)	Part no.	Type
90/90	8128215	EHAM-AK-L9-90-L9-90-MR
120/90	8128214	EHAM-AK-L9-120-L9-90-MR
120/120	8128213	EHAM-AK-L9-120-L9-120-MR
160/120	8128212	EHAM-AK-L9-160-L9-120-MR
160/160	8128211	EHAM-AK-L9-160-L9-160-MR

Adapter kit EHAM-MA-L9-...
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For axis/axis mounting with adapter plate

- Mounting option: base axis with the same size or one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation (download CAD data ➔ www.festo.com)
- Overview of mounting options ➔ online

Combination matrix – Type B
Y-Z



	Size	Z-axis: Assembly axis ELGT-BS 90
Y-axis: Base axis ELGT-BS	120	8128227

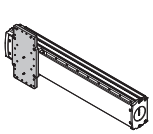
For combination (size)	Part no.	Type
120/90	8128227	EHAM-MA-L9-120-L9-90

Adapter kit EHAM-MA-L9-...
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For axis/axis mounting with adapter plate

- Mounting option: base axis with the same size or one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation (download CAD data ➔ www.festo.com)
- Overview of mounting options ➔ online

Combination matrix – Type B
Y-Z



	Size	Z-axis: Assembly axis ELGT-BS 120
Y-axis: Base axis ELGT-BS	160	8128226

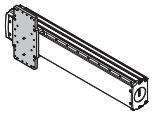
For combination (size)	Part no.	Type
160/120	8128226	EHAM-MA-L9-160-L9-120

Accessories – Ordering data

Adapter kit EHAM-MA-L9-...-S
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For axis/axis mounting with adapter plate
- Mounting option: base axis with the same size or one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation (download CAD data ➔www.festo.com)
- Overview of mounting options ➔ online

Combination matrix – Type C
Y-Z



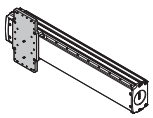
	Size	Z-axis: Assembly axis ELGT-BS 90
Y-axis: Base axis ELGT-BS	120	8128232

For combination (size)	Part no.	Type
120/90	8128232	EHAM-MA-L9-120-L9-90-S

Adapter kit EHAM-MA-L9-...-S
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For axis/axis mounting with adapter plate
- Mounting option: base axis with the same size or one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation (download CAD data ➔www.festo.com)
- Overview of mounting options ➔ online

Combination matrix – Type C
Y-Z



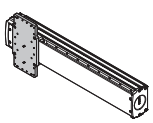
	Size	Z-axis: Assembly axis ELGT-BS 120
Y-axis: Base axis ELGT-BS	160	8128231

For combination (size)	Part no.	Type
160/120	8128231	EHAM-MA-L9-160-L9-120-S

Adapter kit EHAM-MA-L9-...-L2-...
Material:
Anodised wrought aluminium alloy
RoHS-compliant

- For axis/axis mounting with adapter plate
- Mounting option: base axis with the same size or one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation (download CAD data ➔www.festo.com)
- Overview of mounting options ➔ online

Combination matrix – Type D
Y-Z

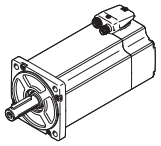
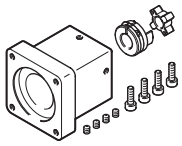


	Size	Z-axis: Assembly axis ELGC 60	Z-axis: Assembly axis ELGC 80	Assembly axis EGSC 60
Y-axis: Base axis ELGT-BS	90	8128230	8128229	8128230
	120	–	8128228	–

For combination (size)	Part no.	Type
90/60	8128230	EHAM-MA-L9-90-L2-60
90/80	8128229	EHAM-MA-L9-90-L2-80
120/80	8128228	EHAM-MA-L9-120-L2-80

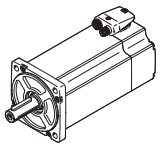
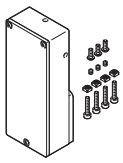
Accessories – Ordering data

Permissible axis/motor combinations with axial kit – Without gear unit

Motor[1]	Axial kit	
		
Type	Part no.	Type
ELGT-BS-90 ... 160		
With servo motor		
EMMT-AS-60-...	4824833	EAMM-A-T46-60P
EMME-AS-60-...	4824833	EAMM-A-T46-60P
EMMS-AS-70-...	8092674	EAMM-A-T46-70A
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
With integrated drive		
EMCA-EC-67-...	8084495	EAMM-A-T46-67A

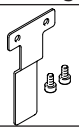
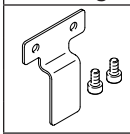
1) The input torque must not exceed the maximum permissible transferable torque of the axial kit.

Permissible axis/motor combinations with parallel kit

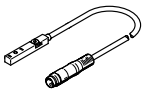
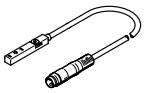
Motor/gear unit[1]	Parallel kit	
		
Type	Part no.	Type
ELGT-BS-90 ... 120		
With servo motor		
EMMT-AS-60-...	4824069	EAMM-U-87-T46-60P-114
EMME-AS-60-...	4824069	EAMM-U-87-T46-60P-114
EMMS-AS-70-...	8092891	EAMM-U-87-T46-70A-114
EMME-AS-80-...	4822696	EAMM-U-87-T46-80P-114
With stepper motor		
EMMS-ST-87-...	4819278	EAMM-U-87-T46-87A-114
With integrated drive		
EMCA-EC-67-...	8084496	EAMM-U-87-T46-67A-114
ELGT-BS-160		
With servo motor		
EMME-AS-60-...	8126161	EAMM-U-87-T46-60P-147
EMMS-AS-70-...	8126165	EAMM-U-87-T46-70A-147
EMME-AS-80-...	8126167	EAMM-U-87-T46-80P-147
With stepper motor		
EMMS-ST-87-...	8126170	EAMM-U-87-T46-87A-147
With integrated drive		
EMCA-EC-67-...	8126164	EAMM-U-87-T46-67A-147

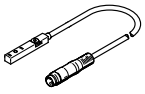
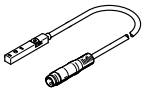
1) The input torque must not exceed the max. permissible transferable torque of the parallel kit.

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 particular kit must be taken into consideration.

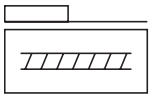
	For size	Part no.	Type
Profile mounting			
	90	5183133	EAHF-L2-45-P-S
	120	5183133	EAHF-L2-45-P-S
	160	5183133	EAHF-L2-45-P-S
Switch lug			
	90	8119853	EAPM-L9-90-SLS
	120	8119854	EAPM-L9-120-SLS
	160	8119855	EAPM-L9-160-SLS
Switch lug			
	90	8120123	EAPM-L9-90-SLE
	120	8120124	EAPM-L9-120-SLE
	160	8120125	EAPM-L9-160-SLE
	90 ... 160	8119255	EAPM-L9-SHE
Slot nut			
	90, 120	150914	NST-5-M5
		8047843	NST-5-M5-10[1]
		8047878	NST-5-M5-50[2]
	160	150915	NST-8-M6
		8047868	NST-8-M6-10[1]
		8047869	NST-8-M6-50[2]

1) Packaging unit 10 pieces.
2) Packaging unit 50 pieces.

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	551386	SIES-8M-PS-24V-K-7,5-OE
	PNP, plug	551387	SIES-8M-PS-24V-K-0,3-M8D
	NPN, cable	551396	SIES-8M-NS-24V-K-7,5-OE
	NPN, plug	551397	SIES-8M-NS-24V-K-0,3-M8D
N/C contact			
	PNP, cable	551391	SIES-8M-PO-24V-K-7,5-OE
	PNP, plug	551392	SIES-8M-PO-24V-K-0,3-M8D
	NPN, cable	551401	SIES-8M-NO-24V-K-7,5-OE
	NPN, plug	551402	SIES-8M-NO-24V-K-0,3-M8D

		Part No.	Type
Proximity sensor for T-slot, inductive, N/O contact			
	PNP, cable	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
	PNP, plug	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
N/C contact			
	PNP, cable	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE

Data sheet



Size
90 ... 160 mm

Stroke length
50 ... 1000 mm

General technical data				
Size		90	120	160
Design		Electromechanical linear axis		
		With ball screw		
Mounting position		Any		
Motor type		Stepper motor		
		Servo motor		
Guide		Recirculating ball bearing guide		
Type of spindle		Ball screw		
Working stroke	[mm]	50 ... 1000	300 ... 1000	
Stroke reserve	[mm]	0		
Max. feed force Fx				
[10P]	[N]	1270	1265	1575
[20P]	[N]	810	805	1045
Feed constant				
[10P]	[mm/rev]	10		
[20P]	[mm/rev]	20		
No-load torque at low travel speed				
[10P]	[Nm]	0.08	0.08	0.2
[20P]	[Nm]	0.04	0.08	0.14
No-load torque at max. travel speed				
[10P]	[Nm]	0.3	0.3	0.4
[20P]	[Nm]	0.2	0.3	0.4
Max. radial force[1]				
[10P]	[N]	290		340
[20P]	[N]	290		290
Max. rotational speed[2]	[rpm]	3000		
Max. speed				
[10P]	[m/s]	0.5		
[20P]	[m/s]	1		
Max. acceleration	[m/s²]	15		
Repetition accuracy	[mm]	±0.02		

1) At the drive shaft

2) Rotational speed and velocity are stroke-dependent

Operating and environmental conditions		90	120	160
Ambient temperature[1]	[°C]	0 ... +50		
Degree of protection		IP20		
Duty cycle	[%]	100		

1) Note operating range of proximity switches

Spindle							
Size		90		120		160	
Spindle pitch [mm/rev]		10	20	10	20	10	20
Diameter	[mm]	16	15	16	15	20	

Spindle axes ELGT-BS

Data sheet

Mass moment of inertia

Size		90		120		160	
Spindle pitch [mm/rev]		10	20	10	20	10	20
J_0	[kg cm²]	0.1252	0.2291	0.1306	0.2654	0.3175	0.6342
J_H per metre stroke	[kg cm²]	0.3453	0.2522	0.3453	0.2522	0.809	0.9027
J_L per kg payload	[kg cm²]	0.0253	0.1013	0.0253	0.1013	0.0253	0.1013

The mass moment of inertia J_{rot} of the rotating parts of the axis is calculated as follows:

$J_{rot} = J_0 + J_H \times$ working stroke [m]

Homing

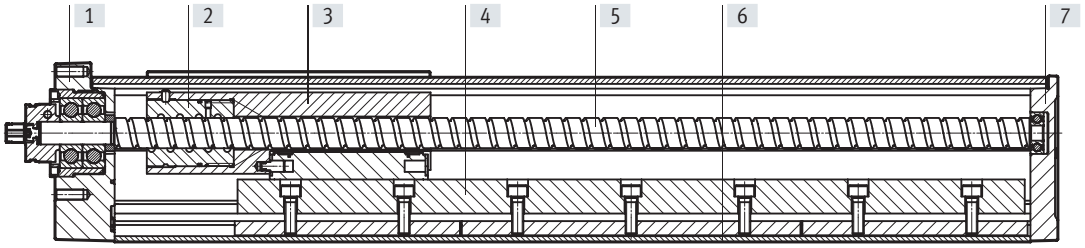
Homing can be carried out in two ways:

- Against a fixed stop
- Using a reference switch

The following values must be observed:

Size		90	120	160
Max. impact energy	[mJ]	2		
At max. speed of the homing travel	[m/s]	0.01		
With max. payload	[kg]	40		

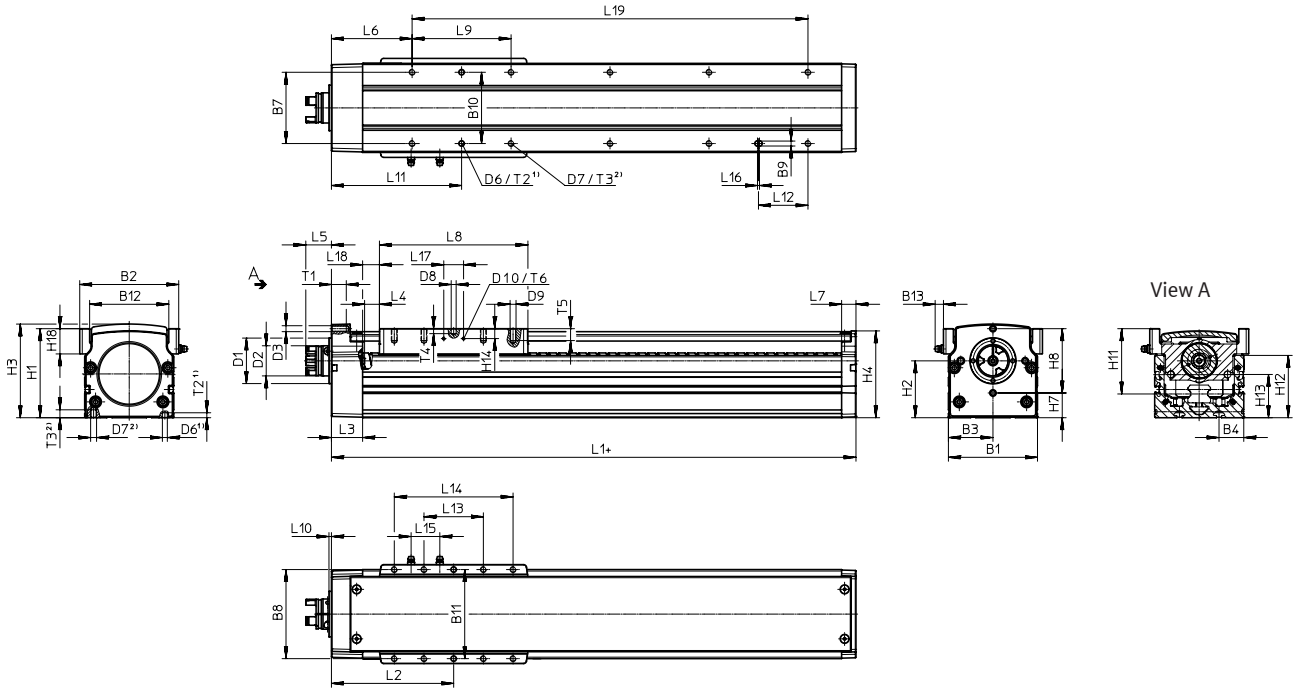
Materials



Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Spindle nut	Steel
[3]	Slide	Anodised wrought aluminium alloy
[4]	Slide guide	Steel
[5]	Spindle	Steel
[6]	Profile	Anodised wrought aluminium alloy
[7]	End cap	Die-cast aluminium, painted
–	Guide rail	Steel
	Note on materials	Contains paint-wetting impairment substances
		RoHS-compliant

Dimensions

Size 90



+ = plus stroke length

1) There are always 2 centring holes per axis

2) The number of threaded holes depends on the stroke → online

ø [mm]	B1	B2	B3	B4	B7	B8	B9 H7	B10 ±0.03	B11 ±0.03	B12	B13	D1 ø	D2 ø	D3	D6[1] ø H7	D7[2]	D8 ø H7	D9
90	90	100	45	25	72	90	5	72	90	80	8.4	46	30.5	M6	5	M6	5	M6

ø [mm]	D10	H1	H2	H3	H4	H7	H8	H11	H12	H13	H14	H18	L1	L2 min.	L3	L4	L5	L6
90	M3	90	57.5	95	88	25	65	66	63	43.7	10	25.5	230	123.5	31.5	15	25.9	81.5

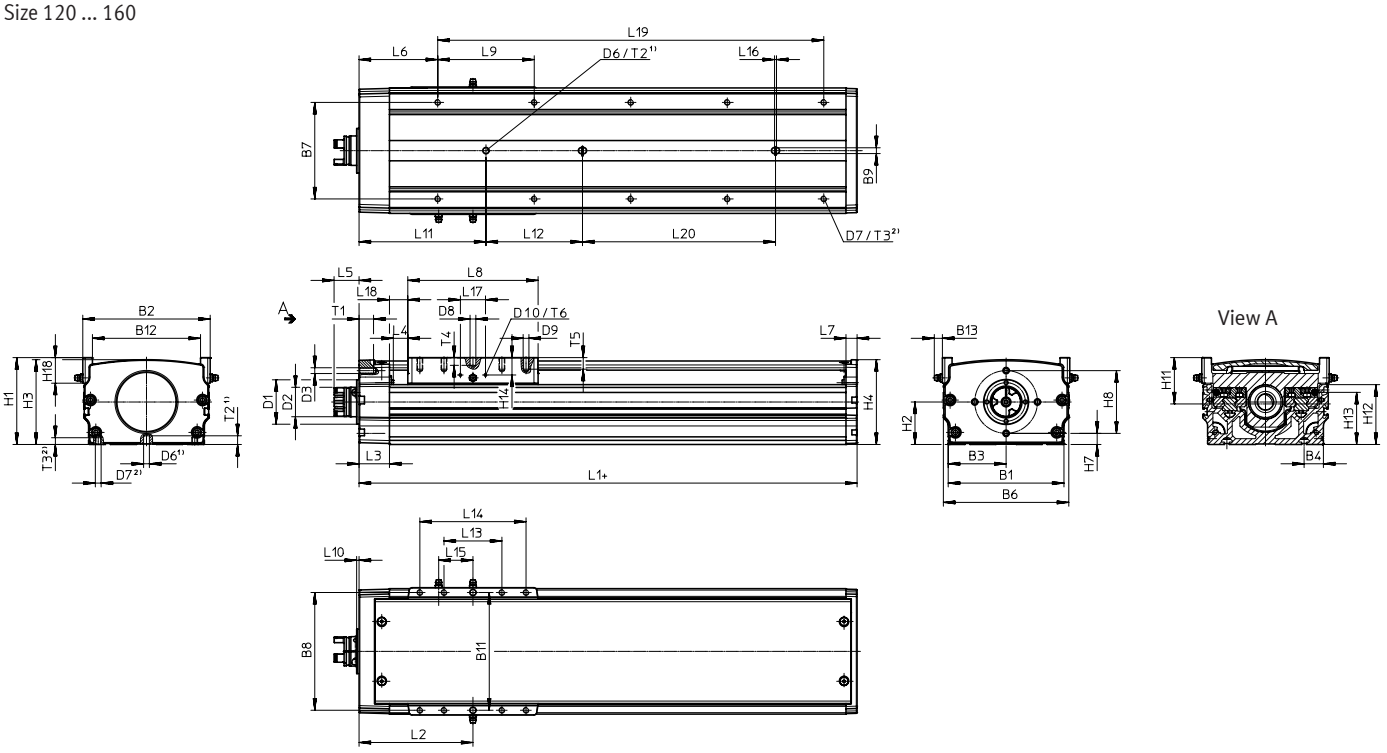
ø [mm]	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	T1	T2[1]	T3[2]	T4	T5	T6
90	14.5	150	100	2.5	131.5	50	60	120	29	2	20	17	15	5	8	5	12	6

ø [mm]	Stroke [mm]	Number of threaded holes	Number of spacings L9	L19
90	50	4	1	100
	100	6	2	200
	150	6	2	200
	200	8	3	300
	250	8	3	300
	300	10	4	400
	350	10	4	400
	400	12	5	500
	450	12	5	500
	500	14	6	600
	550	14	6	600
	600	16	7	700
	650	16	7	700
	700	18	8	800
	750	18	8	800
	800	20	9	900
	900	22	10	1000
	1000	24	11	1100

Spindle axes ELGT-BS

Dimensions

Size 120 ... 160



+ = plus stroke length

1) There are always 2 centring holes per axis

2) The number of threaded holes depends on the stroke ➔ online

ø [mm]	B1	B2	B3	B4	B6	B7	B8	B9 H7	B11 ±0.03	B12	B13	D1 ø	D2 ø	D3	D6 ø H7	D7	D8 ø H7	D9
120	120	132	60	20	130	100	122	6	122	112	8.4	46	30.5	M6	6	M6	6	M6
160	160	178	80	30	170	134	164	8	164	150	8.4	46	31.8	M6	8	M8	8	M8

ø [mm]	D10	H1	H2	H3	H4	H7	H8	H11	H12	H13	H14	H18	L1	L2 min.	L3	L4	L5	L6
120	M3	90	44	88	88	11.5	65	48	62	54	18	26.5	216	118	31.5	15	25.9	81.5
160	M3	100	50	97	97	17.5	65	57.5	65	57.3	25	33	261	141	34.5	15	25.9	84.5

ø [mm]	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	T1	T2	T3	T4	T5	T6
120	11.5	135	100	2.5	131.5	100	60	110	35.5	2	26	19	15	9	7	8	12	6
160	13.5	175	100	2.5	134.5	100	70	140	51.5	2	26	19	15	10	9	8	15	6

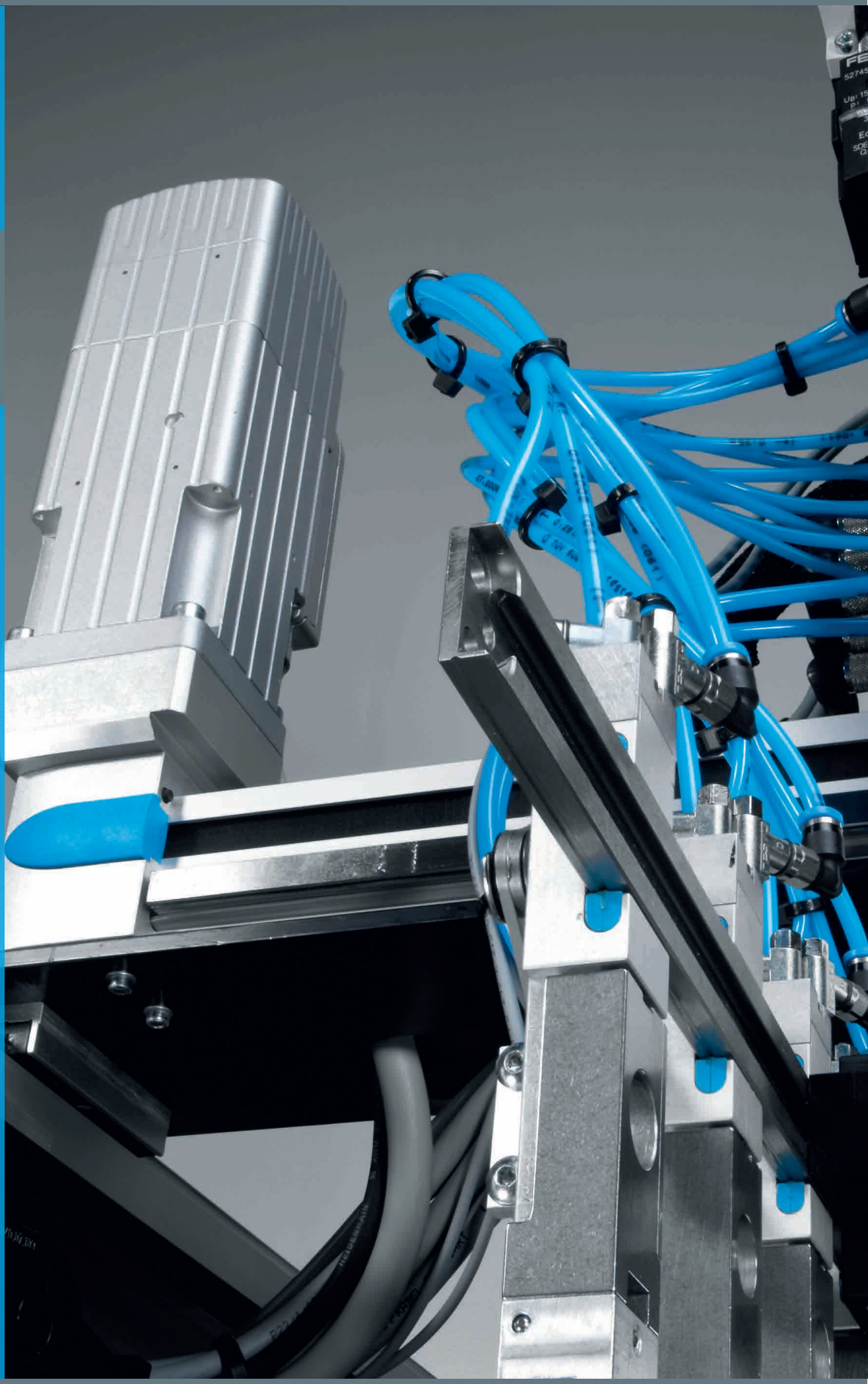
ø [mm]	Stroke [mm]	Number of threaded holes	Number of spacings L9	L19	L20
120	300	10	1	400	200
	350	10	1	400	250
	400	12	2	500	300
	450	12	2	500	350
	500	14	3	600	400
	550	14	3	600	450
	600	16	4	700	500
	650	16	4	700	550
	700	18	5	800	600
	750	18	5	800	650
	800	20	6	900	700
	900	22	7	1000	800
	1000	24	8	1100	900

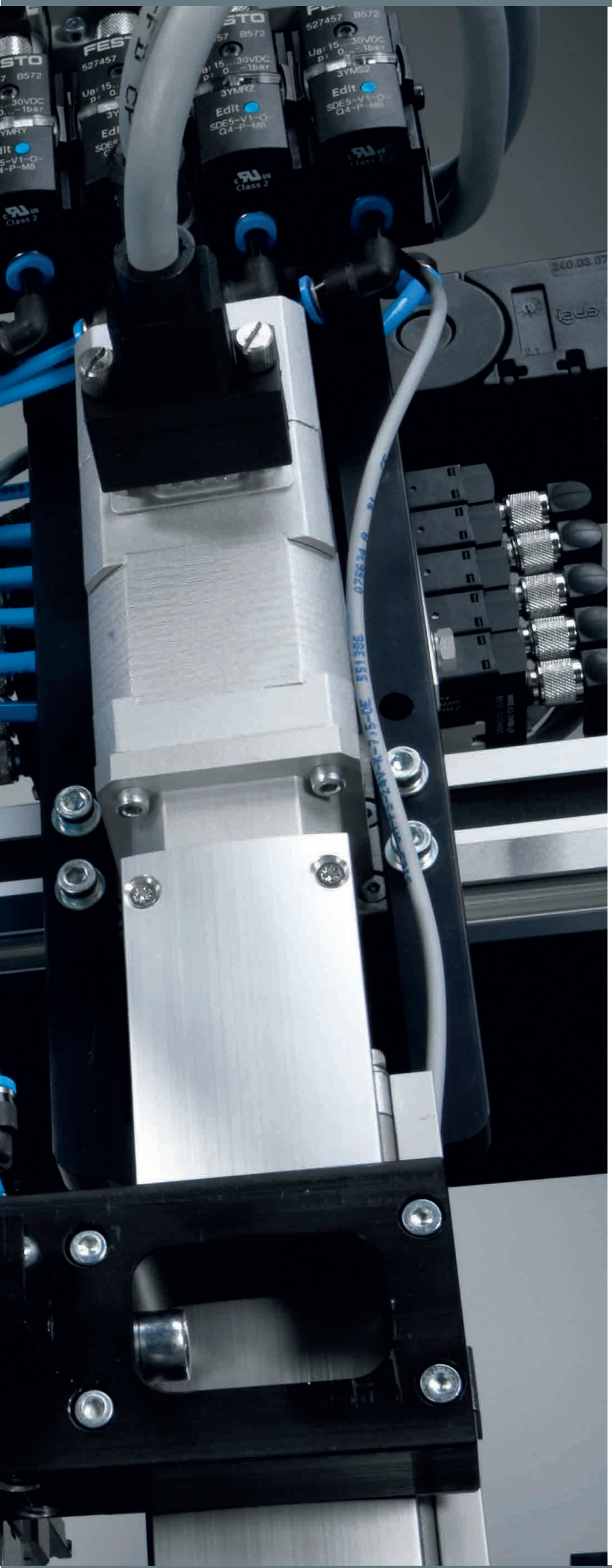
ø [mm]	Stroke [mm]	Number of threaded holes	Number of spacings L9	L19	L20
160	300	10	1	400	200
	350	12	2	400	250
	400	12	2	500	300
	450	14	3	500	350
	500	14	3	600	400
	550	16	4	600	450
	600	16	4	700	500
	650	18	5	700	550
	700	18	5	800	600
	750	20	6	800	650
	800	20	6	900	700
	900	22	7	1000	800
	1000	24	8	1100	900

Spindle axes ELGT-BS

03

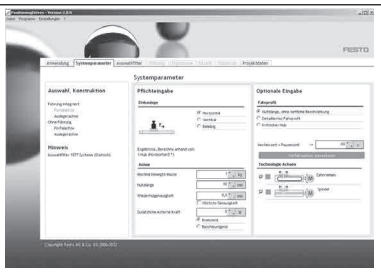
Motors and controllers





Contents

Software tools

Festo Configuration Tool (FCT)		FCT is a configuration and parameterisation software program that supports all Festo devices, in particular motor controllers. 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. The parameterisation software can be found on the website under Support › Support Portal › enter search term.
PositioningDrives: for selecting and sizing electromechanical linear drives, motors, and gear units		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 will suggest several solutions. This tool can be found • on our website under www.festo.com/catalogue by clicking on the blue icon “Product Finder”.

Servo motors

	 **Servo motors EMMB-AS**	 **Servo motors EMMT-AS** ★	 **Servo motors EMME-AS**
Nominal torque	0.32 ... 2.39 Nm	0.6 ... 7.2 Nm	0.12 ... 6.4 Nm
Nominal rotary speed	3000 1/min	2700 ... 3000 1/min	3000 ... 9000 1/min
Peak torque	0.96 ... 7.17 Nm	1.6 ... 30.5 Nm	0.7 ... 30 Nm
Max. rotational speed	5000 ... 6000 1/min	3770 ... 12500 1/min	3910 ... 10000 1/min
Description	• Very cost-effective • Brushless, permanently excited synchronous servo motor • Digital absolute displacement encoder, single turn; multi-turn optional • Reliable, dynamic, precise • Optimised connection technology • Different winding variants • Optionally with holding brake	• For demanding tasks • Brushless, permanently excited synchronous servo motor • Digital absolute displacement encoder, single turn or multi-turn • 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	• Brushless, permanently excited synchronous servo motor • Digital absolute displacement encoder, single turn or multi-turn • Reliable, dynamic, precise • Optimised connection technology • Over 40 types in stock • Optionally with holding brake • Optional multi-turn encoder with SIL2
➔ Page/online	**361**	**367**	**emme**

Stepper motors

	 **Stepper motors EMMS-ST**
Max. rotational speed	430 ... 6000 1/min
Motor holding torque	0.09 ... 9.3 Nm
Description	• Small increments and high driving torques thanks to 2-phase hybrid technology • Optimised connection technology • 28 types in stock • With incremental encoder for closed-loop operation • Optionally with holding brake
➔ Page/online	emms

Controllers for AC servo motors

	 **Servo drives CMMT-AS** ★
Nominal current	
Nominal operating voltage AC	230 ... 400 V
Nominal operating voltage phases	Single-phase, 3-phase
Rated output controller	350 ... 2500 VA
Fieldbus coupling	EtherCAT, PROFINET, EtherNet/IP
Description	• Universal applications • The latest generation of servo drive systems with optimised prices and sizes • One of the most compact servo drives on the market • Configuration of standard safety functions without software • Auto-tuning supports easy commissioning and automatically optimises the control behaviour of rotary and linear motions • Precise force, speed and position control • Optimally with servo motor EMMT-AS
➔ Page/online	**375**

Controllers for stepper motors

	 **Servo drives CMMT-ST** ★
Nominal current load supply	
Nominal voltage, load supply DC	24 V, 48 V
Fieldbus coupling	
Description	• Very efficient for tasks with low power requirements • Ideal for positioning tasks and point-to-point and interpolating motion solutions • 50% more compact than the smallest servo drive CMMT-AS • Optimised for use with stepper motors like the tried-and-tested EMMS-ST
➔ Page/online	**383**

Multi-axis controllers

	 **Motor controllers** **CPX-CEC-M1**
CPU data	800 MHz processor, 256 MB MB RAM, 32 MB MB Flash
Processing time	Approx. 200 µs/1 k instruction
Degree of protection	IP65, IP67
Configuration support	CODESYS V3
Fieldbus coupling	
Description	• Easy control of valve terminal configurations • Programming with CoDeSys to IEC 61131-3 • Connection to all fieldbuses as a remote controller and for pre-processing • Control of electric drives via CANopen • SoftMotion functions for coordinated multi-axis movements
➔ **Page/online**	**cpx-cec-m1**

Servo motors EMMB-AS

Highlights

+ Very cost-effective
+ Brushless, permanently excited synchronous servo motor
+ Digital absolute displacement encoder, single turn; multi-turn optional
+ Reliable, dynamic, precise
+ Optimised connection technology
+ Different winding variants
+ Optionally with holding brake

Servo motors EMMB-AS

Features

Everything from a single source

Motors EMMB-AS

- Brushless, permanently excited synchronous servo motors
- Reliable, dynamic, precise
- Digital absolute displacement encoder with single turn
- Optimised connection technology
- Winding variants
  - For single-phase motor controller
  - Optimised for rotational speed
  - Holding brake

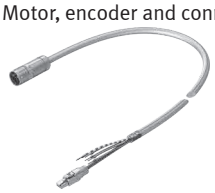
Gear unit EMGA-EAS/-SAS

- Low-backlash planetary gear
- Gear ratio i = 3 and 5, available from stock
- Life-time lubrication
- Degree of protection: IP54
- Other gear unit types, ratios, designs and versions on request

Servo drive CMMT-AS

- Universal servo drive for synchronous servo motors
- Integrated EMC filters
- Integrated brake chopper
- Integrated braking resistor
- Integrated safety functions
- Position controller
- Speed controller
- Force controller
- Range of control functions
- Interfaces:
  - EtherCAT
  - PROFINET RT/IRT
  - EtherNet/IP

Motor, encoder and connecting cables NEBM



- Suitable for energy chains
- Connection technology on motor side with degree of protection to IP20
- Can be used in a wide temperature range

Axial and parallel kits EAMM

- Specific kits for all electromechanical axes from Festo
- Each kit includes the relevant necessary coupling housing, couplings and motor flange as well as all screws
- Optionally with degree of protection IP65

Type code explanation

001	Series	
EMMB	Motor	

002	Motor type	
AS	AC synchronous	

003	Flange size, motors	
40	40	
60	60	
80	80	

004	Performance class	
01	100 W	
02	200 W	
04	400 W	
07	750 W	

005	Output shaft	
	Smooth shaft	
K	Shaft to DIN 6885	

006	Electrical connection	
S	Straight plug	

007	Cable length [cm]	
30	30 cm	

008	Measuring unit	
S	Absolute encoder, single turn	

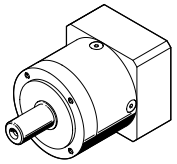
009	Brake	
	None	
B	With brake	

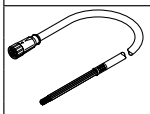
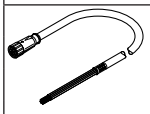
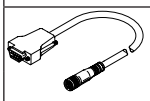
Ordering data

Nominal power [W]				Measuring unit	Variant		Part no.	Type
100	200	400	750	Encoder, single turn	With featherkey	With brake		
Flange size 40								
■				■			8097163	EMMB-AS-40-01-S30S
■				■		■	8097164	EMMB-AS-40-01-S30SB
■				■	■		8097165	EMMB-AS-40-01-K-S30S
■				■	■	■	8097166	EMMB-AS-40-01-K-S30SB
Flange size 60								
	■			■			8097171	EMMB-AS-60-02-S30S
	■			■		■	8097172	EMMB-AS-60-02-S30SB
	■			■	■		8097173	EMMB-AS-60-02-K-S30S
	■			■	■	■	8097174	EMMB-AS-60-02-K-S30SB
		■		■			8097179	EMMB-AS-60-04-S30S
		■		■		■	8097180	EMMB-AS-60-04-S30SB
		■		■	■		8097181	EMMB-AS-60-04-K-S30S
		■		■	■	■	8097182	EMMB-AS-60-04-K-S30SB
Flange size 80								
			■	■			8097187	EMMB-AS-80-07-S30S
			■	■		■	8097188	EMMB-AS-80-07-S30SB
			■	■	■		8097189	EMMB-AS-80-07-K-S30S
			■	■	■	■	8097190	EMMB-AS-80-07-K-S30SB

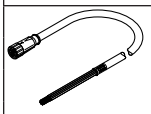
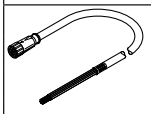
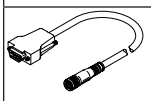
Accessories – Ordering data

Gear unit

	For motor flange size	Gear ratio	Part no.	Type
	40P	3	2297684	EMGA-40-P-G3-EAS-40
		5	2297685	EMGA-40-P-G5-EAS-40
	60P	3	2297686	EMGA-60-P-G3-EAS-60
		5	2297687	EMGA-60-P-G5-EAS-60
	80P	3	2297690	EMGA-80-P-G3-EAS-80
		5	2297691	EMGA-80-P-G5-EAS-80

	Cable length [m]	Part No.	Type
Motor cable for EMME-AS with CMMP-AS			
	For EMME-AS-40/60 (cable cross section: 0.75 mm²)		
	2.5	8004662	NEBM-M16G8-E-2.5-Q7-LE8
	5	8003770	NEBM-M16G8-E-5-Q7-LE8
	7.5	8004663	NEBM-M16G8-E-7.5-Q7-LE8
	10	8003771	NEBM-M16G8-E-10-Q7-LE8
	15	8003772	NEBM-M16G8-E-15-Q7-LE8
	X length[1]	8003773	NEBM-M16G8-E-...-Q7-LE8
	For EMME-AS-80/100 (cable cross section: 1.5 mm²)		
	2.5	8004660	NEBM-M16G8-E-2.5-Q9-LE8
	5	8003766	NEBM-M16G8-E-5-Q9-LE8
	7.5	8004661	NEBM-M16G8-E-7.5-Q9-LE8
	10	8003767	NEBM-M16G8-E-10-Q9-LE8
	15	8003768	NEBM-M16G8-E-15-Q9-LE8
	X length[1]	8003769	NEBM-M16G8-E-...-Q9-LE8
Encoder cable for EMME-AS with CMMP-AS			
	For EMME-AS-40/60/80/100		
	2.5	8004664	NEBM-M12G8-E-2.5-N-S1G15
	5	8003762	NEBM-M12G8-E-5-N-S1G15
	7.5	8004665	NEBM-M12G8-E-7.5-N-S1G15
	10	8003763	NEBM-M12G8-E-10-N-S1G15
	15	8003764	NEBM-M12G8-E-15-N-S1G15
	X length[1]	8003765	NEBM-M12G8-E-...-N-S1G15

1) Max. 25 m. Cable lengths › 25 m possible following technical clarification; up to 100 m on request. Available in 0.1 m increments.

	Cable length [m]	Part No.	Type
Motor cable for EMME-AS with CMMT-AS			
	For EMME-AS-40/60 (cable cross section: 0.75 mm²)		
	2.5	5391541	NEBM-M16G8-E-2.5-Q7-LE8-1
	5	5391543	NEBM-M16G8-E-5-Q7-LE8-1
	7.5	5391548	NEBM-M16G8-E-7.5-Q7-LE8-1
	10	8085952	NEBM-M16G8-E-10-Q7-LE8-1
	15	8085953	NEBM-M16G8-E-15-Q7-LE8-1
	X length[1]	8085954	NEBM-M16G8-E-...-Q7-LE8-1
	For EMME-AS-80/100 (cable cross section: 1.5 mm²)		
	2.5	5391540	NEBM-M16G8-E-2.5-Q9-LE8-1
	5	5391545	NEBM-M16G8-E-5-Q9-LE8-1
	7.5	5391547	NEBM-M16G8-E-7.5-Q9-LE8-1
	10	5391549	NEBM-M16G8-E-10-Q9-LE8-1
	15	5391550	NEBM-M16G8-E-15-Q9-LE8-1
	X length[1]	5392489	NEBM-M16G8-E-...-Q9-LE8-1
Encoder cable for EMME-AS with CMMT-AS			
	For EMME-AS-40/60/80/100		
	2.5	5212312	NEBM-M12G8-E-2.5-N-R8G8
	5	5212313	NEBM-M12G8-E-5-N-R8G8
	7.5	5212314	NEBM-M12G8-E-7.5-N-R8G8
	10	5212315	NEBM-M12G8-E-10-N-R8G8
	15	5212316	NEBM-M12G8-E-15-N-R8G8
	X length[1]	5212317	NEBM-M12G8-E-...-N-R8G8

1) Max. 25 m. Cable lengths › 25 m possible following technical clarification; up to 100 m on request. Available in 0.1 m increments.

Data sheet

Note
Motors and motor controllers from Festo have been specially designed to be used together. Trouble-free operation cannot be guaranteed in combination with third-party controllers.

Technical data					
Flange size		40	60		80
Performance class		01	02	04	07
Motor					
Nominal voltage	[V DC]	300	300	300	300
Nominal current	[A]	1.3	1.4	2.4	3.8
Continuous stall current	[A]	1.43	1.5	2.6	4.2
Peak current	[A]	3.9	4.2	7.2	11.4
Nominal power	[W]	100	200	400	750
Nominal torque	[Nm]	0.32	0.64	1.27	2.39
Peak torque	[Nm]	0.96	1.92	3.81	7.17
Stall torque	[Nm]	0.352	0.7	1.4	2.63
Nominal rotary speed	[rpm]	3000	3000	3000	3000
Max. rotational speed	[rpm]	6000	6000	6000	5000
Motor constant	[Nm/A]	0.265	0.48	0.562	0.662
Voltage constant (phase-to-phase)	[mVmin]	16.2	29	34	40
Number of pole pairs		5	3	3	3
Winding resistance	[Ω]	7.9	11.2	5.8	2.1
Winding inductance	[mH]	10.5	20.9	11.5	10.5
Total output moment of inertia					
Without brake	[kgcm²]	0.059	0.214	0.405	0.942
With brake	[kgcm²]	0.063	0.234	0.425	0.978
Shaft load at nominal rotary speed					
Radial	[N]	120	180	180	335
Axial	[N]	60	90	90	167.5
Brake					
Operating voltage	[V DC]	24	24	24	24
Power	[W]	5.9	7.2	7.2	11.5
Holding torque	[Nm]	0.32	1.3	1.3	3.2
Mass moment of inertia	[kgcm²]	0.004	0.004	0.004	0.012

Technical data – Encoder		
Measuring unit		Absolute, single turn
Interface/protocol		Nikon A format
Operating voltage	[V DC]	5 (±5%)
Operating voltage range	[V DC]	4.75 ... 5.25
Measuring principle		Optical
Position values per revolution		1048576
Resolution	[bit]	20
Absolute detectable revolutions		1
System accuracy of angle measurement	[arcsec]	±120

Servo motors EMMB-AS

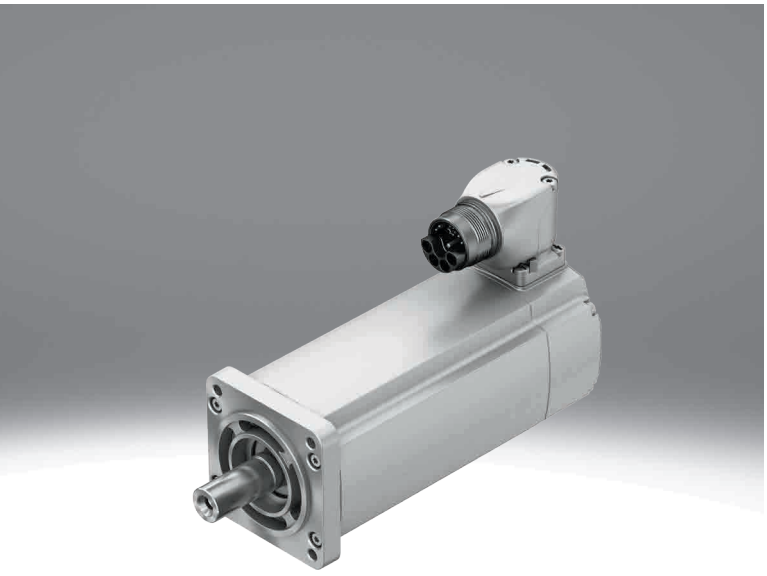
Data sheet

Operating and environmental conditions				
Flange size		40	60	80
Conforms to standard		IEC60034		
Degree of protection				
Motor shaft (without rotary shaft seal)		IP40		
Motor shaft (with rotary shaft seal)[1]		IP54		
Motor housing (without connection technology)		IP65		
Ambient temperature	[°C]	–15 … +40		
Note on ambient temperature		Up to 60 °C with derating of –1.5% per degree Celsius		
Storage temperature	[°C]	–20 … +55		
Max. setup altitude	[m]	4000		
Note on max. setup altitude		As of 1000 m only with derating of –1.0% per 100 m		
Insulation class		F (up to 155 °C)		
Temperature monitoring		Digital motor temperature transmission via Nikon A format		
Rating class to EN 60034-1		S1 (continuous operation)		
Relative humidity	[%]	0 … 90 (non-condensing)		
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6		
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
CE marking (see declaration of conformity)		To EU Low Voltage Directive		
		To EU-EMC Directive[2]		
		To EU RoHS Directive		
Certification		c UL us - Recognized (OL)		
Note on materials		RoHS-compliant		
		Contains paint-wetting impairment substances		

1) The rotary shaft seal is included in the scope of delivery of the motor.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Servo motors EMMT-AS



Highlights

+ For demanding tasks
+ Brushless, permanently excited synchronous servo motor
+ Digital absolute displacement encoder, single turn or multi-turn
+ 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

★ Festo core product range
Solves the majority of your automation tasks

With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .

Worldwide: Always in stock
Superb: Festo quality at an attractive price
Easy: Simplified procurement and warehousing

Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.

Just look for the star!

Servo motors EMMT-AS

Features

Everything from a single source

Motors EMMT-AS

- Dynamic, brushless, permanently excited synchronous servo motors
- Extremely low cogging torque – supports high synchronisation even at low rotational speeds
- Digital absolute displacement encoder; choose from:
  - Single-turn
  - Multi-turn, no batteries
- Motor temperature transmission, digital via EnDat 2.2; motor protection via CMMT-AS
- Optimised torque
- Optimised rotational speed
- Degree of protection:
  - IP40 (motor shaft)
  - IP67 (motor housing with connection technology)
  - IP65 (motor shaft with rotary shaft seal made of PTFE)
- Optional:
- Holding brake
- Shaft with featherkey
- Motor shaft with rotary shaft seal
- Simple connection technology (OCP: one cable plug) – hybrid cable: motor and connecting cable for supply and encoder rolled into one
- Connector plug rotatable

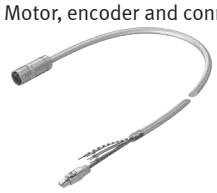
Gear unit EMGA-EAS/-SAS

- Low-backlash planetary gear
- Gear ratio i = 3 and 5, available from stock
- Life-time lubrication
- Degree of protection: IP54
- Other gear unit types, ratios, designs and versions on request

Servo drive CMMT-AS

- Universal servo drive for synchronous servo motors
- Integrated EMC filters
- Integrated brake chopper
- Integrated braking resistor
- Integrated safety functions
- Position controller
- Speed controller
- Force controller
- Range of control functions
- Interfaces:
  - EtherCAT
  - PROFINET RT/IRT
  - EtherNet/IP

Motor, encoder and connecting cables NEBM



- Suitable for energy chains
- Connection technology on motor side with degree of protection to IP20
- Can be used in a wide temperature range

Axial and parallel kits EAMM

- Specific kits for all electromechanical axes from Festo
- Each kit includes the relevant necessary coupling housing, couplings and motor flange as well as all screws
- Optionally with degree of protection IP65

Ordering – Modular product system

Size	60	80	100	Conditi-ons	Code	Enter code
Module no.	4808568	4595815	5185818			
Series	EMMT				EMMT	EMMT
Motor technology	AC synchronous				-AS	-AS
Motor flange size	60 mm	80	100		-	-
Length	Short				-S	
	Medium				-M	
	Long				-L	
	Very long				-H	
Output shaft	Smooth shaft					
	Shaft to DIN 6885				K	
Rotary shaft seal	Without					
	With standard shaft seal			[1]	R	
Winding	Low voltage, standard			[2]	-LS	
	High voltage, standard				-HS	
Electrical connection	Angled plug, rotatable				-R	-R
Measuring unit	Absolute encoder, single-turn				S	
	Absolute encoder, multi-turn				M	
Brake	Without					
	With brake				B	

[1] R When using the rotary shaft seal, a derating must be taken into account
[2] LS Not in combination with length H

Ordering data

Length			Winding		Measuring unit		Brake	Part no.	Type
Short	Medium	Long	Low voltage, standard	High voltage, standard	Encoder, single-turn	Encoder, multi-turn			
Flange size 60									
■			■		■			5242196	EMMT-AS-60-S-LS-RS
■			■			■		5242197	EMMT-AS-60-S-LS-RM
■			■		■		■	5242198	EMMT-AS-60-S-LS-RSB
■			■			■	■	5242199	EMMT-AS-60-S-LS-RMB
■				■	■			5242200	EMMT-AS-60-S-HS-RS
■				■		■		5242201	EMMT-AS-60-S-HS-RM
■				■	■		■	5242202	EMMT-AS-60-S-HS-RSB
■				■		■	■	5242203	EMMT-AS-60-S-HS-RMB
	■		■		■			5242204	EMMT-AS-60-M-LS-RS
	■		■			■		5242205	EMMT-AS-60-M-LS-RM
	■		■		■		■	5242206	EMMT-AS-60-M-LS-RSB
	■		■			■	■	5242207	EMMT-AS-60-M-LS-RMB
	■			■	■			5242208	EMMT-AS-60-M-HS-RS
	■			■		■		5242209	EMMT-AS-60-M-HS-RM
	■			■	■		■	5242210	EMMT-AS-60-M-HS-RSB
	■			■		■	■	5242211	EMMT-AS-60-M-HS-RMB
		■	■		■			5242212	EMMT-AS-60-L-LS-RS
		■	■			■		5242213	EMMT-AS-60-L-LS-RM
		■	■		■		■	5242214	EMMT-AS-60-L-LS-RSB
		■	■			■	■	5242215	EMMT-AS-60-L-LS-RMB
		■		■	■			5242216	EMMT-AS-60-L-HS-RS
		■		■		■		5242217	EMMT-AS-60-L-HS-RM
		■		■	■		■	5242218	EMMT-AS-60-L-HS-RSB
		■		■		■	■	5242219	EMMT-AS-60-L-HS-RMB

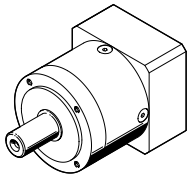
Servo motors EMMT-AS

Ordering data

Length			Winding		Measuring unit			Part no.	Type
Short	Medium	Long	Low voltage, standard	High voltage, standard	Encoder, single-turn	Encoder, multi-turn	Brake		
Flange size 80									
■			■		■			5255425	EMMT-AS-80-S-LS-RS
■			■			■		5255426	EMMT-AS-80-S-LS-RM
■			■		■		■	5255427	EMMT-AS-80-S-LS-RSB
■			■			■	■	5255428	EMMT-AS-80-S-LS-RMB
■				■	■			5255429	EMMT-AS-80-S-HS-RS
■				■		■		5255430	EMMT-AS-80-S-HS-RM
■				■	■		■	5255431	EMMT-AS-80-S-HS-RSB
■				■		■	■	5255432	EMMT-AS-80-S-HS-RSM
	■		■		■			5255433	EMMT-AS-80-M-LS-RS
	■		■			■		5255434	EMMT-AS-80-M-LS-RM
	■		■		■		■	5255435	EMMT-AS-80-M-LS-RSB
	■		■			■	■	5255436	EMMT-AS-80-M-LS-RMB
	■			■	■			5255437	EMMT-AS-80-M-HS-RS
	■			■		■		5255438	EMMT-AS-80-M-HS-RM
	■			■	■		■	5255439	EMMT-AS-80-M-HS-RSB
	■			■		■	■	5255440	EMMT-AS-80-M-HS-RMB
		■	■		■			5255441	EMMT-AS-80-L-LS-RS
		■	■			■		5255442	EMMT-AS-80-L-LS-RM
		■	■		■		■	5255443	EMMT-AS-80-L-LS-RSB
		■	■			■	■	5255444	EMMT-AS-80-L-LS-RMB
		■		■	■			5255445	EMMT-AS-80-L-HS-RS
		■		■		■		5255446	EMMT-AS-80-L-HS-RM
		■		■	■		■	5255447	EMMT-AS-80-L-HS-RSB
		■		■		■	■	5255448	EMMT-AS-80-L-HS-RMB
		■		■	■		■	5242218	EMMT-AS-60-L-HS-RSB
		■		■		■	■	5242219	EMMT-AS-60-L-HS-RMB
Flange size 100									
■				■	■			5255519	EMMT-AS-100-S-HS-RS
■				■		■		5255521	EMMT-AS-100-S-HS-RM
■				■	■		■	5255528	EMMT-AS-100-S-HS-RSB
■				■		■	■	5255529	EMMT-AS-100-S-HS-RMB
	■			■	■			5255530	EMMT-AS-100-M-HS-RS
	■			■		■		5255531	EMMT-AS-100-M-HS-RM
	■			■	■		■	5255532	EMMT-AS-100-M-HS-RSB
	■			■		■	■	5255533	EMMT-AS-100-M-HS-RMB
		■		■	■			5255534	EMMT-AS-100-L-HS-RS
		■		■		■		5255535	EMMT-AS-100-L-HS-RM
		■		■	■		■	5255536	EMMT-AS-100-L-HS-RSB
		■		■		■	■	5255537	EMMT-AS-100-L-HS-RMB

Accessories – Ordering data

Gear unit

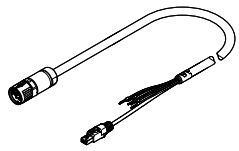


Motor interface	Gear ratio	Part no.	Type
60P	3	2297686	EMGA-60-P-G3-EAS-60
	5	2297687	EMGA-60-P-G5-EAS-60
80P	3	2297690	EMGA-80-P-G3-EAS-80
	5	2297691	EMGA-80-P-G5-EAS-80
100P	3	552194	EMGA-80-P-G3-SAS-100
	5	552195	EMGA-80-P-G5-SAS-100
	3	552196	EMGA-120-P-G3-SAS-100
	5	552197	EMGA-120-P-G5-SAS-100

Rotary shaft seal

For flange size	Description	Part no.	Type
60	• Degree of protection IP65 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 • When using the rotary shaft seal, a derating must be taken into account • Information on installation/replacement → www.festo.com/sp	8079786	EASS-RS-T-A-4P-15-30-B7
80, 100		8079785	EASS-RS-T-A-4P-20-40-B7

Ordering data – Motor cable



Cable cross section	Cable length [m]	Part no.	Type
0.75 mm²	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
1.5 mm²	2.5	5251381	NEBM-M23G15-EH-2.5-Q9N-R3LEG14
	5	5251382	NEBM-M23G15-EH-5-Q9N-R3LEG14
	7.5	5251383	NEBM-M23G15-EH-7.5-Q9N-R3LEG14
	10	5251384	NEBM-M23G15-EH-10-Q9N-R3LEG14
	15	5251385	NEBM-M23G15-EH-15-Q9N-R3LEG14
	20	5251386	NEBM-M23G15-EH-20-Q9N-R3LEG14
	X length[1]	5251380	NEBM-M23G15-EH-...-Q9N-R3LEG14
2.5 mm²	2.5	5251388	NEBM-M23G15-EH-2.5-Q10N-R3LEG14
	5	5251389	NEBM-M23G15-EH-5-Q10N-R3LEG14
	7.5	5251390	NEBM-M23G15-EH-7.5-Q10N-R3LEG14
	10	5251391	NEBM-M23G15-EH-10-Q10N-R3LEG14
	15	5251392	NEBM-M23G15-EH-15-Q10N-R3LEG14
	20	5251393	NEBM-M23G15-EH-20-Q10N-R3LEG14
	X length[1]	5251387	NEBM-M23G15-EH-...-Q10N-R3LEG14

1) Choice of cable lengths: 0.5 ... 99.9 m, in increments of 0.1 m.

Servo motors EMMT-AS

Data sheet

Note
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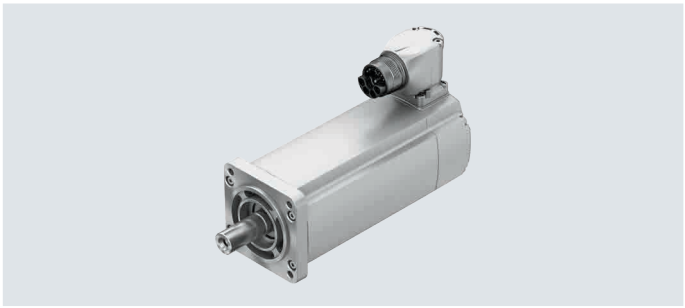

Technical data							
Flange size		60					
Length		S		M		L	
Winding		LS	HS	LS	HS	LS	HS
Nominal operating voltage[1]	[V DC]	325	565	325	565	325	565
Nominal current[2]	[A]	1.6/1.4	1.6/1.4	2.4/2.2	2.4/2.2	3.2/3	3.2/3
Continuous stall current[2]	[A]	1.7/1.6	1.7/1.6	2.7/2.5	2.7/2.5	3.8/3.5	3.8/3.5
Peak current	[A]	5.4	5.4	11.0	11.0	18.3	18.3
Nominal power[2]	[W]	200/190	200/190	350/310	350/310	440/410	440/410
Nominal torque[2]	[Nm]	0.64/0.6	0.64/0.6	1.1/1.0	1.1/1.0	1.4/1.3	1.4/1.3
Peak torque	[Nm]	1.6	1.6	3.4	3.4	5.6	5.6
Stall torque[2]	[Nm]	0.7/0.66	0.7/0.66	1.24/1.15	1.24/1.15	1.66/1.56	1.66/1.56
Stall torque constant	[Nm/A]	0.49	0.49	0.53	0.53	0.52	0.52
Nominal rotary speed	[rpm]	3000					
Max. rotational speed	[rpm]	7100	12500	6800	11800	6800	11900
Max. mechanical rotational speed	[rpm]	16000					
Max. idling rotational speed with brake	[rpm]	10000					
Motor constant	[Nm/A]	0.41	0.41	0.45	0.45	0.44	0.44
Voltage constant (phase-to-phase)	[mVmin]	29.9	29.9	32	32	31.2	31.2
Electric time constant	[ms]	2.1	2.1	2.7	2.7	3	3
Number of pole pairs		5	5	5	5	5	5
Winding resistance (phase-to-phase)	[Ω]	11.7	11.7	4.85	4.85	2.68	2.68
Winding inductance (phase-to-phase)	[mH]	21	21	11	11	7	7
Total output moment of inertia[2]	[kgcm²]	0.169/0.257	0.169/0.257	0.286/0.373	0.286/0.373	0.403/0.490	0.403/0.490
Shaft load at nominal rotary speed							
Radial	[N]	350					
Axial	[N]	65					
Brake							
Operating voltage	[V DC]	24 (+6 ... −10%)					
Current consumption	[A]	0.46					
Holding current	[A]	0.33					
Air flow	[A]	0.33					
Power	[W]	11					
Holding torque (static)	[Nm]	2.5					
Separation time	[ms]	≤ 35					
Closing time	[ms]	10					
Response delay	[ms]	≤ 2					
Coil resistance	[Ω]	52.4					
Coil inductance	[mH]	700					
Mass moment of inertia	[kgcm²]	0.074					
Max. friction work	[J]	5600					

1) Operation is only tested and approved in combination with servo drives from Festo. On 3-phase grids, operation up to 3x 400 VAC +10% is approved.
2) Without brake/with brake

Data sheet

Technical data								
Flange size		80						
Length		S		M		L		H
Winding		LS	HS	LS	HS	LS	HS	HS
Nominal operating voltage[1]	[V DC]	325	565	325	565	325	565	565
Nominal current	[A]	2.7	1.76	4.1	2.2	5.5	3.5	3.8
Continuous stall current	[A]	3.1	2	4.9	2.6	6.7	4.3	4.8
Peak current	[A]	8.4	5.4	17.1	9	27.3	17.5	21.7
Nominal power	[W]	408	408	690	690	910	910	1070
Nominal torque	[Nm]	1.3	1.3	2.2	2.2	2.9	2.9	3.4
Peak torque	[Nm]	2.8	2.8	6.4	6.4	9.9	9.9	13.5
Stall torque	[Nm]	1.46	1.46	2.6	2.6	3.5	3.5	4.3
Stall torque constant	[Nm/A]	0.57	0.89	0.62	1.17	0.6	0.93	1
Nominal rotary speed	[rpm]	3000						
Max. rotational speed	[rpm]	6700	7440	6150	5650	6400	7100	6500
Max. mechanical rotational speed	[rpm]	14000						
Max. idling rotational speed with brake	[rpm]	10000						
Motor constant	[Nm/A]	0.48	0.74	0.54	1	0.53	0.82	0.9
Voltage constant (phase-to-phase)	[mVmin]	34.3	53.6	37.3	70.7	36	56	61.4
Electric time constant	[ms]	4.9	4.8	6.5	6.4	6.9	7	7.2
Number of pole pairs		5	5	5	5	5	5	5
Winding resistance (phase-to-phase)	[Ω]	4.93	12.4	2.04	7.43	1.13	2.69	2.21
Winding inductance (phase-to-phase)	[mH]	16.3	39.8	8.9	31.8	5.2	12.6	10.7
Total output moment of inertia[2]	[kgcm²]	1.33/1.64	1.33/1.64	1.77/2.07	1.77/2.07	2.21/2.72	2.21/2.72	2.65/3.16
Shaft load at nominal rotary speed								
Radial	[N]	620						
Axial	[N]	120						
Brake								
Operating voltage	[V DC]	24 (+6 … −10%)						
Current consumption	[A]	0.5	0.5	0.5	0.5	0.63	0.63	0.63
Holding current	[A]	0.37	0.37	0.37	0.37	0.45	0.45	0.45
Air flow	[A]	0.37	0.37	0.37	0.37	0.45	0.45	0.45
Power	[W]	12	12	12	12	15	15	15
Holding torque (static)	[Nm]	4.5	4.5	4.5	4.5	7	7	7
Separation time	[ms]	≤ 55	≤ 55	≤ 55	≤ 55	≤ 45	≤ 45	≤ 45
Closing time	[ms]	≤ 15	≤ 15	≤ 15	≤ 15	≤ 30	≤ 30	≤ 30
Response delay	[ms]	≤ 3	≤ 3	≤ 3	≤ 3	≤ 4	≤ 4	≤ 4
Coil resistance	[Ω]	48	48	48	48	38.4	38.4	38.4
Coil inductance	[mH]	1000	1000	1000	1000	900	900	900
Mass moment of inertia	[kgcm²]	0.249	0.249	0.249	0.249	0.459	0.459	0.459
Max. friction work	[J]	8200	8200	8200	8200	12000	12000	12000

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2) Without brake/with brake

Data sheet

Technical data				
Flange size		100		
Length		S	M	L
Winding		HS	HS	HS
Nominal operating voltage[1]	[V DC]	565	565	565
Nominal current	[A]	3.5	4.3	4.7/4.3
Continuous stall current[2]	[A]	4.4	5.9	7/6.7
Peak current	[A]	13.7	22.1	28.6
Nominal power[2]	[W]	1450	1770	2030/1870
Nominal torque[2]	[Nm]	5.1	6.3	7.2/6.6
Peak torque	[Nm]	13.7	22.4	30.5
Stall torque[2]	[Nm]	6.3	8.6	10.8/10.4
Stall torque constant	[Nm/A]	1.67	1.66	1.75
Nominal rotary speed	[rpm]	2700		
Max. rotational speed	[rpm]	3970	3980	3770
Max. mechanical rotational speed	[rpm]	13000		
Max. idling rotational speed with brake	[rpm]	10000		
Motor constant	[Nm/A]	1.45	1.46	1.54
Voltage constant (phase-to-phase)	[mVmin]	101	100	106
Electric time constant	[ms]	14.5	16.6	15.8
Number of pole pairs		5	5	5
Winding resistance (phase-to-phase)	[Ω]	3.35	1.84	1.49
Winding inductance (phase-to-phase)	[mH]	32.4	20.4	15.7
Total output moment of inertia[2]	[kgcm²]	3.15/4.04	4.46/5.34	5.77/8.06
Shaft load at nominal rotary speed				
Radial	[N]	1110		
Axial	[N]	200		
Brake				
Operating voltage	[V DC]	24 (+6 ... –10%)		
Current consumption	[A]	0.75	0.75	1
Holding current	[A]	0.54	0.54	0.73
Air flow	[A]	0.54	0.54	0.73
Power	[W]	18	18	24
Holding torque (static)	[Nm]	11	11	18
Separation time	[ms]	≤ 80		
Closing time	[ms]	≤ 20	≤ 20	≤ 40
Response delay	[ms]	≤ 4	≤ 4	≤ 5
Coil resistance	[Ω]	32	32	24
Coil inductance	[mH]	900	900	900
Mass moment of inertia	[kgcm²]	0.74	0.74	2.15
Max. friction work	[J]	12000	12000	15000

1) Operation is only tested and approved in combination with servo drives from Festo. On 3-phase grids, operation up to 3x 400 VAC +10% is approved.
2) Without brake/with brake

Technical data – Encoder			
Measuring unit		Absolute, single-turn	Absolute, multi-turn
Operating voltage	[V DC]	5	
Operating voltage range	[V DC]	3.6 ... 14	
Protocol		EnDat 2.2, digital channel only, max. switching frequency (CLOCK) ≤16 MHz	
Position values per revolution		262144	524288
Measuring principle		Inductive	
Rotor position sensor resolution		18 bits	19 bits
Revolutions		1	4096 revolutions, 12 bits
System accuracy of angle measurement			
Flange size 60	[arcsec]	–120 ... 120	
Flange size 80	[arcsec]	–120 ... 120	
Flange size 100	[arcsec]	–65 ... 65	

Servo drives CMMT-AS

Highlights

+ Universal applications
+ The latest generation of servo drive systems with optimised prices and sizes
+ One of the most compact servo drives on the market
+ Configuration of standard safety functions without software
+ Auto-tuning supports easy commissioning and automatically optimises the control behaviour of rotary and linear motions
+ Precise force, speed and position control
+ Optimally with servo motor EMMT-AS

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Servo drives CMMT-AS

Features

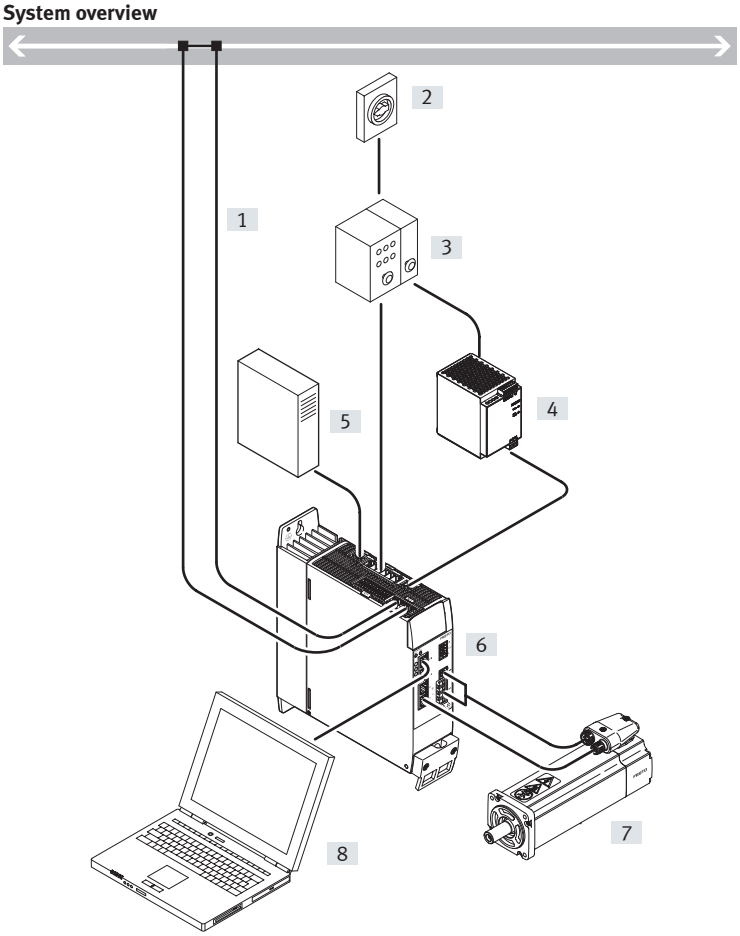
At a glance

- Universal servo drive for PM-synchronous servo motors up to 6000 W continuous power
- Supports the motor series EMMT-AS, EMME-AS, EMMB-AS and EMMS-AS as well as third-party motors
- Integrated single-phase/three-phase mains connection 230/400 V AC, mains filter and braking resistor, connection option for external braking resistor
- Precise torque, speed and position control
- Motion from 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 protocols

EtherCAT. PROFIBUS EtherNet/IP Modbus

  - Modbus TCP is available as an additional protocol for all EtherNet/IP devices
  - Prepared device description files and function blocks 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 operator 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
- Integrated safety functions:
  - Safe torque off (STO) up to SIL3/Cat. 4 PL e
  - Safe stop 1 (SS1) when using a suitable external safety relay unit and suitable circuit for the servo drive
  - Safe brake control (SBC) up to SIL3/Cat. 3 PL e
  - Diagnostic outputs STA and SBA for feedback of the active safety function

System overview



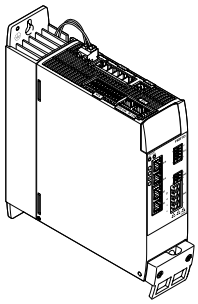
[1] Bus/network
[2] Main switch
[3] Circuit breaker/fuses
[4] Fixed power supply for logic voltage supply 24 V DC (PELV)
[5] External braking resistor (optional)
[6] Servo drive CMMT-AS
[7] Servo motor
[8] PC with Ethernet connection for parameterisation

Ordering – Modular product system

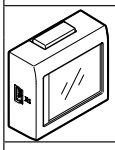
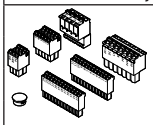
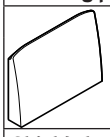
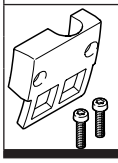
Series CMMT-AS-...	-3A	-11A	Conditi-ons	Code		Enter code
Module no.	5111184	5111189				
Series	CMMT			CMMT		CMMT
Motor type	AC synchronous			-AS		-AS
Nominal current						
2 A				-C2		
3 A	–		[1]	-C3		
4 A		–	[2]	-C4		
5 A	–		[1]	-C5		
7 A	–		[1]	-C7		
12 A	–		[1]	-C12		
Nominal input voltage						
230 V AC/50-60 Hz		–		-3A		
400 V AC	–			-11A		
Number of phases						
Single-phase		–				
Three-phase	–			-P3		
Bus protocol/control	EtherCAT			-EC		
	PROFINET RT/IRT			-PN		
	EtherNet/IP and Modbus TCP			-EP		
Safety function	Standard safety			-S1		-S1

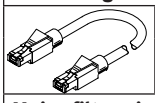
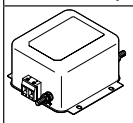
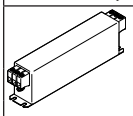
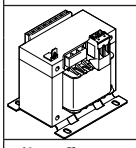
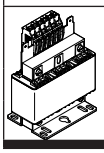
[1] C3, C5, C7, C12 Only with nominal input voltage 11 A
[2] C4 Only with nominal input voltage 3 A

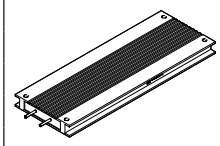
Ordering data

	Description	Number of phases	Nominal current	Part no.	Type
	The assortment of plugs NEKM is not included in the scope of delivery of the servo drive.	Bus protocol: EtherCAT			
		Single-phase	2	5340819	CMMT-AS-C2-3A-EC-S1
			4	5340820	CMMT-AS-C4-3A-EC-S1
		Three-phase	2	5340821	CMMT-AS-C2-11A-P3-EC-S1
			3	5340822	CMMT-AS-C3-11A-P3-EC-S1
			5	5340823	CMMT-AS-C5-11A-P3-EC-S1
			7	8133354	CMMT-AS-C7-11A-P3-EC-S1
			12	8133355	CMMT-AS-C12-11A-P3-EC-S1
		Bus protocol: PROFINET RT/IRT			
		Single-phase	2	5340814	CMMT-AS-C2-3A-PN-S1
			4	5340815	CMMT-AS-C4-3A-PN-S1
		Three-phase	2	5340816	CMMT-AS-C2-11A-P3-PN-S1
			3	5340817	CMMT-AS-C3-11A-P3-PN-S1
			5	5340818	CMMT-AS-C5-11A-P3-PN-S1
			7	8133352	CMMT-AS-C7-11A-P3-PN-S1
			12	8133353	CMMT-AS-C12-11A-P3-PN-S1
		Bus protocol: EtherNet/IP and Modbus TCP			
		Single-phase	2	5340824	CMMT-AS-C2-3A-EP-S1
			4	5340825	CMMT-AS-C4-3A-EP-S1
		Three-phase	2	5340826	CMMT-AS-C2-11A-P3-EP-S1
			3	5340827	CMMT-AS-C3-11A-P3-EP-S1
			5	5340828	CMMT-AS-C5-11A-P3-EP-S1
			7	8133356	CMMT-AS-C7-11A-P3-EP-S1
			12	8133357	CMMT-AS-C12-11A-P3-EP-S1

Accessories – Ordering data

	Description	Part no.	Type
Control unit			
		8070984	CDSB-A1
Assortment of plugs			
	For single wiring connection		
	Single-phase	4325822	NEKM-C-6-C16-S
	Three-phase	5119205	NEKM-C6-C45-P3-S
	For double wiring connection		
	Single-phase	5054513	NEKM-C-6-C16-D
	Three-phase	5118001	NEKM-C6-C45-P3-D
Blanking plate			
		5395254	CAFC-06-C
Shield clamp			
	For CMMT-AS-...-3A	5326867	CAMA-C6-SK-S2
	For CMMT-AS-...-11A	5335956	CAMA-C6-SK-S3

	Part no.	Type
Connecting cable		
	8082383	NEBC-R3G8-KS-0.2-N-S-R3G8-ET
Mains filter, single-phase		
	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
Mains filter, three-phase		
	16 A, for 8x CMMT-AS-C2-11A or 5x CMMT-AS-C3-11A or 2x CMMT-AS-C5-11A	
	8096868	CAMF-C6-F-C16-11A
	42 A, for 21x CMMT-AS-C2-11A or 14x CMMT-AS-C3-11A or 7x CMMT-AS-C5-11A	
	8096894	CAMF-C6-F-C42-11A
Filter flow control, single-phase		
	For: 2x CMMT-AS-C2-3A or 1x CMMT-AS-C4-3A	
	8088930	CAMF-C6-FD-C6-3A
Filter flow control, three-phase		
	6 A, for 3x CMMT-AS-C2-11A or 2x CMMT-AS-C3-11A or 1x CMMT-AS-C5-11A	
	8096867	CAMF-C6-FD-C6-11A

	For type CMMT-AS-					Resistance value	Nominal power	Part no.	Type
	C2-3A	C4-3A	C2-11A	C3-11A	C5-11A	[W]	[W]		
Braking resistor									
	–	■	–	–	–	72	200	1336611	CACR-LE2-72-W500
	■	■	–	–	■	100	200	1336615	CACR-LE2-100-W500
	–	–	■	■	–	240	200	8091543	CACR-LE2-240-W500
	–	–	■	■	–	240	720	8091544	CACR-KL2-240-W1800
	–	–	–	–	■	100	720	8091545	CACR-KL2-100-W1800

Data sheet

Bus protocols

EtherCAT.

PROFIBUS

EtherNet/IP

Modbus

c UL us LISTED

General technical data CMMT-AS-	C2-3A-...	C4-3A-...	C2-11A-...	C3-11A-...	C5-11A-...	C7-11A-...	C12-11A-...
Type of mounting	Mounting plate, screwed in						
Indicators	Green/yellow/red LED or operator unit CDSB with plain-text message						
Controller mode of operation	• Cascade controller • P position controller • PI speed controller • PI current regulator for F or M • Profile operation with record and direct mode • Interpolated mode via fieldbus • Homing/setup mode/auto-tuning						
Operating mode	• Field-oriented control, position resolution 24-bit/rev. • Sampling rate 16 kHz • PWM with 8 or 16 kHz, vector modulation with third harmonic (16 kHz only with CMMT-AS-C2-3A and CMMT-AS-C4-3A) • Real-time data acquisition: – 2x input position capture – 2x output position trigger – 2x position encoder input – 1x SYNC interface for encoder emulation or encoder input						
Mounting position	Vertical						
Product weight [g]	1300	1400	2100	2100	2200	4100	4100

Bus protocols Interface	EtherCAT	PROFINET RT/IRT	EtherNet/IP	Modbus TCP
Function	Bus connection incoming/outgoing			
Process interfacing	Interpolated mode CSP	AC1: adjustable-speed drives	Adjustable-speed drives	Adjustable-speed drives
	Interpolated mode CSV	AC3: drives with positioning function	Drives with positioning function	Drives with positioning function
	Interpolated mode CST	AC4: synchronous servo application		
	Point-to-point mode PP			
	Point-to-point mode PV			
	Point-to-point mode PT			
	Homing mode HM			
	Record table with 128 entries			
Communication profile	CiA402	PROFIdrive	DriveProfile	DriveProfile
	CoE (CANopen over EtherCAT)	PROFIenergy		
	EoE (Ethernet over EtherCAT)			
Max. fieldbus transmission rate [Mbps]	100			
Connection type	2x bushing			
Connection technology	RJ45			

Data sheet

Electrical data								
CMMT-AS-		C2-3A-...	C4-3A-...	C2-11A-...	C3-11A-...	C5-11A-...	C7-11A-...	C12-11A-...
Output connection data								
Output voltage range	[V AC]	3x (0 – Input)						
Nominal current per phase	[A_{eff}]	2	4	1.7	2.5	5	7	12
Peak current per phase	[A_{eff}]	6	12	5.1	7.5	15	21	36
Max. peak current duration (at fs ≥ 5 Hz)	[s]	2						
Nominal power	[W]	350	700	800	1200	2500	4000	6000
Peak power	[W]	1000	2000	2400	3600	7500	12000	18000
Output frequency	[Hz]	0 ... 599						
Max. motor cable length[1]	[m]	25/25		50/100			25/100	
Load voltage AC								
Nominal operating voltage phases		Single-phase		Three-phase				
Input voltage range	[V AC]	100 –20% ... 230 +15%		200 –10% ... 480 +10%				
Nominal operating voltage	[V AC]	230		400				
Nominal current	[A_{eff}]	2.8	5.6	2	3	6	9	15
Peak current		8.4	16.8	6	9	18	27	45
Mains frequency	[Hz]	48 ... 62						
System voltage to EN 61800-5-1	[V]	300						
Max. short circuit current rating of the mains	[kA]	100		10				
Mains types of system earthing		TN, TT, IT		TN, IT				
Mains filter		Integrated						
Load voltage DC								
Input voltage range	[V DC]	80 ... 360		80 ... 700				
Max. DC link voltage	[V DC]	395		800				
Nominal current								
at 320 V DC	[A]	1.3	2.6	–	–	–	–	–
at 560 V DC	[A]	–	–	1.5	2.3	4.7	7.5	11.2
Logic supply								
Nominal voltage	[V DC]	24 ±20%						
Max. current consumption	[A]	0.5/2.3[2]				0.5/2.5[2]		

1) Without/with external mains filter

2) Max. current at full expansion, with two position encoders, brake output and all I/Os with max. specified loads connected

Braking resistor								
CMMT-AS-		C2-3A-...	C4-3A-...	C2-11A-...	C3-11A-...	C5-11A-...	C7-11A-...	C12-11A-...
Integrated								
Resistance	[Ω]	100		130			47	
Pulse power	[kW]	1.6		5			13.6	
Pulse energy	[Ws]	230		850			1200	
Nominal power	[W]	23		48	48	58	100	
External								
Resistance	[Ω]	100 ... 160	67 ... 100	130 ... 250	130 ... 250	80 ... 130	60 ... 85	40 ... 60
Max. continuous power	[W]	180	350	400	600	1200	1500	3000

Motor auxiliary connections								
CMMT-AS-		C2-3A-...	C4-3A-...	C2-11A-...	C3-11A-...	C5-11A-...	C7-11A-...	C12-11A-...
Motor temperature monitoring								
Digital		Connection for temperature switch (PTC, N/C contact or N/O contact)						
Analogue		Connection for analogue temperature sensor (KTY81 ... 84, NTC, Pt1000)						
Output for holding brake								
Design		High-side switch; 24 V; monitored internally						
Output current	[A]	1.0				1.3	1.5	
Output for 2nd brake								
Design		High-side switch; 24 V; monitored internally						
Output current	[A]	0.1						

Data sheet

Interfaces		
Ethernet		
Function		Parameterisation and commissioning
Protocol		DHCP
		FTP
		TCP/IP
Position encoders		
Function of position encoder 1		ENDAT 2.1 encoder
		ENDAT 2.2 encoder
		HIPERFACE encoder
		Incremental encoder
		SIN/COS encoder
		Nikon-A
Function of position encoder 2		Incremental encoder
		SIN/COS encoder
Synchronisation		
Function		Encoder emulation A/B/Z
		Encoder input A/B/Z
Encoder output, characteristics		1 MHz maximum output frequency
		Resolution up to 16384 ppr
Encoder input, characteristics		1 MHz maximum input frequency
		Resolution up to 16384 ppr
Input/output		
Digital inputs		
Number		10 ... 12 (depending on device design)
Number of high-speed		2
Time resolution of high-speed	[µs]	1
Switching logic		PNP
Characteristics		Not galvanically isolated
		Freely configurable in some cases
		Safety inputs in some cases
Specification		Based on IEC 61131-2, type 3
Operating range	[V]	0 ... 30
Digital outputs		
Number		4 ... 6 (depending on device design)
Number of high-speed		2
Time resolution of high-speed	[µs]	1
Switching logic		PNP
Characteristics		Not galvanically isolated
		Freely configurable in some cases
Max. current	[mA]	20
Analogue setpoint inputs		
Number		1
Characteristics		Differential input
		Configurable for current/force, rotational speed and position
Operating range	[V]	±10
Impedance	[kΩ]	70
Floating switching outputs		
Number		1
Max. current	[mA]	50

Data sheet

Safety characteristics		
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 and no.		TÜV Rheinland (German Technical Control Board) 01/205/5640.00/18
Proof test interval		
Safe torque off (STO)		Up to 20a
Safe brake control (SBC)		24 h
Diagnostic coverage	[%]	Up to 97
Safe failure fraction (SFF)	[%]	Up to 99
Hardware fault tolerance		1

Operating and environmental conditions		
Degree of protection		IP20
Ambient temperature[1]	[°C]	0 ... +50
Storage temperature	[°C]	–25 ... +55
Relative humidity	[%]	5 ... 90 (non-condensing)
Protection class		I
Overvoltage category		III
Pollution degree		2
Surge resistance	[kV]	6
Max. installation height[2]	[m]	2000
Shock and vibration resistance		To EN 61800-2 and EN 61800-5-1
CE marking (see declaration of conformity)		To EU EMC Directive[3]
		To EU Machinery Directive
		To EU Low Voltage Directive
		To EU RoHS Directive
KC marking		KC EMC
Certification		c UL us listed (OL)
		RCM compliance mark
Note on materials		Contains paint-wetting impairment substances
		RoHS-compliant

1) Above 40°C power is reduced by 3% per K.
2) Above 1000 m power is reduced by 1% per 100 m.
3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Servo drives CMMT-ST

Highlights

+ Very efficient for tasks with low power requirements
+ Ideal for positioning tasks and point-to-point and interpolating motion solutions
+ 50% more compact than the smallest servo drive CMMT-AS
+ Optimised for use with stepper motors like the tried-and-tested EMMS-ST

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Servo drives CMMT-ST

Features

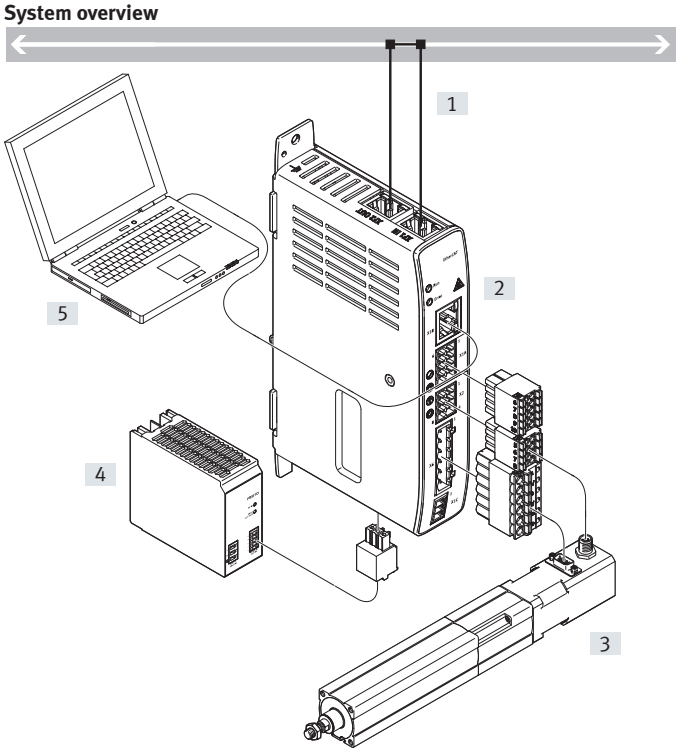
At a glance

- Space-saving servo drive for operating stepper motors and brushless direct current motors
- Extremely economical for positioning tasks and motion solutions with low power requirements up to 300 W
- Primary voltage from 24 ... 48 V DC
- Motor current up to 8 A (peak 10 A)
- 50% more compact than the smallest CMMT-AS
- Options for point-to-point and interpolating motion and for precise positioning
- Bus protocols

EtherCAT® PROFINET® EtherNet/IP Modbus

- Direct fieldbus integration to major controller manufacturers
- Auto-tuning supports simple commissioning of rotary and linear movements, using mechanical systems from Festo and third-party suppliers
- Integrated safety functions:
  - Safe torque off (STO) up to SIL3/Cat. 3 PL e
  - Safe stop 1 time controlled (SS1-t) when using a suitable external safety relay unit and suitable circuitry for the servo drive
- Can be easily combined with the servo drive CMMT-AS and axis mechanisms from Festo

System overview



1 Bus/network
2 Servo drive CMMT-ST
3 Stepper motor or EC motor with drive
4 Power supply unit(s) for logic and load voltage (PELV)
5 PC with Ethernet connection for parameterisation

Type code explanation

001	Series	
CMMT	Motor controller	

002	Motor type	
ST	Stepper motor ST	

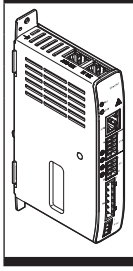
003	Nominal current	
C8	8 A	

004	Nominal input voltage	
1C	24 - 48 V DC	

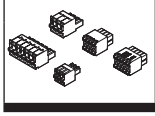
005	Bus protocol/activation	
EC	EtherCAT®	
EP	EtherNet/IP	
PN	Profinet	

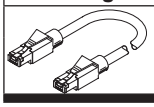
006	Safety function	
S0	Basic safety	

Ordering data

	Description	Bus protocol	Part no.	Type
	The assortment of plugs NEKM is included in the scope of delivery of the servo drive	EtherCAT	8084005	CMMT-ST-C8-1C-EC-SO
		PROFINET RT/IRT	8084004	CMMT-ST-C8-1C-PN-SO
		EtherNet/IP and Modbus TCP	8084006	CMMT-ST-C8-1C-EP-SO

Accessories – Ordering data

	Description	Part no.	Type
Assortment of plugs			
	For single wiring connection		
	Single-phase	8081885	NEKM-C-22

	Part no.	Type
Connecting cable		
	8082383	NEBC-R3G8-KS-0.2-N-S-R3G8-ET

Data sheet

Bus protocols

EtherCAT

PROFINET

EtherNet/IP

Modbus

General technical data	
Type of mounting	Mounting plate, screwed in
	With H-rail
Display	LED green/yellow/red
Controller operating mode	Cascade controller
	P position controller
	PI speed controller
	PI current regulator for F or M
	Profile operation with record and direct mode
	Interpolating operation via fieldbus
	Synchronised operating modes
	Homing
	Set up mode
	Auto-tuning
	Open-loop operation

General technical data (continued)	
Operating mode	Field-oriented closed-loop control
	Position resolution 24 bit/rev.
	Sampling rate 20 kHz
	PWM with 20 kHz
	Real-time data acquisition
	2x input capture (x, v, F)
	2x output trigger (x, v, F)
	1x position encoder input
Adjustable current reduction	Via software
Protective function	I^2t monitoring
	Temperature monitoring
	Current monitoring
	Voltage failure detection
	Following error monitoring
	Software end-position detection
Mounting position	Free convection
	Vertical

Data sheet

Bus protocols					
Interface		EtherCAT	PROFINET RT/IRT	EtherNet/IP	Modbus TCP
Function		Bus connection incoming/outgoing			
Process interfacing		Interpolated mode CSP	AC1: adjustable-speed drives	Adjustable-speed drives	Adjustable-speed drives
		Interpolated mode CSV	AC3: drives with positioning function	Drives with positioning function	Drives with positioning function
		Interpolated mode CST	AC4: synchronous servo application		
		Point-to-point mode PP			
		Point-to-point mode PV			
		Point-to-point mode PT			
		Homing mode HM			
		Record table with 128 entries			
Communication profile		CiA402	PROFIdrive	DriveProfile	DriveProfile
		CoE (CANopen over EtherCAT)	PROFIenergy		
		EoE (Ethernet over EtherCAT)			
		FoE (File over EtherCAT)			
Max. fieldbus transmission rate	[Mbps]	100			
Connection type		2 x socket			
Connection technology		RJ45			

Electrical data		
Output connection data		
Output voltage range	[V AC]	0 – Input
Nominal output current	[A]	8
Nominal current per phase	[A]	8
Peak current per phase	[A]	10
Max. peak current duration	[s]	3
Nominal power	[W]	300
Peak power	[W]	400
Output frequency	[kHz]	0 ... 20
Max. motor cable length[1]	[m]	25
Load voltage DC		
Load voltage range	[V DC]	24 –15% ... 48+15%
Max. DC link voltage	[V DC]	60
Logic supply		
Nominal voltage	[V DC]	24 ±15%
Max. current consumption		
Without locking brake	[A]	1
With locking brake	[A]	2
Holding brake		
Max. output current	[A]	1
Max. voltage drop	[V]	1

1) Without external mains filter

Safety data	
Safety function to EN 61800-5-2	Safe torque off (STO)
	Safe stop 1 (SS1-t)
Performance level (PL) to EN ISO 13849-1	
Safe torque off (STO)	Category 3, PLd (EC motor without diagnostics)
	Category 3, PLe (stepper motor/EC motor with diagnostics)
Safety integrity level (SIL) to EN 62061 and EN 61508	
Safe torque off (STO)	SIL 2 / SILCL 2 (EC motor without diagnostics)
	SIL 3 / SILCL 3 (stepper motor/EC motor with diagnostics)
Certificate issuing authority and no.	German Technical Control Board (TÜV Rheinland) 01/205/5696.00/19
Proof test interval	
Safe torque off (STO)	20 a (stepper motor/EC motor without diagnostics)
Hardware fault tolerance	1

Data sheet

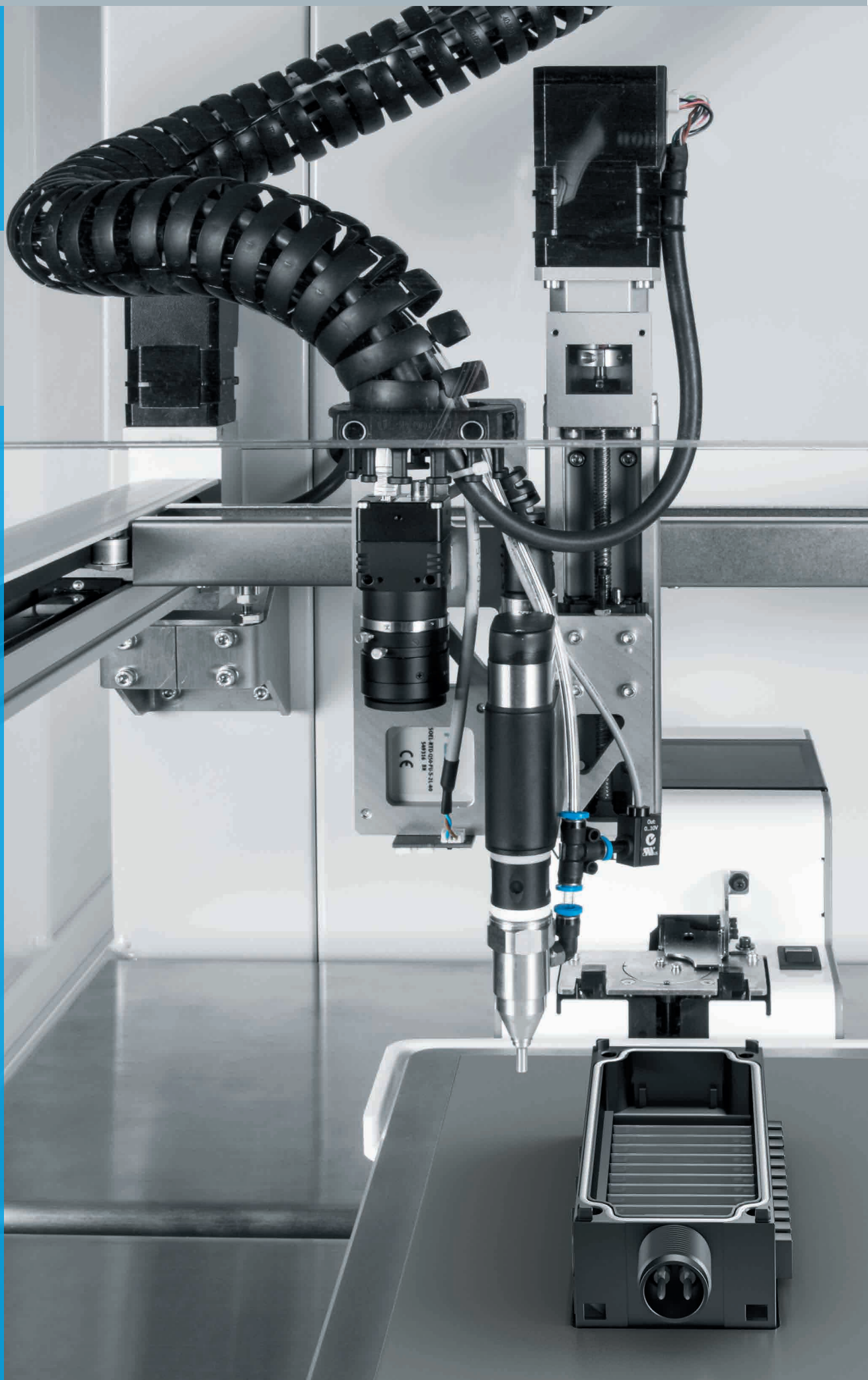
Interfaces		
Ethernet		
Function		Parameterisation and commissioning
Protocol		TCP/IP
Position encoder		
Function		Incremental encoder
		BiSS-C
Input/output		
Digital inputs		
Number		6
Number of high-speed		2
Time resolution of high-speed	[µs]	1
Switching logic		PNP
		NPN
Properties		Not galvanically isolated
		Freely configurable in some cases
		Safety inputs in some cases
Specification		Based on IEC 61131-2, type 3
Working area	[V]	–3 ... +30
Digital outputs		
Number		2
Number of high-speed		2
Time resolution of high-speed	[µs]	1
Switching logic		PNP
		NPN
Properties		Not galvanically isolated
		Configurable
Max. current	[mA]	100
Floating switching outputs		
Number		1
Max. current	[mA]	100

Operating and environmental conditions		
Degree of protection		IP20
Ambient temperature	[°C]	0 ... 50
Storage temperature	[°C]	–25 ... +55
Note on ambient temperature		Observe derating with regard to mounting clearance and output current
Relative humidity	[%]	5 ... 90 (non-condensing)
Protection class		III
Overvoltage category		I
Contamination level		2
Max. installation height	[m]	2000
Shock and vibration resistance		To EN 61800-2 and EN 61800-5-1
CE marking (see declaration of conformity)		To EU EMC Directive[1)]
		To EU Machinery Directive
		To EU RoHS Directive
Certification		c UL us - Listed (OL)
		RCM trademark
KC marking		KC-EMV
Note on materials		Contains paint-wetting impairment substances
		RoHS-compliant

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

04

Handling systems



Contents

An overview of our handling systems

You can pick and choose from our large selection of handling systems for a multitude of applications, from single-axis systems to 2D and 3D gantries and the extremely dynamic parallel kinematic system.

Our variety

Your tailor-made solution

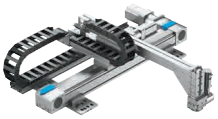
Standard

Single-axis system YXCS

2D: Linear gantry YXCL

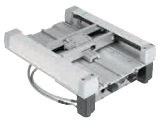
2D: Planar surface gantry YXCF

3D: Three-dimensional gantry YXCR



3D: Cantilever

Compact



2D: Planar surface gantry EXCM

High dynamic response

2D: Linear gantry EXCT

2D: Planar surface gantry EXCH

3D: Parallel kinematic system EXPT

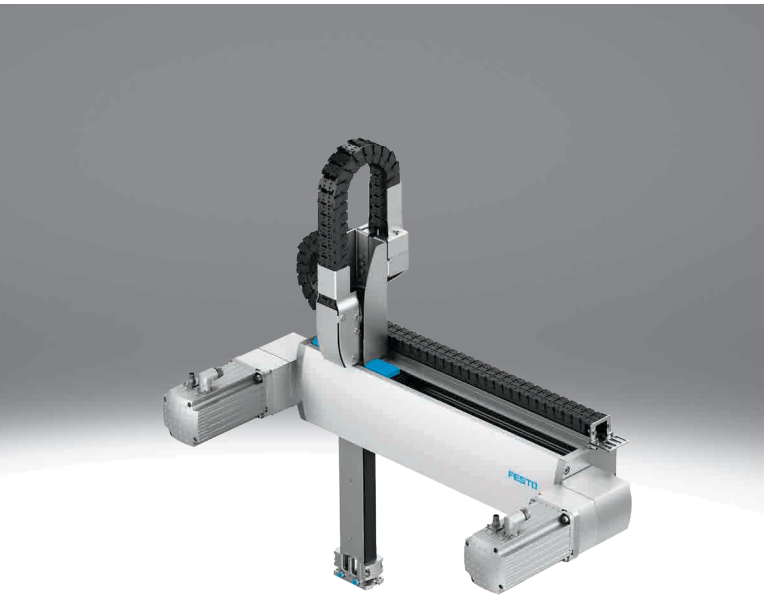
Application-specific

For projecting loads

With frame solution

For heavy loads

Linear gantries EXCT



Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Linear gantries EXCT

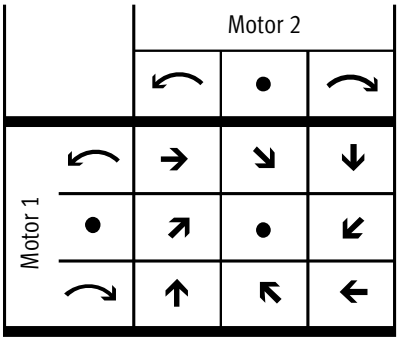
At a glance

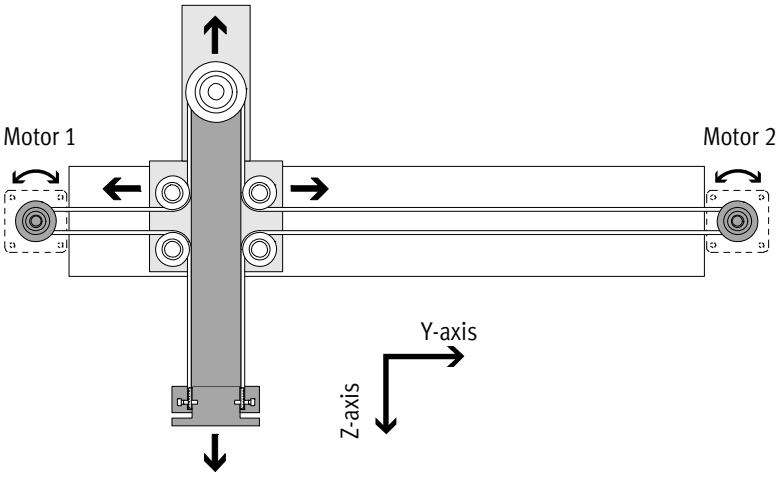
Operating principle

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 2-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 axial 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



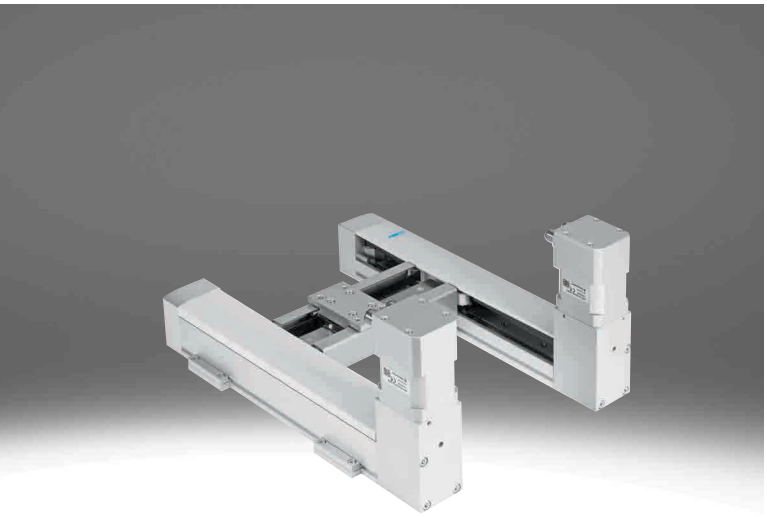


Data sheet

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 for max. dynamic response[1]	[kg]	1.5	3	10
Max. process force in Z direction	[N]	100	300	500
Max. acceleration	[m/s²]	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.

2D planar surface gantries EXCM



Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Planar surface gantries EXCM

Features

At a glance

General

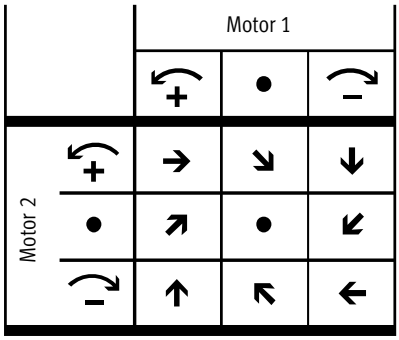
- Compact gantry distinguished by its high level of functionality in a very small installation space
- The drive design minimises the moving mass
- A perfectly matched drive and controller
- The kinematic system is actuated via 2 stepper motors with integrated optical encoder (closed loop) and one matching two-axis controller
- Can be actuated using two operating modes:
  - Direct mode via Ethernet and CAN
  - Record selection via digital I/O, Ethernet and CAN
- EXCM-30 permits flexible motor mounting

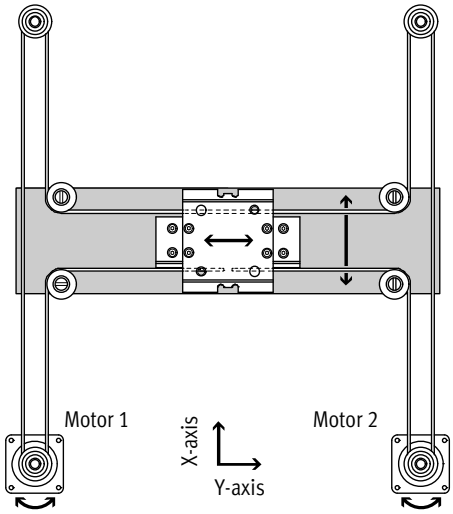
Application examples

- Feeding, pressing, joining components
- Dispensing liquids
- Mounting electronic components

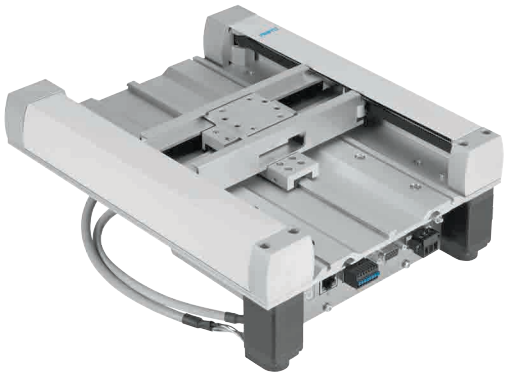
Functional principle

A slide is moved in a two-dimensional space (X-axis/Y-axis) via a toothed belt. The system is powered via 2 fixed motors in position-controlled mode (closed loop). The motors are coupled to the toothed belt. The belt is guided via pulleys in such a way that the slide can approach any position in a working space when the motors are actuated accordingly.

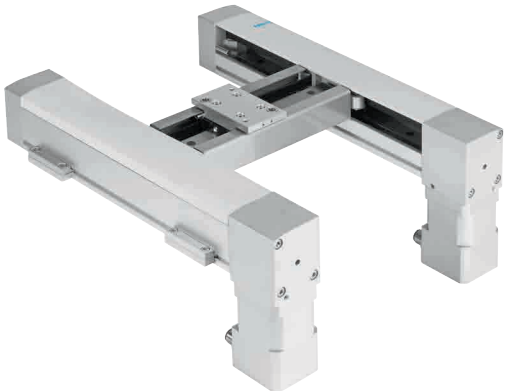




EXCM-10



EXCM-30



Type		EXCM-10	EXCM-30
Guide		Plain-bearing guide	Recirculating ball bearing guide
Stroke of the			
X-axis	[mm]	150, 260, 300, 360, 460, 700	90 ... 700
Y-axis	[mm]	110	110, 160, 210, 260, 310, 360
Effective load	[kg]	0.5	3
Repetition accuracy	[mm]	±0.1	±0.05
Controller		Attached	Separate

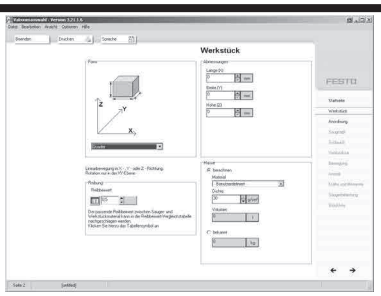
05

Vacuum technology

Contents

Software tools

Vacuum selection



Which suction cup for which surface and which movement?
Don't experiment – calculate!
This software tool even enables a distinction to be made between linear and rotary movements.

This tool can be found
- on our website under www.festo.com/catalogue by clicking on the blue icon "Engineering".

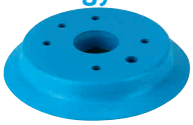
Vacuum generators

	 **Vacuum generators OVEL** ★	 **Vacuum generators OVEM**	 **Vacuum generators, pneumatic VN**	 **Vacuum generators, electropneumatic VN**
Nominal width of Laval nozzle	0.45 ... 0.95 mm	0.45 ... 3 mm	0.45 ... 3 mm	0.45 ... 3 mm
Ejector characteristics	High suction rate, High vacuum, Standard	High suction rate, High vacuum, Standard	High suction rate, High vacuum, Standard, Inline, High negative pressure, High suction volume	Standard, High negative pressure, High suction volume
Integrated function	Electric ejector pulse, Flow control, Pressure sensor, Pressure transmitter, Electric on-off valve, Filter, Open silencer	Electric ejector pulse valve, Flow control, Electric on-off valve, Filter, Air saving function, electrical, Check valve, Open silencer, Vacuum switch	Ejector pulse valve, pneumatic, Open silencer, Vacuum switch	Ejector pulse valve, pneumatic, Electric on-off valve, Open silencer
Max. vacuum	89 ... 92%	93%	86 ... 93%	92 ... 93%
Max. suction rate with respect to atmosphere	4 ... 21 l/min	6 ... 348 l/min	6.1 ... 339 l/min	7.2 ... 186 l/min
Description	• Low-cost, compact vacuum generator • Light weight • Various performance levels and vacuum types • Short switching times thanks to integrated solenoid valves • Quick, precise and safe placement of the workpiece via the ejector pulse • Easy to install using H3 plugs and push-in fittings	• 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	• Can be used directly in the work space • Available as straight type (in-line: 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	• Can be used directly in the work space • Low cost • Maintenance-free operation and reduced noise level through an integrated, open silencer • With solenoid valve vacuum on/off
→ Page/online	**401**	**407**	**417**	**417**

Vacuum gripping technology

	 Bernoulli grippers OGGB	 Suction grippers ESG	 Suction cups ESS
Suction cup size		4x20 mm, 6x10 mm, 6x20 mm, 8x20 mm, 8x30 mm, 4x10 mm, 10x30 mm, 15x45 mm, 20x60 mm, 25x75 mm, 30x90 mm	4x20 mm, 6x10 mm, 6x20 mm, 8x20 mm, 8x30 mm, 4x10 mm, 10x30 mm, 15x45 mm, 20x60 mm, 25x75 mm, 30x90 mm
Gripper diameter	60 ... 140 mm		
Suction cup diameter		2 ... 200 mm	2 ... 200 mm
Holding force at nominal operating pressure	6 ... 10 N		0.1 ... 1610 N
Design		Vacuum port on top, Vacuum port on side, With height compensator, With long height compensator	Round, bell-shaped
Information on suction cup materials		BR, FPM, NBR, PUR, VMQ (silicone), Vulkollan	BR, FPM, NBR, PUR, VMQ (silicone), Vulkollan
Spacer material	NBR, POM		
Description	• 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 ideal solution for low-contact gripping and for gripping pliable, porous and brittle workpieces	• 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 connection: push-in connector or barbed fitting for plastic tubing, threaded connection	• 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	ogbb	esg	ess

Vacuum gripping technology

	 Suction cups ESV	 Suction cups VAS, VASB ★
Suction cup size		
Gripper diameter		
Suction cup diameter	20 ... 200 mm	2 ... 125 mm
Holding force at nominal operating pressure	8.2 ... 1610 N	0.14 ... 700 N
Design	Bellows, Round, bell-shaped	
Information on suction cup materials	BR, FPM, NBR, PUR, VMQ (silicone), Vulkollan	NBR, PUR, TPE-U(PU), VMQ (silicone)
Spacer material		
Description	• Wearing part for suction cup • Easily interchangeable • Suction cup volume: 0.318 ... 245 cm³ • Min. workpiece radius: 10 ... 680 mm	• Sturdy and reliable • Suction cups with fixed connecting thread • 11 suction cup diameters • Round suction cup, bellows • Vacuum connection on top, on side • Screw-in thread
→ Page/online	esv	vas

Product overview

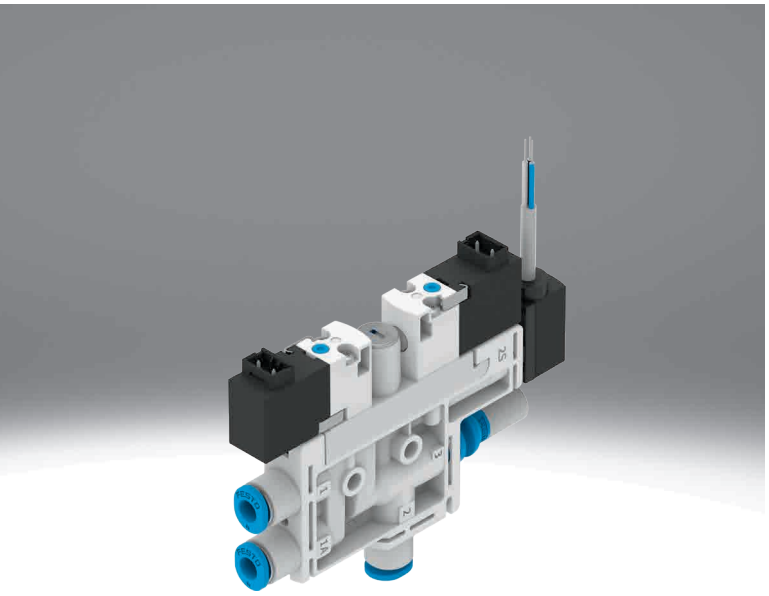
Assembly and connecting components

	 **Suction cup holders ESH**
Design	Vacuum port on top, Vacuum port on side, With height compensator
Description	• With or without height compensator • 6 holder sizes • 8 holder types • 3 tubing connection options
➔ Page/online	esh

Assembly and connecting components

	 **Vacuum filters ESF, VAF**	 **Silencers UO**	 **Silencers UOM, UOMS**
Vacuum connection	G1/2, G1/4, G3/8, M4, M6		
Pneumatic connection	G1/2, G1/4, G3/8, M4, M6, PK-3 Via union nut, PK-4 Via union nut, PK-6 Via union nut	G1/4, G1/8, M7	G1/4, G3/8
Type of mounting	In-line installation, Push-on, Snapping in, Via male thread, Via wall/surface bracket, Via vacuum port		Snapping in, Screw-in
Grade of filtration	10 µm, 40 µm, 50 µm, 80 µm		
Description	• Vacuum filter ESF: for suction gripper ESG • Vacuum filter VAF: with transparent housing or bowl to allow users to assess contamination level • Vacuum filter OAFF: for vacuum generators OVEL	• Special open minimal resistance silencer • For vacuum generators • Facilitates trouble-free operation of the vacuum generator • Operating medium compressed air	• 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	vaf	uo	uom

Vacuum generators OVEL



Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Vacuum generators OVEL

Features

At a glance

Rapid reduction of vacuum for safe placement of the workpiece by a solenoid valve to control the ejector pulse, optional

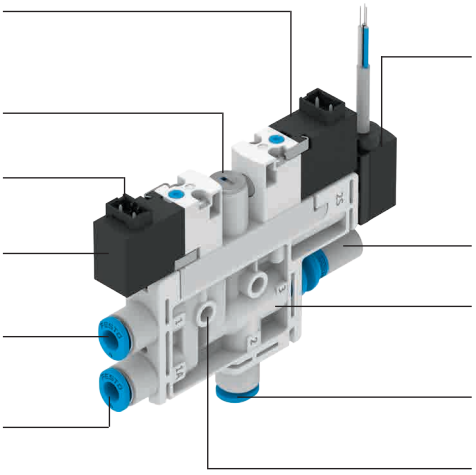
Flow control screw for adjusting the ejector pulse

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

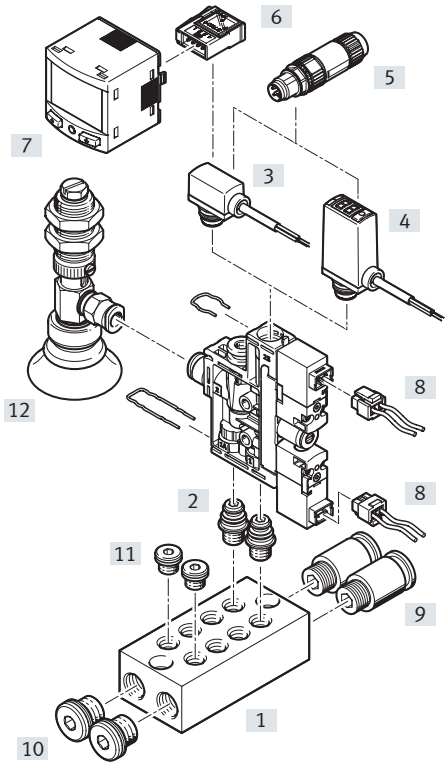
Maintenance-free operation and reduced noise level through an open silencer, optional

Vacuum generator cartridge, secured with clamp strap

Vacuum connection, secured with clamp strap

Housing with mounting holes

Peripherals overview



		→ Page/Internet
[1]	Common supply manifold OABM-P	404
[2]	Mounting kit OABM-MK	
[3]	Pressure transmitter SPTE	
[4]	Pressure sensor SPAE	
[5]	Plug NECU-S-M8G3/M12G3	
[6]	Plug NECU-S-ECG4	
[7]	Signal converter SCDN	
[8]	Plug socket with cable NEBV	
[9]	Push-in fitting NPQE	803
[10]	Blanking plug B-1/8	404
[11]	Blanking plug B-M7	
[12]	Suction gripper ESG	esg
–	Suction cup holder ESH	esh
–	Suction cup with connection ESS	ess
–	Vacuum filter OAFF	404

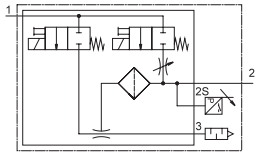
Ordering – Modular product system

Type	OVEL	Conditi-ons	Code	Enter code
Module no.	8049045			
Vacuum generator	Vacuum generator, electropneumatic		OVEL	OVEL
Nominal width of Laval nozzle [mm]	0.45		-5	
	0.7		-7	
	0.95		-10	
Ejector characteristic	High vacuum		-H	
	High suction rate		-L	
Housing size/width [mm]	10	[1]	-10	
	15	[2]	-15	
Pneumatic connection 1	For pneumatic connections via manifold rail		-P	
	Push-in connectors, metric		-PQ	
Vacuum connection	Push-in connector 3 mm	[3]	-VQ3	
	Push-in connector 4 mm	[4]	-VQ4	
	Push-in connector 6 mm	[5]	-VQ6	
Pneumatic connection 3	Push-in connectors, metric		-RQ	
	Silencer open		-UA	
Ejector pulse connection	Via pneumatic connection 1			
	Additional connection (as pneumatic connection 1)		-Z	
Vacuum valve	Normally closed		-C	-C
Additional function	Without ejector pulse			
	Ejector pulse, electrical	[6]	-A	
Pressure measuring range of vacuum sensor	Without vacuum sensor			
	–1 ... 0 bar		-V1	
	–1 ... 1 bar		-B2	
Vacuum sensor output signal	Without vacuum sensor			
	1 ... 5 V	[7]	B	
	0 ... 10 V	[7]	V	
	PNP or NPN or IO-Link	[7]	PNLK	
Electrical connection	Connection pattern H, vertical plug		-H3	-H3

Ordering data

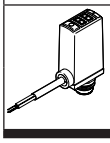
High vacuum

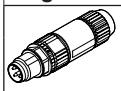
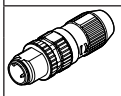
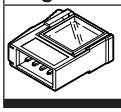
Push-in connector at pneumatic connection 1 and vacuum connection, open silencer at pneumatic connection 3, with vacuum sensor and ejector pulse

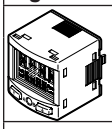
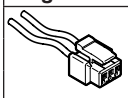
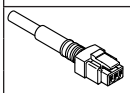
Circuit symbol	Pressure measuring range of vacuum sensor [bar]	Vacuum sensor output signal	Nominal width of Laval nozzle [mm]	Part no.	Type
NC – normally closed					
	–1 ... 0	1 ... 5 V	0.45	8049046	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1B-H3
			0.7	8049047	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1B-H3
			0.95	8049048	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1B-H3
		0 ... 10 V	0.45	8049049	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-H3
			0.7	8049050	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1V-H3
			0.95	8049051	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1V-H3
		PNP or NPN or IO-Link	0.45	8049052	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1PNLK-H3
			0.7	8049053	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1PNLK-H3
			0.95	8049054	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1PNLK-H3
	–1 ... 1	0 ... 10 V	0.45	8069567	OVEL-5-H-10-PQ-VQ4-UA-C-A-B2V-H3
			0.7	8069568	OVEL-7-H-15-PQ-VQ4-UA-C-A-B2V-H3
			0.95	8069569	OVEL-10-H-15-PQ-VQ6-UA-C-A-B2V-H3
		PNP or NPN or IO-Link	0.45	8069570	OVEL-5-H-10-PQ-VQ4-UA-C-A-B2PNLK-H3
			0.7	8069571	OVEL-7-H-15-PQ-VQ4-UA-C-A-B2PNLK-H3
			0.95	8069572	OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3

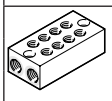
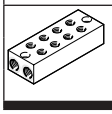
Vacuum generators OVEL

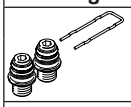
Accessories – Ordering data

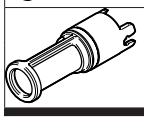
	Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Analogue output [V]	Cable length [m]	Part no.	Type
Pressure transmitter SPTE							
	Cartridge 10 mm	Cable, 3-wire, open end	–1 … 0	0 … 10	2.5	8025974	SPTE-V1R-PC10-V-2.5K
				1 … 5	2.5	8025975	SPTE-V1R-PC10-B-2.5K
			–1 … 1	0 … 10	2.5	8025976	SPTE-B2R-PC10-V-2.5K
				1 … 5	2.5	8025977	SPTE-B2R-PC10-B-2.5K
Pressure sensor 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
Plug NECU-S-M8G3/M12G3		
	562024	NECU-S-M8G3-HX
	562027	NECU-S-M12G3-HX
Plug NECU-S-ECG4		
	570922	NECU-S-ECG4-HX-Q3

		Part no.	Type
Signal converter SCDN			
		8035555	SCDN-2V-EC4-PNLK-L1
Plug socket with cable 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

	Description	Number of device locations	Part no.	Type
Common supply manifold 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]
Mounting kit OABM-MK				
	–	8065850	OABM-MK-G3	1
Push-in fitting QS				
	G1/8	★ 186098	QS-G1/8-8	10
	G1/8	★ 186109	QS-G1/8-8-I	10
Blanking plug B-1/8				
	G1/8	★ 3568	B-1/8	10
Blanking plug B-M7				
	M7	★ 174309	B-M7	10

	Description	Part no.	Type	PU[1]
Vacuum filter OAFF				
	For OVEL-5	8068944	OAFF-G3-5	10
	For OVEL-7/10	8068945	OAFF-G3-7	10

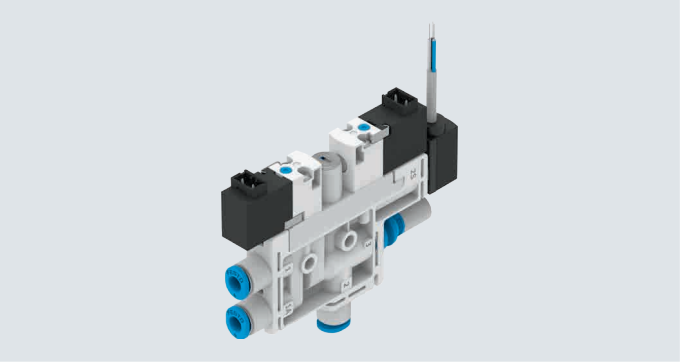
1) Packaging unit quantity

Data sheet

Function
NC, normally closed:
- With/without ejector pulse
- Push-in connectors
- Open silencer
- With/without vacuum sensor
- Prepared for common supply manifold

Temperature range 0 ... +50°C

Operating pressure 2 ... 7 bar



General technical data

Type		OVEL-5-H	OVEL-5-L	OVEL-7-H	OVEL-7-L	OVEL-10-H/L
Nominal width of Laval nozzle [mm]		0.45		0.7		0.95
Grid dimension [mm]		10		15		15
Grade of filtration [µm]		40				
Mounting position		Any				
Type of mounting		With through-hole				
		On manifold rail				
Pneumatic connection 1	OVEL-...-P	Common line via manifold rail				
	OVEL-...-PQ-VQ3	For tubing O.D. 3 mm	–	–		–
	OVEL-...-PQ	For tubing O.D. 4 mm		For tubing O.D. 4 mm	For tubing O.D. 6 mm	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	Open silencer				
	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				

1) If there is no ejector pulse or the ejector pulse is generated via pneumatic connection 1, the additional connection for the ejector pulse is sealed with a blanking plug.

Technical data – Design

Type		OVEL-...-UA
Design		T-shape
Ejector characteristic	OVEL-...-H	High vacuum/standard
	OVEL-...-L	High suction rate/standard
Silencer design		Open
Integrated function		Electric on/off valve
		Filter
		Silencer open
Valve function		Closed
Manual override		Non-detenting

Operating and environmental conditions

Operating pressure	[bar]	2 ... 7
Nominal operating pressure	[bar]	4
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Operation with lubricated medium not possible
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	0 ... +50
Corrosion resistance CRC[1]		2
CE marking (see declaration of conformity)[2]		To EU EMC Directive
Degree of protection		IP40

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Vacuum generators OVEL

Data sheet

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
Pressurisation time at nominal operating pressure 4 bar (for 1 l volume)[1]	[s]	2	1.2	1
Noise level at p_1 = 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.

Technical data – Electrical connection

Type			OVEL without ejector pulse	OVEL with ejector pulse
Solenoid valve				
Electrical connection input	Function		Vacuum generation	
			–	Ejector pulse
	Connection type		Plug	2x plug
	Connection technology		Connection pattern H	
	Number of pins/wires		2	
	Connection pattern		 1 3	
	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 pins/wires		3	
Cable diameter		[mm]	2.9 ±0.1	
Cable length		[m]	2.5	
Conductor nominal cross section		[mm²]	0.14	
Cable characteristics			Suitable for energy chains	

Materials	
Housing	Reinforced PA
Silencer	PE
Jet nozzle	Wrought aluminium alloy
Receiving nozzle	POM
Filter	POM
Adjusting screw	Steel
Connecting thread	POM
Screws	Steel
Cable sheath	PVC (colour: grey)
Seals	NBR
Note on materials	RoHS-compliant

Vacuum generators OVEM

Highlights

+ 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

Vacuum generators OVEM

Features

At a glance

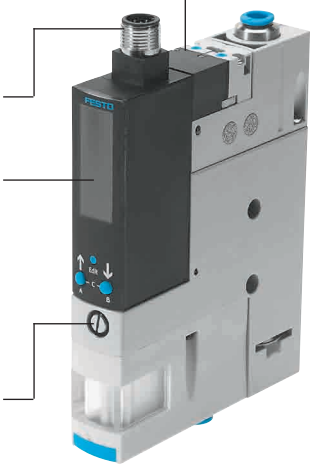
Rapid purging of vacuum for safe placement of the workpiece using an integrated solenoid valve to control the ejector pulse

Central electrical connection via an M12 plug

OVEM-...-1PD/2P/2N/PU/PI/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

Functional principle of OVEM

Vacuum ON/OFF
The compressed air supply is controlled by an integrated solenoid valve. The solenoid valve is available in two different switching functions, NC/NO.
- NC - normally closed:
- The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.
- NO - normally open:
- The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve is in the normal position.

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.

Power ejector pulse
A power ejector pulse is generated by means of an additional shut-off piston, thus preventing the ejector pulse from escaping via the silencer.

Note
Use the power ejector pulse only in open vacuum systems as the exhaust duct is sealed tightly during the ejector pulse. This can cause overpressure at the vacuum port and destroy the vacuum sensor.

Vacuum sensor
The set or taught-in setpoint value for the generated vacuum is monitored via an integrated vacuum sensor. If the setpoint value is reached or if it is not reached due to malfunctions (e.g. leakages, dropped workpiece), the vacuum sensor emits an electrical signal.

Connection to higher-level systems and configuration of the switching outputs

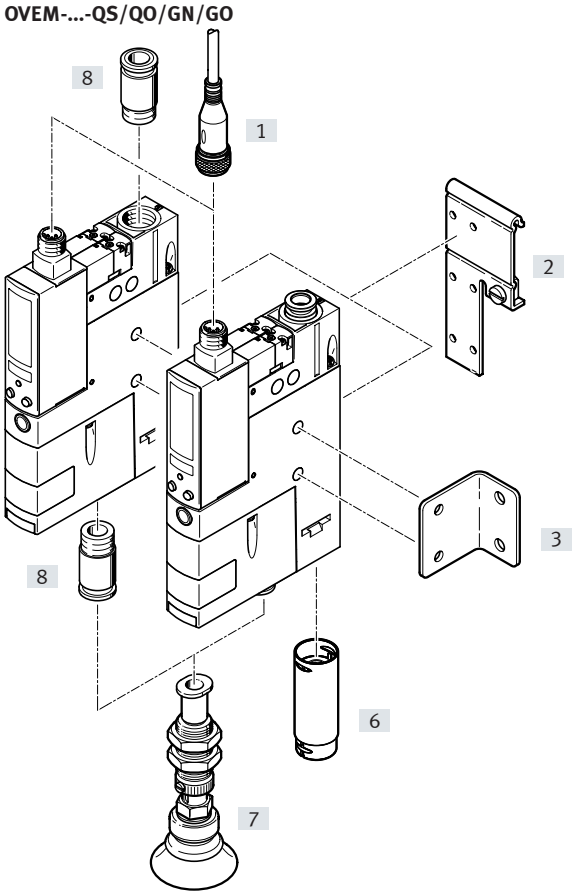
OVEM-...-1P/1PD/1N
- Switching inputs for actuating the solenoid valves for vacuum generation and ejector pulse
- OVEM-...-1P/1N only:
- One switching output for supplying a control signal
  - Configured as an N/O contact
  - Switching function configured as a threshold value comparator
- OVEM-...-1PD 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/PI
- 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
- If there are two switching outputs, these can be configured independently of each other. This enables tasks to be performed in parallel with one vacuum generator, reducing the time needed for sorting good and reject parts, for example.

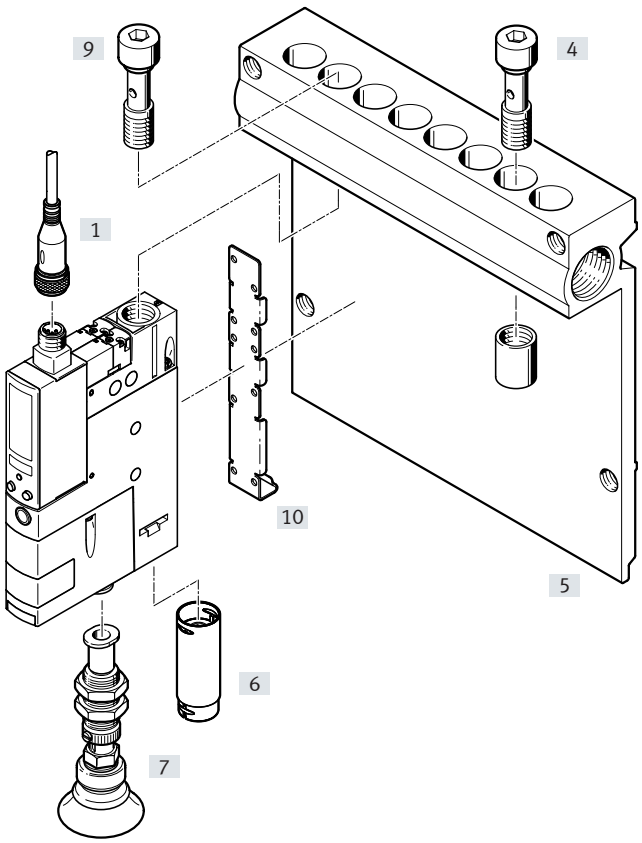
OVEM-...-LK
- Digital setpoint and actual value transfer for simple parameterisation and diagnostic feedback. Communication takes place in IO-Link mode with an IO-Link master.
- SIO mode is supported. In the case of this local configuration using the operating buttons on the vacuum sensor, the OVEM takes on the function of an OVEM-...-2P.

Peripherals overview

OVEM-...-QS/QO/GN/GO



OVEM-...-PL/PO[1]



1) Hollow bolt [9] and mounting bracket [10] are included in the scope of delivery for the OVEM-...-PL/PO.

Type		OVEM-...-B						OVEM-...-C						→ Page/Internet
Pneumatic connections		[QS]	[QO]	[GN]	[GO]	[PL]	[PO]	[QS]	[QO]	[GN]	[GO]	[PL]	[PO]	
[1]	Connecting cable NEBU-M12	■				■		■				■		nebu
[2]	H-rail mounting OABM-H	■				–		–				–		412
[3]	Mounting bracket HRM-1	■				–		–				–		
[4]	Blanking plug OASC-G1-P	–				■		–				■		
[5]	P manifold rail OABM-P	–				■		–				■		
[6]	Silencer extension UOMS-1/4	–	■[2]	–	■[2]	–	■[2]	–				–		
	Silencer extension UOMS-3/8	–				–		–	■	–	■	–	■	
[7]	Suction gripper ESG	■				■		■				■		esg
[8]	Push-in fitting NPQE	–		■		–		–		■		–		803
–	Suction cup holder ESH	■				■		■				■		esh
–	Suction cup with connection ESS	■				■		■				■		ess

2) Silencer extension UOMS-1/4 [6] is included in the scope of delivery of the OVEM-20.

Vacuum generators OVEM

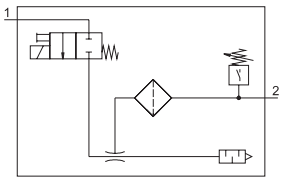
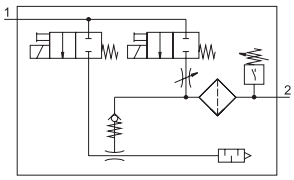
Ordering – Modular product system

Type	OVEM	Conditions	Code	Enter code
Module no.	539074			
Vacuum generator	Vacuum generator with solenoid valve for vacuum on/off and manual override		OVEM	OVEM
Nominal width of Laval nozzle [mm]	0.45		-05	
	0.7		-07	
	0.95		-10	
	1.4		-14	
	2.0		-20	
	3.0		-30	
Ejector characteristic	High vacuum		-H	
	High suction rate	[1]	-L	
Housing size/width [mm]	20	[2]	-B	
	36	[3]	-C	
Pneumatic connections	All connections with QS fittings		-QS	
	Supply/vacuum port with QS fittings, exhaust port with open silencer		-QO	
	All connections with G female thread		-GN	
	Supply / vacuum port with G female thread, exhaust port with open silencer		-GO	
	Prepared for supply manifold, vacuum port and exhaust port with QS fittings		-PL	
	Prepared for supply manifold, vacuum port with QS fittings, exhaust port with open silencer		-PO	
Normal position of the vacuum generator	NO, normally open (vacuum generation)		-ON	
	NO, normally open (vacuum generation) with ejector pulse		-OE	
	N/O, normally open (vacuum generation) with power ejector pulse	[4]	-OPE	
	NC, normally closed (no vacuum generation)		-CN	
	NC, normally closed (no vacuum generation) with ejector pulse		-CE	
	N/C, normally closed (no vacuum generation) with power ejector pulse	[4]	-CPE	
Electrical connection	M12 plug (5-pin)		-N	-N
Vacuum sensor, (standard scale in bar)	Without vacuum sensor			
	1 switching output PNP		-1P	
	1 switching output PNP and LCD display	[5]	-1PD	
	1 switching output NPN		-1N	
	2 switching outputs PNP		-2P	
	1 switching output PNP, 1 analogue output 0 ... 10 V		-PU	
	1 switching output PNP, 1 analogue output 4 ... 20 mA		-PI	
	2 switching outputs NPN		-2N	
	IO-Link	[5]	-LK	
Alternative vacuum display	None			
	inchHg	[6]	-H	

[1] L Not with Laval nozzle nominal width 20 in combination with housing size/width B.
[2] B Not with Laval nozzle nominal width 30.
[3] C Not with Laval nozzle nominal width 05, 07, 10, 14.
[4] OPE, CPE Not with housing size/width B.
[5] 1PD, LK Not with normal position of the vacuum generator ON, CN.
[6] H Only with vacuum sensor 2P, PU, PI, 2N, LK.

Ordering data

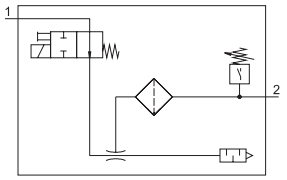
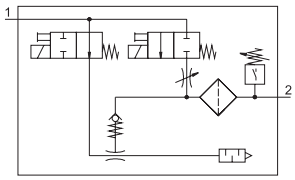
OVEM-...-B

Circuit symbol	Description	Electrical switching output	Display	Nominal width of Laval nozzle [mm]	Part no.	Type
NC – normally closed						
	P-V with QS fitting, R with open silencer	2x PNP	LCD	0.45	538834	OVEM-05-H-B-QO-CN-N-2P
				0.7	538835	OVEM-07-H-B-QO-CN-N-2P
				0.95	538836	OVEM-10-H-B-QO-CN-N-2P
				1.4	539998	OVEM-14-H-B-QO-CN-N-2P
	With ejector pulse, P-V with QS fitting, R with open silencer	2x PNP	LCD	0.45	538831	OVEM-05-H-B-QO-CE-N-2P
				0.7	538832	OVEM-07-H-B-QO-CE-N-2P
				0.95	538833	OVEM-10-H-B-QO-CE-N-2P
				1.4	539997	OVEM-14-H-B-QO-CE-N-2P
				2.0	8023700	OVEM-20-H-B-QO-CE-N-2P
		2x NPN	LCD	0.7	540018	OVEM-07-H-B-QO-CE-N-2N
				0.95	540019	OVEM-10-H-B-QO-CE-N-2N
				1.4	540020	OVEM-14-H-B-QO-CE-N-2N
		PNP	LED	0.45	540021	OVEM-05-H-B-QO-CE-N-1P
				0.7	540022	OVEM-07-H-B-QO-CE-N-1P
				0.95	540023	OVEM-10-H-B-QO-CE-N-1P
				1.4	540024	OVEM-14-H-B-QO-CE-N-1P
				2.0	8023699	OVEM-20-H-B-QO-CE-N-1P
			LCD	0.45	8037697	OVEM-05-H-B-QO-CE-N-1PD
				0.7	8037698	OVEM-07-H-B-QO-CE-N-1PD
				0.95	8037699	OVEM-10-H-B-QO-CE-N-1PD
				1.4	8037700	OVEM-14-H-B-QO-CE-N-1PD
		IO-Link, 2x PNP in SIO mode	LCD	0.45	8037693	OVEM-05-H-B-QO-CE-N-LK
				0.7	8037694	OVEM-07-H-B-QO-CE-N-LK
				0.95	8037695	OVEM-10-H-B-QO-CE-N-LK
				1.4	8037696	OVEM-14-H-B-QO-CE-N-LK
	With ejector pulse, P-V with female thread, R with open silencer	2x PNP	LCD	0.7	540015	OVEM-07-H-B-GO-CE-N-2P
				0.95	540016	OVEM-10-H-B-GO-CE-N-2P
				1.4	540017	OVEM-14-H-B-GO-CE-N-2P
		2x NPN	LCD	0.7	540012	OVEM-07-H-B-GO-CE-N-2N
				0.95	540013	OVEM-10-H-B-GO-CE-N-2N
				1.4	540014	OVEM-14-H-B-GO-CE-N-2N
		PNP	LED	0.45	540025	OVEM-05-H-B-GO-CE-N-1P
				0.7	540026	OVEM-07-H-B-GO-CE-N-1P
				0.95	540027	OVEM-10-H-B-GO-CE-N-1P
				1.4	540028	OVEM-14-H-B-GO-CE-N-1P
	With ejector pulse, prepared for common supply manifold, V with QS fitting, R with open silencer	2x PNP	LCD	2.0	8023702	OVEM-20-H-B-PO-CE-N-2P
		PNP	LED	2.0	8023701	OVEM-20-H-B-PO-CE-N-1P

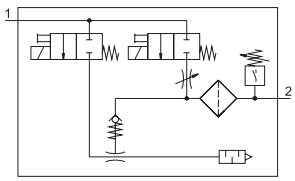
Vacuum generators OVEM

Ordering data

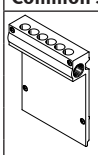
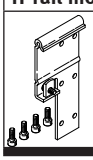
OVEM-...-B

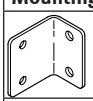
Circuit symbol	Description	Electrical switching output	Display	Nominal width of Laval nozzle [mm]	Part no.	Type
NO – normally open						
	P-V with QS fitting, R with open silencer	2x PNP	LCD	0.45	538828	OVEM-05-H-B-QO-ON-N-2P
				0.7	538829	OVEM-07-H-B-QO-ON-N-2P
				0.95	538830	OVEM-10-H-B-QO-ON-N-2P
				1.4	539996	OVEM-14-H-B-QO-ON-N-2P
	With ejector pulse, P-V with QS fitting, R with open silencer	2x PNP	LCD	0.45	538825	OVEM-05-H-B-QO-OE-N-2P
				0.7	538826	OVEM-07-H-B-QO-OE-N-2P
				0.95	538827	OVEM-10-H-B-QO-OE-N-2P
				1.4	539995	OVEM-14-H-B-QO-OE-N-2P
		2x NPN	LCD	0.7	540009	OVEM-07-H-B-QO-OE-N-2N
				0.95	540010	OVEM-10-H-B-QO-OE-N-2N
				1.4	540011	OVEM-14-H-B-QO-OE-N-2N
	With ejector pulse, P-V with female thread, R with open silencer	2x PNP	LCD	0.7	540006	OVEM-07-H-B-GO-OE-N-2P
				0.95	540007	OVEM-10-H-B-GO-OE-N-2P
				1.4	540008	OVEM-14-H-B-GO-OE-N-2P
		2x NPN	LCD	0.7	540003	OVEM-07-H-B-GO-OE-N-2N
				0.95	540004	OVEM-10-H-B-GO-OE-N-2N
				1.4	540005	OVEM-14-H-B-GO-OE-N-2N

OVEM-...-C

Circuit symbol	Description	Electrical switching output	Display	Nominal width of Laval nozzle [mm]	Part no.	Type
NC – normally closed						
	With ejector pulse, P-V with QS fitting, R with open silencer	2x PNP	LCD	2.0	8070092	OVEM-20-H-C-QO-CE-N-2P
				3.0	8070094	OVEM-30-H-C-QO-CE-N-2P
		PNP	LED	2.0	8070091	OVEM-20-H-C-QO-CE-N-1P
				3.0	8070093	OVEM-30-H-C-QO-CE-N-1P
			LCD	2.0	8070095	OVEM-20-H-C-QO-CE-N-1PD
				3.0	8070097	OVEM-30-H-C-QO-CE-N-1PD
		IO-Link, 2x PNP in SIO mode	LCD	2.0	8070096	OVEM-20-H-C-QO-CE-N-LK
				3.0	8070098	OVEM-30-H-C-QO-CE-N-LK

Accessories – Ordering data

	Description	Part No.	Type
Common supply manifold OABM-P			
	4 devices OVEM-B	549456	OABM-P-4
	6 devices OVEM-B	549457	OABM-P-6
	8 devices OVEM-B	549458	OABM-P-8
	2 devices OVEM-C	8100283	OABM-P-G1-36-2
	4 devices OVEM-C	8100284	OABM-P-G1-36-4
H-rail mounting kit OABM-H			
	Galvanised steel	549461	OABM-H

	Description	Part No.	Type
Mounting bracket HRM			
	Galvanised steel	9769	HRM-1
Blanking plug OASC			
		549460	OASC-G1-P
Silencer extension UOMS			
	For OVEM-...-B	538436	UOMS-1/4
	For OVEM-...-C	538437	UOMS-3/8

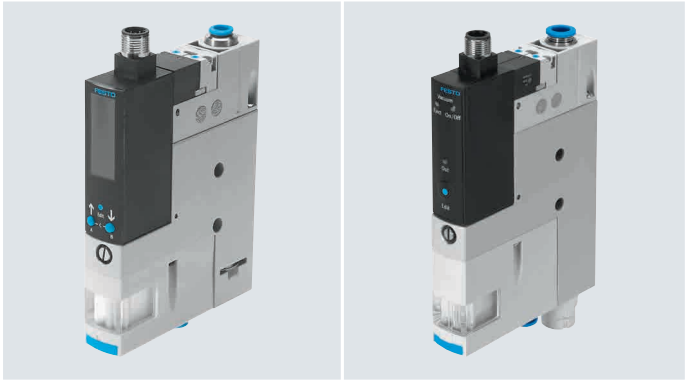
Data sheet

Function
NC, normally closed:
- Ejector pulse
- QS fitting or G female thread
- With open silencer
- Prepared for common supply manifold

NO, normally open:
- Ejector pulse
- QS fitting or G female thread
- With open silencer
- Prepared for common supply manifold

Temperature range
0 ... +50 °C

Operating pressure
2 ... 8 bar



General technical data

Type		OVEM-...-B					OVEM-...-C	
Nominal width of Laval nozzle	[mm]	0.45	0.7	0.95	1.4	2.0	2.0	3.0
Grid dimension	[mm]	20					36	
Grade of filtration	[µm]	40					–	
Mounting position		Any						
Type of mounting		With through-hole						
		Via female thread						
		With accessories						
Pneumatic port 1 (P)		→ Dimensions online						
Vacuum port (V)		→ Dimensions online						
Pneumatic port 3 (R)		→ Dimensions online						

Technical data – Design

Type		OVEM-...-QO/GO/PO	OVEM-...-QS/GN/PL
Design		Modular	
Ejector characteristic		High vacuum	
		High suction rate	
Silencer design		Open	–
Integrated function	[ON]/[CN]	Electric on/off valve	Electric on/off valve
		Vacuum sensor[1]	Vacuum sensor[1]
		Filter	Filter
		Open silencer	–
	[OE]/[OPE]/[CE]/[CPE]	Electric on/off valve	Electric on/off valve
		Ejector pulse / power ejector pulse, electrical	Ejector pulse / power ejector pulse, electrical
		Flow control valve	Flow control valve
		Vacuum sensor[1]	Vacuum sensor[1]
		Air saving function, electrical[2]	Air saving function, electrical[2]
		Check valve	Check valve
		Filter	Filter
		Open silencer	–
Valve function	[ON]/[OE]/[OPE]	Open	
	[CN]/[CE]/[CPE]	Closed	
Manual override		Non-detenting	
		Additionally via operating buttons[2]	

1) Only with OVEM-...-1P/1PD/1N/2P/2N/PU/PI/LK
2) Only possible with OVEM-...-1PD/2P/2N/PU/PI/LK

Vacuum generators OVEM

Data sheet

Operating and environmental conditions

Type		OVEM-...-QO/GO/PO	OVEM-...-QS/GN/PL	
			Without vacuum sensor	With vacuum sensor
Operating pressure	[bar]	2 ... 8	2 ... 8	2 ... 6
Nominal operating pressure	[bar]	6		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium		Operation with lubricated medium not possible		
Ambient temperature	[°C]	0 ... +50		
Temperature of medium	[°C]	0 ... +50		
Relative humidity	[%]	5 ... 85		
Protection class		III		
Degree of protection		IP65		
Corrosion resistance class CRC[1]		2		
CE marking (see declaration of conformity)[2]		To EU EMC Directive		
Certification		c UL us - Listed (OL) (OVEM-...-B only)		
		RCM compliance mark		
KC mark		KC EMC		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Performance data – High vacuum

Type			OVEM-...-B					OVEM-...-C	
Nominal width of Laval nozzle		[mm]	0.45	0.7	0.95	1.4	2.0	2.0	3.0
Max. vacuum		[%]	93						
Operating pressure for max. vacuum		[bar]	5.1	4.1	3.5	3.6	5.3	4	4
Max. suction rate with respect to atmosphere		[l/min]	6	16	19.5	50.5	86.5	98	181
Suction rate at p_1 = 6 bar		[l/min]	5.9	15.1	18.6	46	80.5	93.4	173.8
Air supply time[1] for 1 l volume, at p_1 = 6 bar	[ON]/[CN]	[s]	4.8	1.9	1.2	0.6	0.4	0.4	0.3
	[OE]/[CE]	[s]	2	0.4	0.2	0.2	0.2	0.2	0.2
	[OPE]/[CPE]	[s]	–	–	–	–	–	0.15	0.15
Noise level at p_1 = 6 bar		[db(A)]	51	58	73	77	74	62	75

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			OVEM-...-B				OVEM-...-C	
Nominal width of Laval nozzle		[mm]	0.45	0.7	0.95	1.4	2.0	3.0
Max. suction rate with respect to atmosphere		[l/min]	13	31.5	45	92	190	348
Suction rate at p_1 = 6 bar		[l/min]	12.8	31.5	45.1	88.7	182.5	320
Air supply time[1] for 1 l volume, at p_1 = 6 bar	[ON]/[CN]	[s]	2	1	0.8	0.4	0.3	0.3
	[OE]/[CE]	[s]	1.3	0.2	0.2	0.2	0.2	0.2
	[OPE]/[CPE]	[s]	–	–	–	–	0.15	0.15
Noise level at p_1 = 6 bar		[db(A)]	45	53	64	70	57	69

1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar after switching off the operating pressure.

Data sheet

Technical data – Electrical data, general							
Type		Without vacuum sensor	With vacuum sensor				
			OVEM-...-1P/1N	OVEM-...-1PD	OVEM-...-2P/2N	OVEM-...-PU/PI	OVEM-...-LK
Electrical connection		Plug M12x1, 5-pin					
Switching input to standard		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]	30	180	170	270	180	150 (270 in SIO mode)
Insulation voltage	[V]	50					
Surge resistance	[kV]	0.8					
Contamination level		3					
Reverse polarity protection		For all electrical connections					
Switching position indication		LED		LCD			

Technical data – Vacuum sensor									
Vacuum sensor		[1PD]	[2P]	[2N]	[PU]	[PI]	[LK]	[1P]	[1N]
Input signal/measuring element									
Measured variable		Relative pressure							
Measuring principle		Piezoresistive							
Pressure measuring range	[bar]	–1 ... 0							
Display/operation									
Setting options		Via display and keys						–	
		–					IO-Link	–	
		–						Teach-in	
Threshold value setting range	[bar]	–0.999 ... 0						–1 ... 0	
Hysteresis setting range	[bar]	–0.9 ... 0						–	
Setting range ejector pulse duration	[ms]	–[1]	20 ... 9999 (OVEM-05)				40 ... 9999	–	
			40 ... 9999 (OVEM-07/10/14/20/30)						
Display type		4-character alphanumeric, backlit LCD						LED	
Displayable units		bar						–	
	[H]	inchHg					–	–	
Display range	[bar]	–0.999 ... 0						–	
	[inchHg]	–29.5 ... 0					–	–	
Protection against tampering		PIN code	–				Electronic lock	–	
Accuracy									
Accuracy FS[2]	[%]	±3						±0.5	
Reproducibility of switching value FS[2]	[%]	0.6						0.6	
Inputs/outputs									
Input switching logic		PNP	PNP	NPN	PNP	PNP	PNP	PNP	NPN
Switching output		1x PNP	2x PNP	2x NPN	1x PNP	1x PNP	2x PNP	1x PNP	1x NPN
Switching function		Window comparator						–	
		Threshold value comparator[3]							
Switching status indication		Optical							
Switching element function		N/O contact							
		N/C contact						–	
Fixed hysteresis	[mbar]	–						20	
Max. output current	[mA]	100							
No-load supply current	[mA]	< 70						< 80	
Residual current	[mA]	0.1							
Voltage drop	[V]	≤ 2	≤ 1.5				≤ 1.8	≤ 1.5	
Analogue output	[V]	–			0 ... 10	–	–	–	
	[mA]	–			–	4 ... 20	–	–	
Permitted load resistance, analogue output	[ohm]	–			Min. 2000	Max. 500	–	–	
Accuracy of analogue output FS[2]	[%]	–			4		–	–	
Short circuit current rating		Yes							
Inductive protective circuit		Adapted to MZ, MY, ME coils					–	Adapted to MZ, MY, ME coils	
Overload protection		Provided							

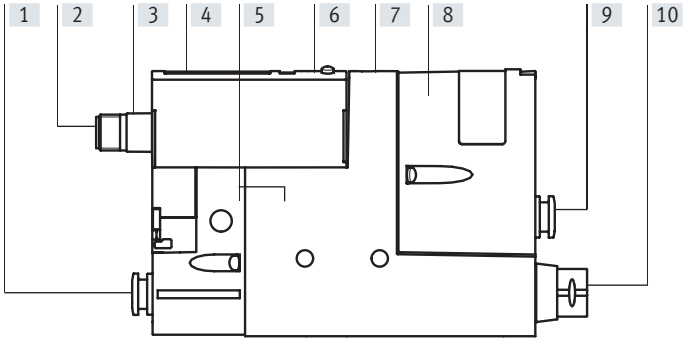
1) Generation of an ejector pulse via a control signal at the digital switching input.
2) % FS = % of the measuring range final value (full scale)
3) OVEM-...-1P/1N threshold value with fixed hysteresis

Vacuum generators OVEM

Data sheet

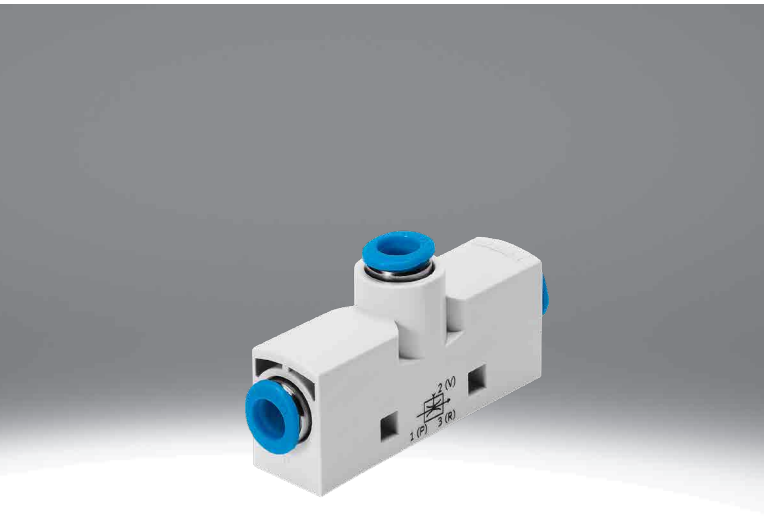
Technical data – IO-Link		
Protocol version		Device V 1.1
Profile		Smart sensor profile
Function classes		Binary data channel (BDC)
		Diagnostics
		Identification
		Process data variable (PDV)
		Teach channel
Communication mode		COM2 (38.4 kBd)
Port class		A
Process data width OUT		1 bytes
Process data content OUT		1-bit (ejector pulse ON/OFF)
		1 bit (vacuum ON/OFF)
Process data width IN		2 bytes
Process data content IN		14 bit PDV (pressure measurement value)
		2 bit BDC (pressure monitoring)
Minimum cycle time [ms]		3.5
Data memory required		0.5 KB
Device ID	OVEM-...-H-...-OE-N-LK	0x00003C
	OVEM-...-L-...-OE-N-LK	0x00003D
	OVEM-...-H-...-OPE-N-LK	0x000104
	OVEM-...-L-...-OPE-N-LK	0x000105
	OVEM-...-H-...-CE-N-LK	0x00003E
	OVEM-...-L-...-CE-N-LK	0x00003F
	OVEM-...-H-...-CPE-N-LK	0x000106
	OVEM-...-L-...-CPE-N-LK	0x000107

Materials



Type			OVEM-...-1PD/2P/2N/PU/PI/LK	OVEM-...-1P/1N
[1]	Fitting	[QS]/[QO]	Nickel-plated brass	
	Connecting thread	[GN]/[GO]	Anodised wrought aluminium alloy	
[2]	Pin contacts		Gold-plated brass	
[3]	Plug housing		Nickel-plated brass	
[4]	Inspection window		PA	–
[5]	Housing		Die-cast aluminium (OVEM-...-B), wrought aluminium alloy (OVEM-...-C), reinforced PA	
[6]	Keypad		TPE-U	Reinforced PA
[7]	Adjusting screw	[OE]/[OPE]/[CE]/[CPE]	Steel	
[8]	Filter housing		Reinforced PA	
[9]	Fitting	[QS]/[QO]/[PL]/[PO]	Nickel-plated brass	
	Connecting thread	[GN]/[GO]	Anodised wrought aluminium alloy	
[10]	Silencer	[QO]/[GO]/[PO]	Wrought aluminium alloy, PU foam, POM (OVEM-...-C)	
	Fitting	[QS]/[QO]/[PL]/[PO]	Nickel-plated brass	
		[GN]/[GO]	Anodised wrought aluminium alloy	
–	Screws, pins		Steel	
–	Jet nozzle		Wrought aluminium alloy	
–	Receiver		POM	
–	Filter		Fabric, PA, sintered steel	
–	Seals		NBR, HNBR (OVEM-...-C)	
–	Hollow bolt	[PL]/[PO]	Wrought aluminium alloy	
–	Mounting bracket	[PL]/[PO]	Stainless steel	
Note on materials			RoHS-compliant	
		[QO]/[GO]/[PO]	Contains paint-wetting impairment substances	

Vacuum generators VN



Highlights

+ Can be used directly in the work space
+ Available as straight type (in-line: vacuum port in line with the supply port) or Tshape (standard: vacuum port at 90° to the supply port)
+ Compact and cost-effective
+ Maintenance-free operation and reduced noise level through an integrated, open silence

Vacuum generators VN

Product range overview

Type	Nominal width of Laval nozzle	High vacuum		High suction rate		Grid dimension	
						T-shape	Straight
	[mm]	Standard H	Inline M	Standard L	Inline N	[mm]	[mm]
VN-05	0.45	■	–	■	–	10, 14	–
		–	■	–	–	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	–
VN-07-...-P	0.7	■	–	■	–	16	–
VN-10-...-P	0.95	■	–	■	–	16	–
With ejector pulse							
VN-05-...-A	0.45	■	–	■	–	14	–
		–	■	–	■	–	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	–
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	–
VN-07-...-B	0.7	■	–	■	–	14	–
VN-10-...-B	0.95	■	–	■	–	14	–
VN-14-...-B	1.4	■	–	■	–	18	–
Vacuum generator cartridges							
VN-05-...-H	0.45	■	–	–	–	–	–
VN-07-...-H	0.7	■	–	–	–	–	–
VN-10-...-H	0.95	■	–	–	–	–	–
VN-14-...-H	1.4	■	–	–	–	–	–
VN-20-...-H	2.0	■	–	–	–	–	–
VN-05-...-L	0.45	–	–	■	–	–	–
VN-07-...-L	0.7	–	–	■	–	–	–
VN-10-...-L	0.95	–	–	■	–	–	–
VN-14-...-L	1.4	–	–	■	–	–	–
VN-20-...-L	2.0	–	–	■	–	–	–

Features

At a glance

- Vacuum generators for high vacuum levels of up to 93%
- Laval nozzles in six nominal sizes:
  - 0.45 mm
  - 0.7 mm
  - 0.95 mm
  - 1.4 mm
  - 2.0 mm
  - 3.0 mm
- Vacuum generators for high suction rates resulting in very short evacuation times
- Low space requirement
- Compact and sturdy design
- Wear-resistant and maintenance-free
- Modular system: Large selection of different types
- Can be used directly in the workplace, making them very effective
- Plastic housing
- Versatile connection options:
  - Push-in connector QS
  - Screw-in thread
  - Push-in sleeve
  - Screw-in silencer
- Easy mounting thanks to the double-sided latching function of the mounting plate
- With or without integrated vacuum switch to monitor the vacuum with PNP output

Two housing types

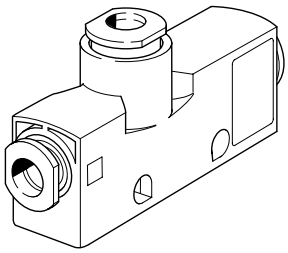
Standard T-type

Connection options:

- QS push-in connectors
- Female thread
- Male thread
- Silencers

Mounting options:

- Direct mounting with screws
- Indirect mounting by latching onto a mounting plate. This plate is suitable for H-rails 35x7.5 to DIN EN 50 022.



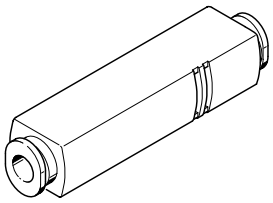
In-line version

Connection options:

- QS push-in connectors
- Push-in sleeve

Mounting options:

- Extremely compact housing with supply and vacuum port arranged in a line and with unducted exhaust air. As a result, this housing type can be installed directly into the tubing line.



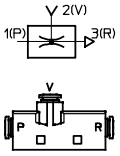
Two operating principles

Standard

- T-type housing

Design:

- Supply port at 90° to vacuum port. The drawn-in flow is diverted 90° from V to R.

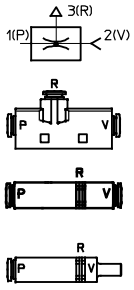


Inline

- T-type housing with exhaust port
- Straight housing without exhaust port for space-saving assembly in a tubing line or directly in the suction cup holder

Design:

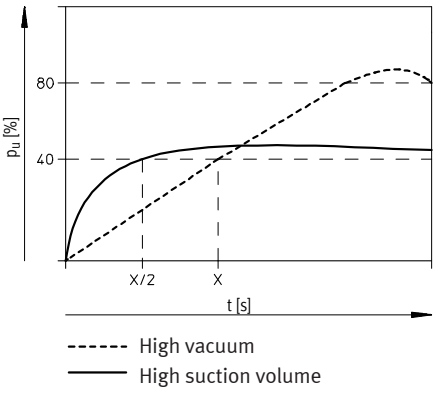
- Supply and vacuum ports arranged in-line.



System comparison: High vacuum – high suction volume

The first type of generator has been optimised for the generation of high vacuum (up to 93%) at comparatively lower suction flow rates.

The second type of generator, on the other hand, can achieve very short evacuation times because of the high suction flow rate (up to 339 l/min) at relatively low vacuum.



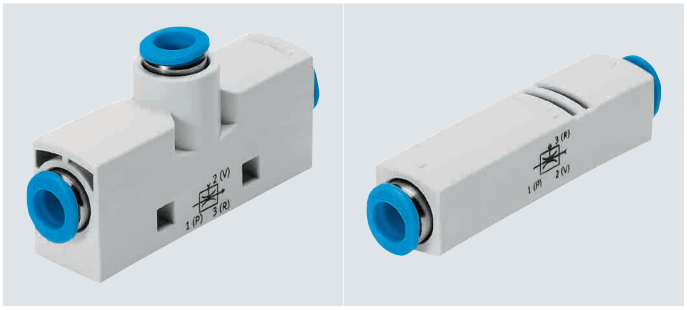
Vacuum generators VN

Peripherals overview

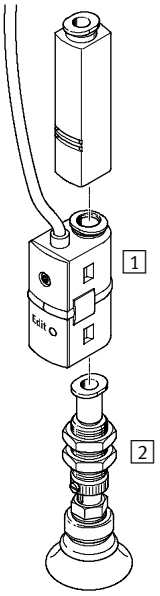
Function
Standard, Inline

Temperature range
0 ... +60 °C

Operating pressure
1 ... 8 bar

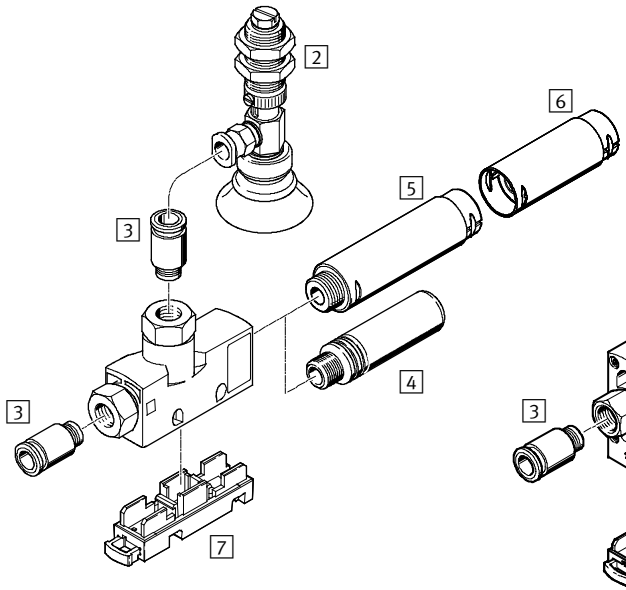


Straight
VN-05/07/10

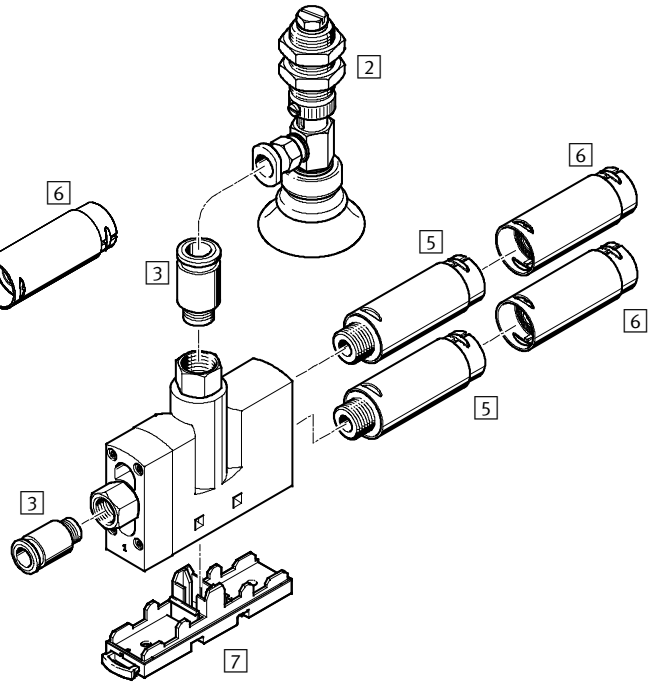


Accessories		➔ Page/online
1	Pressure switch SDE5	sde5
2	Push-in fitting QS	803
3	Silencer UO	423
4	Silencer UOM	

T-shape
VN-05/07/10/14



VN-20/30



Accessories		➔ Page/online
5	Silencer extension UOMS	423
6	Mounting plate VN-T	
7	Suction gripper ESG	esg

Type code explanation

001	Series
VN	Vacuum generator

002	Nominal size of laval nozzle [mm]
05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

003	Ejector characteristic
H	High vacuum/Standard
L	High suction rate/Standard
M	High vacuum/Inline
N	High suction rate/Inline

004	Housing type
I2	Inline, grid dimensions 10 mm
I3	Inline, grid dimensions 13 mm
T2	T-type, grid dimensions 10 mm
T3	T-type, grid dimensions 14 mm
T4	T-type, grid dimensions 18 mm
T6	T-type, grid dimensions 24 mm

005	Pneumatic connection 1
PQ1	Push-in fitting QS-4
PQ2	Push-in fitting QS-6
PQ4	Push-in fitting QS-10
PI2	Female thread M5
PI4	Female thread G1/8
PI5	Female thread G1/4

006	Vacuum connection
VQ1	Push-in fitting QS-4
VQ2	Push-in fitting QS-6
VQ3	Push-in fitting QS-8
VQ5	Push-in fitting QS-12
VI2	Female thread M5
VI4	Female thread G1/8
VI5	Female thread G1/4
VI6	Female thread G3/8
VA4	Male thread G1/8
VA5	Male thread G1/4
VT1	Push-in sleeve ∅ 4 mm
VT2	Push-in sleeve ∅ 6 mm

007	Pneumatic connection 3
RQ1	Push-in fitting QS-4
RQ2	Push-in fitting QS-6
RQ3	Push-in fitting QS-8
RI2	Female thread M5
RI4	Female thread G1/8
RI5	Female thread G1/4
RO1	Silencer UO, minimal resistance
RO2	Silencer UOM, minimal resistance

Ordering data

Ordering data and weights – Standard

T-type

Housing width [mm]	Nominal size of laval nozzle [mm]	Weight [g]	High vacuum H Part No.	High vacuum H Type	Weight [g]	High suction rate L Part No.	High suction rate L Type
With push-in fitting							
10	0.45	15	526100	VN-05-H-T2-PQ1-VQ1-RQ1	15	526114	VN-05-L-T2-PQ1-VQ1-RQ1
	0.7	15	526101	VN-07-H-T2-PQ1-VQ1-RQ1	–	–	–
14	0.45	22	193478	VN-05-H-T3-PQ2-VQ2-RQ2	22	193561	VN-05-L-T3-PQ2-VQ2-RQ2
	0.7	22	193479	VN-07-H-T3-PQ2-VQ2-RQ2	22	193562	VN-07-L-T3-PQ2-VQ2-RQ2
	0.95	22	193480	VN-10-H-T3-PQ2-VQ2-RQ2	22	193563	VN-10-L-T3-PQ2-VQ2-RQ2
18	0.95	27	526147	VN-10-H-T4-PQ2-VQ3-RQ3	27	526157	VN-10-L-T4-PQ2-VQ3-RQ3
	1.4	27	193482	VN-14-H-T4-PQ2-VQ3-RQ3	27	193565	VN-14-L-T4-PQ2-VQ3-RQ3
With push-in fitting and silencer							
10	0.45	15	193569	VN-05-H-T2-PQ1-VQ1-RO1	15	193595	VN-05-L-T2-PQ1-VQ1-RO1
	0.7	15	193570	VN-07-H-T2-PQ1-VQ1-RO1	–	–	–
14	0.45	24	193488	VN-05-H-T3-PQ2-VQ2-RO1	24	193571	VN-05-L-T3-PQ2-VQ2-RO1
	0.7	24	193489	VN-07-H-T3-PQ2-VQ2-RO1	24	193572	VN-07-L-T3-PQ2-VQ2-RO1
	0.95	24	193490	VN-10-H-T3-PQ2-VQ2-RO1	24	193573	VN-10-L-T3-PQ2-VQ2-RO1
18	0.95	36	549251	VN-10-H-T4-PQ2-VQ3-RO2	36	549253	VN-10-L-T4-PQ2-VQ3-RO2
	1.4	36	547707	VN-14-H-T4-PQ2-VQ3-RO2	36	547710	VN-14-L-T4-PQ2-VQ3-RO2
24	2.0	182	193495	VN-20-H-T6-PQ4-VQ5-RO2	182	193578	VN-20-L-T6-PQ4-VQ5-RO2
	3.0	182	193497	VN-30-H-T6-PQ4-VQ5-RO2	–	–	–

Vacuum generators VN

Ordering data

Ordering data and weights – Standard

T-type

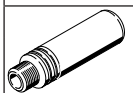
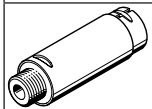
Housing width [mm]	Nominal size of laval nozzle [mm]	Weight [g]	High vacuum H Part No.	High vacuum H Type	Weight [g]	High suction rate L Part No.	High suction rate L Type
With push-in fitting, vacuum connection with male thread							
14	0.45	24	193516	VN-05-H-T3-PQ2-VA4-RQ2	24	193599	VN-05-L-T3-PQ2-VA4-RQ2
	0.7	24	193517	VN-07-H-T3-PQ2-VA4-RQ2	24	193600	VN-07-L-T3-PQ2-VA4-RQ2
	0.95	24	193518	VN-10-H-T3-PQ2-VA4-RQ2	24	193601	VN-10-L-T3-PQ2-VA4-RQ2
18	0.95	33	526153	VN-10-H-T4-PQ2-VA5-RQ3	33	526163	VN-10-L-T4-PQ2-VA5-RQ3
	1.4	33	193520	VN-14-H-T4-PQ2-VA5-RQ3	33	193603	VN-14-L-T4-PQ2-VA5-RQ3
With push-in fitting, vacuum connection with male thread and silencer							
14	0.45	26	193526	VN-05-H-T3-PQ2-VA4-RO1	26	193609	VN-05-L-T3-PQ2-VA4-RO1
	0.7	26	193527	VN-07-H-T3-PQ2-VA4-RO1	26	193610	VN-07-L-T3-PQ2-VA4-RO1
	0.95	26	193528	VN-10-H-T3-PQ2-VA4-RO1	26	193611	VN-10-L-T3-PQ2-VA4-RO1
18	0.95	42	549252	VN-10-H-T4-PQ2-VA5-RO2	42	549254	VN-10-L-T4-PQ2-VA5-RO2
	1.4	42	547706	VN-14-H-T4-PQ2-VA5-RO2	42	547709	VN-14-L-T4-PQ2-VA5-RO2
24	2.0	189	526145	VN-20-H-T6-PQ4-VA5-RO2	189	526135	VN-20-L-T6-PQ4-VA5-RO2
	3.0	189	526146	VN-30-H-T6-PQ4-VA5-RO2	189	526136	VN-30-L-T6-PQ4-VA5-RO2
With female thread							
10	0.45	13	526102	VN-05-H-T2-PI2-VI2-RI2	13	526116	VN-05-L-T2-PI2-VI2-RI2
	0.7	13	526103	VN-07-H-T2-PI2-VI2-RI2	–	–	–
14	0.45	22	193498	VN-05-H-T3-PI4-VI4-RI4	22	193581	VN-05-L-T3-PI4-VI4-RI4
	0.7	22	193499	VN-07-H-T3-PI4-VI4-RI4	22	193582	VN-07-L-T3-PI4-VI4-RI4
	0.95	22	193500	VN-10-H-T3-PI4-VI4-RI4	22	193583	VN-10-L-T3-PI4-VI4-RI4
18	1.4	36	193502	VN-14-H-T4-PI4-VI5-RI5	36	193585	VN-14-L-T4-PI4-VI5-RI5
With female thread and silencer							
10	0.45	13	526104	VN-05-H-T2-PI2-VI2-RO1	13	526118	VN-05-L-T2-PI2-VI2-RO1
	0.7	13	526105	VN-07-H-T2-PI2-VI2-RO1	–	–	–
14	0.45	24	193507	VN-05-H-T3-PI4-VI4-RO1	24	193590	VN-05-L-T3-PI4-VI4-RO1
	0.7	24	193508	VN-07-H-T3-PI4-VI4-RO1	24	193591	VN-07-L-T3-PI4-VI4-RO1
	0.95	24	193509	VN-10-H-T3-PI4-VI4-RO1	24	193592	VN-10-L-T3-PI4-VI4-RO1
18	1.4	40	547705	VN-14-H-T4-PI4-VI5-RO2	40	547708	VN-14-L-T4-PI4-VI5-RO2
24	2.0	183	526141	VN-20-H-T6-PI5-VI6-RO2	183	526131	VN-20-L-T6-PI5-VI6-RO2
	3.0	183	526142	VN-30-H-T6-PI5-VI6-RO2	183	526132	VN-30-L-T6-PI5-VI6-RO2
With female thread, vacuum connection with male thread and silencer							
14	0.95	–	–	–	26	543315	VN-10-L-T3-PI4-VA4-RO1

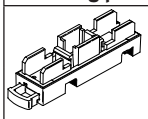
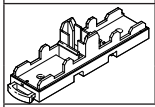
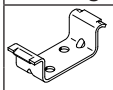
Ordering data

Ordering data and weights – Inline

Housing width [mm]	Nominal size of laval nozzle [mm]	Weight [g]	High vacuum H Part No.	Type	Weight [g]	High suction rate L Part No.	Type
T-type							
With push-in fitting							
10	0.45	15	526106	VN-05-M-T2-PQ1-VQ1-RQ1	–	–	–
	0.7	15	526107	VN-07-M-T2-PQ1-VQ1-RQ1	–	–	–
14	0.45	22	193536	VN-05-M-T3-PQ2-VQ2-RQ2	22	193619	VN-05-N-T3-PQ2-VQ2-RQ2
	0.7	22	193537	VN-07-M-T3-PQ2-VQ2-RQ2	–	–	–
With push-in fitting and silencer							
10	0.45	15	526108	VN-05-M-T2-PQ1-VQ1-RO1	–	–	–
	0.7	15	526109	VN-07-M-T2-PQ1-VQ1-RO1	–	–	–
14	0.45	24	193540	VN-05-M-T3-PQ2-VQ2-RO1	24	193623	VN-05-N-T3-PQ2-VQ2-RO1
	0.7	24	193541	VN-07-M-T3-PQ2-VQ2-RO1	–	–	–
With female thread							
10	0.45	13	526110	VN-05-M-T2-PI2-VI2-RI2	–	–	–
	0.7	13	526111	VN-07-M-T2-PI2-VI2-RI2	–	–	–
14	0.45	22	193544	VN-05-M-T3-PI4-VI4-RI4	22	193627	VN-05-N-T3-PI4-VI4-RI4
	0.7	22	193545	VN-07-M-T3-PI4-VI4-RI4	–	–	–
With female thread and silencer							
10	0.45	13	526112	VN-05-M-T2-PI2-VI2-RO1	–	–	–
	0.7	13	526113	VN-07-M-T2-PI2-VI2-RO1	–	–	–
14	0.45	24	193548	VN-05-M-T3-PI4-VI4-RO1	24	193631	VN-05-N-T3-PI4-VI4-RO1
	0.7	24	193549	VN-07-M-T3-PI4-VI4-RO1	–	–	–
Inline							
With push-in fitting							
10	0.45	11	193580	VN-05-M-I2-PQ1-VQ1	–	–	–
	0.7	11	193586	VN-07-M-I2-PQ1-VQ1	–	–	–
13	0.45	16	193552	VN-05-M-I3-PQ2-VQ2	16	193635	VN-05-N-I3-PQ2-VQ2
	0.7	16	193553	VN-07-M-I3-PQ2-VQ2	–	–	–
	0.95	23	193554	VN-10-M-I3-PQ2-VQ2	–	–	–
With push-in fitting and push-in sleeve							
10	0.45	8	193587	VN-05-M-I2-PQ1-VT1	–	–	–
	0.7	8	193588	VN-07-M-I2-PQ1-VT1	–	–	–
13	0.45	12	193555	VN-05-M-I3-PQ2-VT2	12	193637	VN-05-N-I3-PQ2-VT2
	0.7	12	193556	VN-07-M-I3-PQ2-VT2	–	–	–

Accessories – Ordering data

	Pneumatic connection	Part no.	Type
Silencer UO			
	M7	197582	UO-M7
	G1/8	197583	UO-1/8
	G1/4	197584	UO-1/4
Silencer UOM			
	G1/4	538432	UOM-1/4
	G3/8	538433	UOM-3/8
Silencer extension UOMS			
	–	538436	UOMS-1/4
		538437	UOMS-3/8

	Description	Part no.	Type
Mounting plate VN-NRH			
	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]
Mounting bracket VN-BP			
	Grid dimension 14 mm	547436	VN-T3-BP
	Grid dimension 18 mm	547437	VN-T4-BP

1) Horizontal wall mounting is not permitted with mounting plate VN-T6-BP-NRH.

Vacuum generators VN

Data sheet

General technical data – Standard										
Design		T-type								
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 size of laval nozzle	[mm]	0.45		0.7		0.95		1.4	2.0	3.0
Ejector characteristic		High vacuum H								
		High suction rate L		–		High suction rate L				
Pneumatic connection 1	Push-in fitting	QS-4	QS-6	QS-4	QS-6	QS-6	QS-6	QS-6	QS-10	QS-10
	Female thread	M5	G1/8	M5	G1/8	G1/8	–	G1/8	G1/4	G1/4
Vacuum connection	Push-in fitting	QS-4	QS-6	QS-4	QS-6	QS-6	QS-8	QS-8	QS-12	QS-12
	Male thread	–	G1/8	–	G1/8	G1/8	G1/4	G1/4	G1/4	G1/4
	Female thread	M5	G1/8	M5	G1/8	G1/8	–	G1/4	G3/8	G3/8
Pneumatic connection 3	Push-in fitting	QS-4	QS-6	QS-4	QS-6	QS-6	QS-8	QS-8	–	–
	Female thread	M5	G1/8	M5	G1/8	G1/8	–	G1/4	–	–
	Silencer	minimal resistance								
Type of mounting (max. tightening torque)		Via through-holes								
		Via accessories								

General technical data – Inline										
Design		T-type				Inline				
Type		VN-05		VN-07		VN-05		VN-07		VN-10
Grid dimension	[mm]	10	14	10	14	10	13	10	13	13
Nominal size of laval nozzle	[mm]	0.45		0.7		0.45		0.7		0.95
Ejector characteristic		High vacuum M								
		–	High suction rate N	–		–	High suction rate N	–		–
Pneumatic connection 1	Push-in fitting	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-6
	Female thread	M5	G1/8	M5	G1/8	–				
Vacuum connection	Push-in fitting	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-4	QS-6	QS-6
	Female thread	M5	G1/8	M5	G1/8	–				
	Push-in sleeve	–				4	6	4	6	–
Pneumatic connection 3	Push-in fitting	QS-4	QS-6	QS-4	QS-6	Non-ducted				
	Female thread	M5	G1/8	M5	G1/8					
	Silencer	minimal resistance								
Type of mounting (max. tightening torque)		Via through-holes (0.5 Nm)				Inline installation				
		Via accessories								

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Operating and environmental conditions		
Operating pressure	[bar]	1 ... 8
Nominal operating pressure	[bar]	6
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium not possible
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	0 ... +60
Corrosion resistance class CRC[1]		1 (with push-in fitting)
		2 (without push-in fitting; exception: VN-...-T3-...-RO1 ➔ CRC 1)

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions)
Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Data sheet

Performance data – High vacuum

Ejector characteristic		Standard H						Inline M		
Nominal size 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
Noise level at nominal operating pressure 6 bar	[dB (A)]	53	64	74 (RO1) 71 (RO2)	69	63	78	53	59	–

1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Performance data – High suction rate

Ejector characteristic		Standard L						Inline N
Nominal size 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)[1)]	[s]	1.7	0.5	0.46	0.25	0.15	0.1	1.57
Noise level at nominal operating pressure 6 bar	[dB (A)]	53	66	73 (RO1) 72 (RO2)	77	60	70	48

1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Materials

Vacuum generator VN-20/30		
Housing		POM-reinforced
Silencer	R01	PE
	R02	Die-cast aluminium, POM, PU foam
Push-in fitting		Nickel plated brass
Connecting thread	VA	Wrought aluminium alloy
	PI, VI	Anodised wrought aluminium alloy
	T3-R01	Nickel plated brass
Jet nozzle		Wrought aluminium alloy
Receiver nozzle		POM
Seals		NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE
		Contains paint-wetting impairment substances

Vacuum generator VN-20/30		
Housing		POM-reinforced
Silencer		Die-cast aluminium, POM, PU foam
Push-in fitting		Nickel plated brass
Connecting thread	VA	Wrought aluminium alloy
	PI, VI	Anodised wrought aluminium alloy
Jet nozzle		Wrought aluminium alloy
Receiver nozzle		POM
Seals		NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE
		Contains paint-wetting impairment substances

Vacuum generators VN-P

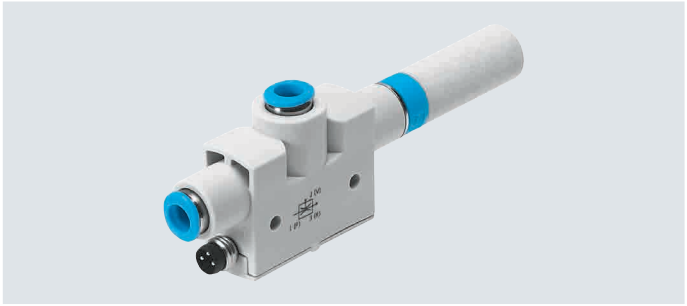
Peripherals overview

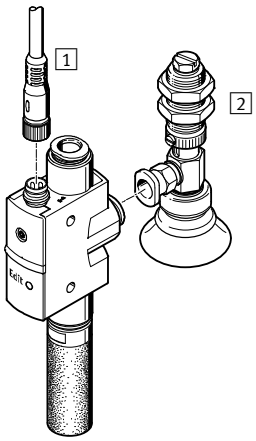
Function
Standard

- Threshold value comparator with fixed or variable hysteresis
- Teach-in setting option for threshold value and hysteresis

Temperature range
0 ... +60 °C

Operating pressure
1 ... 8 bar





Accessories		➔ Page/online
1	Connecting cable NEBU-M8	nebu
2	Suction gripper ESG	esg

Type code explanation

001	Series
VN	Vacuum generator

002	Nominal size of laval nozzle [mm]
05	0.45
07	0.7
10	0.95

003	Ejector characteristic
H	High vacuum/Standard
L	High suction rate/Standard

004	Housing type
T4	T-type, grid dimensions 18 mm

005	Pneumatic connection 1
PQ2	Push-in fitting QS-6

006	Vacuum connection
VQ2	Push-in fitting QS-6

007	Switching function
O1	Threshold value with fixed hysteresis, 2 teach-in points, NO contact
O2	Threshold value with variable hysteresis, NO contact

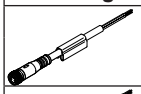
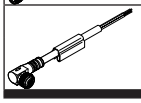
008	Electrical output
P	Switch output PNP

Ordering data

Standard
T-type

Nominal size of laval nozzle [mm]	Switching function		High vacuum H		High suction rate L	
	Threshold value with fixed hysteresis	Threshold value with variable hysteresis	Part No.	Type	Part No.	Type
0.45	■	–	536796	VN-05-H-T4-PQ2-VQ2-O1-P	536798	VN-05-L-T4-PQ2-VQ2-O1-P
	–	■	536797	VN-05-H-T4-PQ2-VQ2-O2-P	536799	VN-05-L-T4-PQ2-VQ2-O2-P
0.7	■	–	536800	VN-07-H-T4-PQ2-VQ2-O1-P	536802	VN-07-L-T4-PQ2-VQ2-O1-P
	–	■	536801	VN-07-H-T4-PQ2-VQ2-O2-P	536803	VN-07-L-T4-PQ2-VQ2-O2-P
0.95	■	–	536804	VN-10-H-T4-PQ2-VQ2-O1-P	536806	VN-10-L-T4-PQ2-VQ2-O1-P
	–	■	536805	VN-10-H-T4-PQ2-VQ2-O2-P	536807	VN-10-L-T4-PQ2-VQ2-O2-P

Accessories – Ordering data

	Electrical connection	Cable length [m]	Part no.	Type
Connecting cable NEBU-M8				
	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

Data sheet

General technical data				
Design		T-type		
Type		VN-05	VN-07	VN-10
Grid dimension	[mm]	16	16	16
Nominal size of laval nozzle	[mm]	0.45	0.7	0.95
Ejector characteristic		High vacuum/Standard H		
		High suction rate/Standard L		
Pneumatic connection 1		QS-6		
Vacuum connection		QS-6		
Pneumatic connection 3		Silencer, minimal resistance		
Measured variable		Relative pressure		
Measuring principle		Piezoresistive		
Pressure measuring range	[bar]	–1 ... 0		
Type of mounting (max. tightening torque)		Via through-holes (0.6 Nm)		
Assembly position		Any[1]		
Cleaning recommendation		Soap suds		

1) The collection of condensate in the sensor should be prevented.

Operating and environmental conditions		
Operating pressure	[bar]	1 ... 8
Nominal operating pressure	[bar]	6
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium not possible
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	0 ... +60
Corrosion resistance class CRC[1]		1
CE mark (see declaration of conformity)		To EU EMC Directive[2]
Certification		RCM Mark
KC marking		KC EMC

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Performance data							
Ejector characteristic		High vacuum/Standard H			High suction rate/Standard L		
Nominal size 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
Noise level at nominal operating pressure 6 bar	[dB (A)]	62	66	70	54	63	66

Vacuum generators VN-P

Data sheet

Electrical data		
Operating voltage range	[V DC]	15 ... 30
Residual ripple	[%]	10
Electrical connection		M8x1, 3-pin
Switch-on/switch-off times	[ms]	≤ 4
Switch output		PNP
Max. output current	[mA]	100
Residual current	[mA]	≤ 0.3
Voltage drop	[V]	≤ 1.5
Switching element function		NO contact
Setting options		Teach-In
Switching function		Threshold value comparator with fixed hysteresis
		Threshold value comparator with variable hysteresis
Threshold value setting range	[bar]	–1 ... 0
Accuracy	[% FS][1)]	±1.5
Hysteresis	[% FS][1)]	±2 (threshold value comparator with fixed hysteresis)
Long-term drift	[% FS][1)]	Max. ±0.5
Temperature coefficient of switching point	[%/K]	0.05
Type of display/switching status display		LED
Inductive protective circuit		Adapted to MZ, MY, ME coils
Protection against short circuit		Pulsed
Protection against polarity reversal		For all electrical connections
Protection against overloading		Yes
Protection class		IP40 (to EN 60 529)

1) % FS = % of the measuring range final value (full scale)

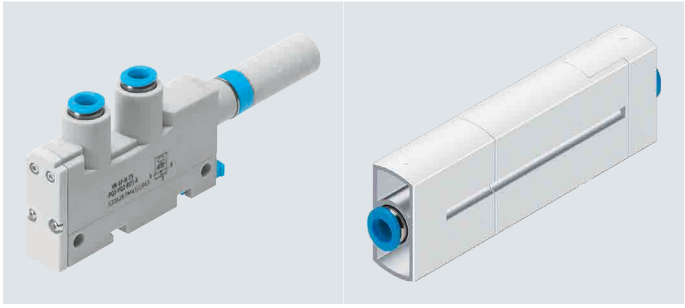
Materials	
Vacuum generator	
Housing	POM-reinforced
Silencer	PE
Push-in fitting	Nickel plated brass
Plug housing	PA, nickel and chrome plated brass
Fibre optics	PC
Jet nozzle	Wrought aluminium alloy
Receiver nozzle	POM
Key pad	POM
Seals	NBR

Peripherals overview

Function
VN-A – Standard/Inline
Pneumatic ejector pulse

VN-A:
Temperature range
0 ... +60 °C

Operating pressure
1 ... 8 bar

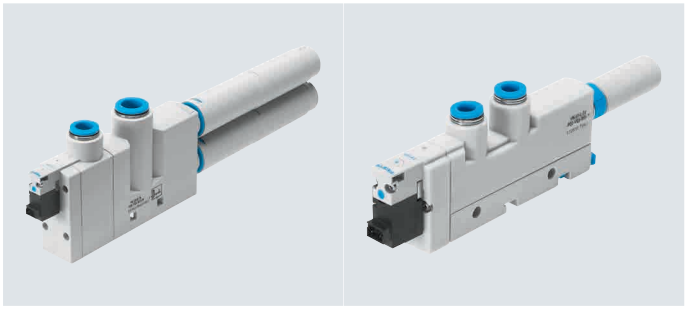


VN-M – Standard
Electrical on-off valve

VN-B – Standard
Electrical on-off valve,
pneumatic ejector pulse

VN-M / VN-B:
Temperature range
0 ... +50 °C

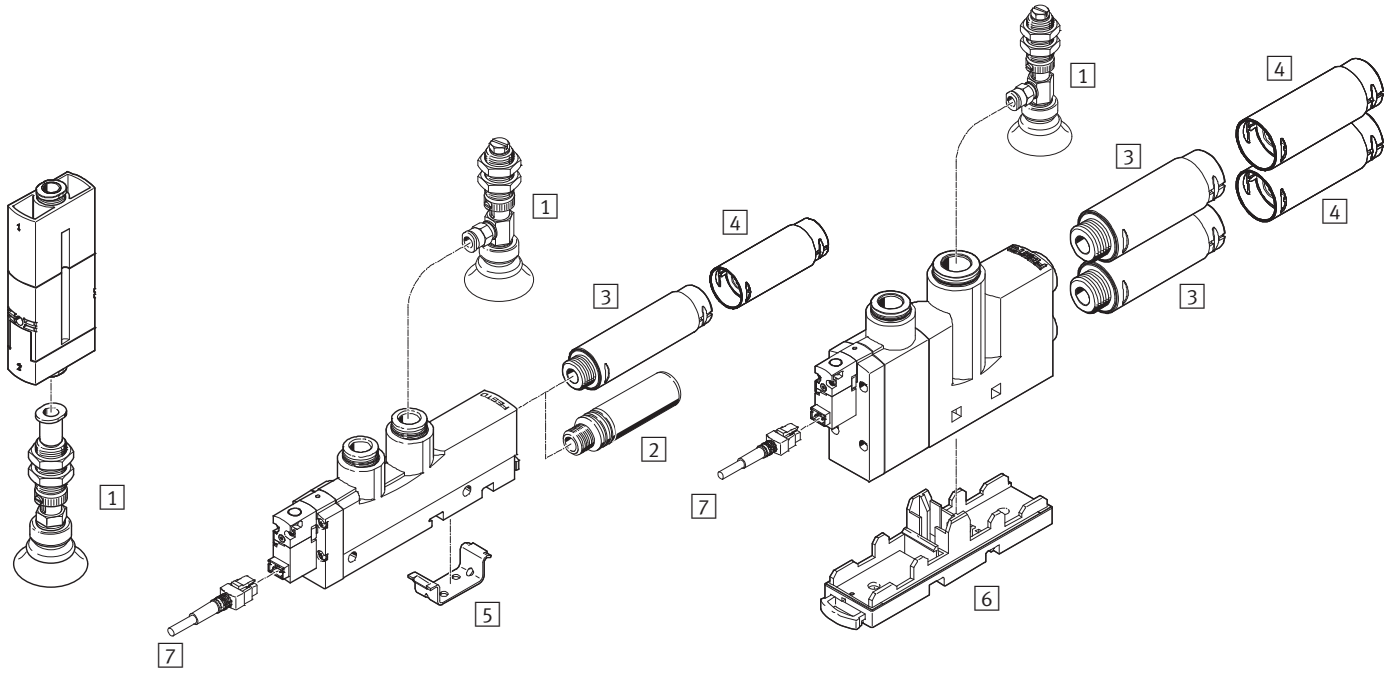
Operating pressure
2 ... 8 bar



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	Suction gripper ESG	esg
2	Silencer UO	423
3	Silencer UOM	
4	Silencer extension UOMS	

Mounting components and accessories		➔ Page/online
5	Mounting bracket VN-T3/T4-BP	423
6	Mounting plate VN-T	
7	Plug socket with cable NEBV	431

Vacuum generators VN-A/M/B

Type code explanation

001	Series
VN	Vacuum generator

002	Nominal size of laval nozzle [mm]
05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

003	Ejector characteristic
H	High vacuum/Standard
L	High suction rate/Standard
M	High vacuum/Inline
N	High suction rate/Inline

004	Housing type
I3	Inline, grid dimensions 13 mm
T3	T-type, grid dimensions 14 mm
T4	T-type, grid dimensions 18 mm
T6	T-type, grid dimensions 24 mm

005	Pneumatic connection 1
PQ2	Push-in fitting QS-6
PQ4	Push-in fitting QS-10
PI4	Female thread G1/8
PI5	Female thread G1/4

006	Vacuum connection
VQ2	Push-in fitting QS-6
VQ3	Push-in fitting QS-8
VQ5	Push-in fitting QS-12
VI2	Female thread M5
VI4	Female thread G1/8
VI5	Female thread G1/4

007	Pneumatic connection 3
RO1	Silencer UO, minimal resistance
RO2	Silencer UOM, minimal resistance

008	Integrated function
A	Pneumatic ejector pulse
M	Electrical on-off valve
B	Electrical on-off valve and pneumatic ejector pulse

Ordering data

Ordering data and weights – Standard

T-type

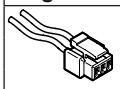
Nominal size of laval nozzle [mm]	Weight [g]	High vacuum H Part No.	Type	Weight [g]	High suction rate L Part No.	Type
With pneumatic ejector pulse, push-in fitting and silencer						
0.45	49	532620	VN-05-H-T3-PQ2-VQ2-RO1-A	49	532621	VN-05-L-T3-PQ2-VQ2-RO1-A
0.7	50	532628	VN-07-H-T3-PQ2-VQ2-RO1-A	50	532629	VN-07-L-T3-PQ2-VQ2-RO1-A
0.95	50	532638	VN-10-H-T3-PQ2-VQ2-RO1-A	50	532639	VN-10-L-T3-PQ2-VQ2-RO1-A
1.4	85	532646	VN-14-H-T4-PQ3-VQ3-RO2-A	85	532647	VN-14-L-T4-PQ3-VQ3-RO2-A
With pneumatic ejector pulse, female thread and silencer						
0.45	49	537225	VN-05-H-T3-PI4-VI4-RO1-A	49	537226	VN-05-L-T3-PI4-VI4-RO1-A
0.7	50	532632	VN-07-H-T3-PI4-VI4-RO1-A	50	532633	VN-07-L-T3-PI4-VI4-RO1-A
0.95	50	532642	VN-10-H-T3-PI4-VI4-RO1-A	50	532643	VN-10-L-T3-PI4-VI4-RO1-A
1.4	94	532719	VN-14-H-T4-PI5-VI5-RO2-A	94	532720	VN-14-L-T4-PI5-VI5-RO2-A
With electrical on-off valve, push-in fitting and silencer						
0.45	60	532618	VN-05-H-T3-PQ2-VQ2-RO1-M	60	532619	VN-05-L-T3-PQ2-VQ2-RO1-M
0.7	61	532626	VN-07-H-T3-PQ2-VQ2-RO1-M	61	532627	VN-07-L-T3-PQ2-VQ2-RO1-M
0.95	61	532636	VN-10-H-T3-PQ2-VQ2-RO1-M	61	532637	VN-10-L-T3-PQ2-VQ2-RO1-M
1.4	98	532644	VN-14-H-T4-PQ3-VQ3-RO2-M	98	532645	VN-14-L-T4-PQ3-VQ3-RO2-M
2.0	215	532656	VN-20-H-T6-PQ4-VQ5-RO2-M	–	–	–
3.0	215	532662	VN-30-H-T6-PQ4-VQ5-RO2-M	–	–	–
With electrical on-off valve, pneumatic ejector pulse, push-in fitting and silencer						
0.45	62	532622	VN-05-H-T3-PQ2-VQ2-RO1-B	62	532623	VN-05-L-T3-PQ2-VQ2-RO1-B
0.7	63	532630	VN-07-H-T3-PQ2-VQ2-RO1-B	63	532631	VN-07-L-T3-PQ2-VQ2-RO1-B
0.95	63	532640	VN-10-H-T3-PQ2-VQ2-RO1-B	63	532641	VN-10-L-T3-PQ2-VQ2-RO1-B
1.4	100	532648	VN-14-H-T4-PQ3-VQ3-RO2-B	100	532649	VN-14-L-T4-PQ3-VQ3-RO2-B

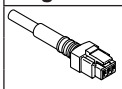
Ordering data and weights – Inline

Inline

Nominal size of laval nozzle [mm]	Weight [g]	High vacuum M Part No.	Type	Weight [g]	High suction rate N Part No.	Type
With pneumatic ejector pulse and push-in fitting						
0.45	38	532624	VN-05-M-I3-PQ2-VQ2-A	38	532625	VN-05-N-I3-PQ2-VQ2-A
0.7	41	532634	VN-07-M-I3-PQ2-VQ2-A	41	532635	VN-07-N-I3-PQ2-VQ2-A

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Plug socket with cable 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

	Cable length [m]	Part no.	Type
Plug socket with cable NEBV			
	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

Data sheet

General technical data – Standard															
Constructional design		T-type													
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 size of laval nozzle	[mm]	0.45			0.7			0.95			1.4			2.0	3.0
Ejector characteristic		High vacuum/Standard H (T-type)													
		High suction rate/Standard L (T-type)												–	
Pneumatic connection 1	Push-in fitting	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	G1/8	–	–	G1/8	–	–	G1/8	–	–	G1/4	–	–	–	–
Vacuum connection	Push-in fitting	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	G1/8	–	–	G1/8	–	–	G1/8	–	–	G1/4	–	–	–	–
Pneumatic connection 3		Silencer, minimal resistance													
Type of mounting (max. tightening torque)		Via through-holes													
		Via H-rail												–	
		Via accessories													
Mounting position		Any													
Cleaning recommendation		Soapy water													

Note: This product conforms to ISO 1179-1 and to ISO 228-1

General technical data – Inline			
Constructional design		Inline	
Type		VN-05	VN-07
Grid dimension	[mm]	14.5	14.5
Integrated function		A	A
Nominal size of laval nozzle	[mm]	0.45	0.7
Ejector characteristic		High vacuum/Inline M	
		High suction rate/Inline N	
Pneumatic connection 1		QS-6	
Vacuum connection		QS-6	
Type of mounting		Inline installation	
Mounting position		Any	
Cleaning recommendation		Soapy water	

Operating and environmental conditions					
Pneumatic connection		Via push-in fitting			Via female threads
Integrated function		A	M	B	A
Operating pressure	[bar]	1 ... 8	2 ... 8		1 ... 8
Nominal operating pressure	[bar]	6			
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium		Operation with lubricated medium not possible			
Ambient temperature	[°C]	0 ... +60	0 ... +50		0 ... +60
Temperature of medium	[°C]	0 ... +60	0 ... +50		0 ... +60
Corrosion resistance class CRC[1)]		1			2

1) Corrosion resistance class CRC 1 to Festo standard FN 940070. Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
Corrosion resistance class CRC 2 to Festo standard FN 940070.
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Vacuum generators VN-A/M/B

Data sheet

Performance data – High vacuum

Ejector characteristic		Standard H														Inline M	
Nominal size 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	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
Noise level at nominal operating pressure 6 bar	[dB (A)]	56			65			71			69			63	78	66	75

1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Performance data – High suction rate

Ejector characteristic		Standard L												Inline N	
Nominal size 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)[1]	[s]	1.93	1.97		0.79	0.83		0.62	0.67		0.28	0.32		2.24	0.89
Noise level at nominal operating pressure 6 bar	[dB (A)]	52			64			72			69			68	78

1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Technical data – Solenoid valve

Operating voltage range	[V DC]	21.6 ... 26.4
Duty cycle	[%]	100
Protection class		IP40 (to EN 60 529)
Valve function		2/2-way valve
Manual override		By pushing

Materials

Vacuum generator VN – Standard

Housing		PA-reinforced, POM-reinforced
Silencer	R01	PE
	R02	Wrought aluminium alloy, POM, PU foam
Push-in fitting		Nickel plated brass
Connecting thread		Anodised wrought aluminium alloy
Jet nozzle		Wrought aluminium alloy
Receiver nozzle		POM
Seals		NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE
	RO2	Contains paint-wetting impairment substances

Vacuum generator VN – Inline

Housing	PA-reinforced, POM-reinforced
Push-in fitting	Nickel plated brass
Jet nozzle	Wrought aluminium alloy
Receiver nozzle	POM
Seals	NBR
Note on materials	RoHS-compliant
	Free of copper and PTFE

Type code explanation

Function
Standard

Temperature range
0 ... +60 °C

Operating pressure
1 ... 8 bar

001	Series
VN	Vacuum generator cartridge

002	Nominal size of laval nozzle [mm]
05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

003	Ejector characteristic
H	High vacuum/Standard
L	High suction rate/Standard

Ordering data

Nominal size of laval nozzle [mm]	Weight [g]	High vacuum H Part No.	Type	Weight [g]	High suction rate L Part No.	Type
0.45	0.65	547693	VN-05-H	0.65	547694	VN-05-L
0.7	1.65	547695	VN-07-H	1.65	547696	VN-07-L
0.95	1.65	547697	VN-10-H	1.65	547698	VN-10-L
1.4	3.75	547699	VN-14-H	3.75	547700	VN-14-L
2.0	3.75	547701	VN-20-H	3.75	547702	VN-20-L

Data sheet

General technical data						
Type		VN-05	VN-07	VN-10	VN-14	VN-20
Nominal size of laval nozzle	[mm]	0.45	0.7	0.95	1.4	2.0
Ejector characteristic		High vacuum, T-type/Standard H				
		High suction rate, T-type/Standard L				
Mounting position		Any				

Operating and environmental conditions		
Operating pressure	[bar]	1 ... 8
Nominal operating pressure	[bar]	6
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium not possible
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	0 ... +60
Corrosion resistance class CRC[1)]		2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Vacuum generator cartridges VN

Data sheet

Performance data – High vacuum						
Ejector characteristic		Standard H				
Nominal size of laval nozzle	[mm]	0.45	0.7	0.95	1.4	2.0
Max. vacuum	[%]	92	92	93	92	92
Operating pressure for max. vacuum	[bar]	4.9	4.4	3.5	3.5	3.5
Max. suction rate with respect to atmosphere	[l/min]	7.2	16.2	21.8	48.8	98
Operating pressure for max. suction rate	[bar]	3	3	3	2	2
Air supply time at nominal operating pressure 6 bar (for 1 l volume)	[s]	4.43	1.67	1.02	0.48	0.23

Performance data – High suction rate						
Ejector characteristic		Standard L				
Nominal size of laval nozzle	[mm]	0.45	0.7	0.95	1.4	2.0
Max. suction rate with respect to atmosphere	[l/min]	13.6	30.9	41.5	92.6	184.4
Operating pressure for max. suction rate	[bar]	5	4	5	5	5
Air supply time at nominal operating pressure 6 bar (for 1 l volume)	[s]	2.04	0.82	0.66	0.31	0.17

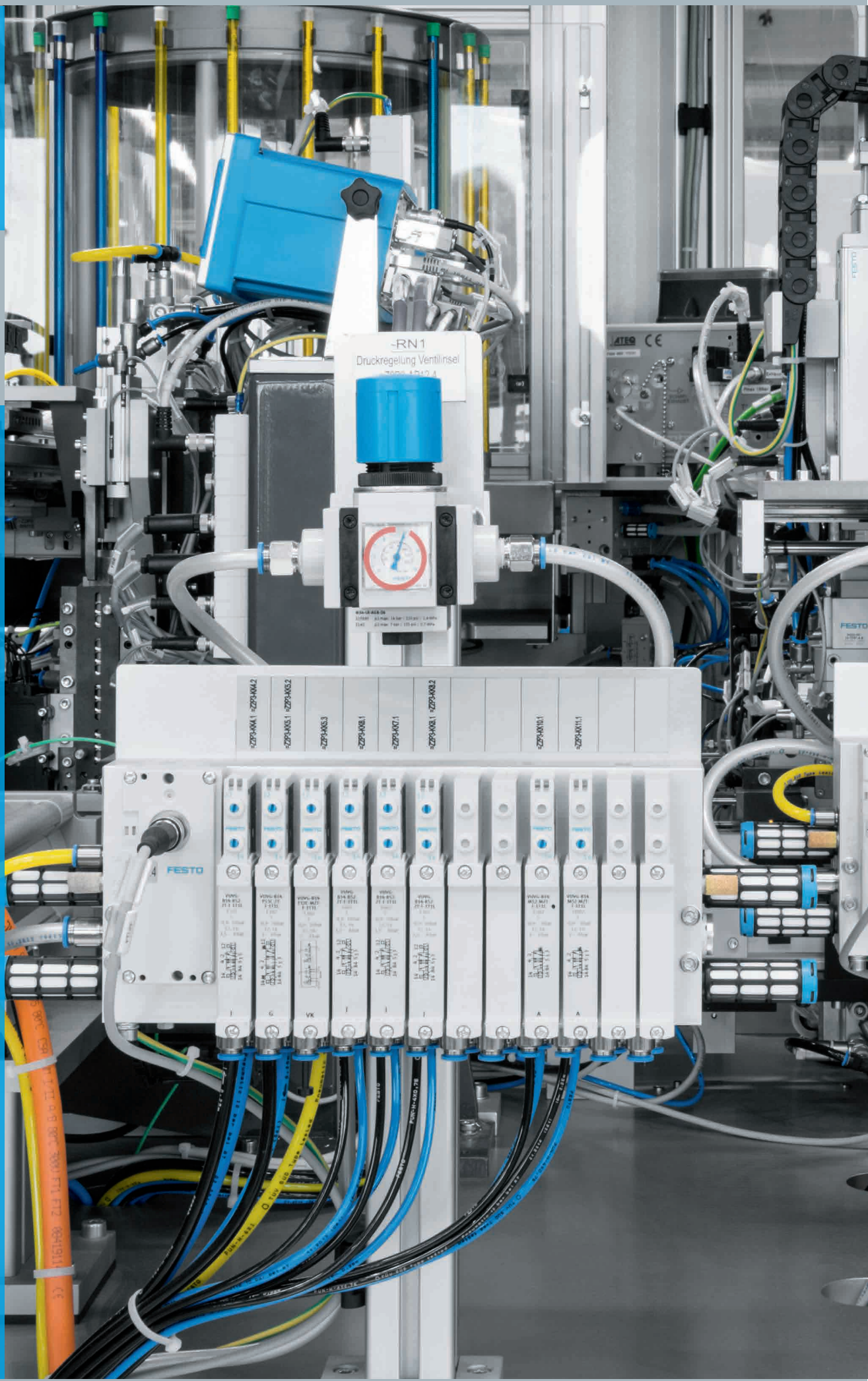
Materials

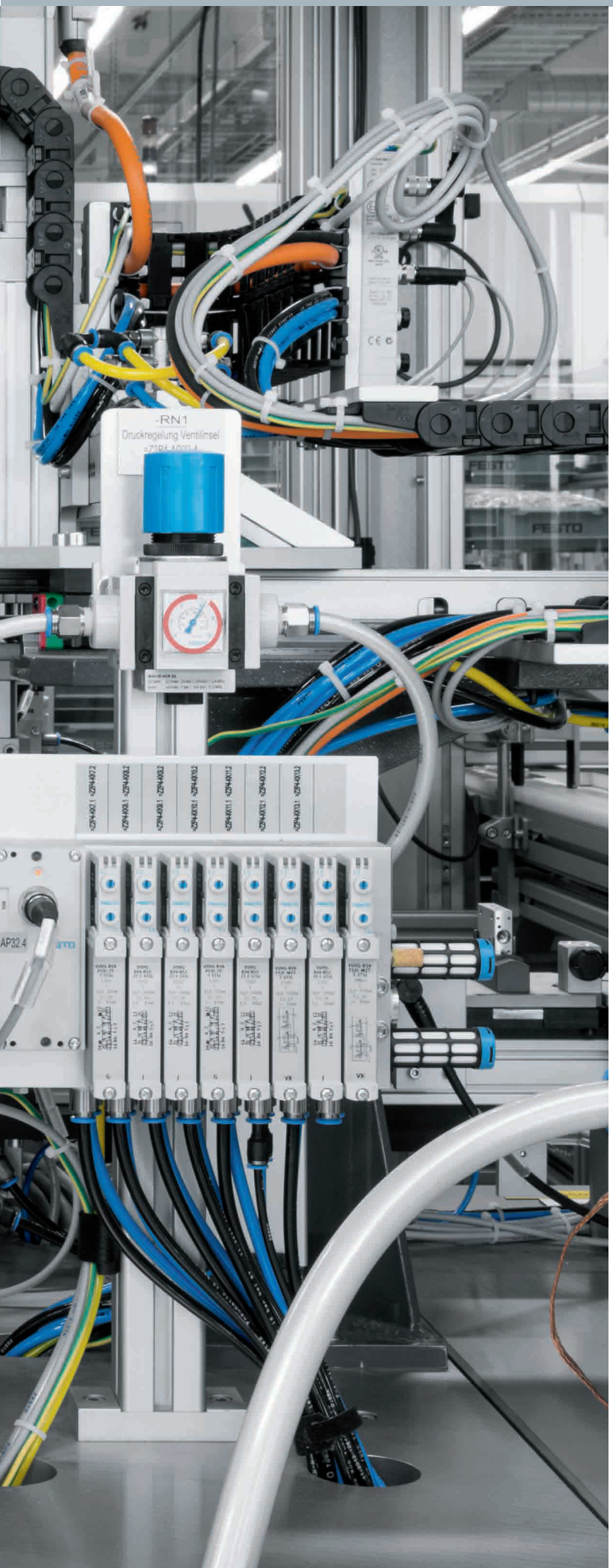
Vacuum generator VN – Standard	
Jet nozzle	Wrought aluminium alloy
Receiver nozzle	POM
Seals	NBR

Vacuum generator cartridges VN

06

Valves





Inhalt

Product overview

Universal directional control valves

	 Solenoid valves, for individual connection VUVG ★	 Solenoid valves, plug-in VUVG	 Solenoid valves VUVS ★	 Solenoid valves VMPA1, VMPA14, VMPA2
Type of actuation	Electric	Electric	Electric	Electric
Pneumatic connection 1	G1/4, G1/8, M3, M5, M7		1/8 NPT, G1/4, G1/8, G3/8	G1/8, M7
Pneumatic working port	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	Flange, G1/4, G1/8, M5, M7	1/8 NPT, 1/4 NPT, 3/8 NPT, G1/4, G1/8, G3/8, QS-1/2, QS-1/4, QS-10, QS-12, QS-3/8, QS-4, QS-5/16, QS-5/32, QS-6, QS-8	G1/8, M7
Standard nominal flow rate	80 ... 1380 l/min	130 ... 1200 l/min	600 ... 2400 l/min	140 ... 870 l/min
Valve function	2x3/2-way, monostable, closed, 2x3/2-way, open, monostable, 2x3/2-way, open/closed, monostable, 5/2 double solenoid, 5/2-way, monostable, 5/3-way, pressurised, 5/3 exhausted, 5/3 closed	2x3/2-way, monostable, closed, 2x3/2-way, open, monostable, 2x3/2-way, open/closed, monostable, 3/2-way, closed, monostable, 3/2 open, single solenoid, 5/2 double solenoid, 5/2-way, monostable, 5/3-way, pressurised, 5/3 exhausted, 5/3 closed	2x3/2-way, monostable, closed, 2x3/2-way, open, monostable, 2x3/2-way, open/closed, monostable, 3/2-way, closed, monostable, 3/2 open, single solenoid, 5/2 double solenoid, 5/2-way, monostable, 5/3-way, pressurised, 5/3 exhausted, 5/3 closed	2x2/2-way, monostable, closed, 2x3/2-way, monostable, closed, 2x3/2-way, open, monostable, 2x3/2-way, open/closed, monostable, 3/2-way, closed, monostable, 3/2 open, single solenoid, 5/2 double solenoid, 5/2-way, monostable, 5/3-way, pressurised, 5/3 exhausted, 5/3 closed
Electrical connection	Plugs, Via electrical sub-base, Plug pattern H, horizontal connection, M8x1, A-coded to EN 61076-2-104, 2-pin, 3-pin	Via sub-base	To EN 175301-803, Type B, Type C	Plugs, To EN 60947-5-2, 4-pin, M8x1
Description	• Compact universal valve • Connection technology via electrical sub-base (E-box) • High flow rate relative to its size • In-line valves can be used as individual valves or manifold valves	• Sub-base valve • For valve terminal VTUG with multi-pin, fieldbus interface • Variants to EU Explosion Protection Directive (ATEX)	• Universal valve, sturdy and durable • Low cost, no limitations with regard to performance • Can be used as individual valves or manifold valves VTUS	• For valve terminal MPA • As individual valve mounted on sub-base • Comprehensive range of valves
➔ Page/online	**445**	**445**	**vuvs**	**vmpa1**

Standards-based directional control valves

	 Solenoid valves VSNC ★
Type of actuation	Electric
Pneumatic connection 1	1/4 NPT, G1/4, QS-1/4, QS-10, QS-3/8, QS-5/16, QS-6, QS-8
Standard nominal flow rate	800 ... 1350 l/min
Valve function	5/2 double solenoid, 5/2-way or 3/2-way, convertible, 5/3-way, pressurised, 5/3 exhausted, 5/3 closed
Electrical connection	Plugs, To EN 175301-803, To industry standard (11 mm), Type A, Type B, 3-pin
Description	• Namur connection pattern to VDI/VDE 3845 • Rotatable seal for 3/2- or 5/2-way valve • Wide choice of EX solenoid systems • Sturdy and powerful • Extended temperature range • Excellent value for money • All solenoid coils can be used on an armature tube • The VSNC-...FN variant achieves greater energy efficiency with reduced power consumption
➔ Page/online	**vsnc**

Application-specific directional control valves

	 **Solenoid valves VOFD**	 **Solenoid valves VOFC**	 **Solenoid valves MHA1, MHP1**	 **Solenoid valves MHE..., MHP..., MHA...**
Design	Directly actuated poppet valve	Piston gate valve, Piloted piston poppet valve	Poppet valve with spring return	Pressure-relieved poppet valve
Valve function	3/2-way, closed, monostable, semi-automatic, 3/2-way, closed, monostable	3/2-way, closed, monostable, 5/2 double solenoid, 5/2-way, monostable	2/2-way, closed, monostable, 2x2/2-way, monostable, closed, 3/2-way, closed, monostable, 3/2 open, single solenoid	3/2-way, closed, monostable, 3/2 open, single solenoid, 5/2-way, monostable
Operating pressure	0 ... 12 bar	0 ... 38 bar	-0.9 ... 8 bar	-0.9 ... 8 bar
Ambient temperature	-50 ... 60°C	-25 ... 60°C	-5 ... 50°C	-5 ... 60°C
Pneumatic connection 1	NAMUR port pattern, 1/4 NPT, G1/4, M5	1/2 NPT, NAMUR port pattern, 1/4 NPT, G1/2, G1/4, M5	Sub-base, Prepared for QSP10, QS-3, QS-4	Sub-base, G1/4, G1/8, M7, QS-4, QS-6, QS-8
Standard nominal flow rate	52 ... 1900 l/min	766 ... 2686 l/min	10 ... 30 l/min	90 ... 400 l/min
Description	• 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 NAMUR flange pattern • Variants with TÜV approval up to SIL3 to IEC 61508	• 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 NAMUR flange pattern • Valve can switch between internal and external pilot air • Variants with TÜV approval up to SIL3 to IEC 61508	• 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 a pilot valve • UL certification; same connections and cables as for the VUVG	• 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
➔ Page/online	**vofd**	**vofc**	**491**	**mh2**

Non-return valves and quick exhaust valves

	 **Check valves, piloted HGL** ★
Pneumatic connection 1	G1/2, G1/4, G1/8, G3/8, M5, QS-10, QS-12, QS-4, QS-6, QS-8
Standard nominal flow rate 1 -› 2 from 6 to 5 bar	130 ... 1600 l/min
Operating pressure	0.5 ... 10 bar
Description	• 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
➔ Page/online	**hgl**

Product overview

Pressure regulators

	 Pressure regulators VRPA	 Pressure regulators LR, LRMA	 Differential pressure regulators LRL, LRLL
Pressure regulation range	0.1 ... 0.8 MPa	1 ... 8 bar	2 ... 6 bar
Standard nominal flow rate	80 ... 130 l/min	22 ... 127 l/min	
Nominal flow rate, closed			30 ... 730 l/min
Nominal flow rate, open			30 ... 760 l/min
Pneumatic connection 1	R1/4, R1/8, M5, QS-4, QS-6, QS-8	G1/4, G1/8, M5, QS-4, QS-6, QS-8	G1/2, G1/4, G1/8, G3/8, M5
Pneumatic connection 2	QS-4, QS-6, QS-8	QS-4, QS-6, QS-8	QS-10, QS-12, QS-4, QS-6, QS-8
Description		• Regulates the operating pressure independently of the fluctuating inlet pressure • With secondary exhausting • Piston regulator with through pressure supply • Available with pressure gauge • Directly actuated • Connections: push-in connector at both ends, thread/push-in connector • Greater energy efficiency thanks to movement-specific pressure adjustment	• Constant pressure differential between the input and output • Without secondary exhaust • Piston regulator with through pressure supply • Without pressure gauge • Connections: thread/push-in connector on top or on side
→ Page/online	**527**	**lrma**	**lrl**

One-way flow control valves

	 One-way flow control valves GRLA, GRLZ ★	 One-way flow control valves GR, GRA
Valve function	Exhaust air one-way flow control function, One-way flow control function, Supply air one-way flow control function	One-way flow control function
Pneumatic connection 1	Male thread G1/4, G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, PK-3, PK-3 Via union nut, PK-4, PK-4 Via union nut, PK-6 Via union nut, QS-10, QS-12, QS-3, QS-4, QS-6, QS-8	G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, QS-3, QS-4, QS-6, QS-8
Standard nominal flow rate in flow control direction	0 ... 4320 l/min	29.5 ... 3300 l/min
Adjusting element	Knurled screw, Slotted head screw, Internal hexagon	Knurled screw
Description	• 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 of one-way flow control valve and piloted check valve • Connections: thread at both ends, push-in connector at both ends, thread/push-in connector	• Non-return and flow control valve • In-line installation
→ Page/online	**519**	**gra**

Flow control valves

	 **Flow control valves GRLO**	 **Flow control valves GRO**
Valve function	Flow control function	Flow control function
Pneumatic connection 1	M3, M5	G1/4, G1/8, M5, PK-3, QS-3, QS-4, QS-6
Standard flow rate in flow control direction 6 -› 0 bar	33 ... 169 l/min	
Standard nominal flow rate in flow control direction	18 ... 95 l/min	85 ... 350 l/min
Adjusting element	Slotted head screw	Knurled screw
Description	• 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: L-outlet • Metal version	• 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	grlo	gra

Proportional valves

	 **Proportional-pressure regulators VEAA**	 **Proportional-pressure regulators VEAB**	 **Proportional pressure regulators VPPX**
Valve function	3-way proportional pressure regulator	3-way proportional pressure regulator	3-way proportional pressure regulator
Pneumatic connection 1	Flange, QS-4	Flange, QS-4	Sub-base, G1/2, G1/4, G1/8
Pressure regulation range			0.1 ... 10 bar
Operating pressure for positioning/Soft Stop			
Operating pressure			
Standard nominal flow rate	≥7 l/min	≥4.5 l/min	1400 ... 7000 l/min
Description	• Silent operation • Very low power consumption • Highly precise • Integrated piezo technology • Durable • Mounting: via through-holes, H-rail mounting, on mounting plate or sub-base	• Silent operation • Very low power consumption • Highly precise • Integrated piezo technology • Short switching times • Mounting: using through-holes, H-rail mounting	• Pressure regulator with additional sensor input • Multi-sensor control (cascade control) • Control characteristic adjustable via software FCT (Festo Configuration Tool) • Integrated pressure sensor with separate output • Pressure is maintained if the controller fails
➔ Page/online	**531**	**537**	vppx

Product overview

Proportional valves

	 **Proportional pressure regulators VPPM**	 **Proportional pressure regulators VPPI**	 **Proportional pressure regulators VPPE**
Valve function	3-way proportional pressure regulator	3-way proportional pressure regulator	3-way proportional pressure regulator, 3-way proportional-pressure regulator, closed
Pneumatic connection 1	Sub-base, G1/2, G1/4, G1/8	G1/8	G1/8
Pressure regulation range	0.02 ... 10 bar	–1 ... 12 bar	0.02 ... 10 bar
Operating pressure		0 ... 13 bar	8 bar
Standard nominal flow rate	380 ... 7000 l/min	150 ... 1630 l/min	310 ... 1250 l/min
Description	• Piloted 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 connector, round design, 8-pin, M12 or terminal linking	• Three predefined regulator presets, as well as the option of a custom preset • The internal control electronics adjust automatically • Low-noise • Flexible • Highly dynamic up to 30 Hz	• Piloted pressure regulator • Setpoint input as analogue voltage signal (0 ... 10 V) • Electrical connection via M12x1 plug, 4-pin • Available with setpoint module • For simple control tasks
→ Page/online	**543**	**553**	**559**

Solenoid-actuated process and media valves

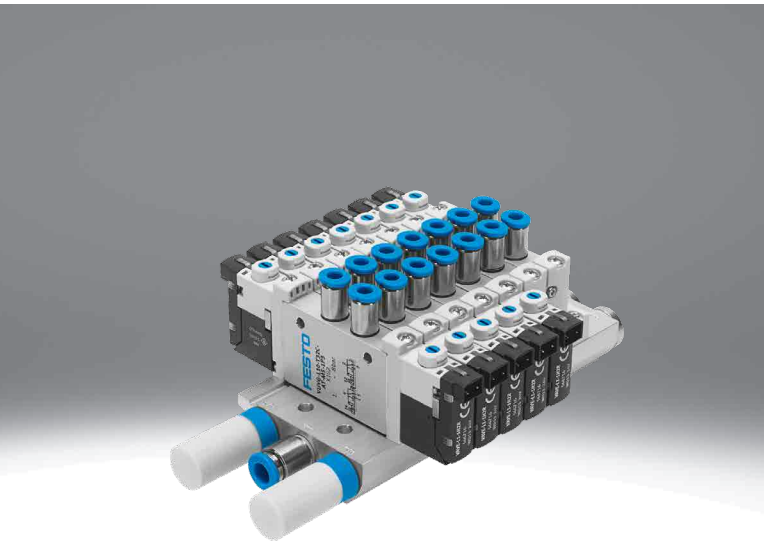
	 **Solenoid valves VZWD** ★	 **Solenoid valves VZWF** ★	 **Solenoid valves MN1H**
Design	Directly actuated poppet valve	Diaphragm valve, Force pilot operated	Diaphragm valve
Actuation type	Electric	Electric	Electric
Nominal size	1 ... 6 mm	13.5 ... 50 mm	13 ... 40 mm
Flow rate Kv	0.06 ... 0.4 m³/h	1.8 ... 28 m³/h	
Temperature of medium	-10 ... 80°C	-10 ... 80°C	-10 ... 60°C
Medium pressure	0 ... 90 bar	0 ... 10 bar	0.5 ... 10 bar
Process valve connection	1/4 NPT, 1/8 NPT, G1/4, G1/8, NPT1/4	1 NPT, 1 1/2 NPT, 1 1/4 NPT, 1/2 NPT, 1/4 NPT, 2 NPT, 3/4 NPT, 3/8 NPT, G1, G1 1/2, G1 1/4, G1/2, G1/4, G2, G3/4, G3/8, NPT1, NPT1 1/2, NPT1 1/4, NPT1/2, NPT1/4, NPT2, NPT3/4, NPT3/8	G1, G1 1/2, G1/2, G1/4, G3/4, G3/8
Description	• Extensive pressure range • Directly actuated poppet valve • No differential pressure required • Can also be used in vacuum technology	• High flow rates • Large nominal diameters with relatively small solenoids • No differential pressure required • Can also be used in vacuum technology	• Piloted 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	**vzwd**	**vzwf**	**mn1h-2**

Pneumatically and mechanically actuated process and media valves

	 **Angle seat valves VZXF**	 **Angle seat valves VZXA** ★	 **Pinch valves VZQA**
Design	Poppet valve with piston drive	Poppet valve with piston drive, Poppet valve with diaphragm actuator	2-way ball valve
Valve function	2/2-way, closed, monostable	2/2	2/2
Actuation type	Pneumatic	Pneumatic	Mechanical
Nominal size	12 ... 45 mm		
			15, 20, 25, 32, 40, 50, 65, 80, 100
			Clamp to ASME-BPE, Clamp to DIN 32676 series B, Weld-on end to ASME-BPE, Weld-on end to ISO 1127
Flow rate Kv	3.3 ... 43 m³/h	6 ... 68.5 m³/h	3.5 ... 436.3 m³/h
Temperature of medium	-40 ... 200°C	-10 ... 180°C	-20 ... 200°C
Medium pressure	-0.9 ... 40 bar	0 ... 30 bar	
Nominal pressure process valve PN	16 ... 40		16
Description	• Sturdy design • Stainless steel and gunmetal process valves with stainless steel, brass or aluminium actuators • Safety position “closing” • Different drive 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	• Highly flexible, extremely high flow rates • Long service life • Modular design • Hygienic design, insensitive to dirt • Quick and easy maintenance • Simple and sturdy: an ideal choice for virtually all media with a viscosity of 600 mm2/s • High chemical and thermal resistance	• Electropolished surfaces SFV4 • PTFE seal with little dead space • The high-performance ball valve for the pharmaceutical and cosmetics industry • FDA-compliant seal to FDA 21 CFR 177.1550
➔ Page/online	**vzxf**	**vzxa**	**567**

Product overview

Solenoid valves VUVG



Highlights

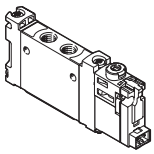
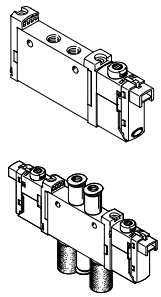
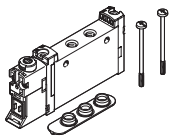
+ Connection technology via E-box
+ Specific I-Port interface from Festo for fieldbus node
+ IO-Link mode for direct connection to a higher-order IO-Link master
+ Variable multi-pin plug connection using Sub-D or ribbon cable
+ Sturdy and durable metal components
+ Reversible piston spool valves
+ Up to 24 valve positions

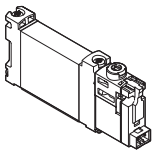
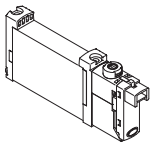
★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Solenoid valves VUVG

Product range overview

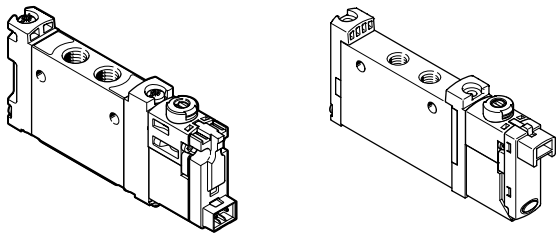
Design	Working port	Size	Functions and flow rate [l/min]											
			T32C	T32U	T32H	T32C/M	T32U/M	T32H/M	M52	M52/M	B52	P53C	P53U	P53E
In-line valve as individual valve, solenoid valve VUVG-LK														
	M5	10	■ 180	–	–	–	–	–	■ 195	–	■ 195	–	–	–
	M7	10	■ 280	–	–	–	–	–	■ 340	–	■ 340	–	–	–
	G1/8	14	■ 570	–	–	–	–	–	■ 660	–	■ 660	–	–	–
In-line valve as individual valve, solenoid valve VUVG-L														
	M3	10A	–	–	–	–	–	–	■ 100	■ 80	■ 100	■ 90	■ 90	■ 90
	M5	10	■ 150	■ 150	■ 150	■ 135	■ 125	■ 125	■ 220	■ 190	■ 220	■ 210	■ 210	■ 210
	M7	10	■ 190	■ 190	■ 190	■ 150	■ 140	■ 140	■ 380	■ 320	■ 380	■ 320	■ 320	■ 320
	G1/8	14	■ 650	■ 600	■ 650	■ 550	■ 500	■ 500	■ 780	■ 780	■ 780	■ 650	■ 600	■ 600
	G1/4	18	■ 1000	■ 1000	■ 1000	■ 1000	■ 1000	■ 1000	■ 1300	■ 1300	■ 1380	■ 1200	■ 1000	■ 1000
Semi in-line valve for manifold assembly, solenoid valve VUVG-S														
	M3	10A	–	–	–	–	–	–	■ 100	■ 80	■ 100	■ 90	■ 90	■ 90
	M5	10	■ 150	■ 150	■ 150	■ 135	■ 125	■ 125	■ 220	■ 190	■ 220	■ 210	■ 210	■ 210
	M7	10	■ 170	■ 170	■ 170	■ 140	■ 130	■ 130	■ 340	■ 290	■ 340	■ 300	■ 300	■ 300
	G1/8	14	■ 620	■ 580	■ 580	■ 520	■ 480	■ 480	■ 730	■ 730	■ 730	■ 620	■ 580	■ 580
	G1/4	18	■ 1000	■ 1000	■ 1000	■ 1000	■ 1000	■ 1000	■ 1300	■ 1300	■ 1380	■ 1200	■ 1000	■ 1000

Design	Working port	Size	Functions and flow rate [l/min]											
			T32C	T32U	T32H	T32C/M	T32U/M	T32H/M	M52	M52/M	B52	P53C	P53U	P53E
Sub-base valve, solenoid valve VUVG-BK														
	M5	10	■ 160	–	–	–	–	–	■ 160	–	■ 160	–	–	–
	M7	10	■ 160	–	–	–	–	–	■ 160	–	■ 160	–	–	–
	G1/8	14	■ 350	–	–	–	–	–	■ 380	–	■ 380	–	–	–
Sub-base valve, solenoid valve VUVG-B														
	M3	10A	–	–	–	–	–	–	■ 100	■ 80	■ 100	■ 90	■ 90	■ 90
	M5	10	■ 150	■ 150	■ 150	■ 130	■ 120	■ 120	■ 210	■ 180	■ 210	■ 200	■ 200	■ 200
	M7	10	■ 160	■ 160	■ 160	■ 140	■ 130	■ 130	■ 270	■ 230	■ 270	■ 250	■ 250	■ 250
	G1/8	14	■ 540	■ 510	■ 540	■ 430	■ 410	■ 410	■ 580	■ 580	■ 580	■ 540	■ 510	■ 510
	G1/4	18	■ 800	■ 800	■ 800	■ 800	■ 800	■ 800	■ 1000	■ 1000	■ 1000	■ 950	■ 950	■ 950

Features

Individual valves and valve manifold assemblies

In-line valves as individual valve

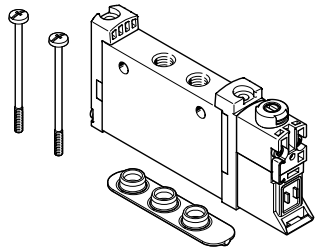


In-line valve VUVG-LK/VUVG-L

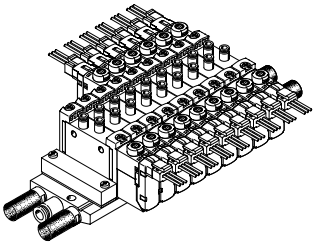
In-line valves are designed to be used without pneumatic links, as all connections to the fittings/tubing are on the valve. The electrical connection is provided by different E-boxes.

If a special seal set is used, in-line valves VUVG can also be mounted on a manifold rail (pneumatic linking) as semi in-line valves.

Semi in-line valves for manifold assembly



Semi in-line valve VUVG-S

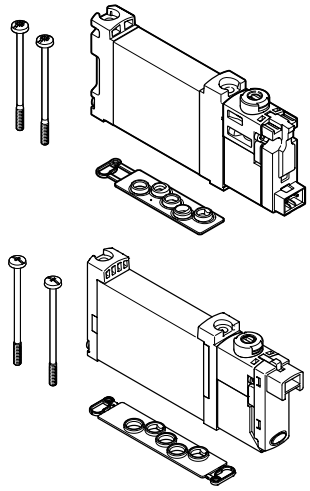


Valve manifold assembly VTUG comprising
semi in-line valves VUVG-S

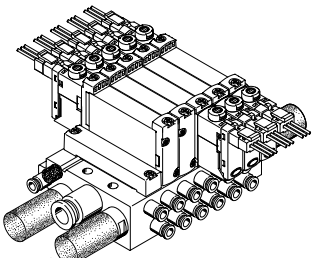
The supply ports (1, 3 and 5) for semi in-line valves are connected to the valve by common pneumatic links (e.g. sub-base).

The working ports (2, 4) are on the valve. The electrical connection is provided by different E-boxes.

Sub-base valves for manifold assembly



Sub-base valve
VUVG-BK/VUVG-B



Valve manifold assembly VTUG comprising
sub-base valves VUVG-BK/VUVG-B

The supply ports (1, 3 and 5) and the working ports (2, 4) of sub-base valves are connected through the sub-base or manifold

to the valve. The electrical connection is provided by different E-boxes.

Valve terminal configurator

A valve terminal configurator is available to help you select a suitable valve terminal VTUG. This makes it much easier to order the right product.

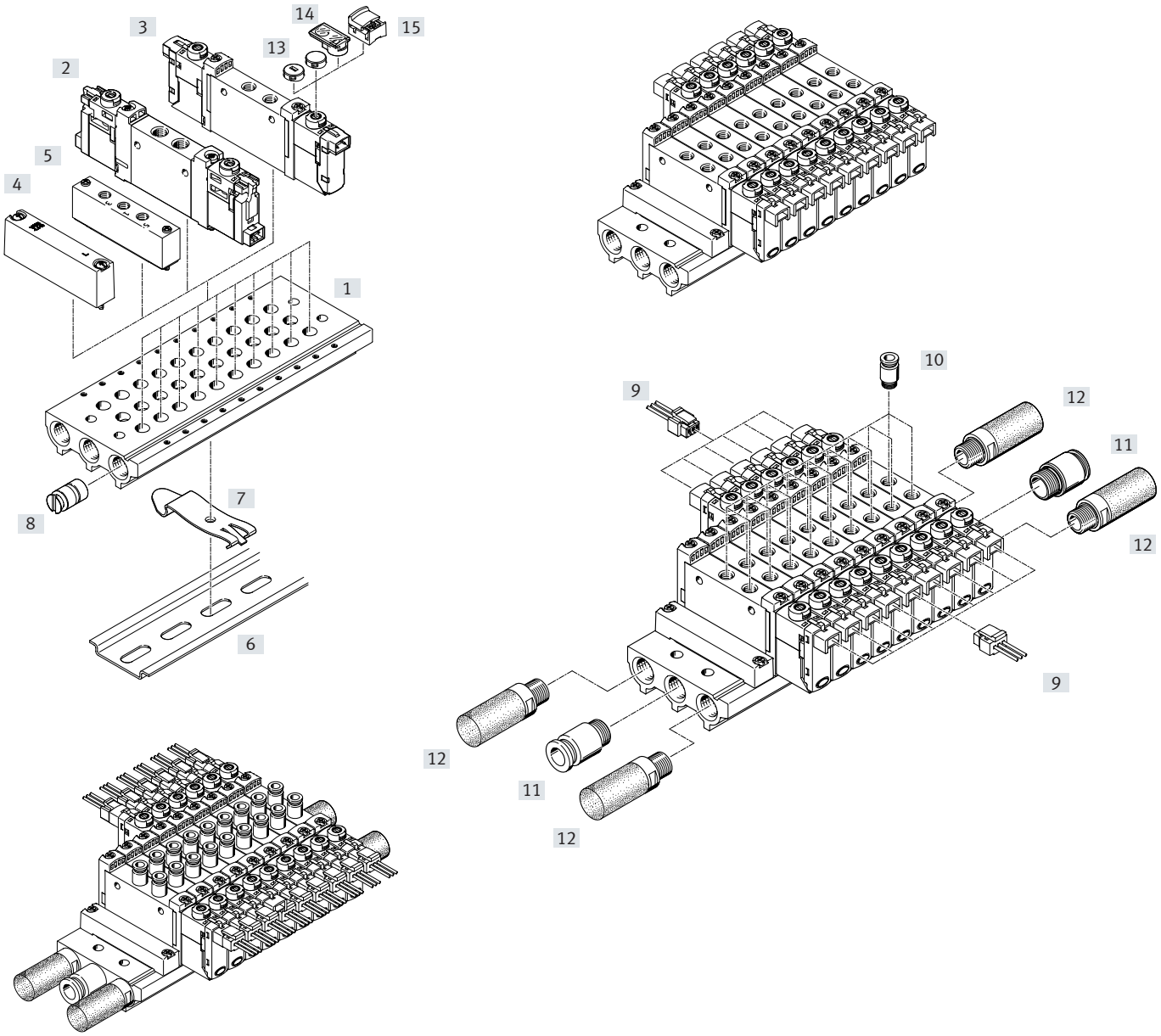
Valve terminals VTUG are ordered via an ident. code. All valve terminals are supplied fully assembled and individually tested.

This reduces assembly and installation time to a minimum.

Ordering system for valve terminal VTUG
→ Internet: vtug

Peripherals overview example – In-line valves

Manifold assembly



	Type	Description	→ Page/Internet
[1] Manifold rail	VABM-L1-...	For 2 to 10, 12, 14 and 16 valve positions	starting page 449
[2] Solenoid valve	VUVG-LK...	In-line valve 2x 3/2-way, 5/2-way and 5/3-way	
[3] Solenoid valve	VUVG-L...	In-line valve 2x 3/2-way, 5/2-way and 5/3-way	
[4] Blanking plate	VABB-L1-...	For covering a vacant position	
[5] Supply plate	VABF-L1-...	For air supply at duct 1 and duct 3 and 5	
[6] H-rail	NRH-35-2000	For mounting the valve manifold assembly	nrh
[7] H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold assembly on an H-rail	vame
[8] Separator	VABD-...	For creating pressure zones	612
[9] Plug socket with cable	NEBV-H1G2-...-LE2	For E-box H2 and H3	490
[10] Push-in fitting	NPQE...	Push-in fitting for duct 2 and 4	803
[11] Push-in fitting	NPQE...	Push-in fitting for air supply at duct 1	803
[12] Silencer	U..., AMTE	For duct 3 and 5	u, amte
[13] Cover cap	VMPA-HB...-B	For manual override	612
[14] Identification holder	ASLR-D	For labelling the valves, covering the retaining screw and the manual override	aslr
[15] Cover	VAMC	For manual override	612

Type code explanation – In-line valves

001	Series	
VUVG	Solenoid valve	

002	Directional control valve type	
L	In-line valve	
S	Semi-inline valve	

003	Design principle	
	Piston spool	
K	Piston spool with sealing ring	

004	Size	
10A	Size 10, deviating flow	
10	Size 10	
14	Size 14	
18	Size 18	

005	Valve function	
T32U	2x3/2-way valve, normally open	
T32C	2x3/2-way valve, normally closed	
T32H	2x3/2-way valve, 1x normally closed, 1x normally open	
M52	5/2-way valve, single solenoid/monostable	
B52	5/2-way valve, double solenoid/bistable	
P53U	5/3-way valve, mid-position pressurised	
P53E	5/3-way valve, mid-position exhausted	
P53C	5/3-way valve, mid-position closed	

006	Reset method for monostable/single solenoid valves	
	None	
A	Pneumatic spring	
M	Mechanical spring	
R	Mixed, pneumatic/mechanical spring	

007	Pilot air	
	Internal	
Z	External	

008	Manual override	
T	Non-detenting, detenting with accessories	

009	Pneumatic connection	
M3	M3	
M5	M5	
M7	M7	
G18	G1/8	
G14	G1/4	

010	Exhaust	
	No fitting	

011	Nominal operating voltage	
1	24 V DC	

012	Electrical connection	
P3	Without electrical sub-base	
H2	Connection pattern H, horizontal plug	
R8	Individual connector M8, 3-pin	
T1	Plug-in	

013	Circuitry	
	No holding current reduction	

014	Display	
	None	
L	LED	

015	Electrical valve accessories	
	None	
W1	Connecting cable, flying leads, 0.5 m	

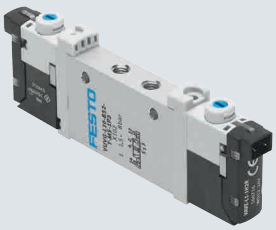
016	Version	
	Expanded properties	
S	Focused properties	

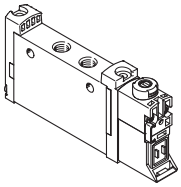
Solenoid valves VUVG-L/S

Ordering data – L10A-M3

Function
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

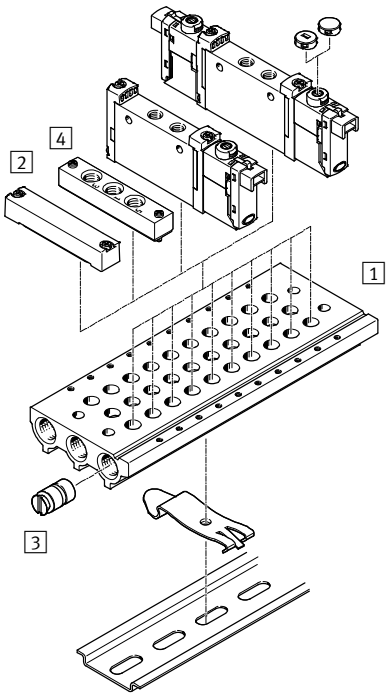
Size 10 mm
Flow rate 90 ... 100 l/min
Voltage 5, 12 and 24 V DC

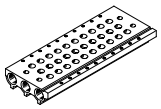
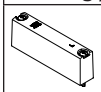
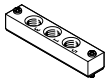
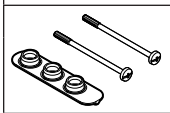


	Description		Part no.	Type
In-line valve M3, without E-box				
	**5/2-way single solenoid valve**			
	Internal pilot air supply	Pneumatic/mechanical spring reset	566437	VUVG-L10A-M52-RT-M3-1P3
		Mechanical spring reset	574345	VUVG-L10A-M52-MT-M3-1P3
	External pilot air supply	Pneumatic/mechanical spring reset	566443	VUVG-L10A-M52-RZT-M3-1P3
		Mechanical spring reset	574346	VUVG-L10A-M52-MZT-M3-1P3
	5/2-way double solenoid valve			
	Internal pilot air supply		566438	VUVG-L10A-B52-T-M3-1P3
	External pilot air supply		566444	VUVG-L10A-B52-ZT-M3-1P3
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	566439	VUVG-L10A-P53C-T-M3-1P3
		Mid-position exhausted, mechanical spring reset	566440	VUVG-L10A-P53E-T-M3-1P3
		Mid-position pressurised, mechanical spring reset	566441	VUVG-L10A-P53U-T-M3-1P3
	External pilot air supply	Mid-position closed, mechanical spring reset	566445	VUVG-L10A-P53C-ZT-M3-1P3
		Mid-position exhausted, mechanical spring reset	566446	VUVG-L10A-P53E-ZT-M3-1P3
		Mid-position pressurised, mechanical spring reset	566447	VUVG-L10A-P53U-ZT-M3-1P3

Accessories – Ordering data

Manifold assembly



		Part no.	Type
Manifold rail			
	For M3	566522	VABM-L1-10AS-M5-2
		566523	VABM-L1-10AS-M5-3
		566524	VABM-L1-10AS-M5-4
		566525	VABM-L1-10AS-M5-5
		566526	VABM-L1-10AS-M5-6
		566527	VABM-L1-10AS-M5-7
		566528	VABM-L1-10AS-M5-8
		566529	VABM-L1-10AS-M5-9
		566530	VABM-L1-10AS-M5-10
		566531	VABM-L1-10AS-M5-12
		566532	VABM-L1-10AS-M5-14
		566533	VABM-L1-10AS-M5-16
Blanking plate			
	For M3	569986	VABB-L1-10A
Blanking plug			
	Separator for pressure zones	570872	VABD-4.2-B
Supply plate			
	For M3	569990	VABF-L1-10A-P3A4-M5
Seals for in-line valves (10 pieces incl. 20 screws)			
	For VUVG-L		
	For M3	566670	VABD-L1-10AX-S-M3

Data sheet

General technical data VUVG-L							
Valve function			M52-R	B52	M52-M	P53	
Normal position			–	–	–	C[1]	U[2] / E[3]
Stable position			Monostable	Bistable	Monostable	Monostable	
Pneumatic spring reset			Yes[4]	–	No	–	
Mechanical spring reset			Yes[4]	–	Yes	Yes	
Vacuum operation at port 1			Only with external pilot air supply				
Design			Piston spool				
Sealing principle			Soft				
Type of actuation			Electrical				
Type of control			Piloted				
Pilot air supply			Internal or external				
Exhaust function			Can be throttled				
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting				
Type of mounting			Optionally via through-holes[5] or on manifold rail				
Mounting position			Any				
Nominal width		[mm]	2		1.4	2	
Standard nominal flow rate		[l/min]	100		80	90	
Flow rate on manifold rail		[l/min]	100		80	90	
Switching time on/off		[ms]	7/15	–	7/21	8/25	
Switching time changeover		[ms]	–	5	–	14	
Size		[mm]	10				
Connection	1, 2, 3, 4, 5, 12/14		M3				
Certification			c UL us - Recognized (OL)				
			c CSA us (OL)				
			RCM compliance mark				
CE marking (see declaration of conformity)[6]			To EU EMC Directive				
Corrosion resistance class CRC[7]			2				

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) Combined reset method
5) 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.
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions						
Valve function			M52-R[1]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]			
Operating pressure	Internal	[bar]	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External	[bar]	–0.9 ... 10			–0.9 ... 8
Pilot pressure		[bar]	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60			
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60			

1) Mixed, pneumatic/mechanical spring
2) Mechanical spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)

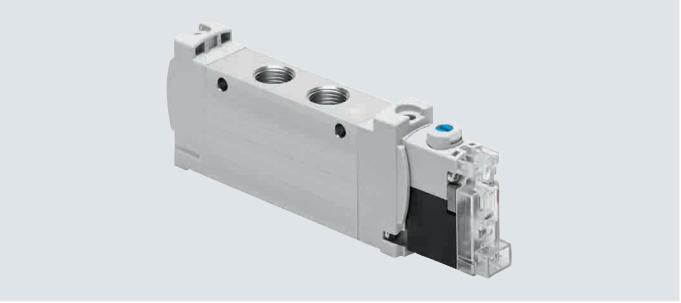
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

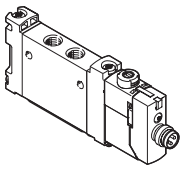
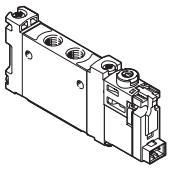
Solenoid valves VUVG-L/S

Ordering data – LK10-M5

Function
2x 3/2C
5/2-way, single solenoid
5/2-way, double solenoid valve

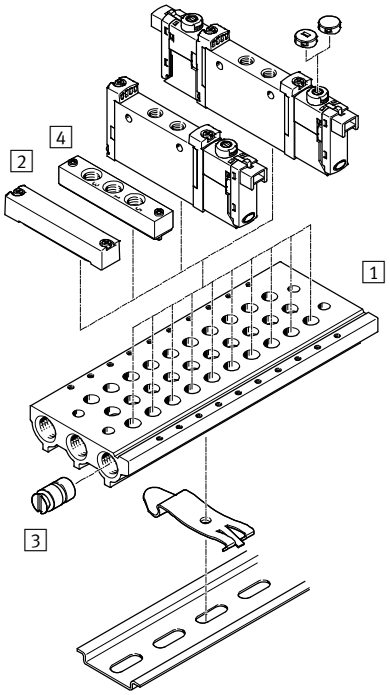
Size 10 mm
Flow rate 180 ... 195 l/min
Voltage 24 V DC

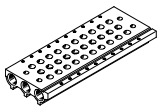
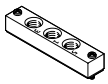


	Description		Part no.	Type
In-line valve M5, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042542	VUVG-LK10-T32C-AT-M5-1R8L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042543	VUVG-LK10-M52-AT-M5-1R8L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042544	VUVG-LK10-B52-T-M5-1R8L-S
In-line valve M5, with E-box H2				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042538	VUVG-LK10-T32C-AT-M5-1H2L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042539	VUVG-LK10-M52-AT-M5-1H2L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042540	VUVG-LK10-B52-T-M5-1H2L-S

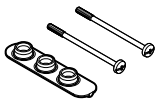
Accessories – Ordering data

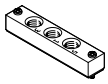
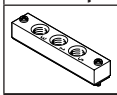
Manifold assembly



		Part no.	Type
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
Blanking plate			
	For M5/M7	★ 566462	VABB-L1-10-S
Blanking plug			
	Separator for pressure zones	569995	VABD-8-B
Supply plate			
	For M5	569991	VABF-L1-10-P3A4-M5
	For M7	569992	VABF-L1-10-P3A4-M7

Accessories – Ordering data

		Part no.	Type
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

		Part no.	Type
Vertical pressure supply plate			
	For M7	574592	VABF-L1-P3A3-M7
Vertical pressure exhaust plate			
	For M7	574594	VABF-L1-P7A13-M7

Data sheet

General technical data VUVG-LK				
Valve function		T32-A	M52-A	B52
Normal position		C[1]	–	–
Stable position		Monostable		Bistable
Pneumatic spring reset		Yes	Yes	–
Design		Piston spool		
Sealing principle		Soft		
Type of actuation		Electrical		
Type of control		Piloted		
Pilot air supply		Internal		
Exhaust function		Can be throttled		
Manual override		Detenting, non-detenting		
Type of mounting		Optionally via through-holes[2] or on manifold rail		
Mounting position		Any		
Standard nominal flow rate	[l/min]	180	195	195
Switching time on/off	[ms]	12/14	14/17	–
Switching time changeover	[ms]	–		7
Size	[mm]	10		
Connection 2, 4		M5		
Product weight	[g]	55	45	57
Corrosion resistance class CRC[3]		2		

1) C=Normally closed

2) 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.

3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions				
Valve function		T32-A[1]	M52-A[1]	B52
Operating medium		Compressed air to ISO 8573-2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	1.5 ... 7	2.5 ... 7	1.5 ... 7
Ambient temperature	[°C]	–5 ... +50		
Temperature of medium	[°C]	–5 ... +50		

1) Pneumatic spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)
Signal status display		LED
Maximum switching frequency	[Hz]	2

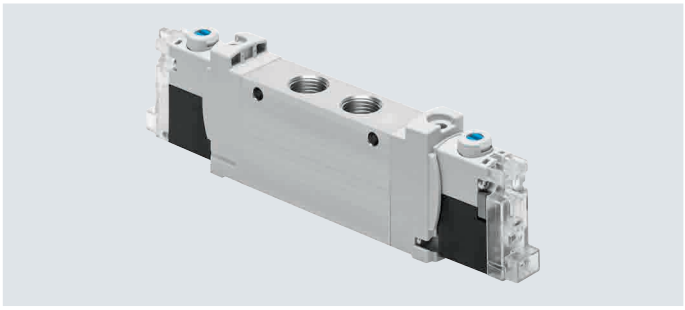
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

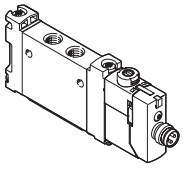
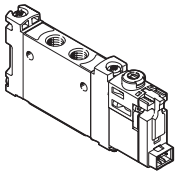
Solenoid valves VUVG-L/S

Ordering data – LK10-M7

Function
2x 3/2C
5/2-way, single solenoid
5/2-way, double solenoid valve

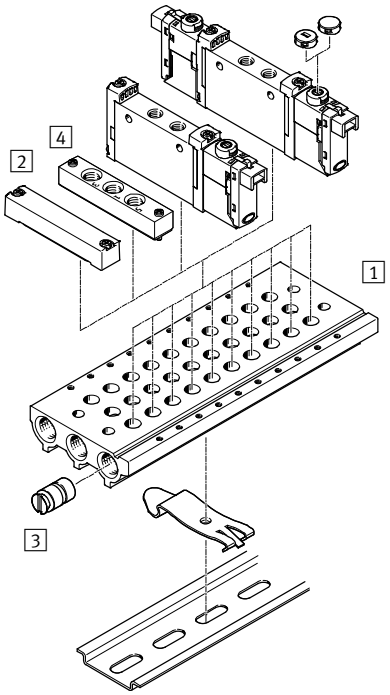
Size 10 mm
Flow rate 280 ... 340 l/min
Voltage 24 V DC

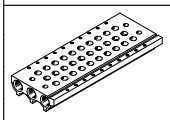
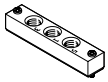


	Description		Part no.	Type
In-line valve M7, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042550	VUVG-LK10-T32C-AT-M7-1R8L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042551	VUVG-LK10-M52-AT-M7-1R8L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042552	VUVG-LK10-B52-T-M7-1R8L-S
In-line valve M7, with E-box H2				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042546	VUVG-LK10-T32C-AT-M7-1H2L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042547	VUVG-LK10-M52-AT-M7-1H2L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042548	VUVG-LK10-B52-T-M7-1H2L-S

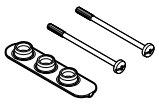
Accessories – Ordering data

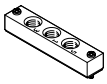
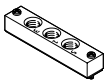
Manifold assembly



		Part no.	Type
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
Blanking plate			
	For M5/M7	★ 566462	VABB-L1-10-S
Blanking plug			
	Separator for pressure zones	569995	VABD-8-B
Supply plate			
	For M5	569991	VABF-L1-10-P3A4-M5
	For M7	569992	VABF-L1-10-P3A4-M7

Accessories – Ordering data

		Part no.	Type
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

		Part no.	Type
Vertical pressure supply plate			
	For M7	574592	VABF-L1-P3A3-M7
Vertical pressure exhaust plate			
	For M7	574594	VABF-L1-P7A13-M7

Data sheet

General technical data VUVG-LK				
Valve function		T32-A	M52-A	B52
Normal position		C[1]	–	–
Stable position		Monostable		Bistable
Pneumatic spring reset		Yes	Yes	–
Design		Piston spool		
Sealing principle		Soft		
Type of actuation		Electrical		
Type of control		Piloted		
Pilot air supply		Internal		
Exhaust function		Can be throttled		
Manual override		Detenting, non-detenting		
Type of mounting		Optionally via through-holes[2] or on manifold rail		
Mounting position		Any		
Standard nominal flow rate	[l/min]	280	340	340
Switching time on/off	[ms]	12/14	14/17	–
Switching time changeover	[ms]	–		7
Size	[mm]	10		
Connection 2, 4		M7		
Product weight	[g]	55	45	57
Corrosion resistance class CRC[3]		2		

1) C=Normally closed

2) 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.

3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions				
Valve function		T32-A[1]	M52-A[1]	B52
Operating medium		Compressed air to ISO 8573-2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	1.5 ... 7	2.5 ... 7	1.5 ... 7
Ambient temperature	[°C]	–5 ... +50		
Temperature of medium	[°C]	–5 ... +50		

1) Pneumatic spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)
Signal status display		LED
Maximum switching frequency	[Hz]	2

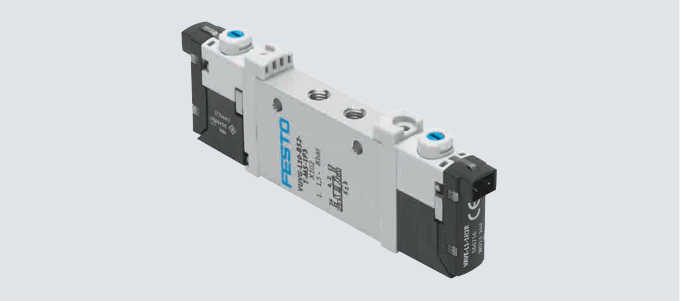
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

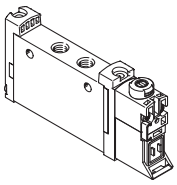
Solenoid valves VUVG-L/S

Ordering data – L/S10-M5

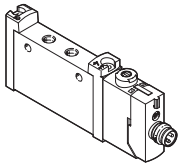
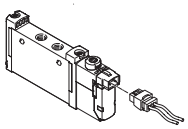
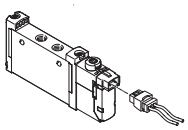
Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

Size 10 mm
Flow rate 125 ... 220 l/min
Voltage 5, 12 and 24 V DC



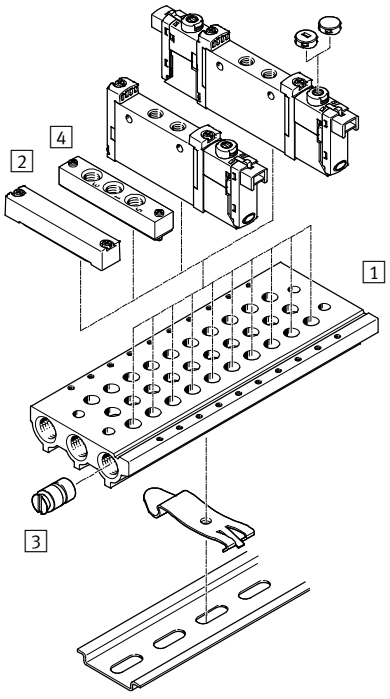
	Description		Part no.	Type
In-line valve M5, without E-box				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	566454	VUVG-L10-T32C-AT-M5-1P3
		Normally open, pneumatic spring reset	566455	VUVG-L10-T32U-AT-M5-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566456	VUVG-L10-T32H-AT-M5-1P3
		Normally closed, mechanical spring reset	574348	VUVG-L10-T32C-MT-M5-1P3
		Normally open, mechanical spring reset	574349	VUVG-L10-T32U-MT-M5-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574350	VUVG-L10-T32H-MT-M5-1P3
	External pilot air supply	Normally closed, pneumatic spring reset	566463	VUVG-L10-T32C-AZT-M5-1P3
		Normally open, pneumatic spring reset	566464	VUVG-L10-T32U-AZT-M5-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566465	VUVG-L10-T32H-AZT-M5-1P3
		Normally closed, mechanical spring reset	574352	VUVG-L10-T32C-MZT-M5-1P3
		Normally open, mechanical spring reset	574353	VUVG-L10-T32U-MZT-M5-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574354	VUVG-L10-T32H-MZT-M5-1P3
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic/mechanical spring reset	566457	VUVG-L10-M52-RT-M5-1P3
		Mechanical spring reset	574351	VUVG-L10-M52-MT-M5-1P3
	External pilot air supply	Pneumatic/mechanical spring reset	566466	VUVG-L10-M52-RZT-M5-1P3
		Mechanical spring reset	574355	VUVG-L10-M52-MZT-M5-1P3
	5/2-way double solenoid valve			
	Internal pilot air supply		566458	VUVG-L10-B52-T-M5-1P3
	External pilot air supply		566467	VUVG-L10-B52-ZT-M5-1P3
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	566459	VUVG-L10-P53C-T-M5-1P3
		Mid-position exhausted, mechanical spring reset	566460	VUVG-L10-P53E-T-M5-1P3
		Mid-position pressurised, mechanical spring reset	566461	VUVG-L10-P53U-T-M5-1P3
	External pilot air supply	Mid-position closed, mechanical spring reset	566468	VUVG-L10-P53C-ZT-M5-1P3
		Mid-position exhausted, mechanical spring reset	566469	VUVG-L10-P53E-ZT-M5-1P3
		Mid-position pressurised, mechanical spring reset	566470	VUVG-L10-P53U-ZT-M5-1P3

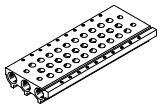
Ordering data – L/S10-M5

	Description		Part no.	Type
In-line valve M5, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	577347	VUVG-L10-T32C-AT-M5-1R8L
		Normally open, pneumatic spring reset	8031466	VUVG-L10-T32U-AT-M5-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	8031467	VUVG-L10-T32H-AT-M5-1R8L
		Normally closed, mechanical spring reset	8031468	VUVG-L10-T32C-MT-M5-1R8L
		Normally open, mechanical spring reset	8031469	VUVG-L10-T32U-MT-M5-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031470	VUVG-L10-T32H-MT-M5-1R8L
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic/mechanical spring reset	572634	VUVG-L10-M52-RT-M5-1R8L
		Mechanical spring reset	8031472	VUVG-L10-M52-MT-M5-1R8L
	5/2-way double solenoid valve			
	Internal pilot air supply		576664	VUVG-L10-B52-T-M5-1R8L
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	★ 577346	VUVG-L10-P53C-T-M5-1R8L
		Mid-position exhausted, mechanical spring reset	8031475	VUVG-L10-P53E-T-M5-1R8L
		Mid-position pressurised, mechanical spring reset	8031476	VUVG-L10-P53U-T-M5-1R8L
In-line valve M5, with E-box H2				
	**5/2-way single solenoid valve**			
	Internal pilot air supply	Pneumatic/mechanical spring reset	577316	VUVG-L10-M52-RT-M5-1H2L-W1
		Mechanical spring reset	578162	VUVG-L10-M52-MT-M5-1H2L-W1
	5/2-way double solenoid valve			
	Internal pilot air supply		577317	VUVG-L10-B52-T-M5-1H2L-W1
Semi in-line valve M5, with E-box H2				
	**5/2-way single solenoid valve**			
	Internal pilot air supply	Pneumatic/mechanical spring reset	577324	VUVG-S10-M52-RT-M5-1H2L-W1

Accessories – Ordering data

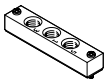
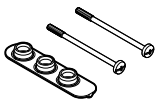
Manifold assembly

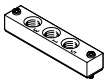
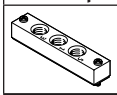


		Part no.	Type
Manifold rail			
	For M5/M7	★ 566558	VABM-L1-10S-G18-2
		★ 566559	VABM-L1-10S-G18-3
		★ 566560	VABM-L1-10S-G18-4
		566561	VABM-L1-10S-G18-5
		★ 566562	VABM-L1-10S-G18-6
		566563	VABM-L1-10S-G18-7
		★ 566564	VABM-L1-10S-G18-8
		566565	VABM-L1-10S-G18-9
		★ 566566	VABM-L1-10S-G18-10
		566567	VABM-L1-10S-G18-12
		566568	VABM-L1-10S-G18-14
		566569	VABM-L1-10S-G18-16
Blanking plate			
	For M5/M7	★ 566462	VABB-L1-10-S
Blanking plug			
	Separator for pressure zones	569995	VABD-8-B

Solenoid valves VUVG-L/S

Accessories – Ordering data

		Part no.	Type
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

		Part no.	Type
Vertical pressure supply plate			
	For M7	574592	VABF-L1-P3A3-M7
Vertical pressure exhaust plate			
	For M7	574594	VABF-L1-P7A13-M7

Data sheet

General technical data VUVG-L M5													
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]
Stable position		Monostable							Bistable	Monostable	Monostable		
Pneumatic spring reset		Yes			No			Yes[5]	–	No	–		
Mechanical spring reset		No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1		No			Only with external pilot air supply								
Design		Piston spool											
Sealing principle		Soft											
Type of actuation		Electrical											
Type of control		Piloted											
Pilot air supply		Internal or external											
Exhaust function		Can be throttled											
Manual override		Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting		Optionally via through-holes[6] or on manifold rail											
Mounting position		Any											
Nominal width	[mm]	2.7			1.9	1.8		3.2		2.2	3.2		
Standard nominal flow rate	[l/min]	150			135	125	125	220		190	210		
Flow rate on manifold rail	[l/min]	150			135	125	125	220		190	210		
Switching time on/off	[ms]	6/16			8/11			7/19	–	8/24	10/30		
Switching time changeover	[ms]	–							7	–	15		
Size	[mm]	10											
Connection	1, 2, 3, 4, 5	M5											
	12/14	M3											
Product weight	[g]	55			54			45	55	44	55		
Certification		c UL us - Recognized (OL)											
		c CSA us (OL)											
		RCM compliance mark											
CE marking (see declaration of conformity)[7]		To EU EMC Directive											
Corrosion resistance class CRC[8]		2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position 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.
7) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
8) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Data sheet

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	2.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External	[bar]	1.5 ... 10	–0.9 ... 10			–0.9 ...8	–0.9 ... 10
Pilot pressure		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60					
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60					

1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)

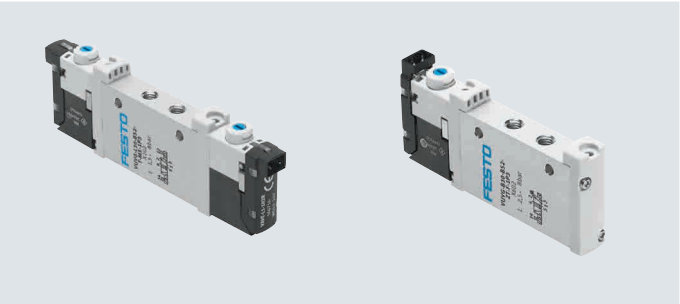
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

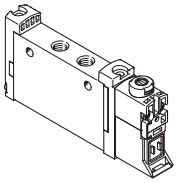
Solenoid valves VUVG-L/S

Ordering data – L/S10-M7

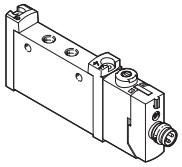
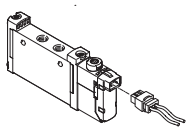
Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

Size 10 mm
Flow rate 170 ... 340 l/min
Voltage 5, 12 and 24 V DC



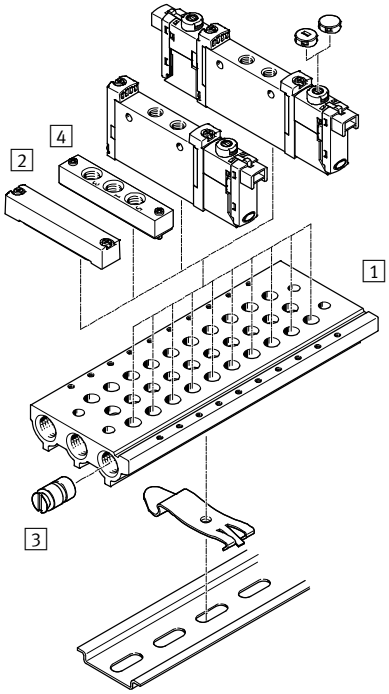
	Description		Part no.	Type
In-line valve M7, without E-box				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	566471	VUVG-L10-T32C-AT-M7-1P3
		Normally open, pneumatic spring reset	566472	VUVG-L10-T32U-AT-M7-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566473	VUVG-L10-T32H-AT-M7-1P3
		Normally closed, mechanical spring reset	574356	VUVG-L10-T32C-MT-M7-1P3
		Normally open, mechanical spring reset	574357	VUVG-L10-T32U-MT-M7-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574358	VUVG-L10-T32H-MT-M7-1P3
	External pilot air supply	Normally closed, pneumatic spring reset	566479	VUVG-L10-T32C-AZT-M7-1P3
		Normally open, pneumatic spring reset	566480	VUVG-L10-T32U-AZT-M7-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566481	VUVG-L10-T32H-AZT-M7-1P3
		Normally closed, mechanical spring reset	574360	VUVG-L10-T32C-MZT-M7-1P3
		Normally open, mechanical spring reset	574361	VUVG-L10-T32U-MZT-M7-1P3
		Normally closed, mechanical spring reset	574362	VUVG-L10-T32H-MZT-M7-1P3
	5/2-way single solenoid valve			
	Internal pilot air supply	Mechanical spring reset	574359	VUVG-L10-M52-MT-M7-1P3
		Pneumatic/mechanical spring reset	566474	VUVG-L10-M52-RT-M7-1P3
	External pilot air supply	Mechanical spring reset	574363	VUVG-L10-M52-MZT-M7-1P3
		Pneumatic/mechanical spring reset	566482	VUVG-L10-M52-RZT-M7-1P3
	5/2-way double solenoid valve			
	Internal pilot air supply		566475	VUVG-L10-B52-T-M7-1P3
	External pilot air supply		566483	VUVG-L10-B52-ZT-M7-1P3
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	566476	VUVG-L10-P53C-T-M7-1P3
		Mid-position exhausted, mechanical spring reset	566477	VUVG-L10-P53E-T-M7-1P3
		Mid-position pressurised, mechanical spring reset	566478	VUVG-L10-P53U-T-M7-1P3
	External pilot air supply	Mid-position closed, mechanical spring reset	566484	VUVG-L10-P53C-ZT-M7-1P3
		Mid-position exhausted, mechanical spring reset	566485	VUVG-L10-P53E-ZT-M7-1P3
		Mid-position pressurised, mechanical spring reset	566486	VUVG-L10-P53U-ZT-M7-1P3

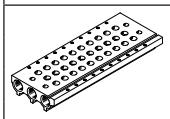
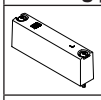
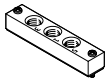
Ordering data – L/S10-M7

	Description		Part no.	Type
In-line valve M7, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	574218	VUVG-L10-T32C-AT-M7-1R8L
		Normally open, pneumatic spring reset	574219	VUVG-L10-T32U-AT-M7-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	574220	VUVG-L10-T32H-AT-M7-1R8L
		Normally closed, mechanical spring reset	8031480	VUVG-L10-T32C-MT-M7-1R8L
		Normally open, mechanical spring reset	8031481	VUVG-L10-T32U-MT-M7-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031482	VUVG-L10-T32H-MT-M7-1R8L
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic/mechanical spring reset	574221	VUVG-L10-M52-RT-M7-1R8L
		Mechanical spring reset	8031485	VUVG-L10-M52-MT-M7-1R8L
	5/2-way double solenoid valve			
	Internal pilot air supply		574222	VUVG-L10-B52-T-M7-1R8L
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	★ 574223	VUVG-L10-P53C-T-M7-1R8L
		Mid-position exhausted, mechanical spring reset	574225	VUVG-L10-P53E-T-M7-1R8L
		Mid-position pressurised, mechanical spring reset	574224	VUVG-L10-P53U-T-M7-1R8L
In-line valve M7, with E-box H2				
	**5/2-way single solenoid valve**			
	Internal pilot air supply	Pneumatic/mechanical spring reset	577333	VUVG-L10-M52-RT-M7-1H2L-W1
		Mechanical spring reset	578163	VUVG-L10-M52-MT-M7-1H2L-W1
	5/2-way double solenoid valve			
	Internal pilot air supply		577332	VUVG-L10-B52-T-M7-1H2L-W1

Accessories – Ordering data

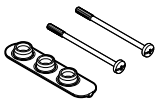
Manifold assembly

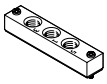
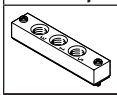


		Part no.	Type
Manifold rail			
	For M5/M7	★ 566558	VABM-L1-10S-G18-2
		★ 566559	VABM-L1-10S-G18-3
		★ 566560	VABM-L1-10S-G18-4
		566561	VABM-L1-10S-G18-5
		★ 566562	VABM-L1-10S-G18-6
		566563	VABM-L1-10S-G18-7
		★ 566564	VABM-L1-10S-G18-8
		566565	VABM-L1-10S-G18-9
		★ 566566	VABM-L1-10S-G18-10
		566567	VABM-L1-10S-G18-12
		566568	VABM-L1-10S-G18-14
		566569	VABM-L1-10S-G18-16
Blanking plate			
	For M5/M7	★ 566462	VABB-L1-10-S
Blanking plug			
	Separator for pressure zones	569995	VABD-8-B
Supply plate			
	For M5	569991	VABF-L1-10-P3A4-M5
	For M7	569992	VABF-L1-10-P3A4-M7

Solenoid valves VUVG-L/S

Accessories – Ordering data

		Part no.	Type
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

		Part no.	Type
Vertical pressure supply plate			
	For M7	574592	VABF-L1-P3A3-M7
Vertical pressure exhaust plate			
	For M7	574594	VABF-L1-P7A13-M7

Data sheet

General technical data VUVG-L M7

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]
Stable position			Monostable							Bistable	Monostable	Monostable		
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply								
Design			Piston spool											
Sealing principle			Soft											
Type of actuation			Electrical											
Type of control			Piloted											
Pilot air supply			Internal or external											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			Optionally via through-holes[6] or on manifold rail											
Mounting position			Any											
Nominal width		[mm]	2.7			2.0	1.9	1.9	4.0		2.8	3.5		
Standard nominal flow rate		[l/min]	190			150	140	140	330	380	220	320		
Flow rate on manifold rail		[l/min]	170			140	130	130	330	340	220	300		
Switching time on/off		[ms]	6/16			8/11			7/19	–	8/24	10/30		
Switching time changeover		[ms]	–							7		15		
Size		[mm]	10											
Connection	1, 2, 3, 4, 5		M7											
	12/14		M3											
Product weight		[g]	55			54			45	55	44	55		
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[7]			To EU EMC Directive											
Corrosion resistance class CRC[8]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position 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.
7) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
8) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	2.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	-0.9 ... 10			−0.9 ... 8	−0.9 ... 10
Pilot pressure		[bar]	1.5 ... 8	2 ...8	2.5 ... 8	1.5 ... 8	3 ...8	3 ... 8
Ambient temperature		[°C]	−5 ... +50, with holding current reduction −5 ... +60					
Temperature of medium		[°C]	−5 ... +50, with holding current reduction −5 ... +60					

1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring

Data sheet

Electrical data		
Electrical connection		Via E-box ➔ page 490
Operating voltage	[V DC]	5, 12, 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 M8)

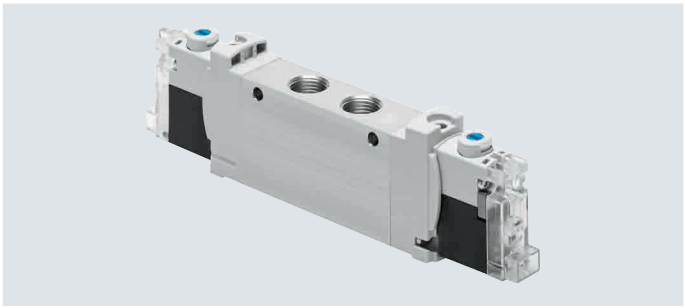
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

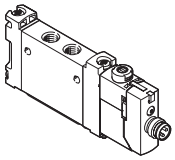
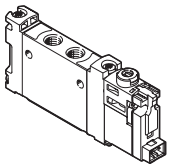
Solenoid valves VUVG-L/S

Ordering data – LK14-G1/8

Function
2x 3/2C
5/2-way, single solenoid
5/2-way, double solenoid valve

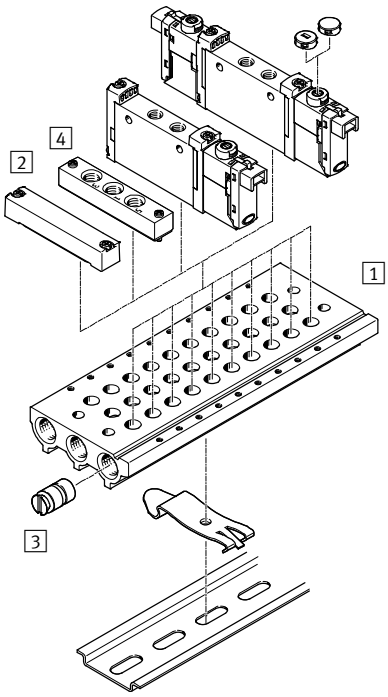
Size 14 mm
Flow rate 570 ... 660 l/min
Voltage 24 V DC

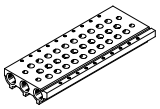
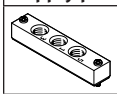


	Description		Part no.	Type
In-line valve G1/8, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042566	VUVG-LK14-T32C-AT-G18-1R8L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042567	VUVG-LK14-M52-AT-G18-1R8L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042568	VUVG-LK14-B52-T-G18-1R8L-S
In-line valve G1/8, with E-box H2				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042562	VUVG-LK14-T32C-AT-G18-1H2L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042563	VUVG-LK14-M52-AT-G18-1H2L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042564	VUVG-LK14-B52-T-G18-1H2L-S

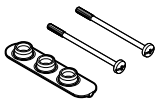
Accessories – Ordering data

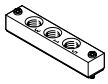
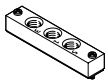
Manifold assembly



		Part no.	Type
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
Blanking plate			
	For G1/8	★ 569989	VABB-L1-14
Blanking plug			
	Separator for pressure zones	569996	VABD-10-B
Supply plate			
	For G1/8	569993	VABF-L1-14-P3A4-G18

Accessories – Ordering data

		Part no.	Type
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

		Part no.	Type
Vertical pressure supply plate			
	For G1/8	574593	VABF-L1-P3A3-G18
Vertical pressure exhaust plate			
	For G1/8	574595	VABF-L1-P7A13-G18

Data sheet

General technical data VUVG-LK				
Valve function		T32-A	M52-A	B52
Normal position		C[1]	–	–
Stable position		Monostable		Bistable
Pneumatic spring reset		Yes	Yes	–
Design		Piston spool		
Sealing principle		Soft		
Type of actuation		Electrical		
Type of control		Piloted		
Pilot air supply		Internal		
Exhaust function		Can be throttled		
Manual override		Non-detenting, detenting		
Type of mounting		Optionally via through-holes[2] or on manifold rail		
Mounting position		Any		
Standard nominal flow rate	[l/min]	570	660	660
Switching time on/off	[ms]	13/20	14/24	–
Switching time changeover	[ms]	–		8
Size	[mm]	14		
Connection 2, 4		G1/8		
Product weight	[g]	75	65	85
Corrosion resistance class CRC[3]		2		

1) C=Normally closed

2) 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.

3) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions				
Valve function		T32-A[1]	M52-A[1]	B52
Operating medium		Compressed air to ISO 8573-2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	1.5 ... 7	2.5 ... 7	1.5 ... 7
Ambient temperature	[°C]	–5 ... +50		
Temperature of medium	[°C]	–5 ... +50		

1) Pneumatic spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)
Signal status display		LED
Maximum switching frequency	[Hz]	2

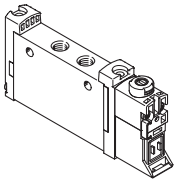
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Solenoid valves VUVG-L/S

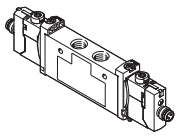
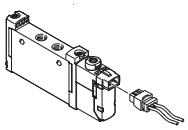
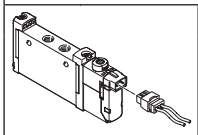
Ordering data – L/S14-G1/8

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

Size 14 mm
Flow rate 480 ... 780 l/min
Voltage 5, 12 and 24 V DC

	Description		Part no.	Type
In-line valve G1/8, without E-box				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	566496	VUVG-L14-T32-AT-G18-1P3
		Normally open, pneumatic spring reset	566497	VUVG-L14-32U-AT-G18-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566498	VUVG-L14-T32H-AT-G18-1P3
		Normally closed, mechanical spring reset	574368	VUVG-L14-T32C-MT-G18-1P3
		Normally open, mechanical spring reset	574369	VUVG-L14-T32U-MT-G18-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574370	VUVG-L14-T32H-MT-G18-1P3
	External pilot air supply	Normally closed, pneumatic spring reset	566505	VUVG-L14-T32C-AZT-G18-1P3
		Normally open, pneumatic spring reset	566506	VUVG-L14-T32U-AZT-G18-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566507	VUVG-L14-T32H-AZT-G18-1P3
		Normally closed, mechanical spring reset	574372	VUVG-L14-T32C-MZT-G18-1P3
		Normally open, mechanical spring reset	574373	VUVG-L14-T32U-MZT-G18-1P3
		Normally closed, mechanical spring reset	574374	VUVG-L14-T32H-MZT-G18-1P3
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	566499	VUVG-L14-M52-AT-G18-1P3
		Mechanical spring reset	574371	VUVG-L14-M52-MT-G18-1P3
	External pilot air supply	Pneumatic spring return	566508	VUVG-L14-M52-AZT-G18-1P3
		Mechanical spring reset	574375	VUVG-L14-M52-MZT-G18-1P3
	5/2-way double solenoid valve			
	Internal pilot air supply		566500	VUVG-L14-B52-T-G18-1P3
	External pilot air supply		566509	VUVG-L14-B52-ZT-G18-1P3
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	566501	VUVG-L14-P53C-T-G18-1P3
		Mid-position exhausted, mechanical spring reset	566502	VUVG-L14-P53E-T-G18-1P3
		Mid-position pressurised, mechanical spring reset	566503	VUVG-L14-P53U-T-G18-1P3
	External pilot air supply	Mid-position closed, mechanical spring reset	566510	VUVG-L14-P53C-ZT-G18-1P3
		Mid-position exhausted, mechanical spring reset	566511	VUVG-L14-P53E-ZT-G18-1P3
		Mid-position pressurised, mechanical spring reset	566512	VUVG-L14-P53U-ZT-G18-1P3

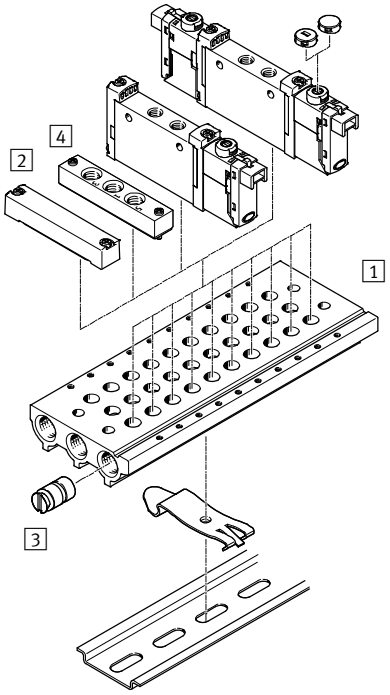
Ordering data – L/S14-G1/8

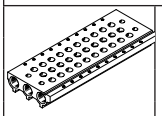
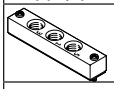
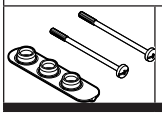
	Description		Part no.	Type
In-line valve G1/8, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	574226	VUVG-L14-T32C-AT-G18-1R8L
		Normally open, pneumatic spring reset	574227	VUVG-L14-T32U-AT-G18-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	574228	VUVG-L14-T32H-AT-G18-1R8L
		Normally closed, mechanical spring reset	8031504	VUVG-L14-T32C-MT-G18-1R8L
		Normally open, mechanical spring reset	8031505	VUVG-L14-T32U-MT-G18-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031506	VUVG-L14-T32H-MT-G18-1R8L
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	574229	VUVG-L14-M52-AT-G18-1R8L
		Mechanical spring reset	8031508	VUVG-L14-M52-MT-G18-1R8L
	5/2-way double solenoid valve			
	Internal pilot air supply		574230	VUVG-L14-B52-T-G18-1R8L
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	★ 574231	VUVG-L14-P53C-T-G18-1R8L
		Mid-position exhausted, mechanical spring reset	574233	VUVG-L14-P53E-T-G18-1R8L
		Mid-position pressurised, mechanical spring reset	574232	VUVG-L14-P53U-T-G18-1R8L
In-line valve G1/8, with E-box H2				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	577321	VUVG-L14-T32C-AT-G18-1H2L-W1
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	576256	VUVG-L14-M52-AT-G18-1H2L-W1
		Mechanical spring reset	578164	VUVG-L14-M52-MT-G18-1H2L-W1
	5/2-way double solenoid valve			
	Internal pilot air supply		577319	VUVG-L14-B52-T-G18-1H2L-W1
Semi in-line valve G1/8, with E-box H2				
	**5/2-way single solenoid valve**			
	Internal pilot air supply	Pneumatic spring reset	577325	VUVG-S14-M52-AT-G18-1H2L-W1

Solenoid valves VUVG-L/S

Accessories – Ordering data

Manifold assembly



		Part no.	Type
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
Blanking plate			
	For G1/4	★ 574482	VABB-L1-18
Blanking plug			
	Separator for pressure zones	574483	VABD-14-B
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

Data sheet

General technical data 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]
Stable position			Monostable							Bistable	Monostable			
Pneumatic spring reset			Yes			No			Yes	–	No	–		
Mechanical spring reset			No			Yes			No	–	Yes	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply								
Size		[mm]	14											
Design			Piston spool											
Sealing principle			Soft											
Type of actuation			Electrical											
Type of control			Piloted											
Pilot air supply			Internal or external											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			Optionally via through-holes[5] or on manifold rail											
Mounting position			Any											
Nominal width		[mm]	4.6			4.3			5.6	5.6	5.6	5.6		
Standard nominal flow rate		[l/min]	560	600	590	550	500	500	780	780	780	650	560	
Flow rate on manifold rail		[l/min]	560	580		520	480	480	680	700	700	620	560	
Switching time	On/off	[ms]	8/23			15/11			14/22	–	13/40	12/40		
	Changeover	[ms]	–							8	–	20		
Pneumatic connection	1, 2, 3, 4, 5		G1/8											
	12/14		M5											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position 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 distance of 0.3 mm must be ensured by placing spacer discs between them.

Data sheet

General technical data VUVG-L							
Valve function	T32-A	T32-M	M52-A	B52	M52-M	P53	
Product weight [g]	89	80	78	89	70	89	
Certification	c UL us - Recognized (OL)						
	c CSA us (OL)						
	RCM compliance mark						
CE marking (see declaration of conformity)[1]	To EU EMC Directive						
Corrosion resistance class CRC[2]	2						

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[2]	M52-A[1]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	3 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External	[bar]	1.5... 10	–0.9... 10			–0.9... 8	–0.9... 10
Pilot pressure		[bar]	1.5 ... 8	3.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60					
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60					

1) Pneumatic spring
2) Mechanical spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)

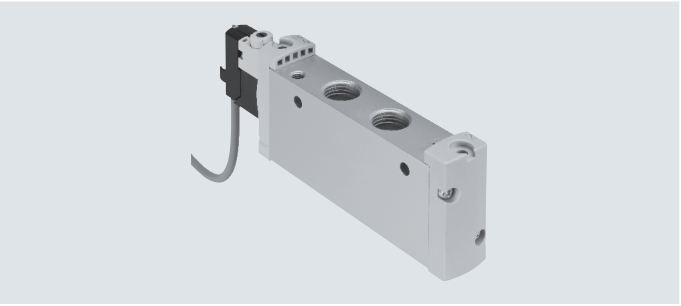
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

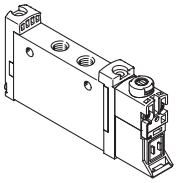
Solenoid valves VUVG-L/S

Ordering data – L/S18-G1/4

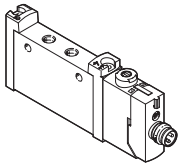
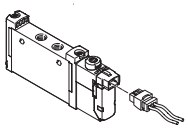
Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

Size 18 mm
Flow rate 1000 ... 1380 l/min
Voltage 5, 12 and 24 V DC



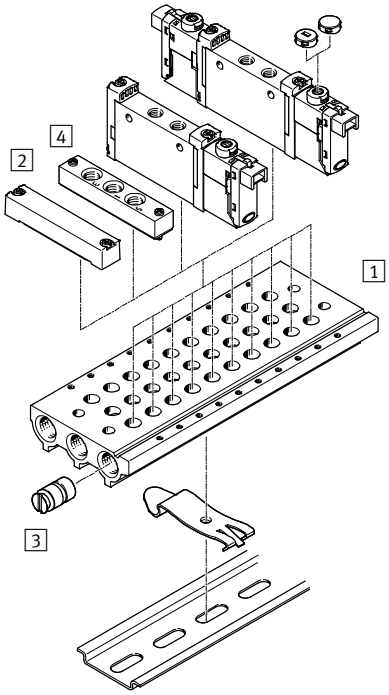
	Description		Part no.	Type
In-line valve G1/4, without E-box				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	574422	VUVG-L18-T32C-AT-G14-1P3
		Normally open, pneumatic spring reset	574423	VUVG-L18-T32U-AT-G14-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	574424	VUVG-L18-T32H-AT-G14-1P3
		Normally closed, mechanical spring reset	574425	VUVG-L18-T32C-MT-G14-1P3
		Normally open, mechanical spring reset	574426	VUVG-L18-T32U-MT-G14-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574427	VUVG-L18-T32H-MT-G14-1P3
	External pilot air supply	Normally closed, mechanical spring reset	574434	VUVG-L18-T32C-MZT-G14-1P3
		Normally open, mechanical spring reset	574435	VUVG-L18-T32U-MZT-G14-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574436	VUVG-L18-T32H-MZT-G14-1P3
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic/mechanical spring reset	574428	VUVG-L18-M52-RT-G14-1P3
		Mechanical spring reset	574429	VUVG-L18-M52-MT-G14-1P3
	External pilot air supply	Mechanical spring reset	574438	VUVG-L18-M52-MZT-G14-1P3
		Pneumatic/mechanical spring reset	574437	VUVG-L18-M52-RZT-G14-1P3
	5/2-way double solenoid valve			
	Internal pilot air supply		574430	VUVG-L18-B52-T-G14-1P3
	External pilot air supply		574439	VUVG-L18-B52-ZT-G14-1P3
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	574431	VUVG-L18-P53C-T-G14-1P3
		Mid-position exhausted, mechanical spring reset	574432	VUVG-L18-P53E-T-G14-1P3
		Mid-position pressurised, mechanical spring reset	574433	VUVG-L18-P53U-T-G14-1P3
	External pilot air supply	Mid-position closed, mechanical spring reset	574440	VUVG-L18-P53C-ZT-G14-1P3
		Mid-position exhausted, mechanical spring reset	574441	VUVG-L18-P53E-ZT-G14-1P3
		Mid-position pressurised, mechanical spring reset	574442	VUVG-L18-P53U-ZT-G14-1P3

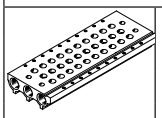
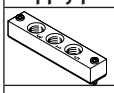
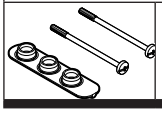
Ordering data – L/S18-G1/4

	Description		Part no.	Type
In-line valve G1/4, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8031525	VUVG-L18-T32C-AT-G14-1R8L
		Normally open, pneumatic spring reset	8031526	VUVG-L18-T32U-AT-G14-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	8031527	VUVG-L18-T32H-AT-G14-1R8L
		Normally closed, mechanical spring reset	8031528	VUVG-L18-T32C-MT-G14-1R8L
		Normally open, mechanical spring reset	8031529	VUVG-L18-T32U-MT-G14-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031530	VUVG-L18-T32H-MT-G14-1R8L
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic/mechanical spring reset	★ 8031531	VUVG-L18-M52-RT-G14-1R8L
		Mechanical spring reset	★ 8031532	VUVG-L18-M52-MT-G14-1R8L
	5/2-way double solenoid valve			
	Internal pilot air supply		8031533	VUVG-L18-B52-T-G14-1R8L
	5/3-way valve			
	Internal pilot air supply	Mid-position closed, mechanical spring reset	★ 8031534	VUVG-L18-P53C-T-G14-1R8L
		Mid-position exhausted, mechanical spring reset	8031535	VUVG-L18-P53E-T-G14-1R8L
		Mid-position pressurised, mechanical spring reset	8031536	VUVG-L18-P53U-T-G14-1R8L
In-line valve G1/4, with E-box H2				
	**5/2-way single solenoid valve**			
	Internal pilot air supply	Pneumatic/mechanical spring reset	578823	VUVG-L18-M52-RT-G14-1H2L-W1

Accessories – Ordering data

Manifold assembly



		Part no.	Type
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
Blanking plate			
	For G1/4	★ 574482	VABB-L1-18
Blanking plug			
	Separator for pressure zones	574483	VABD-14-B
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

Solenoid valves VUVG-L/S

Data sheet

General 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]
Stable position			Monostable							Bistable	Monostable			
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply								
Size		[mm]	18											
Design			Piston spool											
Sealing principle			Soft											
Type of actuation			Electrical											
Type of control			Piloted											
Pilot air supply			Internal/external											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			Optionally via through-holes[6] or on manifold rail											
Mounting position			Any											
Nominal width		[mm]	5.7						6.9	7.3	6.9	6.5	6.3	
Standard nominal flow rate		[l/min]	880	970	950	870	990	920	1300	1380	1300	1200	1000	910
Flow rate on manifold rail			780	980	820	780	960	820	1300	1370	1300	1180	1220	1050
Switching time	On/off	[ms]	13/25			15/22			15/31	–	10/45	15/48		
	Changeover	[ms]	–			–			–	11	–	29		
Pneumatic connection	1, 2, 3, 4, 5		G1/4											
	12/14		M5											
Product weight		[g]	164			164			154	164	154	160		
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[7]			To EU EMC Directive											
Corrosion resistance class CRC[8]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position 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.
7) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
8) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)					
Operating pressure	Internal	[bar]	1.5 ... 8	3 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ... 10				
Pilot pressure		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature	VUVG-...	[°C]	–5 ... +50, with holding current reduction –5 ... +60					
Temperature of medium	VUVG-...	[°C]	–5 ... +50, with holding current reduction –5 ... +60					

1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring

Electrical data

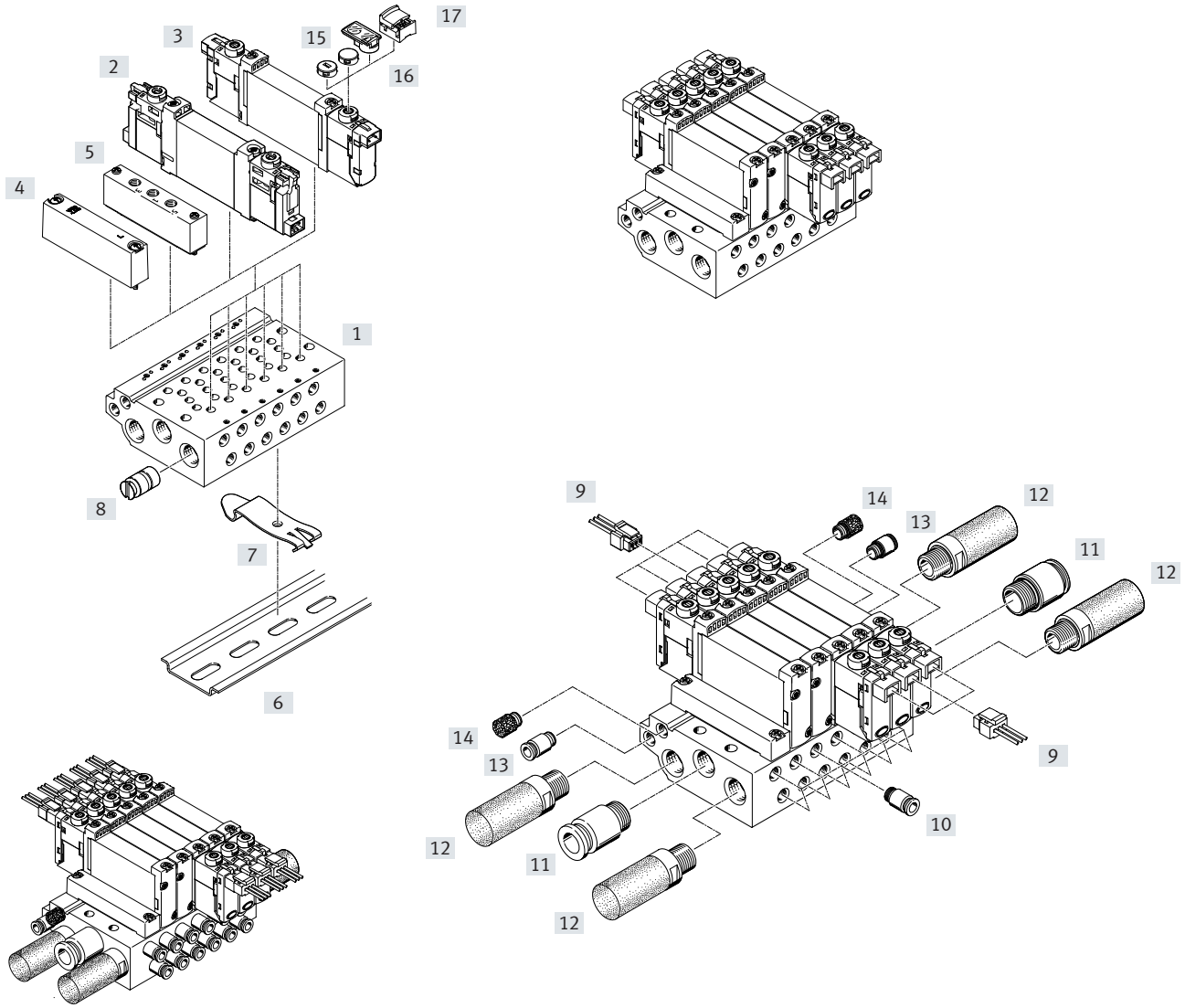
Electrical connection		Via E-box ➔ page 490
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with M8)

Information on materials

Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Peripherals overview example – Sub-base valves

Manifold assembly



		Type	Description	→ Page/Internet
[1]	Manifold rail	VABM-L1-...	For 2 to 10, 12, 14 and 16 valve positions	starting page 474
[2]	Solenoid valve	VUVG-LK...	In-line valve 2x 3/2-way, 5/2-way and 5/3-way	
[3]	Solenoid valve	VUVG-L...	In-line valve 2x 3/2-way, 5/2-way and 5/3-way	
[4]	Blanking plate	VABB-L1-...	For covering a vacant position	
[5]	Supply plate	VABF-L1-...	For air supply at duct 1 and duct 3 and 5	
[6]	H-rail	NRH-35-2000	For mounting the valve manifold assembly	nrh
[7]	H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold assembly on an H-rail	vame
[8]	Separator	VABD-...	For creating pressure zones	612
[9]	Plug socket with cable	NEBV-H1G2-...-LE2	For E-box H2 and H3	490
[10]	Push-in fitting	NPQE...	Push-in fitting for duct 2 and 4	803
[11]	Push-in fitting	NPQE...	Push-in fitting for air supply at duct 1	803
[12]	Silencer	U..., AMTE	For duct 3 and 5	u, amte
[13]	Push-in fitting	NPQE...	Push-in fitting for pilot air supply at duct 12/14	803
[14]	Silencer	U..., AMTE	Silencer for pilot air exhaust at duct 82/84	u, amte
[15]	Cover cap	VMPA-HB...-B	For manual override	612
[16]	Identification holder	ASLR-D	For labelling the valves, covering the retaining screw and the manual override	aslr
[17]	Cover	VAMC	For manual override	612

Solenoid valves VUVG-B

Type code explanation – Sub-base valves

001	Series
VUVG	Solenoid valve

002	Directional control valve type
B	Sub-base valve

003	Design principle
	Piston spool
K	Piston spool with sealing ring

004	Size
10A	Size 10, deviating flow
10	Size 10
14	Size 14
18	Size 18

005	Valve function
T32U	2x3/2-way valve, normally open
T32C	2x3/2-way valve, normally closed
T32H	2x3/2-way valve, 1x normally closed, 1x normally open
M52	5/2-way valve, single solenoid/monostable
B52	5/2-way valve, double solenoid/bistable
P53U	5/3-way valve, mid-position pressurised
P53E	5/3-way valve, mid-position exhausted|
P53C	5/3-way valve, mid-position closed

006	Reset method for monostable/single solenoid valves
	None
A	Pneumatic spring
M	Mechanical spring
R	Mixed, pneumatic/mechanical spring

007	Pilot air
	Internal
Z	External

008	Manual override
T	Non-detenting, detenting with accessories

009	Pneumatic connection
F	Flange/sub-base

010	Exhaust
	No fitting

011	Nominal operating voltage
1	24 V DC

012	Electrical connection
P3	Without electrical sub-base
H2	Connection pattern H, horizontal plug
R8	Individual connector M8, 3-pin
T1	Plug-in

013	Circuitry
	None

014	Display
	None
L	LED

015	Electrical valve accessories
	None
W1	Connecting cable, flying leads, 0.5 m

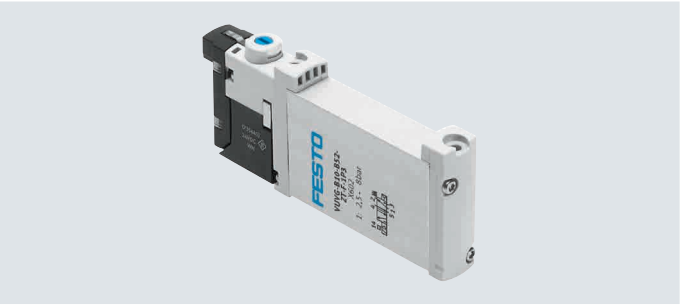
016	Version
	Expanded properties
S	Focused properties

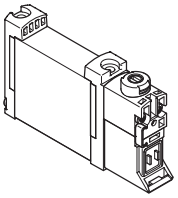
017	Certification
	None
EX2C	II 3GD to EU Explosion Pritection Directive (ATEX), Compatible component

Ordering data – B10A-M3

Function
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

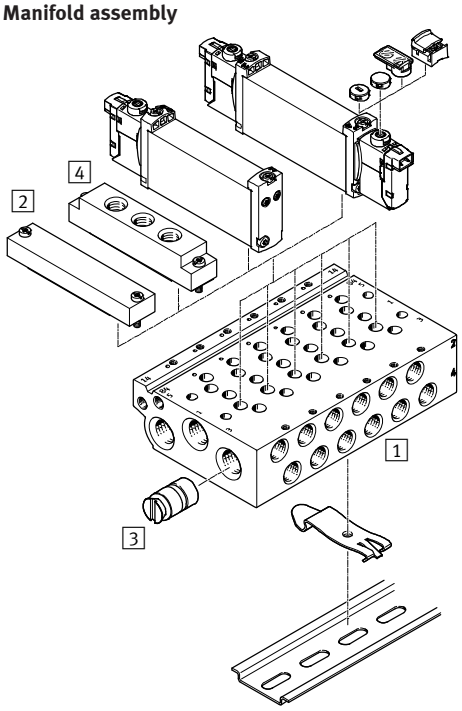
Size 10 mm
Flow rate 90 ... 100 l/min
Voltage 5, 12 and 24 V DC

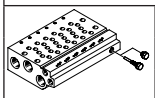
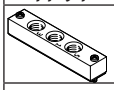
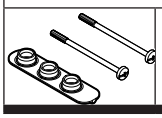


	Description		Part no.	Type
Sub-base valve M3, without E-box				
	**5/2-way single solenoid valve**			
	External pilot air supply	Pneumatic/mechanical spring reset	566448	VUVG-B10A-M52-RZT-F-1P3
		Mechanical spring reset	574347	VUVG-B10A-M52-MZT-F-1P3
	5/2-way double solenoid valve			
	External pilot air supply		566449	VUVG-B10A-B52-ZT-F-1P3
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	566450	VUVG-B10A-P53C-ZT-F-1P3
		Mid-position exhausted, mechanical spring reset	566451	VUVG-B10A-P53E-ZT-F-1P3
		Mid-position pressurised, mechanical spring reset	566452	VUVG-B10A-P53U-ZT-F-1P3

Accessories – Ordering data

Manifold assembly



		Part no.	Type
Manifold rail			
	For B10A (M3)	566546	VABM-L1-10AW-M7-2
		566547	VABM-L1-10AW-M7-3
		566548	VABM-L1-10AW-M7-4
		566549	VABM-L1-10AW-M7-5
		566550	VABM-L1-10AW-M7-6
		566551	VABM-L1-10AW-M7-7
		566552	VABM-L1-10AW-M7-8
		566553	VABM-L1-10AW-M7-9
		566554	VABM-L1-10AW-M7-10
		566555	VABM-L1-10AW-M7-12
		566556	VABM-L1-10AW-M7-14
		566557	VABM-L1-10AW-M7-16
Blanking plate			
	For B10A (M3)	569986	VABB-L1-10A
Blanking plug			
	Separator for pressure zones	570872	VABD-4.2-B
Supply plate			
	For B10A (M3)	569990	VABF-L1-10A-P3A4-M5
Seals for in-line valves (10 pieces incl. 20 screws)			
	For B10A (M3)	566671	VABD-L1-10AB-S-M3

Solenoid valves VUVG-B

Data sheet

General technical data VUVG-B

Valve function			M52-R	B52	M52-M	P53		
Normal position			–	–	–	C[1]	U[2]	E[3]
Stable position			Monostable	Bistable	Monostable	Monostable		
Pneumatic spring reset			Yes[4]	–	No	–		
Mechanical spring reset			Yes[4]	–	Yes	Yes		
Vacuum operation at port 1			Only with external pilot air supply					
Design			Piston spool					
Sealing principle			Soft					
Type of actuation			Electrical					
Type of control			Piloted					
Pilot air supply			External, internal; can be selected via sub-base					
Exhaust function			Can be throttled					
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting					
Type of mounting			On manifold rail					
Mounting position			Any					
Nominal width		[mm]	2		1.4	2		
Standard nominal flow rate		[l/min]	100		80	90		
Flow rate on manifold rail M3		[l/min]	100		80	90		
Switching time on/off		[ms]	7/15	–	7/21	8/25		
Switching time changeover		[ms]	–	5	–	14		
Size		[mm]	10					
Connection	1, 3, 5		M7 in manifold rail					
	2, 4		M5 in manifold rail					
	12/14, 82/84		M5 in manifold rail					
Product weight		[g]	38	49	37	49		
Certification			c UL us - Recognized (OL)					
			c CSA us (OL)					
			RCM compliance mark					
CE marking (see declaration of conformity)[5]			To EU EMC Directive					
Corrosion resistance class CRC[6]			2					

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) Combined reset method
5) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
6) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions

Valve function			M52-R[1]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]			
Operating pressure	Internal	[bar]	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	–0.9 ... 10		–0.9 ...8	–0.9 ... 10
Pilot pressure		[bar]	2.5 ... 8	1.5 ... 8	2 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60			
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60			

1) Mixed, pneumatic/mechanical spring
2) Mechanical spring

Electrical data

Electrical connection		Via E-box ➔ page 490
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 M8)

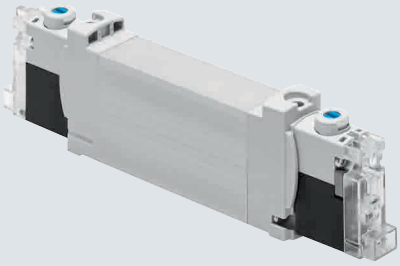
Information on materials

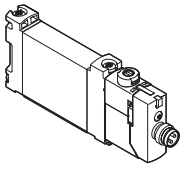
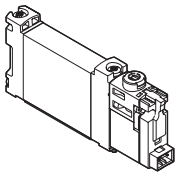
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Ordering data – BK10-M5/M7

Function
2x 3/2C
5/2-way, single solenoid
5/2-way, double solenoid valve

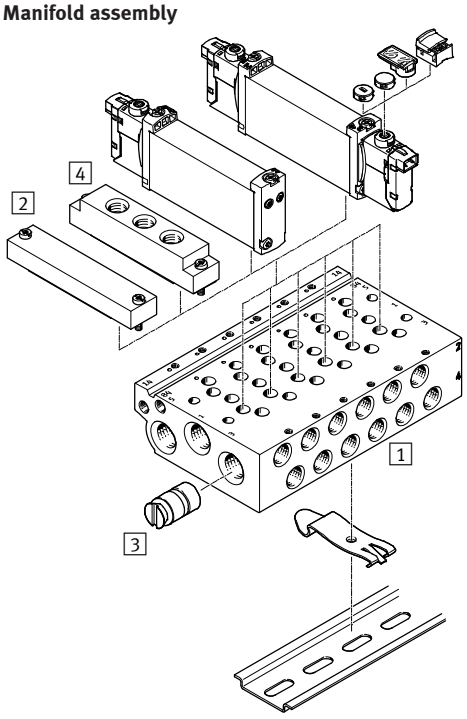
Size 10 mm
Flow rate 160 l/min
Voltage 24 V DC

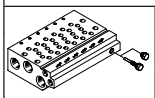
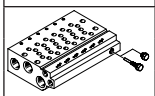


	Description		Part no.	Type
Sub-base valve M5/M7, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042558	VUVG-BK10-T32C-AT-F-1R8L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042559	VUVG-BK10-M52-AT-F-1R8L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042560	VUVG-BK10-B52-T-F-1R8L-S
Sub-base valve M5/M7, with E-box H2				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042554	VUVG-BK10-T32C-AT-F-1H2L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042555	VUVG-BK10-M52-AT-F-1H2L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042556	VUVG-BK10-B52-T-F-1H2L-S

Accessories – Ordering data

Manifold assembly

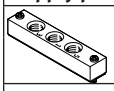
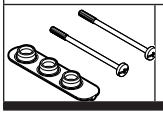


		Part no.	Type
Manifold rail			
	For 10 W (M5)	★ 566582	VABM-L1-10W-G18-2
		★ 566583	VABM-L1-10W-G18-3
		★ 566584	VABM-L1-10W-G18-4
		566585	VABM-L1-10W-G18-5
		★ 566586	VABM-L1-10W-G18-6
		566587	VABM-L1-10W-G18-7
		★ 566588	VABM-L1-10W-G18-8
		566589	VABM-L1-10W-G18-9
		★ 566590	VABM-L1-10W-G18-10
		566591	VABM-L1-10W-G18-12
		566592	VABM-L1-10W-G18-14
		566593	VABM-L1-10W-G18-16
	For 10 HW (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

Solenoid valves VUVG-B

Accessories – Ordering data

		Part no.	Type
Blanking plate			
	For 10 W/ 10 HW	★ 566495	VABB-L1-10-W
Blanking plug			
	Separator for pressure zones	569994	VABD-6-B

		Part no.	Type
Supply plate			
	For 10 W	569991	VABF-L1-10-P3A4-M5
	For 10 HW	569992	VABF-L1-10-P3A4-M7
Seals for in-line valves (10 pieces incl. 20 screws)			
	For 10 W/ 10 HW	566674	VABD-L1-10B-S-M7

Data sheet

General technical data VUVG-BK				
Valve function		T32-A	M52-A	B52
Normal position		C[1]	–	–
Stable position		Monostable		Bistable
Pneumatic spring reset		Yes	Yes	–
Design		Piston spool		
Sealing principle		Soft		
Type of actuation		Electrical		
Type of control		Piloted		
Pilot air supply		Internal		
Exhaust function		Can be throttled		
Manual override		Non-detenting, detenting		
Type of mounting		On manifold rail		
Mounting position		Any		
Standard nominal flow rate	[l/min]	160	160	160
Switching time on/off	[ms]	12/14	14/17	–
Switching time changeover	[ms]	–		7
Size	[mm]	10		
Connection 2, 4		M5/M7 in manifold rail		
Corrosion resistance class CRC[2]		2		

1) C=Normally closed

2) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions				
Valve function		T32-A[1]	M52-A[1]	B52
Operating medium		Compressed air to ISO 8573-2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	1.5 ... 7	2.5 ... 7	1.5 ... 7
Ambient temperature	[°C]	–5 ... +50		
Temperature of medium	[°C]	–5 ... +50		

1) Pneumatic spring

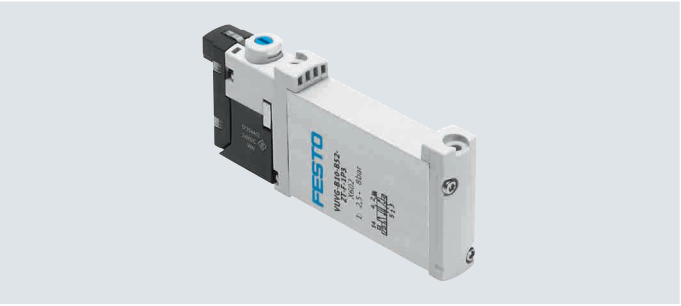
Electrical data		
Electrical connection		Via E-box ➔ page 490
Operating voltage	[V DC]	24 ±10%
Nominal operating voltage	[V DC]	22
Power	[W]	0.7
Duty cycle	[%]	100
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with M8)
Signal status display		LED
Maximum switching frequency	[Hz]	2

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

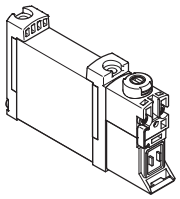
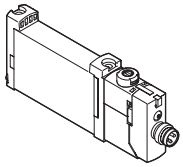
Ordering data – B10-M5/M7

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

Size 10 mm
Flow rate 120 ... 270 l/min
Voltage 5, 12 and 24 V DC



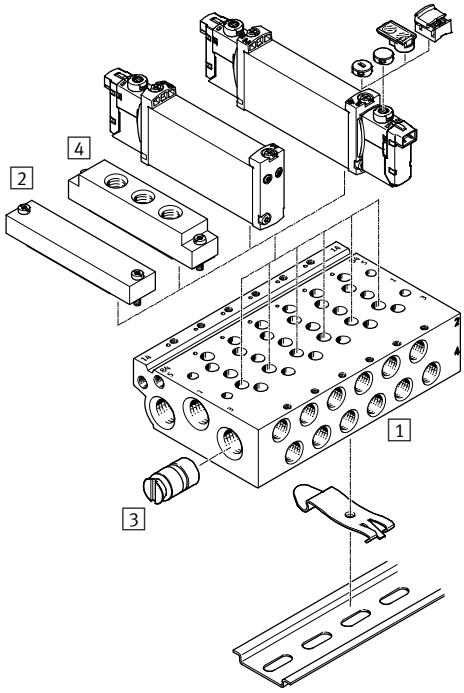
Ordering data

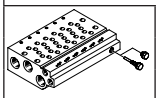
	Description		Part no.	Type
Sub-base valve M5/M7, without E-box				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	566487	VUVG-B10-T32C-AZT-F-1P3
		Normally open, pneumatic spring reset	566488	VUVG-B10-T32U-AZT-F-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566489	VUVG-B10-T32H-AZT-F-1P3
		Normally closed, mechanical spring reset	574364	VUVG-B10-T32C-MZT-F-1P3
		Normally open, mechanical spring reset	574365	VUVG-B10-T32U-MZT-F-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574366	VUVG-B10-T32H-MZT-F-1P3
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic/mechanical spring reset	566490	VUVG-B10-M52-RZT-F-1P3
		Mechanical spring reset	574367	VUVG-B10-M52-MZT-F-1P3
	5/2-way double solenoid valve			
	External pilot air supply		566491	VUVG-B10-B52-ZT-F-1P3
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	566492	VUVG-B10-P53C-ZT-F-1P3
		Mid-position exhausted, mechanical spring reset	566493	VUVG-B10-P53E-ZT-F-1P3
		Mid-position pressurised, mechanical spring reset	566494	VUVG-B10-P53U-ZT-F-1P3
Sub-base valve M5/M7, with E-box R8				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	574234	VUVG-B10-T32C-AZT-F-1R8L
		Normally open, pneumatic spring reset	574235	VUVG-B10-T32U-AZT-F-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	574236	VUVG-B10-T32H-AZT-F-1R8L
		Normally closed, mechanical spring reset	8031492	VUVG-B10-T32C-MZT-F-1R8L
		Normally open, mechanical spring reset	8031493	VUVG-B10-T32U-MZT-F-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031494	VUVG-B10-T32H-MZT-F-1R8L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic/mechanical spring reset	574237	VUVG-B10-M52-RZT-F-1R8L
		Mechanical spring reset	578157	VUVG-B10-M52-MZT-F-1R8L
	5/2-way double solenoid valve			
	External pilot air supply		574238	VUVG-B10-B52-ZT-F-1R8L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	574239	VUVG-B10-P53C-ZT-F-1R8L
		Mid-position exhausted, mechanical spring reset	574241	VUVG-B10-P53E-ZT-F-1R8L
		Mid-position pressurised, mechanical spring reset	574240	VUVG-B10-P53U-ZT-F-1R8L

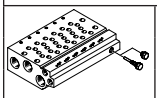
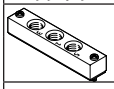
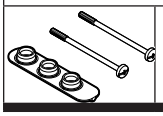
Solenoid valves VUVG-B

Accessories – Ordering data

Manifold assembly



		Part no.	Type
1	**Manifold rail**		
	For 10 W (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
Manifold rail			
	For 10 HW (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
Blanking plate			
	For 10 W/ 10 HW	★ 566495	VABB-L1-10-W
Blanking plug			
	Separator for pressure zones	569994	VABD-6-B
Supply plate			
	For 10 W	569991	VABF-L1-10-P3A4-M5
	For 10 HW	569992	VABF-L1-10-P3A4-M7
Seals for in-line valves (10 pieces incl. 20 screws)			
	For 10 W/ 10 HW	566674	VABD-L1-10B-S-M7

Data sheet

General 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]
Stable position			Monostable							Bistable	Monostable	Monostable		
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply								
Design			Piston spool											
Sealing principle			Soft											
Type of actuation			Electrical											
Type of control			Piloted											
Pilot air supply			External, internal; can be selected via sub-base											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			On manifold rail											
Mounting position			Any											
Nominal width		[mm]	2.7			1.8	1.7		4		2.3	3.5		
Standard nominal flow rate		[l/min]	170			150	140	140	330		285	300		
Flow rate on manifold rail M5		[l/min]	150			130	120	120	210		180	200		
Flow rate on manifold rail M7		[l/min]	160			140	130	130	270		230	250		
Switching time on/off		[ms]	6/16			8/11			7/19	–	8/24	11/30		
Switching time changeover		[ms]	–							7		14		
Size		[mm]	10											
Connection	1, 3, 5		G1/8 in manifold rail											
	2, 4		M5 or M7 in manifold rail											
	12/14, 82/84		M5 in manifold rail											
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[6]			To EU EMC Directive											
Corrosion resistance class CRC[7]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	3 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ... 10			–0.9 ... 8	–0.9 ... 10
Pilot pressure		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60					
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60					

1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)

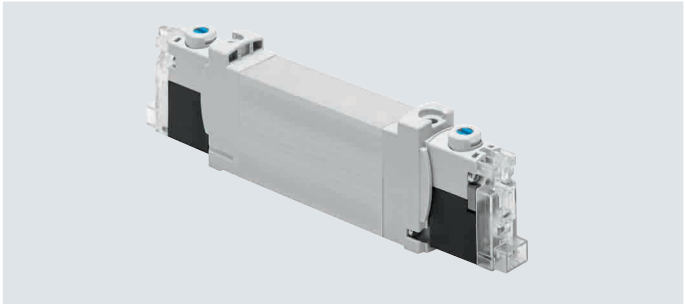
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

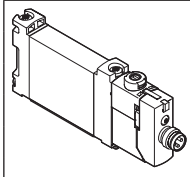
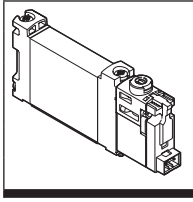
Solenoid valves VUVG-B

Ordering data – BK14-G1/8

Function
2x 3/2C
5/2-way, single solenoid
5/2-way, double solenoid valve

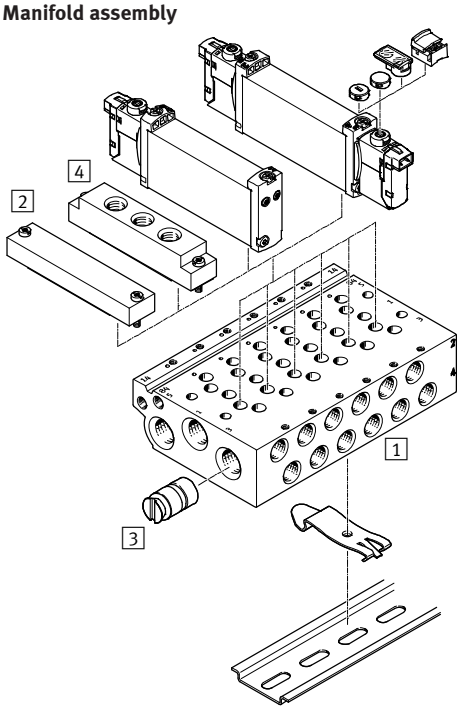
Size 14 mm
Flow rate 350 ... 380 l/min
Voltage 24 V DC

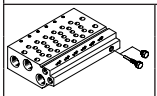
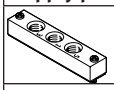
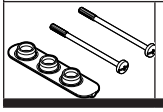


	Description		Part no.	Type
Sub-base valve G1/8, with E-box R8				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042574	VUVG-BK14-T32C-AT-F-1R8L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042575	VUVG-BK14-M52-AT-F-1R8L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042576	VUVG-BK14-B52-T-F-1R8L-S
Sub-base valve G1/8, with E-box H2				
	**2x 3/2-way valve**			
	Internal pilot air supply	Normally closed, pneumatic spring reset	★ 8042570	VUVG-BK14-T32C-AT-F-1H2L-S
	5/2-way single solenoid valve			
	Internal pilot air supply	Pneumatic spring reset	★ 8042571	VUVG-BK14-M52-AT-F-1H2L-S
	5/2-way double solenoid valve			
	Internal pilot air supply		★ 8042572	VUVG-BK14-B52-T-F-1H2L-S

Accessories – Ordering data

Manifold assembly



		Part no.	Type
Manifold rail			
	For 14 W (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
Blanking plate			
	For 14 W	★ 569989	VABB-L1-14
Blanking plug			
	Separator for pressure zones	569996	VABD-10-B
Supply plate			
	For 14 W	569993	VABF-L1-14-P3A4-G18
Seals for in-line valves (10 pieces incl. 20 screws)			
	For 14 W	566676	VABD-L1-14B-S-G18

Data sheet

General technical data VUVG-BK				
Valve function		T32-A	M52-A	B52
Normal position		C[1]	–	–
Stable position		Monostable		Bistable
Pneumatic spring reset		Yes	Yes	–
Design		Piston spool		
Sealing principle		Soft		
Type of actuation		Electrical		
Type of control		Piloted		
Pilot air supply		Internal		
Exhaust function		Can be throttled		
Manual override		Non-detenting, detenting		
Type of mounting		On manifold rail		
Mounting position		Any		
Standard nominal flow rate	[l/min]	350	380	380
Switching time on/off	[ms]	13/20	14/24	–
Switching time changeover	[ms]	–		8
Size	[mm]	14		
Connection 2, 4		G1/8 in manifold rail		
Product weight	[g]	75	65	85
Corrosion resistance class CRC[2]		2		

1) C=Normally closed

2) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions				
Valve function		T32-A[1]	M52-A[1]	B52
Operating medium		Compressed air to ISO 8573-2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	1.5 ... 7	2.5 ... 7	1.5 ... 7
Ambient temperature	[°C]	–5 ... +50		
Temperature of medium	[°C]	–5 ... +50		

1) Pneumatic spring

Electrical data		
Electrical connection		Via E-box → page 490
Operating voltage	[V DC]	24 ±10%
Nominal operating voltage	[V DC]	22
Power	[W]	0.7
Duty cycle	[%]	100
Degree of protection to EN 60529		IP40 (with plug socket), IP65 (with M8)
Signal status display		LED
Maximum switching frequency	[Hz]	2

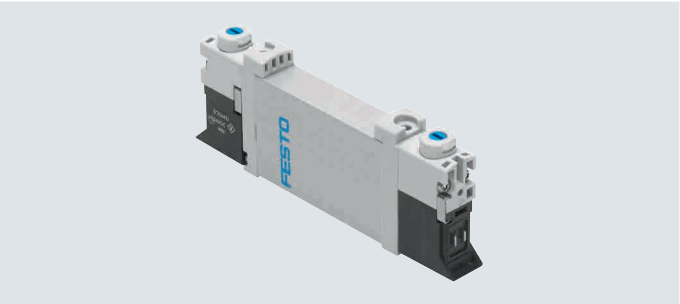
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

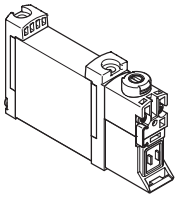
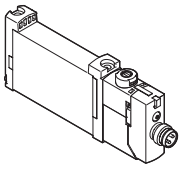
Solenoid valves VUVG-B

Ordering data – B14-G1/8

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

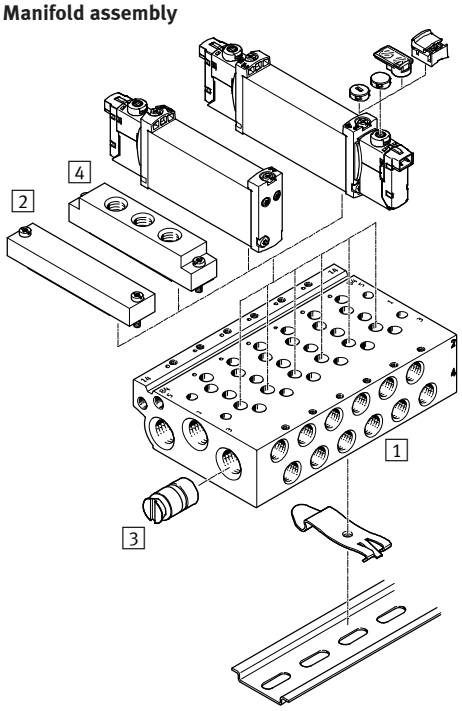
Size 14 mm
Flow rate 410 ... 700 l/min
Voltage 5, 12 and 24 V DC

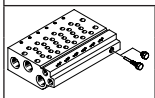
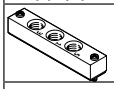
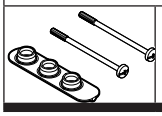


	Description		Part no.	Type
Sub-base valve G1/8, without E-box				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	566513	VUVG-B14-T32C-AZT-F-1P3
		Normally open, pneumatic spring reset	566514	VUVG-B14-T32U-AZT-F-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	566515	VUVG-B14-T32H-AZT-F-1P3
		Normally closed, mechanical spring reset	574376	VUVG-B14-T32C-MZT-F-1P3
		Normally open, mechanical spring reset	574377	VUVG-B14-T32U-MZT-F-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574378	VUVG-B14-T32H-MZT-F-1P3
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic spring reset	566516	VUVG-B14-M52-AZT-F-1P3
		Mechanical spring reset	574379	VUVG-B14-M52-MZT-F-1P3
	5/2-way double solenoid valve			
	External pilot air supply		566517	VUVG-B14-B52-ZT-F-1P3
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	566518	VUVG-B14-P53C-ZT-F-1P3
		Mid-position exhausted, mechanical spring reset	566519	VUVG-B14-P53E-ZT-F-1P3
		Mid-position pressurised, mechanical spring reset	566520	VUVG-B14-P53U-ZT-F-1P3
Sub-base valve G1/8, with E-box R8				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	574242	VUVG-B14-T32C-AZT-F-1R8L
		Normally open, pneumatic spring reset	574243	VUVG-B14-T32U-AZT-F-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	574244	VUVG-B14-T32H-AZT-F-1R8L
		Normally closed, mechanical spring reset	578248	VUVG-B14-T32C-MZT-F-1R8L
		Normally open, mechanical spring reset	8031517	VUVG-B14-T32U-MZT-F-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031518	VUVG-B14-T32H-MZT-F-1R8L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic spring reset	574245	VUVG-B14-M52-AZT-F-1R8L
		Mechanical spring reset	578158	VUVG-B14-M52-MZT-F-1R8L
	5/2-way double solenoid valve			
	External pilot air supply		574246	VUVG-B14-B52-ZT-F-1R8L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	574247	VUVG-B14-P53C-ZT-F-1R8L
		Mid-position exhausted, mechanical spring reset	574249	VUVG-B14-P53E-ZT-F-1R8L
		Mid-position pressurised, mechanical spring reset	574248	VUVG-B14-P53U-ZT-F-1R8L

Accessories – Ordering data

Manifold assembly



		Part no.	Type
Manifold rail			
	For 14 W (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
Blanking plate			
	For 14 W	★ 569989	VABB-L1-14
Blanking plug			
	Separator for pressure zones	569996	VABD-10-B
Supply plate			
	For 14 W	569993	VABF-L1-14-P3A4-G18
Seals for in-line valves (10 pieces incl. 20 screws)			
	For 14 W	566676	VABD-L1-14B-S-G18

Solenoid valves VUVG-B

Data sheet

General technical data VUVG-B

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]
Stable position			Monostable							Bistable	Monostable	Monostable		
Pneumatic spring reset			Yes			No			Yes	–	No	–		
Mechanical spring reset			No			Yes			No	–	Yes	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply								
Size		[mm]	14											
Design			Piston spool											
Sealing principle			Soft											
Type of actuation			Electrical											
Type of control			Piloted											
Pilot air supply			External, internal; can be selected via sub-base											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			On manifold rail											
Mounting position			Any											
Nominal width		[mm]	4.6			4.3			5.6					
Standard nominal flow rate		[l/min]	600	580		470	450		630	680		600	580	580
Flow rate on manifold rail G1/8		[l/min]	510			430	410		520	570		520	500	460
Switching time	On/off	[ms]	8/23			15/11			14/22	–	13/40	12/40		
	Changeover	[ms]	–							8		20		
Pneumatic connection	1, 3, 5		G1/4 in manifold rail											
	2, 4		G1/8 in manifold rail											
	12/14, 82/84		M5 in manifold rail											
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[5]			To EU EMC Directive											
			to EU Low Voltage Directive											
Corrosion resistance class CRC[6]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
6) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[2]	M52-A[1]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)					
Operating pressure	Internal	[bar]	1.5 ... 8	3 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ... 10			–0.9 ... 8	–0.9 ... 10
Pilot pressure		[bar]	1.5 ... 8	3 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60					
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60					

1) Pneumatic spring
2) Mechanical spring

Electrical data

Electrical connection		Via E-box → page 490
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 M8)

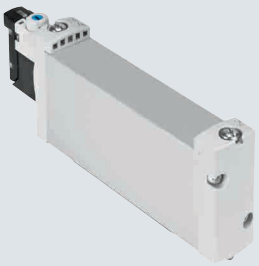
Information on materials

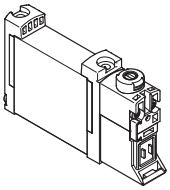
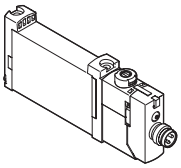
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Ordering data – B18-G1/4

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid valve
5/3C, 5/3U, 5/3E

Size 18 mm
Flow rate 800 ... 1080 l/min
Voltage 5, 12 and 24 V DC

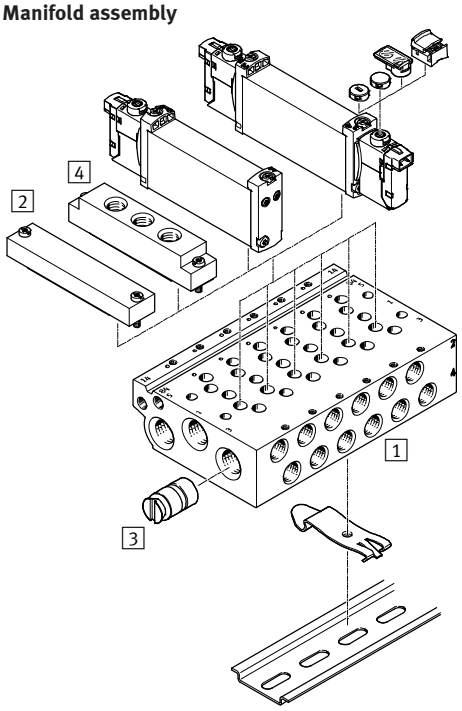


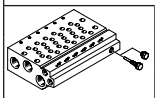
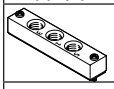
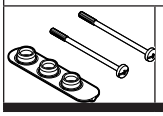
	Description		Part no.	Type
Sub-base valve G1/4, without E-box				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	574443	VUVG-B18-T32C-AZT-F-1P3
		Normally open, pneumatic spring reset	574444	VUVG-B18-T32U-AZT-F-1P3
		1x normally open, 1x normally closed, pneumatic spring reset	574445	VUVG-B18-T32H-AZT-F-1P3
		Normally closed, mechanical spring reset	574446	VUVG-B18-T32C-MZT-F-1P3
		Normally open, mechanical spring reset	574447	VUVG-B18-T32U-MZT-F-1P3
		1x normally open, 1x normally closed, mechanical spring reset	574448	VUVG-B18-T32H-MZT-F-1P3
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic/mechanical spring reset	574449	VUVG-B18-M52-RZT-F-1P3
		Mechanical spring reset	574450	VUVG-B18-M52-MZT-F-1P3
	5/2-way double solenoid valve			
	External pilot air supply		574451	VUVG-B18-B52-ZT-F-1P3
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	574452	VUVG-B18-P53C-ZT-F-1P3
		Mid-position exhausted, mechanical spring reset	574453	VUVG-B18-P53E-ZT-F-1P3
		Mid-position pressurised, mechanical spring reset	574454	VUVG-B18-P53U-ZT-F-1P3
Sub-base valve G1/4, with E-box R8				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	8031537	VUVG-B18-T32C-AZT-F-1R8L
		Normally open, pneumatic spring reset	8031538	VUVG-B18-T32U-AZT-F-1R8L
		1x normally open, 1x normally closed, pneumatic spring reset	8031539	VUVG-B18-T32H-AZT-F-1R8L
		Normally closed, mechanical spring reset	8031540	VUVG-B18-T32C-MZT-F-1R8L
		Normally open, mechanical spring reset	8031541	VUVG-B18-T32U-MZT-F-1R8L
		1x normally open, 1x normally closed, mechanical spring reset	8031542	VUVG-B18-T32H-MZT-F-1R8L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic/mechanical spring reset	8031543	VUVG-B18-M52-RZT-F-1R8L
		Mechanical spring reset	8031544	VUVG-B18-M52-MZT-F-1R8L
	5/2-way double solenoid valve			
	External pilot air supply		8031545	VUVG-B18-B52-ZT-F-1R8L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	8031546	VUVG-B18-P53C-ZT-F-1R8L
		Mid-position exhausted, mechanical spring reset	8031547	VUVG-B18-P53E-ZT-F-1R8L
		Mid-position pressurised, mechanical spring reset	8031548	VUVG-B18-P53U-ZT-F-1R8L

Solenoid valves VUVG-B

Accessories – Ordering data

Manifold assembly



		Part no.	Type
Manifold rail			
	For 18 W (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
Blanking plate			
	For 18 W	★ 574482	VABB-L1-18
Blanking plug			
	Separator for pressure zones	574483	VABD-14-B
Supply plate			
	For 18 W	574481	VABF-L1-18-P3A4-G14
Seals for in-line valves (10 pieces incl. 20 screws)			
	For 18 W	574480	VABD-L1-18B-S-G14

Data sheet

General 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]
Stable position			Monostable							Bistable	Monostable	Monostable		
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply								
Design			Piston spool											
Sealing principle			Soft											
Type of actuation			Electrical											
Type of control			Piloted											
Pilot air supply			External, internal; can be selected via sub-base											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			On manifold rail											
Mounting position			Any											
Nominal width		[mm]	5.7						6.9	7.3	6.9	6.5		
Standard nominal flow rate		[l/min]	900						1150			1080		
Flow rate on manifold rail			800						1000			950		
Switching time on/off		[ms]	13/27			15/22			15/31	–	10/45	15/48		
Switching time changeover		[ms]	–							11		29		
Size		[mm]	18											
Connection	1, 3, 5		G3/8 in manifold rail											
	2, 4		G1/4 in manifold rail											
	12/14, 82/84		M5 in manifold rail											
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[6]			To EU EMC Directive											
Corrosion resistance class CRC[7]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air to ISO 8573-2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	3.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ... 10			–0.9 ... 8	–0.9 ... 10
Pilot pressure		[bar]	1.5 ... 8	3 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +50, with holding current reduction –5 ... +60					
Temperature of medium		[°C]	–5 ... +50, with holding current reduction –5 ... +60					

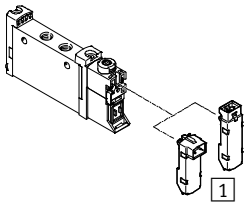
1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring

Electrical data		
Electrical connection		Via E-box ➔ page 490
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 M8)

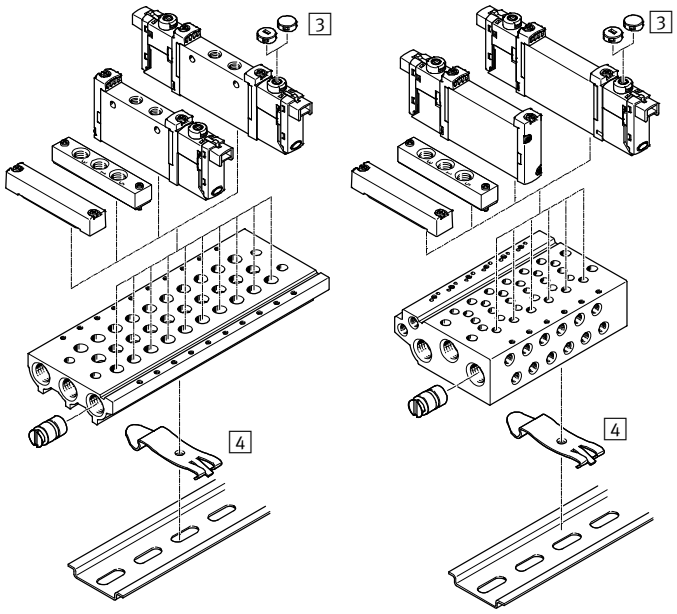
Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

General Accessories – Ordering data

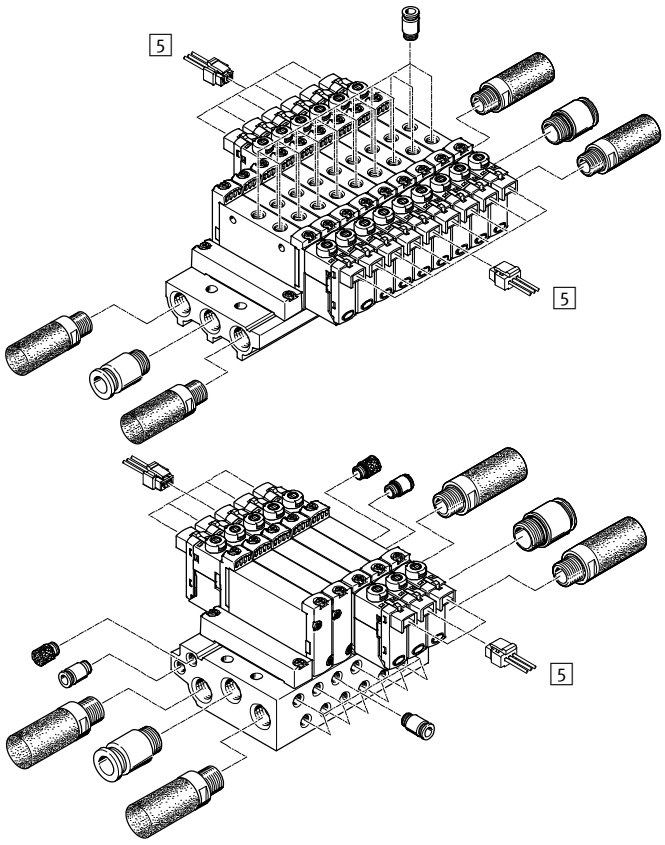
Electrical connection boxes

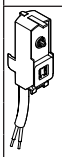
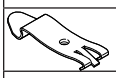
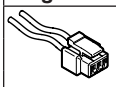
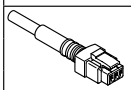


System overview

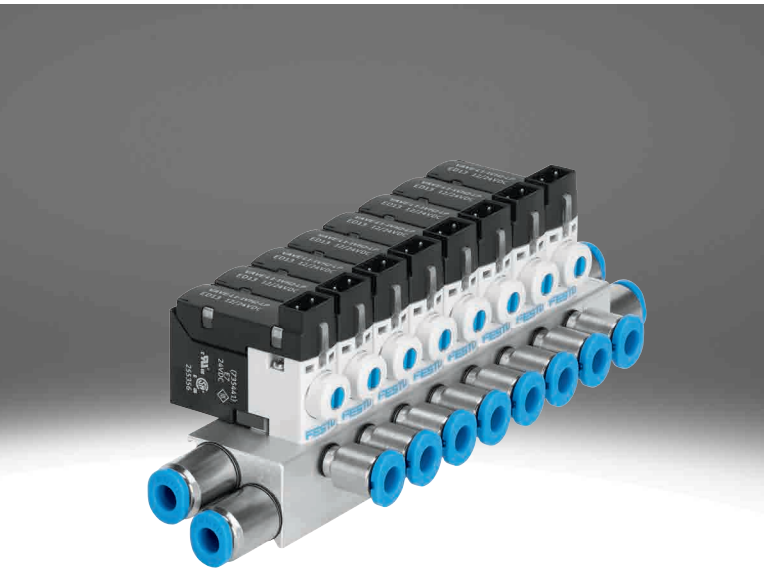


Accessories overview



		Part no.	Type
Electrical connection boxes, H2			
	12/24 V DC	★ 566714	VAVE-L1-1VH2-LP
	24 V DC	★ 566716	VAVE-L1-1H2-LR
Electrical connection boxes, H3			
	12/24 V DC	566715	VAVE-L1-1VH3-LP
	24 V DC	566717	VAVE-L1-1H3-LR
Electrical connection boxes, S2			
	12/24 V DC	566718	VAVE-L1-1VS2-LP
	24 V DC	566720	VAVE-L1-1S2-LR
Electrical connection boxes, S3			
	12/24 V DC	566719	VAVE-L1-1VS3-LP
	24 V DC	566721	VAVE-L1-1S3-LR
Electrical connection boxes, 1L1 … 1L4/1VL1 … 1VL4			
	24 V DC	566726	VAVE-L1-1L1-LR
		566727	VAVE-L1-1L2-LR
		566728	VAVE-L1-1L3-LR
		566729	VAVE-L1-1L4-LR
	12/24 V DC	566722	VAVE-L1-1VL1-LP
		566723	VAVE-L1-1VL2-LP
		566724	VAVE-L1-1VL3-LP
		566725	VAVE-L1-1VL4-LP
Electrical connection boxes, R8/R1			
	12/24 V DC	★ 573919	VAVE-L1-1VR8-LP
	24 V DC	573920	VAVE-L1-1R8-LR
Electrical connection box, K6 … K9			
	12/24 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
Covers for manual override			
	Covered	540898	VMPA-HBV-B
	Non-detenting	540897	VMPA-HBT-B
H-rail mounting			
	2 pieces	★ 569998	VAME-T-M4
Plug socket with cable, open end			
	0.5 m	★ 566654	NEBV-H1G2-KN-0.5-LE2
	1 m	★ 566655	NEBV-H1G2-KN-1-LE2
	2.5 m	★ 566656	NEBV-H1G2-KN-2.5-LE2
	5 m	566657	NEBV-H1G2-KN-5-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

Solenoid valves MH1

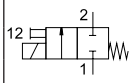
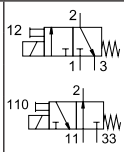
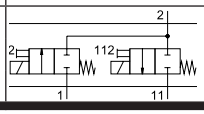


Highlights

+ 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 a pilot valve
+ UL certification; same connections and cables as for VUVG valves

Solenoid valves MH1

Product range overview

Function	Circuit symbol	Version	Operating voltage			
			5 V DC	12 V DC	24 V DC	24 V AC
2/2-way valve		Standard nominal flow rate 14 l/min				
		Semi in-line valve	■	■	■	–
		Sub-base valve without LED	■	■	■	–
		Standard nominal flow rate 30 l/min, controls vacuum or ejector pulse				
		Sub-base valve with LED	–	–	■	–
3/2-way valve[1]		Standard nominal flow rate 10 l/min				
		Semi in-line valve	■	■	■	–
		Sub-base valve without LED	■	■	■	–
		Sub-base valve with E-box	■	■	■	■
		Sub-base valve with LED	–	–	■	–
2x2/2-way valve		Standard nominal flow rate 30 l/min, controls vacuum and ejector pulse				
		Sub-base valve with LED	–	–	■	–

1) Can be used as a 2/2-way valve by sealing port 1 or 3

Features, mounting options

Operation with different pressures

Vacuum operation

The flow direction of the MH1 valves is clearly defined and cannot be reversed.

This flow direction needs to be observed even when operating the valve with vacuum.

This is achieved by connecting the vacuum to port 3 or 2 (33 or 11).

Reverse operation

Reverse operation is not possible; the direction of flow cannot be reversed.

Note

Vacuum must not be connected to port 1.

2/2-way valve,
MH...-2/2G-...

- Vacuum operation is established by connecting vacuum at port 2
- An ejector pulse can only be realised with another valve

3/2-way valve,
MH...-3/2G-...

- Vacuum operation is established by connecting vacuum at port 3
- Venting (or pressurisation) takes place via port 1
- Normally open with vacuum operation

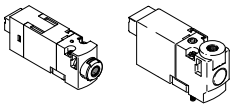
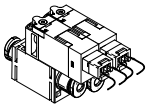
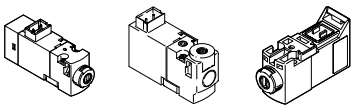
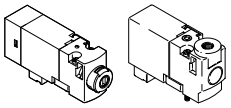
3/2-way valve,
MH...-3/2O-...

- Vacuum operation is established by connecting vacuum at port 33
- Venting (or pressurisation) takes place via port 11
- Normally closed with vacuum operation

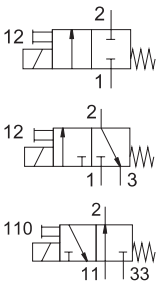
2x2/2-way valve,
MHA1-2X2/2G-...

- Vacuum operation is established by connecting vacuum at port 11
- The ejector pulse is connected at port 1

Mounting options

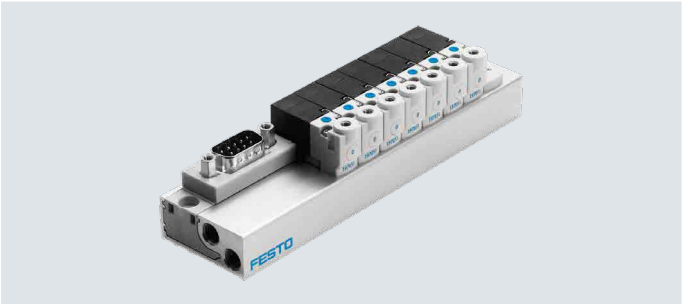
Design		Semi in-line valve	Sub-base valve		
Electrical connection		Without LED	Without LED	With E-box	With LED
Plug connection at rear (HC)					
	Individual sub-base	■	■	–	■
	Manifold assembly	■	■	–	■
	Sub-base with 2x2/2-way valve fully assembled	–	–	–	■
Plug connection on top (TC)					
	Individual sub-base	■	■	■	■
	Manifold assembly	■	■	■	■
Plug connection underneath (PI)					
	Individual sub-base with plug base	■	■	–	■
	Manifold assembly with plug bases	■	■	–	■
	Manifold assembly with plug bases and electrical multi-pin plug	■	■	–	■
	Manifold assembly on PCB with soldering bases	■	■	–	■
	Manifold assembly on PCB with soldering bases and pneumatic multiple connector plate	–	■	–	■

Peripherals overview

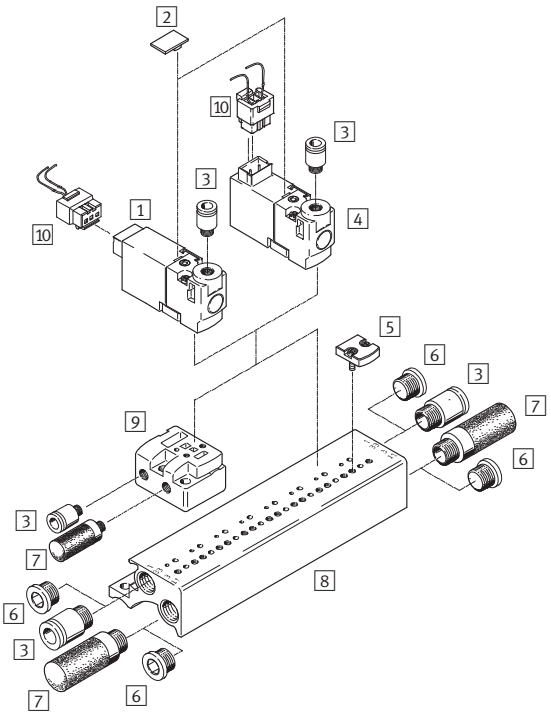


Voltage
5 V DC, 12 V DC, 24 V DC

Operating pressure
–0.9 ... +8 bar

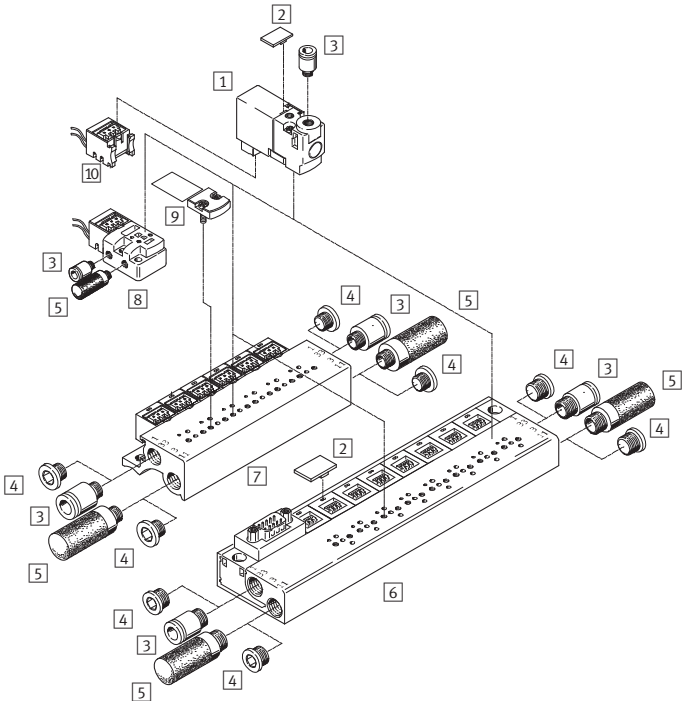


MHP1-TC (plug connection at rear), MHP1-HC (plug connection on top



Designation	Brief description	➔ Page/ Internet
1 Solenoid valve	Valve with plug connection at rear	495
2 Inscription label	For identifying the valve positions	496
3 Push-in fitting	For connecting compressed air tubing with standard O.D.	803
4 Solenoid valve	Valve with plug connection on top	495
5 Blanking plate	For manifold rail without plug bases	496
6 Blanking plug	For sealing ports that are not required	
7 Silencer	For exhaust ports	
8 Manifold rail	Without plug bases	495
9 Individual sub-base	For valves with plug connection at rear, plug connection on top	
10 Plug socket with cable	Straight socket, connection pattern H, 3-pin	497

MHP1-PI (plug connection underneath)

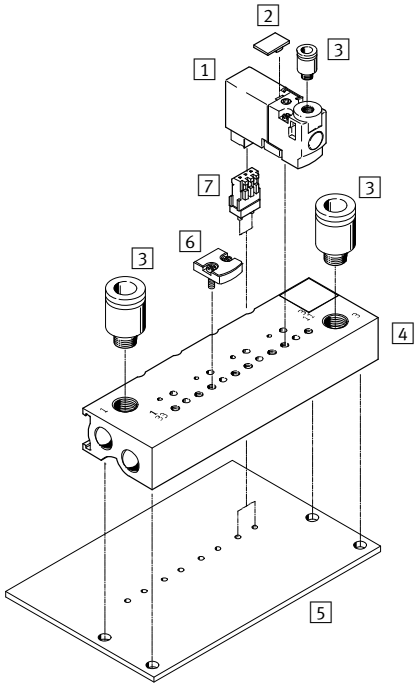


Designation	Brief description	➔ Page/ Internet
1 Solenoid valve	Valve with plug connection underneath	495
2 Inscription label	For identifying the valve positions	496
3 Push-in fitting	For connecting compressed air tubing with standard O.D.	803
4 Blanking plug	For sealing ports that are not required	496
5 Silencer	For exhaust ports	
6 Manifold rail	With plug bases and electrical multi-pin plug, Sub-D	
7 Manifold rail	With plug bases	495
8 Individual sub-base	For valves with plug connection underneath	
9 Blanking plate	For manifold rail with plug bases	496
10 Electrical plug-in base	Straight socket, connection pattern H, 3-pin	497

Solenoid valves MHP1

Peripherals overview

MHP1-PI (plug connection underneath), PCB mounting



Designation		Brief description	➔ Page/ Internet
1	Solenoid valve	Valve with plug connection underneath	495
2	Inscription label	For identifying the valve positions	496
3	Push-in fitting	For connecting compressed air tubing with standard O.D.	803
4	Manifold rail	Without plug bases, for PCB mounting	496
5	PCB	Not included in the scope of delivery	–
6	Blanking plate	For manifold rail without plug bases	496
7	Soldering base	For PCB mounting, 3-pin	497

Type code explanation

001	Series
MH	Miniature and fast-switching valves

002	Design
P	Semi in-line valve

003	Size
1	Flow rate 10 ... 14 l/min

004	Drive system
M	Solenoid, switching

005	Operating voltage
4	5 V DC
5	12 V DC
1	24 V DC

006	Manual override
H	Non-detenting/detenting

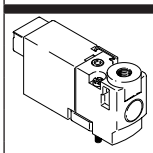
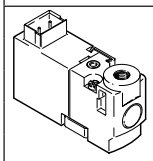
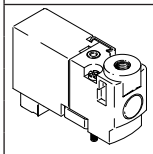
007	Valve function
2/2	2/2-way valve
3/2	3/2-way valve

008	Normal position
G	Closed
O	Open

009	Pneumatic connection
M3	M3 thread

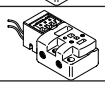
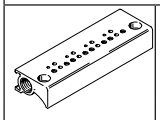
010	Electrical connection
HC	Plug connection at rear for plug socket NEBV-H1G2
TC	Plug connection on top for plug socket NEBV-H1G2
PI	Plug connection underneath for plug-in connection

Ordering data

		Valve function	Normal position	Nominal voltage	Part No.	Type
	Plug connection at rear	2/2-way solenoid valve	Closed	5 V DC	197045	MHP1-M4H-2/2G-M3-HC
				12 V DC	197046	MHP1-M5H-2/2G-M3-HC
				24 V DC	197047	MHP1-M1H-2/2G-M3-HC
		3/2-way solenoid valve	Closed	5 V DC	197009	MHP1-M4H-3/2G-M3-HC
				12 V DC	197010	MHP1-M5H-3/2G-M3-HC
				24 V DC	197011	MHP1-M1H-3/2G-M3-HC
			Open	5 V DC	197027	MHP1-M4H-3/2O-M3-HC
				12 V DC	197028	MHP1-M5H-3/2O-M3-HC
				24 V DC	197029	MHP1-M1H-3/2O-M3-HC
	Plug connection on top	2/2-way solenoid valve	Closed	5 V DC	197048	MHP1-M4H-2/2G-M3-TC
				12 V DC	197049	MHP1-M5H-2/2G-M3-TC
				24 V DC	197050	MHP1-M1H-2/2G-M3-TC
		3/2-way solenoid valve	Closed	5 V DC	197012	MHP1-M4H-3/2G-M3-TC
				12 V DC	197013	MHP1-M5H-3/2G-M3-TC
				24 V DC	197014	MHP1-M1H-3/2G-M3-TC
			Open	5 V DC	197030	MHP1-M4H-3/2O-M3-TC
				12 V DC	197031	MHP1-M5H-3/2O-M3-TC
				24 V DC	197032	MHP1-M1H-3/2O-M3-TC
	Plug connection underneath	2/2-way solenoid valve	Closed	5 V DC	197051	MHP1-M4H-2/2G-M3-PI
				12 V DC	197052	MHP1-M5H-2/2G-M3-PI
				24 V DC	197053	MHP1-M1H-2/2G-M3-PI
		3/2-way solenoid valve	Closed	5 V DC	197015	MHP1-M4H-3/2G-M3-PI
				12 V DC	197016	MHP1-M5H-3/2G-M3-PI
				24 V DC	197017	MHP1-M1H-3/2G-M3-PI
			Open	5 V DC	197033	MHP1-M4H-3/2O-M3-PI
				12 V DC	197034	MHP1-M5H-3/2O-M3-PI
				24 V DC	197035	MHP1-M1H-3/2O-M3-PI

Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

Accessories – Ordering data

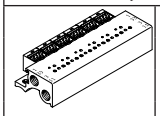
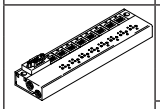
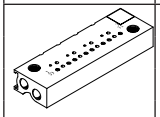
				Part No.	Type
Individual sub-base					
	For valves with plug connection at rear or on top	For 2/2-way solenoid valve	1 valve position	197188	MHP1-AS-2-M3
		For 3/2-way solenoid valve	1 valve position	197184	MHP1-AS-3-M3
	For valves with plug connection underneath	For 2/2-way solenoid valve	1 valve position	197190	MHP1-AS-2-M3-PI
		For 3/2-way solenoid valve	1 valve position	197186	MHP1-AS-3-M3-PI
Manifold rail, for valves with plug connection at rear or on top					
	Without plug bases	For 2/2-way solenoid valve	2 valves	197196	MHP1-P2-2
			4 valves	197197	MHP1-P4-2
			6 valves	197198	MHP1-P6-2
			8 valves	197200	MHP1-P8-2
			10 valves	197201	MHP1-P10-2
		For 3/2-way solenoid valve	2 valves	197191	MHP1-PR2-3
			4 valves	197192	MHP1-PR4-3
			6 valves	197193	MHP1-PR6-3
			8 valves	197194	MHP1-PR8-3
			10 valves	197195	MHP1-PR10-3

Note
Manifold rails with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered online using the MH1 modular product system.

Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

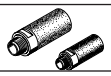
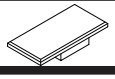
Solenoid valves MHP1

Accessories – Ordering data

				Part No.	Type
Manifold rail, for valves with plug connection underneath					
	With plug bases	For 2/2-way solenoid valve	2 valves	197217	MHP1-P2-2-PI
			4 valves	197218	MHP1-P4-2-PI
			6 valves	197219	MHP1-P6-2-PI
			8 valves	197220	MHP1-P8-2-PI
			10 valves	197221	MHP1-P10-2-PI
		For 3/2-way solenoid valve	2 valves	197212	MHP1-PR2-3-PI
			4 valves	197213	MHP1-PR4-3-PI
			6 valves	197214	MHP1-PR6-3-PI
			8 valves	197215	MHP1-PR8-3-PI
			10 valves	197216	MHP1-PR10-3-PI
	With plug bases and electrical multi-pin plug, Sub-D, 9-pin	For 3/2-way solenoid valve	4 valves	197233	MHP1-PR4-3-PI-D9
			6 valves	197234	MHP1-PR6-3-PI-D9
			8 valves	197235	MHP1-PR8-3-PI-D9
	With plug bases and electrical multi-pin plug, Sub-D, 25-pin	For 3/2-way solenoid valve	10 valves	197236	MHP1-PR10-3-PI-D25
	Without plug bases for PCB mounting	For 3/2-way solenoid valve	2 valves	197242	MHP1-PR2-3-PI-PCB
			4 valves	197243	MHP1-PR4-3-PI-PCB
			6 valves	197244	MHP1-PR6-3-PI-PCB
			8 valves	197245	MHP1-PR8-3-PI-PCB
			10 valves	197246	MHP1-PR10-3-PI-PCB
Blanking plate					
	For manifold rail without plug bases			197257	MHAP1-BP-3
	For manifold rail with plug bases			197258	MHAP1-BP-3-PI

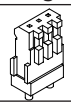
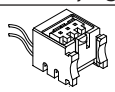
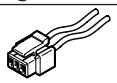
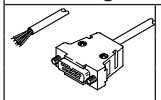
Note
Manifold rails with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered online using the MH1 modular product system.

Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

				Part No.	Type	PU[1]
Blanking plug						
	For M3 thread			30979	B-M3-S9	10
	For M7 thread			174309	B-M7	10
Silencer						
	M3 connecting thread			1231120	AMTE-M-LH-M3	20
	M7 connecting thread			161418	UC-M7	1
Push-in fitting						
	M3 connecting thread	With internal hex	For tubing O.D. 3 mm	153312	QSM-M3-3-I	10
			For tubing O.D. 4 mm	153314	QSM-M3-4-I	10
		With external hex	For tubing O.D. 3 mm	153301	QSM-M3-3	10
			For tubing O.D. 4 mm	153303	QSM-M3-4	10
	M5 connecting thread	With internal hex	For tubing O.D. 3 mm	153313	QSM-M5-3-I	10
			For tubing O.D. 4 mm	153315	QSM-M5-4-I	10
			For tubing O.D. 6 mm	153317	QSM-M5-6-I	10
		With external hex	For tubing O.D. 3 mm	153302	QSM-M5-3	10
			For tubing O.D. 4 mm	153304	QSM-M5-4	10
			For tubing O.D. 6 mm	153306	QSM-M5-6	10
	M7 connecting thread	With internal hex	For tubing O.D. 4 mm	153319	QSM-M7-4-I	10
			For tubing O.D. 6 mm	153321	QSM-M7-6-I	10
Inscription label						
	For identifying the valve positions			197259	MH-BZ-80X	80

1) Packaging unit.

Accessories – Ordering data

				Part No.	Type	PU[1]
Soldering base						
	For manifold rail for valves with plug connection underneath for PCB mounting, 3-pin			197261	PCBC-A-10	10
				197262	PCBC-A-100	100
Electrical plug-in base						
	For manifold rail, for valves with plug connection underneath	2x flying leads Open end 1-wire	0.5 m	197260	MHAP-PI	1
			1 m	532182	MHAP-PI-1	1
Plug socket with cable						
	Straight socket Connection pattern H 3-pin	2x flying leads Open end 1-wire	0.5 m	566654	NEBV-H1G2-KN-0.5-N-LE2	1
			1 m	566655	NEBV-H1G2-KN-1-N-LE2	1
			2.5 m	566656	NEBV-H1G2-KN-2.5-N-LE2	1
			5 m	566657	NEBV-H1G2-KN-5-N-LE2	1
Connecting cable for manifold rail with electrical multi-pin plug						
	Straight socket, Sub-D, 9-pin	Cable Open end 9-wire	2.5 m	531184	KMP6-09P-8-2,5	1
			5 m	531185	KMP6-09P-8-5	1
			10 m	531186	KMP6-09P-8-10	1
	Straight socket, Sub-D, 25-pin	Cable Open end 15-wire	2.5 m	530049	KMP6-25P-12-2,5	1
			5 m	530050	KMP6-25P-12-5	1
			10 m	530051	KMP6-25P-12-10	1
	Straight socket, Sub-D, 25-pin	Cable Open end 25-wire	2.5 m	530046	KMP6-25P-20-2,5	1
			5 m	530047	KMP6-25P-20-5	1
			10 m	530048	KMP6-25P-20-10	1

1) Packaging unit.

Data sheet

General technical data				
Type		MHP1-...-2/2G-...	MHP1-...-3/2G-...	MHP1-...-3/2O-...
Valve function		2/2-way solenoid valve	3/2-way solenoid valve	3/2-way solenoid valve
		Normally closed	Normally closed	Normally open
		Single solenoid	Single solenoid	Single solenoid
Design		Poppet valve with spring return		
Sealing principle		Soft		
Actuation type		Electric		
Reset method		Mechanical spring		
Type of control		Direct		
Direction of flow		Non-reversible		
Suitability for vacuum		Yes	–	–
Exhaust function		No flow control	With flow control	With flow control
Manual override		Non-detenting		
Type of mounting		On sub-base via through-hole		
Mounting position		Any		
Nominal size	[mm]	0.9	0.65	0.7
Standard nominal flow rate	[l/min]	14 (2 bar → 0 bar)	10	10
Grid dimension	[mm]	10	10	10
Pneumatic connection	1	Sub-base	Sub-base	–
	2	M3	M3	M3
	3	–	Sub-base	–
	11	–	–	Sub-base
	33	–	–	Sub-base

Solenoid valves MHP1

Data sheet

Operating and environmental conditions					
Type			MHP1-...-2/2G-...	MHP1-...-3/2G-...	MHP1-...-3/2O-...
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]	–0.9 ... +2	0 ... 8[1]	0 ... 6[1]
Ambient temperature		[°C]	–5 ... +40		
Temperature of medium		[°C]	–5 ... +40		
Storage temperature		[°C]	–20 ... +60		
Corrosion resistance class CRC[2]			2		
Certification			c UL us Recognized (OL)		
			c CSA us Recognized (OL)		

1) Vacuum operation possible with special connection method
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

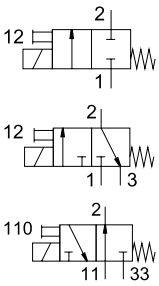
Safety data				
Operating voltage		5 V DC	12 V DC	24 V DC
Note on forced checking procedure		Switching frequency min. 1/week		
Max. positive test pulse with 0 signal	[µs]	–	–	500
Max. negative test pulse with 1 signal	[µs]	–	–	400
Resistance to shocks		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6		

Electrical data		
Operating voltage	[V DC]	5, 12, 24
Permissible voltage fluctuations	[%]	±10
Connection type		Plug connection
Power consumption	[W]	1
Duty cycle	[%]	100
Degree of protection to EN 60529		IP40

Switching times and frequencies					
Type			MHP1-...-2/2G-...	MHP1-...-3/2G-...	MHP1-...-3/2O-...
Switching time	On	[ms]	4	4	4
	Off	[ms]	5	4	4
Maximum switching frequency		[Hz]	20	20	20

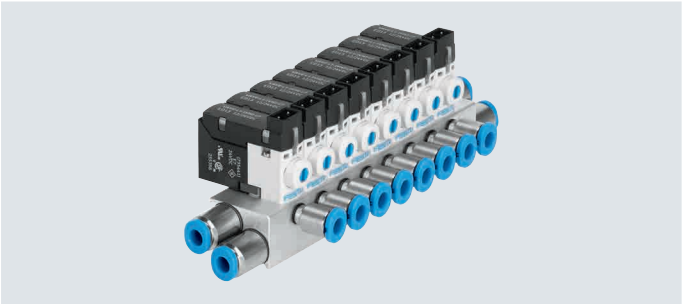
Materials	
Housing	Reinforced PA, reinforced PPS
Sub-base	Aluminium
Seals	FPM, HNBR, NBR
Note on materials	RoHS-compliant
Free of copper and PTFE	

Peripherals overview

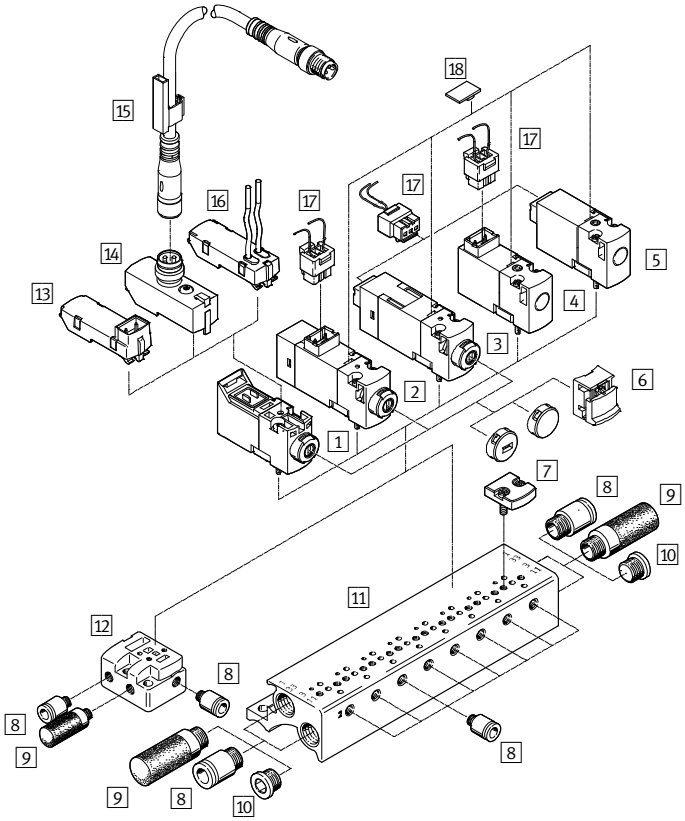


Voltage
5 V DC, 12 V DC, 24 V DC

Operating pressure
–0.9 ... +8 bar



MHA1-TC (plug connection at rear), MHA1-HC (plug connection on top)

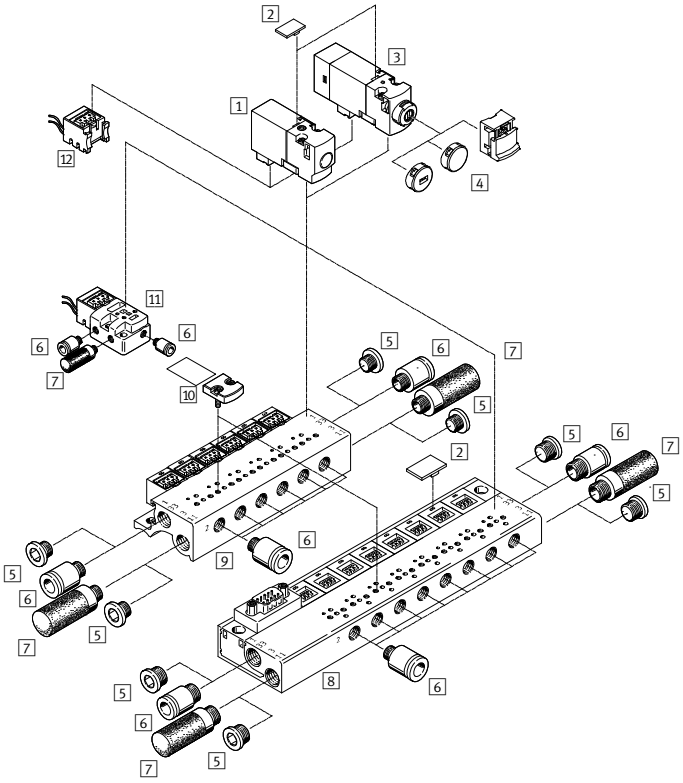


Designation		Brief description	➔ Page/ Internet
1	Solenoid valve	Valve without plug connection, with manual override, use with E-box	507
2	Solenoid valve	Valve with plug connection on top, with LED, with manual override	512
3	Solenoid valve	Valve with plug connection at rear, with LED, with manual override	
4	Solenoid valve	Valve with plug connection on top, without LED, without manual overri-de	501
5	Solenoid valve	Valve with plug connection at rear, without LED, without manual overri-de	
6	Cover cap	For manual override	513
7	Blanking plate	For manifold rail without plug bases	502
8	Push-in fitting	For connecting compressed air tu-bing with standard O.D.	803
9	Silencer	For exhaust ports	503
10	Blanking plug	For sealing ports that are not re-quired	
11	Manifold rail	Without plug bases	502
12	Individual sub-base	For valves with plug connection at rear, plug connection on top	
13	E-box	Plug connection pattern H/connec-tion pattern S	508
14	E-box	Plug M8x1	
15	Connecting cable	Socket M8x1, 4-pin	
16	E-box	Open end	
17	Plug socket with cable	Straight socket, connection pattern H, 3-pin	503
18	Inscription label	For identifying the valve positions	

Solenoid valves MHA1

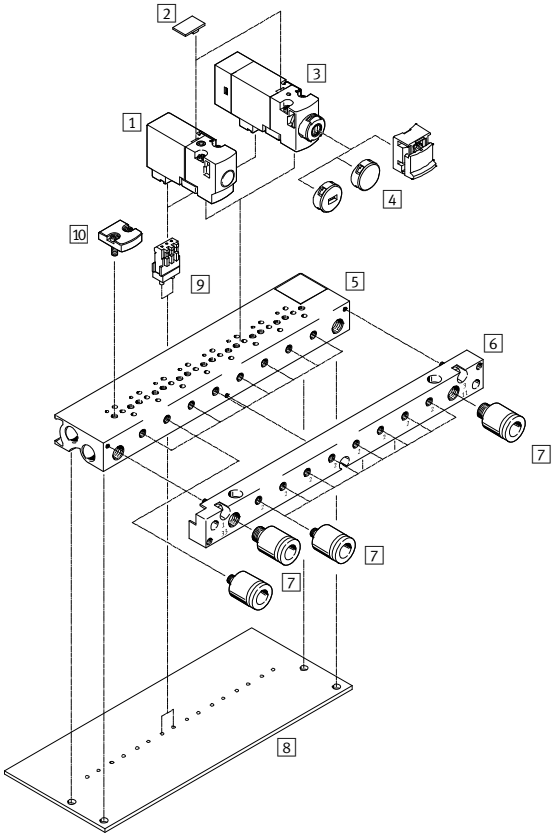
Peripherals overview

MHA1-PI (plug connection underneath)



Designation	Brief description	➔ Page/ Internet
1 Solenoid valve	Valve with plug connection underneath, without LED	501
2 Inscription label	For identifying the valve positions	503
3 Solenoid valve	Valve with plug connection underneath, with LED	501
4 Cover cap	For manual override	513
5 Blanking plug	For sealing ports that are not required	503
6 Push-in fitting	For connecting compressed air tubing with standard O.D.	803
7 Silencer	For exhaust ports	503
8 Manifold rail	With plug bases	502
9 Manifold rail	With plug bases and electrical multi-pin plug	
10 Blanking plate	For manifold rail with plug bases	
11 Individual sub-base	For valves with plug connection underneath	
12 Plug socket with cable	Straight socket, connection pattern H, 3-pin	503

MHA1-PI (plug connection underneath), PCB mounting



Designation	Brief description	➔ Page/ Internet
1 Solenoid valve	Valve with plug connection underneath, without LED	501
2 Inscription label	For identifying the valve positions	503
3 Solenoid valve	Valve with plug connection underneath, with LED	501
4 Cover cap	For manual override	513
5 Manifold rail	Without plug bases for PCB mounting	502
6 Pneumatic multiple connector plate	Enables the tubing connection to be left in place on the PCB when changing the valve terminal (included in the scope of delivery)	–
7 Push-in fitting	For connecting compressed air tubing with standard O.D.	803
8 PCB	Provided by the customer (not included in the scope of delivery)	–
9 Soldering base	For plug-in connection, 3-pin	503
10 Blanking plate	For manifold rail without plug bases	502

Type code explanation

001	Series
MH	Miniature and fast-switching valves

002	Design
A	Sub-base valve

003	Size
1	Flow rate 10 ... 14 l/min

004	Drive system
M	Solenoid, switching

005	Operating voltage
4	5 V DC
5	12 V DC
1	24 V DC

006	Manual override
H	Non-detenting/detenting

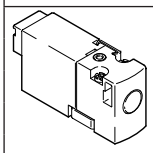
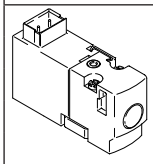
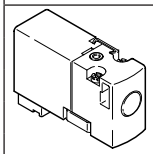
007	Valve function
2/2	2/2-way valve
3/2	3/2-way valve

008	Normal position
G	Closed
O	Open

009	Nominal width
0,6	0.65 mm
0,9	0.9 mm

010	Electrical connection
HC	Plug connection at rear for plug socket NEBV-H1G2
TC	Plug connection on top for plug socket NEBV-H1G2
PI	Plug connection underneath for plug-in connection

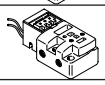
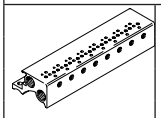
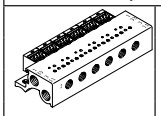
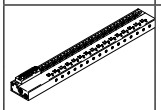
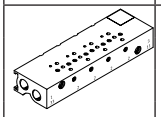
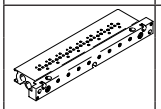
Ordering data

		Valve function	Normal position	Nominal voltage	Part No.	Type
Solenoid valve						
	Plug connection at rear	2/2-way solenoid valve	Closed	5 V DC	197036	MHA1-M4H-2/2G-0,9-HC
				12 V DC	197037	MHA1-M5H-2/2G-0,9-HC
				24 V DC	197038	MHA1-M1H-2/2G-0,9-HC
		3/2-way solenoid valve	Closed	5 V DC	197000	MHA1-M4H-3/2G-0,6-HC
				12 V DC	197001	MHA1-M5H-3/2G-0,6-HC
				24 V DC	197002	MHA1-M1H-3/2G-0,6-HC
			Open	5 V DC	197018	MHA1-M4H-3/2O-0,6-HC
				12 V DC	197019	MHA1-M5H-3/2O-0,6-HC
				24 V DC	197020	MHA1-M1H-3/2O-0,6-HC
	Plug connection on top	2/2-way solenoid valve	Closed	5 V DC	197039	MHA1-M4H-2/2G-0,9-TC
				12 V DC	197040	MHA1-M5H-2/2G-0,9-TC
				24 V DC	197041	MHA1-M1H-2/2G-0,9-TC
		3/2-way solenoid valve	Closed	5 V DC	197003	MHA1-M4H-3/2G-0,6-TC
				12 V DC	197004	MHA1-M5H-3/2G-0,6-TC
				24 V DC	197005	MHA1-M1H-3/2G-0,6-TC
			Open	5 V DC	197021	MHA1-M4H-3/2O-0,6-TC
				12 V DC	197022	MHA1-M5H-3/2O-0,6-TC
				24 V DC	197023	MHA1-M1H-3/2O-0,6-TC
	Plug connection underneath	2/2-way solenoid valve	Closed	5 V DC	197042	MHA1-M4H-2/2G-0,9-PI
				12 V DC	197043	MHA1-M5H-2/2G-0,9-PI
				24 V DC	197044	MHA1-M1H-2/2G-0,9-PI
		3/2-way solenoid valve	Closed	5 V DC	197006	MHA1-M4H-3/2G-0,6-PI
				12 V DC	197007	MHA1-M5H-3/2G-0,6-PI
				24 V DC	197008	MHA1-M1H-3/2G-0,6-PI
			Open	5 V DC	197024	MHA1-M4H-3/2O-0,6-PI
				12 V DC	197025	MHA1-M5H-3/2O-0,6-PI
				24 V DC	197026	MHA1-M1H-3/2O-0,6-PI

Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

Solenoid valves MHA1

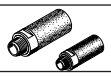
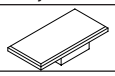
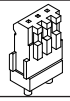
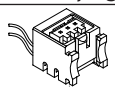
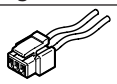
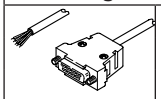
Accessories – Ordering data

				Part No.	Type
Individual sub-base					
	For valves with plug connection at rear or on top	For 2/2-way solenoid valve	1 valve position	197187	MHA1-AS-2-M3
		For 3/2-way solenoid valve	1 valve position	197183	MHA1-AS-3-M3
	For valves with plug connection underneath	For 2/2-way solenoid valve	1 valve position	197189	MHA1-AS-2-M3-PI
		For 3/2-way solenoid valve	1 valve position	197185	MHA1-AS-3-M3-PI
Manifold rail, for valves with plug connection at rear or on top					
	Without plug bases	For 2/2-way solenoid valve	2 valves	197207	MHA1-P2-2-M3
			4 valves	197208	MHA1-P4-2-M3
			6 valves	197209	MHA1-P6-2-M3
			8 valves	197210	MHA1-P8-2-M3
			10 valves	197211	MHA1-P10-2-M3
		For 3/2-way solenoid valve	2 valves	197202	MHA1-PR2-3-M3
			4 valves	197203	MHA1-PR4-3-M3
			6 valves	197204	MHA1-PR6-3-M3
			8 valves	197205	MHA1-PR8-3-M3
			10 valves	197206	MHA1-PR10-3-M3
Manifold rail, for valves with plug connection underneath					
	With plug bases	For 2/2-way solenoid valve	2 valves	197227	MHA1-P2-2-M3-PI
			4 valves	197228	MHA1-P4-2-M3-PI
			6 valves	197229	MHA1-P6-2-M3-PI
			8 valves	197230	MHA1-P8-2-M3-PI
			10 valves	197231	MHA1-P10-2-M3-PI
		For 3/2-way solenoid valve	2 valves	197222	MHA1-PR2-3-M3-PI
			4 valves	197223	MHA1-PR4-3-M3-PI
			6 valves	197224	MHA1-PR6-3-M3-PI
			8 valves	197225	MHA1-PR8-3-M3-PI
			10 valves	197226	MHA1-PR10-3-M3-PI
	With plug bases and electrical multi-pin plug	For 3/2-way solenoid valve	4 valves	197238	MHA1-PR4-3-M3-PI-D9
			6 valves	197239	MHA1-PR6-3-M3-PI-D9
			8 valves	197240	MHA1-PR8-3-M3-PI-D9
			10 valves	197241	MHA1-PR10-3-M3-PI-D25
	Without plug bases for PCB mounting	For 3/2-way solenoid valve	2 valves	197247	MHA1-PR2-3-M3-PI-PCB
			4 valves	197248	MHA1-PR4-3-M3-PI-PCB
			6 valves	197249	MHA1-PR6-3-M3-PI-PCB
			8 valves	197250	MHA1-PR8-3-M3-PI-PCB
			10 valves	197251	MHA1-PR10-3-M3-PI-PCB
	Without plug bases for PCB mounting, with pneumatic multiple connector plate	For 3/2-way solenoid valve	4 valves	197253	MHA1-PR4-3-PI-PCBM
			6 valves	197254	MHA1-PR6-3-PI-PCBM
			8 valves	197255	MHA1-PR8-3-PI-PCBM
			10 valves	197256	MHA1-PR10-3-PI-PCBM
Blanking plate					
	For manifold rail without plug bases			197257	MHAP1-BP-3
	For manifold rail with plug bases			197258	MHAP1-BP-3-PI

Note
Manifold rails with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered online using the MH1 modular product system.

Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

Accessories – Ordering data

				Part No.	Type	PU[1]
Blanking plug						
	For M3 thread			30979	B-M3-S9	10
	For M7 thread			174309	B-M7	10
Silencer						
	M3 connecting thread			1231120	AMTE-M-LH-M3	20
	M7 connecting thread			161418	UC-M7	1
Push-in fitting						
	M3 connecting thread	With internal hex	For tubing O.D. 3 mm	153312	QSM-M3-3-I	10
			For tubing O.D. 4 mm	153314	QSM-M3-4-I	10
		With external hex	For tubing O.D. 3 mm	153301	QSM-M3-3	10
			For tubing O.D. 4 mm	153303	QSM-M3-4	10
	M5 connecting thread	With internal hex	For tubing O.D. 3 mm	153313	QSM-M5-3-I	10
			For tubing O.D. 4 mm	153315	QSM-M5-4-I	10
			For tubing O.D. 6 mm	153317	QSM-M5-6-I	10
		With external hex	For tubing O.D. 3 mm	153302	QSM-M5-3	10
			For tubing O.D. 4 mm	153304	QSM-M5-4	10
			For tubing O.D. 6 mm	153306	QSM-M5-6	10
	M7 connecting thread	With internal hex	For tubing O.D. 4 mm	153319	QSM-M7-4-I	10
			For tubing O.D. 6 mm	153321	QSM-M7-6-I	10
Inscription label						
	For identifying the valve positions			197259	MH-BZ-80X	80
Soldering base						
	For manifold rail for valves with plug connection underneath for PCB mounting, 3-pin			197261	PCBC-A-10	10
				197262	PCBC-A-100	100
Electrical plug-in base						
	For manifold rail, for valves with plug connection underneath	2x flying leads Open end 1-wire	0.5 m	197260	MHAP-PI	1
			1 m	532182	MHAP-PI-1	1
Plug socket with cable						
	Straight socket Connection pattern H 3-pin	2x flying leads Open end 1-wire	0.5 m	566654	NEBV-H1G2-KN-0.5-N-LE2	1
			1 m	566655	NEBV-H1G2-KN-1-N-LE2	1
			2.5 m	566656	NEBV-H1G2-KN-2.5-N-LE2	1
			5 m	566657	NEBV-H1G2-KN-5-N-LE2	1
Connecting cable for manifold rail with electrical multi-pin plug						
	Straight socket, Sub-D, 9-pin	Cable Open end 9-wire	2.5 m	531184	KMP6-09P-8-2,5	1
			5 m	531185	KMP6-09P-8-5	1
			10 m	531186	KMP6-09P-8-10	1
	Straight socket, Sub-D, 25-pin	Cable Open end 15-wire	2.5 m	530049	KMP6-25P-12-2,5	1
			5 m	530050	KMP6-25P-12-5	1
			10 m	530051	KMP6-25P-12-10	1
	Straight socket, Sub-D, 25-pin	Cable Open end 25-wire	2.5 m	530046	KMP6-25P-20-2,5	1
			5 m	530047	KMP6-25P-20-5	1
			10 m	530048	KMP6-25P-20-10	1

1) Packaging unit.

Solenoid valves MHA1

Data sheet

General technical data

Type		MHA1-...-2/2G-...	MHA1-...-3/2G-...	MHA1-...-3/2O-...
Valve function		2/2-way solenoid valve	3/2-way solenoid valve	3/2-way solenoid valve
		Normally closed	Normally closed	Normally open
		Single solenoid	Single solenoid	Single solenoid
Design		Poppet valve with spring return		
Sealing principle		Soft		
Actuation type		Electric		
Reset method		Mechanical spring		
Type of control		Direct		
Direction of flow		Non-reversible		
Suitability for vacuum		Yes	–	–
Exhaust function		No flow control	With flow control	With flow control
Manual override		Non-detenting		
Type of mounting		On sub-base via through-hole		
Mounting position		Any		
Nominal size	[mm]	0.9	0.65	0.7
Standard nominal flow rate	[l/min]	14	10	10
Grid dimension	[mm]	10	10	10
Pneumatic connection	1	Sub-base	Sub-base	–
	2	Sub-base	Sub-base	Sub-base
	3	–	Sub-base	–
	11	–	–	Sub-base
	33	–	–	Sub-base

Operating and environmental conditions

Type		MHA1-...-2/2G-...	MHA1-...-3/2G-...	MHA1-...-3/2O-...
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]	–0.9 ... +2	0 ... 8[1]	0 ... 6[1]
Ambient temperature	[°C]	–5 ... +40		
Temperature of medium	[°C]	–5 ... +40		
Storage temperature	[°C]	–20 ... +60		
Corrosion resistance class CRC[2]		2		
Certification		c UL us Recognized (OL)		
		c CSA us Recognized (OL)		

1) Vacuum operation possible with special connection method è 4
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Safety data

Operating voltage		5 V DC	12 V DC	24 V DC
Note on forced checking procedure		Switching frequency min. 1/week		
Max. positive test pulse with 0 signal	[µs]	–	–	500
Max. negative test pulse with 1 signal	[µs]	–	–	400
Resistance to shocks		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6		

Data sheet

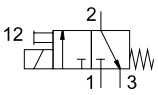
Electrical data		
Operating voltage	[V DC]	5, 12, 24
Permissible voltage fluctuations	[%]	±10
Connection type		Plug connection
Power consumption	[W]	1
Duty cycle	[%]	100
Degree of protection to EN 60529		IP40

Switching times and frequencies					
Type			MHP1-...-2/2G-...	MHP1-...-3/2G-...	MHP1-...-3/2O-...
Switching time	On	[ms]	4	4	4
	Off	[ms]	5	4	4
Maximum switching frequency		[Hz]	20	20	20

Materials	
Housing	Reinforced PA, reinforced PPS
Sub-base	Aluminium
Seals	FPM, HNBR, NBR
Note on materials	RoHS-compliant
Free of copper and PTFE	

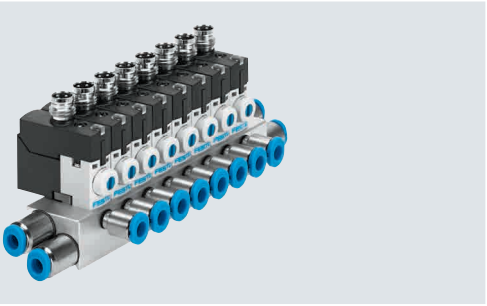
Solenoid valves MHA1-P3

Peripherals overview

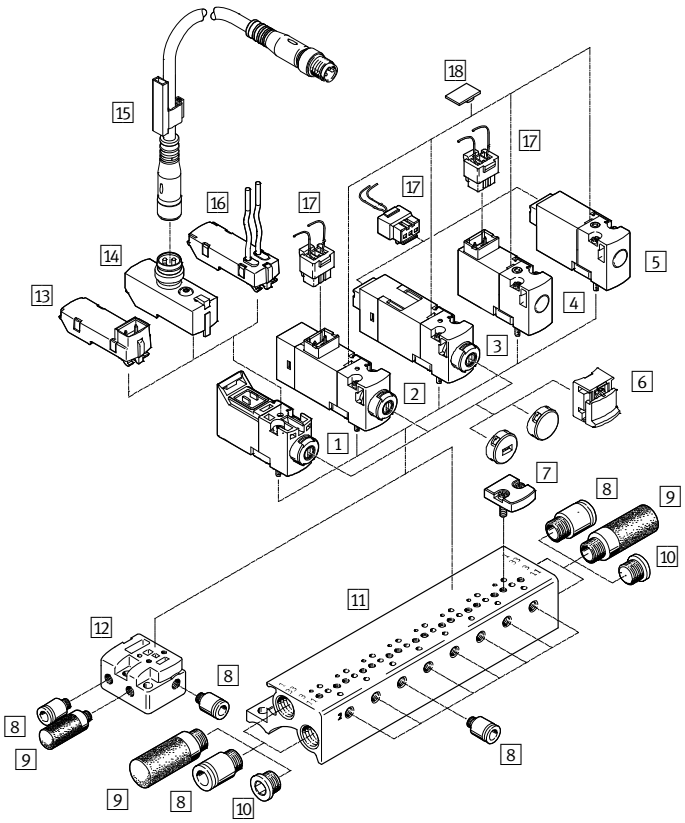


Voltage
5 V DC, 12 V DC, 24 V DC
24 V AC

Operating pressure
1.5 ... 8 bar



MHA1-TC (plug connection at rear), MHA1-HC (plug connection on top)



Designation		Brief description	➔ Page/ Internet
1	Solenoid valve	Valve without plug connection, with manual override, for use with E-box	507
2	Solenoid valve	Valve with plug connection on top, with LED, with manual override	512
3	Solenoid valve	Valve with plug connection at rear, with LED, with manual override	
4	Solenoid valve	Valve with plug connection on top, without LED, without manual override	501
5	Solenoid valve	Valve with plug connection at rear, without LED, without manual override	
6	Cover cap	For manual override	513
7	Blanking plate	For manifold rail without plug bases	507
8	Push-in fitting	For connecting compressed air tubing with standard O.D.	803
9	Silencer	For exhaust ports	507
10	Blanking plug	For sealing ports that are not required	
11	Manifold rail	Without plug bases	
12	Individual sub-base	For valves with plug connection at rear, plug connection on top	
13	E-box	Plug connection pattern H/connection pattern S	508
14	E-box	Plug M8x1	
15	Connecting cable	Socket M8x1, 4-pin	
16	E-box	Open end	
17	Plug socket with cable	Straight socket, connection pattern H, 3-pin	
18	Inscription label	For identifying the valve positions	503

Type code explanation

001	Series
MH	Miniature and fast-switching valves

002	Design
A	Sub-base valve

003	Size
1	Flow rate 10 ... 14 l/min

004	Drive system
M	Solenoid, switching

005	Operating voltage
4	5 V DC
5	12 V DC
1	24 V DC
1A	24 V AC

006	Manual override
R	Non-detenting/detenting

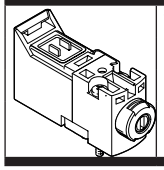
007	Valve function
3/2	3/2-way valve

008	Normal position
G	Closed

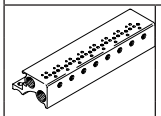
009	Nominal width
0,6	0.65 mm

010	Electrical connection
P3	Without plug connection

Ordering data

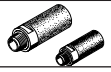
		Valve function	Normal position	Nominal voltage	Part No.	Type
	Without plug connection	3/2-way solenoid valve	Closed	5 V DC	8025224	MHA1-M4R-3/2G-0,6-P3
				12 V DC	8025225	MHA1-M5R-3/2G-0,6-P3
				24 V DC	8025223	MHA1-M1R-3/2G-0,6-P3
				24 V AC	8025226	MHA1-M1AR-3/2G-0,6-P3

Accessories – Ordering data

				Part No.	Type
Individual sub-base					
	For valves with plug connection at rear or on top	For 3/2-way solenoid valve	1 valve position	197183	MHA1-AS-3-M3
Manifold rail, for valves with plug connection at rear or on top					
	Without plug bases	For 3/2-way solenoid valve	2 valves	197202	MHA1-PR2-3-M3
			4 valves	197203	MHA1-PR4-3-M3
			6 valves	197204	MHA1-PR6-3-M3
			8 valves	197205	MHA1-PR8-3-M3
			10 valves	197206	MHA1-PR10-3-M3
Blanking plate					
	For manifold rail without plug bases			197257	MHAP1-BP-3
	For manifold rail with plug bases			197258	MHAP1-BP-3-PI

Note
Manifold rails with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered online using the MH1 modular product system.

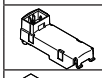
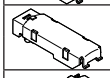
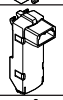
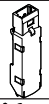
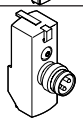
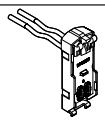
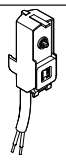
Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

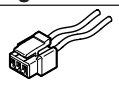
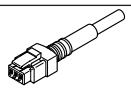
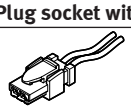
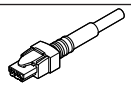
	Description			Part No.	Type	PU[1]
Cover cap for manual override						
	Function covered The cover cap protects the manual override against accidental actuation			540898	VMPA-HBV-B	10
	Function non-detenting The cover cap prevents latching of the manual override			540897	VMPA-HBT-B	10
	Function detenting The cover cap enables the manual override to be actuated and latched without tools			8002234	VAMC-L1-CD	10
Blanking plug						
	For M3 thread			30979	B-M3-S9	10
	For M7 thread			174309	B-M7	10
Silencer						
	M3 connecting thread			1231120	AMTE-M-LH-M3	20
	M7 connecting thread			161418	UC-M7	1
Push-in fitting						
	M3 connecting thread	With internal hex	For tubing O.D. 3 mm	153312	QSM-M3-3-I	10
			For tubing O.D. 4 mm	153314	QSM-M3-4-I	10
		With external hex	For tubing O.D. 3 mm	153301	QSM-M3-3	10
			For tubing O.D. 4 mm	153303	QSM-M3-4	10
	M7 connecting thread	With internal hex	For tubing O.D. 4 mm	153319	QSM-M7-4-I	10
			For tubing O.D. 6 mm	153321	QSM-M7-6-I	10

1) Packaging unit.

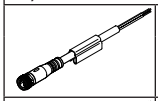
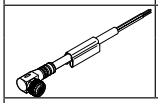
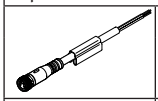
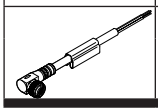
Solenoid valves MHA1-P3

Accessories – Ordering data

Design	Electrical connection	Contacts	Cable length [m]	Nominal operating voltage [V DC]	Holding current reduction	Part No.	Type
E-box with protective circuit							
	Plug connection pattern H, angled	2-pin	–	12/24	–	566714	VAVE-L1-1VH2-LP
				24	■	566716	VAVE-L1-1H2-LR
	Plug connection pattern H, straight	2-pin	–	12/24	–	566715	VAVE-L1-1VH3-LP
				24	■	566717	VAVE-L1-1H3-LR
	Plug connection pattern S, angled	2-pin	–	12/24	–	566718	VAVE-L1-1VS2-LP
				24	■	566720	VAVE-L1-1S2-LR
	Plug connection pattern S, straight	2-pin	–	12/24	–	566719	VAVE-L1-1VS3-LP
				24	■	566721	VAVE-L1-1S3-LR
	Plug M8x1, angled	4-pin	–	12/24	–	573921	VAVE-L1-1VR1-LP
				24	■	573920	VAVE-L1-1R8-LR
		3-pin	–	12/24	–	573919	VAVE-L1-1VR8-LP
				24	■	573922	VAVE-L1-1R1-LR
	2x flying leads, open end	1-wire	0.5	12/24	–	566722	VAVE-L1-1VL1-LP
				24	■	566726	VAVE-L1-1L1-LR
			1	12/24	–	566723	VAVE-L1-1VL2-LP
				24	■	566727	VAVE-L1-1L2-LR
			2.5	12/24	–	566724	VAVE-L1-1VL3-LP
				24	■	566728	VAVE-L1-1L3-LR
			5	12/24	–	566725	VAVE-L1-1VL4-LP
				24	■	566729	VAVE-L1-1L4-LR
	Cable, open end	2-wire	0.5	12/24	–	573941	VAVE-L1-1VK6-LP
				24	■	573945	VAVE-L1-1K6-LR
			1	12/24	–	573942	VAVE-L1-1VK7-LP
				24	■	573946	VAVE-L1-1K7-LR
			2.5	12/24	–	573943	VAVE-L1-1VK8-LP
				24	■	573947	VAVE-L1-1K8-LR
			5	12/24	–	573944	VAVE-L1-1VK9-LP
				24	■	573948	VAVE-L1-1K9-LR

	Electrical connection 1	Electrical connection 2	Length	Part No.	Type
Plug socket with cable for plug connection pattern H					
	Straight socket Connection pattern H 3-pin	2x flying leads Open end 1-wire	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
	Straight socket Connection pattern H 3-pin	Cable Open end 2-wire	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
Plug socket with cable for plug connection pattern S					
	Straight socket Connection pattern S 2-pin	2x flying leads Open end 1-wire	0.5 m	566662	NEBV-HSG2-KN-0.5-N-LE2
			1 m	566663	NEBV-HSG2-KN-1-N-LE2
			2.5 m	566664	NEBV-HSG2-KN-2.5-N-LE2
			5 m	566665	NEBV-HSG2-KN-5-N-LE2
	Straight socket Connection pattern S 2-pin	Cable Open end 2-wire	0.5 m	566666	NEBV-HSG2-P-0.5-N-LE2
			1 m	566667	NEBV-HSG2-P-1-N-LE2
			2.5 m	566668	NEBV-HSG2-P-2.5-N-LE2
			5 m	566669	NEBV-HSG2-P-5-LE2

Accessories – Ordering data

	Electrical connection 1	Electrical connection 2	Length	Part No.	Type
Connecting cable for plug M8x1					
4-pin					
	Straight socket Plug coding type A, to EN 61076-2-104	Cable Open end 4-wire	2.5 m	541342	NEBU-M8G4-K-2.5-LE4
			5 m	541343	NEBU-M8G4-K-5-LE4
	Angled socket Plug coding type A, to EN 61076-2-104	Cable Open end 4-wire	2.5 m	541344	NEBU-M8W4-K-2.5-LE4
			5 m	541345	NEBU-M8W4-K-5-LE4
3-pin					
	Straight socket Plug coding type A, to EN 61076-2-104	Cable Open end 3-wire	2.5 m	541333	NEBU-M8G3-K-2.5-LE3
			5 m	541334	NEBU-M8G3-K-5-LE3
	Angled socket Plug coding type A, to EN 61076-2-104	Cable Open end 3-wire	2.5 m	541338	NEBU-M8W3-K-2.5-LE3
			5 m	541341	NEBU-M8W3-K-5-LE3

Data sheet

General technical data		
Valve function		3/2-way solenoid valve
		Normally closed
		Single solenoid
Design		Poppet valve with spring return
Sealing principle		Soft
Actuation type		Electric
Reset method		Mechanical spring
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		With flow control
Manual override		Non-detenting/detenting
Signal status display		–
Type of mounting		On sub-base via through-hole
Mounting position		Any
Nominal size	[mm]	0.65
Standard nominal flow rate	[l/min]	10
Grid dimension	[mm]	10
Pneumatic connection	1	Sub-base
	2	Sub-base
	3	Sub-base

Operating and environmental conditions					
Type		MHA1-M4R-...	MHA1-M5R-...	MHA1-M1R-...	MHA1-M1AR-...
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]	1.5 ... 8[1]			
Ambient temperature	[°C]	–5 ... +40	–5 ... +40	–5 ... +50	–5 ... +50
Temperature of medium	[°C]	–5 ... +50	–5 ... +50	–5 ... +50	–5 ... +50
Restricted ambient and media temperature	[°C]	–	–	–5 ... +40	–
		–	–	Without holding current reduction	–
Storage temperature	[°C]	–20 ... +60	–20 ... +60	–20 ... +60	–20 ... +60
Corrosion resistance class CRC[1]		2	2	2	2

1) Vacuum operation possible with special connection method è 4
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Solenoid valves MHA1-P3

Data sheet

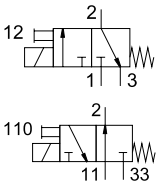
Safety data					
Operating voltage		5 V DC	12 V DC	24 V DC	24 V AC
Note on forced checking procedure		Switching frequency min. 1/week			
Max. positive test pulse with 0 signal	[µs]	–	–	500	–
Max. negative test pulse with 1 signal	[µs]	–	–	400	–
Resistance to shocks		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27			
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6			

Electrical data					
Type		MHA1-M4R-...	MHA1-M5R-...	MHA1-M1R-...	MHA1-M1AR-...
Operating voltage	[V DC]	5	12	24	–
	[V AC]	–	–	–	24, 50/60 Hz
Permissible voltage fluctuations	[%]	±10	±10	±10	±10
Connection type		Plug connection	Plug connection	Plug connection	Plug connection
Power consumption	[W]	1	1	1	–
	[VA]	–	–	–	1
Duty cycle	[%]	100	100	100	100
Degree of protection to EN 60529		IP40	IP40	IP40	IP40
IP65		IP65	–		
IP65					

Switching times and frequencies						
Type			MHA1-M4R-...	MHA1-M5R-...	MHA1-M1R-...	MHA1-M1AR-...
Switching time	On	[ms]	5	5	5	5
	Off	[ms]	5	5	5	10
Maximum switching frequency		[Hz]	10	10	10	10

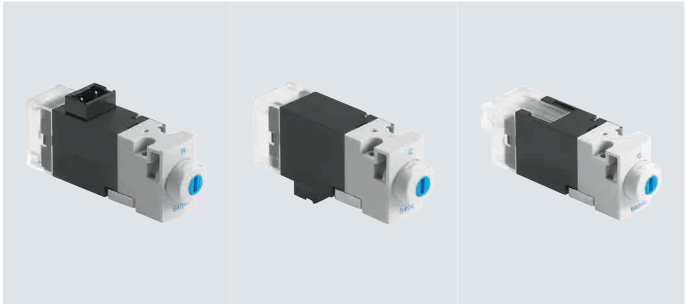
Materials	
Housing	Reinforced PA, reinforced PPS
Sub-base	Aluminium
Seals	FPM, HNBR, NBR
Note on materials	RoHS-compliant
	Free of copper and PTFE

Peripherals overview

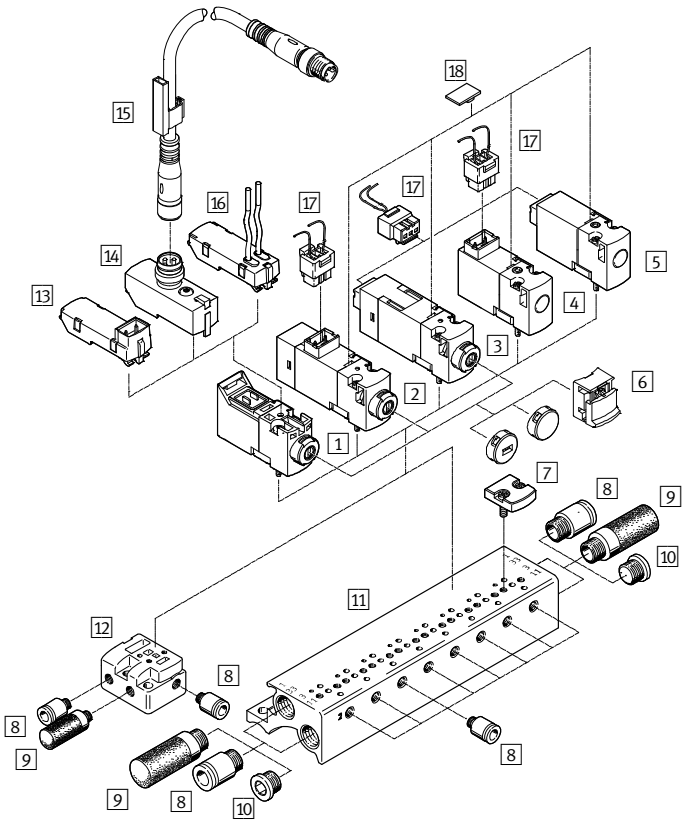


Voltage
5 V DC, 12 V DC, 24 V DC
24 V AC

Operating pressure
0 ... 8 bar



MHA1-TC (plug connection at rear), MHA1-HC (plug connection on top)



Designation	Brief description	➔ Page/ Internet
1 Solenoid valve	Valve without plug connection, with manual override, for use with E-box	507
2 Solenoid valve	Valve with plug connection on top, with LED, with manual override	512
3 Solenoid valve	Valve with plug connection at rear, with LED, with manual override	
4 Solenoid valve	Valve with plug connection on top, without LED, without manual override	501
5 Solenoid valve	Valve with plug connection at rear, without LED, without manual override	
6 Cover cap	For manual override	513
7 Blanking plate	For manifold rail without plug bases	512
8 Push-in fitting	For connecting compressed air tubing with standard O.D.	803
9 Silencer	For exhaust ports	513
10 Blanking plug	For sealing ports that are not required	
11 Manifold rail	Without plug bases	512
12 Individual sub-base	For valves with plug connection at rear, plug connection on top	
13 E-box	Plug connection pattern H/connection pattern S	508
14 E-box	Plug M8x1	
15 Connecting cable	Socket M8x1, 4-pin	
16 E-box	Open end	
17 Plug socket with cable	Straight socket, connection pattern H, 3-pin	513
18 Inscription label	For identifying the valve positions	

Type code explanation

001	Series
MH	Miniature and fast-switching valves

002	Design
A	Sub-base valve

003	Size
1	Flow rate 10 ... 14 l/min

004	Drive system
M	Solenoid, switching

005	Operating voltage
1	24 V DC

006	Signal status display
L	LED

007	Manual override
H	Non-detenting/detenting

008	Valve function
3/2	3/2-way valve

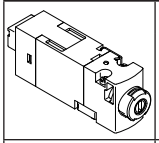
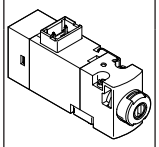
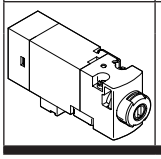
009	Normal position
G	Closed
O	Open

010	Nominal width
0,6	0.65 mm

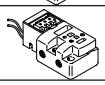
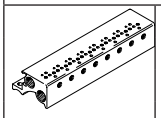
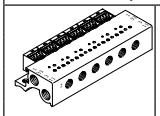
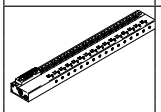
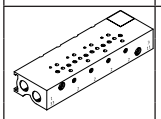
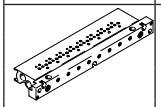
011	Electrical connection
HC	Plug connection at rear for plug socket NEBV-H1G2
TC	Plug connection on top for plug socket NEBV-H1G2
PI	Plug connection underneath for plug-in connection

Solenoid valves MHA1-M1LH

Ordering data

		Valve function	Normal position	Nominal voltage	Part No.	Type
	Plug connection at rear	3/2-way solenoid valve	Closed	24 V DC	540443	MHA1-M1LH-3/2G-0,6-HC
			Open	24 V DC	540440	MHA1-M1LH-3/2O-0,6-HC
	Plug connection on top	3/2-way solenoid valve	Closed	24 V DC	540444	MHA1-M1LH-3/2G-0,6-TC
			Open	24 V DC	540441	MHA1-M1LH-3/2O-0,6-TC
	Plug connection underneath	3/2-way solenoid valve	Closed	24 V DC	540445	MHA1-M1LH-3/2G-0,6-PI
			Open	24 V DC	540442	MHA1-M1LH-3/2O-0,6-PI

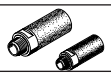
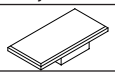
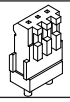
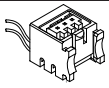
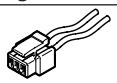
Accessories – Ordering data

				Part No.	Type
Individual sub-base					
	For valves with plug connection at rear or on top	For 3/2-way solenoid valve	1 valve position	197183	MHA1-AS-3-M3
	For valves with plug connection underneath	For 3/2-way solenoid valve	1 valve position	197185	MHA1-AS-3-M3-PI
Manifold rail, for valves with plug connection at rear or on top					
	Without plug bases	For 3/2-way solenoid valve	2 valves	197202	MHA1-PR2-3-M3
			4 valves	197203	MHA1-PR4-3-M3
			6 valves	197204	MHA1-PR6-3-M3
			8 valves	197205	MHA1-PR8-3-M3
			10 valves	197206	MHA1-PR10-3-M3
Manifold rail, for valves with plug connection underneath					
	With plug bases	For 3/2-way solenoid valve	2 valves	197222	MHA1-PR2-3-M3-PI
			4 valves	197223	MHA1-PR4-3-M3-PI
			6 valves	197224	MHA1-PR6-3-M3-PI
			8 valves	197225	MHA1-PR8-3-M3-PI
			10 valves	197226	MHA1-PR10-3-M3-PI
	With plug bases and electrical multi-pin plug	For 3/2-way solenoid valve	4 valves	197238	MHA1-PR4-3-M3-PI-D9
			6 valves	197239	MHA1-PR6-3-M3-PI-D9
			8 valves	197240	MHA1-PR8-3-M3-PI-D9
			10 valves	197241	MHA1-PR10-3-M3-PI-D25
	Without plug bases for PCB mounting	For 3/2-way solenoid valve	2 valves	197247	MHA1-PR2-3-M3-PI-PCB
			4 valves	197248	MHA1-PR4-3-M3-PI-PCB
			6 valves	197249	MHA1-PR6-3-M3-PI-PCB
			8 valves	197250	MHA1-PR8-3-M3-PI-PCB
			10 valves	197251	MHA1-PR10-3-M3-PI-PCB
	Without plug bases for PCB mounting, with pneumatic multiple connector plate	For 3/2-way solenoid valve	4 valves	197253	MHA1-PR4-3-PI-PCBM
			6 valves	197254	MHA1-PR6-3-PI-PCBM
			8 valves	197255	MHA1-PR8-3-PI-PCBM
			10 valves	197256	MHA1-PR10-3-PI-PCBM
Blanking plate					
	For manifold rail without plug bases			197257	MHAP1-BP-3
	For manifold rail with plug bases			197258	MHAP1-BP-3-PI

Note
Manifold rails with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered online using the MH1 modular product system.

Note
Valves of the type 3/2G and 3/2O must not be mixed on a manifold rail.

Accessories – Ordering data

	Description			Part No.	Type	PU[1]
Cover cap for manual override						
	Function covered The cover cap protects the manual override against accidental actuation			540898	VMPA-HBV-B	10
	Function non-detenting The cover cap prevents latching of the manual override			540897	VMPA-HBT-B	10
	Function detenting The cover cap enables the manual override to be actuated and latched without tools			8002234	VAMC-L1-CD	10
Blanking plug						
	For M3 thread			30979	B-M3-S9	10
	For M7 thread			174309	B-M7	10
Silencer						
	M3 connecting thread			1231120	AMTE-M-LH-M3	20
	M7 connecting thread			161418	UC-M7	1
Push-in fitting						
	M3 connecting thread	With internal hex	For tubing O.D. 3 mm	153312	QSM-M3-3-I	10
			For tubing O.D. 4 mm	153314	QSM-M3-4-I	10
		With external hex	For tubing O.D. 3 mm	153301	QSM-M3-3	10
			For tubing O.D. 4 mm	153303	QSM-M3-4	10
	M5 connecting thread	With internal hex	For tubing O.D. 3 mm	153313	QSM-M5-3-I	10
			For tubing O.D. 4 mm	153315	QSM-M5-4-I	10
			For tubing O.D. 6 mm	153317	QSM-M5-6-I	10
		With external hex	For tubing O.D. 3 mm	153302	QSM-M5-3	10
			For tubing O.D. 4 mm	153304	QSM-M5-4	10
			For tubing O.D. 6 mm	153306	QSM-M5-6	10
	M7 connecting thread	With internal hex	For tubing O.D. 4 mm	153319	QSM-M7-4-I	10
			For tubing O.D. 6 mm	153321	QSM-M7-6-I	10
Inscription label						
	For identifying the valve positions			197259	MH-BZ-80X	80
Soldering base						
	For manifold rail for valves with plug connection underneath for PCB mounting, 3-pin			197261	PCBC-A-10	10
				197262	PCBC-A-100	100
Electrical plug-in base						
	For manifold rail, for valves with plug connection underneath	2x flying leads Open end 1-wire	0.5 m	197260	MHAP-PI	1
			1 m	532182	MHAP-PI-1	1
Plug socket with cable						
	Straight socket Connection pattern H 3-pin	2x flying leads Open end 1-wire	0.5 m	566654	NEBV-H1G2-KN-0.5-N-LE2	1
			1 m	566655	NEBV-H1G2-KN-1-N-LE2	1
			2.5 m	566656	NEBV-H1G2-KN-2.5-N-LE2	1
			5 m	566657	NEBV-H1G2-KN-5-N-LE2	1

1) Packaging unit.

Solenoid valves MHA1-M1LH

Data sheet

General technical data			
Type		MHA1-M1LH-...-3/2G-...	MHA1-M1LH-...-3/2O-...
Valve function		3/2-way solenoid valve	3/2-way solenoid valve
		Normally closed	Normally open
		Single solenoid	Single solenoid
Design		Poppet valve with spring return	
Sealing principle		Soft	
Actuation type		Electric	
Reset method		Mechanical spring	
Type of control		Direct	
Direction of flow		Non-reversible	
Exhaust function		With flow control	
Manual override		Non-detenting/detenting	
Signal status display		LED	
Type of mounting		On sub-base via through-hole	
Mounting position		Any	
Nominal size	[mm]	0.65	0.7
Standard nominal flow rate	[l/min]	10	10
Grid dimension	[mm]	10	10
Pneumatic connection	1	Sub-base	–
	2	Sub-base	Sub-base
	3	Sub-base	–
	11	–	Sub-base
	33	–	Sub-base

Operating and environmental conditions			
Type		MHA1-M1LH-...-3/2G-...	MHA1-M1LH-...-3/2O-...
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 ... 8[1]	0 ... 6[1]
Ambient temperature	[°C]	–5 ... +40	
Temperature of medium	[°C]	–5 ... +40	
Storage temperature	[°C]	–20 ... +60	
Corrosion resistance class CRC[2]		2	
Certification		c UL us Recognized (OL)	
		c CSA us Recognized (OL)	

1) Vacuum operation possible with special connection method è 4
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Safety data	
Note on forced checking procedure	Switching frequency min. 1/week
Resistance to shocks	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Electrical data		
Operating voltage	[V DC]	24
Permissible voltage fluctuations	[%]	±10
Connection type		Plug connection
Power consumption	[W]	1.1
Duty cycle	[%]	100
Degree of protection to EN 60529		IP40

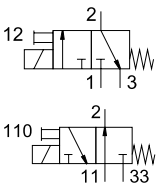
Data sheet

Switching times and frequencies			
Switching time	On	[ms]	4
	Off	[ms]	4
Maximum switching frequency		[Hz]	20

Materials	
Housing	Reinforced PA, reinforced PPS
Sub-base	Aluminium
Seals	FPM, HNBR, NBR
Note on materials	RoHS-compliant
	Free of copper and PTFE

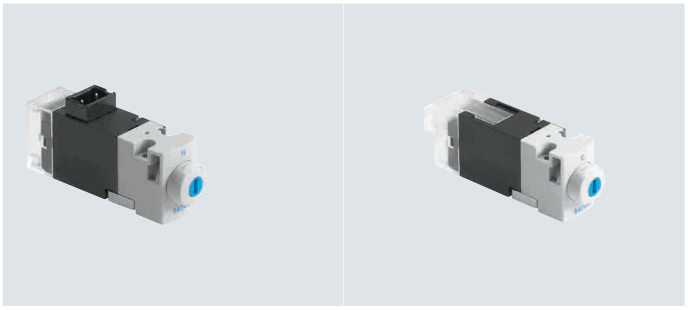
Solenoid valves MHA1-2x2/2

Peripherals overview

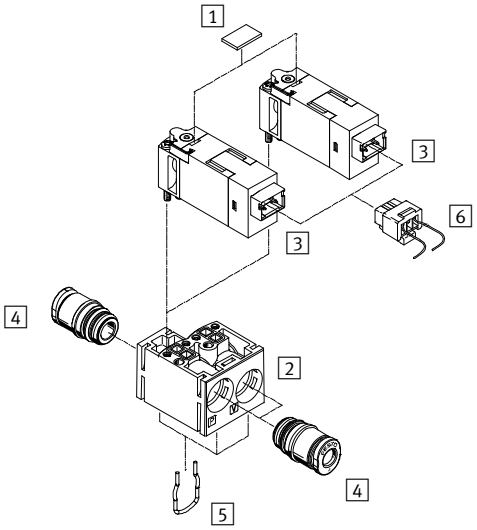


Voltage
24 V DC

Operating pressure
–0.95 ... +1.5 bar



2x2/2-way sub-base valve with LED



Designation		Brief description	➔ Page/ Internet
1	Inscription label	For identifying the valve positions	517
2	Sub-base	Included in the scope of delivery	–
3	Solenoid valve	2/2-way valve, normally closed	516
4	Push-in cartridge	Included in the scope of delivery	517
5	Clip	Included in the scope of delivery	–
6	Plug socket with cable	Straight socket, connection pattern H, 3-pin	517

Type code explanation

001	Series
MH	Miniature and fast-switching valves

002	Design
A	Sub-base valve

003	Size
1	Flow rate 10 ... 14 l/min

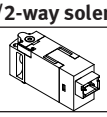
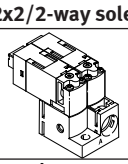
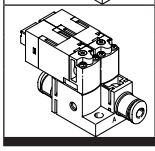
004	Valve function
2X2/2	2x2/2-way valve on sub-base

005	Normal position
G	Closed

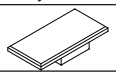
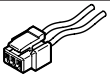
006	Nominal width
1,5	1.5 mm

007	Electrical connection
–	With connection for 10 mm cartridge
333	With push-in connector for tubing O.D. 3 mm
444	With push-in connector for tubing O.D. 4 mm
443	With push-in connector for tubing O.D. 4 mm, port 2 with push-in connector for tubing O.D. 3 mm

Ordering data

	Pneumatic connection	Part No.	Type
2/2-way solenoid valve			
 Plug connection at rear	Via sub-base	557864	MHA1-M1LCH-2/2G-1.5-HC
2x2/2-way solenoid valve on sub-base			
 Plug connection at rear	Connection for 10 mm cartridge	563365	MHA1-2X2/2G-1,5
 Plug connection at rear	Push-in connector for tubing O.D. 3 mm	562051	MHA1-2X2/2G-1,5-3-3-3
	Push-in connector for tubing O.D. 4 mm	566175	MHA1-2X2/2G-1,5-4-4-4
	Push-in connector for tubing O.D. 4 mm, port 2 with push-in connector for tubing O.D. 3 mm	560372	MHA1-2X2/2G-1,5-4-4-3

Accessories – Ordering data

				Part No.	Type	PU[1]
Push-in fittings						
	10 mm cartridge	Plastic	For tubing O.D. 3 mm	132621	QSPKG10-3	10
			For tubing O.D. 4 mm	132622	QSPKG10-4	10
			For tubing O.D. 6 mm	132623	QSPKG10-6	10
Inscription label						
	For identifying the valve positions			197259	MH-BZ-80X	80
Plug socket with cable						
	Straight socket Connection pattern H 3-pin	2x flying leads Open end 1-wire	0.5 m	566654	NEBV-H1G2-KN-0.5-N-LE2	1
			1 m	566655	NEBV-H1G2-KN-1-N-LE2	1
			2.5 m	566656	NEBV-H1G2-KN-2.5-N-LE2	1
			5 m	566657	NEBV-H1G2-KN-5-N-LE2	1

1) Packaging unit.

Data sheet

General technical data			
Valve function		2/2-way, single solenoid	2x2/2-way, single solenoid
Design		Poppet valve with spring return	
Sealing principle		Soft	
Actuation type		Electric	
Reset method		Mechanical spring	
Type of control		Direct	
Direction of flow		Non-reversible	
Suitability for vacuum		Yes	
Exhaust function		No flow control	
Manual override		Non-detenting	
Signal status display		LED	
Type of mounting		On sub-base via through-hole	Via through-hole
Mounting position		Any	
Nominal size	[mm]	1.5	
Standard nominal flow rate	[l/min]	30	
Width	[mm]	10	20
Grid dimension	[mm]	10	20
Pneumatic connection	1	–	QS3, QS4
	11	–	QS3, QS4
	2	–	QS3, QS4

Operating and environmental 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	Port 1	[bar]	0 ... 1.5
	Port 11	[bar]	– 0.95 ... 0
Ambient temperature		[°C]	–5 ... +50
Temperature of medium		[°C]	–5 ... +50
Storage temperature		[°C]	–20 ... +60
Corrosion resistance class CRC[1]			2
CE marking (see declaration of conformity)			In accordance with EU EMC Directive[2]

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp è Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Solenoid valves MHA1-2x2/2

Data sheet

Safety data	
Resistance to shocks	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		Plug connection
Power consumption	[W]	3, following current reduction 0.7
Duty cycle	[%]	100
Max. cable length	[m]	30
Degree of protection to EN 60529		
With plug socket NEBV-H1G2		IP40

Switching times and frequencies			
Switching time	On	[ms]	6
	Off	[ms]	6
Maximum switching frequency		[Hz]	10

Materials	
Housing	Reinforced PA, reinforced PPS
Screws	Steel
Seals	FPM, HNBR, NBR
Note on materials	RoHS-compliant
	Free of copper and PTFE

One-way flow control valves GRLA, GRLZ

Highlights

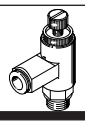
+ Flow control valves, flow control at one end
+ Standard, mini, in-line variants with different flow rates and minimal height
+ Polymer, metal or stainless steel design
+ Connections: thread at both ends, push-in connector at both ends, thread/push-in connector

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

One-way flow control valves GRLA, GRLZ

Product range overview

Valve function	Version	Type	Connection direction	Pneumatic connection 1	Pneumatic connection 2	qnN[1] [l/min]	Adjustment component
Metal							
Exhaust air one-way flow control function		GRLA	Elbow outlet	QS-3, QS-4, QS-6, QS-8, QS-10, QS-12	M3, M5, G1/8, G1/4, G3⁄8, G1/2	40 … 1,580	Slotted head screw
							Knurled screw
				M3, M5, G1/8, G1/4, G3/8, G1/2, G3/4	M3, M5, G1/8, G1/4, G3/8, G1/2, G3/4	0 … 4,320	Slotted head screw
				M5, G1/8, G1/4	M5, G1/8, G1/4	95 … 610	Knurled screw
		GRLSA	Elbow outlet	QS-6, QS-8	G1/8, G1/	0 … 450	Rotary knob with scale, internal hex
Supply air one-way flow control function		GRLZ	Elbow outlet	QS-3, QS-4, QS-6, QS-8	M3, M5, G1/8	41 … 215	Slotted head screw
							Knurled screw
				M3, M5, G1/8, G1/4	M3, M5, G1/8, G1/4	0 … 610	Slotted head screw
Polymer							
Exhaust air one-way flow control function		GRLA	Elbow outlet	QS-6, QS-8	G1/8, G1/4, G3⁄8	520 … 650	Knurled screw

Features

Function

Flow control or one-way flow control valves regulate the piston speed of pneumatic drives during advance and return strokes. This is done through suitable restriction of the flow rate of compressed air in exhaust air or supply air direction. With the one-way flow control valve GRLA or GRLZ, the flow control function works in one direction only (exhaust air or supply air); the non-return function works in the opposite direction. With the flow control valve GRLO, the flow control function is active in both directions.

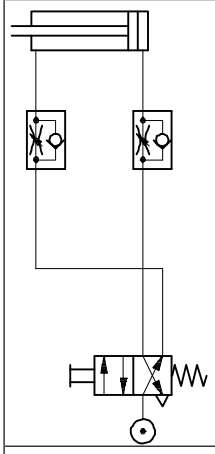
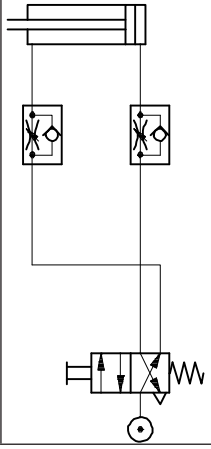
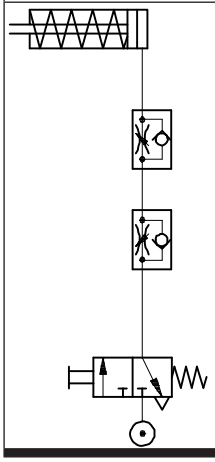
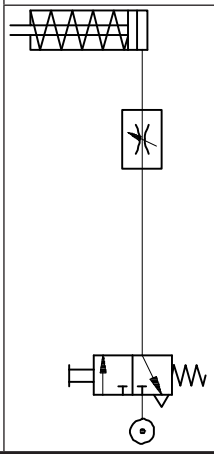
The flow control function creates an adjustable annular gap inside the valve. This gap can be increased or decreased by turning the knurled screw or slotted head screw. The required restriction can be set with the help of this adjustment component.

General information

Standard nominal flow rate qnN
The standard nominal flow rate qnN is the flow rate based on standard conditions at an operating pressure of p1 = 6 bar and an output pressure of p2 = 5 bar, measured at room temperature t = 20 °C.
Standard flow rate qn
The standard flow rate is measured at an operating pressure of p1 = 6 bar and an output pressure with respect to atmospheric pressure (p2 = 0 bar).

Application examples

Flow control functions and range of applications

Application	Description	Application	Description
Double-acting cylinder with one-way flow control valve			
Exhaust air one-way flow control function		Supply air one-way flow control function	
	Speed adjustment through exhaust air flow control. Uncontrolled supply air and controlled exhaust air move the piston between air cushions (improves motion, even with load changes).		Adjustable speed during advance and return strokes. The flow rate is identical in both directions.
Single-acting cylinder with one-way flow control valve		**Single-acting cylinder with flow control valve**	
Exhaust air and supply air one-way flow control function		Flow control function in both directions	
	Adjustable speed during advance and return strokes. The flow rate can be adjusted differently for both directions.		Speed adjustment through flow control on both sides is often applied in the case of single-acting or small cylinders. The benefit of this application lies in its simplicity.

Type code explanation

001	Series	
GRLA	One-way flow control valve, exhaust air one-way flow control function	
GRLSA	One-way flow control valve, exhaust air one-way flow control function, with rotary knob	
GRLZ	One-way flow control valve, supply air one-way flow control function	

002	Pneumatic connection 2	
M3, M5, 1/8, 1/4, 3/8, 1/2, 3/4	Male thread	

003	Pneumatic connection 1, connection type	
–	Female thread (connection size as for connection 2)	
QS	Push-in connector QS	

004	Pneumatic connection 1, tubing O. D.	
3, 4, 6, 8, 10, 12	Tubing O.D. with push-in connector QS	

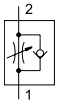
005	Adjustment component	
–	Slotted head screw	
RS	Knurled screw	

006	Flow rate characteristic	
LF	Low flow	
MF	Medium flow	

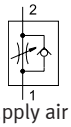
007	Generation	
B	B series	
C	C series	
D	D series	

One-way flow control valves GRLA, GRLZ

Ordering data – GRLA/GRLZ, push-in connector QS, metal



Exhaust air control GRLA



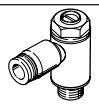
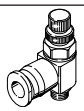
Supply air control GRLZ

Flow rate
100 ... 1,580 l/min

Temperature range
–10 ... +60 °C

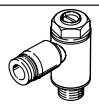
Operating pressure
0.2 ... 10 bar

Exhaust air one-way flow control function

	Pneumatic connection		Standard nominal flow rate qnN at 6 → 5 bar		Standard flow rate qn at 6 → 0 bar		Part No.	Type
			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]		
Slotted head screw								
	M3	QS-3	41	27 ... 50	95	75 ... 110	175041	GRLA-M3-QS-3
	M5	QS-3	40	46 ... 70	80	90 ... 140	175053	GRLA-M5-QS-3-LF-C
		QS-4	40	50 ... 75	80	100 ... 150	175056	GRLA-M5-QS-4-LF-C
	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	1,300	1,080 ... 1,420	★193150	GRLA-3/8-QS-8-D
		QS-10	900	540 ... 975	1,400	1,160 ... 1,620	★193151	GRLA-3/8-QS-10-D
	G1/2	QS-12	1,580	925 ... 1,605	2,220	1,910 ... 2,500	★193152	GRLA-1/2-QS-12-D
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	1,300	1,080 ... 1,420	★534342	GRLA-3/8-QS-8-RS-D
		QS-10	900	540 ... 975	1,400	1,160 ... 1,620	★534343	GRLA-3/8-QS-10-RS-D
	G1/2	QS-12	1,580	925 ... 1,605	2,220	1,910 ... 2,500	★534344	GRLA-1/2-QS-12-RS-D

Ordering data – GRLA/GRLZ, push-in connector QS, metal

Supply air one-way flow control function

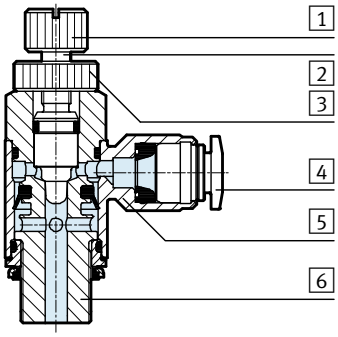
	Pneumatic connection		Standard nominal flow rate qnN at 6 → 5 bar		Standard flow rate qn at 6 → 0 bar		Part No.	Type
			in direction of flow control	in non-return direction	in direction of flow control	in non-return direction		
	2	1	[l/min]	[l/min]	[l/min]	[l/min]		
Slotted head screw								
	M3	QS-3	41	27 ... 44	95	75 ... 100	175043	GRLZ-M3-QS-3
	M5	QS-3	48	36 ... 52	80	60 ... 90	175055	GRLZ-M5-QS-3-LF-C
		QS-4	48	40 ... 65	80	65 ... 110	175058	GRLZ-M5-QS-4-LF-C
	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

Data sheet – GRLA/GRLZ, push-in connector QS, metal

Operating and environmental conditions		
Operating pressure complete temperature range	[bar]	0.2 ... 10
Operating medium		Compressed air in accordance with ISO 85731:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Storage temperature	[°C]	–10 ... +40

Materials

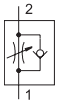
Sectional view



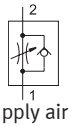
Legend	
1 Knurled head (only GRLA-...-RS)	Anodised wrought aluminium alloy
2 Adjusting screw	Brass
3 Hollow bolt (only GRLA-...-RS)	Anodised wrought aluminium alloy
4 Releasing ring	POM
5 Swivel connection	Die-cast zinc, chromed
6 Threaded plug	Wrought aluminium alloy GRLA/GRLZ-M5: Brass
– Seals	NBR
Note on materials	RoHS-compliant
Clean room class to ISO 14644-1	4

One-way flow control valves GRLA, GRLZ

Ordering data – GRLA/GRLZ, female thread, metal



Exhaust air control

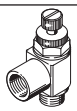
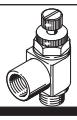


Supply air control

Flow rate
83 ... 4,320 l/min

Temperature range
–10 ... +60 °C

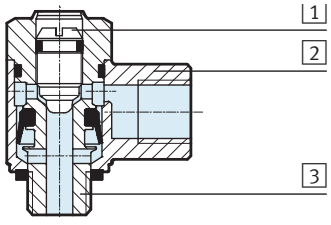
Operating pressure
0.2 ... 10 bar

	Pneumatic connection		Standard nominal flow rate qnN at 6 → 5 bar		Standard flow rate qn at 6 → 0 bar		Part No.	Type
			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								
Slotted head screw								
	M3	M3	18	18 ... 20	33	33 ... 37	175038	GRLA-M3
	M5	M5	95	76 ... 95	169	135 ... 170	151160	GRLA-M5-B
	G1/8	G1/8	340	260 ... 420	615	470 ... 760	151165	GRLA-1/8-B
	G1/4	G1/4	610	450 ... 820	1,200	885 ... 1,615	151172	GRLA-1/4-B
	G3/8	G3/8	1,450	970 ... 1,600	2,300	1,540 ... 2,540	151178	GRLA-3/8-B
	G1/2	G1/2	2,100	1,550 ... 2,200	4,000	2,950 ... 4,190	151179	GRLA-1/2-B
	G3/4	G3/4	4,320	3,220 ... 4,720	7,300	5,440 ... 7,300	151180	GRLA-3/4-B
Knurled screw								
	M5	M5	95	76 ... 95	169	135 ... 170	151163	GRLA-M5-RS-B
	G1/8	G1/8	340	260 ... 420	615	470 ... 760	151169	GRLA-1/8-RS-B
	G1/4	G1/4	610	450 ... 820	1,200	885 ... 1,615	151175	GRLA-1/4-RS-B
Supply air one-way flow control function								
Slotted head screw								
	M3	M3	18	18 ... 20	33	33 ... 37	175040	GRLZ-M3
	M5	M5	95	76 ... 95	169	135 ... 170	151183	GRLZ-M5-B
	G1/8	G1/8	340	260 ... 420	615	470 ... 760	151188	GRLZ-1/8-B
	G1/4	G1/4	610	450 ... 820	1,200	885 ... 1,615	151195	GRLZ-1/4-B
Knurled screw								
	M5	M5	95	76 ... 95	169	135 ... 170	151186	GRLZ-M5-RS-B
	G1/8	G1/8	340	260 ... 420	615	470 ... 760	151192	GRLZ-1/8-RS-B
	G1/4	G1/4	610	450 ... 820	1,200	885 ... 1,615	151198	GRLZ-1/4-RS-B

Data sheet

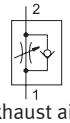
Operating and environmental conditions							
Pneumatic connection 2		M5	G1/8	G1/4	G3/8	G1/2	G3/4
Operating pressure	[bar]	0.2 ... 10	0.3 ... 10				
Operating medium		Compressed air in accordance with ISO 85731:2010 [7:4:4]					
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)					
Ambient temperature	[°C]	–10 ... +60					
Temperature of medium	[°C]	–10 ... +60					
Storage temperature	[°C]	–10 ... +40					

Materials



1	Adjusting screw	Brass
2	Swivel connection	Die-cast zinc
3	Threaded plug	Wrought aluminium alloy; GRLA/GRLZ-M5: Brass
–	Seals	NBR
Note on materials		RoHS-compliant
Clean room class to ISO 14644-1		4

Ordering data – GRLSA, push-in connector QS, metal



Exhaust air control

Flow rate
0 ... 450 l/min

Temperature range
–10 ... +60 °C

Operating pressure
0.2 ... 10 bar

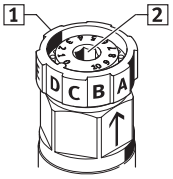
Ordering data – Exhaust air one-way flow control function

	Pneumatic connection		Standard nominal flow rate qnN at 6 → 5 bar		Standard flow rate qn at 6 → 0 bar		Part No.	Type
			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]		
Rotary knob with scale and internal hex								
	G1/8	QS-6	0 ... 250	180 ... 310	0 ... 410	430 ... 540	540661	GRLSA-1/8-QS-6
	G1/4	QS-8	0 ... 450	390 ... 570	0 ... 700	820 ... 930	540662	GRLSA-1/4-QS-8

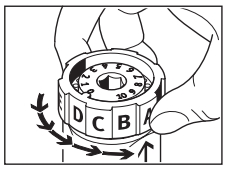
Data sheet

This one-way flow control valve offers the ideal conditions for optimum and easy setting of the flow rate in a unique design.

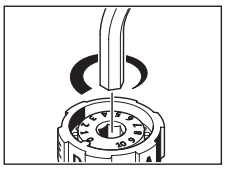
There are two setting options:



1 Gradual for preselection of the flow range in 5 stages via rotary switch: A, B, C, D, E



2 Infinitely variable for precision adjustment using internal hex via a scale marked from 0 to 10

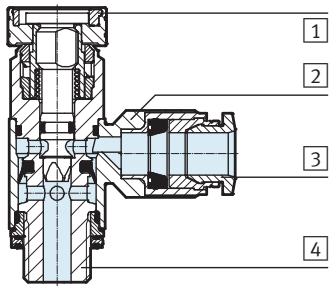


Operating and environmental conditions

Operating pressure complete temperature range	[bar]	0.2 ... 10
Operating medium		Compressed air in accordance with ISO 85731:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Storage temperature	[°C]	–10 ... +40

Materials

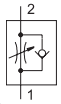
Sectional view



Legend	
1 Adjusting screw	PA, reinforced
2 Swivel connection	Die-cast zinc
3 Releasing ring	POM
4 Hollow bolt	Anodised wrought aluminium alloy
– Seals	NBR
Note on materials	RoHS-compliant
Clean room class to ISO 14644-1	4

One-way flow control valves GRLA, GRLZ

Ordering data – GRLA, Push-in connector QS, polymer



Exhaust air control

Can be swivelled 360° around the screw-in axis after mounting

Flow rate
520 ... 650 l/min

Temperature range
–10 ... +60 °C

Operating pressure
0.2 ... 10 bar

Ordering data – Exhaust air one-way flow control function

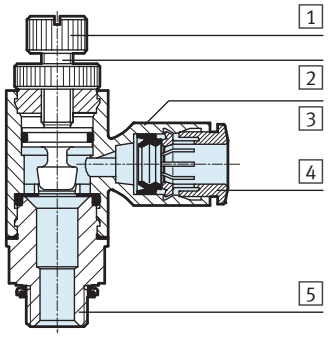
	Pneumatic connection		Standard nominal flow rate qnN at 6 → 5 bar		Standard flow rate qn at 6 → 0 bar		Part No.	Type
			in direction of flow control	in non-return direction	in direction of flow control	in non-return direction		
	2	1	[l/min]	[l/min]	[l/min]	[l/min]		
Knurled screw								
	G1/8	QS-6	520	400 ... 550	720	600 ... 750	162965	GRLA-1/8-QS-6-RS-B
		QS-8	650	600 ... 750	1,080	800 ... 1,250	162966	GRLA-1/8-QS-8-RS-B
	G1/4	QS-6	520	400 ... 550	720	600 ... 750	162967	GRLA-1/4-QS-6-RS-B
		QS-8	650	600 ... 750	1,130	800 ... 1,250	162968	GRLA-1/4-QS-8-RS-B
	G3/8	QS-6	530	400 ... 550	720	600 ... 750	162969	GRLA-3/8-QS-6-RS-B
		QS-8	650	600 ... 750	1,130	800 ... 1,250	162970	GRLA-3/8-QS-8-RS-B

Data sheet

Operating and environmental conditions	
Operating pressure complete temperature range [bar]	0.2 ... 10
Operating medium	Compressed air in accordance with ISO 85731:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	–10 ... +60
Temperature of medium [°C]	–10 ... +60
Storage temperature [°C]	–10 ... +40

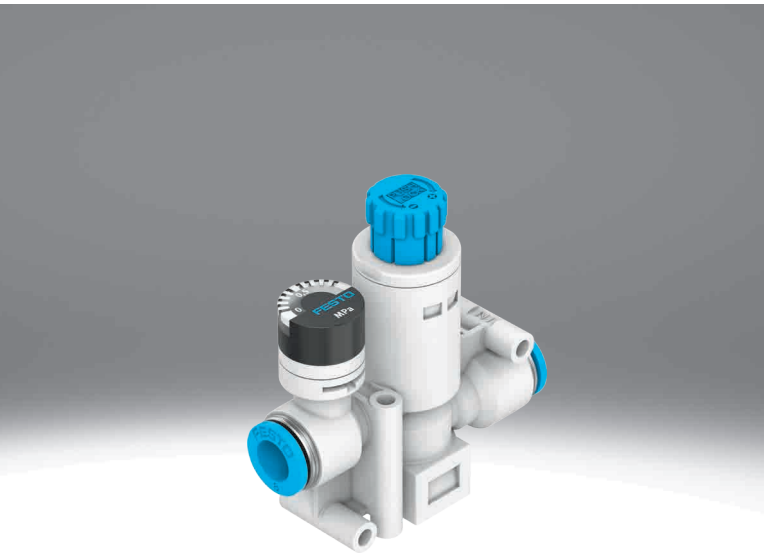
Materials

Sectional view



Legend	
1 Knurled head	Wrought aluminium alloy
2 Adjusting screw	Brass
3 Swivel connection	PBT, reinforced
4 Releasing ring	POM
5 Threaded plug	Wrought aluminium alloy
– Seals	NBR
	TPE-U(PU)
Note on materials	RoHS-compliant
Clean room class to ISO 14644-1	4

Pressure regulators VRPA

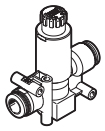
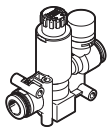
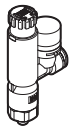


Highlights

+ Regulates the operating pressure independently of the fluctuating inlet pressure
+ With secondary exhaust and with return flow function
+ Piston regulator with through pressure supply
+ Greater energy efficiency thanks to movement-specific pressure adjustment
+ Directly actuated
+ Available with pressure gauge
+ Connections: push-in connector at both ends, thread/push-in connector

Pressure regulators VRPA

Product range overview

Design	Version	Type	Pneumatic connection		Standard nominal flow rate
			1	2	[l/min]
Inline	Without pressure gauge				
		VRPA-C	QS-4	QS-4	80
			QS-6	QS-6	90
			QS-8	QS-8	130
	With pressure gauge, pressure gauge scale in MPa				
		VRPA-CM	QS-4	QS-4	80
			QS-6	QS-6	90
			QS-8	QS-8	125
L-shape	With pressure gauge, pressure gauge scale in MPa				
		VRPA-LM	M5	QS-4	80
				QS-6	90
			R1/8	QS-4	90
				QS-6	100
				QS-8	110
			R1/4	QS-6	115
				QS-8	130

Type code explanation

001	Series	
VRPA	Pressure regulator	

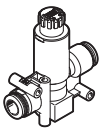
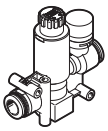
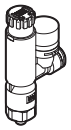
002	Design	
C	Inline	
L	L-shape	

003	Pressure indication	
	Without pressure gauge	
M	With pressure gauge	

004	Pneumatic connection 1	
Q4	Push-in connector 4 mm	
Q6	Push-in connector 6 mm	
Q8	Push-in connector 8 mm	
M5	M5	
R18	R1/8	
R14	R1/4	

005	Pneumatic connection 2	
Q4	Push-in connector 4 mm	
Q6	Push-in connector 6 mm	
Q8	Push-in connector 8 mm	
E	Same size as connection 1	

Ordering data

	Pneumatic connection		Standard nominal flow rate	Weight	Part no.	Type
	1	2	[l/min]	[g]		
Inline, without pressure gauge						
	QS-4	QS-4	80	19	8086000	VRPA-C-Q4-E
	QS-6	QS-6	90	20	8086001	VRPA-C-Q6-E
	QS-8	QS-8	130	33	8086002	VRPA-C-Q8-E
Inline, with pressure gauge, pressure gauge scale in MPa						
	QS-4	QS-4	80	23	8086003	VRPA-CM-Q4-E
	QS-6	QS-6	90	23	8086004	VRPA-CM-Q6-E
	QS-8	QS-8	125	36	8086005	VRPA-CM-Q8-E
L-shape, with pressure gauge, pressure gauge scale in MPa						
	M5	QS-4	80	29	8086007	VRPA-LM-M5-Q4
		QS-6	90	29	8086008	VRPA-LM-M5-Q6
	R1/8	QS-4	90	29	8086009	VRPA-LM-R18-Q4
		QS-6	100	29	8086010	VRPA-LM-R18-Q6
		QS-8	110	31	8086011	VRPA-LM-R18-Q8
	R1/4	QS-6	115	49	8086012	VRPA-LM-R14-Q6
		QS-8	130	49	8086013	VRPA-LM-R14-Q8

Pressure regulators VRPA

Data sheet

Standard nominal flow rate:
80 ... 130 l/min

General technical data							
Pneumatic connection 1		QS-4	QS-6	QS-8	M5	R1/8	R1/4
Pneumatic connection 2		QS-4	QS-6	QS-8	QS-4, QS-6	QS-4, QS-6, QS-8	QS-6, QS-8
Controller function		Outlet pressure constant, with secondary venting, with return flow action					
Pressure regulation range	[MPa]	0.1 ... 0.8					
Actuation type		Manual					
Mounting position		Any					
Adjusting element		Rotary knob with detent					
Pressure indicator		With/without pressure gauge			With pressure gauge		
Type of mounting		With through-hole			Screw-in		
Type of seal on screwed trunnion		–			Sealing ring	Coating	
Rotatability		–			360°/continuous rotation not permitted		
Nominal tightening torque	[Nm]	–			0.8 ±20%	–	

Operating and environmental 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]	0 ... +60

Materials							
Pneumatic connection 1		QS-4	QS-6	QS-8	M5	R1/8	R1/4
Housing		PBT					
Screwed trunnion		–			Nickel-plated brass		
Threaded seal		–				PTFE	
Static seals		NBR					
Note on materials		RoHS-compliant					

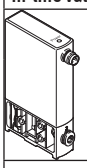
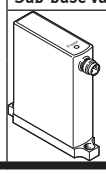
Proportional-pressure regulators VEAA

Highlights

+ 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

Version		Valve function	Pneumatic port 1, 2, 3	Pressure regulation range	Setpoint value input		
					Voltage type		Current type
				[bar]	0 ... 5 V	0 ... 10 V	4 ... 20 mA
Pressure regulator	In-line valve						
		3/3-way valve, normally closed	QS 4	0.01 ... 2	-	■	■
				0.03 ... 6	-	■	■
				0.05 ... 10	■	■	■
	Sub-base valve						
		3/3-way valve, normally closed	Flange	0.01 ... 2	-	■	■
				0.03 ... 6	-	■	■
				0.05 ... 10	-	■	■

Features

Innovative
- Silent operation
- Very low power consumption
- High precision
- Integrated piezo technology

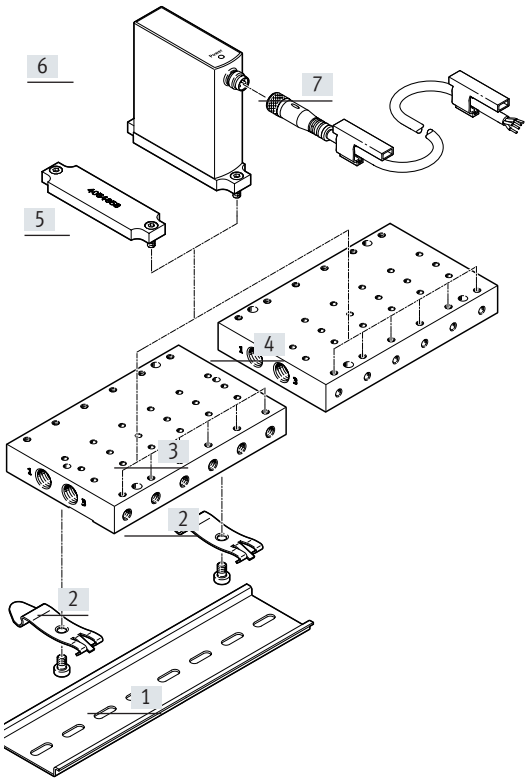
Versatile
- In-line valves
- Sub-base valves
- Simple electrical and pneumatic interfaces
- Choice of different setpoint specifications
  - Current input
  - Voltage input

Reliable
- Integrated pressure sensor with separate output
- Diagnostics:
  - Operating voltage: over- and undervoltage
  - Setpoint value: falling below and exceeding
- Consistent pressure regulation performance with long-term stability

Easy to install
- Mounting the in-line valve via three thought-holes at the side
- H-rail mounting
- Attaching the in-line valve to the mounting plate
- Mounting the sub-base valve using the sub-base

Peripherals overview

Valve manifold assembly



		Description	→ Page/ Internet
[1]	H-rail NRH-35-2000	For control cabinet installation	614
[2]	H-rail mounting VAME	For mounting the H-rail	
[3]	Manifold rail VABM-P6-15M	Connection direction at the side, for control cabinet installation	533
[4]	Manifold rail VABM-P6-15MB	Connection direction underneath, for wall mounting and control cabinet installation	
[5]	Cover plate VABB	–	
[6]	Proportional-pressure regulator VEAA	–	
[7]	Connecting cable NEBU	–	nebu

Type code explanation

001	Series	
VEAA	Proportional pressure regulator	

002	Directional control valve type	
L	In-line valve	
B	Sub-base valve	

003	Valve function	
3	3/3-way valve, normally closed	

004	Pressure range [bar]	
D11	0 ... 10	
D9	0 ... 6	
D2	0 ... 2	

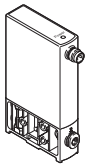
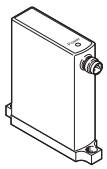
005	Pneumatic connection	
F	Flange/sub-base	
Q4	Push-in connector 4 mm	

006	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	
V2	0 ... 5 V	

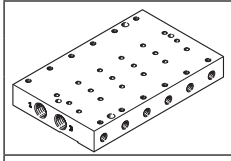
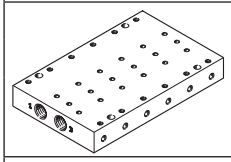
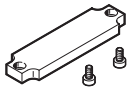
007	Nominal operating voltage	
1	24 V DC	

008	Electrical connection	
R1	Individual connector M8, 4-pin	

Ordering data

		Pressure regulation range [bar]	Part no.	Type
In-line valve				
	Voltage type, 0 ... 5 V	0.05 ... 10	8126196	VEAA-L-3-D11-Q4-V2-1R1
	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

Accessories – Ordering data

			Part no.	Type
Manifold rail				
	Connection direction at the side	4 valve positions	8083543	VABM-P6-15M-G18-M5-4
		6 valve positions	8083545	VABM-P6-15M-G18-M5-6
		8 valve positions	8083547	VABM-P6-15M-G18-M5-8
	Connection direction underneath	4 valve positions	8083544	VABM-P6-15MB-G18-M5-4
		6 valve positions	8083546	VABM-P6-15MB-G18-M5-6
		8 valve positions	8083548	VABM-P6-15MB-G18-M5-8
Cover plate				
	Including screws (2) and O-rings (3, preassembled)		4054657	VABB-P6-M

Proportional-pressure regulators VEAA

Data sheet

Flow rate 7 ... 13 l/min

Voltage 24 V DC

Pressure regulation range 0.01 ... 2 bar, 0.03 ... 6 bar, 0.05 ... 10 bar

General technical data				
Type			VEAA-L	VEAA-B
Valve type			In-line valve	Sub-base valve
Valve function			3-way proportional-pressure regulator	
Dimensions W x L x H		[mm]	15 x 54.5 x 85	15 x 61 x 66
Standard nominal flow rate			→ Page 10	
Pneumatic port 1, 2, 3			QS-4	Flange
Sealing principle			Soft	
Actuation type			Electrical with piezo element	
Display type			LED	
Type of pilot control			Directly piloted	
Reset method			Mechanical spring	
Type of mounting			Via through-hole, via accessories	
Mounting position			Any	

Electrical data			
Electrical connection			Plug M8x1, 4-pin, to EN 60947-5-2
Nominal operating voltage		[V DC]	24
Operating voltage range		[V DC]	19 ... 29
Residual ripple		[%]	10
Max. electrical power consumption		[W]	1
Setpoint input signal	Voltage	[V DC]	0 ... 10
			0 ... 5
	Current	[mA]	4 ... 20
Analogue output signal range (actual value)		[V DC]	0 ... 10
			1 ... 5
			4 ... 20
Accuracy of analogue output		[%]	2
Short circuit current rating			For all electrical connections
Reverse polarity protection			For all electrical connections
Degree of protection			IP65

Note

Safety position VEAA:

If the electrical power supply fails, the output pressure will be unregulated and may rise or fall – valve blocked.

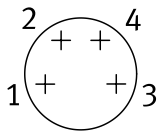
Data sheet

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
		Inert gases
Note on operating/pilot medium		Operation with lubricated medium not possible
Input pressure at port 1[1]	[bar]	0... 11
Hysteresis FS (full scale)	[%]	0.25
Linearity error FS (full scale)	[%]	± 0.5
Repetition accuracy FS (full scale)	[%]	± 0.4
Absolute accuracy FS (full scale)	[%]	Max. 0.75
Temperature coefficient	[%/K]	0.05
Ambient temperature	[°C]	0 ... 50
Temperature of medium	[°C]	5 ... 50
Storage temperature	[°C]	–20 ... 70
Corrosion resistance CRC[1]		2
CE marking (see declaration of conformity)		To EU EMC Directive
Certification		RCM

1) Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

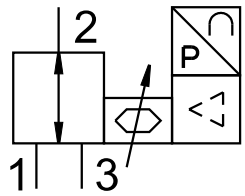
Materials	
Seals	NBR
Housing	Reinforced PA
Note on materials	RoHS-compliant

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

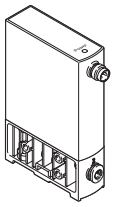
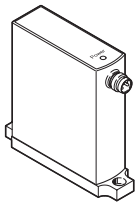
Proportional-pressure regulators VEAB

Highlights

+ 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

Design		Valve function	Pneumatic connection 1, 2, 3	Pressure regulation range [bar]	Setpoint value input	
					Voltage type 0 ... 10 V	Current type 4 ... 20 mA
Pressure regulator	**In-line valve**					
		3-way proportional-pressure regulator	Push-in connector	–1 ... –0.005 –1 ... 1 –1 ... 5 –0.5 ... 0.5 0.001 ... 0.2 0.005 ... 1 0.01 ... 2 0.03 ... 6	■	■
	Sub-base valve					
		3-way proportional-pressure regulator	Via manifold rail	–1 ... –0.005 –1 ... 1 –1 ... 5 –0.5 ... 0.5 0.001 ... 0.2 0.005 ... 1 0.01 ... 2 0.03 ... 6	■	■

Features

Innovative
- Silent operation
- Very low power consumption
- High precision
- Short switching times
- Piezo technology

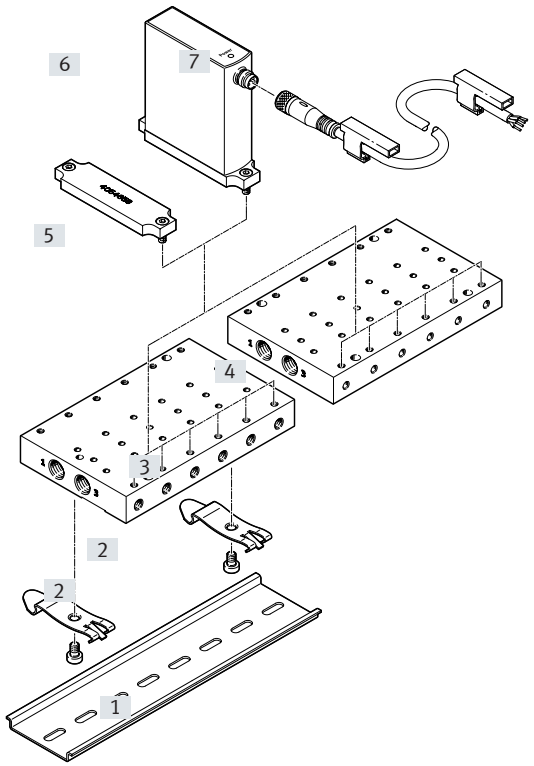
Versatile
- In-line valves
- Sub-base valves
- Simple electrical interfaces and pneumatic port patterns
- Choice of different setpoint specifications
- Current input
- Voltage input

Reliable
- Integrated pressure sensor with separate output
- Diagnostics
  - Operating voltage: over- and undervoltage
  - Setpoint value: falling below and exceeding
- Consistent pressure regulation performance with long-term stability
- Durable

Easy to install
- Mounting the in-line valve via three lateral through-holes
- Secure mounting on wall or H-rail

Peripherals overview

Valve manifold assembly



		Description	➔ Page/ Internet
[1]	H-rail NRH352000	For control cabinet installation	614
[2]	H-rail mounting VAME	For mounting the H-rail	
[3]	Manifold rail VABM-P7-G18M	Connection direction at the side, for control cabinet installation	540
[4]	Manifold rail VABM-P7-G18MB	Connection direction underneath, for wall mounting and control cabinet installation	
[5]	Cover plate VABB	–	
[6]	Proportional-pressure regulator VEAB	–	
[7]	Connecting cable NEBU	–	nebu

Type code explanation

001	Series	
VEAB	Proportional pressure regulator	

002	Valve function	
26	2x2/2-way valve, normally closed	

003	Directional control valve type	
L	In-line valve	
B	Sub-base valve	

004	Pressure range [bar]	
D12	0 ... 0.2	
D7	0 ... 1	
D13	-1 ... 1	
D14	-1 ... 0	
D9	0 ... 6	
D15	-0.5 ... 0.5	
D2	0 ... 2	
D18	-1 ... 5	

005	Pneumatic connection	
F	Flange/sub-base	
Q4	Push-in connector 4 mm	

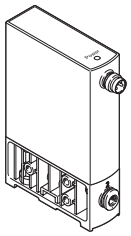
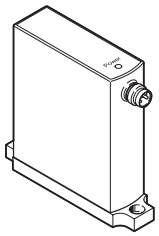
006	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	

007	Electrical connection	
R1	Individual connector M8, 4-pin	

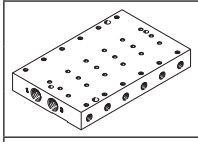
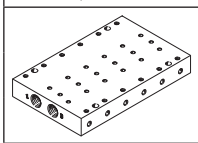
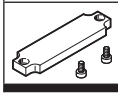
008	Nominal operating voltage	
1	24 V DC	

Proportional-pressure regulators VEAB

Ordering data

		Pressure regulation range [bar]	Part no.	Type
In-line valve				
	Voltage type, 0 ... 10 V	–1 ... –0.005	8046307	VEAB-L-26-D14-Q4-V1-1R1
		–1 ... 1	8067677	VEAB-L-26-D13-Q4-V1-1R1
		–1 ... 5	8067679	VEAB-L-26-D18-Q4-V1-1R1
		–0.5 ... 0.5	8067675	VEAB-L-26-D15-Q4-V1-1R1
		0.001 ... 0.2	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	–1 ... –0.005	8046308	VEAB-L-26-D14-Q4-A4-1R1
		–1 ... 1	8067678	VEAB-L-26-D13-Q4-A4-1R1
		–1 ... 5	8067680	VEAB-L-26-D18-Q4-A4-1R1
		–0.5 ... 0.5	8067676	VEAB-L-26-D15-Q4-A4-1R1
		0.001 ... 0.2	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
		–1 ... 1	8067669	VEAB-B-26-D13-F-V1-1R1
		–1 ... 5	8067671	VEAB-B-26-D18-F-V1-1R1
		–0.5 ... 0.5	8067667	VEAB-B-26-D15-F-V1-1R1
		0.001 ... 0.2	8046265	VEAB-B-26-D12-F-V1-1R1
		0.005 ... 1	8046267	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	–1 ... –0.005	8046272	VEAB-B-26-D14-F-A4-1R1
		–1 ... 1	8067670	VEAB-B-26-D13-F-A4-1R1
		–1 ... 5	8067672	VEAB-B-26-D18-F-A4-1R1
		–0.5 ... 0.5	8067668	VEAB-B-26-D15-F-A4-1R1
		0.001 ... 0.2	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

Accessories – Ordering data

			Part no.	Type
Manifold rail				
	Connection direction at the side	4 valve positions	8076386	VABM-P7-18M-G18-M5-4
		6 valve positions	8076388	VABM-P7-18M-G18-M5-6
		8 valve positions	8076390	VABM-P7-18M-G18-M5-8
	Connection direction underneath	4 valve positions	8076387	VABM-P7-18MB-G18-M5-4
		6 valve positions	8076389	VABM-P7-18MB-G18-M5-6
		8 valve positions	8076391	VABM-P7-18MB-G18-M5-8
Cover plate				
	Including screws (2) and O-rings (3, preassembled)		4054658	VABB-P7-M

Data sheet

Flow rate 4.5 ... 20 l/min

Voltage 24 V DC

Pressure regulation range
–1 ... –0.005 bar
0.001 ... 0.2 bar
0.005 ... 1 bar
0.01 ... 2 bar
0.03 ... 6 bar
–1 ... 1 bar
–1 ... 5 bar
–0.5 ... 0.5 bar

General technical data				
Type			VEAB-L	VEAB-B
Valve type			In-line valve	Sub-base valve
Valve function			3-way proportional-pressure regulator	
Dimensions W x L x H		[mm]	18 x 60.5 x 85	18 x 67 x 66
Standard nominal flow rate			➔ Page 11	
Pneumatic connection 1, 2, 3			Push-in connector 4 mm	Flange/via sub-base
Sealing principle			Soft	
Actuation type			Electrical	
Display type			LED	
Type of control			Direct	
Reset method			Mechanical spring	
Type of mounting			Optionally with through-hole, with accessories	
Mounting position			Any	
Product weight		[g]	70	

Electrical data			
Electrical connection			Plug, M8x1, 4-pin, to EN 60947-5-2
Nominal operating voltage		[V DC]	24
Operating voltage range		[V DC]	19 ... 29
Residual ripple		[%]	10
Max. electrical power consumption		[W]	1
Setpoint input signal	Voltage	[V DC]	0 ... 10
	Current	[mA]	4 ... 20
Short circuit current rating			For all electrical connections
Reverse polarity protection			For all electrical connections
Degree of protection			IP65

Operating and environmental conditions						
Pressure regulation range		[bar]	–1 ... –0.005	–1 ... 1	–1 ... 5	–0.5 ... 0.5	0.001 ... 0.2
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
			Inert gases				
Note on operating/pilot medium			Operation with lubricated medium not possible				
Input pressure at port 1[1]		[bar]	–1	0 ... 2	0 ... 5.5	0 ... 2	0 ... 1
Input pressure at port 3		[bar]	–1	–1	–1	–1	–
Hysteresis FS (full scale)		[%]	0.25	0.25	0.25	0.25	0.5
Linearity error FS (full scale)		[%]	± 0.5	0.5	0.5	0.5	± 0.8
Repetition accuracy FS (full scale)		[%]	± 0.4				
Absolute accuracy at room temperature FS (full scale)		[%]	0.75	0.75	0.75	0.75	0.8
Accuracy of analogue output FS (full scale)		[%]	2				
Temperature coefficient		[%/K]	0.05				
Ambient temperature		[°C]	0 ... 50				
Temperature of medium		[°C]	5 ... 50				
Storage temperature		[°C]	–20 ... 70				
Corrosion resistance class CRC[2]			2				
CE marking (see declaration of conformity)			To EU EMC Directive[3]				
Certification			RCM compliance mark				

1) Input pressure 1 should always be 1 bar greater than the maximum regulated output pressure.

2) Corrosion resistance class CRC 2 to Festo standard FN 940070
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) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Proportional-pressure regulators VEAB

Data sheet

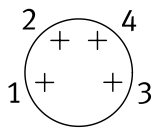
Operating and environmental conditions				
Pressure regulation range	[bar]	0.005 … 1	0.01 … 2	0.03 … 6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
		Inert gases		
Note on operating/pilot medium		Operation with lubricated medium not possible		
Input pressure at port 1	[bar]	0 … 3	0 … 4	0 … 6.5
Input pressure at port 3	[bar]	–	–	–
Hysteresis FS (full scale)	[%]	0.25		
Linearity error FS (full scale)	[%]	± 0.5		
Repetition accuracy FS (full scale)	[%]	± 0.4		
Absolute accuracy at room temperature FS (full scale)	[%]	0.75		
Accuracy of analogue output FS (full scale)	[%]	2		
Temperature coefficient	[%/K]	0.05		
Ambient temperature	[°C]	0 … 50		
Temperature of medium	[°C]	5 … 50		
Storage temperature	[°C]	–20 … 70		
Corrosion resistance class CRC[1]		2		
CE marking (see declaration of conformity)		To EU EMC Directive[2]		
Certification		RCM compliance mark		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

2) For information about the area of use, see the EC declaration of conformity: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

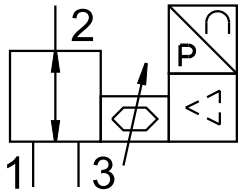
Materials	
Seals	NBR
Housing	Reinforced PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Pin allocation



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.

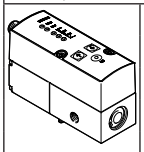
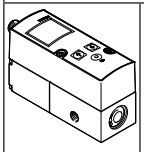
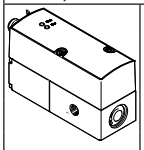
Proportional-pressure regulators VPPM

Highlights

+ 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

Version	Design	Pressure regulation range [bar]	Pneumatic connection 1, 2, 3	Nominal width for pressurisation/exhaust [mm]	Setpoint value input		
					Voltage type 0 ... 10 V	Current type 4 ... 20 mA	Digital –
LED operator unit (standard)							
	Piloted diaphragm valve	0.02 ... 2 0.06 ... 6 0.1 ... 10	G1/8	6/4.5	■	■	–
			Sub-base	6/4.5	■	■	–
				8/7	■	■	–
			G1/4	8/7	■	■	–
			G1/2	12/12	■	■	–
Operator unit with LCD, pressure unit variable							
	Piloted diaphragm valve	0.02 ... 2 0.06 ... 6 0.1 ... 10	G1/8	6/4.5	■	■	–
			Sub-base	6/4.5	■	■	–
				8/7	■	■	–
			G1/4	8/7	■	■	–
			G1/2	12/12	■	■	–
LED operator unit with IO-Link							
	Piloted diaphragm valve	0.02 ... 2 0.06 ... 6 0.1 ... 10	G1/8	6/4.5	–	–	■
			Sub-base	6/4.5	–	–	■
				8/7	–	–	■
			G1/4	8/7	–	–	■
			G1/2	12/12	–	–	■

Features

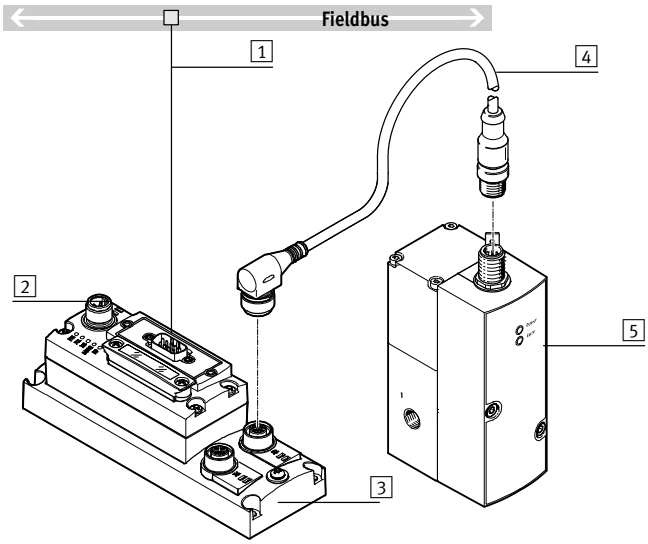
Innovative
- Multi-sensor control (cascade control)
- Diagnostics
- Choice of regulation characteristics
- Temperature compensated
- High dynamic response
- High repetition accuracy
- Modular product system
- IO-Link, for direct connection to a higher-level IO-Link/I-Port master

Versatile
- Individual valves (in-line valve)
- Manifold valves (sub-base/flange valve)
- Various user interfaces
  - LED indicators
  - LCD display
  - Adjustment/selection buttons
- A choice of valves with different pressure ranges
- Pressure range can be modified on the valve
- Choice of different setpoint specifications
  - Current input
  - Voltage input

Reliable
- Integrated pressure sensor with independent output
- Open circuit monitoring
- Pressure is maintained if the controller fails

Easy to mount
- Manifold block
- H-rail mounting
- Individually via mounting bracket
- QS fittings

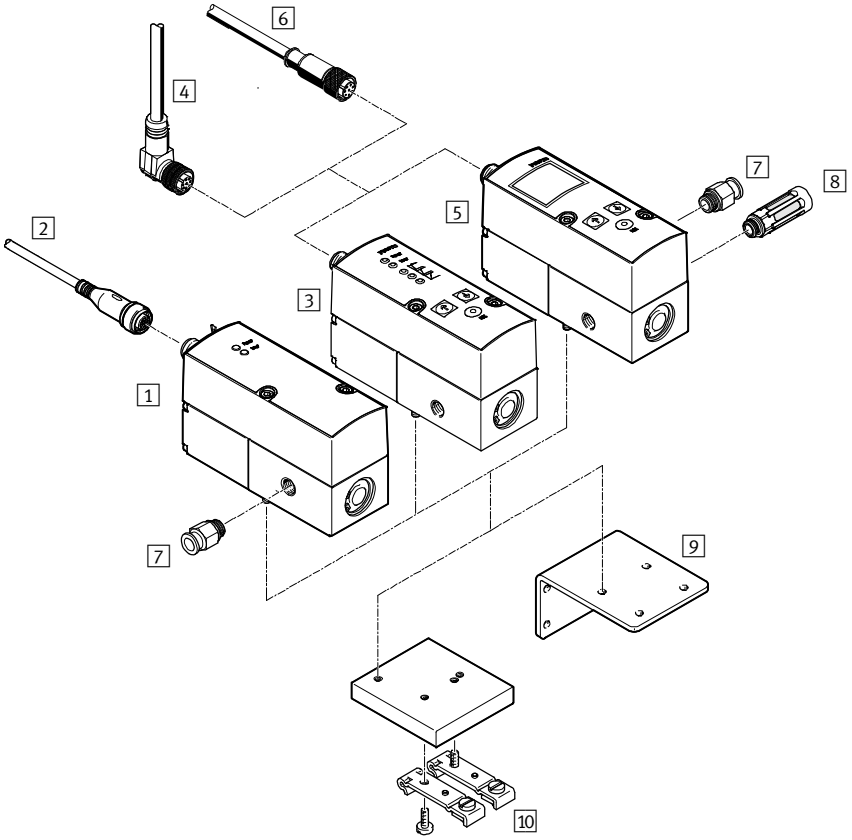
Overview, VPPM IO-Link



1 Diagnostics via fieldbus
2 Fieldbus node
3 Connecting block CAPC
4 Connecting cable NEBU
5 Proportional pressure regulator VPPM with IO-Link

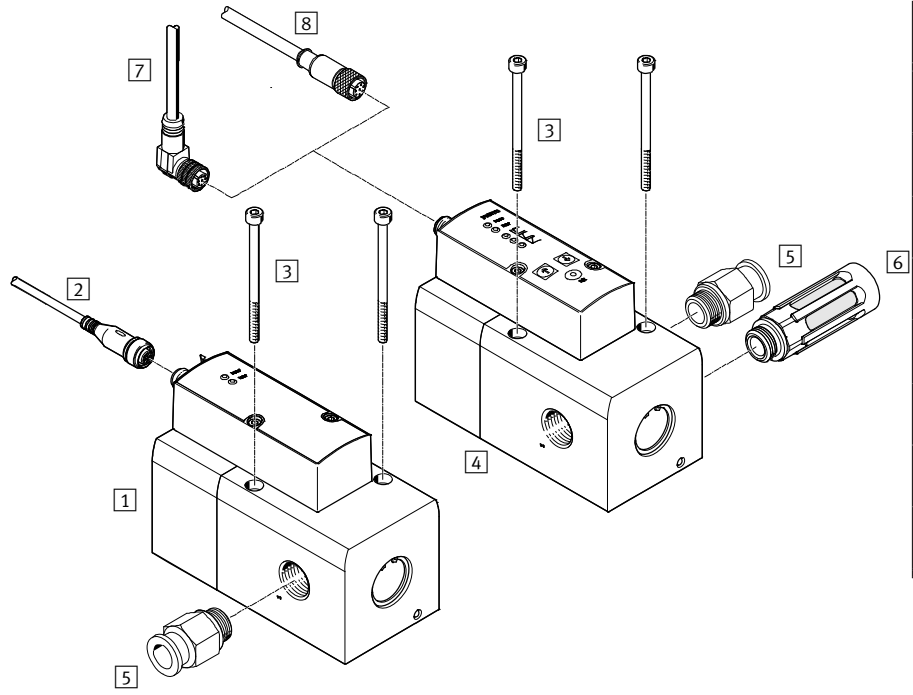
Peripherals overview

Individual valve VPPM-6L ... , VPPM-8L ...



		→ Page/ Internet
1	Proportional pressure regulator VPPM with IO-Link interface	551
2	Connecting cable NEBU-M12G5...	546
3	Proportional pressure regulator VPPM with analogue interface	548
4	Angled plug socket with cable NEBU-M12W8-...	546
5	Proportional pressure regulator VPPM with analogue interface	548
6	Straight plug socket with cable SIM-M12-8GD-...	546
7	Push-in fitting NPQE	803
8	Silencer	u
9	Angle bracket VAME-P1-A	546
10	H-rail mounting VAME-P1-T	

Individual valve VPPM-12L ...

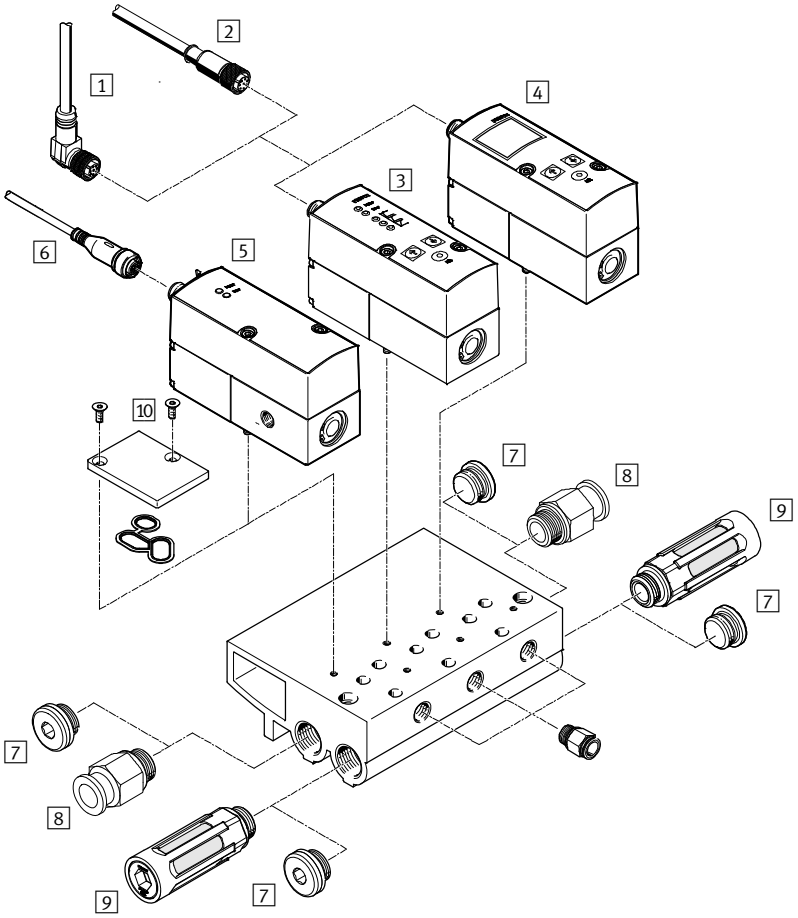


		→ Page/ Internet
1	Proportional pressure regulator VPPM with IO-Link interface	551
2	Connecting cable NEBU-M12G5...	546
3	Mounting screws	–
4	Proportional pressure regulator VPPM with analogue interface	548
5	Push-in fitting NPQE	803
6	Silencer	u
7	Angled plug socket with cable NEBU-M12W8-...	546
8	Straight plug socket with cable SIM-M12-8GD-...	

Proportional-pressure regulators VPPM

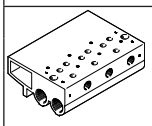
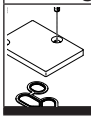
Peripherals overview

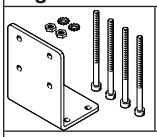
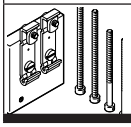
Manifold assembly with VPPM-6F ... , VPPM-8F ...

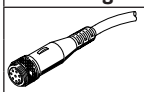
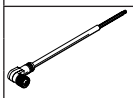
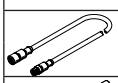
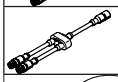
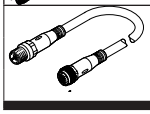


		→ Page/ Internet
1	Angled plug socket with cable NEBU-M12W8-...	546
2	Straight plug socket with cable SIM-M12-8GD-...	
3	Proportional pressure regulator VPPM with analogue interface	548
4	Proportional pressure regulator VPPM with analogue interface	
5	Proportional pressure regulator VPPM with IO-Link interface	551
6	Connecting cable NEBU-M12G5...	546
7	Blanking plug B	b
8	Push-in fitting NPQE	803
9	Silencer	u
10	Cover plate VABB-P1	546
–	Manifold block VABM	

Accessories – Ordering data

	Description	Part No.	Type
Sub-base VABM-P1			
	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
Blanking plate VABB-P1			
	Wrought aluminium alloy, NBR, steel	558350	VABB-P1

	Description	Part No.	Type
Angle bracket VAME-P1-A			
	Galvanised steel	542251	VAME-P1-A
H-rail mounting VAME-P1-T			
	Galvanised steel	542255	VAME-P1-T

	Description	Length	Part No.	Type
Connecting cables				
	Straight socket, 8-pin, M12	2 m	525616	SIM-M12-8GD-2-PU
		5 m	525618	SIM-M12-8GD-5-PU
		10 m	570008	SIM-M12-8GD-10-PU
	Angled socket, 8-pin, M12	2 m	542256	NEBU-M12W8-K-2-N-LE8
		5 m	542257	NEBU-M12W8-K-5-N-LE8
		10 m	570007	NEBU-M12W8-K-10-N-LE8
	One straight socket, 8-pin, and one straight plug, 4-pin	2 m	553575	NEBV-M12G8-K-2-M12G4
		5 m	553576	NEBV-M12G8-K-5-M12G4
	One straight socket, 8-pin, and two straight plugs, 4-pin	3 m	547888	NEBV-M12G8-KD-3-M12G4
	Connecting cable for IO-Link interface, straight socket, 5-pin, M12x1, protection class IP65, IP68, IP69K	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

Ordering – Modular product system

Size		6	8	12	Conditions	Code	Enter code
	Module No.	543432	543433	543435			
M	**Mandatory data**						
	Design	Modular pressure regulator				VPPM	VPPM
	Nominal diameter	6				-6	
			8			-8	
				12	1	-12	
	Valve type	In-line			2	L	
		Flanged valve			3	F	
		Flanged valve for valve terminal			4	T	
	Dynamic response	Low dynamic response (pilot-actuated, soft-sealing)				-L	-L
	Valve mode	3/2-way valve, normally closed				-1	-1
	Type of connection	G⅛ thread				-G18	
		G1/4 thread				-G14	
		G1/2 thread				-G12	
		Flange/sub-base				-F	
	Pressure regulation range	0 ... 2 bar				-0L2H	
		0 ... 6 bar				-0L6H	
		0 ... 10 bar				-0L10H	
	Alternative lower pressure regulation range	0.1 ... 10 bar			4	-...L	
	Alternative upper pressure regulation range	0.1 ... 10 bar			5	...H	
	Setpoint specification	Voltage (standard 0 ... 10 V)				-V1	
		IO-Link				-LK	
		Current (standard 4 ... 20 mA)				-A4	
	Switching output	Positive switching				P	
		Negative switching				N	
O	**Optional data**						
	Overall accuracy	1%				-S1	
	Operator unit	With LCD, pressure unit variable				C1	

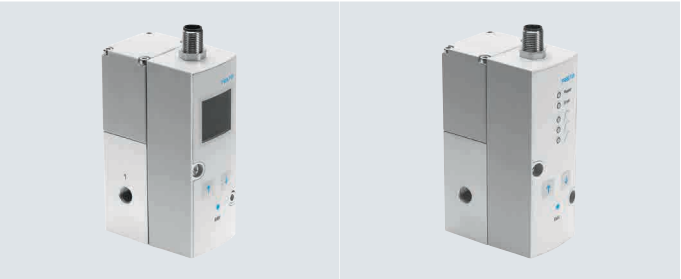
1 12 Only with valve type L (In-Line)
2 L Only with connection type G18, G14, G12 (G1/8, G1/4, G1/2 thread)
3 F Only with connection type F (flange/sub-base)
4 T Only with connection type F (flange/sub-base)
5 ...L Not with pressure regulation range (0L2H, 0L6H, 0L10H). Must always be less than alternative upper pressure regulation range H
6 ...H Not with pressure regulation range (0L2H, 0L6H, 0L10H). Must always be greater than alternative lower pressure regulation range L

Proportional-pressure regulators VPPM

Ordering data – VPPM with analogue interface

- Pilot actuated diaphragm valve
- Pressure regulation ranges: 0.02 ... 2, 0.06 ... 6, 0.1 ... 10 bar
- Flow rate: 380 ... 7000 l/min
- Signal setpoint input: 0 ... 10 V DC, 4 ... 20 mA

Variants
- Setpoint input as analogue voltage signal 0 ... 10 V
- Setpoint input as analogue current signal 4 ... 20 mA
- LED version
- With LCD display
- NPN or PNP switching output



VPPM with analogue interface

Pneumatic connection 1, 2, 3	Pressure regulation range [bar]	Part No.	Type	Part No.	Type
		Voltage type 0 ... 10 V Overall accuracy 2%		Current type 4 ... 20 mA Overall accuracy 2%	
G1/8	0.02 ... 2	542233	VPPM-6L-L-1-G18-0L2H-V1N	542236	VPPM-6L-L-1-G18-0L2H-A4N
	0.06 ... 6	542234	VPPM-6L-L-1-G18-0L6H-V1N	542237	VPPM-6L-L-1-G18-0L6H-A4N
		554043	VPPM-6L-L-1-G18-0L6H-V1P	554045	VPPM-6L-L-1-G18-0L6H-A4P
		558337	VPPM-6L-L-1-G18-0L6H-V1P-C1	558338	VPPM-6L-L-1-G18-0L6H-A4P-C1
	0.1 ... 10	575125	VPPM-6L-L-1-G18-0L10H-V1P-C1	–	
		542235	VPPM-6L-L-1-G18-0L10H-V1N	542238	VPPM-6L-L-1-G18-0L10H-A4N
		554044	VPPM-6L-L-1-G18-0L10H-V1P	554046	VPPM-6L-L-1-G18-0L10H-A4P
G1/4	0.06 ... 6	571296	VPPM-8L-L-1-G14-0L6H-V1P	571299	VPPM-8L-L-1-G14-0L6H-A4P
Sub-base, size 6	0.02 ... 2	542245	VPPM-6F-L-1-F-0L2H-V1N	542248	VPPM-6F-L-1-F-0L2H-A4N
	0.06 ... 6	542246	VPPM-6F-L-1-F-0L6H-V1N	542249	VPPM-6F-L-1-F-0L6H-A4N
		558339	VPPM-6F-L-1-F-0L6H-V1P-C1	558340	VPPM-6F-L-1-F-0L6H-A4P-C1
		558347	VPPM-6F-L-1-F-0L6H-V1N-C1	–	
	0.1 ... 10	542247	VPPM-6F-L-1-F-0L10H-V1N	542250	VPPM-6F-L-1-F-0L10H-A4N
Sub-base, size 8	0.06 ... 6	571285	VPPM-8F-L-1-F-0L6H-V1P	571282	VPPM-8F-L-1-F-0L6H-A4P
		Overall accuracy 1%		Overall accuracy 1%	
G1/8	0.02 ... 2	542227	VPPM-6L-L-1-G18-0L2H-V1N-S1	542230	VPPM-6L-L-1-G18-0L2H-A4N-S1
	0.06 ... 6	542228	VPPM-6L-L-1-G18-0L6H-V1N-S1	542231	VPPM-6L-L-1-G18-0L6H-A4N-S1
		554039	VPPM-6L-L-1-G18-0L6H-V1P-S1	554041	VPPM-6L-L-1-G18-0L6H-A4P-S1
		571448	VPPM-6L-L-1-G18-0L6H-V1N-S1C1	575128	VPPM-6L-L-1-G18-0L6H-A4P-S1C1
		575121	VPPM-6L-L-1-G18-0L6H-V1P-S1C1	–	
	0.1 ... 10	542229	VPPM-6L-L-1-G18-0L10H-V1N-S1	542232	VPPM-6L-L-1-G18-0L10H-A4N-S1
		554040	VPPM-6L-L-1-G18-0L10H-V1P-S1	554042	VPPM-6L-L-1-G18-0L10H-A4P-S1
		558335	VPPM-6L-L-1-G18-0L10H-V1P-S1C1	558336	VPPM-6L-L-1-G18-0L10H-A4P-S1C1
		558345	VPPM-6L-L-1-G18-0L10H-V1N-S1C1	–	
G1/4	0.1 ... 10	571291	VPPM-8L-L-1-G14-0L10H-V1N-S1	571288	VPPM-8L-L-1-G14-0L10H-A4N-S1
		571292	VPPM-8L-L-1-G14-0L10H-V1P-S1	571289	VPPM-8L-L-1-G14-0L10H-A4P-S1
		571293	VPPM-8L-L-1-G14-0L10H-V1P-S1C1	571290	VPPM-8L-L-1-G14-0L10H-A4P-S1C1
	0.06 ... 6	571294	VPPM-8L-L-1-G14-0L6H-V1N-S1	571302	VPPM-8L-L-1-G14-0L6H-A4N-S1
		571295	VPPM-8L-L-1-G14-0L6H-V1N-S1C1	571303	VPPM-8L-L-1-G14-0L6H-A4N-S1C1
		571297	VPPM-8L-L-1-G14-0L6H-V1P-S1	571300	VPPM-8L-L-1-G14-0L6H-A4P-S1
		571298	VPPM-8L-L-1-G14-0L6H-V1P-S1C	571301	VPPM-8L-L-1-G14-0L6H-A4P-S1C1
G1/2	0.1 ... 10	575235	VPPM-12L-L-1-G12-0L10H-V1N-S1	575232	VPPM-12L-L-1-G12-0L10H-A4N-S1
		575236	VPPM-12L-L-1-G12-0L10H-V1P-S1	575233	VPPM-12L-L-1-G12-0L10H-A4P-S1
		575237	VPPM-12L-L-1-G12-0L10H-V1P-S1C1	575234	VPPM-12L-L-1-G12-0L10H-A4P-S1C1
	0.06 ... 6	575238	VPPM-12L-L-1-G12-0L6H-V1N-S1	575242	VPPM-12L-L-1-G12-0L6H-A4P-S1
		575239	VPPM-12L-L-1-G12-0L6H-V1N-S1C1	575243	VPPM-12L-L-1-G12-0L6H-A4P-S1C1
		575240	VPPM-12L-L-1-G12-0L6H-V1P-S1	575244	VPPM-12L-L-1-G12-0L6H-A4N-S1
		575241	VPPM-12L-L-1-G12-0L6H-V1P-S1C1	575245	VPPM-12L-L-1-G12-0L6H-A4N-S1C1
Sub-base, size 6	0.02 ... 2	542239	VPPM-6F-L-1-F-0L2H-V1N-S1	542242	VPPM-6F-L-1-F-0L2H-A4N-S1
	0.06 ... 6	542240	VPPM-6F-L-1-F-0L6H-V1N-S1	542243	VPPM-6F-L-1-F-0L6H-A4N-S1
	0.1 ... 10	542241	VPPM-6F-L-1-F-0L10H-V1N-S1	542244	VPPM-6F-L-1-F-0L10H-A4N-S1
Sub-base, size 8	0.06 ... 6	571286	VPPM-8F-L-1-F-0L6H-V1P-S1	571283	VPPM-8F-L-1-F-0L6H-A4P-S1
		571287	VPPM-8F-L-1-F-0L6H-V1P-S1C1	571284	VPPM-8F-L-1-F-0L6H-A4P-S1C1

Ordering data – VPPM with analogue interface

VPPM with analogue interface	Pneumatic connection 1, 2, 3	Pressure regulation range [bar]	Part No.	Type
For valve terminal				
Overall accuracy 2%	Via valve terminal	0.02 ... 2	542220	VPPM-6TA-L-1-F-0L2H
			572410	VPPM-8TA-L-1-F-0L2H-C1
		0.06 ... 6	542221	VPPM-6TA-L-1-F-0L6H
			572411	VPPM-8TA-L-1-F-0L6H-C1
		0.02 ... 10	542222	VPPM-6TA-L-1-F-0L10H
			572412	VPPM-8TA-L-1-F-0L10H-C1
Overall accuracy 1%	Via valve terminal	0.02 ... 2	542217	VPPM-6TA-L-1-F-0L2H-S1
			572407	VPPM-8TA-L-1-F-0L2H-S1C1
		0.06 ... 6	542218	VPPM-6TA-L-1-F-0L6H-S1
			572408	VPPM-8TA-L-1-F-0L6H-S1C1
		0.02 ... 10	542219	VPPM-6TA-L-1-F-0L10H-S1
			572409	VPPM-8TA-L-1-F-0L10H-S1C1

Data sheet – VPPM with analogue interface

General technical data

Type			VPPM-6	VPPM-8	VPPM-12	Sub-base	
Pneumatic connection			G1/8	G1/4	G1/2	Via sub-base	
Constructional design			Pilot actuated diaphragm regulator				
Sealing principle			Soft				
Actuation type			Electric				
Type of control			Pilot actuated via 2/2-way valves				
Type of mounting			Via through-hole, via accessories				
Mounting position			Any				
Nominal diameter	Pressurisation	[mm]	6	8	12	6	8
	Exhaust	[mm]	4.5	7	12	4.5	7
Standard nominal flow rate		[l/min]	➔ Graphs online				
Product weight		[g]	400	560	2050	400	560

Electrical data

Type			VPPM-6	VPPM-8	VPPM-12
Electrical connection			Plug, round design, 8-pin, M12		
Operating voltage range		[V DC]	24 ± 10% = 21.6 ... 26.4		
Residual ripple		[%]	10		
Duty cycle		[%]	100		
Max. electrical power consumption		[W]	7	7	12
Signal setpoint input	Voltage	[V DC]	0 ... 10		
	Current	[mA]	4 ... 20		
Protection against short circuit			For all electrical connections		
Protection against polarity reversal			For all electrical connections		
Protection class			IP65		

Note
If the power supply cable is interrupted, output pressure is maintained unregulated.

Proportional-pressure regulators VPPM

Data sheet – VPPM with analogue interface

Operating and environmental conditions				
Pressure regulation range	[bar]	0.02 ... 2	0.06 ... 6	0.1 ... 10
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]		
		Inert gases		
Note on operating/pilot medium		Operation with lubricated medium not possible		
Supply pressure 1[1]	[bar]	0 ... 4	0 ... 8	0 ... 11
Max. hysteresis	[mbar]	10	30	50
FS (full scale) linearity error	[%]	2		
FS (full scale) repetition accuracy	[%]	±0.5		
Temperature coefficient	[%/K]	0.04		
Ambient temperature, operator unit LED (standard)	[°C]	0 ... 60		
Ambient temperature, operator unit with LCD	[°C]	0 ... 50		
Temperature of medium	[°C]	10 ... 50		
Note on materials		RoHS-compliant		
Corrosion resistance	[CRC]	2[2]		
CE mark		To EU EMC Directive (see declaration of conformity)[3]		
Certification		RCM trademark		
		c UL us - Listed (OL)		

1) Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Housing	Wrought aluminium alloy
Diaphragm	Nitrile rubber

Ordering data – VPPM with IO-Link interface

- Pilot actuated diaphragm valve
- Pressure regulation ranges: 0.02 ... 2, 0.06 ... 6, 0.1 ... 10 bar
- Flow rate: 380 ... 7000 l/min
- Signal setpoint input: 0 ... 10 V DC, 4 ... 20 mA
- Digital setpoint and actual value transfer
- For connection to an I/O-Link/I-Port master
- LED version
- Comparator output (digital)

VPPM with IO-Link interface	Pneumatic connection 1, 2, 3	Pressure regulation range [bar]	Part No.	Type
Overall accuracy 1%	G1/8	0.02 ... 2	8024258	VPPM-6L-L-1-G18-0L2H-LK-S1
		0.06 ... 6	8024259	VPPM-6L-L-1-G18-0L6H-LK-S1
		0.1 ... 10	8024260	VPPM-6L-L-1-G18-0L10H-LK-S1
	G1/4	0.02 ... 2	8024261	VPPM-8L-L-1-G14-0L2H-LK-S1
		0.06 ... 6	8024262	VPPM-8L-L-1-G14-0L6H-LK-S1
		0.1 ... 10	8024263	VPPM-8L-L-1-G14-0L10H-LK-S1
	G1/2	0.02 ... 2	8024264	VPPM-12L-L-1-G12-0L2H-LK-S1
		0.06 ... 6	8024265	VPPM-12L-L-1-G12-0L6H-LK-S1
		0.1 ... 10	8024266	VPPM-12L-L-1-G12-0L10H-LK-S1
	Sub-base, size 6	0.02 ... 2	8031107	VPPM-6F-L-1-F-0L2H-LK-S1
		0.06 ... 6	8031108	VPPM-6F-L-1-F-0L6H-LK-S1
		0.1 ... 10	8031109	VPPM-6F-L-1-F-0L10H-LK-S1
	Sub-base, size 8	0.02 ... 2	8031110	VPPM-8F-L-1-F-0L2H-LK-S1
		0.06 ... 6	8031111	VPPM-8F-L-1-F-0L6H-LK-S1
		0.1 ... 10	8031112	VPPM-8F-L-1-F-0L10H-LK-S1

Data sheet – VPPM with IO-Link interface

General technical data							
Type			VPPM-6	VPPM-8	VPPM-12	Sub-base	
Pneumatic connection			G1/8	G1/4	G1/2	Via sub-base	
Valve function			3-way proportional pressure regulator				
Design			Piloted diaphragm regulator				
Type of display			LED				
Sealing principle			Soft				
Actuation type			Electric				
Type of control			Piloted				
Reset method			Mechanical spring				
Type of mounting			Via through-hole, via accessories				
Mounting position			Any				
Nominal width	Pressurisation	[mm]	6	8	12	6	8
	Exhaust	[mm]	4.5	7	12	4.5	7
Standard nominal flow rate		[l/min]	→ Graphs online				
Product weight		[g]	400	560	2050	400	560
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				
Material	Housing		Wrought aluminium alloy				

Proportional-pressure regulators VPPM

Data sheet – VPPM with IO-Link interface

Electrical data

Type		VPPM-6	VPPM-8	VPPM-12
Electrical connection		M12 plug connector, 5-pin		
Operating voltage range	[V DC]	18 ... 30		
Max. current consumption	[mA]	300	300	500
Max. electrical power consumption	[W]	7		12
Protection against short circuit		For all electrical connections		
Protection against incorrect polarity		For all electrical connections		
Residual ripple	[%]	10		
Duty cycle	[%]	100		
Degree of protection		IP65		

Note
If the power supply cable is interrupted, output pressure is maintained unregulated.

Operating and environmental conditions

Pressure regulation range	[bar]	0.02 ... 2	0.06 ... 6	0.1 ... 10
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]		
		Inert gases		
Note on operating/pilot medium		Operation with lubricated medium not possible		
Supply pressure 1[1]	[bar]	0 ... 4	0 ... 8	0 ... 11
Max. hysteresis	[mbar]	10	30	50
FS (full scale) linearity error	[%]	±0.5		
FS (full scale) repetition accuracy	[%]	0.5		
Temperature coefficient	[%/K]	0.04		
Ambient temperature	[°C]	0 ... 60		
Temperature of medium	[°C]	10 ... 50		
Note on materials		RoHS-compliant		
Corrosion resistance	[CRC]	2[2]		
CE mark		To EU EMC Directive (see declaration of conformity)[3]		
Certification		RCM trademark		
		c UL us - Listed (OL)		

1) Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.
2) Corrosion resistance class 2 as per Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

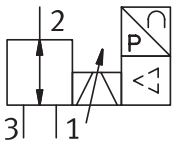
Proportional-pressure regulators VPPI

Highlights

+ Three predefined regulator presets, as well as the option of a custom preset
+ The internal control electronics adjust automatically
+ Low-noise
+ Flexible
+ Highly dynamic up to 30 Hz

Proportional-pressure regulators VPPI

Product range overview

Function	Circuit symbol	Type	Valve function	Pressure regulation range	Setpoint value input	
					Voltage type	Current type
				[bar]	0 ... 10 V	4 ... 20 mA
Proportional pressure regulator	**Poppet valve with spring return**					
		**VPPI-5L-3**	3-way proportional pressure regulator Normally closed	–1 ... 0	■	■
				–1 ... 1	■	■
				0 ... 2	■	■
				0 ... 6	■	■
				0 ... 10	■	■
				0 ... 12	■	■

Features

Special characteristics

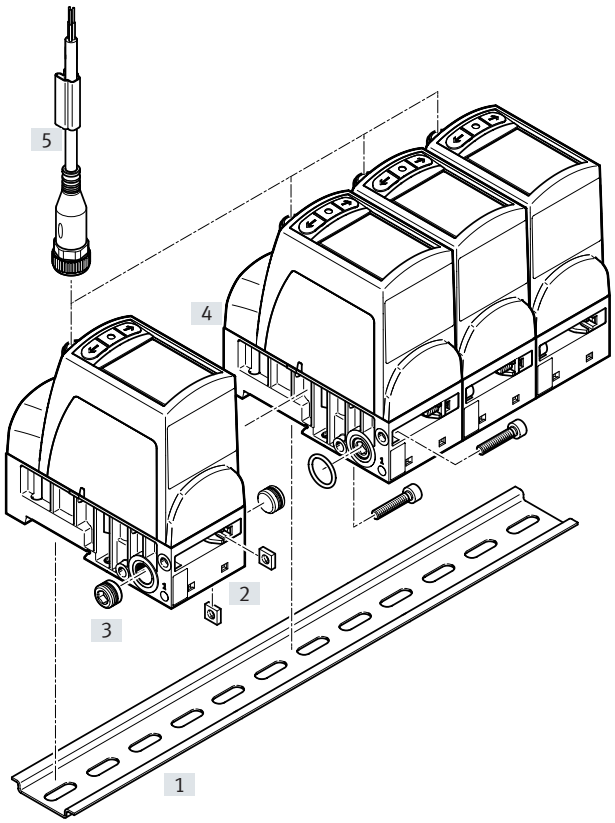
- Three predefined regulator presets, as well as the option of a custom preset
- Low-noise
- Flexible
- Highly dynamic up to 30 Hz
- The max. frequency of 30 Hz protects the system
- Precise and stable: the powerful moving coil actuator also ensures that setpoint value changes are quick, easy and precise
  Lots of pressure ranges
- Pressure regulation range: –1 ... 12 bar
- PWM operation: the VPPI detects PWM signals generated by any machine controller and changed over automatically

Function

The valve VPPI is a directly actuated proportional pressure regulator that uses two proportional 2/2-way valves as a basis.
The valve regulates a pneumatic pressure to an electronically defined value. This makes use of cascaded closed-loop control of pressure/travel and current.

Control is provided using an analogue current or voltage signal, or alternatively using a digital pattern (voltage version) for adjustable setpoint values, or using a PWM signal (voltage version).

Peripherals overview



	Type/order code	Description	→ Page/ Internet
[1]	NRH-35-2000	DIN mounting rail, for a maximum of five proportional pressure regulators	614
[2]	VAME-P18-K-P5	Connecting kit, enables linking of several proportional pressure regulators using a common compressed air supply	556
[3]	B	Blanking plug	
[4]	VPPI	Proportional pressure regulator	555
[5]	NEBU-M12W5	Connecting cable	

Type code explanation

001	Series
VPPI	Proportional-pressure regulator

002	Nominal width [mm]
5	5

003	Directional control valve type
L	In-line valve

004	Valve function
4	3/3-way valve, normally open
3	3/3-way valve, normally closed

005	Pneumatic connection
G18	G1/8

006	Lower pressure value of control range
...L	
0L	0 bar
1V	-1 bar

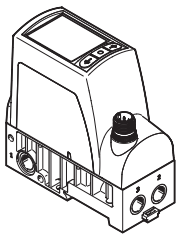
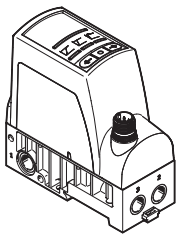
007	Upper pressure value of control range
...H	
0H	
10H	10 bar
12H	12 bar
1H	1 bar
2H	2 bar
6H	6 bar

008	Setpoint input for individual valves
A4	4 ... 20 mA
V1	0 ... 10 V

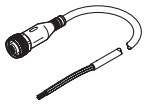
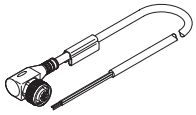
009	Overall accuracy
S1	1 %

010	Operator unit/interface
D	Display
	None

Ordering data

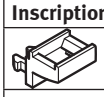
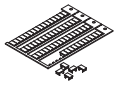
	Pressure regulation range [bar]	Description		Part no.	Type
Proportional pressure regulator					
With display					
	-1 ... 1	Normally closed	Voltage type 0 ... 10 V	8104673	VPPI-5L-3-G18-1V1H-V1-S1D
	0 ... 6	Normally closed	Voltage type 0 ... 10 V	8104665	VPPI-5L-3-G18-0L6H-V1-S1D
			Current type 4 ... 20 mA	8104667	VPPI-5L-3-G18-0L6H-A4-S1D
	0 ... 10	Normally closed	Voltage type 0 ... 10 V	8104669	VPPI-5L-3-G18-0L10H-V1-S1D
			Current type 4 ... 20 mA	8104670	VPPI-5L-3-G18-0L10H-A4-S1D
	0 ... 12	Normally closed	Voltage type 0 ... 10 V	8104672	VPPI-5L-3-G18-0L12H-V1-S1D
Without display					
	0 ... 6	Normally closed	Voltage type 0 ... 10 V	8104664	VPPI-5L-3-G18-0L6H-V1-S1
	0 ... 10		Voltage type 0 ... 10 V	8104668	VPPI-5L-3-G18-0L10H-V1-S1

Accessories – Ordering data

	Description		Part no.	Type
Connecting cable				
	Straight socket, M12x1, A-coded	2.5 m	541330	NEBU-M12G5-K-2.5-LE5
		5 m	541331	NEBU-M12G5-K-5-LE5
	Angled socket, M12x1, A-coded	2.5 m	567843	NEBU-M12W5-K-2.5-LE5
		5 m	567844	NEBU-M12W5-K-5-LE5

Proportional-pressure regulators VPPI

Accessories – Ordering data

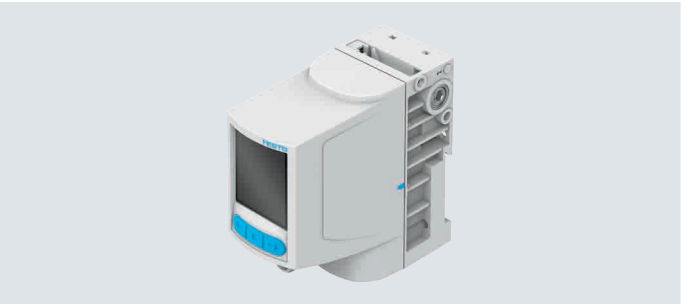
	Description	Part no.	Type
Inscription label holder			
	10 pieces	561115	VMPAL-ST-AP-20
Inscription label			
	64 inscription labels	18576	IBS-6X10
Connecting kit			
	Connecting kit, for linking several proportional pressure regulators using a common compressed air supply	8108270	VAME-P18-K-P5
Blanking plug			
	10 pieces	3568	B-1/8-10
	100 pieces	534213	B-1/8-100
Plug screw			
	For duct 1 of the valve for pressure zone separation, 5 pieces	8108292	VAME-P18-BP-G18-P5
	For duct 1 of the valve for pressure zone separation, 10 pieces	8108271	VAME-P18-BP-G18-P10
DIN mounting rail			
	For H-rail mounting	35430	NRH-35-2000

Data sheet

Flow rate 150 ... 1630 l/min

Voltage 20.4 ... 27.6 V DC

Pressure regulation range
–1 ... 0 bar
–1 ... 1 bar
0 ... 2 bar
0 ... 6 bar
0 ... 10 bar
0 ... 12 bar



General technical data			±1 bar	1 bar	2 bar	6 bar	10 bar	12 bar
Valve function			3-way proportional pressure regulator					
Design			Poppet valve with spring return					
Reset method			Mechanical spring					
Dimensions W x L x H			42.2 x 95.3 x 94.3 mm					
Display type			LED					
	With display (-...D-...)		TFT colour					
Safety instructions			Safety position VPPI, normally closed					
Display size	With display (-...D-...)		1.77“					
Display resolution			128x160 pixels					
Nominal size pressurisation/exhaust		[mm]	5					
Pneumatic port 1			G1/8					
Pneumatic port 2			G1/8					
Pneumatic port 3			G1/8					
Standard nominal flow rate qnN 1-2		[l/min]	-	150	375	900	1400	1630
Standard nominal flow rate qnN 2-3		[l/min]	20	20	210	480	750	850
Sealing principle			Soft					
Flow direction			Non-reversible					
Actuation type			Electric					
Type of control			Direct					
Type of mounting			Via through-hole for M4 screw, via H-rail					
Mounting position			Any					
Degree of protection			IP65					
Corrosion resistance class[1)]			2					
Max. tightening torque of fitting		[Nm]	8.5					

1) Corrosion resistance class CRC 2 to Festo standard FN 940070 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.

Data sheet

Electrical data			
Operating voltage range		[V DC]	20.4 ... 27.6
Nominal operating voltage		[V DC]	24
Nominal current		[A]	0.15
Max. current consumption		[mA]	525
Max. electrical power consumption		[W]	14.5
Reverse polarity protection			For all electrical connections
Short circuit current rating			For all electrical connections
Max. cable length		[m]	30
Electrical connection 1			
Function			Actual value output
			Setpoint input
			Power supply
Connection type			Plug
Connection technology			M12x1, A-coded to EN 61076-2-101
Number of pins/wires			5
Tightening torque		[Nm]	1.5
Setpoint input			
Setpoint value input	Voltage type (-V1-...)	[V]	0 ... 10/PMW signal/ digital[1]
	Current type (-A4-...)	[mA]	4 ... 20
Input resistance	Voltage type (-V1-...)	[kOhm]	100
	Current type (-A4-...)	[kOhm]	0.3
Actual value output			
Switching output[1]			Push-pull
Max. output current (switching output)[1]		[mA]	25
Analogue output signal range	Voltage type (-V1-...)	[V]	0 ... 10
	Current type (-A4-...)	[mA]	4 ... 20
Max. load resistance of current output	Current type (-A4-...)	[Ohm]	500
Min. load resistance of voltage output	Voltage type (-V1-...)	[Ohm]	2000
Accuracy of analogue output in FS		[%]	1

1) Only in combination with display variant VPPI-...-V...-...D-...

Operating and environmental conditions		
Medium		Compressed air to ISO 8573-1:2010 [7:4:4]
		Inert gases
Note on the medium		Operation with lubricated medium not possible
Temperature of medium	[°C]	0 ... 50
Ambient temperature	[°C]	0 ... 50
Storage temperature	[°C]	- 20 ... 70
Climatic category		3K3 to EN 60721
Nominal altitude of use	[m above sea level]	< 3000
Sound power level LwA	[dB(A)]	62.5
Sound power level at a distance of 1 m	[dB(A)]	51.9
Linearity full scale	[%]	0.9
Hysteresis full scale	[%]	0.4
Reproducibility full scale	[%]	0.4
Overall accuracy full scale	[%]	1.1
Temperature coefficient K	[%]	0.02
Total leakage	[l/h]	5
Certification		RCM compliance mark
KC mark		KC EMC
CE marking (see declaration of conformity)		To EU EMC Directive[1]
		To EU RoHS directive
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Proportional-pressure regulators VPPI

Data sheet

Operating and environmental conditions		±1 bar	1 bar	2 bar	6 bar	10 bar	12 bar
Operating pressure	[bar]	0 ... 2	1 ... 2	2 ... 4	6 ... 8	10 ... 12	12 ... 13
Pressure regulation range	[bar]	–1 ... 0	-1 ... 1	0 ... 2	0 ... 6	0 ... 10	0 ... 12
	[MPa]	–0.1 ... 0	–0.1 ... 0.1	0 ... 0.2	0 ... 0.6	0 ... 1	0 ... 1.2
Input pressure 1	[bar]	0 ... 6	0 ... 6	0 ... 6	0 ... 13	0 ... 13	0 ... 13
	[MPa]	0 ... 0.6	0 ... 0.6	0 ... 0.6	0 ... 1.3	0 ... 1.3	0 ... 1.3
Input pressure 3	[bar]	–1	–1	-	-	-	-
	[MPa]	– 0.1	– 0.1	-	-	-	-
Burst pressure	[bar]	40	40	40	40	40	40

Information on materials	
Note on materials	RoHS-compliant
Housing material	PA-reinforced
Seals material	HNBR
	PTFE

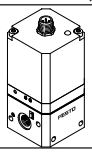
Proportional-pressure regulators VPPE

Highlights

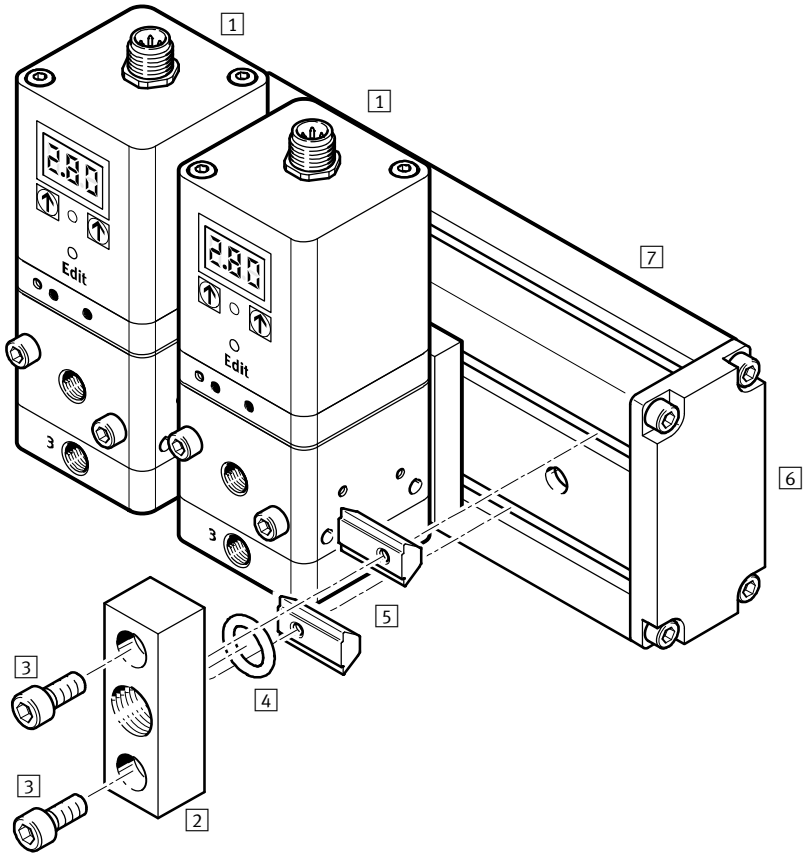
+ Piloted pressure regulator
+ Setpoint input as analogue voltage signal (0 ... 10 V)
+ Electrical connection via M12x1 plug, 4-pin
+ Available with setpoint module
+ For simple control tasks

Proportional-pressure regulators VPPE

Product range overview

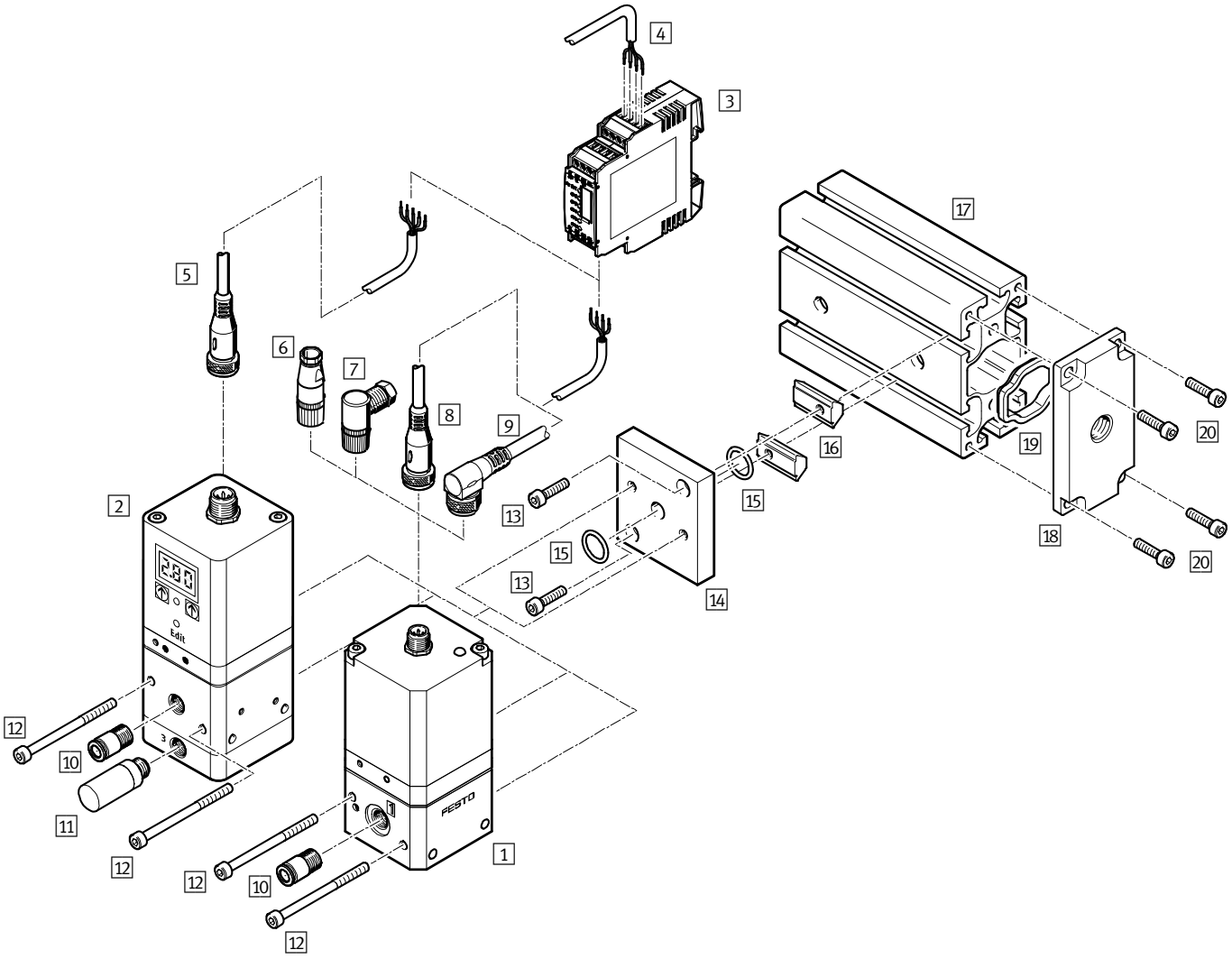
Version	Design	Pressure regulation range [bar]	Pneumatic connection 1, 2, 3	Nominal width for pressurisation/ exhaust [mm]	Setpoint value input	
					Voltage type 0 ... 10 V	Current type 4 ... 20 mA
Without display						
	Piloted piston regulator	0.15 ... 6	G1/8	5/2.5	■	–
With display						
	Piloted piston regulator	0.02 ... 2 0.06 ... 6 0.1 ... 10	G1/8	5/2.5	■	■

Peripherals overview – Additional power supply



Accessories		Brief description	➔ Page/online
1	Proportional pressure regulator with display VPPE ... E1	–	564
2	Additional power supply module VABF-P5-P1A3... (set)	For supplying compressed air (consists of compressed air supply plate, screws and seal)	566
3	Socket head screw M6x20	For screwing a compressed air supply plate to the slot nut	
4	O-ring	For sealing	
5	Slot nuts	For clamp fitting components on the mounting rail	
6	End plate VABE-P5-C (set)	For sealing the mounting rail (consists of an end plate, screws and seal)	
7	Mounting rail IPM-PN-08-40x80-AL	Standard mounting rail as central air supply	

Peripherals overview



Accessories		Brief description	→ Page/online
1	Proportional pressure regulator VPPE	–	562
2	Proportional pressure regulator with display VPPE ... E1	–	564
3	Setpoint module MPZ	For generating 6+1 analogue voltage signals	562 , 564
4	Digital input/output	For actuating the setpoint module	–
5	Connecting cable SIM-M12-5GD-...-PU	With straight plug socket for actuating the VPPE...E1	562 , 564
6	Plug socket SIE-GD	Straight plug socket for actuating the VPPE	
7	Plug socket SIE-WD-TR	Angled plug socket for actuating the VPPE	
8	Connecting cable SIM-M12-4GD-5PU	With straight plug socket for actuating the VPPE	
9	Connecting cable SIM-M12-4WD-5PU	With angled plug socket for actuating the VPPE	
10	Push-in fitting NPQE	For connecting compressed air tubing with standard O.D.	803
11	Silencer U	For fitting in exhaust ports	u
12	Socket head screw M4x55	For screwing the VPPE to the mounting plate	566
13	Socket head screw M4x16	For screwing the mounting plate to the slot nut	
14	Mounting plate VAME-P5-MK (set)	For attaching the VPPE to the mounting rail (consists of mounting plate, slot nuts, screws and seals)	
15	O-ring	For sealing	
16	Slot nuts	For clamp fitting components on the mounting rail	
17	Mounting rail	Standard mounting rail as central air supply	
18	Compressed air supply plate VABF-P5-P3A3... (set)	For supplying compressed air (consists of compressed air supply plate, screws and seal)	
19	Seal	–	
20	Socket head screw M5x12	For screwing a compressed air supply plate to the mounting rail	

Proportional-pressure regulators VPPE

Type code explanation

- Piloted piston regulator
- Pressure regulation range: 0.15 ... 6 bar
- Flow rate: 850 l/min
- Signal setpoint input: 0 ... 10 V DC

Variants
- Setpoint input as analogue voltage signal 0 ... 10 V

001	Series
VPPE	Proportional pressure regulator with switching valve head

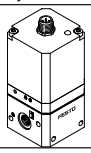
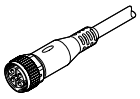
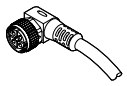
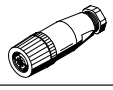
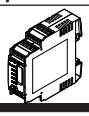
002	Valve function
3	3-way pressure regulator

003	3-way pressure regulator
1/8	G1/8 female thread

004	Pressure regulation range
6	0.15 ... 6 bar

005	Analogue setpoint input
010	0 ... 10 V

Ordering data

	Description	Part No.	Type
Proportional pressure regulator VPPE without display			
	Pressure regulation range: 0 ... 6 bar Pneumatic connection: G1/8	539639	VPPE-3-1/8-6-010
Plug socket with cable			
	Straight socket, M12x1, 5-pin Open end, 4-wire, cable length 5 m	164259	SIM-M12-4GD-5-PU
	Angled socket, M12x1, 5-pin Open end, 4-wire, cable length 5 m	164258	SIM-M12-4WD-5-PU
Plug socket			
	Straight socket, M12x1, 4-pin	18494	SIE-GD
	Angled socket, M12x1, 4-pin	12956	SIE-WD-TR
Setpoint module			
	Setpoint module for generating 6 + 1 analogue voltage signals	546224	MPZ-1-24DC-SGH-6-SW

Data sheet

General technical data			
Pneumatic connection 1 and 2			G1/8
Design, valve function			Piloted piston regulator, 3-way proportional pressure regulator, closed
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted via 2/2-way valves
Type of mounting			Via through-hole
Mounting position			Any, preferably vertical
Nominal size	Pressurisation	[mm]	5
	Exhaust	[mm]	2.5
Standard nominal flow rate		[l/min]	➔ Graph online
Product weight		[g]	445

Electrical data		
Electrical connection		Plug, round design, 4-pin, M12x1
Operating voltage range	[V DC]	21.6 ... 26.4
Power supply indicator		LED
Residual ripple	[%]	10
Max. electrical power consumption	[W]	3.6
Max. current consumption	[mA]	150
Setpoint input signal	[V DC]	0 ... 10
Switching time on/off	[ms]	550/1300
Protection against short circuit/polarity reversal		For all electrical connections
Protection class		IP65

Operating and environmental conditions		
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]
		Inert gases
Note on operating/pilot medium		Lubricated operation not possible
Supply pressure 1	[bar]	7 ... 8
Pressure regulation range	[bar]	0.15 ... 6
Max. pressure hysteresis	[bar]	0.15
Ambient temperature	[°C]	10 ... 50
Temperature of medium	[°C]	10 ... 50
Corrosion resistance class CRC[1]		2
CE marking (see declaration of conformity)		In accordance with EU EMC Directive[2]
Certification		RCM trademark
		c UL us - Listed (OL)

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Housing	Wrought aluminium alloy
Diaphragm	NBR
Note on materials	RoHS-compliant

Proportional-pressure regulators VPPE

Type code explanation

- Piloted piston regulator
- Pressure regulation ranges: 0.02 ... 2, 0.06 ... 6, 0.1 ... 10 bar
- Flow rate: 310 ... 1250 l/min
- Signal setpoint input: 0 ... 10 V DC, 4 ... 20 mA

Variants
- Setpoint input as analogue voltage signal 0 ... 10 V
- Setpoint input as analogue current signal 4 ... 20 mA
- Assembly as in-line valve or on mounting rail
- 3-digit LED display

001	Series
VPPE	Proportional pressure regulator with switching valve head

002	Directional control function
3	3-way pressure regulator

003	Valve function
1	Normally closed

004	Pneumatic connection
1/8	G1/8 female thread

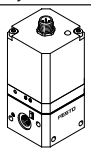
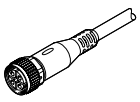
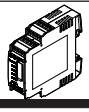
005	Pressure regulation range
2	0.02 ... 2 bar
6	0.06 ... 6 bar
10	0.1 ... 10 bar

006	Analogue setpoint input
010	0 ... 10 V
420	4 ... 20 mA

007	Operator unit
E1	Segmented LED display

008	Valve function
–	In-line valve
T	Common supply manifold assembly (mounting rail)

Ordering data

	Description		Part No.	Type
Proportional pressure regulator VPPE with LED display				
	Voltage type 0 ... 10 V			
	Pressure regulation range 0.02 ... 2 bar		557771	VPPE-3-1-1/8-2-010-E1
			557777	VPPE-3-1-1/8-2-010-E1T
	Pressure regulation range 0.06 ... 6 bar		557772	VPPE-3-1-1/8-6-010-E1
			567539	VPPE-3-1-1/8-6-010-E1T
	Pressure regulation range 0.1 ... 10 bar		557773	VPPE-3-1-1/8-10-010-E1
			557778	VPPE-3-1-1/8-10-010-E1T
	Current type 4 ... 20 mA			
	Pressure regulation range 0.02 ... 2 bar		557774	VPPE-3-1-1/8-2-420-E1
			557779	VPPE-3-1-1/8-2-420-E1T
	Pressure regulation range 0.06 ... 6 bar		557775	VPPE-3-1-1/8-6-420-E1
			567540	VPPE-3-1-1/8-6-420-E1T
	Pressure regulation range 0.1 ... 10 bar		557776	VPPE-3-1-1/8-10-420-E1
			557780	VPPE-3-1-1/8-10-420-E1T
Plug socket with cable				
	Straight socket, M12x1, 5-pin Open end, 5-wire	2.5 m	175715	SIM-M12-5GD-2,5-PU
		5 m	175716	SIM-M12-5GD-5-PU
Setpoint module				
	Setpoint module for generating 6 + 1 analogue voltage signals		546224	MPZ-1-24DC-SGH-6-SW

Data sheet

General technical data			
Pneumatic connection 1, 2, 3			G1/8
Design, valve function			Piloted diaphragm regulator, 3-way proportional pressure regulator
Sealing principle			Soft
Actuation type			Electric
Reset method			Mechanical spring
Type of control			Piloted via 2/2-way valves
Type of mounting			Via through-hole
Mounting position			Any, preferably vertical
Nominal size	Pressurisation	[mm]	5
	Exhaust	[mm]	2.5
Standard nominal flow rate		[l/min]	➔ Graphs online

Electrical data			
Electrical connection			Plug, round design, 5-pin, M12x1
Operating voltage range		[V DC]	21.6 ... 26.4
Power supply indicator			LED
Residual ripple		[%]	10
Max. electrical power consumption		[W]	4.2
Analogue signal range	Voltage	[V DC]	0 ... 10
Output/input	Current	[mA]	4 ... 20
Protection against short circuit			For all electrical connections
Switching output			PNP
Protection against incorrect polarity			For all electrical connections
Protection class			IP65

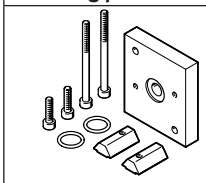
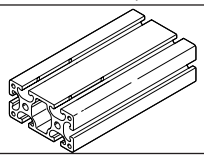
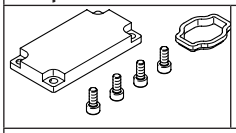
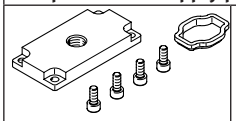
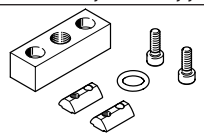
Note
If the power supply cable is interrupted, output pressure is maintained unregulated.

Operating and environmental conditions					
Pressure regulation range		[bar]	0.02 ... 2	0.06 ... 6	0.1 ... 10
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]		
			Inert gases		
Note on operating/pilot medium			Lubricated operation not possible		
Supply pressure 1[1]		[bar]	3 ... 4	6 ... 8	6 ... 11
Max. pressure hysteresis		[mbar]	20	30	50
FS (full scale) linearity error		[%]	± 1		
FS (full scale) repetition accuracy		[%]	0.5		
Temperature coefficient		[%/K]	0.04		
Duty cycle		[%]	100		
Ambient temperature		[°C]	0 ... 60		
Temperature of medium		[°C]	10 ... 50		
Corrosion resistance class		[CRC]	2[2]		
CE marking (see declaration of conformity)			To EU EMC Directive[3]		
Certification			RCM trademark		
			c UL us - Listed (OL)		

1) Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Housing	Anodised wrought aluminium alloy
Note on materials	RoHS-compliant
	Free of copper and PTFE

Accessories – Ordering data

	Description	Part No.	Type
Mounting plate set			
	Set, consisting of: • 1x mounting plate, weight: 110 g • 2x socket head screws M4X55 • 2x socket head screws M4X16 • 2x slot nuts • 2x O-rings	570966	VAME-P5-MK
Profile column (mounting rail)			
	Made from aluminium, as central air supply, length: individually adaptable	175964	HMBS-80/40- -
End plate set			
	For sealing the mounting rail, consisting of: • 1x plate • 1x seal • 4x socket head screws M5x12	8021858	VABE-P5-C
Compressed air supply plate set			
	With connecting thread G1/4, consisting of: • 1x plate with connecting thread G1/4 • 1x seal • 4x socket head screws M5x12	8021859	VABF-P5-P3A3-G14
	With connecting thread G3/8, consisting of: • 1x plate with connecting thread G3/8 • 1x seal • 4x socket head screws M5x12	8021860	VABF-P5-P3A3-G38
	With connecting thread G1/2, consisting of: • 1x plate with connecting thread G1/2 • 1x seal • 4x socket head screws M5x12	8021861	VABF-P5-P3A3-G12
Additional power supply module set			
	Connection G1/4, consisting of: • 1x plate with connecting thread G1/4 • 1x O-ring • 2x slot nuts • 2x socket head screws M6x20	8021862	VABF-P5-P1A3-G14
	Connection G3/8, consisting of: • 1x plate with connecting thread G3/8 • 1x O-ring • 2x slot nuts • 2x socket head screws M6x20	8021863	VABF-P5-P1A3-G38

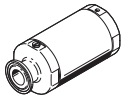
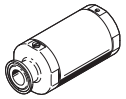
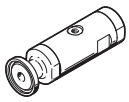
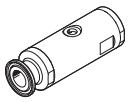
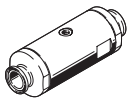
Pinch valves VZQA

Highlights

+ Electropolished surfaces SFV4
+ PTFE seal with little dead space
+ The high-performance ball valve for the pharmaceutical and cosmetics industry
+ FDA-compliant seal to FDA 21 CFR 177.1550

Pinch valves VZQA

Product range overview

Type		Nominal width DN	Valve body connection	Flow rate [m³/h]	Pilot air connection 12, max. permissible screw-in depth
Normally closed M22C					
	VZQA-C-M22C	6	G1/4	0.7	M3, 3 mm
			1/4 NPT		
			Clamp ferrule to DIN 32676, series A		
			Clamp ferrule to ASME-BPE, type A		
	VZQA-C-M22C	15	G1/2	5	M5, 5 mm
			1/2 NPT		
			Clamp ferrule to DIN 32676, series A		
			Clamp ferrule to ASME-BPE, type A		
Normally open M22U					
	VZQA-C-M22U	6	G1/4	0.7	M5, 4.5 mm
			1/4 NPT		
			Clamp ferrule to DIN 32676, series A		
			Clamp ferrule to ASME-BPE, type A		
	VZQA-C-M22U	15	G1/2	5	G1/8, 5 mm
			1/2 NPT		
			Clamp ferrule to DIN 32676, series A		
			Clamp ferrule to ASME-BPE, type A		
	VZQA-C-M22U	25	G1	18	G1/8, 6 mm
			1 NPT		
			Clamp ferrule to DIN 32676, series A		
			Clamp ferrule to ASME-BPE, type A		
			Clamp ferrule to ASME-BPE, type B		

Features

Application

- The pinch valve is a 2/2-way valve used to control liquid and powdery media, solids as well as a mixture of substances.

Design

- Easy-to-clean housing (clean design)
- Open or closed in normal position
- Shut-off element made of elastomer

Areas of application

- Filling systems
- Dosing and weighing systems
- Powder coating systems
- Suction and compressed air control units
- Pneumatic conveying systems
- Sandblast systems

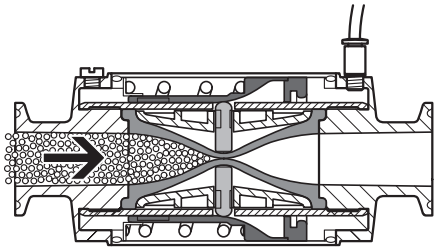
Examples of flow media:
- Granules
- Powder
- Dust
- Liquids containing solids
- Fibrous products
- Highly viscous media
- Abrasive media
- Corrosive media
- Paste-like media

Function

The pinch valve is a 2/2-way valve with a tubular pinch sleeve made of elastomer. The free passage when the valve is opened ensures minimum flow resistance and prevents the valve becoming blocked or clogged.

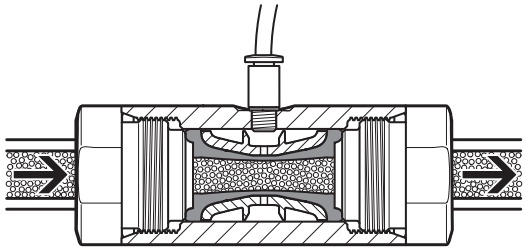
Features

VZQA-C-M22C (normally closed)



In the normal position, the pinch valve is closed. The pinch valve sleeve opens when the valve is pressurised, releasing the material flow. When pressure is no longer applied, a spring closes the valve. The valve can be used to shut off liquid and gaseous media.

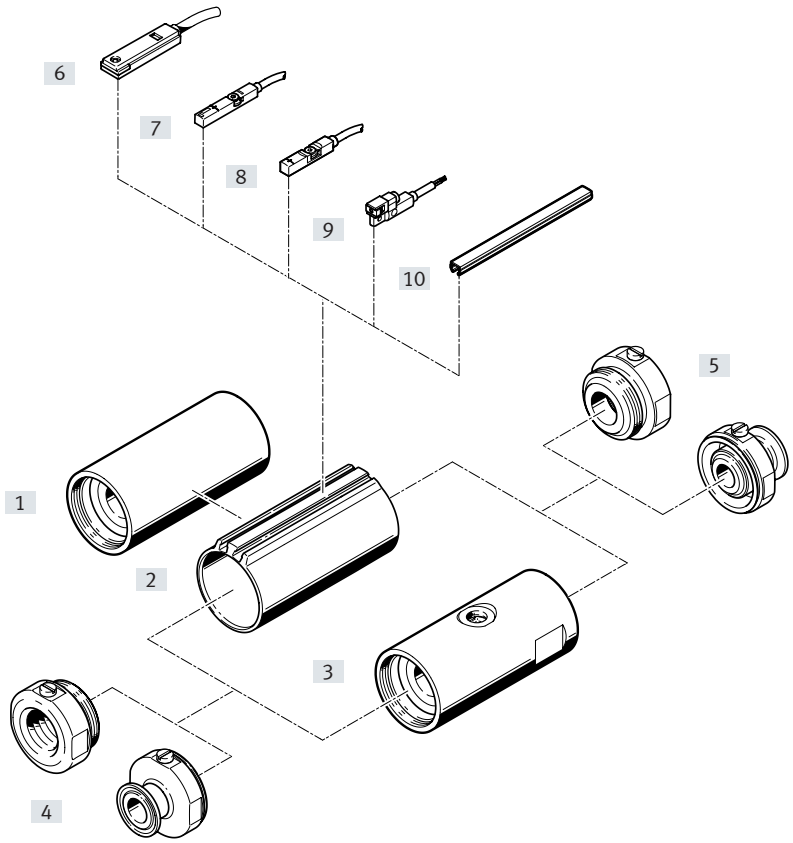
VZQA-C-M22U (normally open)



In the normal position, the pinch valve is open. The pinch valve sleeve closes when the valve is pressurised, shutting off the material flow. When pressure is no longer applied, the valve opens due to the inherent stress of the pinch valve sleeve or the pressure of the flow medium. The valve can be used to shut off liquid and powdery media, solids (granules) as well as a mixture of substances.

Note
The hermetic separation between the media circuit and control circuit is no longer guaranteed if wear causes the pinch valve sleeve to leak. The flow medium can then get into the control circuit, from where it can escape. Any potential hazard (e.g. due to aggressive or hot media) must be ruled out. The compressed air supply to the control valve must be protected against the ingress of the flow medium using a suitable check valve, or suitable protection against return flow must be integrated in the pilot line in the immediate vicinity of the media valve. Pilot medium can get into the media circuit if the pinch valve sleeve fails. The media circuit must therefore be sized for the set operating pressure. Any potential hazard must be ruled out.

Peripherals overview



		→ Page/Internet
[1]	Basic body VZQA-C-M22C	571
[2]	Basic body VZQA-C-M22C	
[3]	Basic body VZQA-C-M22U	573
[4]	Connection 1	–
[5]	Connection 2	–

Proximity switches for T-slot		→ Page/Internet
[6]	SME-8	576
[7]	SME-8M	
[8]	SMT-8M	575
[9]	SMT-8G	
[10]	Slot cover ABP-5-S	576

Pinch valves VZQA

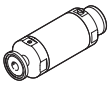
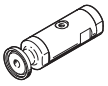
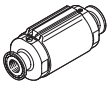
Ordering – Modular product system

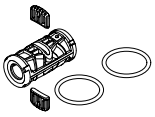
VZQA-C-...		M22C	M22U	Conditions	Code	Enter code
Module no.		3174282	2037881			
Product type		Pinch valve			VZQA	VZQA
Version		Easy-to-clean design			-C	-C
Valve function		2/2-way valve, normally closed	–		-M22C	
		–	2/2-way valve, normally open		-M22U	
Nominal diameter DN		6			-6	
		15			-15	
		–	25		-25	
Valve body connection type 1		G female thread			-G	
		Clamp ferrule to ASME-BPE, type A		[1] [4]	-S1	
		Clamp ferrule to DIN 32676, series A		[1]	-S5	
		NPT female thread			-T	
		Clamp ferrule to ASME-BPE, type B		[1] [3] [4] [6]	-S12	
Valve body connection type 2		G female thread			G	
		Clamp ferrule to ASME-BPE, type A		[1] [4]	S1	
		Clamp ferrule to DIN 32676, series A		[1]	S5	
		NPT female thread			T	
		Clamp ferrule to ASME-BPE, type B		[1] [3] [4] [6]	S12	
Housing material		Aluminium			-AL	
		Stainless steel (austenitic chromium-nickel)	–		-V2	
		–	Stainless steel (austenitic chromium-nickel-molybdenum)		-V4	
Housing cover material		Aluminium			AL	
		–	Polyoxymethylene	[3]	POM	
		Stainless steel (austenitic chromium-nickel-molybdenum)			V4	
Shut-off element material		EPDM			E	
		–	NBR		N	
		–	Silicone		S1	
Pressure range of media	[bar]	0 ... 4		[7]	-4	
		0 ... 6	–	[3]	-6	
Sensing type		None	–			
		End positions	–	[2] [5]	-E	

[1] S1, S5, S12 — Only in combination with housing cover material V4 (stainless steel)
[2] E — Only in combination with valve function M22C
[3] POM, S12, 6 — Not in combination with nominal diameter DN6
[4] S1, S12 — Not in combination with nominal diameter DN25 with valve function M22C
[5] E — Not in combination with housing material V2 (stainless steel)
[6] S12 — Not in combination with nominal diameter DN15
[7] 4 — Not in combination with nominal diameter DN15 with valve function M22C

Ordering data

Function: Normally closed

Pinch valves	Nominal width DN	Valve body connection	Shut-off element material	Part no.	Type
	6	G1/4	EPDM	8091739	VZQA-C-M22C-6-GG-V2V4E-4
		1/4 NPT		4748311	VZQA-C-M22C-6-TT-V2V4E-4
	6	Clamp ferrule to DIN 32676, series A	EPDM	8079857	VZQA-C-M22C-6-S5S5-V2V4E-4
		Clamp ferrule to ASME-BPE, type A		8079858	VZQA-C-M22C-6-S1S1-V2V4E-4
	15	G1/2	EPDM	3412426	VZQA-C-M22C-15-GG-V2V4E-6
		Clamp ferrule to DIN 32676, series A		3412424	VZQA-C-M22C-15-S5S5-V2V4E-6
With integrated ring magnet for sensing the end positions					
	15	Clamp ferrule to DIN 32676, series A	EPDM	3412425	VZQA-C-M22C-15-S5S5-ALV4E-6-E

Seal cartridge	Nominal width DN	Storage temperature [°C]	Shut-off element material	Note on materials	Part no.	Type
	6	6 ... 8	EPDM	RoHS-compliant	3418620	VAVC-Q2-M22C-6-E
	15	6 ... 8	EPDM	RoHS-compliant	3418619	VAVC-Q2-M22C-15-E

Pinch valves VZQA

Data sheet

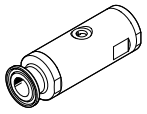
General technical data			
Nominal width DN		6	15
Nominal pressure of valve body PN		10	
Design		Pinch valve, pneumatically actuated	
Actuation type		Pneumatic	
Sealing principle		Soft	
Mounting position		Any	
Valve function		2/2-way closed, single solenoid	
Flow direction		Reversible	
Reset method		Mechanical spring	
Type of pilot control		Externally piloted	
Type of mounting		In-line installation	
Auxiliary pilot air connection 12		M3	M5
Switching time on	[ms]	125	150
Switching time off	[ms]	125	250
Flow rate Kv	[m³/h]	0.7	5
Max. viscosity	[mm²/s]	4000	

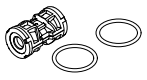
Operating and environmental conditions			
Nominal width DN		6	15
Operating pressure	[bar]	3.5 ... 6	
Burst pressure	[bar]	16	
Pressure of medium	[bar]	0 ... 4	0 ... 6
Ambient temperature	[°C]	–5 ... +60	
Temperature of medium	[°C]	–5 ... +100	
Storage temperature	[°C]	6 ... 8	
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:1]	
Medium		Compressed air to ISO 8573-1:2010 [-:-:1]	
		Water	

Materials		Material number
Housing		
V2V4	High-alloy stainless steel	1.4301
ALV4	Wrought aluminium alloy	–
Housing cover	High-alloy stainless steel	1.4435
Bowl		
Nominal width DN6	PPS	
Nominal width DN15	PA6	
Seals	FPM	
Shut-off element	EPDM	
Note on materials	RoHS-compliant	
	Contains paint-wetting impairment substances	

Ordering data

Function: Normally open

Pinch valve	Nominal width DN	Valve body connection	Shut-off element material	Part no.	Type
	6	G1/4	NBR	2931679	VZQA-C-M22U-6-GG-ALV4N-4
			EPDM	2931678	VZQA-C-M22U-6-GG-V4V4E-4
			Silicone	2931683	VZQA-C-M22U-6-GG-V4V4S1-4
		1/4 NPT	Silicone	2931685	VZQA-C-M22U-6-TT-V4V4S1-4
		Clamp ferrule to DIN 32676, series A	EPDM	2931681	VZQA-C-M22U-6-S5S5-V4V4E-4
			Silicone	2931682	VZQA-C-M22U-6-S5S5-V4V4S1-4
		Clamp ferrule to ASME-BPE, type A	Silicone	2931684	VZQA-C-M22U-6-S1S1-V4V4S1-4
	15	G1/2	NBR	3022830	VZQA-C-M22U-15-GG-V4V4N-4
			NBR	3022831	VZQA-C-M22U-15-GG-ALV4N-4
			NBR	3022832	VZQA-C-M22U-15-GG-ALPOMN-4
			EPDM	3022829	VZQA-C-M22U-15-GG-V4V4E-4
			Silicone	3022835	VZQA-C-M22U-15-GG-V4V4S1-4
		1/2 NPT	Silicone	3022838	VZQA-C-M22U-15-TT-V4V4S1-4
		Clamp ferrule to DIN 32676, series A	EPDM	3022833	VZQA-C-M22U-15-S5S5-V4V4E-4
			Silicone	3022834	VZQA-C-M22U-15-S5S5-V4V4S1-4
		Clamp ferrule to ASME-BPE, type A	Silicone	3022837	VZQA-C-M22U-15-S1S1-V4V4S1-4
	25	G1	EPDM	3968922	VZQA-C-M22U-25-GG-V4V4E-4
			EPDM	3968923	VZQA-C-M22U-25-GG-ALALE-4
			Silicone	3968926	VZQA-C-M22U-25-GG-V4V4S1-4
		1 NPT	Silicone	3968928	VZQA-C-M22U-25-TT-V4V4S1-4
		Clamp ferrule to DIN 32676, series A	EPDM	3968924	VZQA-C-M22U-25-S5S5-V4V4E-4
			Silicone	3968925	VZQA-C-M22U-25-S5S5-V4V4S1-4
		Clamp ferrule to ASME-BPE, type B	Silicone	3968927	VZQA-C-M22U-25-S12S12-V4V4S1-4

Seal cartridge	Nominal width DN	Shut-off element material	Storage temperature [°C]	Note on materials		Part no.	Type
	6	NBR	6 ... 8	–	RoHS-compliant	2392881	VAVC-Q2-M22U-6-N
		EPDM				2392882	VAVC-Q2-M22U-6-E
		VMQ (silicone)	0 ... 25	Contains paint-wetting impairment substances		2392883	VAVC-Q2-M22U-6-S1
	15	NBR	6 ... 8	–		3019151	VAVC-Q2-M22U-15-N
		EPDM				3019148	VAVC-Q2-M22U-15-E
		VMQ (silicone)	0 ... 25	Contains paint-wetting impairment substances		3019144	VAVC-Q2-M22U-15-S1
	25	NBR	6 ... 8	–		3970092	VAVC-Q2-M22U-25-N
		EPDM				3970093	VAVC-Q2-M22U-25-E
		VMQ (silicone)	0 ... 25	Contains paint-wetting impairment substances		3970094	VAVC-Q2-M22U-25-S1

Pinch valves VZQA

Data sheet

General technical data

Nominal width DN		6	15	25
Nominal pressure of valve body PN		10		
Design		Pinch valve, pneumatically actuated		
Actuation type		Pneumatic		
Sealing principle		Soft		
Mounting position		Any		
Valve function		2/2 open, single solenoid		
Flow direction		Reversible		
Reset method		Rebound resilience		
Type of pilot control		Externally piloted		
Type of mounting		In-line installation		
Auxiliary pilot air connection 12		M5	G1/8	G1/8
Switching time on	[ms]	125	250	250
Switching time off	[ms]	125	250	250
Flow rate Kv	[m^3/h]	0.7	5	18
Max. viscosity	[mm^2/s]	4000		

Operating and environmental conditions

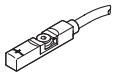
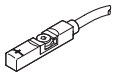
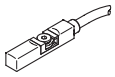
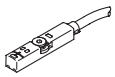
Nominal width DN		6	15	25
Operating pressure	[bar]	1 ... 6.5		
Overload pressure	[bar]	7.8		
Pressure of medium	[bar]	0 ... 4		
Differential pressure				
For shut-off element NBR, EPDM	[bar]	2.5	2.5	2.5
For shut-off element VMQ	[bar]	2.5	2.5	3
Burst pressure	[bar]	16		
Ambient temperature	[°C]	–5 ... +60		
Temperature of medium				
For shut-off element NBR	[°C]	–5 ... +60		
For shut-off element EPDM	[°C]	–5 ... +100		
For shut-off element VMQ	[°C]	–5 ... +150		
Storage temperature				
For shut-off element NBR, EPDM	[°C]	6 ... 8		
For shut-off element VMQ	[°C]	5 ... 30		
Pilot medium				
For shut-off element EPDM		Compressed air to ISO 8573-1:2010 [7:4:1]		
For shut-off element NBR, VMQ		Compressed air to ISO 8573-1:2010 [7:4:4]		
Medium				
For shut-off element EPDM		Compressed air to ISO 8573-1:2010 [-:-:1]		
		Water		
For shut-off element NBR, VMQ		Compressed air to ISO 8573-1:2010 [-:-:-]		

Materials

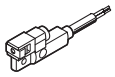
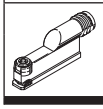
VZQA-C-M22U-...	V4V4	ALAL	ALV4	ALPOM
Housing	High-alloy stainless steel	Wrought aluminium alloy		
Housing cover	High-alloy stainless steel	Wrought aluminium alloy	High-alloy stainless steel	POM
Bowl	PA6			
Seals	FPM			
Note on materials				
For shut-off element NBR, EPDM, VMQ	RoHS-compliant			
For shut-off element VMQ	Contains paint-wetting impairment substances			

Accessories – Ordering data

Proximity switches for T-slot, magnetoresistive

	Switching output	Electrical connection			Cable length	Part no.	Type
		Cable	Cable with plug, rotatable thread				
			M8x1	M12x1	[m]		
N/O contact							
	PNP	–	3-pin	–	0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8D
		3-wire	–	–	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE
		3-wire	–	–	5	574336	SMT-8M-A-PS-24V-E-5.0-OE
		–	–	3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0.3-M12
	NPN	3-wire	–	–	2.5	574338	SMT-8M-A-NS-24V-E-2.5-OE
		–	3-pin	–	0.3	574339	SMT-8M-A-NS-24V-E-0.3-M8D
	To EU Explosion Protection Directive (ATEX)						
	Non-contacting	2-wire	–	–	5	574341	SMT-8M-A-ZS-24V-E-5.0-OE-EX2
	PNP	–	3-pin	–	0.3	574342	SMT-8M-A-PS-24V-E-0.3-M8D-EX2
N/O contact, corrosion-resistant							
	PNP	3-wire	–	–	5	574380	CRSMT-8M-PS-24V-K-5.0-OE
		3-wire	–	–	10	574381	CRSMT-8M-PS-24V-K-10.0-OE
	PNP	–	–	3-pin	0.3	574382	CRSMT-8M-PS-24V-K-0.3-M12
		–	3-pin	–	0.3	574383	CRSMT-8M-PS-24V-K-0.3-M8D
N/C contact							
	PNP	3-wire	–	–	7.5	574340	SMT-8M-A-PO-24V-E-7.5-OE
Switchable							
	PNP/NPN	–	3-pin	–	0.3	574343	SMT-8M-A-PNS-24V-E-0.3-M8D
	PNP PS/PO	–	3-pin	–	0.3	574344	SMT-8M-A-PSO-24V-E-0.3-M8D

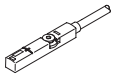
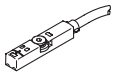
Ordering data – Proximity switches for T-slot, magnetoresistive

	Switching output	Electrical connection		Cable length	Part no.	Type
		Cable	Plug M8x1	[m]		
N/O contact						
	PNP	3-wire	–	2.5	547859	SMT-8G-PS-24V-E-2.5Q-OE
		–	3-pin	0.3	547860	SMT-8G-PS-24V-E-0.3Q-M8D
	PNP	–	3-pin	–	562019	SMT-8-SL-PS-LED-24-B

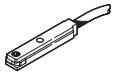
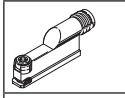
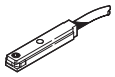
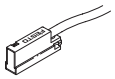
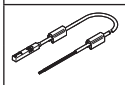
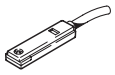
Pinch valves VZQA

Accessories – Ordering data

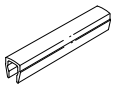
Proximity switches for T-slot, magnetic reed

	Switching output	Electrical connection		Cable length	Part no.	Type
		Cable	Cable with plug, rotatable thread M8x1	[m]		
N/O contact						
	Contacting, bipolar	–	3-pin	0.3	543861	SME-8M-DS-24V-K-0.3-M8D
		3-wire	–	2.5	543862	SME-8M-DS-24V-K-2.5-OE
		3-wire	–	5	543863	SME-8M-DS-24V-K-5.0-OE
		2-wire	–	2.5	543872	SME-8M-ZS-24V-K-2.5-OE
		3-wire	–	7.5	543876	SME-8M-DS-24V-K-7.5-OE
N/C contact						
	Contacting, bipolar	3-wire	–	7.5	546799	SME-8M-DO-24V-K-7.5-OE

Proximity switches for T-slot, magnetic reed

	Switching output	Electrical connection		Cable length	Part no.	Type
		Cable	Plug M8x1	[m]		
N/O contact						
	Contacting, bipolar	3-wire	–	2.5	150855	SME-8-K-LED-24
		3-wire	–	5.0	175404	SME-8-K5-LED-24
		3-wire	–	7.5	530491	SME-8-K-7.5-LED-24
		–	3-pin	0.3	150857	SME-8-S-LED-24
		2-wire	–	2.5	171169	SME-8-ZS-KL-LED-24
	Contacting, bipolar	–	3-pin	–	526622	SME-8-SL-LED-24
	Contacting, bipolar, heat-resistant	2-wire	–	2.5	161756	SME-8-K-24-S6
	Contacting, bipolar, operating voltage range up to 230 V AC/DC	2-wire	–	2.5	152820	SME-8-K-LED-230
	Contacting, bipolar	3-wire	–	2.5	543862	SME-8M-DS-24V-K-2,5-OE
		2-wire	–	2.5	543872	SME-8M-ZS-24V-K-2,5-OE
N/C contact						
	Contacting, bipolar	3-wire	–	7.5	160251	SME-8-O-K-LED-24

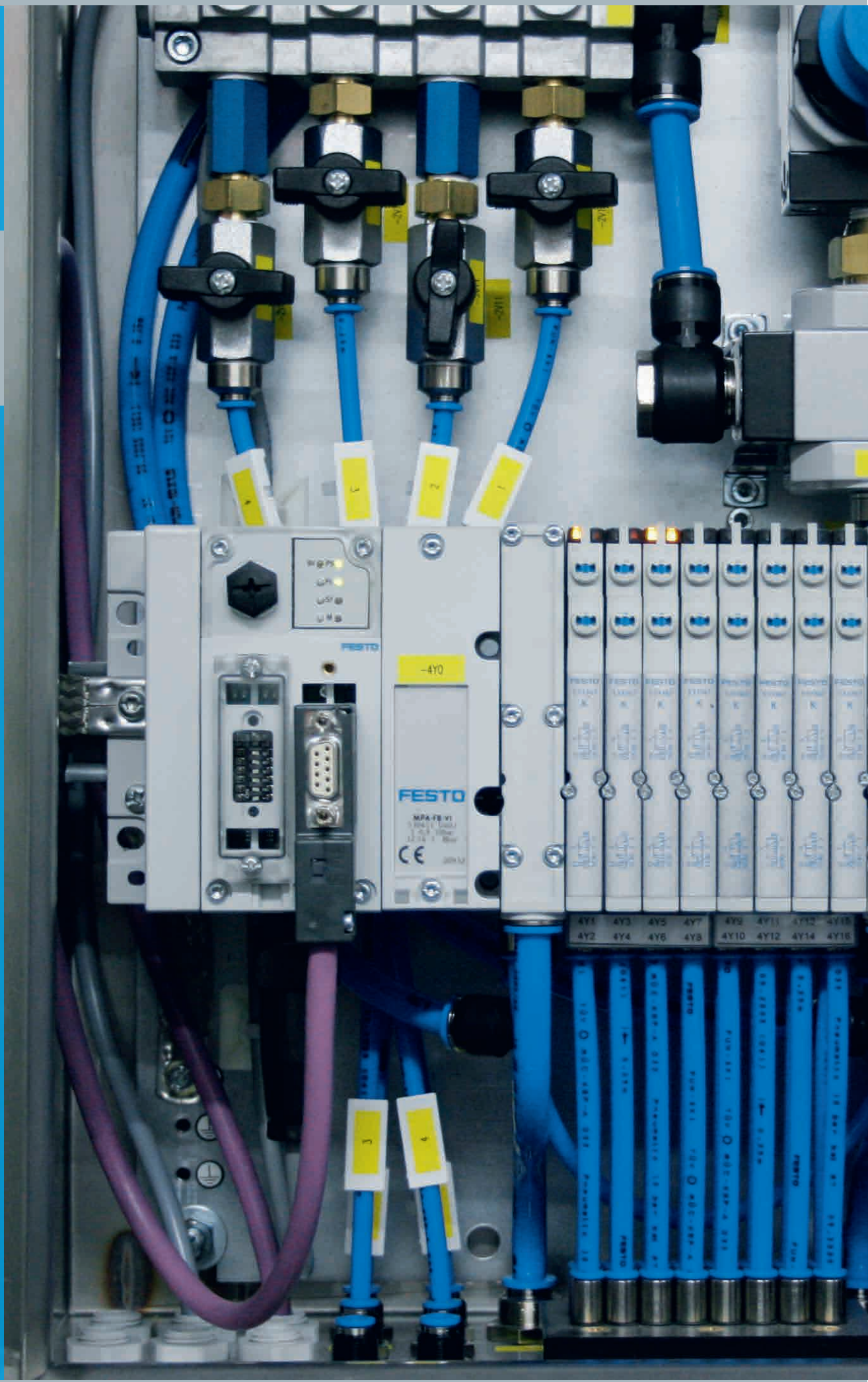
Slot cover for T-slot

	Mounting	Length [m]	Part no.	Type
	Insertable	2x 0.5	151680	ABP-5-S

Pinch valves VZQA

07

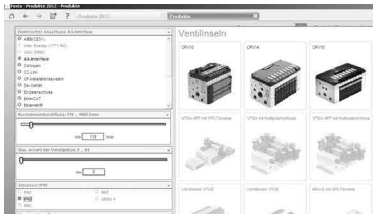
Valve terminals



Contents

Product overview

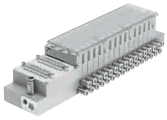
Software tools

Product finder for valve terminals		Find the right valve terminal quickly with the help of the product finder. Start the product finder by clicking on the blue button “Product finder” under “Products”. 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. 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. This tool can be found • on our website under www.festo.com/catalogue by clicking on the blue icon “Product Finder”.

Universal valve terminals

	 **Valve terminals with multi-pin plug/ fieldbus connection VTUG**	 **Valve terminals MPA-L**	 **Valve terminals MPA-S**
Width	10 mm, 14 mm, 18 mm	10 mm, 14 mm, 20 mm	10 mm, 20 mm
Standard nominal flow rate	1200 l/min at 18 mm, 330 l/min at 10 mm, 630 l/min at 14 mm, 130 l/min, 1150 l/min	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
Max. no. of valve positions	24	32	64
Electrical actuation	AP interface, Individual connection, Fieldbus, Multi-pin plug, IO-Link®, I-Port	Fieldbus, multi-pin plug, electrical terminal CPX, IO-Link®, I-Port	Fieldbus, multi-pin plug, electrical terminal CPX, AS-Interface, CP installation system
Valve terminal design	Fixed grid	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed
Description	• Low-cost fixed grid • Extremely easy assembly • Exchangeable electrical control • IO-Link® capable • Valves VUVG with individual electrical connection can be integrated • Also available with pneumatic multiple connector plate • Part of the VG series • Energy-efficient thanks to reverse operation and targeted pressure reduction • Optimised and space-saving variant available for installation in control cabinets • Variants with hot-swap connections: valves can be replaced during operation	• Maximum modularity • Single granular • Polymer sub-base • Three valve sizes • Max. 32 valves • Fieldbus connection via CPX • IO-Link® capable	• 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
➔ Page/online	**585**	**mpa-l**	**mpa-s**

Application-specific valve terminals

	 **Valve terminals VTOC**
Width	10 mm
Standard nominal flow rate	10 l/min at 10 mm
Operating pressure	0 ... 8 bar
Electrical actuation	Multi-pin plug, IO-Link®, I-Port
Nominal operating voltage DC	24
Max. no. of valve positions	24
Valve terminal design	Fixed grid
Description	• Compact pilot valves • Compact assembly • Greater safety thanks to interlock function • Multi-pin or fieldbus control • IO-Link® capable
➔ Page/online	**615**

Product overview

Electrical peripherals

	 **Automation systems CPX-AP-I** ★	 **Terminal CPX**	 **Fieldbus modules CTEU**	 **Automation systems CPX-E**
Protocol		INTERBUS, DeviceNet, PROFIBUS, CANopen, CC-Link, Ether-Net/IP, PROFINET, EtherCAT, ModbusTCP	AS-Interface, CANopen, CC-Link, CPI-B, DeviceNet, EtherCAT, EtherNet/IP, PROFINET, Modbus® TCP, PROFIBUS DP	
Electrical actuation		Fieldbus, Integrated controller		Fieldbus, Integrated controller
Max. address capacity, inputs	1024 ... 2048 Byte	64 Byte	2 ... 64 Byte	64 Byte
Maximum address volume for outputs	1024 ... 2048 Byte	64 Byte	2 ... 64 Byte	64 Byte
Parameterisation		Diagnostic behaviour, Fail-safe response, Forcing of channels, Signal setup	IO-Link mode, Activate diagnostics, Diagnostic behaviour, Fail-safe and idle response, Fail-safe 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
Operating voltage range DC		18 ... 30 V	18 ... 31.6 V	
Description	• Powerful remote I/O system links up to 500 modules/ valve terminals to the bus of your choice: PROFINET, EtherNet/IP, EtherCAT®, PROFIBUS • Real time-capable, bus cycle from 15 µs • IO-Link® master and engineering tool for easy integration of IO-Link® devices • Advanced diagnostics with cloud connection and optional Festo dashboards	• 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 interlinking block with individual linking • Analogue inputs and outputs, 2-way/4-way, with optional HART protocol	• For valve terminals VTUB-12, VTUG, MPA-L, CPV, VTOC • Can be expanded into the installation system CTEL • Fieldbus-typical LEDs, interfaces and switching elements • Isolated power supply for electronics and valves	• 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/0.5A) • Analogue input modules (current, voltage), analogue output modules (current, voltage) • Modern programming with CoDeSys V3 to IEC 61131-3 • Integration of SoftMotion functions (SoftMotion) • Compact I/O assembly • Easy mounting of the control system
➔ Page/online	**625**	**cpx**	**647**	**cpx-e**

Motion Terminal

Motion Terminal
VTEM

Valve terminal design	Fixed grid
Grid dimension	28 mm
Max. no. of valve positi-ons	8
Standard nominal flow rate, exhaust 6-›5 bar	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	• 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 effort • Increased energy efficiency
➔ Page/online	**vtem**

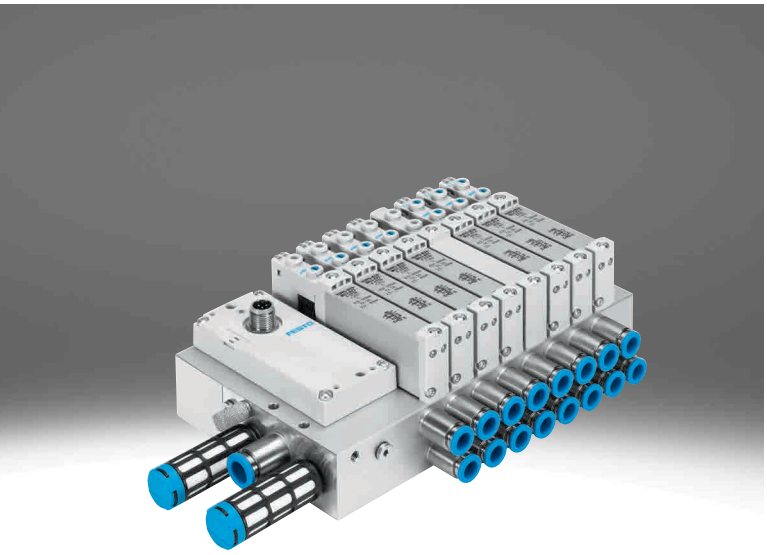
Motion Apps

Motion Apps
GAMM

Description	• Open and closed-loop control programs for valves VEVM • A new dimension in flexibility thanks to Motion Apps – a single valve with a wide range of different functions • Accelerated engineering processes • Short response times without the need to adapt the hardware • Reduced system complexity • Shorter time to market for your application
➔ Page/online	**gamm**

Product overview

Valve terminals VTUG



Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Valve terminals VTUG

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 push-in connectors
- Multiple pressure zones possible
- Sub-D variant and fieldbus interface with degree of protection 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
- Manual override: choose from 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

Valve terminal configurator

A valve terminal configurator is available to help you select a suitable valve terminal VTUG. This makes it much easier to order the right product.

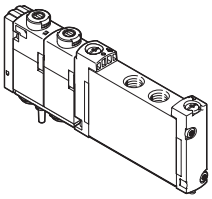
Valve terminals VTUG are ordered via an ident. code. All valve terminals are supplied fully assembled and individually tested.

This reduces assembly and installation time to a minimum.

Ordering system for valve terminal VTUG
→ Internet: vtug

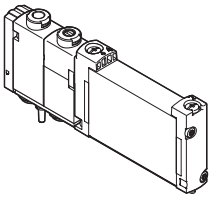
Sub-base and semi in-line valves for valve terminal VTUG

VUVG-S...1T1, semi in-line valve



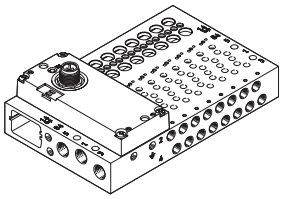
The supply ports (1, 3 and 5) for semi in-line valves are connected to the valve by common pneumatic links (e.g. sub-base). The working ports (2, 4) are on the valve.

VUVG-B...1T1, sub-base valve



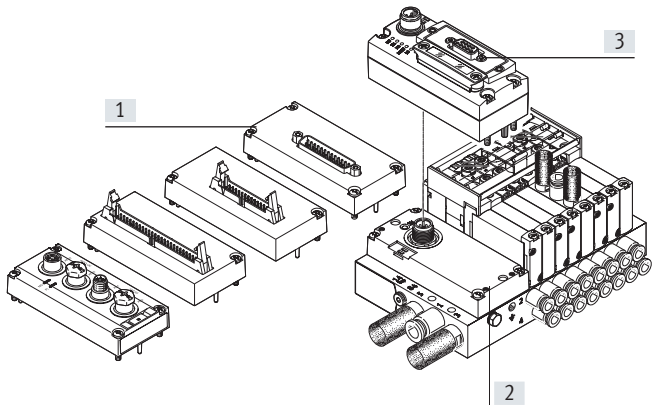
The supply ports (1, 3 and 5) and the working ports (2, 4) of sub-base valves are connected to the valve through the sub-base or manifold.

Valve terminal VTUG with different electrical connections



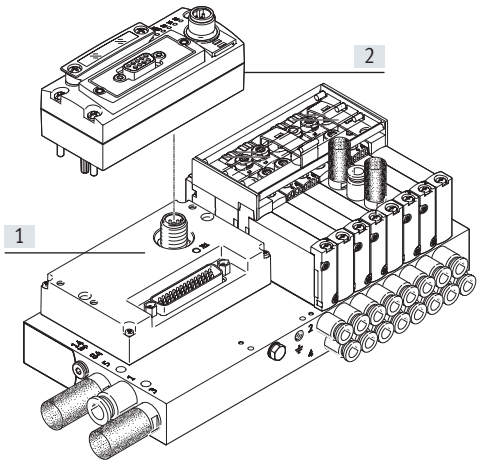
Features

Overview – Valve terminal with multi-pin plug connection and fieldbus interface



Different electrical connections:
1 Ribbon cable or Sub-D
2 I-Port interface
3 Bus node CTEU

Overview – Valve terminal with interlock

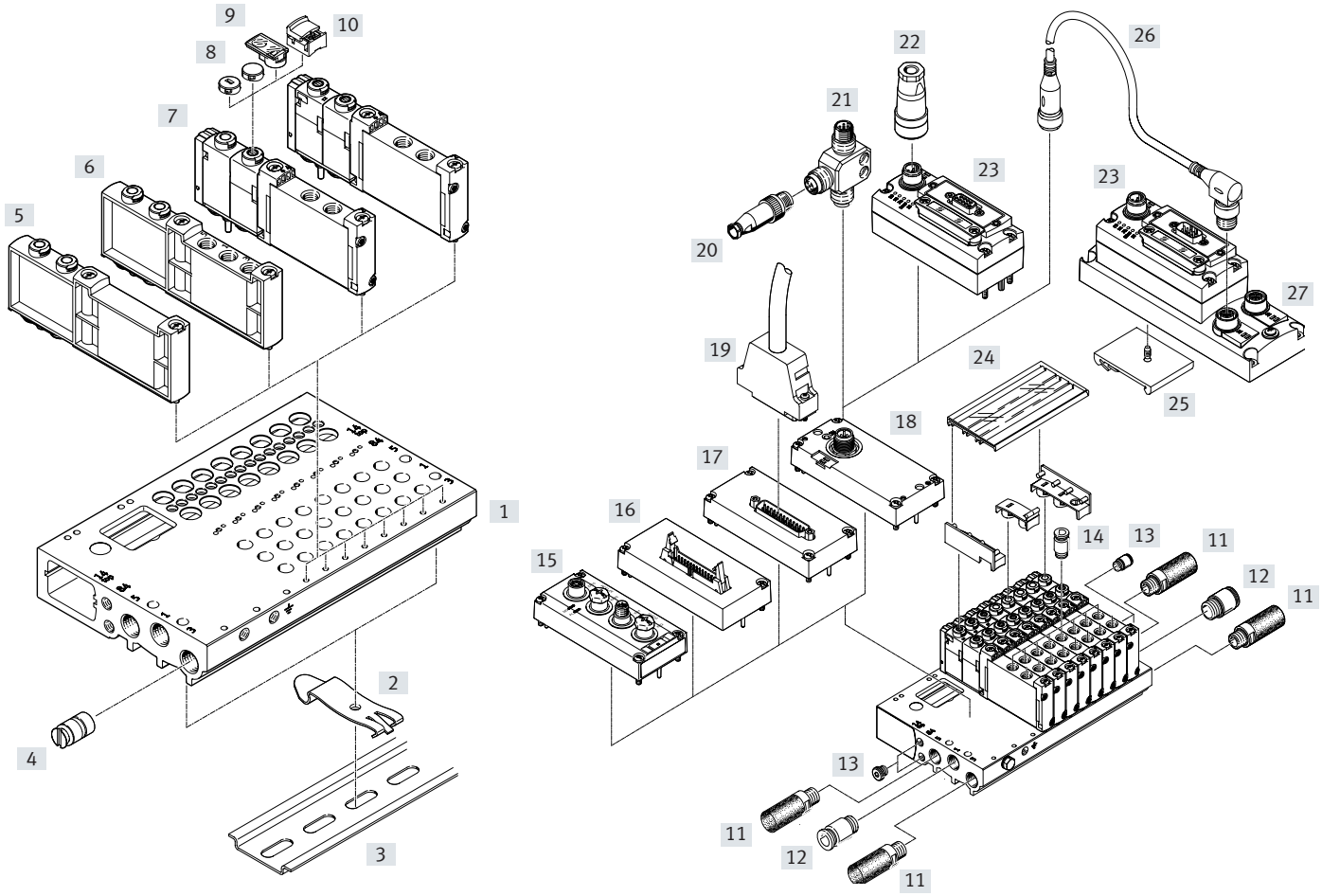


Different electrical connections:
1 I-Port interface with interlock
2 Bus node CTEU

Valve terminals VTUG

Peripherals overview – Semi in-line valves

Valve terminal with multi-pin plug and I-Port interface

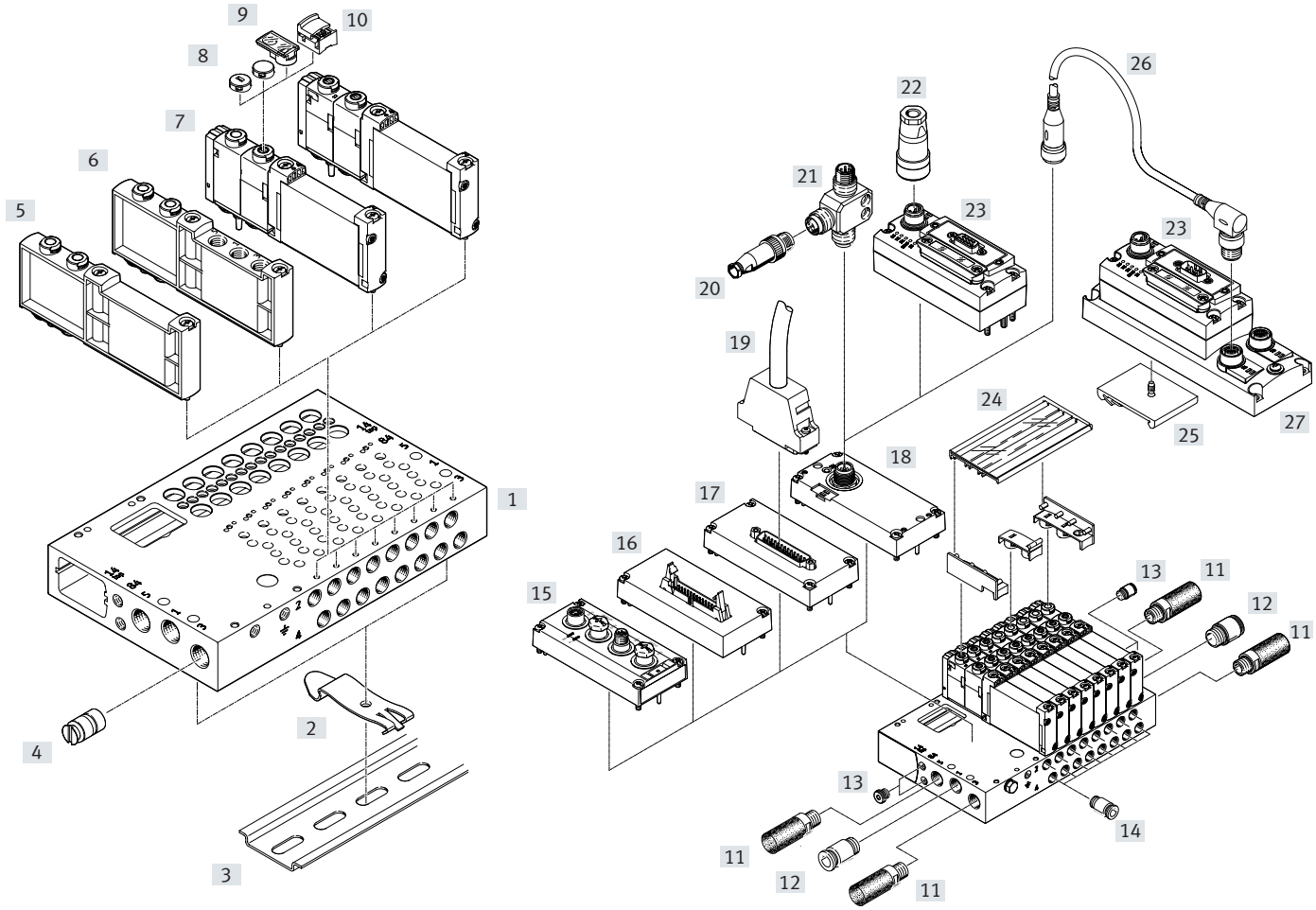


		Type	→ Page/Internet
[1]	Manifold rail	VABM-L1-...	608
[2]	H-rail mounting	VAME-T-M4	614
[3]	H-rail	NRH-35-2000	614
[4]	Separator	VABD-...	612
[5]	Cover plate	VABB-L1-...	612
[6]	Supply plate	VABF-L1-...	612
[7]	Solenoid valve	VUVG-...	593
[8]	Cover cap	VMPA-HB...-B	612
[9]	Identification holder	ASLR-D-L1	610
[10]	Covering	VAMC-...	612
[11]	Silencer	U-...	612
[12]	Push-in fitting	NPQE-...	803
[13]	Blanking plug	B-...	613
[14]	Push-in fitting	NPQE-...	803

		Type	→ Page/Internet
[15]	Electrical interface	VAEM-L1-S-...-AP	611
[16]	Electrical interface	VAEM-L1-S-M3-...	609
[17]	Electrical interface	VAEM-L1-S-M1-...	609
[18]	Electrical interface	VAEM-L1-S-...-PT	610
[19]	Connecting cable	NEBV-...	609
[20]	Plug	SEA-M12-5GS-PG7	610
[21]	T adapter	FB-TA-M12-5POL	610
[22]	Power supply socket	NTSD-.../FBSD-...	611
[23]	CTEU	CTEU-...	611
[24]	Inscription label holder	ASCF-H-L1	614
[25]	H-rail mounting	CAFM-F1-H	610
[26]	Connecting cable	NEBU-...	nebu
[27]	Electrical connection block	CAPC-F1-E-M12	610

Peripherals overview – Sub-base valves

Valve terminal with multi-pin plug and I-Port interface

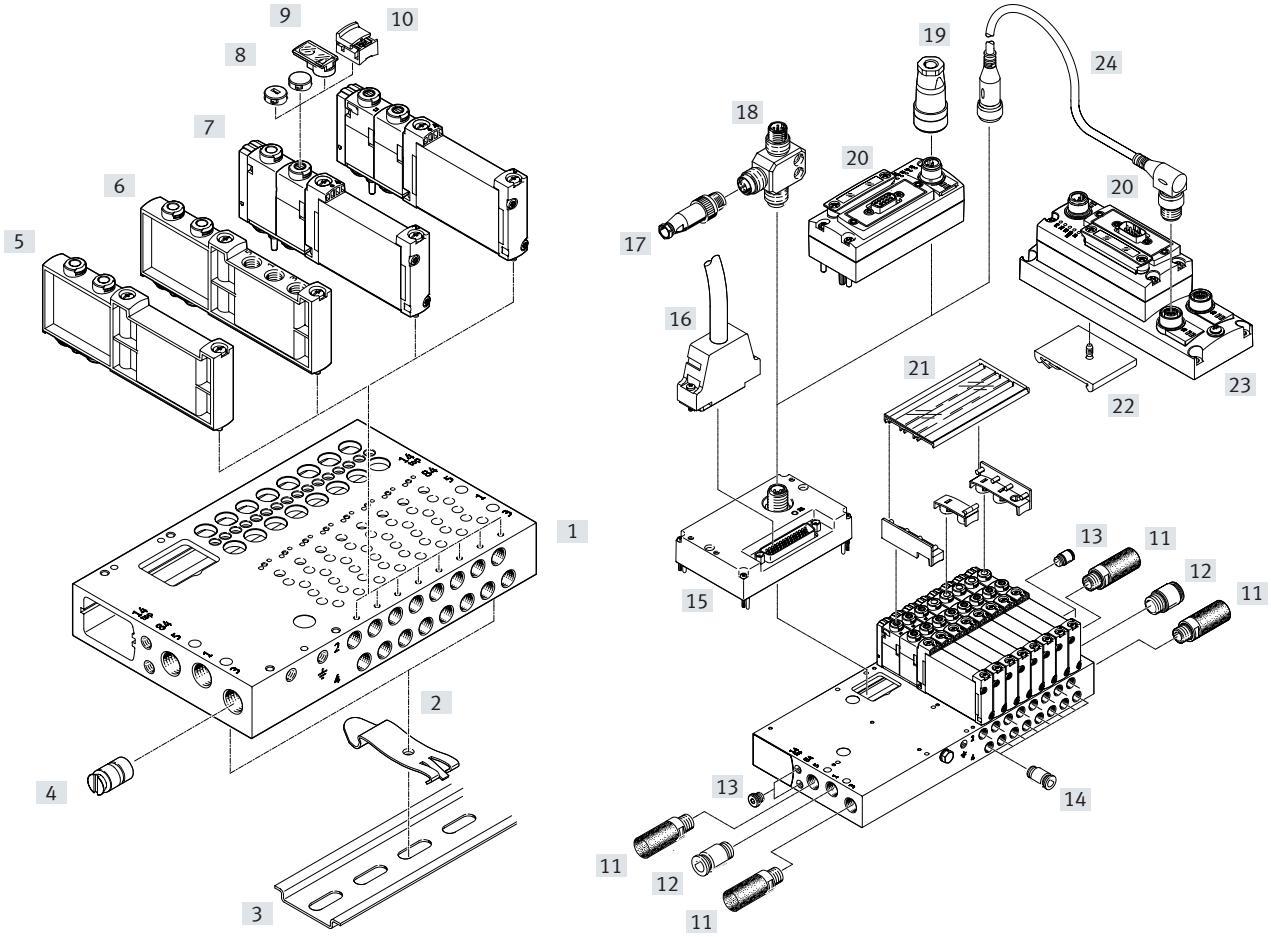


		Type	→ Page/Internet
[1]	Manifold rail	VABM-L1-...	608
[2]	H-rail mounting	VAME-T-M4	614
[3]	H-rail	NRH-35-2000	614
[4]	Separator	VABD-...	612
[5]	Cover plate	VABB-L1-...	612
[6]	Supply plate	VABF-L1-...	612
[7]	Solenoid valve	VUVG- ...	600
[8]	Cover cap	VMPA-HB...-B	612
[9]	Identification holder	ASLR-D-L1	610
[10]	Covering	VAMC...	612
[11]	Silencer	U-...	612
[12]	Push-in fitting	NPQE-...	803
[13]	Blanking plug	B-...	613
[14]	Push-in fitting	NPQE-...	803

		Type	→ Page/Internet
[15]	Electrical interface	VAEM-L1-S-...-AP	611
[16]	Electrical interface	VAEM-L1-S-M3-...	609
[17]	Electrical interface	VAEM-L1-S-M1-...	609
[18]	Electrical interface	VAEM-L1-S-...-PT	610
[19]	Connecting cable	NEBV-...	609
[20]	Plug	SEA-M12-5GS-PG7	610
[21]	T adapter	FB-TA-M12-5POL	610
[22]	Power supply socket	FBSD-.../NTSD-...	611
[23]	CTEU	CTEU-...	611
[24]	Inscription label holder	ASCF-H-L1	614
[25]	H-rail mounting	CAFM-F1-H	610
[26]	Connecting cable	NEBU-...	nebu
[27]	Electrical connection block	CAPC-F1-E-M12	610

Peripherals overview – Sub-base valves

I-Port interface with interlock



		Type	→ Page/Internet
[1]	Manifold rail	VABM-L1-...	608
[2]	H-rail mounting	VAME-T-M4	614
[3]	H-rail	NRH-35-2000	614
[4]	Separator	VABD-...	612
[5]	Cover plate	VABB-L1-...	612
[6]	Supply plate	VABF-L1-...	612
[7]	Solenoid valve	VUVG-...	600
[8]	Cover cap	VMPA-HB...-B	612
[9]	Identification holder	ASLR-D-L1	610
[10]	Covering	VAMC-...	612
[11]	Silencer	U-...	612
[12]	Push-in fitting	NPQE-...	803

		Type	→ Page/Internet
[13]	Blanking plug	B-...	613
[14]	Push-in fitting	NPQE-...	803
[15]	Electrical interface	VAEM-L1-S-24-...	610
[16]	Connecting cable	NEBV-...	609
[17]	Plug	SEA-M12-5GS-PG7	610
[18]	T adapter	FB-TA-M12-5POL	610
[19]	Power supply socket	NTSD-.../FBSD-...	611
[20]	CTEU	CTEU-...	611
[21]	Inscription label holder	ASCF-H-L1	614
[22]	H-rail mounting	CAFM-F1-H	610
[23]	Electrical connection block	CAPC-F1-E-M12	610
[24]	Connecting cable	NEBU-...	nebu

Peripherals overview – Sub-base valves

Valve terminal with multi-pin plug connection/fieldbus interface and individually electrically actuated valves

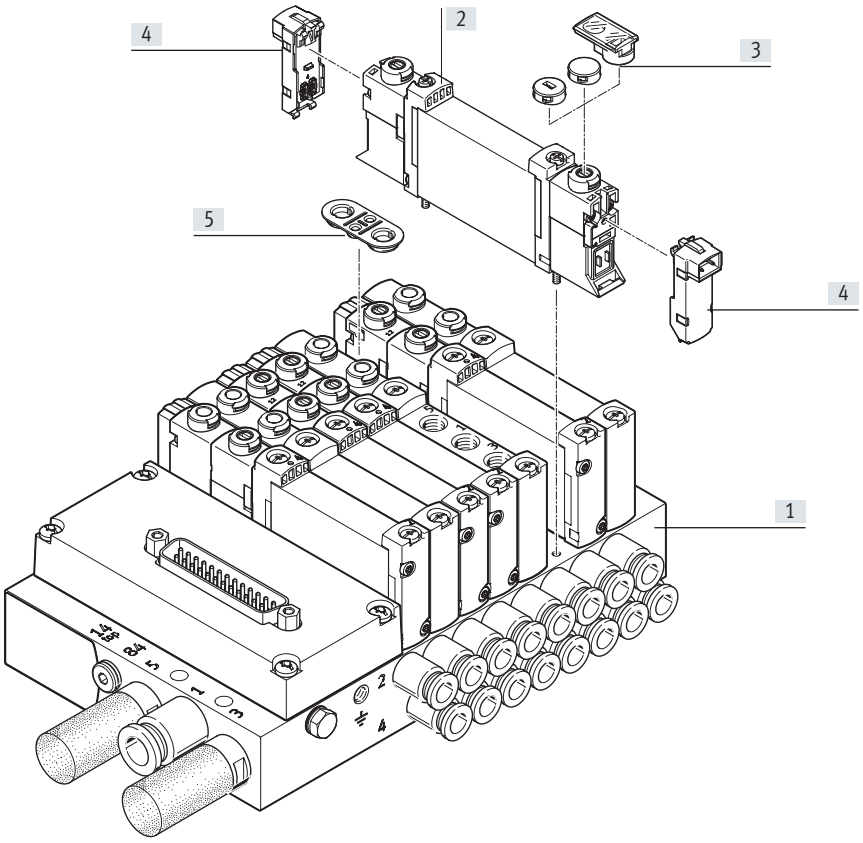
In applications with specific emergency off requirements, it may be necessary to switch one or more valves separately from the valve terminal controller.

Valves VUVG (➔ VUVG) with an individual electrical connection are therefore mounted on the valve terminal.

Valves with individual electrical connection require a special seal when mounted within a valve terminal.

They are therefore ordered/fitted as follows:

- together with the valve terminal using the valve terminal configurator
- individually/subsequently to replace a cover plate in a vacant position



		Type	➔ Page/Internet
[1]	Manifold rail	VABM-L1-10	608
[2]	Solenoid valve	VUVG	600
[3]	Cover cap	VMPA-HB...-B	612
[4]	Electrical connection block	VAVE	490
[5]	Seal	–	–

Valve terminals VTUG

Type code explanation

001	Series
VUVG	Solenoid valve

002	Directional control valve type
S	Semi-inline valve
B	Sub-base valve

003	Size
10	Size 10
14	Size 14
18	Size 18

004	Additional function
Z	External pressure supply
	None

005	Valve function
M32U	3/2-way valve, normally open
M32C	3/2-way valve, normally closed
T32U	2x3/2-way valve, normally open
T32C	2x3/2-way valve, normally closed
T32H	2x3/2-way valve, 1x normally closed, 1x normally open
M52	5/2-way valve, single solenoid/monostable
B52	5/2-way valve, double solenoid/bistable
P53U	5/3-way valve, mid-position pressurised
P53E	5/3-way valve, mid-position exhausted
P53C	5/3-way valve, mid-position closed

006	Reset method for monostable/single solenoid valves
	None
A	Pneumatic spring
M	Mechanical spring
R	Mixed, pneumatic/mechanical spring

Note
Ordering system for valve terminal VTUG
→ **Internet:** vtug

007	Pilot air
Z	External

008	Manual override
T	Non-detenting, detenting with accessories

009	Pneumatic connection
F	Flange/sub-base
M5	M5
M7	M7
G18	G1/8
G14	G1/4

010	Nominal operating voltage
1	24 V DC

011	Electrical connection
T1	Pin

012	Display
L	LED

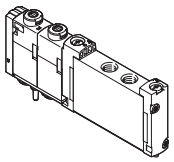
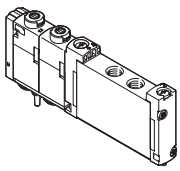
013	Degree of protection, electrical system
	Standard

014	EU certification
	None
EX2	II 3GD

Ordering data – Semi in-line valves M5/M7

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 10 mm
Flow rate 130 ... 330 l/min
Voltage 24 V DC

	Description		Part no.	Type
Semi in-line valve M5				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	573386	VUVG-S10-T32C-AZT-M5-1T1L
		Normally open, pneumatic spring reset	573387	VUVG-S10-T32U-AZT-M5-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	573388	VUVG-S10-T32H-AZT-M5-1T1L
		Normally closed, mechanical spring reset	573389	VUVG-S10-T32C-MZT-M5-1T1L
		Normally open, mechanical spring reset	573390	VUVG-S10-T32U-MZT-M5-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	573391	VUVG-S10-T32H-MZT-M5-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Mechanical spring reset	573393	VUVG-S10-M52-MZT-M5-1T1L
		Pneumatic/mechanical spring reset	573392	VUVG-S10-M52-RZT-M5-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		573394	VUVG-S10-B52-ZT-M5-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	573395	VUVG-S10-P53C-ZT-M5-1T1L
		Mid-position pressurised, mechanical spring reset	573397	VUVG-S10-P53U-ZT-M5-1T1L
		Mid-position exhausted, mechanical spring reset	573396	VUVG-S10-P53E-ZT-M5-1T1L
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	573398	VUVG-S10-T32C-AZT-M7-1T1L
		Normally open, pneumatic spring reset	573399	VUVG-S10-T32U-AZT-M7-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	573400	VUVG-S10-T32H-AZT-M7-1T1L
		Normally closed, mechanical spring reset	573401	VUVG-S10-T32C-MZT-M7-1T1L
		Normally open, mechanical spring reset	573402	VUVG-S10-T32U-MZT-M7-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	573403	VUVG-S10-T32H-MZT-M7-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Mechanical spring reset	573405	VUVG-S10-M52-MZT-M7-1T1L
		Pneumatic/mechanical spring reset	573404	VUVG-S10-M52-RZT-M7-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		573406	VUVG-S10-B52-ZT-M7-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	573407	VUVG-S10-P53C-ZT-M7-1T1L
		Mid-position pressurised, mechanical spring reset	573409	VUVG-S10-P53U-ZT-M7-1T1L
		Mid-position exhausted, mechanical spring reset	573408	VUVG-S10-P53E-ZT-M7-1T1L

Valve terminals VTUG

Data sheet

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[2]	M52-R[3]	B52	M52-M[2]	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 ... 8	–0.9 ... 10
Pilot pressure[4]		[bar]	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					

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring
4) See graphs online

Electrical data

Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power		[W]	1/0.4 (after 25 ms)
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Degree of protection to EN 60529[1]	Individual valve		IP65, IP67
	Valve terminal VTUG		IP40, IP67/IP65, IP69K
	Valve terminal VTUG-VI-EX2		IP20, IP65

1) Depending on the configuration selected

General technical data

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]
Stable position			Monostable							Bistable	Monostable			
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			With external pilot air								
Design			Piston spool											
Sealing principle			Soft											
Actuation type			Electrical											
Type of control			Piloted											
Pilot air supply			External											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			On manifold rail											
Mounting position			Any											
Overlap			Positive overlap											Indeterminate overlap
Signal status indication			LED											
Flow rate on manifold rail M5		[l/min]	150			130			230			210		
Flow rate on manifold rail M7		[l/min]	160			140			330		290	280		
Size		[mm]	10											
Port	1, 3, 5, 12/14, 82/84		On manifold rail											
	2, 4		M5 (VUVG-S10-...-M5)											
			M7 (VUVG-S10-...-M7)											
Product weight		[g]	59						53	60	53	58		
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[6]			To EU EMC Directive											
Corrosion resistance class CRC[7]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Data sheet

Safety data		
Max. positive test pulse with 0 signal	[µs]	1600
Max. negative test pulse with 1 signal	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Valve switching times							
Valve function		T32-A[1]	T32-M[2]	M52-R[3]	B52	M52-M[2]	P53
Switching time on	[ms]	8	10	9	–	12	12
Switching time off	[ms]	20	20	21	–	30	38
Switching time changeover	[ms]	–	–	–	9	–	16

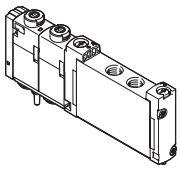
1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring

Valve terminals VTUG

Ordering data – Semi in-line valves G1/8

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 14 mm
Flow rate 520 ... 630 l/min
Voltage 24 V DC

	Description		Part no.	Type
Semi in-line valve G1/8				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	573464	VUVG-S14-T32C-AZT-G18-1T1L
		Normally open, pneumatic spring reset	573465	VUVG-S14-T32U-AZT-G18-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	573466	VUVG-S14-T32H-AZT-G18-1T1L
		Normally closed, mechanical spring reset	573467	VUVG-S14-T32C-MZT-G18-1T1L
		Normally open, mechanical spring reset	573468	VUVG-S14-T32U-MZT-G18-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	573469	VUVG-S14-T32H-MZT-G18-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic spring reset	573470	VUVG-S14-M52-AZT-G18-1T1L
		Mechanical spring reset	573471	VUVG-S14-M52-MZT-G18-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		573472	VUVG-S14-B52-ZT-G18-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	573473	VUVG-S14-P53C-ZT-G18-1T1L
		Mid-position pressurised, mechanical spring reset	573475	VUVG-S14-P53U-ZT-G18-1T1L
		Mid-position exhausted, mechanical spring reset	573474	VUVG-S14-P53E-ZT-G18-1T1

Data sheet

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[2]	M52-A[1]	B52	M 52-M[2]	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 ... 8	–0.9 ... 10
Pilot pressure[3]		[bar]	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					

1) Pneumatic spring
2) Mechanical spring
3) See graphs online

Electrical data			
Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power		[W]	1/0.4 (after 25 ms)
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Degree of protection to EN 60529[1]	Individual valve		IP65, IP67
	Valve terminal VTUG		IP40, IP67/IP65, IP69K
	Valve terminal VTUG-VI-EX2		IP20, IP65

1) Depending on the configuration selected

Data sheet

General technical data													
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]
Stable position	Monostable							Bistable	Monostable			
Pneumatic spring reset	Yes			No			Yes	–	No	–		
Mechanical spring reset	No			Yes			No	–	Yes	Yes		
Vacuum operation at port 1	No			With external pilot air								
Design	Piston spool											
Sealing principle	Soft											
Actuation type	Electrical											
Type of control	Piloted											
Pilot air supply	External											
Exhaust function	Can be throttled											
Manual override	Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting	On manifold rail											
Mounting position	Any											
Overlap	Positive overlap											
Signal status indication	LED											
Flow rate on manifold rail G1/8 [l/min]	610			520			620	630	620	590		
Size [mm]	14											
Port 1, 3, 5, 12/14, 82/84	On manifold rail											
Port 2, 4	G1/8											
Product weight [g]	102			100			91	98	89	95		
Certification	c UL us - Recognized (OL)											
	c CSA us (OL)											
	RCM compliance mark											
CE marking (see declaration of conformity)[5]	To EU EMC Directive											
Corrosion resistance class CRC[6]	2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
6) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Safety data		
Max. positive test pulse with 0 signal	[µs]	1600
Max. negative test pulse with 1 signal	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Valve switching times							
Valve function		T32-A[1]	T32-M[2]	M52-A[1]	B52	M 52-M[2]	P53
Switching time on	[ms]	10	13	13	–	10	15
Switching time off	[ms]	29	21	26	–	38	42
Switching time changeover	[ms]	–	–	–	9	–	25

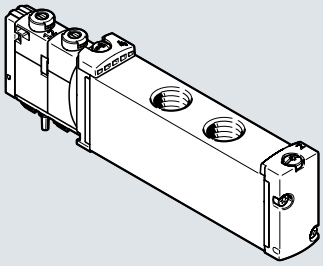
1) Pneumatic spring
2) Mechanical spring

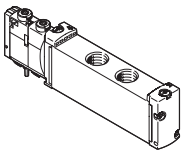
Valve terminals VTUG

Ordering data – Semi in-line valves G1/4

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 18 mm
Flow rate 900 ... 1200 l/min
Voltage 24 V DC



	Description		Part no.	Type
Semi in-line valve G1/4				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed	8004873	VUVG-S18-T32C-AZT-G14-1T1L
		Normally open, pneumatic spring reset	8004874	VUVG-S18-T32U-AZT-G14-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	8004875	VUVG-S18-T32H-AZT-G14-1T1L
		Normally closed, mechanical spring reset	8004876	VUVG-S18-T32C-MZT-G14-1T1L
		Normally open, mechanical spring reset	8004877	VUVG-S18-T32U-MZT-G14-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	8004878	VUVG-S18-T32H-MZT-G14-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic/mechanical spring reset	8004879	VUVG-S18-M52-RZT-G14-1T1L
		Mechanical spring reset	8004880	VUVG-S18-M52-MZT-G14-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		8004881	VUVG-S18-B52-ZT-G14-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed	8004882	VUVG-S18-P53C-ZT-G14-1T1L
		Mid-position pressurised	8004883	VUVG-S18-P53E-ZT-G14-1T1L
		Mid-position exhausted	8004884	VUVG-S18-P53U-ZT-G14-1T1L

Data sheet

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[2]	M52-R[3]	B52	M52-M[2]	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	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 ... 8	–0.9 ... 10
Pilot pressure[4]		[bar]	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					

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring
4) See graphs online

Electrical data

Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power		[W]	1
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Degree of protection to EN 60529[1]	Individual valve		IP65, IP67
	Valve terminal VTUG		IP40, IP67/IP65, IP69K
	Valve terminal VTUG-VI-EX2		IP20, IP65

1) Depending on the configuration selected

Data sheet

General technical data														
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]
Stable position			Monostable							Bistable	Monostable			
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			With external pilot air								
Design			Piston spool											
Sealing principle			Soft											
Actuation type			Electrical											
Type of control			Piloted											
Pilot air supply			External											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			On manifold rail											
Mounting position			Any											
Overlap			Positive overlap						Indeterminate overlap	Positive overlap	Indeterminate overlap	Positive overlap	Indeterminate overlap	
Signal status indication			LED											
Flow rate on manifold rail G1/8		[l/min]	900			900			1150	1200	1150	1000		
Size		[mm]	18											
Port	1, 3, 5, 12/14, 82/84		On manifold rail											
	2, 4		G1/4											
Product weight		[g]	145			147			138	145	138	140		
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)[6]			To EU EMC Directive											
Corrosion resistance class CRC[7]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Safety data		
Max. positive test pulse with 0 signal	[µs]	1600
Max. negative test pulse with 1 signal	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Valve switching times							
Valve function		T32-A[1]	T32-M[2]	M52-R[3]	B52	M52-M[2]	P53
Switching time on	[ms]	15	25	20	–	13	20
Switching time off	[ms]	35	33	35	–	50	57
Switching time changeover	[ms]	–	–	–	15	–	31

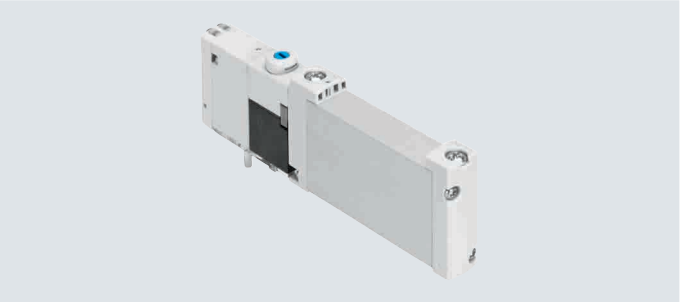
1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring

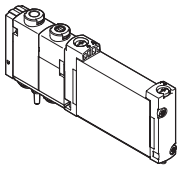
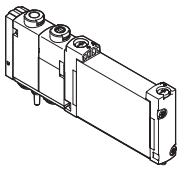
Valve terminals VTUG

Ordering data – Sub-base valves M5/M7

Function
3/2C, 3/2U
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 10 mm
Flow rate 130 ... 300 l/min
Voltage 24 V DC



	Description		Part no.	Type
Sub-base valve M5/M7				
	**3/2-way valve**			
	External pilot air supply	Normally closed, mechanical spring reset	8028231	VUVG-B10Z-M32C-RZT-F-1T1L
		Normally open, mechanical spring reset	8028232	VUVG-B10Z-M32U-RZT-F-1T1L
	2x 3/2-way valve			
	External pilot air supply	Normally closed, pneumatic spring reset	573410	VUVG-B10-T32C-AZT-F-1T1L
		Normally open, pneumatic spring reset	573411	VUVG-B10-T32U-AZT-F-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	573412	VUVG-B10-T32H-AZT-F-1T1L
		Normally closed, mechanical spring reset	573413	VUVG-B10-T32C-MZT-F-1T1L
		Normally open, mechanical spring reset	573414	VUVG-B10-T32U-MZT-F-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	573415	VUVG-B10-T32H-MZT-F-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Mechanical spring reset	573417	VUVG-B10-M52-MZT-F-1T1L
		Pneumatic/mechanical spring reset	573416	VUVG-B10-M52-RZT-F-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		573418	VUVG-B10-B52-ZT-F-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	573419	VUVG-B10-P53C-ZT-F-1T1L
		Mid-position pressurised, mechanical spring reset	573421	VUVG-B10-P53U-ZT-F-1T1L
		Mid-position exhausted, mechanical spring reset	573420	VUVG-B10-P53E-ZT-F-1T1L
Sub-base valve M5/M7				
	**3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic/mechanical spring reset	8041900	VUVG-B10Z-M32C-RZT-F-1T1L-EX2C
		Normally open, pneumatic/mechanical spring reset	8041901	VUVG-B10Z-M32U-RZT-F-1T1L-EX2C
	2x 3/2-way valve			
	External pilot air supply	Normally closed, pneumatic spring reset	8041895	VUVG-B10-T32C-AZT-F-1T1L-EX2C
		Normally open, pneumatic spring reset	8041896	VUVG-B10-T32U-AZT-F-1T1L-EX2C
		1x normally open, 1x normally closed, pneumatic spring reset	8041897	VUVG-B10-T32H-AZT-F-1T1L-EX2C
		Normally closed, mechanical spring reset	8041891	VUVG-B10-T32C-MZT-F-1T1L-EX2C
		Normally open, mechanical spring reset	8041898	VUVG-B10-T32U-MZT-F-1T1L-EX2C
		1x normally open, 1x normally closed, mechanical spring reset	8041899	VUVG-B10-T32H-MZT-F-1T1L-EX2C
	5/2-way single solenoid valve			
	External pilot air supply	Mechanical spring reset	8041892	VUVG-B10-M52-MZT-F-1T1L-EX2C
		Reset method: pneumatic/mechanical spring	8041889	VUVG-B10-M52-RZT-F-1T1L-EX2C
	5/2-way double solenoid valve			
	External pilot air supply		8041888	VUVG-B10-B52-ZT-F-1T1L-EX2C
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	8041890	VUVG-B10-P53C-ZT-F-1T1L-EX2C
		Mid-position pressurised, mechanical spring reset	8041893	VUVG-B10-P53U-ZT-F-1T1L-EX2C
		Mid-position exhausted, mechanical spring reset	8041894	VUVG-B10-P53E-ZT-F-1T1L-EX2C

Data sheet

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[2]	M32-R[3]	M52-R[3]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]						
Operating pressure	Internal pilot air supply	[bar]	1.5 ... 8	2.5 ... 8	2.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External pilot air supply	[bar]	1.5 ... 10	–0.9 ... 10				–0.9 ... 8	–0.9 ... 10
Pilot pressure[4]		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +60						
Temperature of medium		[°C]	–5 ... +60						

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring
4) See graphs online

Electrical data

Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power consumption per valve solenoid		[W]	1/0.4 (after 25 ms)
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Degree of protection to EN 60529[1]	Individual valve		IP65, IP67
	Valve terminal VTUG		IP40, IP67/IP65, IP69K
	Valve terminal VTUG-VI-EX2		IP20, IP65

1) Depending on the configuration selected

General technical data

Valve function			T32-A			T32-M			M32-R		M52-R	B52	M52-M	P53		
Normal position			C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	C[1]	U[2]	–	–	–	C[1]	U[2]	E[3]
Stable position			Monostable									Bistable	Monostable			
Pneumatic spring reset			Yes			No			No		Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes		Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			With external pilot air										
Design			Piston spool													
Sealing principle			Soft													
Actuation type			Electrical													
Type of control			Piloted													
Pilot air supply			External													
Exhaust function			Can be throttled													
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting													
Type of mounting			On manifold rail													
Mounting position			Any													
Overlap			Positive overlap													Indeterminate overlap
Signal status indication			LED													
Standard nominal flow rate M5/M7		[l/min]	160			140			140		300		260	260		
Flow rate on manifold rail M5, front		[l/min]	150			130			130		220		220	200		
Flow rate on manifold rail M7, front		[l/min]	160			140			140		270		240	250		
Flow rate on manifold rail M7, underneath		[l/min]	160			140			140		300		260	260		
Size		[mm]	10													
Port	1, 3, 5, 12/14, 82/84		On manifold rail													
	2, 4		On manifold rail													
Product weight		[g]	59						53			60	53	58		
Certification			c UL us - Recognized (OL)													
			c CSA us (OL)													
			RCM compliance mark													
CE marking (see declaration of conformity)[6]			To EU EMC Directive													
Corrosion resistance class CRC[7]			2													

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Valve terminals VTUG

Data sheet

Safety data		
Max. positive test pulse with 0 signal	[µs]	1600
Max. negative test pulse with 1 signal	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

ATEX		
Type		VTUG-VI-EX2
ATEX category for gas		II 3G
Type of ignition protection for gas		Ex ec IIC T4 Gc
ATEX category for dust		II 3D
Type of ignition protection for dust		Ex tc IIIC T135°C Dc
Explosion protection certification outside the EU		EPL Dc (IECEx)
		EPL Gc (IECEx)
Explosion-proof ambient temperature	[°C]	5°C <= Ta <= +50°C, -5°C <= Ta <= +60°C
CE marking (see declaration of conformity)		To the EU EMC Directive, the EU ATEX Directive and the EU RoHS Directive
Certificate issuing authority		IBExU16ATEXB021 X
		IECEx IBE 17.0003 X

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

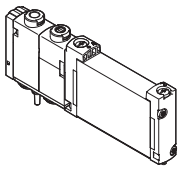
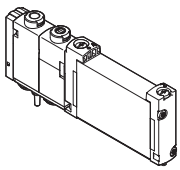
Valve switching times								
Valve function		T32-A[1]	T32-M[2]	M32-R[3]	M52-R[3]	B52	M52-M[2]	P53
Switching time on	[ms]	8	10	9	9	–	12	12
Switching time off	[ms]	20	20	17	21	–	30	38
Switching time changeover	[ms]	–	–	–	–	9	–	16

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring

Ordering data – Sub-base valves G1/8

Function
3/2C, 3/2U
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 14 mm
Flow rate 350 ... 560 l/min
Voltage 24 V DC

	Description		Part no.	Type
Sub-base valve G1/8				
	**3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	8028235	VUVG-B14Z-M32C-AZT-F-1T1L
		Normally open, pneumatic spring reset	8028236	VUVG-B14Z-M32U-AZT-F-1T1L
	2x 3/2-way valve			
	External pilot air supply	Normally closed, pneumatic spring reset	573476	VUVG-B14-T32C-AZT-F-1T1L
		Normally open, pneumatic spring reset	573477	VUVG-B14-T32U-AZT-F-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	573478	VUVG-B14-T32H-AZT-F-1T1L
		Normally closed, mechanical spring reset	573479	VUVG-B14-T32C-MZT-F-1T1L
		Normally open, mechanical spring reset	573480	VUVG-B14-T32U-MZT-F-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	573481	VUVG-B14-T32H-MZT-F-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic spring reset	573482	VUVG-B14-M52-AZT-F-1T1L
		Mechanical spring reset	573483	VUVG-B14-M52-MZT-F-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		573484	VUVG-B14-B52-ZT-F-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	573485	VUVG-B14-P53C-ZT-F-1T1L
		Mid-position pressurised, mechanical spring reset	573487	VUVG-B14-P53U-ZT-F-1T1L
		Mid-position exhausted, mechanical spring reset	573486	VUVG-B14-P53E-ZT-F-1T1L
Sub-base valve G1/8				
	**3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	8041970	VUVG-B14Z-M32C-AZT-F-1T1L-EX2C
		Normally open, pneumatic spring reset	8041971	VUVG-B14Z-M32U-AZT-F-1T1L-EX2C
	2x 3/2-way valve			
	External pilot air supply	Normally closed, pneumatic spring reset	8041958	VUVG-B14-T32C-AZT-F-1T1L-EX2C
		Normally open, pneumatic spring reset	8041959	VUVG-B14-T32U-AZT-F-1T1L-EX2C
		1x normally open, 1x normally closed, pneumatic spring reset	8041960	VUVG-B14-T32H-AZT-F-1T1L-EX2C
		Normally closed, mechanical spring reset	8041961	VUVG-B14-T32C-MZT-F-1T1L-EX2C
		Normally open, mechanical spring reset	8041962	VUVG-B14-T32U-MZT-F-1T1L-EX2C
		1x normally open, 1x normally closed, mechanical spring reset	8041963	VUVG-B14-T32H-MZT-F-1T1L-EX2C
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic spring reset	8041964	VUVG-B14-M52-AZT-F-1T1L-EX2C
		Mechanical spring reset	8041965	VUVG-B14-M52-MZT-F-1T1L-EX2C
	5/2-way double solenoid valve			
	External pilot air supply		8041966	VUVG-B14-B52-ZT-F-1T1L-EX2C
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	8041967	VUVG-B14-P53C-ZT-F-1T1L-EX2C
		Mid-position pressurised, mechanical spring reset	8041969	VUVG-B14-P53U-ZT-F-1T1L-EX2C
		Mid-position exhausted, mechanical spring reset	8041968	VUVG-B14-P53E-ZT-F-1T1L-EX2C

Valve terminals VTUG

Data sheet

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[2]	M32-A[1]	M52-A[1]	B52	M52-M[2]	P53
Operating medium			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	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
	External pilot air supply	[bar]	1.5 ... 10	–0.9 ... 10				–0.9 ... 8	–0.9 ... 10
Pilot pressure[3]		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +60						
Temperature of medium		[°C]	–5 ... +60						

1) Pneumatic spring
2) Mechanical spring
3) See graphs online

Electrical data

Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power		[W]	1/0.4 (after 25 ms)
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Degree of protection to EN 60529	Individual valve		IP67/IP65
	Valve terminal		IP40, IP67/IP65
	Valve terminal VTUG-VI-EX2		IP40, IP65, IP67, IP69K

1) Depending on the configuration selected

General technical data

Valve function			T32-A			T32-M			M32-A		M52-A	B52	M52-M	P53		
Normal position			C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	C[1]	U[2]	–	–	–	C[1]	U[2]	E[3]
Stable position			Monostable									Bistable	Monostable			
Pneumatic spring reset			Yes			No			Yes		Yes	–	No	–		
Mechanical spring reset			No			Yes			No		No	–	Yes	Yes		
Vacuum operation at port 1			No			With external pilot air										
Design			Piston spool													
Sealing principle			Soft													
Actuation type			Electrical													
Type of control			Piloted													
Pilot air supply			External													
Exhaust function			Can be throttled													
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting													
Type of mounting			On manifold rail													
Overlap			Positive overlap													
Mounting position			Any													
Signal status indication			LED													
Standard nominal flow rate G1/8		[l/min]	530			470			350		550	560	550	510		
Flow rate on manifold rail G1/8, front		[l/min]	490			440			320		500	510	500	470		
Flow rate on manifold rail G1/8, underneath		[l/min]	530			470			350		550	560	550	510		
Size		[mm]	14													
Port	1, 3, 5, 12/14, 82/84		On manifold rail													
	2, 4		On manifold rail													
Product weight		[g]	102			100			91			98	89	95		
Certification			c UL us - Recognized (OL)													
			c CSA us (OL)													
			RCM compliance mark													
CE marking (see declaration of conformity)[5]			To EU EMC Directive													
Corrosion resistance class CRC[6]			2													

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
6) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Data sheet

Safety data		
Max. positive test pulse with 0 signal	[µs]	1600
Max. negative test pulse with 1 signal	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

ATEX	
Type	VTUG-VI-EX2, VTUG-VI-EX3
ATEX category for gas	II 3G
Type of ignition protection for gas	Ex ec IIC T4 Gc
ATEX category for dust	II 3D
Type of ignition protection for dust	Ex tc IIIC T135°C Dc
Explosion protection certification outside the EU	EPL Dc (IECEx)
	EPL Gc (IECEx)
Explosion-proof ambient temperature [°C]	5°C <= Ta <= +50°C, -5°C <= Ta <= +60°C
CE marking (see declaration of conformity)	To the EU EMC Directive, the EU ATEX Directive and the EU RoHS Directive
Certificate issuing authority	IBExU16ATEXB021 X
	IECEx IBE 17.0003 X

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

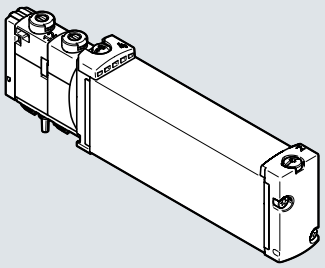
Valve switching times								
Valve function		T32-A[1]	T32-M[2]	M32-A[1]	M52-A[1]	B52	M52-M[2]	P53
Switching time on	[ms]	10	13	13	13	–	10	15
Switching time off	[ms]	29	21	20	26	–	38	42
Switching time changeover	[ms]	–	–	–	–	9	–	25

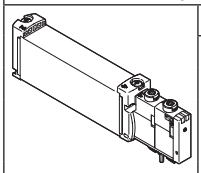
1) Pneumatic spring
2) Mechanical spring

Ordering data – Sub-base valves G1/4

Function
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 18 mm
Flow rate 800 ... 1000 l/min
Voltage 24 V DC



	Description		Part no.	Type
Sub-base valve G1/4				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring reset	8004885	VUVG-B18-T32C-AZT-F-1T1L
		Normally open, pneumatic spring reset	8004886	VUVG-B18-T32U-AZT-F-1T1L
		1x normally open, 1x normally closed, pneumatic spring reset	8004887	VUVG-B18-T32H-AZT-F-1T1L
		Normally closed, mechanical spring reset	8004888	VUVG-B18-T32C-MZT-F-1T1L
		Normally open, mechanical spring reset	8004889	VUVG-B18-T32U-MZT-F-1T1L
		1x normally open, 1x normally closed, mechanical spring reset	8004890	VUVG-B18-T32H-MZT-F-1T1L
	5/2-way single solenoid valve			
	External pilot air supply	Pneumatic/mechanical spring reset	8004891	VUVG-B18-M52-RZT-F-1T1L
		Mechanical spring reset	8004892	VUVG-B18-M52-MZT-F-1T1L
	5/2-way double solenoid valve			
	External pilot air supply		8004893	VUVG-B18-B52-ZT-F-1T1L
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring reset	8004894	VUVG-B18-P53C-ZT-F-1T1L
		Mid-position exhausted, mechanical spring reset	8004895	VUVG-B18-P53E-ZT-F-1T1L
		Mid-position pressurised, mechanical spring reset	8004896	VUVG-B18-P53U-ZT-F-1T1L

Data sheet

Operating and environmental conditions

Valve function			T32-A[1]	T32-M[2]	M52-R[3]	B52	M52-M[2]	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	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 ... 8	–0.9 ... 10
Pilot pressure[4]		[bar]	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					

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring
4) See graphs online

Electrical data

Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power		[W]	1
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Degree of protection to EN 60529[1]	Individual valve		IP65, IP67
	Valve terminal VTUG		IP40, IP67/IP65, IP69K
	Valve terminal VTUG-VI-EX2		IP20, IP65

1) Depending on the configuration selected

Data sheet

General technical data													
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]
Stable position			Monostable							Bistable	Monostable			
Pneumatic spring reset			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset			No			Yes			Yes[5]	–	Yes	Yes		
Vacuum operation at port 1			No			With external pilot air								
Design			Piston spool											
Sealing principle			Soft											
Actuation type			Electrical											
Type of control			Piloted											
Pilot air supply			External											
Exhaust function			Can be throttled											
Manual override			Choice of non-detenting, covered, non-detenting/detenting or detenting											
Type of mounting			On manifold rail											
Mounting position			Any											
Overlap			Positive overlap						Indeterminate overlap	Positive overlap	Indeterminate overlap	Positive overlap	Indeterminate overlap	
Signal status indication			LED											
Flow rate on manifold rail G1/4, front		[l/min]	800			800			950	1000	950	900		
Size		[mm]	18											
Port	1, 3, 5, 12/14, 82/84		On manifold rail											
	2, 4		On manifold rail											
Product weight		[g]	145			147			138	145	138	140		
Certification			c UL us - Recognized (OL)											
			c CSA us (OL)											
			RCM compliance mark											
CE marking (see declaration of conformity)			To EU EMC Directive[6]											
Corrosion resistance class CRC[7]			2											

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
7) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Safety data		
Max. positive test pulse with 0 signal	[µs]	1600
Max. negative test pulse with 1 signal	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Valve switching times							
Valve function		T32-A[1]	T32-M[2]	M52-R[3]	B52	M52-M[2]	P53
Switching time on	[ms]	15	25	20	–	13	20
Switching time off	[ms]	35	33	35	–	50	57
Switching time changeover	[ms]	–	–	–	15	–	31

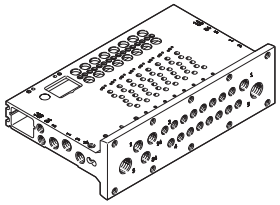
1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring

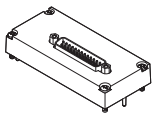
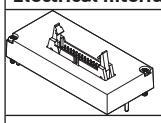
Valve terminals VTUG

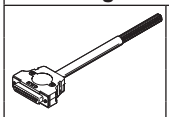
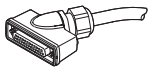
Accessories – Ordering data

Description	Part no.	Type		Part no.	Type
Manifold rails	**for semi in-line valves** Ports 2, 4 on the valve			**for sub-base valves** Ports 2, 4 at the front	
	Size 10 mm			**Size 10 mm**	
4 valve positions	573423	VABM-L1-10G-G18-4-GR		573434	VABM-L1-10HW-G18-4-GR
5 valve positions	573424	VABM-L1-10G-G18-5-GR		573435	VABM-L1-10HW-G18-5-GR
6 valve positions	573425	VABM-L1-10G-G18-6-GR		573436	VABM-L1-10HW-G18-6-GR
7 valve positions	573426	VABM-L1-10G-G18-7-GR		573437	VABM-L1-10HW-G18-7-GR
8 valve positions	573427	VABM-L1-10G-G18-8-GR		573438	VABM-L1-10HW-G18-8-GR
9 valve positions	573428	VABM-L1-10G-G18-9-GR		573439	VABM-L1-10HW-G18-9-GR
10 valve positions	573429	VABM-L1-10G-G18-10-GR		573440	VABM-L1-10HW-G18-10-GR
12 valve positions	573430	VABM-L1-10G-G18-12-GR		573441	VABM-L1-10HW-G18-12-GR
16 valve positions	573431	VABM-L1-10G-G18-16-GR		573442	VABM-L1-10HW-G18-16-GR
20 valve positions	573432	VABM-L1-10G-G18-20-GR		573443	VABM-L1-10HW-G18-20-GR
24 valve positions	573433	VABM-L1-10G-G18-24-GR		573444	VABM-L1-10HW-G18-24-GR
8 double solenoid + 8 single solenoid valves	573927	VABM-L1-10G-G18-16-M-GR		573930	VABM-L1-10HW-G18-16-M-GR
4 double solenoid + 16 single solenoid valves	573928	VABM-L1-10G-G18-20-M-GR		573931	VABM-L1-10HW-G18-20-M-GR
24 single solenoid valves	573929	VABM-L1-10G-G18-24-M-GR		573932	VABM-L1-10HW-G18-24-M-GR
	Size 14 mm			**Size 14 mm**	
4 valve positions	573489	VABM-L1-14G-G14-4-GR		573500	VABM-L1-14W-G14-4-GR
5 valve positions	573490	VABM-L1-14G-G14-5-GR		573501	VABM-L1-14W-G14-5-GR
6 valve positions	573491	VABM-L1-14G-G14-6-GR		573502	VABM-L1-14W-G14-6-GR
7 valve positions	573492	VABM-L1-14G-G14-7-GR		573503	VABM-L1-14W-G14-7-GR
8 valve positions	573493	VABM-L1-14G-G14-8-GR		573504	VABM-L1-14W-G14-8-GR
9 valve positions	573494	VABM-L1-14G-G14-9-GR		573505	VABM-L1-14W-G14-9-GR
10 valve positions	573495	VABM-L1-14G-G14-10-GR		573506	VABM-L1-14W-G14-10-GR
12 valve positions	573496	VABM-L1-14G-G14-12-GR		573507	VABM-L1-14W-G14-12-GR
16 valve positions	573497	VABM-L1-14G-G14-16-GR		573508	VABM-L1-14W-G14-16-GR
20 valve positions	573498	VABM-L1-14G-G14-20-GR		573509	VABM-L1-14W-G14-20-GR
24 valve positions	573499	VABM-L1-14G-G14-24-GR		573510	VABM-L1-14W-G14-24-GR
8 double solenoid + 8 single solenoid valves	573933	VABM-L1-14G-G14-16-M-GR		573936	VABM-L1-14W-G14-16-M-GR
4 double solenoid + 16 single solenoid valves	573934	VABM-L1-14G-G14-20-M-GR		573937	VABM-L1-14W-G14-20-M-GR
24 single solenoid valves	573935	VABM-L1-14G-G14-24-M-GR		573938	VABM-L1-14W-G14-24-M-GR
	Size 18 mm			**Size 18 mm**	
4 valve positions	8004899	VABM-L1-18G-G38-4-G		8004913	VABM-L1-18W-G38-4-G
5 valve positions	8004900	VABM-L1-18G-G38-5-G		8004914	VABM-L1-18W-G38-5-G
6 valve positions	8004901	VABM-L1-18G-G38-6-G		8004915	VABM-L1-18W-G38-6-G
7 valve positions	8004902	VABM-L1-18G-G38-7-G		8004916	VABM-L1-18W-G38-7-G
8 valve positions	8004903	VABM-L1-18G-G38-8-G		8004917	VABM-L1-18W-G38-8-G
9 valve positions	8004904	VABM-L1-18G-G38-9-G		8004918	VABM-L1-18W-G38-9-G
10 valve positions	8004905	VABM-L1-18G-G38-10-G		8004919	VABM-L1-18W-G38-10-G
12 valve positions	8004906	VABM-L1-18G-G38-12-G		8004920	VABM-L1-18W-G38-12-G
16 valve positions	8004907	VABM-L1-18G-G38-16-G		8004921	VABM-L1-18W-G38-16-G
20 valve positions	8004908	VABM-L1-18G-G38-20-G		8004922	VABM-L1-18W-G38-20-G
24 valve positions	8004909	VABM-L1-18G-G38-24-G		8004923	VABM-L1-18W-G38-24-G
8 double solenoid + 8 single solenoid valves	8004910	VABM-L1-18G-G38-16-M-G		8004924	VABM-L1-18W-G38-16-M-G
4 double solenoid + 16 single solenoid valves	8004911	VABM-L1-18G-G38-20-M-G		8004925	VABM-L1-18W-G38-20-M-G
24 single solenoid valves	8004912	VABM-L1-18G-G38-24-M-G		8004926	VABM-L1-18W-G38-24-M-G

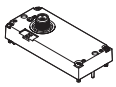
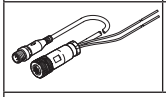
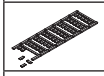
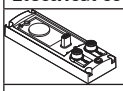
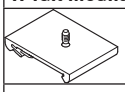
Accessories – Ordering data

	Description		Part no.	Type
Manifold rail for sub-base valve, for control cabinet installation, outlet orientation at the front				
	**Size 10 mm**			
	Ports 2, 4 at the front, single supply	4 valve positions	8058335	VABM-L1-10HWS1-G18-4-GR
		8 valve positions	8058336	VABM-L1-10HWS1-G18-8-GR
	Ports 2, 4 at the front, double supply	8 valve positions	8058338	VABM-L1-10HWS2-G18-8-GR
		12 valve positions	8058339	VABM-L1-10HWS2-G18-12-GR
		16 valve positions	8058340	VABM-L1-10HWS2-G18-16-GR
		24 valve positions	8058341	VABM-L1-10HWS2-G18-24-GR
	Size 14 mm			
	Ports 2, 4 at the front, single supply	4 valve positions	8058342	VABM-L1-14HWS1-G14-4-GR
		8 valve positions	8058343	VABM-L1-14HWS1-G14-8-GR
	Ports 2, 4 at the front, double supply	8 valve positions	8058344	VABM-L1-14HWS2-G14-8-GR
		12 valve positions	8058345	VABM-L1-14HWS2-G14-12-GR
		16 valve positions	8058346	VABM-L1-14HWS2-G14-16-GR
		24 valve positions	8058347	VABM-L1-14HWS2-G14-24-GR

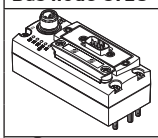
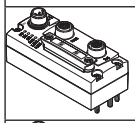
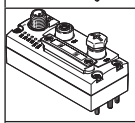
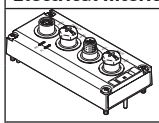
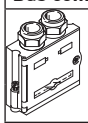
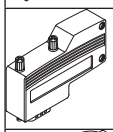
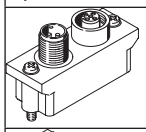
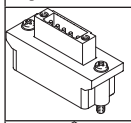
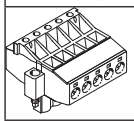
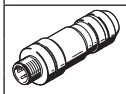
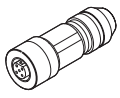
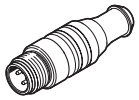
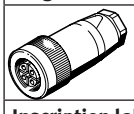
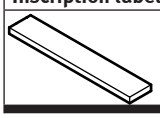
	Description		Part no.	Type
Electrical interface, Sub-D				
	25-pin	For variant M1-25 (V20)	573445	VAEM-L1-S-M1-25
		For variant M1-25V1 (V22)	573447	VAEM-L1-S-M1-25V1
		For variant M1-25V2 (V23)	573448	VAEM-L1-S-M1-25V2
		For variant M1-25V3 (V24)	573449	VAEM-L1-S-M1-25V3
		For variant M1-25V4 (V25)	573450	VAEM-L1-S-M1-25V4
	44-pin	For variant M1-44 (V21)	573446	VAEM-L1-S-M1-44
Electrical interface, ribbon connector				
	26-pin	For variant M3-26 (V20)	573452	VAEM-L1-S-M3-26
	50-pin	For variant M3-50 (V26)	573451	VAEM-L1-S-M3-50

Connecting cable for multi-pin plug					
	Sub-D socket, straight	25-pin, up to 24 coils, IP40 Open cable end, 25-wire	2.5 m	575417	NEBV-S1G25-K-2.5-N-LE25-S6
			5 m	575418	NEBV-S1G25-K-5-N-LE25-S6
			10 m	575419	NEBV-S1G25-K-10-N-LE25-S6
		44-pin, up to 42 coils, IP40 Open cable end, 44-wire	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
	Sub-D socket, angled	25-pin, up to 24 coils, IP65 Open cable end, 25-wire	2.5 m	575423	NEBV-S1WA25-K-2.5-N-LE25-S9
			5 m	575424	NEBV-S1WA25-K-5-N-LE25-S9
			10 m	575425	NEBV-S1WA25-K-10-N-LE25-S9
		44-pin, up to 42 coils, IP65 Open cable end, 44-wire	2.5 m	575420	NEBV-S1WA44-K-2.5-N-LE44-S9
			5 m	575421	NEBV-S1WA44-K-5-N-LE44-S9
			10 m	575422	NEBV-S1WA44-K-10-N-LE44-S9

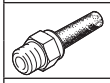
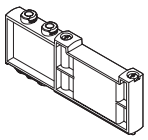
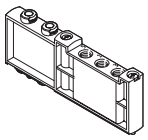
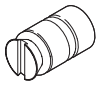
Accessories – Ordering data

	Description	Part no.	Type
Electrical interface for I-Port interface/IO-Link, outlet on top			
	Actuation of up to 8 double solenoid valve positions	573384	VAEM-L1-S-8-PT
	Actuation of up to 16 double solenoid valve positions	573939	VAEM-L1-S-16-PT
	Actuation of up to 24 double solenoid valve positions	573940	VAEM-L1-S-24-PT
Electrical interface for I-Port interface/IO-Link, outlet on the side			
	Actuation of up to 8 double solenoid valve positions	574207	VAEM-L1-S-8-PTL
	Actuation of up to 16 double solenoid valve positions	574208	VAEM-L1-S-16-PTL
	Actuation of up to 24 double solenoid valve positions	574209	VAEM-L1-S-24-PTL
Connection technology for IO-Link			
	T adapter M12, 5-pin for IO-Link and load supply	171175	FB-TA-M12-5POL
	Straight plug, M12, 5-pin, for T adapter FB-TA	175487	SEA-M12-5GS-PG7
	Y-distributor with cable on controller side, M12x1 A-coded, for IO-Link	8091516	NEDU-L1R2-M12G5-M12LE-1R
Inscription label for I-Port interface/IO-Link			
	40 pieces in frame	565306	ASLR-C-E4
Electrical connection block			
	For connecting a second device with I-Port interface	570042	CAPC-F1-E-M12
H-rail mounting			
	For electrical connection block CAPC	570043	CAFM-F1-H

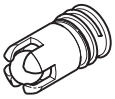
Accessories – Ordering data

	Description		Part no.	Type
Bus node CTEU				
	CANopen bus node		570038	CTEU-CO
	CC-Link bus node		1544198	CTEU-CC
	PROFIBUS bus node		570040	CTEU-PB
	DeviceNet bus node		570039	CTEU-DN
	EtherCAT bus node		572556	CTEU-EC
	EtherNet/IP bus node		2798071	CTEU-EP
Electrical interface VAEM				
	For direct integration of the valve terminal into the decentralised IO system CPX-API		8081922	VAEM-L1-S-12-AP
			8081923	VAEM-L1-S-24-AP
Bus connection				
	Sub-D plug, straight	For CANopen	532219	FBS-SUB-9-BU-2x5POL-B
		For CC-Link	532220	FBS-SUB-9-GS-2x4POL-B
		For PROFIBUS	532216	FBS-SUB-9-GS-DP-B
	Sub-D plug, angled, 9-pin	For CANopen	533783	FBS-SUB-9-WS-CO-K
		For PROFIBUS	533780	FBS-SUB-9-WS-PB-K
	M12x1, 5-pin	A-coded, for CANopen	525632	FBA-2-M12-5POL
		B-coded, for PROFIBUS	533118	FBA-2-M12-5POL-RK
	For 5-pin terminal strip for CANopen		525634	FBA-1-SL-5POL
	Terminal strip, 5-pin, for DeviceNet/CANopen		525635	FBSD-KL-2x5POL
	Straight plug, M12x1	5-pin, for CANopen	175380	FBS-M12-5GS-PG9
		4-pin, D-coded for EtherCAT	543109	NECU-M-S-D12G4-C2-ET
		5-pin, compatible with FBA-2-M12-5POL-RK for PROFIBUS	1066354	NECU-M-S-B12G5-C2-PB
	Straight socket, M12x1, 5-pin, for assembling a connecting cable compatible with FBA-2-M12-5POL-RK for PROFIBUS		1067905	NECU-M-B12G5-C2-PB
	Terminating resistor, M12, B-coded for PROFIBUS		1072128	CACR-S-B12G5-220-PB
Plug socket				
	For power supply, M12x1, 5-pin, B-coded for CANopen/DeviceNet		538999	NTSD-GD-9-M12-5POL-RK
	For power supply, M12x1, 5-pin for CC-Link, PROFIBUS, EtherCAT		18324	FBSD-GD-9-5POL
Inscription label				
	For bus node		565306	ASLR-C-E4

Accessories – Ordering data

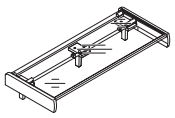
	Description		Part no.	Type	PU[1]
Silencers					
	For M3 thread		1231120	AMTE-M-LH-M3	20
	For M5 thread		★ 1205858	AMTE-M-LH-M5	20
	For M7 thread		161418	UC-M7	1
	For G1/8 thread	High flow rate	★ 2307	U-1/8	1
		Lower flow rate	161419	UC-1/8	1
	For G1/4 thread	High flow rate	★ 2316	U-1/4	1
			534223	U-1/4-20	20
		Lower flow rate	165004	UC-1/4	1
			534220	UC-1/4-20	20
Cover plate					
	Vacant position width 10 mm		573422	VABB-L1-10-T	1
	Vacant position width 14 mm		573488	VABB-L1-14-T	1
	Vacant position width 18 mm		8004897	VABB-L1-18-T	1
Supply plate					
	Supply ports 1, 3, 5, width 10 mm		573924	VABF-L1-10-P3A4-M7-T1	1
	Supply ports 1, 3, 5, width 14 mm		573925	VABF-L1-14-P3A4-G18-T1	1
	Supply ports 1, 3, 5, width 18 mm		8004898	VABF-L1-18-P3A4-G14-T1	1
Separator					
	For manifold rail, size 10, M5/M7	For sub-base valves	569994	VABD-6-B	1
		For semi in-line valves	569995	VABD-8-B	1
	For all manifold rails, size 14		569996	VABD-10-B	1
	For all manifold rails, size 18		569997	VABD-12-B	1
Cover cap for manual override					
	Covered		540898	VMPA-HBV-B	10
	Non-detenting		540897	VMPA-HBT-B	10
	Detenting (without accessories)		8002234	VAMC-L1-CD	10
Identification holder					
	Holder for an inscription label and covering for the retaining screw and manual override		570818	ASLR-D-L12	10
Screw set					
	Control cabinet retaining screw set for IP67		8092501	VAME-S-M5-16-R1-P10	

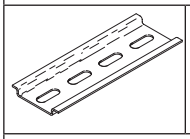
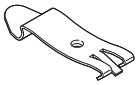
Accessories – Ordering data

	Description			Part no.	Type	PU[1]
Check valve						
	For manifold rails VABM-L1-10...	For blocking the flow in the event of back pressure in duct 3 and 5		8047364	VABF-L1-10H-H2	10
	For manifold rails VABM-L1-14...			8047365	VABF-L1-14-H2	10
Flow restrictor						
	For manifold rails VABM-L1-10...	For setting the flow rate during pressurisation and exhausting (for M5 threaded connection)	Nominal width: 0.5 mm	8025709	VFFG-T-M5-5	10
			Nominal width: 0.6 mm	8025710	VFFG-T-M5-6	10
			Nominal width: 0.7 mm	8025711	VFFG-T-M5-7	10
			Nominal width: 0.85 mm	8025712	VFFG-T-M5-8	10
			Nominal width: 1.05 mm	8025713	VFFG-T-M5-10	10
			Nominal width: 1.2 mm	8025714	VFFG-T-M5-12	10
			Nominal width: 1.55 mm	8025715	VFFG-T-M5-15	10
		For setting the flow rate during pressurisation and exhausting (for ø 4 mm)	Nominal width: 0.5 mm	8047346	VFFG-T-F4-5	10
			Nominal width: 0.6 mm	8047347	VFFG-T-F4-6	10
			Nominal width: 0.7 mm	8047348	VFFG-T-F4-7	10
			Nominal width: 0.85 mm	8047349	VFFG-T-F4-8	10
			Nominal width: 1.05 mm	8047350	VFFG-T-F4-10	10
			Nominal width: 1.2 mm	8047351	VFFG-T-F4-12	10
			Nominal width: 1.55 mm	8047352	VFFG-T-F4-15	10
	For manifold rails VABM-L1-14...	For setting the flow rate during pressurisation and exhausting (for ø 5.8 mm)	Nominal width: 0.7 mm	8047353	VFFG-T-F6-7	10
			Nominal width: 0.85 mm	8047354	VFFG-T-F6-8	10
			Nominal width: 1.05 mm	8047355	VFFG-T-F6-10	10
			Nominal width: 1.15 mm	8047356	VFFG-T-F6-11	10
			Nominal width: 1.4 mm	8047357	VFFG-T-F6-14	10
			Nominal width: 1.6 mm	8047358	VFFG-T-F6-16	10
			Nominal width: 1.8 mm	8047359	VFFG-T-F6-18	10
Flow control set						
	For manifold rails VABM-L1-10...	Two of each size, for M5 threaded connection		8025716	VFFG-T-M5-A-V1	14
		Two of each size, for ø 4 mm		8062200	VFFG-T-F4-A-V1	14
	For manifold rails VABM-L1-14...	Two of each size, for ø 5.8 mm		8062201	VFFG-T-F6-A-V1	14
Blanking plug						
	For M5 thread			★ 174308	B-M5-B	10
	For M7 thread			★ 174309	B-M7	10
	For G1/8 thread			★ 3568	B-1/8	10
	For G1/4 thread			★ 3569	B-1/4	10
	For G1/8 thread			196720	CDVI5.0-B-G1/8	1
	For G3/8 thread			196712	CDVI5.0-B-G3/8	1
	For G1/4 thread			8035644	CDVI5.0-B-G1/4	1

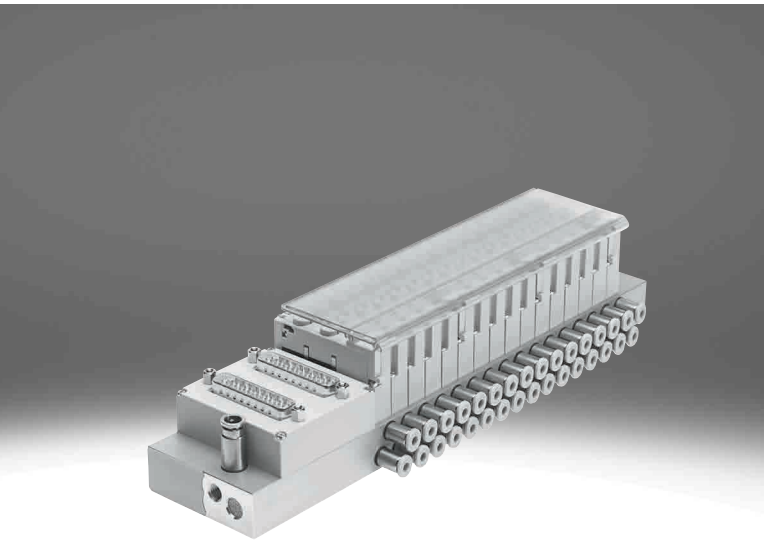
1) Packaging unit.

Accessories – Ordering data

	Description		Part no.	Type
Inscription label holder for valve terminal				
	Size 10	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
	Size 14	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
	Size 18	For 4 valve positions	8004928	ASCF-H-L1-18-4V
		For 5 valve positions	8004929	ASCF-H-L1-18-5V
		For 6 valve positions	8004930	ASCF-H-L1-18-6V
		For 7 valve positions	8004931	ASCF-H-L1-18-7V
		For 8 valve positions	8004932	ASCF-H-L1-18-8V
		For 9 valve positions	8004933	ASCF-H-L1-18-9V
		For 10 valve positions	8004934	ASCF-H-L1-18-10V
		For 12 valve positions	8004935	ASCF-H-L1-18-12V
		For 16 valve positions	8004936	ASCF-H-L1-18-16V
		For 20 valve positions	8004937	ASCF-H-L1-18-20V
		For 24 valve positions	8004938	ASCF-H-L1-18-24V

	Description		Part no.	Type
H-rail				
	To EN 60715, 35 x 7.5 (WxH)	2 m long	35430	NRH-35-2000
H-rail mounting				
	Use the following screws for mounting: Size 10: DIN 912: M4x30 Size 14: DIN 912: M4x40 Size 18: DIN 912: M5x50		569998	VAME-T-M4

Valve terminals VTOC



Highlights

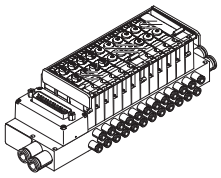
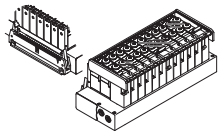
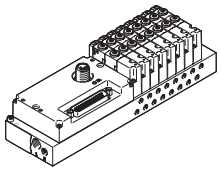
+ Compact pilot valves
+ Compact assembly
+ Greater safety thanks to interlock function
+ Multi-pin or fieldbus control
+ IO-Link capable

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Valve terminals VTOC

Product range overview

Design type	Type code	Description
Valve terminal VTOC with multi-pin plug connection, Sub-D		
	SD	Sub-D 25-pin Sub-D 44-pin
Valve terminal VTOC with multi-pin plug connection, ribbon cable		
	RC	Ribbon cable, 26-pin Ribbon cable, 40-pin Ribbon cable, 50-pin
Valve terminal with I-Port interface, interlock/IO-Link		
	LK/PT	I-Port interface: plug M12, 5-pin Sub-D 44-pin IO-Link

Features

Innovative
- Valve terminal for a wide range of pneumatic applications
- Weight-optimised metal manifold rail
- Space-saving thanks to 2x3/2-way valves on one valve position
- Great flexibility during planning, assembly and operation
- Configurable manifold rails (pneumatic and electric connections)

Flexible
- Provides 2 ... 24 valve positions on one terminal
- Flexibility of the pneumatic working ports provides a practical solution to different requirements
- Wide range of electrical outlet directions
- Multi-pin plug connection with Sub-D plug or ribbon cable
- I-Port interface with interlock for bus node (CTEU)
- IO-Link mode for direct connection to a higher-level IO-Link master

Reliable
- Manual override – non-detenting, non-detenting/detenting, detenting
- Long service life
- Sturdy thanks to simple design

Easy to install
- Ready-to-install and -tested unit
- Reduced ordering, assembly and commissioning costs
- Easy valve assembly

Valve terminal VTOC with multi-pin plug connection, Sub-D
- Up to 24 valve positions/ 48 solenoid coils
- Connection type: ribbon cable, code: RC
- Connection type: Sub-D plug, code: SD

Valve terminals with electrical multi-pin plug connection are available with 2 to max. 24 valve positions. Each valve position can either be equipped with a valve body or a cover plate.

Only valve bodies containing two 3/2-way single solenoid valves are available.

A maximum of 48 solenoid coils can therefore be actuated via the electrical multi-pin plug connection.

Valve terminal VTOC with I-Port interface, interlock/IO-Link
- Up to 24 valve positions/ 48 solenoid coils
- Connection type: I-Port interface with interlock code: PT
- Code: LK

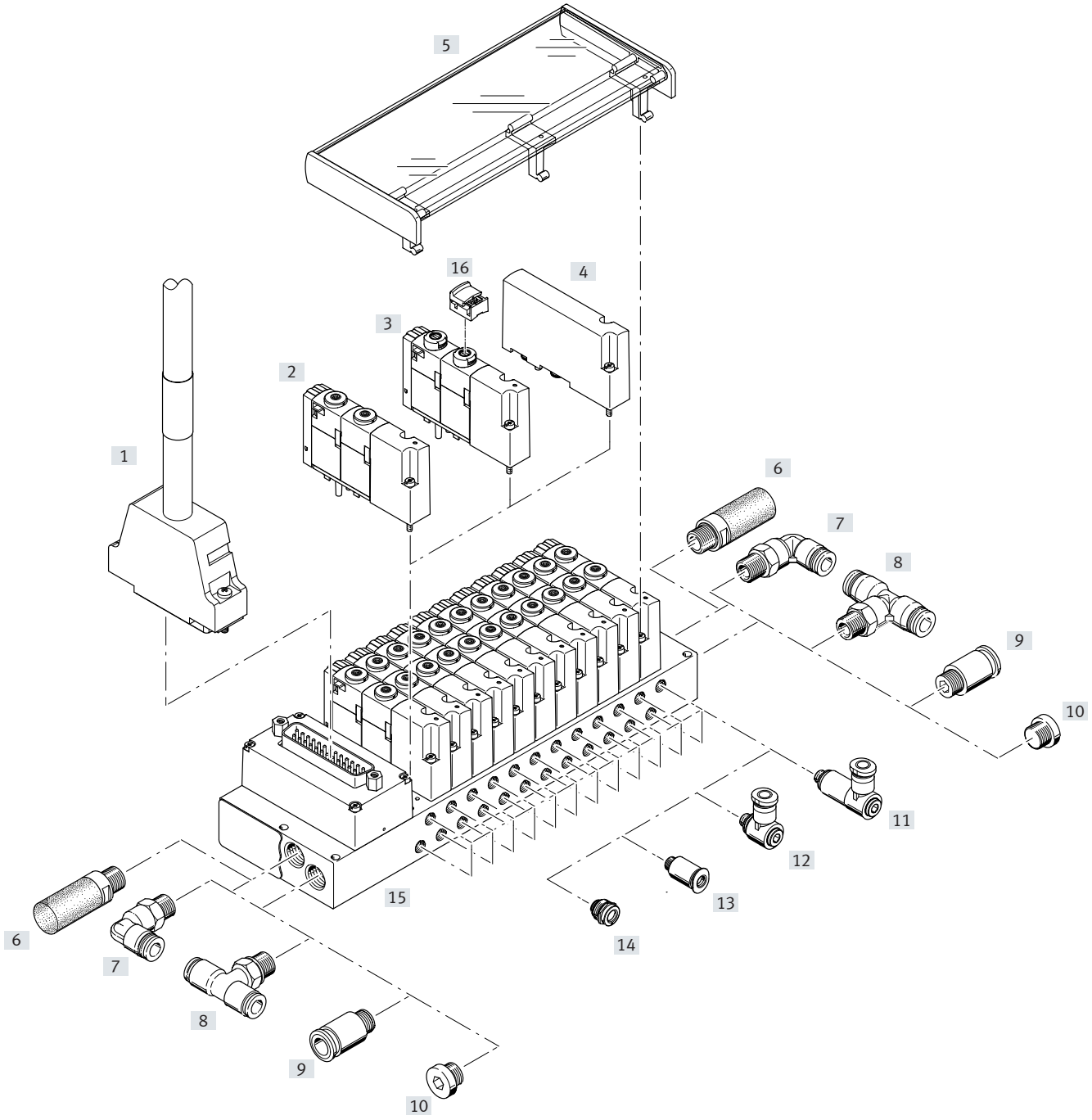
The electrical supply/transmission of communication takes place via an M12 plug.
The valve terminal can be equipped with 2 ... 24 valves.

Only valve bodies containing two single solenoid 3/2-way valves are available.

The following protocols are supported in connection with the associated CTEU bus node:
- DeviceNet
- CANopen
- Profibus DP
- EtherCAT
- CC-Link

Peripherals overview

Valve terminal VTOC with multi-pin plug connection, Sub-D

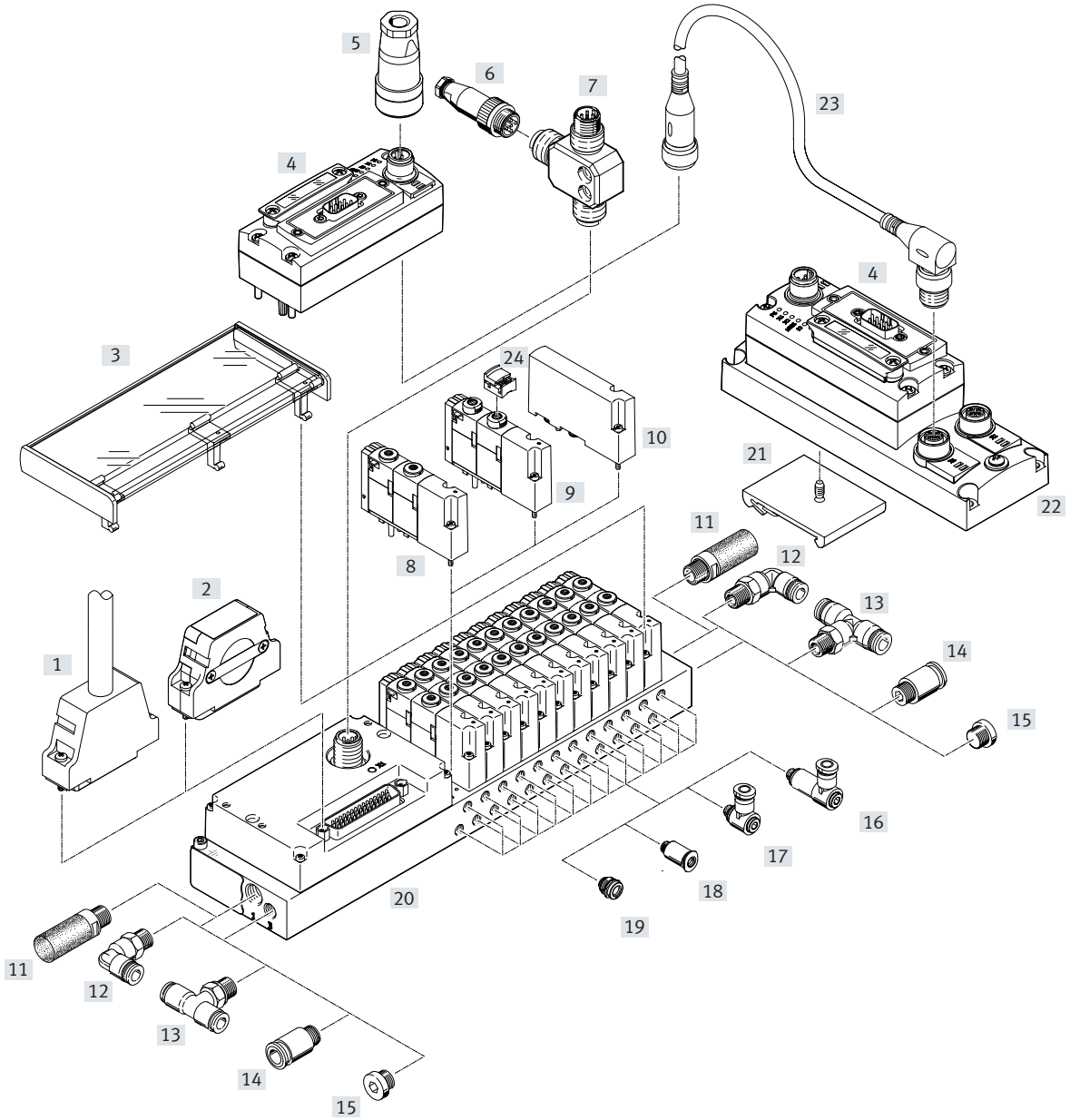


		Type	→ Page/Internet
[1]	Connecting cable	KMP6/NEBV	619
[2]	Solenoid valve, single solenoid	VOVC	619
[3]	Solenoid valve, single solenoid	VOVC	619
[4]	Cover plate	VABB	619
[5]	Inscription label holder	ASCF	620
[6]	Silencer	U	620
[7]	Elbow connector	NPQE-L	803
[8]	T-fitting	NPQE-T	803

		Type	→ Page/Internet
[9]	Straight fitting	NPQE, QSM	803, 620
[10]	Blanking plug	B	619
[11]	Push-in L-fitting, long	QSMLLV	620
[12]	Push-in L-fitting	QSMLV	620
[13]	Push-in fitting	NPQE	803
[14]	Push-in fitting	QSIMG	–
[15]	Manifold rail	VABB	–
[16]	Cover	VAMC	619

Peripherals overview

Overview – Valve terminal VTOC with I-Port interface, interlock/IO-Link

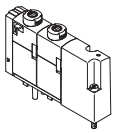
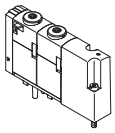


		Type	→ Page/Internet
[1]	Connecting cable	KMP6/NEBV	619
[2]	Plug socket	NEFF	621
[3]	Inscription label holder	ASCF	620
[4]	Fieldbus	CTEU	620
[5]	Plug socket	FBSD/NTSD	620
[6]	Plug	SEA	621
[7]	T adapter	FB-TA	621
[8]	Solenoid valve, single solenoid	VOVC	619
[9]	Solenoid valve, single solenoid	VOVC	619
[10]	Cover plate	VABB	619
[11]	Silencer	U	620
[12]	Elbow connector	NPQE-L	803

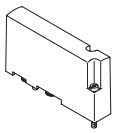
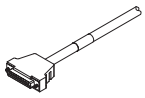
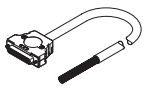
		Type	→ Page/Internet
[13]	T-fitting	NPQE-T	803
[14]	Straight fitting	NPQE, QSM	803, 620
[15]	Blanking plug	B	619
[16]	Push-in L-fitting, long	QSMLLV	620
[17]	Push-in L-fitting	QSMLV	620
[18]	Push-in fitting	NPQE	803
[19]	Push-in fitting	QSIMG	–
[20]	Manifold rail	VABB	–
[21]	H-rail mounting	CAFM	621
[22]	Electrical connection block	CAPC	621
[23]	Connecting cable	NEBU	621
[24]	Cover	VAMC	619

Ordering data

Note
Ordering system for valve terminal VTOC
➔ Internet: vtoc

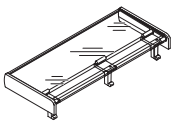
	Code	Valve function	Part no.	Type
Solenoid valves				
	K	2x3/2-way valve, single solenoid, normally closed, manual override detenting, non-detenting/detenting	565450	VOVC-BT-T32C-MT-F-1T1
	K	2x 3/2-way valve, single solenoid, normally closed, manual override, non-detenting	565449	VOVC-BT-T32C-MH-F-1T1

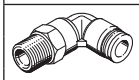
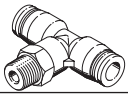
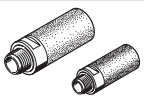
Accessories – Ordering data

	Code	Valve function		Part no.	Type
Cover plate					
	L	Cover plate for vacant position		565451	VABB-L2-P3
Cover cap for manual override					
	–	Detenting, without accessories		8002234	VAMC-L1-CD
Blanking plug					
	–	For sealing the air supply or exhaust port		3568	B-1/8
	–			174309	B-M7
Connecting cable for multi-pin plug					
	–	Sub-D socket, 25-pin, IP40 Open cable end, 15-wire	2.5	530049	KMP6-25P-12-2.5
			5	530050	KMP6-25P-12-5
			10	530051	KMP6-25P-12-10
	–	Sub-D socket, 25-pin, IP40 Open cable end 25-wire	2.5	530046	KMP6-25P-20-2.5
			5	530047	KMP6-25P-20-5
			10	530048	KMP6-25P-20-10
	–	Sub-D socket, straight, 44-pin, up to 35 coils, IP40 Open cable end, 44-wire	2.5	575113	NEBV-S1G44-K-2.5-N-LE44-S6
			5	575114	NEBV-S1G44-K-5-N-LE44-S6
			10	575115	NEBV-S1G44-K-10-N-LE44-S6

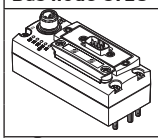
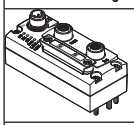
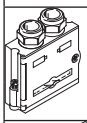
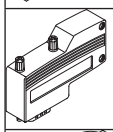
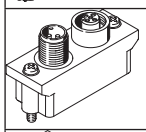
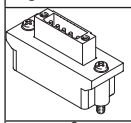
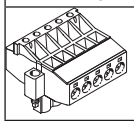
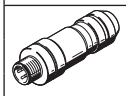
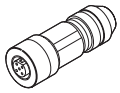
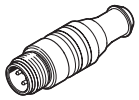
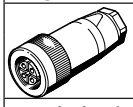
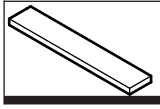
Valve terminals VTOC

Accessories – Ordering data

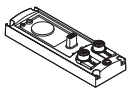
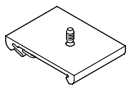
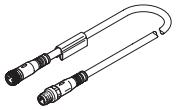
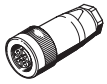
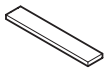
	Code	Valve function		Part no.	Type
Inscription label holder					
	–	Inscription label holder for identifying the valves	3 valve positions	565571	ASCF-H-L2-3V
			4 valve positions	565572	ASCF-H-L2-4V
			5 valve positions	565573	ASCF-H-L2-5V
			6 valve positions	565574	ASCF-H-L2-6V
			7 valve positions	565575	ASCF-H-L2-7V
			8 valve positions	565576	ASCF-H-L2-8V
			9 valve positions	565577	ASCF-H-L2-9V
			10 valve positions	565578	ASCF-H-L2-10V
			11 valve positions	565579	ASCF-H-L2-11V
			12 valve positions	565580	ASCF-H-L2-12V
			13 valve positions	565581	ASCF-H-L2-13V
			14 valve positions	565582	ASCF-H-L2-14V
			15 valve positions	565583	ASCF-H-L2-15V
			16 valve positions	565584	ASCF-H-L2-16V
			17 valve positions	565585	ASCF-H-L2-17V
			18 valve positions	565586	ASCF-H-L2-18V
			19 valve positions	565587	ASCF-H-L2-19V
			20 valve positions	565588	ASCF-H-L2-20V
			21 valve positions	565589	ASCF-H-L2-21V
			22 valve positions	565590	ASCF-H-L2-22V
			23 valve positions	565591	ASCF-H-L2-23V
			24 valve positions	565592	ASCF-H-L2-24V

	Code	Description	Tubing O.D.	Packaging unit quantity	Part no.	Type
Push-in fittings						
	–	QS push-in fitting	1/4"	1	183741	QS-1/8-1/4-I-U-M
			8 mm	10	153015	QS-1/8-8-I
			6 mm	10	153321	QSM-M7-6-I
			1/4"	1	183740	QSM-M7-1/4-I-U-M
			1/8"	10	183749	QSM-M5-1/8-I-U-M
			5/32"	1	130593	QSM-M5-5/32-I-U-M
			3 mm	10	153313	QSM-M5-3-I
			4 mm	10	153315	QSM-M5-4-I
	–	Push-in L-fitting	1/4"	1	533235	QBL-1/8-1/4-U-M
			3/8"	1	562578	QBL-1/8-3/8-U-M
			3 mm	10	130830	QSMLV-M5-3-I
			4 mm	10	130831	QSMLV-M5-4-I
	–	Push-in L-fitting, long	3 mm	10	130834	QSMLLV-M5-3-I
			4 mm	10	130835	QSMLLV-M5-4-I
	–	T-fitting	1/4"	1	533254	QBT-1/8-1/4-U-M
			3/8"	1	562579	QBT-1/8-3/8-U-M
			8 mm	1	153109	QST-1/8-8
Silencer						
	U	Silencer	–	1	161418	UC-M7
				50	534218	UC-M7-50

Accessories – Ordering data

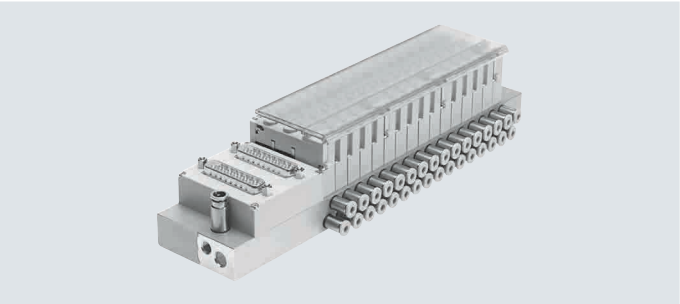
	Description		Part no.	Type
Bus node CTEU				
	CANopen bus node		570038	CTEU-CO
	CC-Link bus node		1544198	CTEU-CC
	PROFIBUS bus node		570040	CTEU-PB
	DeviceNet bus node		570039	CTEU-DN
	EtherCAT bus node		572556	CTEU-EC
Bus connection				
	Sub-D plug, straight	For CANopen	532219	FBS-SUB-9-BU-2x5POL-B
		For CC-Link	532220	FBS-SUB-9-GS-2x4POL-B
		For PROFIBUS	532216	FBS-SUB-9-GS-DP-B
	Sub-D plug, angled, 9-pin	For CANopen	533783	FBS-SUB-9-WS-CO-K
		For PROFIBUS	533780	FBS-SUB-9-WS-PB-K
	M12x1, 5-pin	A-coded, for CANopen	525632	FBA-2-M12-5POL
		B-coded, for PROFIBUS	533118	FBA-2-M12-5POL-RK
	For 5-pin terminal strip for CANopen		525634	FBA-1-SL-5POL
	Terminal strip, 5-pin, for DeviceNet/CANopen		525635	FBSD-KL-2x5POL
	Straight plug, M12x1	5-pin, for CANopen	175380	FBS-M12-5GS-PG9
		4-pin, D-coded for EtherCAT	543109	NECU-M-S-D12G4-C2-ET
		5-pin, compatible with FBA-2-M12-5POL-RK for PROFIBUS	1066354	NECU-M-S-B12G5-C2-PB
	Straight socket, M12x1, 5-pin, for assembling a connecting cable compatible with FBA-2-M12-5POL-RK for PROFIBUS		1067905	NECU-M-B12G5-C2-PB
	Terminating resistor, M12, B-coded for PROFIBUS		1072128	CACR-S-B12G5-220-PB
Plug socket				
	For power supply, M12x1, 5-pin, B-coded for CANopen/DeviceNet		538999	NTSD-GD-9-M12-5POL-RK
	For power supply, M12x1, 5-pin for CC-Link, PROFIBUS, EtherCAT		18324	FBSD-GD-9-5POL
Inscription label				
	For bus node		565306	ASLR-C-E4

Accessories – Ordering data

	Code			Part no.	Type
Electrical connection block					
	–	For connecting a second device with I-Port interface		570042	CAPC-F1-E-M12
H-rail mounting					
	–	For electrical connection block CAPC		570043	CAFM-F1-H
Connecting cable					
	–	Straight socket, M12x1, 5-pin, Straight plug, M12x1, 5-pin Conductor nominal cross section 1 mm²	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
	–	Angled socket, M12x1, 5-pin Angled plug, M12x1, 5-pin	0.5 m	570733	NEBU-M12W5-K-0.5-M12W5
			2 m	570734	NEBU-M12W5-K-2-M12W5
	–	Straight socket, M12x1, 5-pin, Angled plug, M12x1, 5-pin	0.5 m	8003617	NEBU-M12G5-K-0.5-M12W5
			2 m	8003618	NEBU-M12G5-K-2-M12W5
Plug socket					
	–	For power supply, M12x1, 5-pin, B-coded for CANopen/DeviceNet		538999	NTSD-GD-9-M12-5POL-RK
	–	For power supply, M12x1, 5-pin for CC-Link, PROFIBUS, EtherCAT		18324	FBSD-GD-9-5POL
Connection technology for IO-Link					
	XM	T-adapter M12, 5-pin for IO-Link and load supply		171175	FB-TA-M12-5POL
Straight plug, for I-Port interface/IO-Link					
	XN	M12, 5-pin, in combination with T-adapter for separate load voltage		175487	SEA-M12-5GS-PG7
Plug socket					
	–	For bypassing the interlock function		1589339	NEFF-S1G44LB
Inscription label					
	–	For bus node		565306	ASLR-C-E4

Data sheet – Valve terminal VTOC with multi-pin plug connection

Voltage 24 V DC
Pressure 0 ... +8 bar
Temperature range –5 ... +50°C



General technical data			
Valve function			2x3/2-way valve, closed, single solenoid
Design			Poppet valve with spring return
Sealing principle			Soft
Actuation type			Electric
Reset method			Mechanical spring
Type of control			Direct
Flow direction			Non-reversible
Exhaust air function			Cannot be throttled
Manual override			Non-detenting, detenting and non-detenting, detenting (without accessories)
Type of mounting			Via through-hole or thread
Width		[mm]	10
Nominal width		[mm]	0.65
Max. no. of valve positions			24
Standard nominal flow rate	qnN	[l/min]	10

Operating and environmental 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 ... +8
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Note on materials		RoHS-compliant
CE marking		To EU EMC Directive
KC mark		KC EMC
Certification		c UL us - Recognized (OL)

Electrical data		
Electrical control		Multi-pin plug (Sub-D/ribbon cable)
Nominal operating voltage	[V DC]	24
Permissible voltage fluctuations	[%]	±10
Duration of pick-up phase	[ms]	100
Current consumption per coil at 24 V during pick-up phase (valves)	[mA]	55
Current consumption per coil at 24 V during holding phase (valves)	[mA]	13
Degree of protection to EN 60529		IP40
Duty cycle	[%]	100
Signal status display		LED

Safety data		
Well-tried component		Yes
Max. positive test pulse with 0 signal	[µs]	600
Max. negative test pulse with 1 signal	[µs]	800
Shock resistance		Shock test at severity level 2, to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test at severity level 2, to FN 942017-4 and EN 60068-2-6

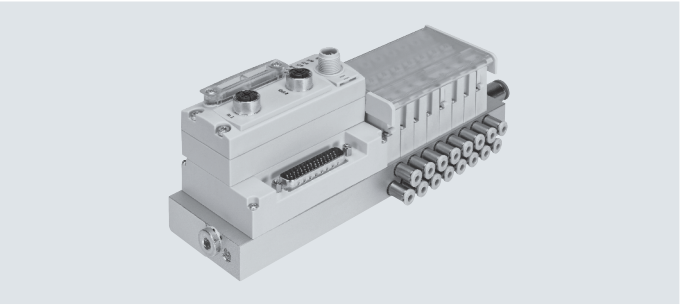
Valve terminals VTOC

Data sheet – Valve terminal VTOC with I-Port interface, interlock/IO-Link

- Voltage
  24 V DC

- Pressure
  0 ... +8 bar

- Temperature range
  –5 ... +50°C



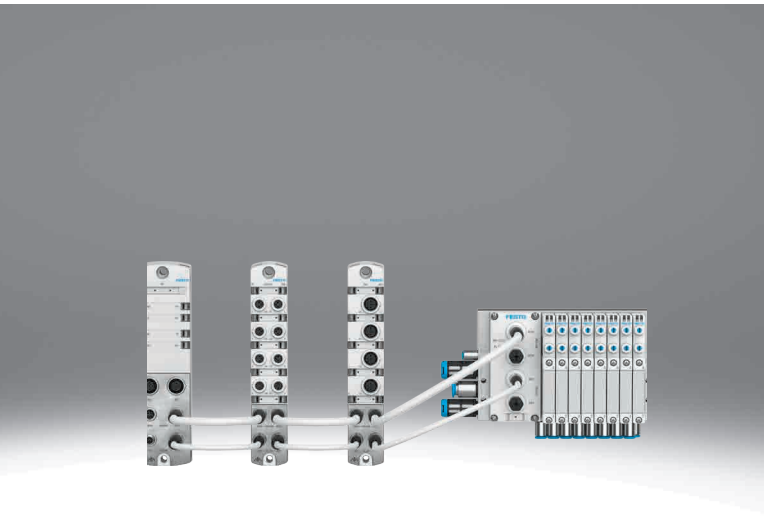
General technical data			
Valve			2x3/2 normally closed, reset via mechanical spring
Design			Poppet valve with spring return
Reset method			Mechanical spring
Type of control			Direct
Flow direction			Non-reversible
Exhaust air function			Cannot be throttled
Manual override			Non-detenting, detenting and non-detenting, detenting (without accessories)
Types of communication			I-Port/IO-Link
Number of valve positions			2 ... 24
Max. number of solenoid coils			48
Number of interlock solenoid coils			16
Number of inputs for voltage feedback			18 (16x interlock + 2 group supply)
Mounting position			Any
Nominal flow rate		[l/min]	10
Residual ripple		[V_{SS}]	4
Baud rate	COM3	[kbps]	230.4
	COM2	[kbps]	38.4
IO-Link	Protocol		V1.0
	Connection technology		M12, A-coded
	Port type		Type B
	Number of ports		1
	Process data width OUT		6 bytes
	Process data width IN		4 bytes
	Minimum cycle time		11.5 ms (2.3 ms per frame = 2 bytes of user data)

Operating and environmental 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 ... +8
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant
CE marking		To EU EMC Directive
KC mark		KC EMC
Certification		c UL us - Recognized (OL)

Electrical data			
Power supply	Load voltage interlock (valves)	[V DC]	24 (±10%)
	Load voltage (valves)	[V DC]	24 (±10%)
	Operating voltage (electronics)	[V DC]	24 (±25%)
Duration of pick-up phase		[ms]	100
Current consumption per coil at 24 V during pick-up phase (valves)		[mA]	55
Current consumption per coil at 24 V during holding phase (valves)		[mA]	13
Intrinsic current consumption via I-Port (valves/electronics)		[mA]	40/30
Degree of protection to EN 60529			IP40

Safety data		
Well-tried component		Yes
Max. positive test pulse with 0 signal	[µs]	600
Max. negative test pulse with 1 signal	[µs]	800
Shock resistance		Shock test at severity level 2, to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test at severity level 2, to FN 942017-4 and EN 60068-2-6

Automation systems CPX-AP-I



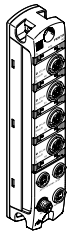
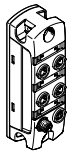
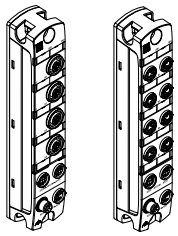
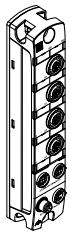
Highlights

+ Powerful remote I/O system links up to 500 modules/valve terminals to the bus of your choice: PROFINET, EtherNet/IP, EtherCAT®, PROFIBUS
+ Real time-capable, bus cycle from 15 µs
+ IO-Link® master and engineering tool for easy integration of IO-Link® devices
+ Advanced diagnostics with cloud connection and optional Festo dash-boards

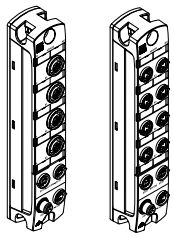
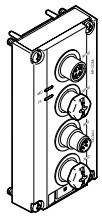
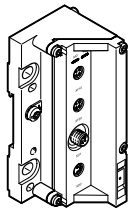
★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Product range overview

Function	Design		Type	Description
Bus interface	**Interface**			
		PROFINET	CPX-AP-I-PN-M12	• Control via PROFINET • Two PROFINET connections • Two connections for system communication • Two connections for power supply and transmission
		PROFIBUS	CPX-AP-I-PB-M12	• Activation via PROFIBUS • Two PROFIBUS connections • Two connections for system communication • Two connections for power supply and transmission
		EtherCAT	CPX-AP-I-EC-M12	• Control via EtherCAT • Two EtherCAT connections • Two connections for system communication • Two connections for power supply and transmission
		EtherNet/IP	CPX-AP-I-EP-M12	• Control via EtherNet/IP • Two Ethernet connections • Two connections for system communication • Two connections for power supply and transmission
IO-Link master		4 IO-Link connections	CPX-AP-I-4IOL-M12	• LED display • Master V 1.1 • Electrical connection M12x1, 5-pin
Input module	**Digital**			
		4 inputs	CPX-AP-I-4DI	• LED display • PNP (positive switching) • Characteristic curve of inputs according to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin
		8 inputs	CPX-AP-I-8DI	• LED display • PNP (positive switching) • Characteristic curve of inputs according to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin
	Analogue			
		4 inputs	CPX-AP-I-4AI	• LED display • Current, voltage, temperature or resistance measurement • Electrical connection M12x1, 5-pin

Product range overview

Function	Design		Type	Description
Input/output module	**Digital**			
		4 inputs 4 outputs	CPX-AP-I-4DI4DO	• LED display • PNP (positive switching) • Characteristic curve of inputs according to IEC 61131-2, type 3 • Characteristic curve outputs to IEC 61131-2, type 0.5 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin
Electrical interface for valve terminal	**Valve terminal VTUG**			
		12 or 24 valve positions Up to 48 solenoid coils	VAEM-L1-S	• LED display • 3 valve sizes (10 mm, 14 mm and 18 mm) • 2x 3/2-way valves • 3/2-way valves • 5/2-way valves • 5/3-way valves • Fixed-grid linkage • 130 ... 1000 l/min flow rate
	Valve terminal MPA-L			
		32 valve positions Up to 32 solenoid coils	VMPAL-EPL-AP	• LED display • 3 valve sizes (10 mm, 14 mm and 20 mm) • 2x 2/2-way valves • 2x 3/2-way valves • 3/2-way valves • 5/2-way valves • 5/3-way valves • Modular design • Flow rates of up to 870 l/min

Automation systems CPX-AP-I

Features

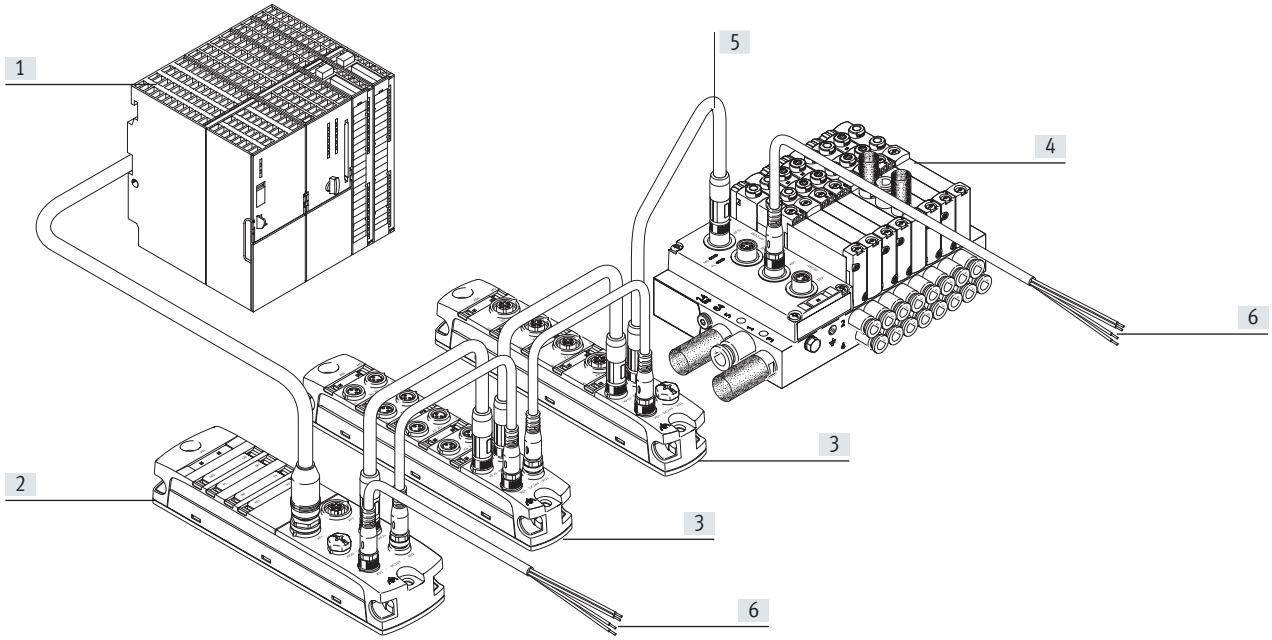
At a glance

CPX-AP-I is a flexible, decentralised, compact and lightweight automation system with high degree of protection IP65/IP67.
The performance of the system is future-proof in terms of the forthcoming demands on the digital factory, and advantageous compared with a slow point-to-point connection.

The simple structure and high degree of scalability ensure the automation system CPX-AP-I is equipped for future applications:
- Extremely easy to assemble
- Separate cables for communication and power supply to form voltage zones and for stable data transfer
- Electrical isolation of output channels
- Digital electronic rating plate available
- Easy to update firmware
- Simple maintenance access to the system via Ethernet
- Easy to integrate
- Realtime capability
- Up to 80 individual modules/valve terminals per bus interface
- Easy to adapt to different control systems by exchanging the bus interface
- Direct connection of valve terminals
- Choice of M8 or M12 electrical connections
- Cable length up to 50 m cable length between the modules

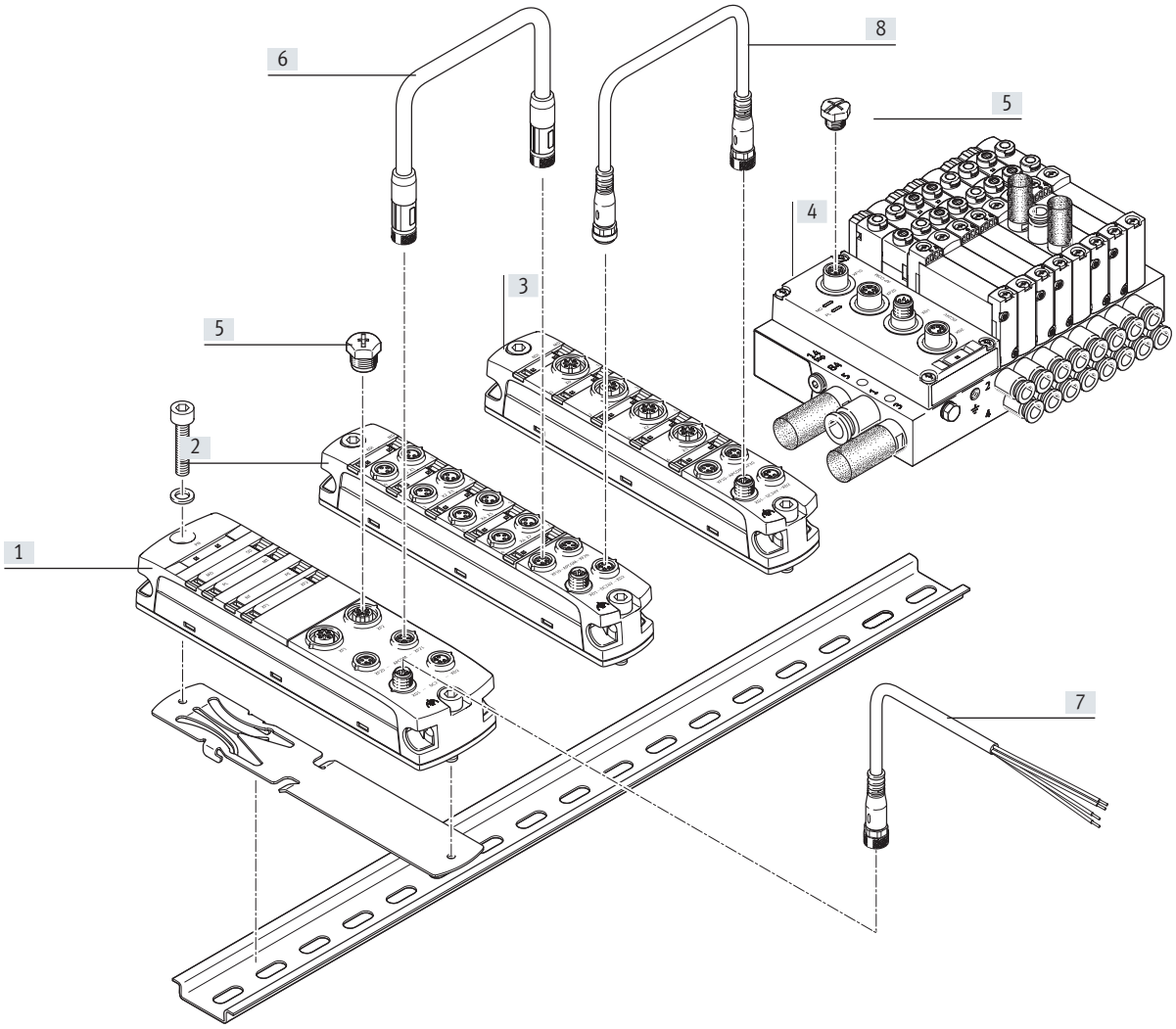
An automation system CPX-AP-I consists of a bus interface and at least one other module. System communication between the modules takes place via connecting cables. The process data is exchanged cyclically.
The following module types are available:
- Bus interface
- IO-Link master
- Input modules
- Input/output modules
- Interface to the valve terminal

Overview



[1] Higher-order controller
[2] Bus interface for connecting the automation system CPX-AP-I to a higher-order controller via a standard bus protocol such as PROFINET
[3] Input module, output module or input/output module; allows sensors and actuators to be connected to the automation system CPX-AP-I. Up to 80 modules per bus interface possible
[4] Valve terminal with electrical interface for CPX-AP-I. Behaves like an output module within the automation system CPX-AP-I
[5] Connecting cable for communication between the modules and the bus interface. The maximum line length from the bus interface to the module is 50 m
[6] Connecting cable for supplying power to the components of the automation system CPX-AP-I. Each module can be connected individually or a central supply is transmitted from module to module

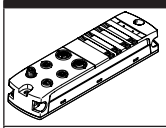
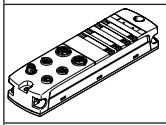
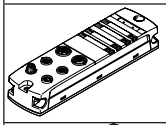
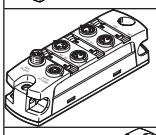
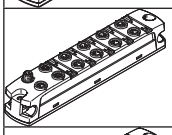
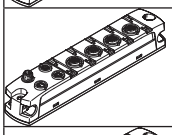
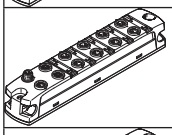
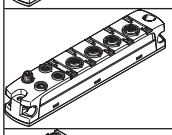
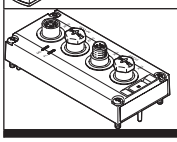
Peripherals overview



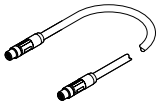
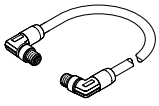
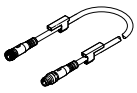
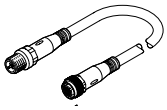
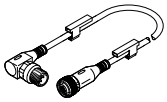
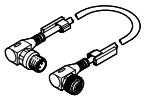
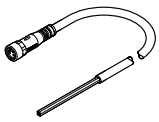
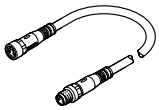
		Type	Description	→ Page/Internet
[1]	Bus interface	CPX-AP-I-PN-M12 CPX-AP-I-PB-M12 CPX-AP-I-EC-M12 CPX-AP-I-EP-M12	Connection of the CPX-AP-I to a higher-order controller	630
[2]	Module with M8 connections	CPX-AP-I-4DI-M8-3P CPX-AP-I-8DI-M8-3P CPX-AP-I-4DI4DO-M8-3P	Digital input and input/output modules	
[3]	Module with M12 connections	CPX-AP-I-4IOL-M12	IO-Link master	
		CPX-AP-I-8DI-M12-5P CPX-AP-I-4AI-U-I-RTD-M12 CPX-AP-I-4DI4DO-M12-5P	Digital and analogue input and input/output modules	
[4]	Electrical interface for valve terminal	VAEM-L1-S	For valve terminal VTUG	
		VMPAL-EPL-AP	For valve terminal MPA-L	mpa-l
[5]	Cover cap	ISK-M8, ISK-M12	For sealing unused electrical connections, connection size M8 and M12	632
[6]	Connecting cable	NEBC	For connecting the modules for communication	631
[7]	Connecting cable	NEBL	For connecting the power supply	
[8]	Connecting cable	NEBL	For power transmission from module to module	

Note
The connecting cables are specially designed for the requirements of the automation system CPX-AP-I. If variants other than those specified in the accessories are used, the correct operation of the system cannot be guaranteed.

Ordering data

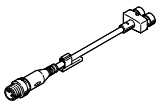
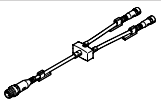
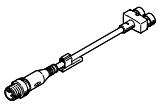
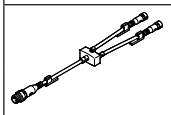
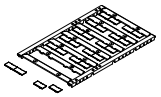
	Description		Part no.	Type
	PROFINET Interface		8086607	CPX-AP-I-PN-M12
	EtherCAT interface		8086609	CPX-AP-I-EC-M12
	EtherNet/IP interface		8086610	CPX-AP-I-EP-M12
	Digital input module	Electrical connection input 4x socket, 3-pin, M8x1	8086605	CPX-AP-I-4DI-M8-3P
		Electrical connection input 8x socket, 3-pin, M8x1	8086600	CPX-AP-I-8DI-M8-3P
		Electrical connection input 4x socket, 5-pin, M12x1	8086602	CPX-AP-I-8DI-M12-5P
	Digital input/output module	Electrical connection input 4x socket, 3-pin, M8x1 Electrical connection output 4x socket, 3-pin, M8x1	8086601	CPX-AP-I-4DI4DO-M8-3P
		Electrical connection input 2x socket, 5-pin, M12x1 Electrical connection output 2x socket, 5-pin, M12x1	8086603	CPX-AP-I-4DI4DO-M12-5P
	Electrical interface for valve terminal VTUG	12 valve positions	8081922	VAEM-L1-S-12-AP
		24 valve positions	8081923	VAEM-L1-S-24-AP

Accessories – Ordering data

	Description				Part no.	Type	PU[1]
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET	1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET	1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET	1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET	1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET	1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET	1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET	1
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET	1
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET	1
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET	1
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET	1
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET	1
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET	1
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET	1
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET	1
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8 x 1, 3-pin, A-coded	0.5 m	541346	NEBU-M8G3-K-0.5-M8G3	1
				1.0 m	541347	NEBU-M8G3-K-1-M8G3	1
				1.5 m	8003133	NEBU-M8G3-K-1.5-M8G3	1
				2.0 m	8003131	NEBU-M8G3-K-2-M8G3	1
				2.5 m	541348	NEBU-M8G3-K-2.5-M8G3	1
				3.0 m	8003132	NEBU-M8G3-K-3-M8G3	1
				3.5 m	559364	NEBU-M8G3-E-3.5-M8G3	1
				5.0 m	541349	NEBU-M8G3-K-5-M8G3	1
				10.0 m	569844	NEBU-M8G3-K-10-M8G3	1
		Straight plug, M12x1, 5-pin, A-coded	Straight socket, M12 x 1, 3-pin, A-coded	0.5 m	8000208	NEBU-M12G5-K-0.5-M12G4	1
				5.0 m	574321	NEBU-M12G5-E-5-Q8N-M12G5	1
				7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5	1
		Angled plug, M12x1, 5-pin, A-coded	Straight socket, M12 x 1, 3-pin, A-coded	0.5 m	8003617	NEBU-M12G5-K-0.5-M12W5	1
				2.0 m	8003618	NEBU-M12G5-K-2-M12W5	1
			Angled socket, M12x1, 3-pin, A-coded	0.5 m	570733	NEBU-M12W5-K-0.5-M12W5	1
				2.0 m	570734	NEBU-M12W5-K-2-M12W5	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4	1
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4	1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4	1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4	1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4	1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4	1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4	1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4	1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4	1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4	1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4	1
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4	1

1) Packaging unit.

Accessories – Ordering data

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			543109	NECU-M-S-D12G4-C2-ET	1
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal		192009	SEA-3GS-M8-S	1
			Solder connection		18696	SEA-GS-M8	1
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal		175487	SEA-M12-5GS-PG7	1
Distributors							
	For inputs	Straight plug, M8x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded	–	8005312	NEDY-L2R1-V1-M8G3-N-M8G4	1
		Straight plug, M12x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded	–	8005311	NEDY-L2R1-V1-M8G3-N-M12G4	1
			2x straight socket, M12x1, 5-pin, A-coded	–	8005310	NEDY-L2R1-V1-M12G5-N-M12G4	1
			2x straight socket, M8x1, 3-pin, A-coded	2.5 m	8005301	NEDY-L2R1-V1-M8G3-U-M12G4-2.5R	1
				5.0 m	8005302	NEDY-L2R1-V1-M8G3-U-M12G4-5R	1
				0.3 m 2.5 m	8032309	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-2.5R	1
				0.3 m 5.0 m	8035484	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-5R	1
			2x straight socket, M12x1, 5-pin, A-coded	2.5 m	8005305	NEDY-L2R1-V1-M12G5-U-M12G4-2.5R	1
				5.0 m	8005306	NEDY-L2R1-V1-M12G5-U-M12G4-5R	1
				0.3 m 2.5 m	8035775	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-2.5R	1
				0.3 m 5.0 m	8035776	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-5R	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			8087174	ASLR-L-X4-612-P240	240
Cover cap							
	For sealing unused connections		For connection M8x1		177672	ISK-M8	10

1) Packaging unit.

Data sheet– PROFINET interface

Interface for operating the automation system CPX-AP-I on PROFINET. Data is transferred on the basis of the Ethernet standard and TCP/IP technology for communication in an industrial environment.

Bus connection

Communication with a higher-order controller takes place via PROFINET with real-time protocol (real time RT or isochronous real time IRT).

The bus connection is provided via two equivalent D-coded M12 sockets which meet Ethernet requirements.

The integrated switch supports star and line topology and enables the network to be divided into segments.

General technical data		
Fieldbus interface		
Protocol		PROFINET IRT
		PROFINET RT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[byte]	1024
Max. address capacity inputs	[byte]	1024
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

General data		
Configuration support		GSDML file
Maximum number of modules		80
Diagnostics via LED		Network error
		Diagnostics per module
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load overvoltage
		Load undervoltage
		Load switch-off
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		Logic supply undervoltage
		APDD invalid
		Communication to AP module interrupted
Diagnostics per internal communication		Module error
		Short circuit/overload in sensor supply
		Short circuit/overload at output
		Undervoltage in load supply
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Data sheet– PROFINET interface

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 80
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 ... +50
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 ... 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Data sheet – EtherCAT interface

Interface for operating the automation system CPX-AP-I on EtherCAT. Data is transferred on the basis of the Ethernet standard for communication in an industrial environment.

General technical data		
Fieldbus interface		
Protocol		EtherCAT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[byte]	2048
Max. address capacity inputs	[byte]	2048
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

General data		
Configuration support		ESI file
Maximum number of modules		80
Diagnostics via LED		Diagnostics per module
		EtherCAT RUN
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load switch-off
		Load overvoltage
		Load undervoltage
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		APDD invalid
		Communication to AP module interrupted
Diagnostics per internal communication		Module error
		Short circuit/overload in sensor supply
		Short circuit/overload at output
		Undervoltage in load supply
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Data sheet – EtherCAT interface

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 90
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 ... +50
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 ... 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Data sheet – EtherNet/IP interface

EtherNet/IP™

Interface for operating the automation system CPX-AP-I in an Ethernet network using the protocols EtherNet/IP or Modbus/TCP. Data is transmitted on the basis of Industrial Ethernet.

General technical data		
Fieldbus interface		
Protocol		EtherNet/IP
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[byte]	1324
Max. address capacity inputs	[byte]	1324
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

General data		
Configuration support		EDS file
Maximum number of modules		80
Diagnostics via LED		Diagnostics per module
		Network status EtherNet/IP
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load switch-off
		Load overvoltage
		Load undervoltage
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		APDD invalid
		Communication to AP module interrupted
Diagnostics per internal communication		Module error
		Short circuit/overload at output
		Short circuit/overload in sensor supply
		Undervoltage in load supply
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Data sheet – EtherNet/IP interface

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 90
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

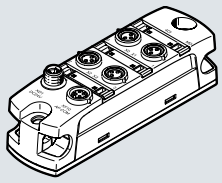
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Data sheet – Digital 4-way input modules

Function
Digital input modules facilitate the connection of electric sensors to IEC 61131-2 type 3 (inductive, capacitive) with an operating voltage of 24 V DC.

- Input modules for 24 V DC operating voltage
- Connection M8x1, 3-pin
- Status and error indication via LED



General technical data		
Type		CPX-AP-I-8DI-M8-3P
Number of inputs		4
Electrical connection, input		
Function		Digital input
Connection type		4 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		3
Switching logic of inputs		PNP (positive switching)
		2-wire sensors to IEC 61131-2
		3-wire sensors to IEC 61131-2
Characteristic curve of inputs		To IEC 61131-2, type 3
Switching level	[V]	Signal 0: ≤5
	[V]	Signal 1: ≥11
Fuse protection inputs (short circuit)		Internal electronic fuse per module
Input debounce time	[ms]	0.1
	[ms]	3
	[ms]	10
	[ms]	20
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN
Connection type		Socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

General data		
Electrical isolation between channel and internal communication		Yes
Electrical isolation between channels		No
Diagnostics via LED		Diagnostics per module
		Status per channel
Diagnostics per internal communication		Short circuit/overload in sensor supply
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
Maximum cable length	[m]	30 inputs
	[m]	50 system communication
Reverse polarity protection		Yes

Data sheet – Digital 4-way input modules

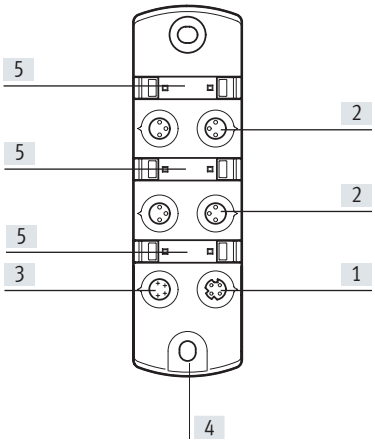
Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. total current of inputs per module	[A]	0.8
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 32
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

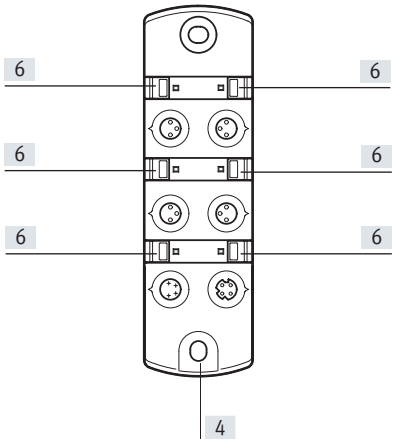
Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 ... +50
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 ... 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information: www.festo.com/sp ➔ Certificates.

Connections and indicators



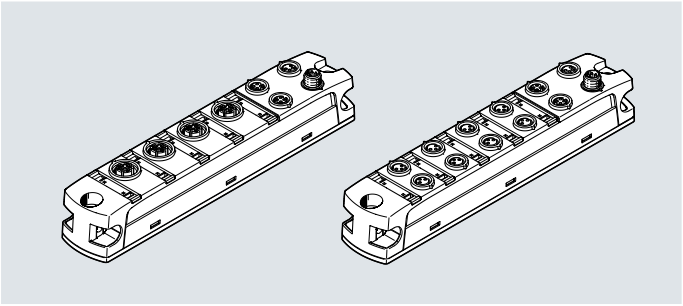


[1] Communication interface
[2] Electrical connection, inputs
[3] Electrical connection, power supply
[4] Earthing connection
[5] Space for inscription label
[6] LED indicators

Data sheet – Digital 8-way input modules

Function
Digital input modules facilitate the connection of electric sensors to IEC 61131-2 type 3 (inductive, capacitive) with an operating voltage of 24 V DC.

- Input modules for 24 V DC operating voltage
- Connection M8x1 3-pin or M12x1 5-pin
- Status and error indication via LED



General technical data			
Type		CPX-AP-I-8DI-M8-3P	CPX-AP-I-8DI-M12-5P
Number of inputs		8	
Electrical connection, input			
Function		Digital input	
Connection type		8 x socket	4 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Switching logic of inputs		PNP (positive switching)	
		2-wire sensors to IEC 61131-2	
		3-wire sensors to IEC 61131-2	
Characteristic curve of inputs		To IEC 61131-2, type 3	
Switching level	[V]	Signal 0: ≤5	
	[V]	Signal 1: ≥11	
Fuse protection inputs (short circuit)		Internal electronic fuse per module	
Input debounce time	[ms]	0.1	
	[ms]	3	
	[ms]	10	
	[ms]	20	
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Shielding		Yes	

General data		
Electrical isolation between channel and internal communication		Yes
Electrical isolation between channels		No
Diagnostics via LED		Diagnostics per module
		Status per channel
Diagnostics per internal communication		Short circuit/overload in sensor supply
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
Maximum cable length	[m]	30 inputs
	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Data sheet – Digital 8-way input modules

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. total current of inputs per module	[A]	1.8
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 32
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

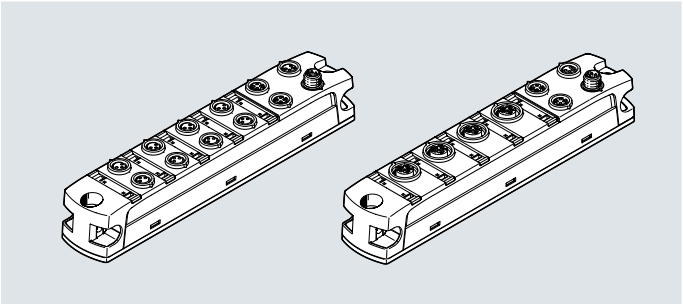
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Data sheet – Digital input/output modules

Function
Digital input/output modules facilitate the connection of electric sensors to IEC 61131-2 type 3 (inductive, capacitive) and of electrical consumers to IEC 1131-2 type 0.5 with an operating voltage of 24 V DC.

- Input/output modules for 24 V DC operating voltage
- Connection M8x1 3-pin or M12x1 5-pin
- Status and error indication via LED



General technical data			
Type		CPX-AP-I-4DI4DO-M8-3P	CPX-AP-I-4DI4DO-M12-5P
Number of inputs		4	
Number of outputs		4	
Electrical connection, input			
Function		Digital input	
Connection type		4 x socket	2 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Switching logic of inputs		PNP (positive switching)	
		2-wire sensors to IEC 61131-2	
		3-wire sensors to IEC 61131-2	
Characteristic curve of inputs		To IEC 61131-2, type 3	
Switching level	[V]	Signal 0: ≤5	
	[V]	Signal 1: ≥11	
Fuse protection inputs (short circuit)		Internal electronic fuse per module	
Input debounce time	[ms]	0.1	
	[ms]	3	
	[ms]	10	
	[ms]	20	
Electrical isolation of inputs between channel and internal communication		Yes	
Electrical isolation of inputs between channels		No	
Electrical connection, output			
Function		Digital output	
Connection type		4 x socket	2 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Switching logic at outputs		PNP (positive switching)	
Characteristic curve of outputs		To IEC 61131-2, type 0.5	
Output delay with resistive load	[µs]	Signal change from 0 to 1: <200	
	[µs]	Signal change from 1 to 0: <200	
Fuse protection outputs (short circuit)		Internal electronic fuse per channel	
Electrical isolation of outputs between channel - internal communication		Yes	
Electrical isolation of outputs between channels		No	
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Shielding		Yes	

Data sheet – Digital input/output modules

General data		
Diagnostics via LED		Diagnostics per module
		Status per channel
		Power supply, load
Diagnostics per internal communication		Load overvoltage
		Load undervoltage
		Load switch-off
		Short-circuit/overload output signal
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		Short circuit/overload in sensor supply
Maximum cable length	[m]	30 outputs
	[m]	30 inputs
	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. power supply per channel	[A]	0.5
Max. total current of inputs per module	[A]	1.8
Max. total current of outputs per module	[A]	2
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 35
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 10
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Materials	
Housing	PA, PC, Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 ... +50
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 ... 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

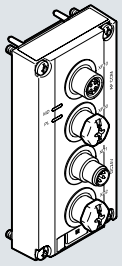
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Data sheet – Electrical interface for valve terminal VTUG

Function
The electrical interface facilitates a valve terminal VTUG to be operated as a component of the automation system CPX-AP-I.

- Indication of status and error messages via LED indicators
- Up to 24 valve positions with up to 48 solenoid coils
- Separate load voltage supply for the connected valves; can be disconnected separately
- Short-circuit disconnection



General technical data			
Type		VAEM-L1-S-12-AP	VAEM-L1-S-24-AP
Maximum number of valve positions		12	24
Maximum number of solenoid coils		24	48
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Shielding		Yes	

General data		
Module parameters		Configuration of voltage monitoring load supply PL
		Response in error state
Diagnostics via LED		Diagnostics per module
		Power supply, load
Diagnostics per internal communication		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		Load overvoltage
		Load undervoltage
		Load switch-off
Maximum cable length	[m]	50 system communication

Technical data – Electrical components			
Type		VAEM-L1-S-12-AP	VAEM-L1-S-24-AP
Nominal operating voltage, electronics/sensors	[V DC]	24	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25	±25
Nominal operating voltage, load	[V DC]	24	24
Permissible voltage fluctuations, load	[%]	±10	±10
Note regarding operating voltage		SELV/PELV power supply units required	SELV/PELV power supply units required
		Note voltage drop	Note voltage drop
Power failure buffering	[ms]	10	10
Mains buffering of load	[ms]	3	3
Maximum power supply		2 x 4 A (external fuse required)	2 x 4 A (external fuse required)
Fuse protection (short circuit)		Internal electronic fuse per channel	Internal electronic fuse per channel
Protection against direct and indirect contact		PELV	PELV
		SELV	SELV
Reverse polarity protection		Yes	Yes
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 34	Typically 34
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 16	Typically 22
Electrical connection, power supply			
Function		Incoming electronics/sensors and load	Incoming electronics/sensors and load
Connection type		Plug	Plug
Connection technology		M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4	4
Electrical connection, power transmission			
Function		Outgoing electronics/sensors and load	Outgoing electronics/sensors and load
Connection type		Socket	Socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4	4

Data sheet – Electrical interface for valve terminal VTUG

Technical data – Mechanical components		
Type of mounting		Screwed on
Connection position		Top
Product weight	[g]	76
Dimensions W x L x H	[mm]	42 x 91 x 30

Materials		
Housing		Reinforced PA
Threaded sleeve		Nickel-plated brass
Note on materials		RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +60
Corrosion resistance class CRC[1)]		2
Relative humidity	[%]	5 ... 95
		Non-condensing
Nominal altitude of use		≤ 2000 m above sea level
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Degree of protection		IP65
		IP67
Note on degree of protection		When mounted
		Unused connections sealed

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Fieldbus modules CTEU

Highlights

+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Fieldbus modules CTEU

Product range overview

Fieldbus systems with CTEU

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.

CC-Link
"Control and Communications Link" (CC-Link) was developed by Mitsubishi Electric and has been available as an open fieldbus network since 1999.

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.

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.

AS-Interface
AS-Interface is a manufacturer-independent, easy and robust installation system. It was developed and represented by the AS-International Association, a loose association of diverse companies from different sectors. AS-Interface has been standardised by IEC 62026-2 and EN 50295.

PROFINET
PROFINET by PROFIBUS and PROFINET International (PI) is the open industrial Ethernet standard for automation and is based on Ethernet TCP/IP and IT standards. PROFINET technology is developed by Siemens and the PROFIBUS user organisation.
PROFINET is standardised in IEC 61158 and IEC 61784.

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.

VARAN
VARAN (Versatile Automation Random Access Network) is a real-time-capable Ethernet bus system that meets the highest requirements when it comes to flexibility and availability. It is an open bus system developed by Austrian company Sigmatek.

Features

The system

- CTEU fieldbus modules for valve terminals
- Festo-specific interface (I-Port)
- Input modules CTSL for recording sensor signals
- Connection for the installation system CPI from Festo
- Direct and easy networking of valve terminals and other devices via a bus connection
- Wide range of applications thanks to high degree of protection to 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, uniformly defined interface (I-Port) enables the fieldbus modules to be used for different types of valve terminal.
The following protocols are currently supported:

- CANopen
- DeviceNet
- CC-Link
- PROFIBUS
- EtherCAT
- AS-Interface
- PROFINET
- EtherNet/IP
- VARAN

Valve terminal configurator

A valve terminal configurator is available online to help you select a suitable valve terminal.
Select the valve terminal with I-Port interface and order the associated CTEU bus nodes. The bus nodes then only need to be placed on the valve terminal.
The ident. code for the valve terminals specifies the valve functions, the number of valves and vacant valve positions, as well as the additional functions and the type of compressed air supply.

As is the case with all Festo products, all valve terminals are supplied:

- Fully pre-assembled
- Equipped with fittings on request
- Tested for electrical function
- Tested for pneumatic function
- Securely packaged
- User documentation can be downloaded free of charge

Peripherals overview

System diagnostics CTEU

Diagnostics LED on the bus node CTEU

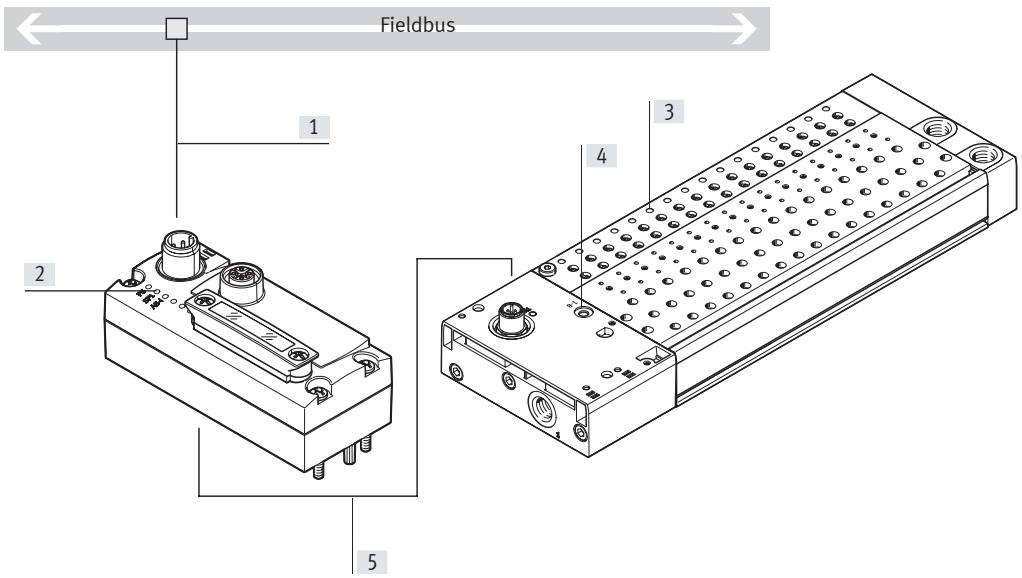
The fieldbus-specific LEDs indicate the communication status and the fieldbus function.

A further LED indicates the status of the power supply:

- Undervoltage/short circuit
- Power supply ensured
- Interruption of voltage

Diagnostic messages via the fieldbus

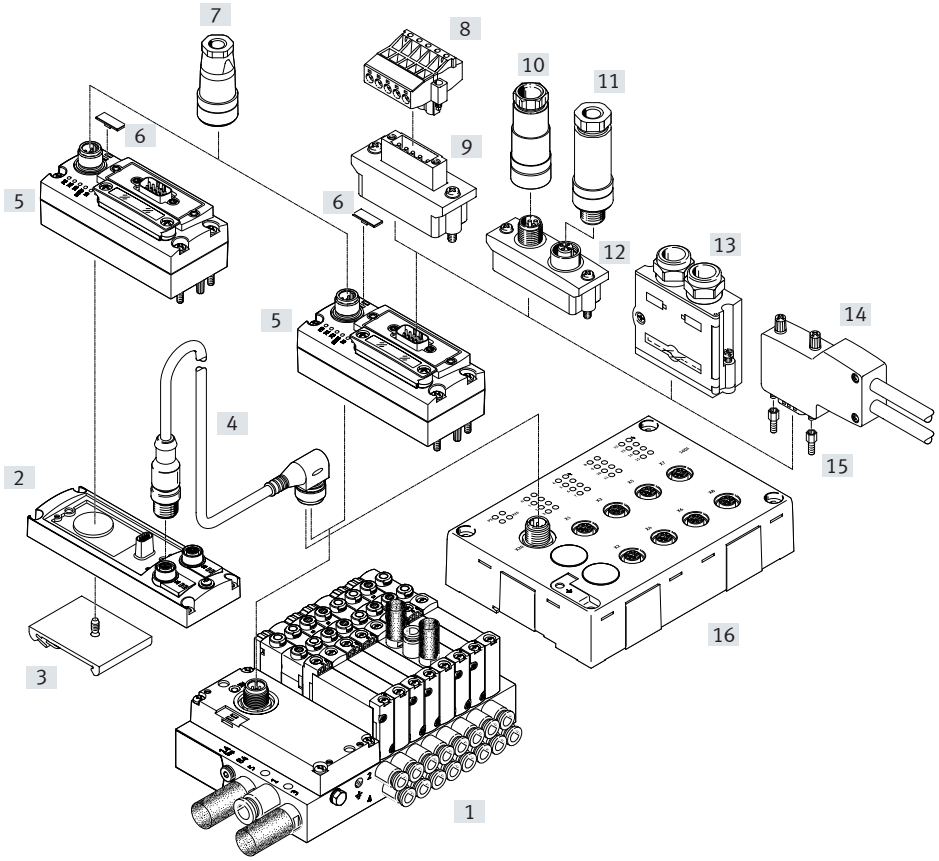
- Configuration error
- Short circuit/overload of an output module
- Short circuit/undervoltage
- Undervoltage/load voltage of the valves
-



[1] Diagnostics via fieldbus
[2] Bus-specific LEDs
[3] Switching status display using LEDs (one per valve on the manifold rail)
[4] Additional communication and voltage status LED for decentralised installation
[5] I-Port interface to the fieldbus module

Peripherals overview

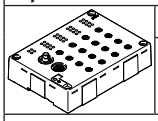
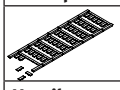
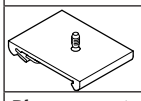
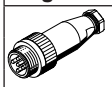
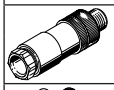
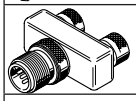
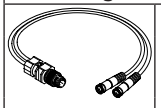
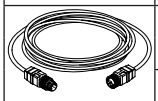
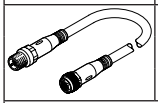
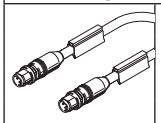
Overview of CTEU with valve terminal VTUG



		Type	Brief description	→ Page/Internet
[1]	Manifold rail	VABM	With I-Port interface, for connecting max. 35 valves	585
[2]	Electrical connection block	CAPC	For connecting a further terminal (2x I-Port interface)	654
[3]	H-rail adapter	CAFM	For electrical connection block CAPC	651
[4]	Connecting cable	NEBU	For IO-Link	651
[5]	Bus node	CTEU	–	655
[6]	Inscription label	ASLR	For bus node	651
[7]	Power supply socket	NTSD/FBSD	For power supply	652
[8]	Terminal strip	FBSD-KL	For open style connection	
[9]	Bus connection	FBA-1	Open style for 5-pin terminal strip	
[10]	Fieldbus socket	FBSD-GD, NECU	For micro style connection, M12, 5-pin	
[11]	Plug	FBS, NECU	For micro style connection, M12, 5-pin	
[12]	Bus connection	FBA-2	Micro style, 2xM12, 5-pin	
[13]	Plug	FBS-SUB-9-BU	Sub-D	
[14]	Plug	FBS-SUB-9-WS	Sub-D, angled	
[15]	Threaded sleeve	UNC	Sub-D mounting bolt	
[16]	Input module	CTSL-D-16E	–	651

Accessories – Ordering data

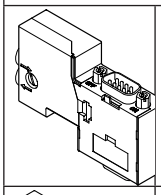
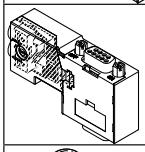
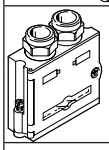
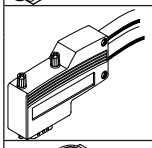
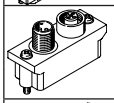
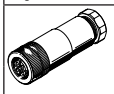
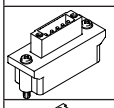
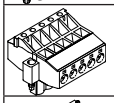
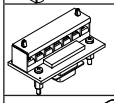
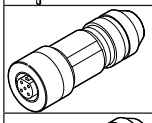
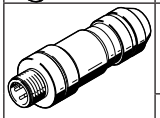
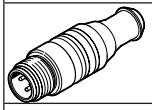
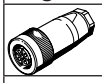
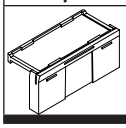
I-Port interface/IO-Link VAEM/Input modules CTSL

	Description		Designation	Part No.	Type
Input modules					
	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
Connection technology for I/O-Link					
	T-adapter M12, 5-pin for IO-Link and load supply		VAEM	171175	FB-TA-M12-5POL
Inscription label for I-Port/IO-Link					
	40 pieces in frame		VAEM	565306	ASLR-C-E4
H-rail mounting					
	–		CAPC	570043	CAFM-F1-H
Plug connector					
	Straight plug, M12	5-pin, PG7	VAEM, CTSL	175487	SEA-M12-5GS-PG7
		4-pin, PG7	CTSL	18666	SEA-GS-7
		4-pin, 2.5 mm² O.D.∅	CTSL	192008	SEA-4GS-7-2,5
	Straight plug, M8	3-pin, solderable	CTSL	18696	SEA-GS-M8
		3-pin, screw-in	CTSL	192009	SEA-3GS-M8-S
	Plug for 2 cables, M12, PG11	4-pin	CTSL	18779	SEA-GS-11-DUO
		5-pin	CTSL	192010	SEA-5GS-11-DUO
	Push-in T-connector	2x socket M12, 5-pin 1x plug M12, 4-pin	CTSL	541596	NEDU-M12D5-M12T4
Connecting cables					
	DUO cable, 1x straight plug M12	2x straight socket M8	CTSL	18685	KM12-DUO-M8-GDGD
		1x straight socket M8 and 1x angled socket M8	CTSL	18688	KM12-DUO-M8-GDWD
		2x angled socket M8	CTSL	18687	KM12-DUO-M8-WDWD
	Connecting cable, M12, 4-pin, straight plug-straight socket	2.5 m	CTSL	539052	NEBU-M12G4-K-2.5-M12G4[1]
		5.0 m	CTSL		NEBU-M12G4-K-5-M12G4[1]
	Connecting cable, M8, 3-pin, straight plug-straight socket	0.5 m	CTSL		NEBU-M8G3-K-0.5-M8G3[1]
		1 m	CTSL		NEBU-M8G3-K-1-M8G3[1]
		2.5 m	CTSL		NEBU-M8G3-K-2.5-M8G3[1]
		5 m	CTSL		NEBU-M8G3-K-5-M8G3[1]
	–		VAEM, CAPC, CTSL	574321	NEBU-M12G5-E-5-Q8N-M12G5
				574322	NEBU-M12G5-E-7.5-Q8N-M12G5
				574323	NEBU-M12G5-E-10-Q8N-M12G5
Connecting cable for bus connection					
	Straight plug, M12x1, 4-pin, D-coded	Straight plug, M12x1, 4-pin, D-coded	0.5 m	8040446	NEBC-D12G4-ES-0.5-S-D12G4-ET
			1 m	8040447	NEBC-D12G4-ES-1-S-D12G4-ET
			3 m	8040448	NEBC-D12G4-ES-3-S-D12G4-ET
			5 m	8040449	NEBC-D12G4-ES-5-S-D12G4-ET
			10 m	8040450	NEBC-D12G4-ES-10-S-D12G4-ET
		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
			10 m	8040454	NEBC-D12G4-ES-10-S-R3G4-ET
		Open end, 4-wire	5 m	8040456	NEBC-LE4-ES-5-D12G4-ET

1) Modular product, further information ➔ online: nebu

Accessories – Ordering data

Bus nodes CTEU-...

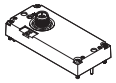
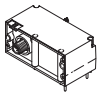
	Description	Designation	Part No.	Type
Bus connection				
	Sub-D socket for CANopen with terminating resistor and programming interface		574588	NECU-S1W9-C2-ACO
	Sub-D plug, straight, with terminating resistor and programming interface		574589	NECU-S1W9-C2-APB
	Sub-D plug, straight, A-coded	CTEU-CO, CTEU-DN	532219	FBS-SUB-9-BU-2x5POL-B
	Sub-D plug, straight	CTEU-CC	532220	FBS-SUB-9-GS-2x4POL-B
	Sub-D plug, straight	CTEU-PB	532216	FFBS-SUB-9-GS-DP-B
	Sub-D plug, angled, A-coded	CTEU-CO	533783	FBS-SUB-9-WS-CO-K
	Sub-D plug, angled	CTEU-PB	533780	FBS-SUB-9-WS-PB-K
	Micro Style bus connection, 2xM12, 5-pin, A-coded	CTEU-CO, CTEU-DN	525632	FBA-2-M12-5POL
	Bus connection M12 adapter, B-coded	CTEU-PB	533118	FBA-2-M12-5POL-RK
	Fieldbus socket for Micro Style connection	CTEU-CO, CTEU-DN, CTEU-CC, CTEU-PB, CTEU-EC	18324	FBSD-GD-9-5POL
	Plug for Micro Style connection, M12, 5-pin	CTEU-CO, CTEU-DN	175380	FBS-M12-5GS-PG9
	Open Style bus connection	CTEU-CO, CTEU-DN	525634	FBA-1-SL-5POL
	Terminal strip for Open Style connection, 5-pin	CTEU-CO, CTEU-DN	525635	FBSD-KL-2x5POL
	Screw terminal bus connection	CTEU-CC	197962	FBA-1-KL-5POL
	Socket M12x1, 5-pin, straight, for self-assembly of a connecting cable, compatible with FBA-2-M12-5POL-RK	CTEU-PB	1067905	NECU-M-B12G5-C2-PB
	Plug M12x1, 5-pin, straight, for self-assembly of a connecting cable, compatible with FBA-2-M12-5POL-RK	CTEU-PB	1066354	NECU-M-S-B12G5-C2-PB
	Plug M12x1, 4-pin, D-coded	CTEU-EC	543109	NECU-M-S-D12G4-C2-ET
	Terminating resistor, M12, B-coded for PROFIBUS	CTEU-PB	1072128	CACR-S-B12G5-220-PB
Fitting				
	Threaded sleeve for Sub-D	CTEU-CO, CTEU-DN, CTEU-CC, CTEU-PB	533000	UNC4-40/M3X8
Plug socket				
	For power supply	CTEU-CO, CTEU-DN	538999	NTSD-GD-9-M12-5POL-RK
Inscription label holder				
	Inscription label holders for EL modules, bag of 10	CTSL	547473	ASCF-H-E2

Ordering data – 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

The electrical supply/transmission of communication data takes place via an M12 plug.

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).

	Description	Part no.	Type
Electrical interface for I-Port interface/IO-Link, outlet on top			
	Actuation of up to 8 double solenoid valve positions	573384	VAEM-L1-S-8-PT
	Actuation of up to 16 double solenoid valve positions	573939	VAEM-L1-S-16-PT
	Actuation of up to 24 double solenoid valve positions	573940	VAEM-L1-S-24-PT
Electrical interface for I-Port interface/IO-Link, outlet on the side			
	Actuation of up to 8 double solenoid valve positions	574207	VAEM-L1-S-8-PTL
	Actuation of up to 16 double solenoid valve positions	574208	VAEM-L1-S-16-PTL
	Actuation of up to 24 double solenoid valve positions	574209	VAEM-L1-S-24-PTL

Data sheet

General technical data			
Types of communication			IO-Link
Electrical connection			• M12 plug, 5-pin • A-coded • Metal thread for shielding
Baud rate	COM3	[kbps]	230.4
	COM2	[kbps]	38.4
Intrinsic current consumption, logic supply PS		[mA]	30
Intrinsic current consumption, 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
Degree of protection to EN 60529			IP67

Fieldbus modules CTEU

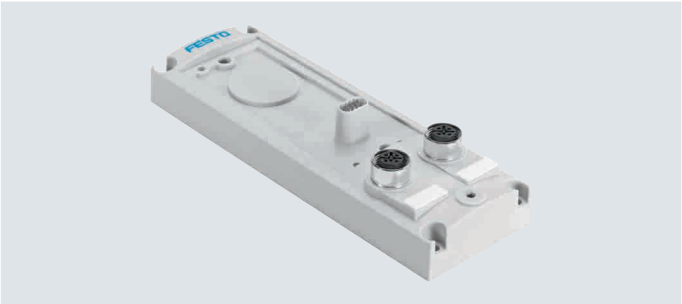
Ordering data – Electrical connection block CAPC

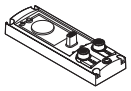
Function

The electrical connection block CAPC enables the decentralised installation of bus nodes CTEU on a valve terminal or input modules with I-Port interface.

Areas 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 block to be installed on an H-rail



	Description	Part no.	Type
Electrical connection block			
	–	570042	CAPC-F1-E-M12

Data sheet

General technical data		
Type		CAPC-F1-E-M12
Fieldbus interface		2 x M12 socket, 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

Materials	
Housing	Reinforced PA
Note on materials	RoHS-compliant

Operating and environmental conditions		
Degree of protection to EN 60529		IP65, IP67
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC		2[1]
CE marking (see declaration of conformity)		To EU EMC Directive[2]

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

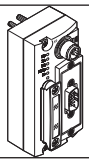
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Ordering data – CTEU-CO

CANopen®

The bus node handles communication between the valve terminal and a higher-order CANopen® master.

The module has basic diagnostic functions. It has 5 integrated LEDs for on-site display. A maximum of 8 byte inputs and 8 byte outputs are transmitted in the cyclic process image.

			Part no.	Type
Bus node				
	CANopen bus node		570038	CTEU-CO
User documentation				
	User documentation – bus node CTEU-CO	English	573768	P.BE-CTEU-CO-OP+MAINT-EN
		Chinese	573772	P.BE-CTEU-CO-OP+MAINT-ZH

Data sheet

Application

Fieldbus connection

The bus connection is established via a 9-pin Sub-D plug as per the CAN in Automation (CiA) specification DS 102 with additional 24 V CAN transceiver supply (option as per DS 102).

The bus connector plug (with degree of protection IP65/IP67 from Festo or degree of protection IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

There are 4 contacts each available for the conductors (CAN_L/CAN_H and 24 V/0 V optional) of the incoming and outgoing bus cables.

The fieldbus parameters and the basic device parameter settings are set on the bus node via DIL switches.

Implementation

Protocol chip used:
- CAN transceiver 82C251

Possible transmission rate:
- 125 kbps
- 250 kbps
- 500 kbps
- 1 Mbps

Max. CANopen cable length (trunk cable):
- 40 m at 1 Mbps
- 100 m at 500 kbps
- 250 m at 250 kbps
- 500 m at 125 kbps

Max. branch cable length (drop cable):
- 0.30 m at 1 Mbps
- 0.75 m at 500 kbps
- 2.00 m at 250 kbps
- 3.75 m at 125 kbps

The following variants can be realised using an adapter:
- 2 x micro style M12, degree of protection IP65, 5-pin, plug and socket
- Open style plug, degree of protection IP20, 5-pin, pin

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Diagnostic behaviour
		Fail-safe response
Additional functions		Emergency message
		Acyclic data access via SDO
Configuration support		EDS files
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	MNS: Network status
		IO: I/O status

Fieldbus modules CTEU

Data sheet

General technical data		
Fieldbus interface		
Protocol		CANopen
Function		Bus connection incoming/outgoing
Transmission rate	[kbps]	125, 250, 500 and 1000
Type		CAN bus
Connection type		Plug
Connection technology		Sub-D
Number of pins/wires		9
Galvanic isolation		Yes
Internal cycle time		1 ms per 1 byte of user data
Note: Optional connection technology with accessories:		Micro style (plug/socket M12x1 A-coded, 5-pin, degree of protection IP65)
		Open style (terminal strip, 5-pin, degree of protection IP20)
		Open style (screw terminal, 5-pin, degree of protection IP20)
Inputs/outputs		
Max. address volume for inputs	[byte]	8
Note on inputs	[byte]	Expandable to max. 16
Max. address volume for outputs	[byte]	8
Note on outputs	[byte]	Expandable to max. 16

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Max. power supply	[A]	4
Power supply		
Function		Electronics and load
Connection type		Plug
Connection technology		M12x1, B-coded to EN 61076-2-101
Number of pins/wires		5

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

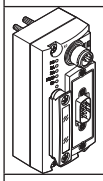
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1]		2
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information is available at www.festo.com/sp ➔ Certificates.

Ordering data – CTEU-DN

The bus node handles communication between the valve terminal and a higher-order DeviceNet® master.

The module has basic diagnostic functions. It has 5 integrated LEDs for on-site display. Up to 8 byte inputs and 8 byte outputs are typically transmitted in the cyclic process image.

			Part no.	Type
Bus node				
	DeviceNet bus node		570039	CTEU-DN
User documentation				
	User documentation – bus node CTEU-DN	English	573745	P.BE-CTEU-DN-OP+MAINT-EN
		Chinese	573779	P.BE-CTEU-DN-OP+MAINT-ZH

Data sheet

Application

Fieldbus connection

The bus connection is established via a 9-pin Sub-D plug with a typical allocation (to EN 50170).

The bus connector plug (with degree of protection IP65/IP67 from Festo or degree of protection IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

The fieldbus parameters and the basic device parameter settings are set on the bus node via DIL switches.

Implementation

Protocol chip used:
- CAN transceiver 82C251

Possible transmission rate:
- 125 kbps
- 250 kbps
- 500 kbps

Max. DeviceNet cable length (trunk cable):
- 100 m at 500 kbps
- 250 m at 250 kbps
- 500 m at 125 kbps

Max. branch cable length (drop cable):
- 6 m at 500 kbps
- 6 m at 250 kbps
- 6 m at 125 kbps

The following variants can be realised using an adapter:
- 2 x micro style M12, degree of protection IP65, 5-pin, plug and socket
- Open style plug, degree of protection IP20, 5-pin, pin

General technical data		
Fieldbus interface		
Protocol		DeviceNet
Transmission rate	[kbps]	125, 250, 500
Type		CAN bus
Connection type		Plug
Connection technology		Sub-D
Number of pins/wires		9
Galvanic isolation		Yes
Internal cycle time		1 ms per 1 byte of user data
Note: Optional connection technology with accessories:		Micro style (plug/socket M12x1 A-coded, 5-pin, degree of protection IP65)
		Open style (terminal strip, 5-pin, degree of protection IP20)
		Open style (screw terminal, 5-pin, degree of protection IP20)
Inputs/outputs		
Max. address volume for inputs	[byte]	8
Max. address volume for outputs	[byte]	8

Fieldbus modules CTEU

Data sheet

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Diagnostic behaviour
		Fail-safe and idle response
Additional functions		Acyclic data access via "Explicit Message"
		QuickConnect
		System status can be displayed using process data
Configuration support		EDS files
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	MNS: Network status
		IO: I/O status

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Max. power supply	[A]	4
Power supply		
Function		Electronics and load
Connection type		Plug
Connection technology		M12x1, B-coded to EN 61076-2-101
Number of pins/wires		5

Materials	
Housing	PA, PC
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

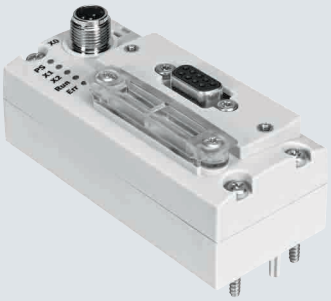
3) Additional information is available at www.festo.com/sp ➔ Certificates.

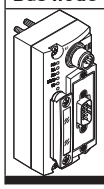
Ordering data – CTEU-CC

CC-Link

The bus node handles communication between the valve terminal and a higher-order master for Control & Communication Link (CC-Link®).

The module has basic diagnostic functions. It has 5 integrated LEDs for on-site display. A maximum of 8 byte inputs and 8 byte outputs are transmitted in the cyclic process image.



		Part no.	Type
Bus node			
	CC-Link bus node	1544198	CTEU-CC

Data sheet

Application

Fieldbus connection

The bus connection is established by a screw terminal with degree of protection IP20, a 9-pin Sub-D socket with degree of protection IP65/IP67 from Festo or a Sub-D socket with degree of protection IP20 from other manufacturers.

The module has a system and load supply, a fieldbus connection and a connection to the valve terminal with serial I-Port interface.

Both connection types have the function of an integrated T-distributor and thus support the connection of an incoming and outgoing bus cable.

The integrated interface with RS485 transmission technology is designed for the typical CC-Link 3-wire connection technology (in accordance with CLPA CC-Link Spec. V1.1).

Implementation

Protocol chip used:
- MFP3 from Mitsubishi

Maximum CC-Link cable length (minimum 0.2 m between devices):
- 100 m at 10 Mbps
- 150 m at 5 Mbps
- 200 m at 2.5 Mbps
- 600 m at 625 kbps
- 1200 m at 156 kbps

When using branch lines: maximum branch line length 8 m, maximum 6 stations per branch line

Length of main string:
- 100 m at 625 kbps, total length of branch line 50 m
- 500 m at 156 kbps, total length of branch line 200 m

Higher baud rates not permitted with a branch line.

The following variant can be realised using an adapter:
- Spring-loaded terminal with degree of protection IP65 (adapter 532220)

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Activating diagnostics
		Fail-safe and idle response
Additional functions		System status can be displayed using process data
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	Err: Data transmission error
		Run: Bus active

Fieldbus modules CTEU

Data sheet

General technical data		
Fieldbus interface		
Protocol		CC-Link
Function		Bus connection incoming/outgoing
Transmission rate	[kbps]	156 ... 10000
Type		Serial interface
Connection type		Socket
Connection technology		Sub-D
Number of pins/wires		9
Galvanic isolation		Yes
Internal cycle time		1 ms per 1 byte of user data
Note: Optional connection technology with accessories:		Open style (screw terminal, 5-pin, degree of protection IP20)
Inputs/outputs		
Max. address volume for inputs	[byte]	16
Max. address volume for outputs	[byte]	16

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 70
Max. power supply	[A]	4
Power supply		
Function		Electronics and load
Connection type		Plug
Connection technology		M12x1, A-coded to EN 61076-2-101
Number of pins/wires		5

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

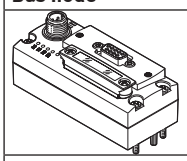
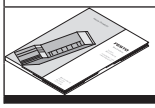
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information is available at www.festo.com/sp ➔ Certificates.

Ordering data – CTEU-PB

The bus node handles communication between the valve terminal and a higher-order master for PROFIBUS DP®.

The module has basic diagnostic functions. It has 4 integrated LEDs for on-site display. A maximum of 8 byte inputs and 8 byte outputs are transmitted in the cyclic process image.

			Part no.	Type
Bus node				
	PROFIBUS bus node		570040	CTEU-PB
User documentation				
	User documentation – bus node CTEU-PB	English	575393	P.BE-CTEU-PB-OP+MAINT-EN
		Chinese	575397	P.BE-CTEU-PB-OP+MAINT-ZH

Data sheet

Application

Fieldbus connection

The bus connection is established via a 9-pin Sub-D socket with the typical PROFIBUS allocation (to EN 50170).

The bus connector plug (with degree of protection IP65/IP67 from Festo or degree of protection IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

An active bus terminal can be connected using the DIL switch integrated in the plug.

The Sub-D interface is designed for controlling network components with a fibre-optic cable connection.

Transmission rate/overview of cable lengths

- RS 485 transceiver used: Analog Devices ADM 2485
- PROFIBUS Slave Controller used: Profichip VPC+S

Possible transmission rate:	Maximum fieldbus length:	Maximum branch line length:
9.6 kbps	1200 m	500 m
19.2 kbps	1200 m	500 m
93.75 kbps	1200 m	100 m
187.5 kbps	1000 m	33.3 m
500 kbps	400 m	20 m
1.5 Mbps	200 m	6.6 m
3 Mbps ... 12 Mbps	100 m	–

Fieldbus modules CTEU

Data sheet

General technical data			
Fieldbus interface			
Protocol			PROFIBUS DP
Function			Bus connection incoming/outgoing
Transmission rate		[kbps]	9.6, 19.2, 93.75, 187.5, 500
		[Mbps]	1.5, 12
Type			PROFIBUS
Connection type			Socket
Connection technology			Sub-D
Number of pins/wires			9
Galvanic isolation			Yes
Internal cycle time			1 ms per 1 byte of user data
Note: Optional connection technology with accessories:			Plug/socket M12x1 B-coded, 5-pin, degree of protection IP65
Inputs/outputs			
Max. address volume for inputs		[byte]	16
Max. address volume for outputs		[byte]	16

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Diagnostic behaviour
		Fail-safe response
Additional functions		Emergency message
		System status via diagnostic test
Configuration support		GSD file
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	BF: Bus fault

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 100
Max. power supply	[A]	4
Power supply		
Function		Electronics and load
Connection type		Plug
Connection technology		M12x1, A-coded to EN 61076-2-101
Number of pins/wires		5

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

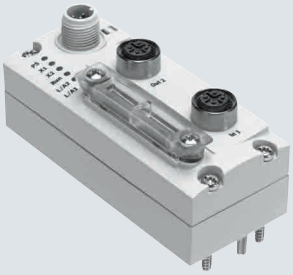
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

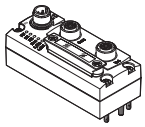
3) Additional information is available at www.festo.com/sp ➔ Certificates.

Ordering data – CTEU-EC

The bus node handles communication between the valve terminal and a higher-order master for EtherCAT®.

The module has basic diagnostic functions.
It has 6 integrated status LEDs for on-site display.
A maximum of 16 byte inputs and 16 byte outputs are transmitted in the cyclic process image.



			Part no.	Type
Bus node				
	EtherCAT bus node		572556	CTEU-EC
User documentation				
	User documentation – bus node CTEU-EC	English	575401	P.BE-CTEU-EC-OP+MAINT-EN
		Chinese	575405	P.BE-CTEU-EC-OP+MAINT-ZH

Data sheet

Application

Fieldbus connection

The bus connection is established via two M12 sockets, D-coded to IEC 61076-2-101 with degree of protection IP65/IP67.
Both connections are equivalent 100BaseTX Ethernet ports with integrated auto MDI functionality (cross-over and patch cables can be used) that are brought together via an internal switch.

The module has a system and load supply, a fieldbus connection and a connection to the valve terminal with serial I-Port interface.

Please observe the applicable specifications such as the cable specifications for Ethernet networks ISO/IEC 11801 and ANSI/TIA/EIA-568-B.

- Maximum cable length (between network stations): 100 m
- Transmission rate: 100 Mbps
- EtherCAT communication chip: ASIC ET1100

EtherCAT bus node

The EtherCAT bus node supports the EtherCAT protocol based on the Ethernet standard and TCP/IP technology to IEEE802.3.
This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs or process equipment. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred.

The data bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel.

The bus node has a system and load supply, EtherCAT input and output port, LEDs for status and diagnostic messages and DIL switches.
Diagnostics is possible directly at the bus node and/or via fieldbus.

The bus node has separate operating and load voltage supplies.
The bus node is mounted on an I-Port compatible device (e.g. valve terminal or electrical connection block) from Festo.
The bus node supplies voltage to downstream devices connected via the I-Port interface.

The following can be set via DIL switch:
- Station addresses
- Diagnostics on/off
- Fail state behaviour

Fieldbus modules CTEU

Data sheet

General technical data		
Fieldbus interface		
Protocol		EtherCAT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Internal cycle time		1 ms per 1 byte of user data
Inputs/outputs		
Max. address volume for inputs	[byte]	16
Max. address volume for outputs	[byte]	16

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Activating diagnostics
		Fail-safe and idle response
Additional functions		Diagnostics object
		Acyclic data access via SDO
		Emergency message
		Modular device profile (MDP)
Configuration support		XML file
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	Run: Operating status (communication status)
		L/A2: Network active (connection status) port 2 (Out)
		L/A1: Network active (connection status) port 1 (In)

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 60
Max. power supply	[A]	4
Power supply		
Function		Electronics and load
Connection type		Plug
Connection technology		M12x1, A-coded to EN 61076-2-101
Number of pins/wires		5

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

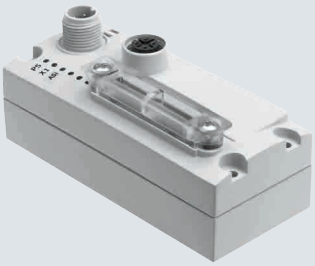
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1]		2
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

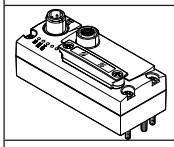
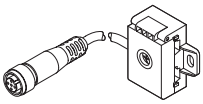
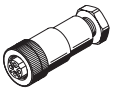
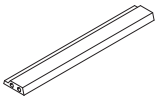
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information is available at www.festo.com/sp ➔ Certificates.

Ordering data – CTEU-AS

The bus node handles communication between the valve terminal and a higher-order AS-Interface® master.

- Activation of up to 16 solenoid coils per valve terminal
- Automatic addressing
- Automatic detection of the number of connected valves



				Part no.	Type
Bus node					
	AS-Interface bus node			572555	CTEU-AS
Cable socket with load voltage supply					
	Flat cable	4-pin socket, M12x1, A-coded	–	572226	NEFU-X24F-M12G4
	Flat cable	4-pin socket, M12x1, A-coded	1 m	572227	NEFU-X24F-1-M12G4
Cable socket without load voltage supply					
	Flat cable	4-pin socket, M12x1, A-coded		572225	NEFU-X22F-M12G4
	Flat cable, screw terminal	4-pin straight socket, M12x1, A-coded		18789	ASI-SD-PG-M12
Flat cable					
	AS-Interface flat cable		Yellow	18940	KASI-1.5-Y-100
			Black	18941	KASI-1.5-Z-100
	Cable sleeve for insulating and sealing the flat cable			165593	ASI-KT-FK
	Cable cap for insulating and sealing the flat cable			18787	ASI-KK-FK

Features

The module has a system and load supply, a bus connection and a connection to the valve terminal with serial I-Port interface.
The module has basic diagnostic functions.
It has 3 integrated LEDs for on-site display.
A maximum of 2 byte inputs and 2 byte outputs are transmitted in the cyclic process image.

Fieldbus modules CTEU

Data sheet

General technical data		
Fieldbus interface 1		
Protocol		AS-Interface
Function		Incoming bus connection
		Power supply
Type		AS-Interface
Connection type		Plug
Connection technology		M12x1, A-coded to EN 61076-2-101
Number of pins/wires		4
Internal cycle time	[ms]	10
Fieldbus interface 2		
Function		Bus connection outgoing
		Power supply
Connection type		Socket
Connection technology		M12x1, A-coded to EN 61076-2-101
Number of pins/wires		4
Inputs/outputs		
Max. address volume for inputs	[byte]	2
Max. address volume for outputs	[byte]	2

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Watchdog enable
		Watchdog disable
Additional functions		Emergency message
		Acyclic data access via SDO
Configuration support		None
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
	Fieldbus-specific	AS-i: AS-Interface mode

Technical data – Electrical components		
Nominal operating voltage	[V DC]	30
Operating voltage range	[V DC]	20 ... 31.6
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 50
Max. power supply	[A]	4

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

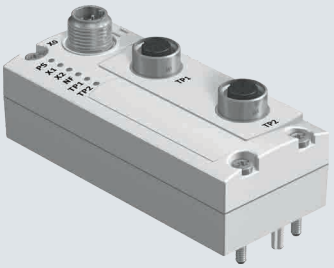
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1]		2
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
Certification		c UL us - Listed (OL)
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

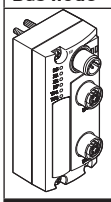
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information is available at www.festo.com/sp ➔ Certificates.

Ordering data – CTEU-PN

The bus node handles communication between the valve terminal and a higher-order PROFINET® master.

The module has basic diagnostic functions. It has 6 integrated LEDs for on-site display. A maximum of 64 byte inputs and 64 byte outputs are transmitted in the cyclic process image.



		Part no.	Type
Bus node			
	PROFINET bus node	2201471	CTEU-PN

Data sheet

Application

Fieldbus connection

The bus connection is established via two M12 sockets, D-coded to IEC 61076-2-101 with degree of protection IP65, IP67.

Both connections are equivalent 100BaseTX Ethernet ports (as per IEEE 802.3).

There is also an integrated switch function that enables free selection of the ports TP1/TP2 for PROFINET communication.

The voltage for the CTEU-PN bus node is supplied via an M12 plug, 5-pin, A-coded.

I-Port interface

The bus node supports two interfaces for connecting I-Port devices.

When mounting the bus node on a valve terminal (direct integration) only one interface is used.

When using the bus node CTEU-PN on the electrical connection block CAPC (installation system CTEL),

both interfaces are available via the electrical connection block.

General technical data		
Fieldbus interface		
Protocol		PROFINET RT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Internal cycle time		1 ms per 1 byte of user data
Inputs/outputs		
Max. address volume for inputs	[byte]	64
Max. address volume for outputs	[byte]	64

Fieldbus modules CTEU

Data sheet

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Additional functions		Conformance class C
		Fast start-up (FSU)
		LLDP
		MRP
		PROFINET IRT
		PROFIenergy
		SNMP
		Shared device
		Web servers
Configuration support		GSDML file
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	NF: Network fault
		TP1: Network active port 1
		TP2: Network active port 2

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 80
Max. power supply	[A]	4

Power supply	
Function	Electronics and load
Connection type	Plug
Connection technology	M12x1, A-coded to EN 61076-2-101
Number of pins/wires	5

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

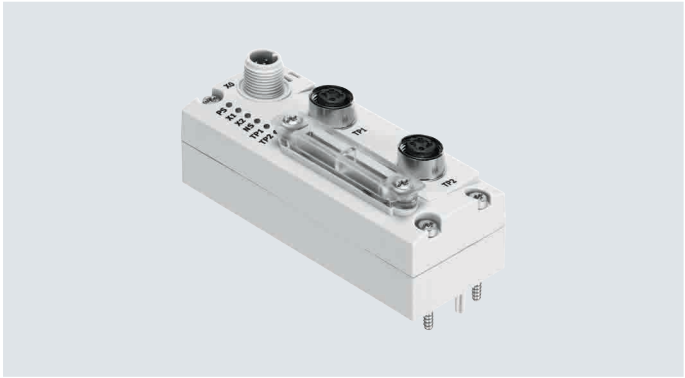
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information is available at www.festo.com/sp ➔ Certificates.

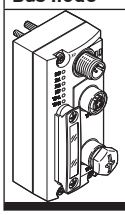
Ordering data – CTEU-EP

EtherNet/IP

The bus node handles communication between the valve terminal and a higher-order master via Ethernet.

The module has basic diagnostic functions. It has 6 integrated LEDs for on-site display. A maximum of 64 byte inputs and 64 byte outputs are transmitted in the cyclic process image.



		Part no.	Type
Bus node			
	EP bus node	2798071	CTEU-EP

Data sheet

Application

The bus node CTEU-EP is a module within the CTEU series which can be used to connect I-Port devices with specification V1.0 to an EtherNet/IP or Modbus/TCP bus.
Depending on the installation, the bus node provides two I-Port interfaces for the connection of I-Port devices.

Installation

Direct integration
- Mounting the bus node on an I-Port device, e.g. valve terminal
- One I-Port interface available (for internal communication)

Adapter CAPC
- Mounting the bus node on the adapter
- Two I-Port interfaces available on the adapter

Power supply
The power is supplied to the bus node and the connected I-Port devices via an M12 plug, 5-pin, A-coded, on the top side of the housing.

Ethernet connection
The bus node CTEU-EP provides two 100BASE-TX Ethernet interfaces (to IEEE802.3) that are galvanically isolated from the rest of the internal electronics.
The integrated switch function differentiates automatically between the incoming and outgoing Ethernet connection, regardless of the network connection used.

General technical data		
Fieldbus interface		
Protocol		EtherNet/IP
		Modbus TCP
Transmission rate	[Mbps]	110/100
Fieldbus interface		2x socket, M12x1, 4-pin, D-coded
Internal cycle time		1 ms per 1 byte of user data
Inputs/outputs		
Max. address volume for inputs	[byte]	64
Max. address volume for outputs	[byte]	64

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Max. power supply	[A]	4

Fieldbus modules CTEU

Data sheet

General data		
Device-specific diagnostics		System diagnostics
		Undervoltage
		Communication errors
Parameterisation		Diagnostic behaviour
		Fail-safe and idle response
Additional functions		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 servers
Configuration support		EDS files
Control elements		DIL switch
LED display	Product-specific	PS: Operating voltage for electronics and load supply
		X1: System status of module at I-Port 1
		X2: System status of module at I-Port 2
	Fieldbus-specific	TP1: Network active port 1
		TP2: Network active port 2
		NS: Network status

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1]		2
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		c UL us - Listed (OL)
		RCM compliance mark
Degree of protection		IP65/IP67

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

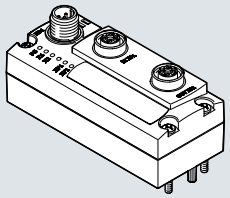
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

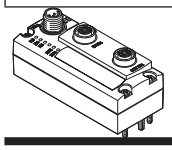
3) Additional information is available at www.festo.com/sp ➔ Certificates.

Ordering data – CTEU-VN

The bus node handles communication between the valve terminal and a higher-order master for VARAN.

The module has basic diagnostic functions. It has 5 integrated LEDs for on-site display. Up to 32 byte inputs and 32 byte outputs are typically transmitted in the cyclic process image.



		Part no.	Type
Bus node			
	VARAN bus node	8087559	CTEU-VN

Data sheet

Application

Bus connection

The bus node provides two VARAN interfaces in line with IEEE802.3 that are galvanically isolated from the rest of the internal electronics.

The Ethernet cables are connected via a 4-pin, D-coded M12 socket.

The metal M12 push-in connectors of the ports on the bus node are connected directly to FE.

The connections are marked as IN XF1 and OUT XF2.

Type of installation

Direct integration:
In the case of direct mounting on an I-Port device, only one I-Port can be used. The connection with the device is established via a 5-pin, A-coded M12 socket.

Decentralised installation of CTEL system with adapter CAPC:
If the bus node is used on an adapter CAPC, the electrical connection of both I-Ports is established via an 8-pin socket strip.

General technical data		
Fieldbus interface		
Protocol		VARAN
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Internal cycle time		1 ms per 1 byte of user data
Function		Bus connection incoming/outgoing
Inputs/outputs		
Max. address volume for inputs	[byte]	32
Max. address volume for outputs	[byte]	32

Fieldbus modules CTEU

Data sheet

General data	
Diagnostics	System diagnostics
	Undervoltage
	Communication errors
Parameterisation	IO-Link mode
	Fail-safe response
Additional functions	FFT
	VARAN splitter
Configuration support	LASAL module
LED display	PS: Operating voltage for electronics and load supply
	X1: System status of module at I-Port 1
	X2: System status of module at I-Port 2
	XF1 AC: network data exchange, port 1
	XF1 LI: network active, port 1

Technical data – Electrical components		
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 65
Max. power supply	[A]	4
Power supply		
Function		Electronics and load
Connection type		Plug
Connection technology		M12x1, A-coded to EN 61076-2-101
Number of pins/wires		5

Technical data – Mechanical components		
Type of mounting		On electrical connection block
		On electrical interface
Product weight	[g]	98
Grid dimension	[mm]	40
Dimensions W x L x H	[mm]	40 x 91 x 50

Materials	
Housing	PA
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

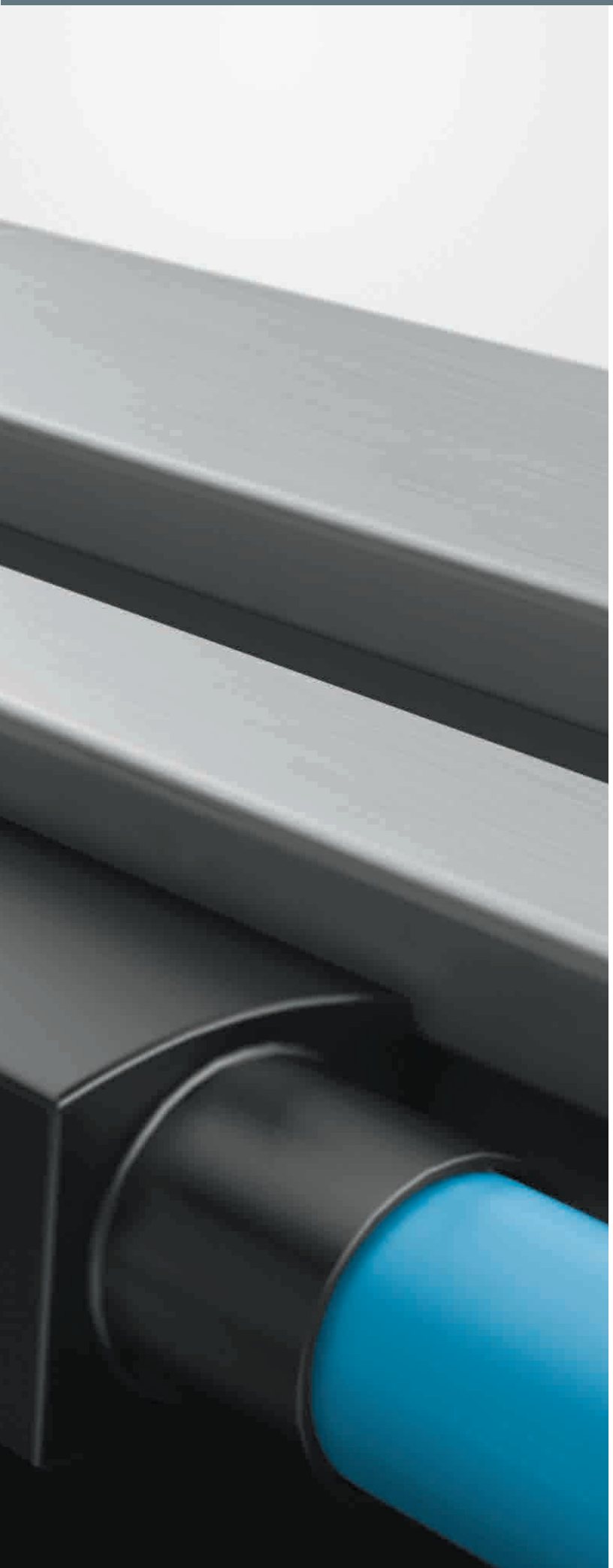
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1]		2
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65/IP67
Note on degree of protection		When mounted
		Unused connections sealed

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information is available at www.festo.com/sp ➔ Certificates.

Fieldbus modules CTEU

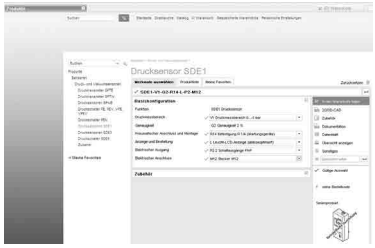
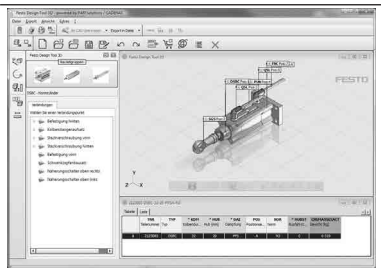
08

Sensors



Contents

Software tools

Configurator		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. A dynamic graphic generated on the basis of the configuration provides visual assistance in selecting the correct product features. The configurator is part of the electronic catalogue and is not available as a separate software program.
Festo Design Tool 3D		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 as a single order item, either completely pre-assembled or as individual parts in a single box. This considerably reduces your bill of materials, and downstream processes such as product ordering, order picking and assembly are significantly simplified. 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 on our website at www.festo.com/FDT-3D in the countries listed above.

Proximity sensors, for T-slot

	 **Proximity sensors SMT-8M-A** ★	 **Proximity sensors SMT-8G**	 **Proximity sensors SDBT**
Electrical connection, connection type	Cable, Cable with plug	Cable, Cable with plug, Plugs	Cable, Cable with plug
Electrical connection, connection technology	M8x1, A-coded to EN 61076-2-104, M12x1, A-coded to EN 61076-2-101, Open end	M8x1, A-coded to EN 61076-2-104, Open end	M12x1, A-coded to EN 61076-2-101, Open end
Electrical connection, occupied pins/wires	2, 3	3	2, 3
Operating voltage range DC	5 ... 30 V	10 ... 30 V	10 ... 30 V SDBT-EX6: 8.2 V
Switching element function	N/C contact, N/C or N/O contact, switchable, N/O contact	N/O contact	N/C contact, N/O contact, switchable, NAMUR
Switching output	NPN, PNP, PNP/NPN, switchable, Non-contacting, 2-wire	NPN, PNP	PNP/NPN, switchable, non-contacting, 2-wire, NAMUR
Description	• Measuring principle: magneto-resistive • Short design • Inserted in the slot from above, flush with the cylinder profile • LED switching status indication • LED operating reserve indication • Cable length 0.1 ... 30 m	• Measuring principle: magneto-resistive • SMT-8G: design ideal for gripper sensing • 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	• Measuring principle: magneto-resistive • Oil-resistant, welding field immune, resistant to welding spatter • Insertable in the slot from above, screw-clamped • LED switching status indication • Cable length 0.3 ... 5 m • SDBT-EX6: to EU Explosion Protection Directive (ATEX)
→ Page/online	**681**	**681**	**701**

Proximity sensors, for C-slot

	 **Proximity sensors SMT-10M**	 **Proximity sensors SMT-10G** ★
Electrical connection	2, 3, Cable, Cable with plug, M8x1, A-coded to EN 61076-2-104, M12x1, A-coded to EN 61076-2-101, Open end	3, Cable, Cable with plug, M8x1, A-coded to EN 61076-2-104, Open end
Operating voltage range DC	5 ... 30 V	10 ... 30 V
Switching element function	N/O contact	N/O contact
Switching output	NPN, PNP, Non-contacting, 2-wire	NPN
Description	• Measuring principle: magneto-resistive • Clamped in C-slot, insertable in the slot from above or lengthwise • LED switching status indication • Cable length 0.3, 2.5 m	• Measuring principle: magneto-resistive • Clamped in C-slot, insertable in the slot from above or lengthwise • LED switching status indication • Cable length 0.3, 2.5 m
→ **Page/online**	**691**	**691**

Inductive sensors

	 **Inductive sensors SIEN**	 **Inductive sensors SIES-8M**
Size	4 mm, 6.5 mm, M12, M12x1, M18, M18x1, M30, M30x1.5, M5x0.5, M8x1	For T-Slot
Switching output	NPN, PNP	NPN, PNP
Switching element function	N/C contact, N/O contact	N/C contact, N/O contact
Electrical connection	Cable, Plugs, 3-pin, 3-wire, M8x1, M12x1	Cable, Cable with plug, 3-pin, 3-wire, Rotatable thread, M8x1
Operating voltage range DC	10 ... 30 V	10 ... 30 V
Description	• 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	• Ideally suited for position sensing for electric axes and grippers with T-slot • Flush mounting • Switching status indication with 2 LEDs for better visibility regardless of the direction from which it is approached • Single inductive sensor for 8 slot with patented LED status indicator
→ **Page/online**	**spae**	**sies**

Product overview

Position sensors

	 **Position transmitters SDAS-MHS**	 **Position sensors SRBS** ★	 **Position transmitters SDAT-MHS**
Design type	For T-slot	Round	For T-slot
Position measuring range	≤52000 µm	›270 …	0 … 160000 µm
Analogue output	50 mA	50 mA	100 mA, 4 - 20 mA mA
Electrical connection, connection type	Cable, Cable with plug	Cable with plug	Cable with plug
Electrical connection, connection technology	Open end, M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Electrical connection, occupied pins/wires	4	4	4
Description	• Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space • Measuring principle: magnetic Hall • Suitable for T-slot • LED status indicator • Suitable for use with energy chains and robots • Cable length 0.3, 2.5 m	• Used to detect rotation of the shaft on rotary drives DRVS and DSM • Sensor can be quickly mounted without having to manually search for switching points • Simple and reliable operation using just one pushbutton directly on the device	• Measuring principle: magnetic Hall • Insertable in the slot from above, screw-clamped • Suitable for use with energy chains and robots • LED status indicator • Cable length 0.3 m • Programmable IO-Link®/switching output
➔ Page/online	**709**	**srbs**	**715**

Position sensors

	 **Position transmitters SMAT-8E**	 **Position transmitters SMAT-8M**
Design type	For T-slot	For T-slot
Position measuring range	48 … 52 mm	40 mm
Analogue output	0 - 10 V V, 4 - 20 mA mA	0 - 10 V V
Electrical connection, connection type	Cable with plug, Plugs	Cable with plug
Electrical connection, connection technology	M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Electrical connection, occupied pins/wires	4	4
Description	• Measuring principle: magnetic Hall • Current and voltage signal at the analogue output • Insertable in the slot lengthwise • Suitable for use with energy chains and robots • LED status indicator • Cable length 2.5, 5 m	• Measuring principle: magnetic Hall • Displacement-proportional analogue output signal • Insertable in the slot, central clamping • Suitable for use with energy chains and robots • LED status indicator • Cable length 0.3 m
➔ Page/online	**smat-8e**	**smat-8m**

Pressure and vacuum sensors

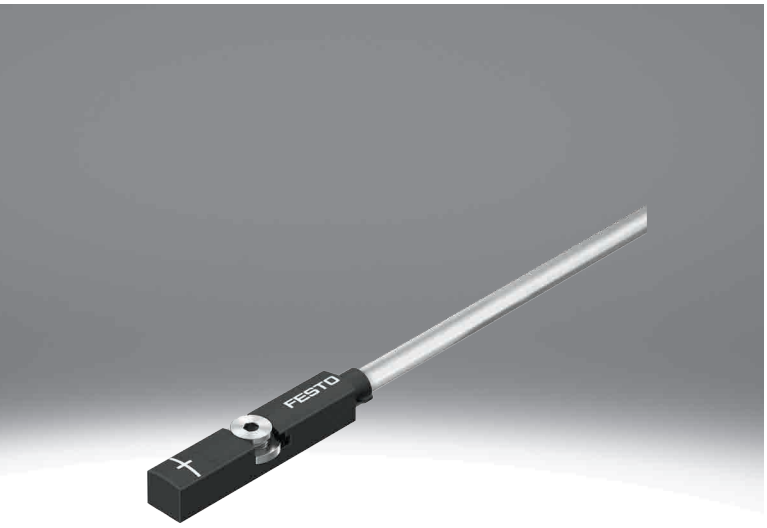
	 **Pressure sensors SPAN** ★	 **Pressure sensors SPAE**	 **Pressure sensors SPAU**	 **Pressure transmitters SPTE**
Pressure measuring range	-1 ... 16 bar	-1 ... 10 bar	-1 ... 16 bar	-1 ... 10 bar
Switching element function	N/C or N/O contact, switchable	N/C contact, N/O contact, Switchable	N/C or N/O contact, switchable	
Pneumatic connection	Male thread 1/8 NPT, Female thread G1/8, M5, For tubing O.D. 4‹0x00A0›mm, Male thread G1/8, R1/8	Flange, Cartridge 10‹0x00A0›mm, Push-in sleeve QS-4, QS-6, QS-3, QS-4	1/8 NPT, Flange, G1/8, M5, M7, QS-4, QS-5/32, QS-6, R1/4, R1/8	Flange, Cartridge 10‹0x00A0›mm, Push-in sleeve QS-4, QS-6, QS-3, QS-4
Electrical connection	Plugs, Square design, 4-pin	Cable, Open end, 3-wire		Cable, Open end, 3-wire
Display type	Illuminated LCD	LED indicator, 2-digit	Illuminated LCD, LED	
Description	• For monitoring compressed air and non-corrosive gases • For network monitoring, regulator monitoring, leak testing, object detection • Relative measurement method based on a piezoresistive measuring cell • Serial communication integrated using IO-Link® 1.1 • Compact design 30x30 mm • High-contrast display with blue backlight	• 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 measured value • All parameters entered can be transferred to other SPAEs (replicating function) • Communication interface IO-Link®	• For monitoring compressed air and non-corrosive gases • With or without display • Transfer of the pressure value as switching signal, analogue signal or via IO-Link® to the connected control system • Maximum versatility thanks to a wide range of pneumatic adaptations and switchable electrical outputs	• Piezoresistive pressure sensor • Measured variable: relative pressure • Cable length 2.5 m • Compact: 8-bracket wall mount for manifold mounting
➔ Page/online	**721**	**spae**	**spau**	**spte**

Flow sensors

Type	 **Flow transmitters SFTE**	 **Flow sensors SFAH**
Flow measuring range end value		0.1 ... 200 l/min
Operating medium	Nitrogen, Compressed air ISO‹0x00A0›8573-1:2010 [6:4:4]	Nitrogen, Argon, Compressed air ISO‹0x00A0›8573-1:2010 [6:4:4]
Operating pressure	-0.9 ... 10 bar	-0.9 ... 10 bar
Pneumatic connection	Female thread M5, For push-in connector O.D. 3‹0x00A0›mm, 4‹0x00A0›mm	Female thread G1/4, G1/8, For tubing O.D. 4‹0x00A0›mm, 6 mm, 8‹0x00A0›mm
Electrical connection, connection type	Cable, Cable with plug	Plugs
Electrical connection, connection technology	M8x1, A-coded to EN 61076-2-104, Open end	Connection pattern L1J, M8x1, A-coded to EN 61076-2-104
Description	• Compact design • Universal flow detection • Simple installation • Reliable pick & place application for extremely small workpieces	• Process air, compressed air, forming gas consumption and pneumatic object monitoring, handling 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
➔ Page/online	**sfte**	**sfah**

Product overview

Proximity sensors SMT-8



Highlights

+ SMT-8: magneto-resistive measuring principle
+ SMT-8G: design ideal for gripper sensing
+ 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
+ SMT-8-...-Ex2: variant for use in potentially explosive areas

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Proximity sensors SMT-8

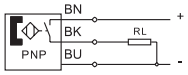
Product range overview

Design	Type of mounting	Measuring principle	Type	Operating voltage range	Switching output	Switching element function
For T-slot	Insertable in the slot from above, flush with the cylinder profile	Magneto-resistive	SMT-8M-A	5 ... 30 V DC	PNP	N/O contact
						N/C contact
					NPN	N/O contact
					Non-contacting, 2-wire	N/O contact
	Insertable in the slot lengthwise	Magneto-resistive	SMT-8G	10 ... 30 V DC	PNP, NPN	N/O contact

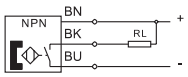
Peripherals overview – SMT-8M

Function

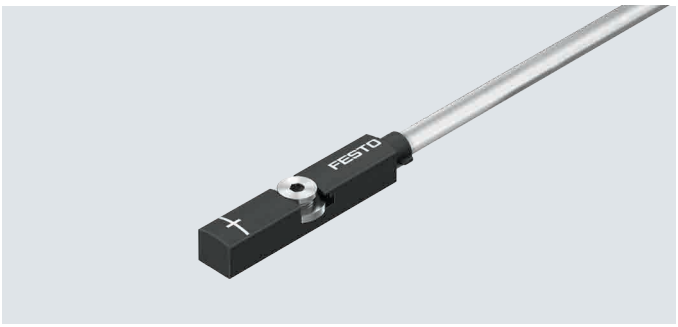
PNP, N/O contact, with cable

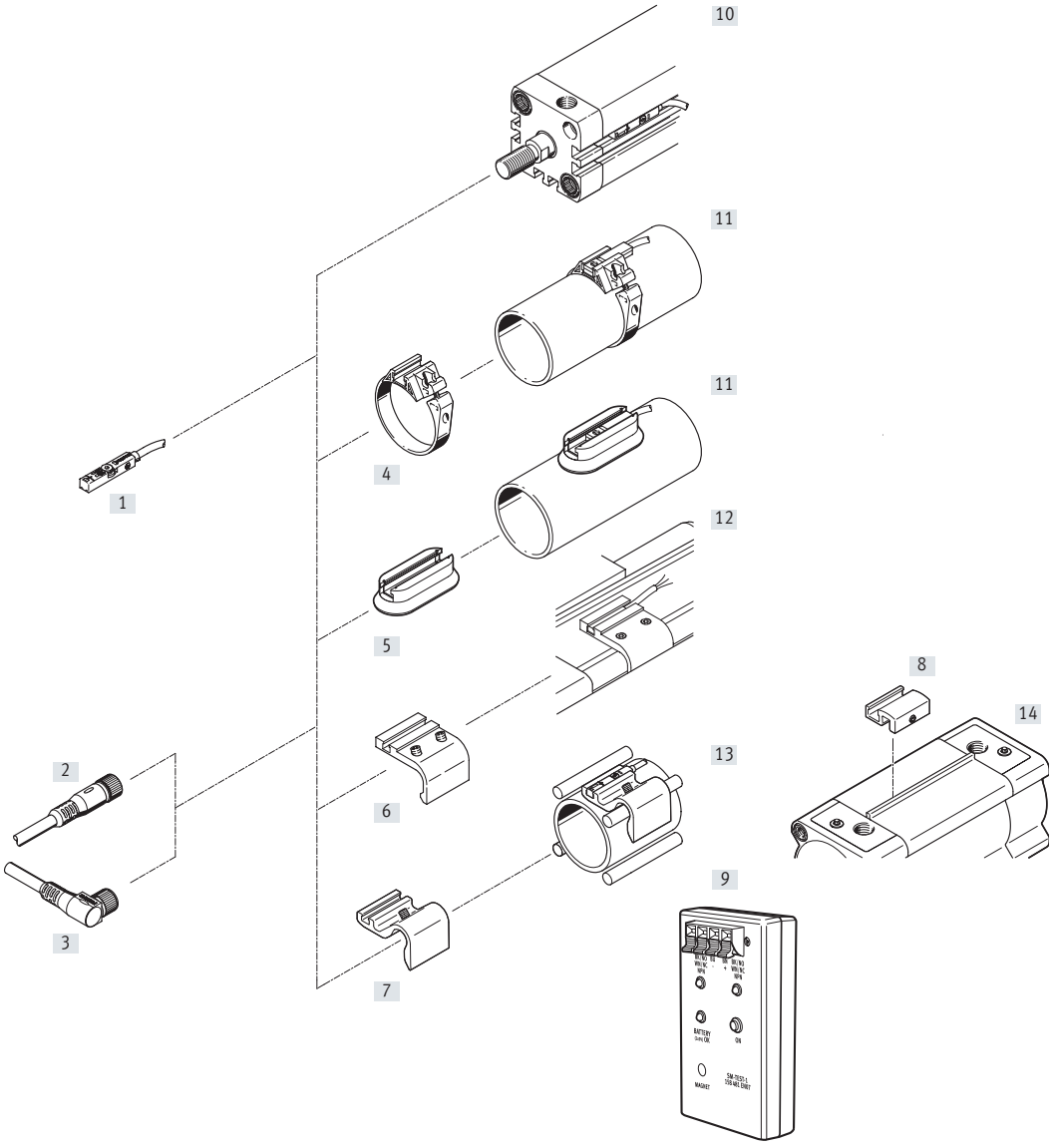


NPN, N/O contact, with cable



- Magneto-resistive measuring principle
- Insertable in the slot from above, does not protrude over the cylinder profile
- Variant Ex2 for use in potentially explosive areas in zones 2 and 22





Peripherals overview – SMT-8M

		→ Page/ Internet
Proximity switches		
[1]	SMT-8M-A-..., with cable	683
Connecting cables		
[2]	NEBU-M...G...	684
[3]	NEBU-M...W...	
Mounting kits and accessories		
[4]	Mounting kit SMBR	684
[5]	Mounting kit CRSMB, corrosion-resistant	
[6]	Mounting kit SMB-8-FENG	
[7]	Sensor bracket DASP-M4-...	
[8]	Mounting kit SMB-8-C	
[9]	Sensor tester SM-TEST-1	sm-test

		→ Page/ Internet
Drives		
[10]	Drives with T-slot	–
[11]	Round cylinders	–
[12]	Standards-based cylinders DSBC	–
[13]	Drives with tie or mounting rod	–
[14]	Standards-based cylinders DSBF	–

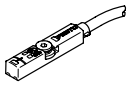
Ordering – Modular product system

Size	8	Conditi-ons	Code	Enter code
Module no.	574333			
Function	Proximity switch for T-slot, electronic		SMT-8M	SMT-8M
			–	–
Series	Short design		A	A
			–	–
Switching output	3-wire PNP N/O contact		PS	
	3-wire NPN N/O contact		NS	
	3-wire PNP N/C contact		PO	
	2-wire PNP N/O contact		ZS	
	PNP / NPN, switchable		PNS	
	PNP N/C contact / N/O contact, switchable		PSO	
	3-wire NPN N/C contact		NO	
			–	–
Rated operating voltage [V DC]	24		24V	24V
			–	–
Cable characteristic	Cable chain + robot		E	E
			–	–
Cable length [m]	0.1 ... 30 (0.1 ... 5.0 in increments of 0.1, 5.0 ... 30 in increments of 0.5)		...	
			–	–
Cable designation	With inscription label holder			
	Without inscription label holder		N	
			–	–
Connection technology	Open end		OE	
	M8, rotatable thread		M8D	
	M8, snap-on flange		M8	
	M12, rotatable thread		M12	
EU certification	II 3GD to EU Directive 2014/34/EU	[1]	-Ex2	

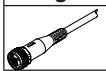
[1] **Ex2**Not with switching output PNS, PSO, minimum cable length 0.2 m

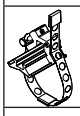
Proximity sensors SMT-8M-A

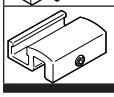
Ordering data

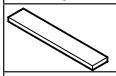
	Switching output	Electrical connection			Cable length	Part no.	Type
		Cable	Cable with plug, rotatable thread				
			M8x1	M12x1	[m]		
	**N/O contact**						
	PNP	–	3-pin	–	0.3	★ 574334	SMT-8M-A-PS-24V-E-0.3-M8D
		3-wire	–	–	2.5	★ 574335	SMT-8M-A-PS-24V-E-2.5-OE
		3-wire	–	–	5	★ 574336	SMT-8M-A-PS-24V-E-5.0-OE
		–	–	3-pin	0.3	★ 574337	SMT-8M-A-PS-24V-E-0.3-M12
		–	3-pin	–	0.3	574342	SMT-8M-A-PS-24V-E-0.3-M8D-Ex2
	NPN	3-wire	–	–	2.5	★ 574338	SMT-8M-A-NS-24V-E-2.5-OE
		–	3-pin	–	0.3	★ 574339	SMT-8M-A-NS-24V-E-0.3-M8D
	Non-contacting	2-wire	–	–	5	★ 574341	SMT-8M-A-ZS-24V-E-5.0-OE-Ex2
	N/C contact						
	PNP	3-wire	–	–	7.5	★ 574340	SMT-8M-A-PO-24V-E-7.5-OE
	Switchable						
	PNP/NPN	–	3-pin	–	0.3	574343	SMT-8M-A-PNS-24V-E-0.3-M8D
	PNP PS/PO	–	3-pin	–	0.3	574344	SMT-8M-A-PSO-24V-E-0.3-M8D

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, straight socket M8x1			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket M8x1			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3
Straight socket M12x1			
	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
	5	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket M8x1			
	2.5	541367	NEBU-M12W5-K-2.5-LE3
	5	541370	NEBU-M12W5-K-5-LE3

	For ∅	Part no.	Type
Mounting kit, max. ambient temperature 120°C			
	8 ... 100	★ 538937	SMBR-8-8/100-S6
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 ∅	Part no.	Type
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				
	–	547941	SMM-8	10
Inscription label				
	23x4 mm	541598	ASLR-L-423	34
Clip				
	–	534254	SMBK-8	1

1) Packaging unit quantity.

Data sheet

General technical data	
Design	For T-slot
Mounting position	Optional
Based on standard	EN 60947-5-2
Certification	c UL us listed (OL)
	RCM compliance mark
KC mark	KC EMC
CE marking (see declaration of conformity)	To EU EMC Directive
	To EU RoHS Directive
Note on materials	Cable halogen-free, oil-resistant
	RoHS-compliant, free of copper and PTFE

Input signal/measuring element		
Measured variable		Position
Measuring principle		Magneto-resistive
Ambient temperature	[°C]	–40 ... +85

Switching output

Type		PS	NS	PO	NO	ZS	PNS	PSO
Switching output		PNP	NPN	PNP	NPN	Non-contacting, 2-wire	PNP, NPN, switchable	PNP
Switching element function		N/O contact	N/O contact	N/C contact	N/C contact	N/O contact	N/O contact	N/C contact, N/O contact, switchable
Repetition accuracy	[mm]	±0.1			0.2	±0.1		
Switch-on time	[ms]	≤ 1.3				≤ 1.0		
Switch-off time	[ms]	≤ 1.4				≤ 1.0		
Max. output current	[mA]	100[1]	100[1]	100[1]	100	80[1]	100	100
Max. output current in mounting kits	[mA]	100				80[1]	100	
Max. switching capacity DC	[W]	2.8	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]	2.8	1.5[2]	2.7	2.7
Max. switching frequency	[Hz]	180						
Voltage drop[1]	[V]	< 1.5				< 6	< 2.5	

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

Output, additional data	
Short circuit protection	Yes
Overload protection	Present

Electronics

Type		PS, NS, PO, NO, ZS	PNS, PSO	Ex2
Operating voltage range	[V DC]	5 ... 30	7 ... 30	5 ... 30
Rated operating voltage	[V DC]	24		
Reverse polarity protection		For all electrical connections		

Electromechanics

Electrical connection		M8	M8D	M12	OE
Electrical connection		Cable with plug, 3-pin			Cable, 3-wire
		M8x1		M12x1	Cable, 2-wire
		–	Rotatable thread		
Outlet direction of connection		In-line			
Cable test conditions		Cable chain: 5 million cycles, bending radius 28 mm			
		Torsional resistance: › 300,000 cycles, ±270°/0.1 m			
		Resistance to bending: to Festo standard; test conditions on request			
Cable length	[m]	0.1 ... 30			
Cable characteristic		Cable chain + robot			
Information on materials: cable sheath		TPE-U(PUR)			
Cable sheath colour		Grey			

Proximity sensors SMT-8M-A

Data sheet

Mechanics			
Electrical connection	M8, M8D, M12	OE	
Type of mounting	Screw-clamped, insertable in the slot from above		
Max. tightening torque [Nm]	0.6		
Housing	black		
	PA-reinforced		
	High-alloy stainless steel		
	Nickel-plated brass	–	

Display/operation			
	PS, NS, PO, NO, ZS	PNS	PSO
Switching status indication	Yellow LED	Yellow LED (for PNP) / white LED (for NPN)	Yellow LED (for N/O contact) / white LED (for N/C contact)
Function reserve indication	Orange LED	–	

Immission/emission	
Ambient temperature with flexible cable installation [°C]	–20 ... +85
Degree of protection	IP65, IP68, IP69K

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
Explosion-proof ambient temperature	-40°C <= Ta <= +70°C
Explosion prevention and protection	Zone 2 (ATEX)
	Zone 22 (ATEX)
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Pin allocation to EN 60947-5-2

M8x1, 2-pin
N/O contact

Pin	Wire colour	Allocation
1	Brown	+
4	Black	–

M12x1, 2-pin
N/O contact

Pin	Wire colour	Allocation
1	Brown	+
4	Black	–

Pin allocation to EN 60947-5-2

M8x1, 3-pin
N/O contact / 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

Pin allocation to EN 60947-5-2

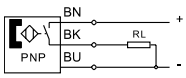
M12x1, 3-pin
N/C contact

Pin	Wire colour	Allocation
1	Brown	+
3	Blue	–
2	White	Output

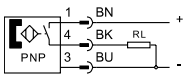
Peripherals overview – SMT-8G

Function

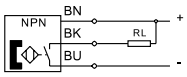
PNP, N/O contact, with cable



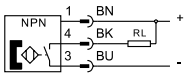
PNP, N/O contact, with plug



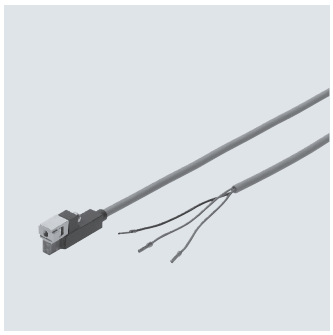
NPN, N/O contact, with cable

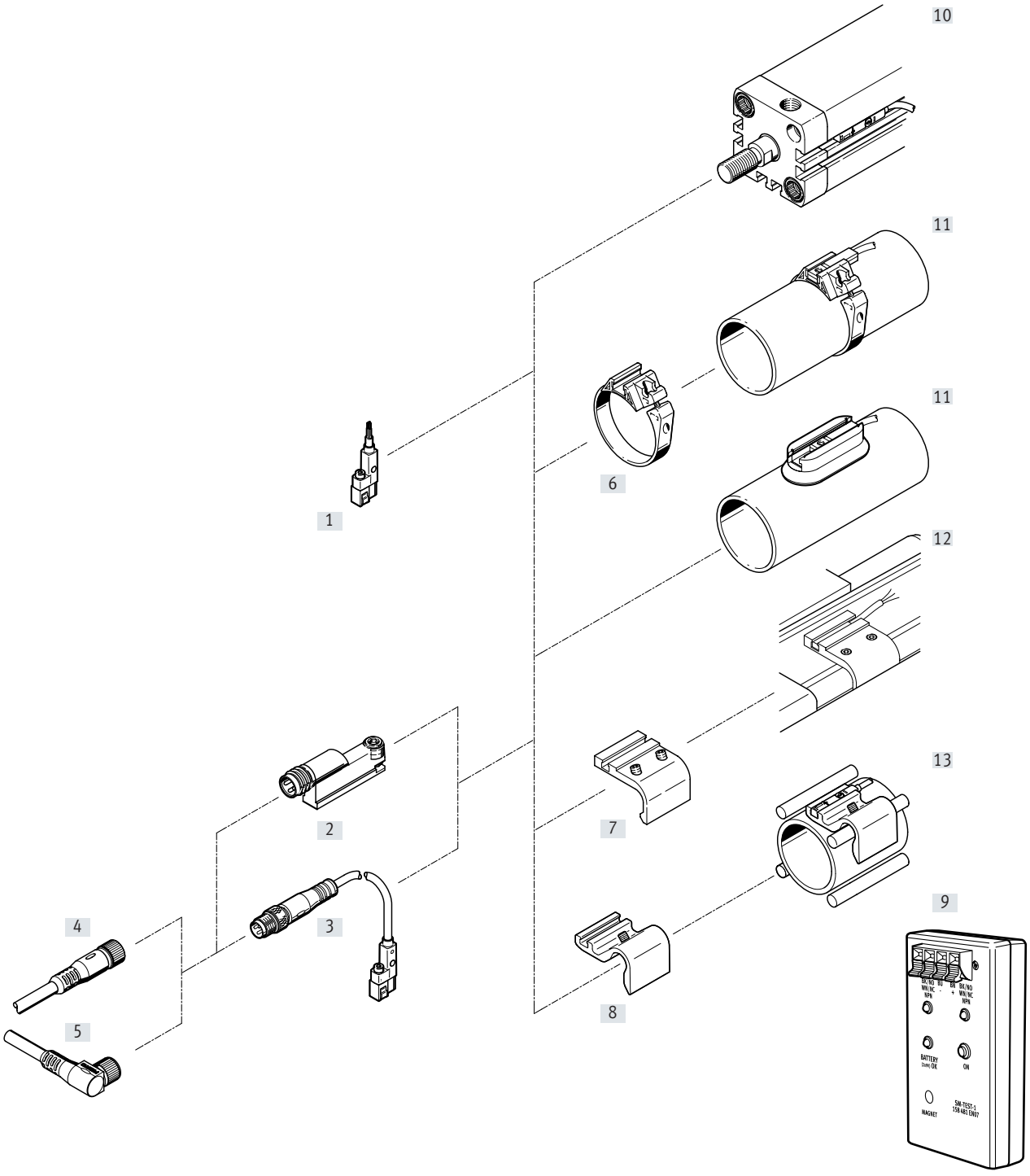


NPN, N/O contact, with plug



- Magneto-resistive
- Inserted in the slot lengthwise
- Design ideal for gripper sensing





Proximity sensors SMT-8G

Peripherals overview

		→ Page/ Internet
Proximity switches		
[1]	SMT-8G-...-OE, with cable	688
[2]	SMT-8-SL-..., with plug	smt-8
[3]	SMT-8G-...-M..., with cable and plug	688
Connecting cables		
[4]	NEBU-M...G...	689
[5]	NEBU-M...W...	
Mounting kits		
[6]	Mounting kit SMBR	689
[7]	Mounting kit SMB-8-FENG	
[8]	Sensor bracket DASP-M4-...	

		→ Page/ Internet
Drives		
[10]	Drives with T-slot	–
[11]	Round cylinder	–
[12]	Standards-based cylinder DSBC	–
[13]	Drives with tie or mounting rod	–
Accessories		
[9]	Sensor tester SM-TEST-1	sm-test
–	Positioning element SMM-8	689
–	Clip SMBK-8	
–	Inscription label ASLR	
–	Safety clip NEAU	neau

Type codes

001	Series
SMT	Proximity sensor

002	Design type
8	For T-slot

003	Sensor version
G	Inserted in the slot lengthwise, optimised for gripper sensing

004	Switching output
NS	3-wire NPN N/O contact
PS	3-wire PNP N/O contact

005	Rated operating voltage
24V	24 V DC

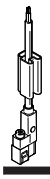
006	Cable characteristic
E	Suitable for energy chains/robot applications

007	Cable length [m]
0.3	0.3
2.5	2.5

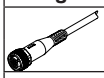
008	Cable outlet
Q	Transverse

009	Electrical connection
OE	Open end
M8D	Cable with M8x1 plug, 3-pin, rotatable thread

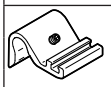
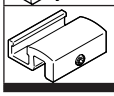
Ordering data

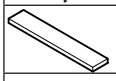
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Cable with plug, rotatable thread, M8x1			
	PNP	3-wire	–	2.5	547859	SMT-8G-PS-24V-E-2.5Q-OE
		–	3-pin	0.3	547860	SMT-8G-PS-24V-E-0.3Q-M8D
	NPN	3-wire	–	2.5	8065028	SMT-8G-NS-24V-E-2.5Q-OE
		–	3-pin	0.3	8065027	SMT-8G-NS-24V-E-0.3Q-M8D

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, straight socket M8x1			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket M8x1			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3
Straight socket M12x1			
	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
	5	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket M8x1			
	2.5	541367	NEBU-M12W5-K-2.5-LE3
	5	541370	NEBU-M12W5-K-5-LE3

	For ∅	Part no.	Type
Mounting kit			
	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 ∅	Part no.	Type
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				
	–	547941	SMM-8	10
Inscription label				
	23x4 mm	541598	ASLR-L-423	34
Clip				
	–	534254	SMBK-8	1

1) Packaging unit quantity.

Proximity sensors SMT-8G

Data sheet

General technical data	
Design	For T-slot
Based on standard	EN 60947-5-2
Certification	RCM compliance mark
	c UL us listed (OL)
CE marking (see declaration of conformity)	To EU EMC Directive
Note on materials	Free of copper and PTFE
	RoHS-compliant

Input signal/measuring element		
Measuring principle		Magneto-resistive
Ambient temperature	[°C]	–20 ... +70

Switching output		PNP	NPN
Switching element function		N/O contact	
Max. output current	[mA]	100	
Max. switching capacity DC	[W]	2.8	

Output, additional data	
Short circuit current rating	Yes
Overload protection	Provided

Electronics		
Operating voltage range	[V DC]	10 ... 30
Reverse polarity protection		For all electrical connections

Electromechanics			
Type		SMT-8G-...-OE	SMT-8G-...-M8D
Electrical connection		Cable, 3-wire	Cable with plug M8x1, 3-pin, rotatable thread
Outlet direction of connection		Lateral	
Cable test conditions		Cable chain: 5 million cycles, bending radius 28 mm	
		Torsional resistance: > 300,000 cycles, ±270°/0.1 m	
		Resistance to bending: to Festo standard; test conditions on request	
Cable length	[m]	2.5	0.3
Cable characteristic		Suitable for energy chains and robot applications	
Information on materials: Cable sheath		TPE-U(PU)	

Mechanics	
Type of mounting	Clamped in T-slot
	Inserted in the slot lengthwise
Information on materials: Housing	Reinforced PA

Display/operation	
Switching status indication	Yellow LED

Immission/emission		
Ambient temperature with flexible cable installation	[°C]	–5 ... +70
Degree of protection		IP65
		IP68

Pin allocation to EN 60947-5-2

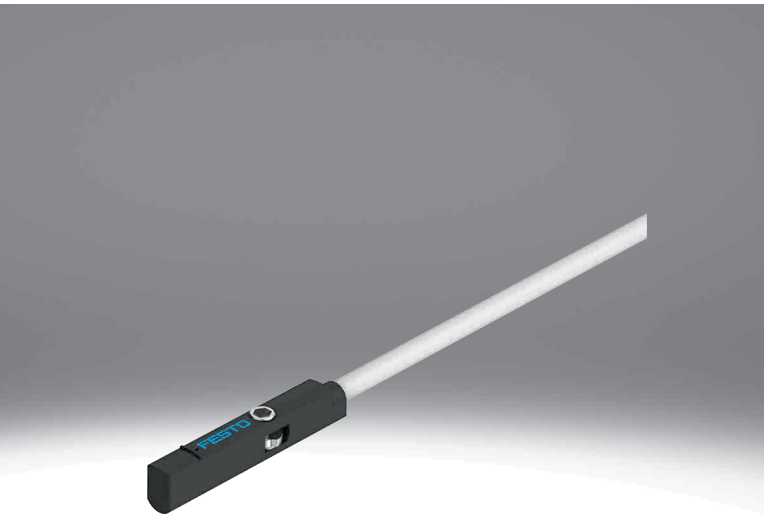
PS

Plug, 3-pin

M8x1

Pin	Wire colour	Allocation
1	Brown	+
3	Blue	–
4	Black	Output

Proximity sensors SMT-10



Highlights

+ SMT-10: magneto-resistive measuring principle
+ SMT-10G: design ideal for gripper sensing
+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

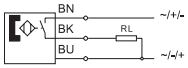
Proximity sensors SMT-10

Product range overview

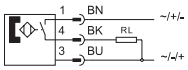
Design	Type of mounting	Measuring principle	Type	Operating voltage range	Switching output	Switching element function
For C-slot	Inserted in the slot from above, flush with the cylinder profile	Magneto-resistive	SMT-10M	5 ... 30 V DC	PNP	N/O contact
					NPN	
					Non-contacting, 2-wire	
	Inserted in the slot lengthwise	Magneto-resistive	SMT-10G	10 ... 30 V DC	PNP, NPN	N/O contact

Peripherals overview – SMT-10M

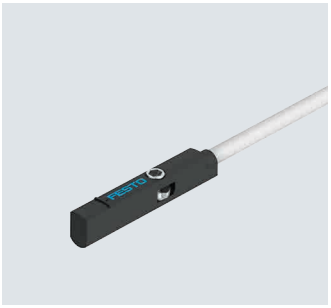
Function
e.g. PNP, N/O contact, with cable

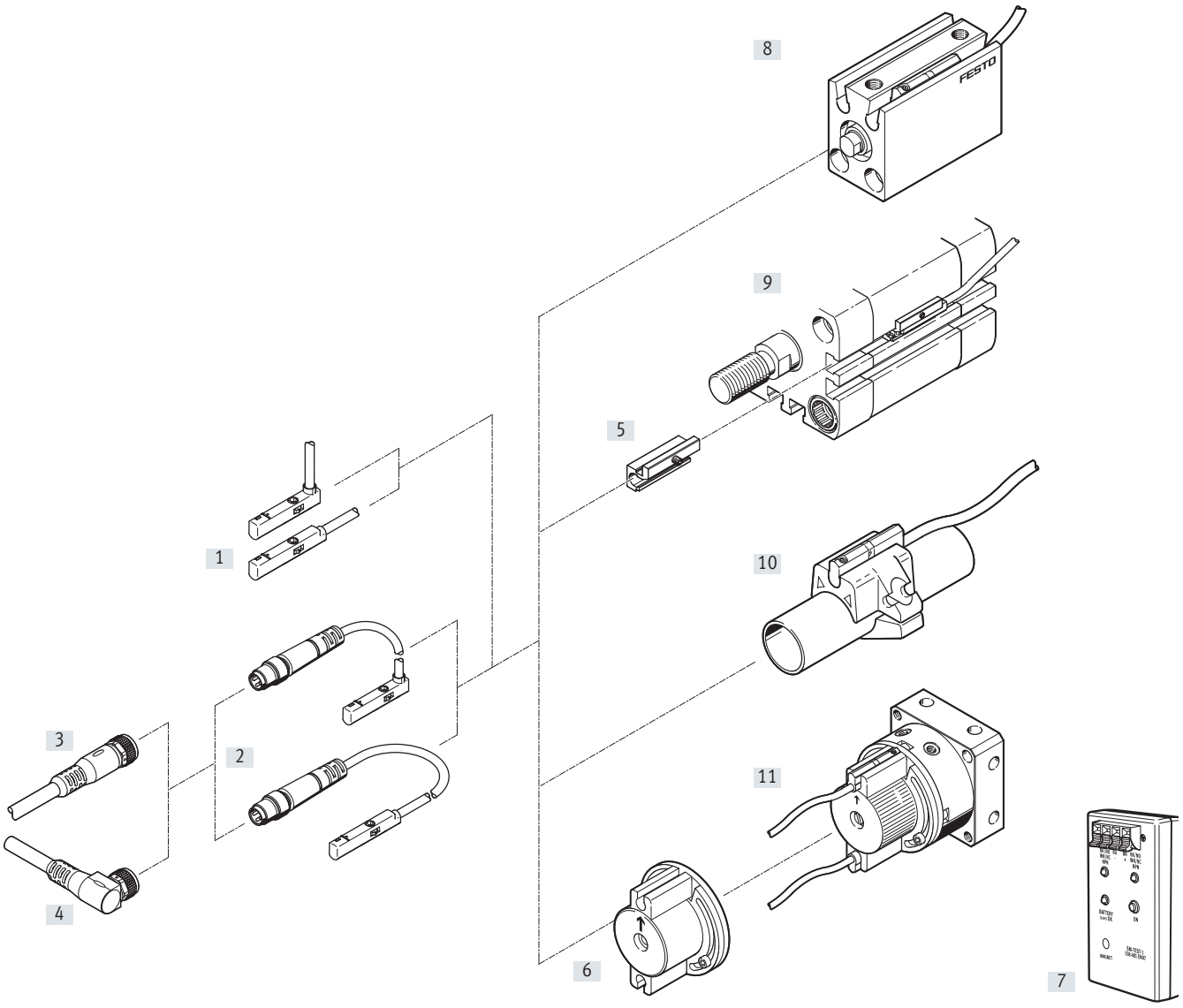


e.g. NPN, N/O contact, with cable



- Magneto-resistive measuring principle
- Inserted in the slot from above, does not protrude beyond the cylinder profile
- Cable clip and retaining bracket for inscription labels holders included in the scope of delivery





Peripherals overview – SMT-10M

		→ Page/ Internet
Proximity sensors		
[1]	SMT-10M-...-OE, with cable	693
[2]	SMT-10M-...-M..., with cable and plug	
Connecting cables		
[3]	Connecting cable NEBU-M...G...	694
[4]	Connecting cable NEBU-M...W...	
Mounting kits and accessories		
[5]	Mounting kit SMBN-10	694
[6]	Mounting kit WSM-...-SME-10	
[7]	Sensor tester SM-TEST-1	sm-test

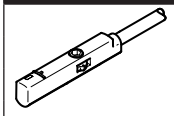
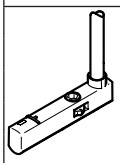
		→ Page/ Internet
Accessories		
–	Positioning element SMM-10	694
–	Clip SMBK-10	
–	Inscription label ASLR	
–	Safety clip NEAU	neau
Drives		
[8]	Drives with C-slot	–
[9]	Drives with T-slot	–
[10]	Round cylinder	–
[11]	Semi-rotary drive DRVS, DSM	drvs, dsm

Ordering – Modular product system

Size		10	Conditions	Code	Enter code
Module no.		551372			
Function		Proximity sensor for C-slot, non-contacting		SMT-10M	SMT-10M
				–	–
Switching output		3-wire PNP N/O contact		PS	
		3-wire NPN N/O contact		NS	
		2-wire N/O contact		ZS	
				–	–
Rated operating voltage	[V DC]	24		24V	24V
				–	–
Cable characteristic		Energy chain + robot		E	E
				–	–
Cable length	[m]	0.2 ... 30; (0.2 ... 5.0 m in 0.1 m increments, 5.0 ... 30 m in 0.5 m increments)		...	
				–	–
Cable outlet		In-line		L	
		Lateral		Q	
				–	–
Cable designation		With inscription label holder		_	
		Without inscription label holder		N	
				–	–
Connection technology		Open end		OE	
		M8, rotatable thread		M8D	
		M8, snap-on flange		M8	
		M12, rotatable thread		M12	

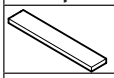
Proximity sensors SMT-10M

Ordering data

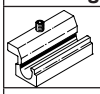
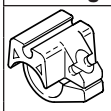
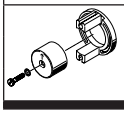
	Switching output	Electrical connection		Cable length [m]	Weight [g]	Part no.	Type
		Cable	Cable with plug, rotatable thread				
	In-line cable outlet, N/O contact						
	PNP	3-wire	–	2.5	16.8	★ 551373	SMT-10M-PS-24V-E-2,5-L-OE
		–	M8x1, 3-pin	0.3	6.7	★ 551375	SMT-10M-PS-24V-E-0,3-L-M8D
	NPN	3-wire	–	2.5	16.8	★ 551377	SMT-10M-NS-24V-E-2,5-L-OE
		–	M8x1, 3-pin	0.3	6.7	★ 551379	SMT-10M-NS-24V-E-0,3-L-M8D
	Non-contacting, 2-wire	2-wire	–	2.5	14.6	★ 551382	SMT-10M-ZS-24V-E-2,5-L-OE
	Lateral cable outlet, N/O contact						
	PNP	3-wire	–	2.5	16.8	551374	SMT-10M-PS-24V-E-2,5-Q-OE
		–	M8x1, 3-pin	0.3	6.7	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
	NPN	3-wire	–	2.5	16.8	551378	SMT-10M-NS-24V-E-2,5-Q-OE
		–	M8x1, 3-pin	0.3	6.7	551380	SMT-10M-NS-24V-E-0,3-Q-M8D
	Non-contacting, 2-wire	2-wire	–	2.5	14.6	551383	SMT-10M-ZS-24V-E-2,5-Q-OE

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, straight socket M8x1			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket M8x1			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3

	Size	Part no.	Type	PU[1]
Positioning element				
	10	547942	SMM-10	10
Inscription label				
	23x4 mm	541598	ASLR-L-423	34
Cable clip				
	–	534255	SMBK-10	

1) Packaging unit quantity.

	For ∅	Part no.	Type
Mounting			
	125 ... 320	537809	SMBN-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
For swivel module			
	6	173205	WSM-6-SME-10
	8	173206	WSM-8-SME-10
	10	173207	WSM-10-SME-10

Data sheet

General technical data	
Design	For C-slot
Conforms to standard	EN 60947-5-2
Certification	RCM compliance mark
	c UL us - Listed (OL)
KC mark	KC EMC
CE mark (see declaration of conformity)	To EU EMC Directive[1)]
	To EU RoHS Directive
Special characteristics	Oil resistant
Note on materials	Cable free of halogen
	Free of copper and PTFE
	RoHS-compliant

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Input signal/measuring element		PS	NS	ZS
Measured variable		Position		
Measuring principle		Magneto-resistive		
Ambient temperature	[°C]	–40 ... +70		
Fused switching field strength				
at –40 ... +70°C	[mT]	1.6 ... 3.0		1.95 ... 2.6
at 25°C	[mT]	1.8 ... 2.8		2.0 ... 2.5

Switching output Type SMT-10M		PS	NS	ZS
Switching output		PNP	NPN	Non-contacting, 2-wire
Switching element function		N/O contact		
Switching output repetition accuracy	[mm]	± 0.2		
Switch-on time	[ms]	≤ 1.3	≤ 1.3	≤ 1.0
Switch-off time	[ms]	≤ 1.4	≤ 1.4	≤ 1.0
Max. switching frequency	[Hz]	150		
Max. output current	[mA]	100		
Max. output current in mounting kits	[mA]	50		
Max. switching capacity DC	[W]	2.8	2.8	2.4
Max. switching capacity DC in mounting kits	[W]	1.5		1.2
Voltage drop	[V]	≤ 1.7	≤ 1.5	≤ 6
Devices can be switched in parallel		5	3	5
Minimum load current	[mA]	0		2.4
Residual current (in new condition at room temperature)	[mA]	< 0.05	< 0.15	< 1.5

Additional output data	
Short circuit current rating	Yes
Overload protection	Present

Electronics		PS/NS	ZS
Rated operating voltage	[V DC]	24	
Operating voltage range	[V DC]	5 ... 30	
Ready-state delay	[ms]	< 45	< 17.2
Reverse polarity protection		For all electrical connections	

Proximity sensors SMT-10M

Data sheet

Electromechanical components									
Type SMT-10M		PS/NS				ZS			
Electrical connection		OE	M8D	M8	M12	OE	M8D	M8	M12
Electrical connection		Cable, 3-wire	Cable with plug, 3-pin			Cable, 2-wire	Cable with plug, 2-pin		
			M8x1	M8x1	M12x1		M8x1	M8x1	M12x1
			Rotatable thread	Snap-on flange	Rotatable thread		Rotatable thread	Snap-on flange	Rotatable thread
Outlet direction of connection		In-line							
		Lateral							
Cable test conditions		Energy chain: 5 million cycles, bending radius 28 mm							
		Torsional resistance: 300,000 cycles, ±270°/0.1 m							
		Resistance to bending: to Festo standard; test conditions on request							
Cable length	[m]	0.2 ... 30							
Cable characteristic		Energy chain + robot							
Information on materials: Cable sheath		TPE-U(PUR)							

Mechanical system		
Type of mounting		Screw-clamped, inserted in the slot from above
Max. tightening torque	[Nm]	0.4
Mounting position		Any
Housing		PA-reinforced
		High-alloy stainless steel

Display/operation	
Switching status indication	Yellow LED

Immission/emission		
Ambient temperature with flexible cable installation	[°C]	–20 ... +70
Degree of protection		IP65
		IP68

Pin allocation to EN 60947-5-2

M8x1, 2-pin
N/O contact

Pin	Wire colour	Allocation
1	Brown	+
4	Black	Output

M8x1, 3-pin
N/O contact

Pin	Wire colour	Allocation
1	Brown	+
3	Blue	–
4	Black	Output

Pin allocation to EN 60947-5-2

M12x1, 2-pin
N/O contact

Pin	Wire colour	Allocation
1	Brown	+
4	Black	Output

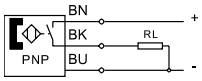
M12x1, 3-pin
N/O contact

Pin	Wire colour	Allocation
1	Brown	+
3	Blue	–
4	Black	Output

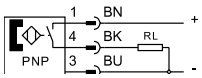
Peripherals overview – SMT-10G

Function

PNP, N/O contact, with cable, 3-wire

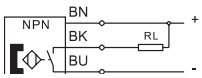


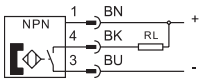
PNP, N/O contact, with plug



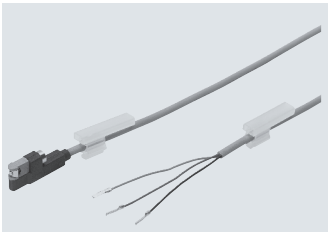
- Magneto-resistive measuring principle

NPN, N/O contact, with cable

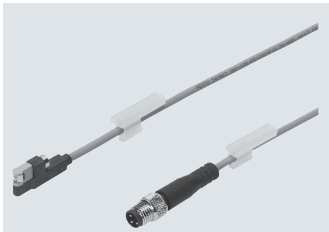




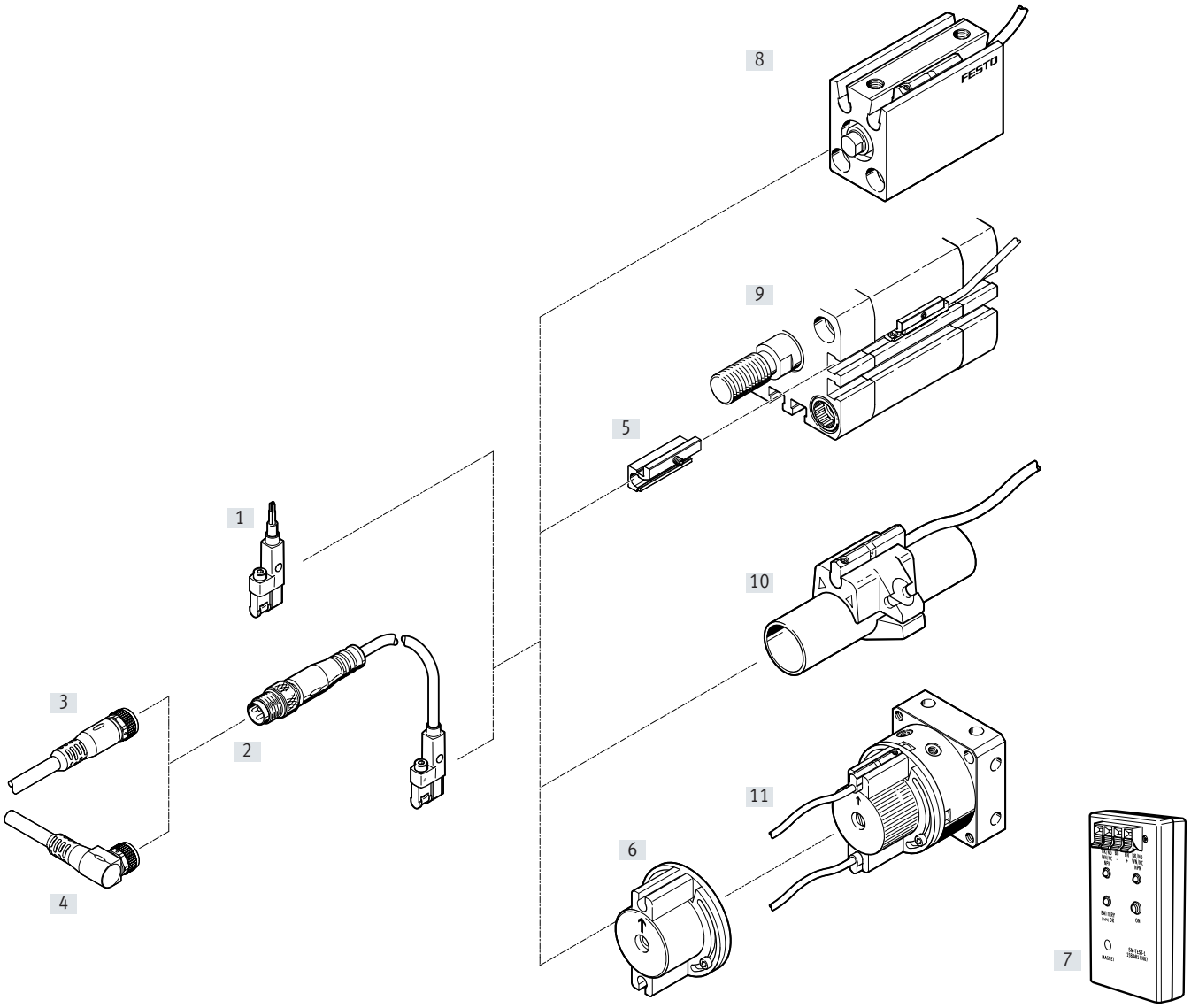
- Insertable in the slot lengthwise
- Design ideal for gripper sensing



SMT-10G-...-OE



SMT-10G-...-M8D



		→ Page/ Internet
Proximity sensors		
[1]	SMT-10G-...-OE, with cable	698
[2]	SMT-10G-...-M..., with cable and plug	
Connecting cables		
[3]	Connecting cable NEBU-M...G...	698
[4]	Connecting cable NEBU-M...W...	
Mounting kits		
[5]	Mounting kit SMBN-10	698
[6]	Mounting kit WSM-...-SME-10	

		→ Page/ Internet
Accessories		
[7]	Sensor tester SM-TEST-1	sm-test
Drives		
[8]	Drives with C-slot	–
[9]	Drives with T-slot	–
[10]	Round cylinder	–
[11]	Semi-rotary drive DSM	drvs, dsm

Proximity sensors SMT-10G

Type code explanation

001	Series
SMT	Proximity sensor

002	Design type
10G	For round slot, inserted in the slot lengthwise

003	Switching output
PS	3-wire PNP N/O contact
NS	3-wire NPN N/O contact

004	Rated operating voltage
24V	24 V

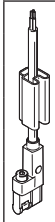
005	Cable characteristic
E	Suitable for energy chains/robot applications

006	Cable length [m]
0.3	0.3
2.5	2.5

007	Cable outlet
Q	Transverse

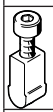
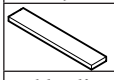
008	Electrical connection
OE	Open end
M8D	Cable with M8x1 plug, 3-pin, rotatable thread

Ordering data

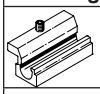
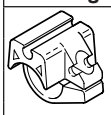
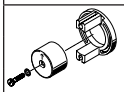
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Cable with plug, rotatable thread M8x1			
N/O contact						
	PNP	3-wire	–	2.5	547862	SMT-10G-PS-24V-E-2.5Q-OE
		–	3-pin	0.3	547863	SMT-10G-PS-24V-E-0.3Q-M8D
	NPN	3-wire	–	2.5	8065030	SMT-10G-NS-24V-E-2.5Q-OE
		–	3-pin	0.3	8065029	SMT-10G-NS-24V-E-0.3Q-M8D

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, straight socket M8x1			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket M8x1			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3

	Size	Part no.	Type	PU[1]
Positioning element				
	10	547942	SMM-10	10
Inscription label				
	23x4 mm	541598	ASLR-L-423	34
Cable clip				
	–	534255	SMBK-10	

1) Packaging unit quantity.

	For ∅	Part no.	Type
Mounting			
	125 ... 320	537809	SMBN-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
For swivel module			
	6	173205	WSM-6-SME-10
	8	173206	WSM-8-SME-10
	10	173207	WSM-10-SME-10

Data sheet

General technical data	
Design	For C-slot
Based on standard	EN 60947-5-2
Certification	RCM compliance mark
	c UL us Listed (OL)
CE marking (see declaration of conformity)	To EU EMC Directive
Note on materials	Free of copper and PTFE
	RoHS-compliant

Input signal/measuring element		
Measuring principle		Magneto-resistive
Ambient temperature	[°C]	–20 ... +70

Switching output		
Switching element function		N/O contact
Max. output current	[mA]	100
Max. switching capacity DC	[W]	2.8

Output, additional data	
Short circuit protection	Yes
Overload protection	Present

Electronics		
Operating voltage range	[V DC]	10 ... 30
Reverse polarity protection		For all electrical connections

Electromechanical components			
Type		SMT-10G-...-OE	SMT-10G-...-M8D
Electrical connection		Cable, 3-wire	Cable with plug M8x1, 3-pin, rotatable thread
Outlet direction of connection		Lateral	
Cable test conditions		Cable chain: 5 million cycles, bending radius 28 mm	
		Torsional resistance: > 300,000 cycles, ±270°/0.1 m	
		Resistance to bending: to Festo standard; test conditions on request	
Cable length	[m]	2.5	0.3
Cable characteristic		Suitable for energy chains and robot applications	
Information on materials: cable sheath		TPE-U(PU)	

Mechanical components	
Type of mounting	Clamped in C-slot
	Insertable in the slot lengthwise
Information on materials: housing	Reinforced PA

Display/operation	
Switching status indication	Yellow LED

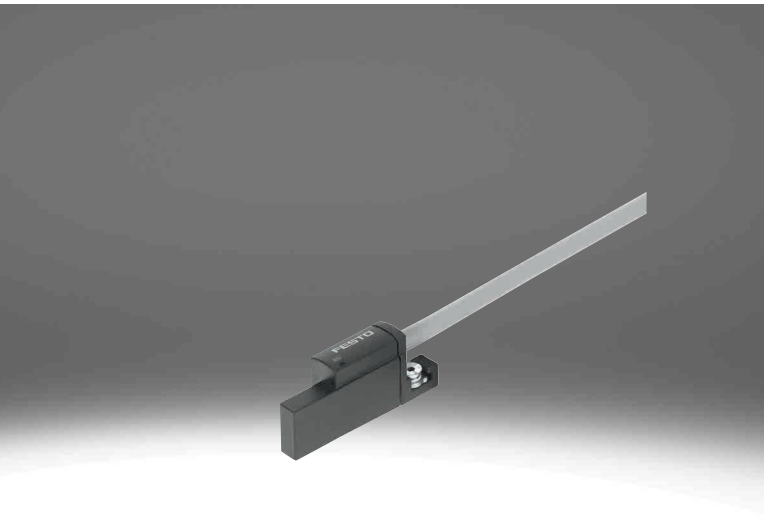
Immission/emission		
Ambient temperature with flexible cable installation	[°C]	–5 ... +70
Degree of protection		IP65
		IP68

Pin allocation to EN 60947-5-2
PS
Plug, 3-pin, M8x1

Pin	Wire colour	Allocation
1	Brown	+
3	Blue	–
4	Black	Output

Proximity sensors SMT-10G

Proximity sensors SDBT



Highlights

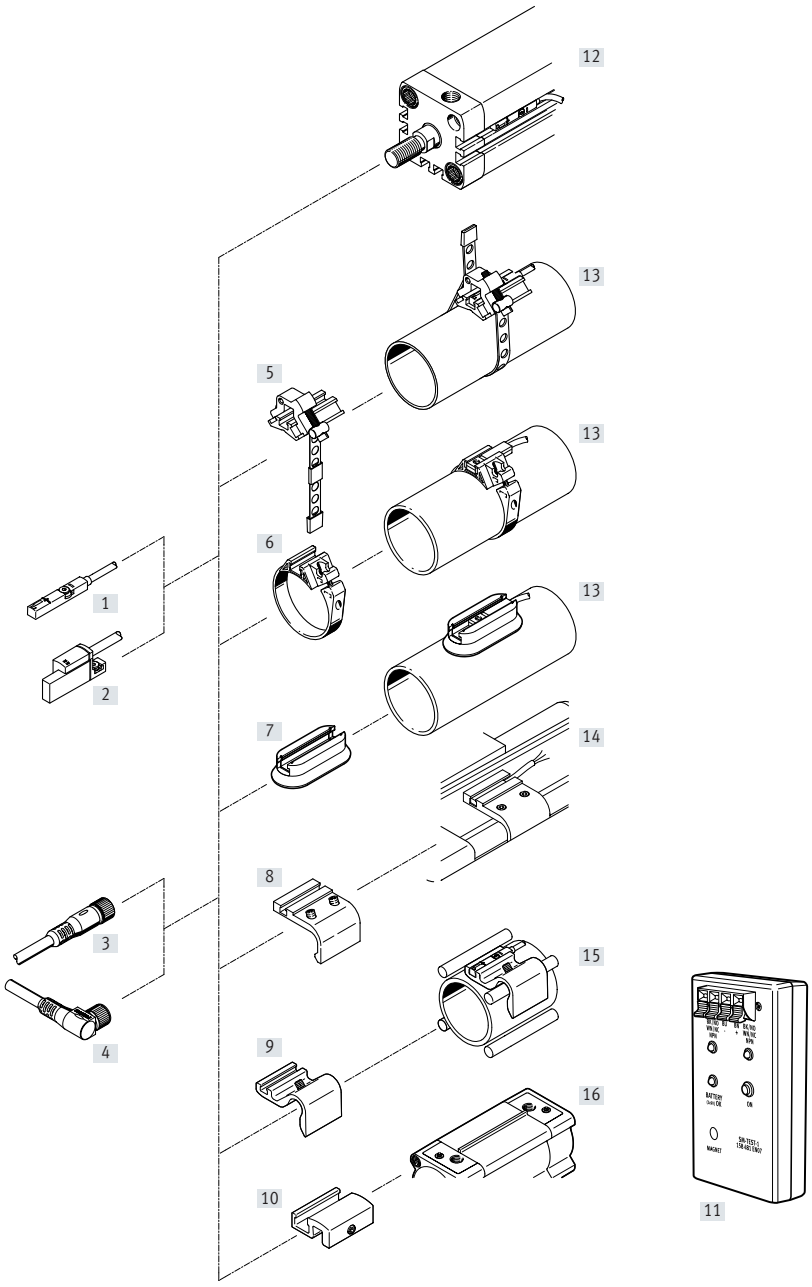
+ Measuring principle: magneto-resistive
+ Oil-resistant, welding field immune, resistant to welding spatter
+ Insertable in the slot from above, screw-clamped
+ LED switching status indication
+ Cable length 0.3 ... 5 m
+ SDBT-EX6: to EU Explosion Protection Directive (ATEX)

Proximity sensors SDBT

Product range overview

Design	Type of mounting	Measuring principle	Type	Operating voltage range	Switching output	Switching element function
For T-slot	**Standard**					
	Screw-clamped, inserted in the slot from above	Magnetic Hall	SDBT-MS	10 ... 30 V DC	PNP/NPN, switchable	N/O/ N/C contact, switchable
	Welding-field-resistant					
	Inserted in the slot from above, screw-clamped	Magneto-resistive	SDBT-BSW	10 ... 30 V DC	PNP	N/O contact
					NPN	
					Non-contacting, 2-wire	
	To EU Explosion Protection Directive (ATEX)					
	Inserted in the slot from above, screw-clamped	Magneto-resistive	SDBT-MS-...-EX6	8.2 V DC	NAMUR	NAMUR

Peripherals overview

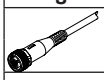


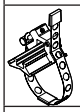
Peripherals overview

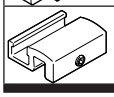
		→ Page/Internet
Proximity switches		
[1]	SDBT-MS-...-EX6, with explosion protection	707
[2]	SDBT-BSW, welding-field-resistant	705
Connecting cables		
[3]	NEBU-M...G...	703
[4]	NEBU-M...W...	
Mounting kits		
[5]	Mounting kit SMBR-8-8/100-S6, heat resistant	703
[6]	Mounting kit SMBR	
[7]	Mounting kit CRSMB, corrosion-resistant	
[8]	Mounting kit SMB-8-FENG	
[9]	Sensor bracket DASP-M4-...	
[10]	Mounting kit SMB-8-C	

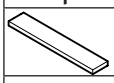
		→ Page/Internet
Accessories		
[11]	Sensor tester SM-TEST-1	sm-test
–	Positioning element SMM-8	703
–	Clip SMBK-8	
–	Inscription label ASLR	
–	Safety clip NEAU	neau
Drives		
[12]	Drives with T-slot	–
[13]	Round cylinders	–
[14]	Standards-based cylinders DSBC	–
[15]	Drives with tie or mounting rod	–
[16]	Standards-based cylinders DSBF	–

Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, straight socket M8x1			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket M8x1			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3
Straight socket M12x1			
	2.5	★ 541363	NEBU-M12G5-K-2.5-LE3
	5	★ 541364	NEBU-M12G5-K-5-LE3
Angled socket M8x1			
	2.5	541367	NEBU-M12W5-K-2.5-LE3
	5	541370	NEBU-M12W5-K-5-LE3

	For ∅	Part no.	Type
Mounting kit, max. ambient temperature 120°C			
	8 ... 100	★ 538937	SMBR-8-8/100-S6
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 ∅	Part no.	Type
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				
	–	547941	SMM-8	10
Inscription label				
	23x4 mm	541598	ASLR-L-423	34
Clip				
	–	534254	SMBK-8	1

1) Packaging unit quantity.

Proximity sensors SDBT

Type code explanation

001	Series	
SDBT	Sensor, position, binary, T series	

002	Sensor version	
B	Can be inserted in the slot, clamping at rear	
M	Can be inserted in the slot	

003	Sensor principle	
S	Contactless (solid state)	

004	Additional features	
	None	
W	Welding field immune	

005	Nominal operating voltage	
20N	8.2 V DC (Namur)	
1	24 V DC	

006	Display	
L	LED	

007	Digital switching output	
PU	3-wire N/O contact, PNP	
NU	3-wire N/O contact, NPN	
ZN	2-wire, Namur	
ZU	2-wire N/O contact	

008	Cable characteristic	
E	Suitable for energy chains/robot applications	
W	Resistant to welding spatter	

009	Cable length [m]	
0,3	0,3 m	
5,0	5 m	
10,0	10 m	

010	Cable identification	
	With label holder	
N	Without label holder	

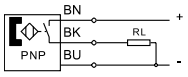
011	Electrical connection	
LE	Open end	
M12	Plug M12, A-coded	

012	EU certification	
	None	
EX6	II 1GD	

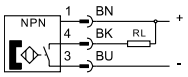
Ordering data – SDBT-BSW

Function

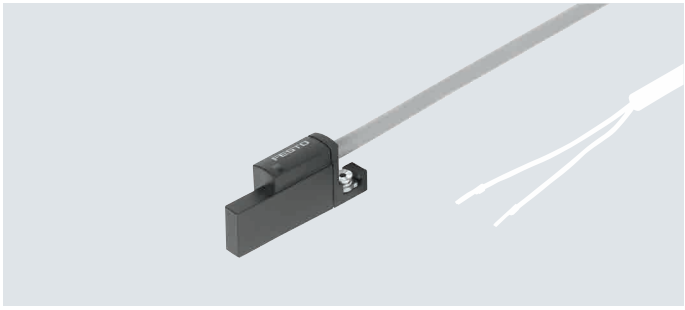
...-PU-...-LE

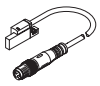


...-NU-...-M12



- Oil-resistant
- Welding-field-resistant, AC 50 ... 60 Hz, MFDC 1000 Hz
- Resistant to welding spatter
- UV-resistant



	Switching output	Cable length [m]	Weight [g]	Part no.	Type
N/O contact					
	3-wire, NPN	0.3	23.3	2427615	SDBT-BSW-1L-NU-W-0.3-N-M12
	3-wire, PNP	5	119.4	2427616	SDBT-BSW-1L-PU-W-5-N-LE
	3-wire, NPN	5	119.4	2427618	SDBT-BSW-1L-NU-W-5-N-LE
	3-wire, PNP	0.3	23.3	2476855	SDBT-BSW-1L-PU-W-0.3-N-M12
	2-wire, contactless	5	116.9	2427617	SDBT-BSW-1L-ZU-W-5-N-LE

Data sheet

General technical data	
Design	For T-slot
Based on standard	EN 60947-5-2
Certification	RCM compliance mark
	c UL us listed (OL)
Special characteristics	Oil-resistant
	Welding-field-resistant
	Resistant to welding spatter
	UV-resistant
Switching characteristics during the welding process	Output signal freezes
CE marking (see declaration of conformity)	To EU EMC Directive
KC mark	KC EMC
Note on materials	Free of copper and PTFE, RoHS-compliant

Input signal/measuring element		
Measuring principle		Magneto-resistive
Measured variable		Position
Ambient temperature	[°C]	–25 ... +85

Signal processing		
Max. speed of travel	[m/s]	1

Switching output		...-PU-...	...- NU-...	...-ZU-...
Switching element function		N/O contact		
Repetition accuracy	[mm]	0.2		
Switch-on time	[ms]	≤15		
Switch-off time	[ms]	≤25		
Max. switching frequency	[Hz]	25		
Max. output current	[mA]	100		80
Max. output current in mounting kits	[mA]	100		80
Max. switching capacity DC	[W]	2.8		1.9
Max. switching capacity DC in mounting kits	[W]	2.8		1.9
Voltage drop	[V]	< 1.5		< 6
Minimum load current	[mA]	0		2.4
Off-state current	[mA]	< 0.005	< 0.14	< 0.7

Proximity sensors SDBT

Data sheet

Output, additional data	
Short circuit current rating	Yes, pulsed
Overload protection	Present

Electronics		
Switching output		PNP
Rated operating voltage	[V DC]	24
Operating voltage range	[V DC]	10 ... 30
Reverse polarity protection		For all electrical connections

Electromechanics	...-PU/ NU-...-M12	...-PU/ NU-...-LE	...-ZU-...-LE
Electrical connection	Cable with plug, 3-pin, M12x1 A-coded according to EN 61076-2-101, screw-type lock	Cable, 3-wire, open end	Cable, 2-wire, open end
Outlet direction of connection	In-line		
Cable characteristic	Resistant to welding spatter		
Cable test conditions	Test conditions on request		

Mechanics		...-PU/ NU-...-M12	...-PU/ NU-...-LE	...-ZU-...-LE
Type of mounting		Screw-clamped, inserted in the slot from above		
Mounting position		Any		
Max. tightening torque	[Nm]	0.6		
Information on materials				
Housing		Epoxy resin, high-alloy stainless steel, PA reinforced, black		
Union nut		Nickel-plated brass	–	–
Cable sheath		PVC, irradiated grey		
Insulating sheath		PVC		
Plug housing		TPE-U(PU)	–	–
Wire ends		–	Wire end sleeve	Wire end sleeve
Pin contacts		Nickel-plated and gold-plated brass	–	–

Display/operation	
Switching status indication	Yellow LED
Function reserve indication	Orange LED

Immission/emission		
Ambient temperature with flexible cable installation	[°C]	–5 ... +80
Degree of protection		IP65
		IP68
Immunity to interference from magnetic fields		Design insensitive to permanent magnetic fields < Bon
	[ZU]	Insensitive to alternating magnetic fields (50 ... 60 Hz) < 160 mT
	[PU/NU]	Insensitive to MFDC magnetic fields (1000 Hz) < 200 mT
		Insensitive to alternating magnetic fields (50 ... 60 Hz) < 200 mT

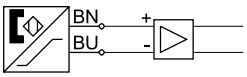
Pin allocation to EN 60947-5-2
M12x1, 3-pin
N/O contact

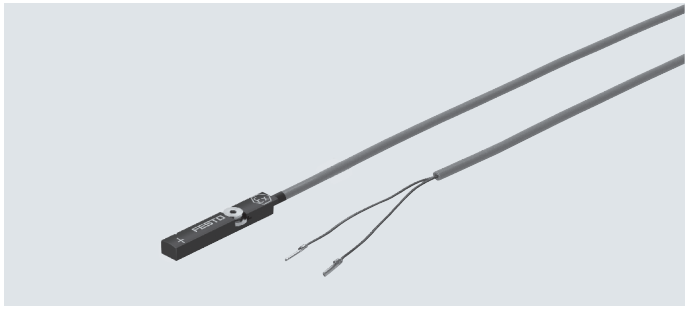
Pin	Wire colour	Allocation
1	Brown	+
3	Blue	–
4	Black	Output

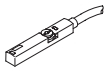
Ordering data – SDBT-MS

Function

- ATEX 1GD





	Switching output	Cable length [m]	Weight [g]	Part no.	Type
N/O contact					
	2-wire, NAMUR	5	53	579071	SDBT-MS-20NL-ZN-E-5-LE-EX6
		10	104	579072	SDBT-MS-20NL-ZN-E-10-LE-EX6

Data sheet

General technical data		
Design		For T-slot
Based on standard		EN 60947-5-6
Certification		RCM compliance mark
Special characteristics		Oil-resistant
Max. input voltage Ui	[V]	28
Max. input current Ii	[A]	0.25
Max. input power Pi	[mW]	T4: 350 mW
		T6: 72 mW
Effective internal inductance Li	[µH]	30
Effective internal capacitance Ci	[µF]	79
Certificate issuing authority		PTZ 16 ATEX 0010 X
		IECEx PTZ 18.0008X
		DNV 17.0027 X
CE marking (see declaration of conformity)		To EU EMC Directive
		To EU Explosion Protection Directive (ATEX)
KC mark		KC EMC

Input signal/measuring element		
Measured variable		Position
Measuring principle		Magneto-resistive
Ambient temperature	[°C]	–40 ... +85
Ambient temperature with flexible cable installation	[°C]	–20 ... +85

ATEX		
ATEX category for gas		II 1G
Type of ignition protection for gas		Ex ia IIC T4 ... T6 Ga
ATEX category for dust		II 1D
Type of ignition protection for dust		Ex ia IIIC T135°C Da
Explosion-proof ambient temperature		T4, with fixed cable installation: –40°C <= Ta <= +85°C
		T4: –20°C <= Ta <= +85°C
		T6, with fixed cable installation: –40°C <= Ta <= +45°C
		T6: –20°C <= Ta <= +45°C
Explosion protection certification outside the EU		EPL Da (IEC-Ex)
		EPL Da (BR)
Explosion protection certification outside the EU		EPL Ga (IEC-Ex)
		EPL Ga (BR)

Proximity sensors SDBT

Data sheet

Materials	
Housing	High-alloy stainless steel
	PA reinforced, black
Cable sheath	TPE-U(PUR), blue
Insulating sheath	PP
Note on materials	Free of copper and PTFE
	RoHS-compliant
	Halogen-free

Switching output		NAMUR
Switching element function		NAMUR
Repetition accuracy	[mm]	0.2
Switch-on time	[ms]	< 1
Switch-off time	[ms]	< 1
Max. switching frequency	[Hz]	330
Off-state current	[mA]	0.4 ... 1

Electronics		
Rated operating voltage	[V DC]	8.2
Operating voltage range	[V DC]	7.5 ... 18
Residual ripple	[%]	10
Reverse polarity protection		For all electrical connections

Electromechanics	
Electrical connection	Cable, 2-wire, open end
Outlet direction of connection	In-line
Cable characteristic	Suitable for robot applications and energy chains
Cable test conditions	Test conditions on request
	Bending strength according to Festo standard

Mechanics		
Type of mounting		Screw-clamped
Mounting position		Any, inserted in slot from above
Max. tightening torque	[Nm]	0.6
Wire ends		Wire end sleeve

Display/operation	
Switching status indication	Yellow LED

Immission/emission	
Degree of protection	IP65
	IP68

Position transmitters SDAS-MHS

Highlights

+ Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space
+ Measuring principle: magnetic Hall
+ Suitable for T-slot
+ LED status indicator
+ Suitable for use with energy chains and robots
+ Cable length 0.3, 2.5 m

Position transmitters SDAS-MHS

Features

General

The SDAS-MHS is used for contactless feedback of the piston position of drives with magnetic proximity sensing. It combines two functions into a single device.

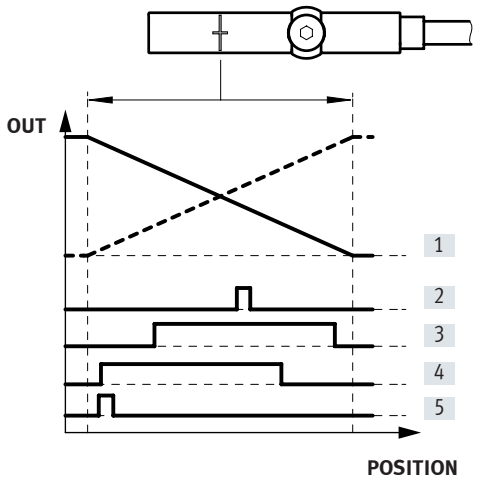
1. As a position transmitter, it provides an output signal proportional to the motion within the sensing range, with the signal being made available in the IO-Link communication standard. Furthermore, 4 channels can be programmed via IO-Link as proximity sensor, window comparator or hysteresis comparator.

2. As a programmable proximity sensor, the SDAS-MHS provides binary feedback of the piston position which is made available as a standard 24 V output signal. Additionally, two proximity sensor switching points can be taught in within the sensing range via a capacitive operating button directly on the device.

Thanks to its extremely compact design, the SDAS-MHS is the ideal solution for grippers, compact cylinders and all applications with limited installation space.

Example applications

Position transmitter

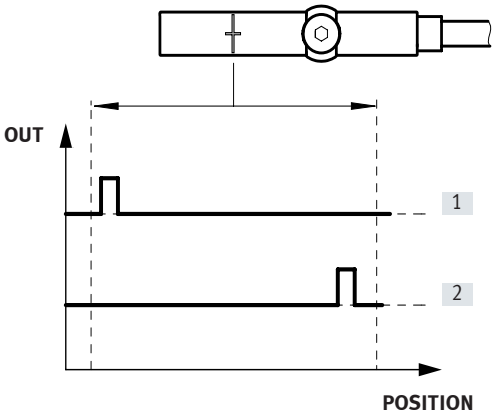


---- Output signal (PDV): direction of increase inverted
— Output signal (PDV): direction of increase as per delivery status

[1] PDV (position data values)
[2] SSC1 (switching signal channel)
[3] SSC2
[4] SSC3
[5] SSC4

Applications:
Good/bad part sorting, press-fitting, riveting, ultrasonic welding etc.

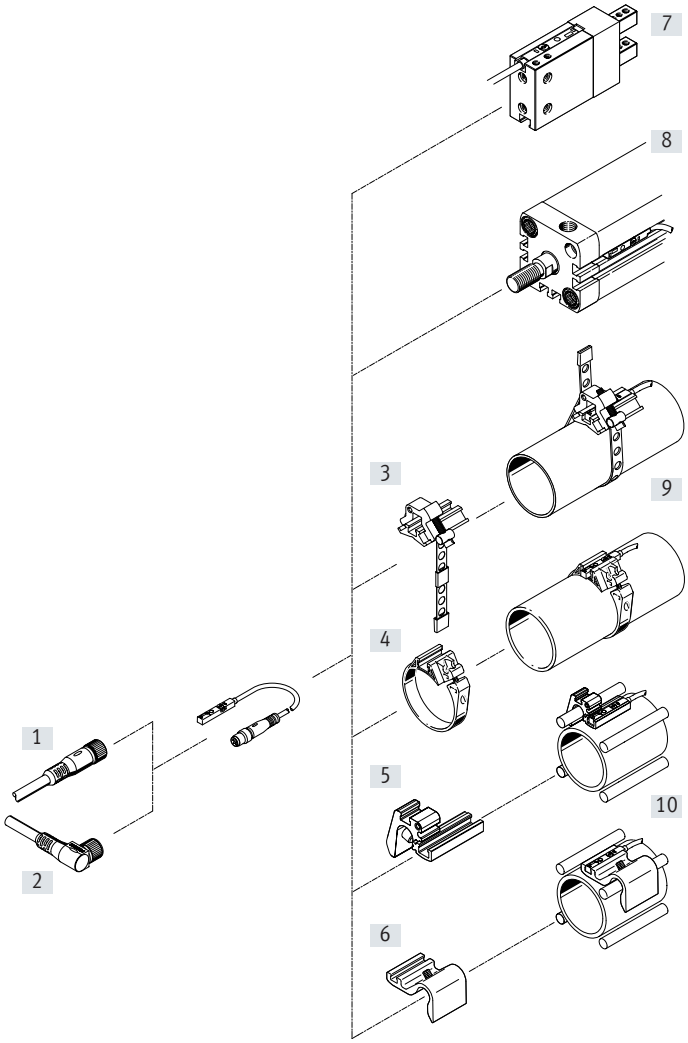
Proximity sensor



[1] Electrical output 1
[2] Electrical output 2

Applications:
Two proximity sensors in one device to save space on compact drives and to save time during assembly and commissioning.

Peripherals overview



		→ Page/Internet
[1]	Connecting cable NEBU-M8G4	712
[2]	Connecting cable NEBU-M8W4	
[3]	Mounting kit SMBR-8-8/100-S6, heat-resistant	
[4]	Mounting kit SMBR	
[5]	Mounting SMBZ-8	
[6]	Sensor bracket DASP-M4-...	
[7]	Three-point gripper HGDD	**hgdd**
	Parallel gripper DHPS	**dhps**
	Parallel gripper HGPD	**hgpd**
	Parallel gripper HGPT	**hgpt**
	Angle gripper DHWS	**dhws**
	Radial gripper DHRS	**dhrs**
	Radial gripper HGRT	**hgrt**
[8]	Standards-based cylinder DSBC	**dsbc**
	Standards-based cylinder DNC	**dnc**
	Compact cylinder ADN	**adn**
	Short-stroke cylinder ADVC/AEVC	**advc**
	Compact cylinder ADVU/AEVU	**advu**
	Flat cylinder DZF	**dzf**
	Linear drive DGC	**dgc**
	Linear/swivel clamp CLR	**clr**
	Guided drive DFM	**dfm**
[9]	Standards-based cylinder/round cylinder DSNU	**dsnu**
	Linear drive unit SLE	**sle**
[10]	Standards-based cylinder DSBG	**dsbg**

Type code explanation

001	Series	
SDAS	Position transmitter/cylinder switch	

002	Sensor version	
M	Can be inserted in the slot	

003	Sensor principle	
HS	Hall sensor	

004	Measuring range	
M40	Typically up to 40 mm	

005	Nominal operating voltage	
1	24 V DC	

006	Display	
L	LED	

007	Electrical output 1	
PNLK	PNP or NPN or IO-Link®	

008	Electrical output 2	
PN	PNP or NPN	

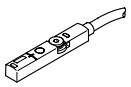
009	Cable characteristic	
E	Suitable for energy chains/robot applications	

010	Cable length [m]	
0.3	0.3	
2.5	2.5	

011	Electrical connection	
LE	Open end	
M8	Plug M8	

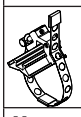
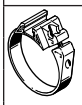
Position transmitters SDAS-MHS

Ordering data

	Electrical connection	Cable length [m]	Part no.	Type
	Cable with plug, M8x1, A-coded to EN 61076-2-104	0.3	8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8
	Cable, open end	2.5	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE

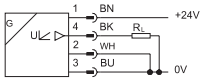
Accessories – Ordering data

	Cable length [m]	Part no.	Type
Connecting cable, straight socket M8x1			
	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
	5	★ 541334	NEBU-M8G3-K-5-LE3
Angled socket M8x1			
	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
	5	★ 541341	NEBU-M8W3-K-5-LE3
Angled socket M8x1			
	2.5	541367	NEBU-M12W5-K-2.5-LE3
	5	541370	NEBU-M12W5-K-5-LE3

	For ∅	Part no.	Type
Mounting kit, max. ambient temperature 120°C			
	8 ... 100	★ 538937	SMBR-8-8/100-S6
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
Mounting kit			
	32 ... 100	537806	SMBZ-8-32/100
	125	1451483	DASP-M4-125-A

Data sheet

Function



Operating mode:
Position transmitter

Operating mode:
Proximity sensor

General technical data	
Design	For T-slot
Mounting position	Any
Type of mounting	Screwed tightly
Certification	RCM compliance mark
KC mark	KC EMC
CE marking (see declaration of conformity)	To EU EMC Directive
Degree of protection	IP65, IP68
Note on materials	RoHS-compliant
	Halogen-free

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Sensors		
Measured variable		Position
Measuring principle		Magnetic Hall
Sensing range	[mm]	≤ 52
Ambient temperature	[°C]	-40 ... +80
Typical sampling interval	[ms]	2
Max. travel speed	[m/s]	3
Path resolution	[mm]	≤ 0.02
Repetition accuracy	[mm]	0.2
Typical linearity error	[mm]	±1

Electronics – General		
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	10
Reverse polarity protection		For all electrical connections

Electronics – Switching output (operating mode: proximity sensor)		
Switching output		2x PNP or 2x NPN adjustable
Switching element function[1)]		N/C or N/O contact, switchable
Switch-on time	[ms]	< 4
Switch-off time	[ms]	< 4
Max. switching frequency	[Hz]	125
Max. output current[2)]	[mA]	50
Short circuit current rating		Yes
Overload protection		Present
Max. switching output voltage DC	[V]	30
Max. switching capacity DC	[W]	1.5
Voltage drop	[V]	< 0.5

1) Switching element function can only be set via IO-Link
2) Per switching output

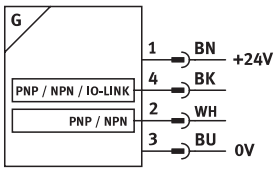
Data sheet

IO-Link (operating mode: position transmitter)		
Protocol		IO-Link
		I-Port
Protocol version		Device V 1.1
Profile		Smart sensor profile
Function classes		Process data variable (PDV)
		Identification
		Diagnostics
		Teach channel
		Switching signal channel (SSC)
Communication mode		COM2 (38.4 kBaud)
SIO-mode support		Yes
Port class		A
Process data width IN		2 bytes
Process data content IN		12-bit PDV (position measurement)
		4-bit SSC (switching signal)
Minimum cycle time	[ms]	2.5

Display/operation	
Switching status indication	LED yellow
Status indication	LED red
Setting options	IO-Link
	Capacitive pushbutton

Electromechanical components		SDAS-MHS- ... -0,3-M8	SDAS-MHS- ... -2,5-LE
Electrical connection 1			
Connection type		Cable with plug	Cable
Connection technology		M8x1, A-coded to EN 61076-2-104	Open end
Number of pins/wires		4	
Type of mounting		Screw-type lock	–
Connection outlet direction		In-line	
Ambient temperature with flexible cable installation	[°C]	–20 ... +70	
Cable length	[m]	0.3	2.5
Cable characteristic		Suitable for use with energy chains/robot applications	
Cable test conditions		Bending strength: to Festo standard	
		Energy chain: 5 million cycles, bending radius 28 mm	
		Torsional resistance: › 300,000 cycles, ± 270°/0.1 m	
Cable sheath colour		Grey	
Cable sheath material		TPE-U(PUR)	
Information on materials: Pin contacts		Gold-plated copper alloy	–

Terminal allocation



Operating mode: proximity sensor

1 Operating voltage
2 Switching output 2
3 0V
4 Switching output 1

Operating mode: position transmitter

1 Operating voltage
2 Not used
3 0V
4 IO-Link

Wire colours

BN = Brown
BK = Black
WH = White
BU = Blue

Plug

Mechanical system	SDAS-MHS- ... -0,3-M8	SDAS-MHS- ... -2,5-LE
Type of mounting	Insertable in the slot from above	
Housing material	High-alloy stainless steel	
	Reinforced PA	
Information on materials: Union nut	Nickel-plated brass	–

Position transmitters SDAT-MHS

Highlights

+ Measuring principle: magnetic Hall
+ Insertable in the slot from above, screw-clamped
+ Suitable for use with energy chains and robots
+ LED status indicator
+ Cable length 0.3 m
+ Programmable IO-Link®/switching output

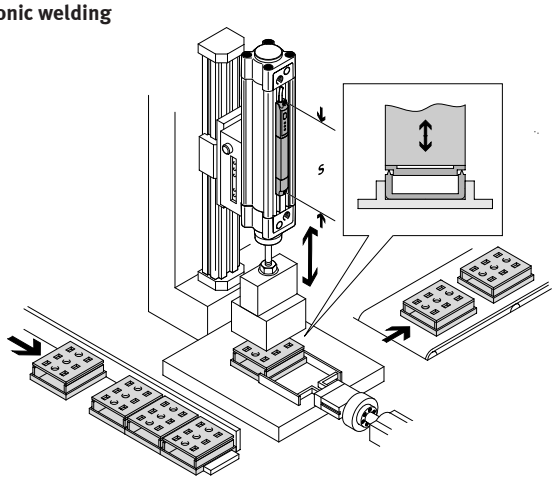
Position transmitters SDAT-MHS

Features

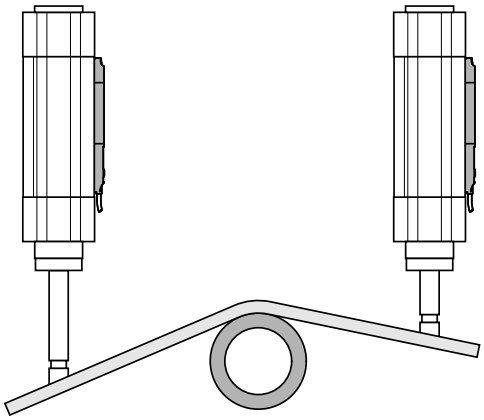
Position transmitters are used to provide feedback on piston movement in pneumatic drives. They are situated between simple cylinder switches and expensive displacement encoders, both in terms of price and complexity. They are the ideal solution for applications in which reliable analogue feedback on the piston stroke is required with high repetition accuracy, such as in press-fitting, screwing, riveting, ultrasonic welding, good/bad selection and other applications.

Example application

Ultrasonic welding

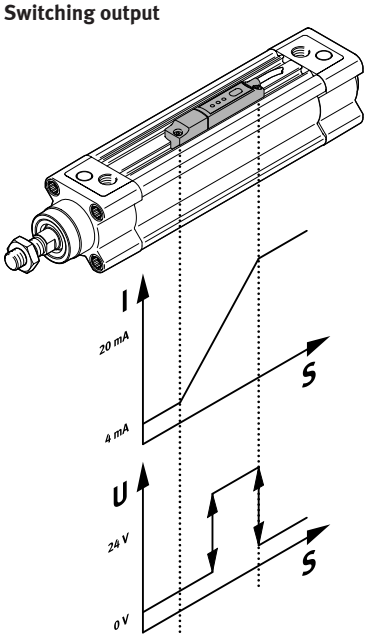


Bending



The SDAT-MHS is a position transmitter which continuously records the movement of the piston within the sensing range and makes it available as an output signal proportional to the displacement.
The sensing ranges are 50, 80, 100, 125 and 160 mm, making them perfectly harmonised to the stroke of the best-selling Festo cylinders.
The SDAT has a 4-20mA analogue output, so it can be connected to analogue inputs without accessories.
An IO-Link/switching output is available as a second interface. There is thus a choice between: switching output 24 V or IO-Link operation.
The switching output is directly programmed into the device using a teach button; the IO-Link function is programmed by means of a graphic user interface in the controller. The programming options in the two operating modes are: cylinder switch function, window comparator, hysteresis comparator.
The IO-Link/switching output is therefore the universal interface for simple programming of routine application functions without needing to evaluate the analogue output.

Switching output



Everything in a single device
- Analogue 4-20mA
- IO-Link
- Switching output

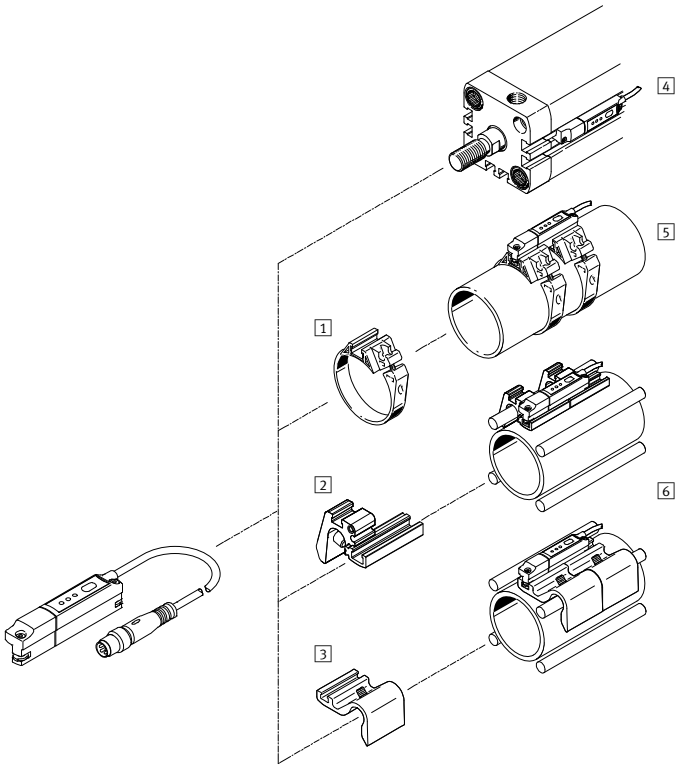
Programming options:
- Cylinder switch function
- Window comparator
- Hysteresis comparator
- NO/NC

Repetition accuracy 0.1 mm

Note
Sensors that detect magnetic fields, such as the position transmitter SDAT, must not be secured onto the drive using mountings made from ferritic materials, as this can lead to malfunction.

IO-Link

Peripherals overview



Designation		➔ Page/ Internet
1	Mounting kit SMBR	718
2	Mounting SMBZ-8	
3	Sensor retainer DASP-M4-...	
4	Standard cylinder DNCB	dncb
	Standard cylinder DNC	dnc
	Compact cylinder ADN	adn
	Short-stroke cylinder ADVC/AEVC	advc
	Compact cylinder ADVU/AEVU	advu
	Flat cylinder DZF	dzf
	Linear drive DGC	dgc
	Linear/swivel clamp CLR	clr
	Guided drive DFM	dfm
5	Standard cylinder/round cylinder DSNU	dsnu
	Linear unit SLE	sle
6	Standard cylinder DSBG	dsbg

Type code explanation

001	Series
SDAT	Position transmitter, magnetic

002	Design
M	Insertable in slot

003	Sensor principle
HS	Hall sensor

004	Measuring range
M50	0 ... 50
M80	0 ... 80
M100	0 ... 100
M125	0 ... 125
M160	0 ... 160

005	Nominal operating voltage
1	24 V DC

006	Signal status display
L	LED

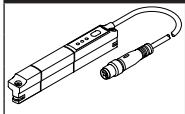
007	Switching input/output
SA	PNP or NPN, 1 analogue output 4 ... 20 mA, IO-Link

008	Cable properties
E	Suitable for use with energy chains/robot applications

009	Cable length
0,3	0.3 m

010	Electrical connection
M8	M8 plug

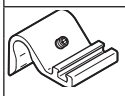
Ordering data

	Electrical connection	Cable length [m]	Part No.	Type
	4-pin, cable with plug, rotatable thread M8	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

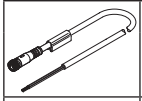
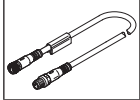
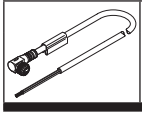
Position transmitters SDAT-MHS

Accessories – Ordering data

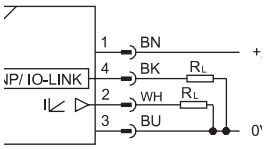
Mounting attachments

	For piston diameter	Part No.	Type
Mounting kit SMBR			
	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
Mounting SMBZ			
	32 ... 100	537806	SMBZ-8-32/100
	125 ... 320	537808	SMBZ-8-125/320
Sensor retainer DASP-M4-...			
	For DSBG-125	1451483	DASP-M4-125-A
	For DSBG-160 ... 200	1553813	DASP-M4-160-A
	For DSBG-250	1456781	DASP-M4-250-A
	For DSBG-320	3015256	DASP-M4-320-A

Connecting cables NEBU-M8

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8G4-K-5-LE4
	Straight socket, M8x1, 4-pin	Straight socket, M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5	541345	NEBU-M8W4-K-5-LE4

Data sheet



General technical data

Type	M50	M80	M100	M125	M160
Design	For T-slot				
Type of mounting	Insertable in the slot from above, secured with screw				
Approval certificate	RCM trademark				
	c UL us - Listed (OL)				
Degree of protection	IP65, IP68				
CE marking (see declaration of conformity)	To EU EMC Directive				
KC marking	KC EMC				
Note on materials	Halogen-free, RoHS-compliant				

Data sheet

Input signal/measuring element						
Type		M50	M80	M100	M125	M160
Measuring principle		Magnetic Hall				
Measured variable		Position				
Sensing range	[mm]	0 ... 50	0 ... 80	0 ... 100	0 ... 125	0 ... 160
Ambient temperature	[°C]	–25 ... 70				
Ambient temperature with flexible cable installation	[°C]	–20 ... 70				

Signal processing		
Typical sampling interval	[ms]	1
Max. speed of travel	[m/s]	3

Output, general		
Displacement resolution	[mm]	0.05

Analogue output		M50	M80	M100	M125	M160
Analogue output	[mA]	4 ... 20				
Sensitivity	[mA/mm]	0.32	0.2	0.16	0.128	0.1
Typ. linearity error	[mm]	±0.25				
Repetition accuracy of analogue value	[mm]	0.1				
Max. load resistance of current output	[Ω]	500				

Output, additional data		
Protection against short circuit		Yes
Overload protection		Yes

Electronic components		
Operating voltage range	[V DC]	15 ... 30
Reverse polarity protection		For all electrical connections
Switching output		PNP
Switching element function		N/C or N/O contact, switchable
Residual ripple	[%]	10
Switch-on time	[ms]	< 2
Switch-off time	[ms]	< 2
Max. switching frequency	[kHz]	1
Max. output current	[mA]	100
Max. switching capacity DC	[W]	2.7
Voltage drop	[V]	2.5

Electromechanical components	
Electrical connection	4-pin
	M8x1, A-coded, to EN 61076-2-104
	Screw locking
Connection direction	In-line
Cable properties	Suitable for use with energy chains/robot applications
Cable test conditions	Bending strength: according to Festo standard
	Energy chain: 5 million cycles, bending radius 28 mm
	Torsional strength: › 300,000 cycles, ±270°/0.1 m

Position transmitters SDAT-MHS

Data sheet

Display/operation	
Setting options	IO-Link
	Pushbutton
Ready status display	Green LED
Switching status display	Yellow LED
Status display	Red LED

Materials	
Housing	High-alloy stainless steel
	Nickel-plated brass
	Reinforced PA
	Polyester
Union nut	Nickel-plated brass
Cable sheath, grey	TPE-U(PUR)
Foil	Polyester
Pin contacts	Gold-plated copper alloy

IO-Link		
Protocol		IO-Link
		I-Port
Protocol version		Device V 1.1
Profile		Smart sensor profile
Function classes		Binary data channel (BDC)
		Diagnostics
		Identification
		Process data variable (PDV)
		Teach channel
Communication mode		COM3 (230.4 kBaud)
SIO mode support		Yes
Port class		A
Process data width IN		2 bytes
Process data content IN		12 bit PDV (position measured value)
		4 bit BDC (position monitoring)
Minimum cycle time	[ms]	1

Pressure sensors SPAN

Highlights

+ For monitoring compressed air and non-corrosive gases
+ For network monitoring, regulator monitoring, leak testing, object detection
+ Relative measurement method based on a piezoresistive measuring cell
+ Serial communication integrated using IO-Link® 1.1
+ Compact design 30x30 mm
+ High-contrast display with blue backlight

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Pressure sensors SPAN

Product range overview

Communication interface

IO-Link

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)

Mounting options, Special features

Product description

The pressure sensor SPAN is suitable for monitoring compressed air and non-corrosive gases. The sensor can be used in many industries due 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.

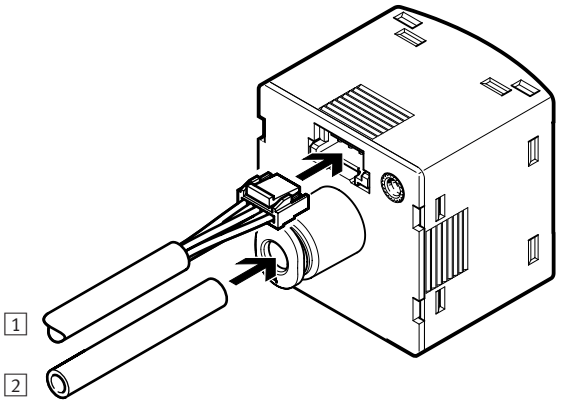
Area of application
- Network monitoring (pressure present)
- Regulator monitoring (pressure in desired range)
- Vacuum (part picked up)
- Leak test (pressure drop over time)
- Object detection (back pressure present)

Functions
- Monitoring and setting a pressure threshold, a pressure range or differential pressure monitoring with teach-in function or by entering values
- ECO function by means of adjustable display switch-off
- 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)

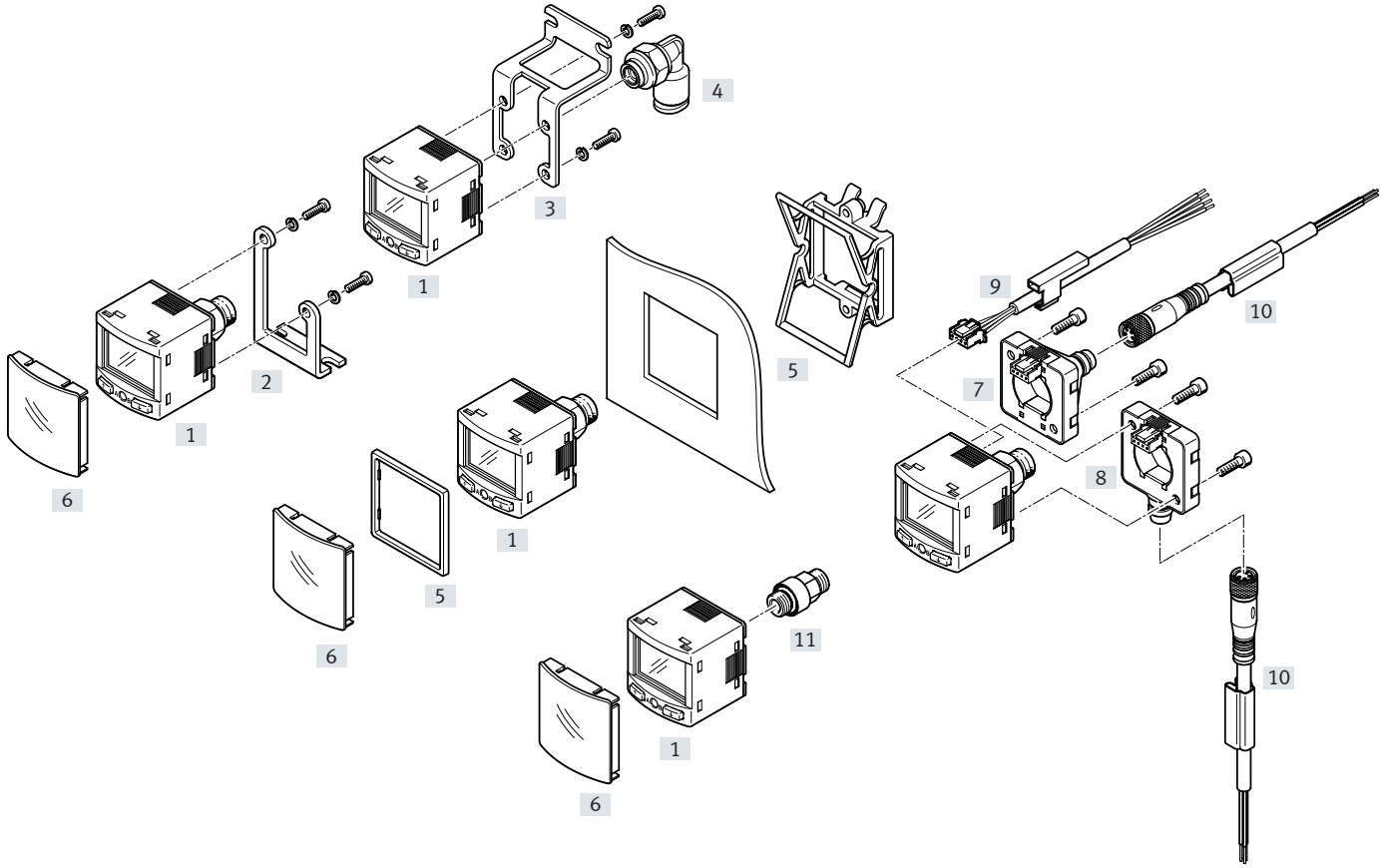
Variants with IO-Link®
- Serial communication integrated using IO-Link® 1.1
- Cyclical transfer of two operating statuses and the measured pressure value
- The sensor can be parameterised remotely using an IO-Link® master
- Sensor can be changed easily using automatic parameterisation (hot-swap)
- Sensor identification, diagnostics and teach-in via IO-Link® possible

2-step connection

1 Push in L1 plug
2 Push in tube



Peripherals overview



Accessories		➔ Page/ Internet	Accessories		➔ Page/ Internet
[1]	Pressure sensors SPAN-/SPAN-B-	724	[7]	Electrical adapter SASC-P4-A-M8-S	727
[2]	Mounting bracket SAMH-PU-A	727	[8]	Electrical adapter SASC-P4-A-M8-A	
[3]	Wall mounting SAMH-PN-W		[9]	Connecting cable NEBS-L1G4	
[4]	Push-in fitting QSML-M5		[10]	Connecting cable NEBU-M8	
[5]	Panel mounting kit SAMH-PN-F		[11]	Adapter (for -G18FPM- with electrical adapter) SASA-PN-A-MG18	
[6]	Safety guard SACC-PN-G				

Pressure sensors SPAN

Type code explanation

001	Series
SPAN	Pressure sensor

002	Product version
	Standard
B	Basis

003	Pressure measuring range
B2	-1 ... 1 bar
B02	-0,1 ... 0,1 bar
B11	-1 ... 10 bar
P025	0 ... 0.25 bar
P05	0 ... 0.5 bar
P1	0 ... 1 bar
P2	0 ... 2 bar
P6	0 ... 6 bar
P10	0 ... 10 bar
P12	0 ... 12 bar
P16	0 ... 16 bar
V025	0 ... -0.25 bar
V05	0 ... -0.5 bar
V1	0 ... -1 bar

004	Pressure inlet
R	Relative pressure

005	Pneumatic connection
G18	G1/8
R18	R1/8
N18	1/8 NPT
M5	M5
Q4	Push-in connector 4 mm

006	Thread type
	None
F	Female
M	Male

007	Thread material
	Standard
AL	Aluminium
PM	Polymer

008	Electrical output 1
PN	PNP/NPN
PNLK	PNP/NPN/IO-Link

009	Electrical output 2
	None
PN	PNP or NPN
PNVBA	PNP or NPN or 0 ... 10 V or 1 ... 5 V or 4 ... 20 mA

010	Electrical connection
L1	Plug type L1

011	Mounting accessories
	None
A	Mounting bracket
W	Wall mounting
FP	Front panel mounting

012	Electrical adapter
	None
EA	Electrical adapter, angled
ES	Electrical adapter, straight

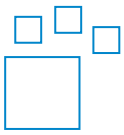
013	Electrical accessories
	None
5S	Straight socket, cable 5 m
2.5S	Straight socket, cable 2.5 m
5A	Angled socket, cable 5 m
2.5A	Angled socket, cable 2.5 m

014	Protective devices
	None
G	Protective hood

015	Certificate
	None
T	Test report

Ordering data – Modular products

Ordering data – Product options



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

The configurator can be found at
→ **www.festo.com/catalogue/span**

Part no.	Type
8003300	SPAN

Ordering data – SPAN

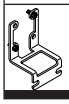
Electrical output			Pneumatic connection	Part no.	Type
Switching output	Analogue output	Serial interface			
Pressure measuring range 0 ... –1 bar					
2x PNP/NPN, switchable	–	–	G1/8 male, M5 female	8035546	SPAN-V1R-G18M-PN-PN-L1
			R1/8 male, M5 female	8035549	SPAN-V1R-R18M-PN-PN-L1
			Push-in connector 4 mm	8035554	SPAN-V1R-Q4-PN-PN-L1
	0 ... 10 V, 1 ... 5 V 4 ... 20 mA Switchable	IO-Link	G1/8 male, M5 female	8035535	SPAN-V1R-G18M-PNLK-PNVBA-L1
			R1/8 male, M5 female	8035538	SPAN-V1R-R18M-PNLK-PNVBA-L1
			Push-in connector 4 mm	8035543	SPAN-V1R-Q4-PNLK-PNVBA-L1
Pressure measuring range –1 ... +1 bar					
2x PNP/NPN, switchable	–	–	G1/8 male, M5 female	★ 8035545	SPAN-B2R-G18M-PN-PN-L1
			R1/8 male, M5 female	★ 8035548	SPAN-B2R-R18M-PN-PN-L1
			M5 female	★ 8035551	SPAN-B2R-M5F-PN-PN-L1
			Push-in connector 4 mm	8035553	SPAN-B2R-Q4-PN-PN-L1
	0 ... 10 V, 1 ... 5 V 4 ... 20 mA Switchable	IO-Link	G1/8 male, M5 female	8035534	SPAN-B2R-G18M-PNLK-PNVBA-L1
			R1/8 male, M5 female	8035537	SPAN-B2R-R18M-PNLK-PNVBA-L1
			M5 female	8035540	SPAN-B2R-M5F-PNLK-PNVBA-L1
			Push-in connector 4 mm	8035542	SPAN-B2R-Q4-PNLK-PNVBA-L1
Pressure measuring range 0 ... +10 bar					
2x PNP/NPN, switchable	–	–	G1/8 male, M5 female	★ 8035544	SPAN-P10R-G18M-PN-PN-L1
			R1/8 male, M5 female	★ 8035547	SPAN-P10R-R18M-PN-PN-L1
			G1/8 female	8134896	SPAN-P10R-G18F-PN-PN-L1
			M5 female	8035550	SPAN-P10R-M5F-PN-PN-L1
			Push-in connector 4 mm	8035552	SPAN-P10R-Q4-PN-PN-L1
	0 ... 10 V, 1 ... 5 V 4 ... 20 mA Switchable	IO-Link	G1/8 male, M5 female	8035533	SPAN-P10R-G18M-PNLK-PNVBA-L1
			R1/8 male, M5 female	8035536	SPAN-P10R-R18M-PNLK-PNVBA-L1
			G1/8 female	8134897	SPAN-P10R-G18F-PNLK-PNVBA-L1
			M5 female	8035539	SPAN-P10R-M5F-PNLK-PNVBA-L1
			Push-in connector 4 mm	8035541	SPAN-P10R-Q4-PNLK-PNVBA-L1
Pressure measuring range: -1 ... +10 bar					
2x PNP/NPN, switchable	–	–	R1/8 male, M5 female	8134891	SPAN-B11R-R18M-PN-PN-L1
			R1/8 male, M5 female	8134892	SPAN-B11R-G18M-PN-PN-L1
			M5 female	8134893	SPAN-B11R-M5F-PN-PN-L1
			Push-in connector 4 mm	8134894	SPAN-B11R-Q4-PN-PN-L1
	0 ... 10 V, 1 ... 5 V 4 ... 20 mA Switchable	IO-Link	G1/8 male, M5 female	609149	SPAN-B11R-G18M-PNLK-PNVBA-L1
			R1/8 male, M5 female	609554	SPAN-B11R-R18M-PNLK-PNVBA-L1
			M5 female	610282	SPAN-B11R-M5F-PNLK-PNVBA-L1
			Push-in connector 4 mm	8134895	SPAN-B11R-Q4-PNLK-PNVBA-L1

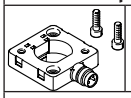
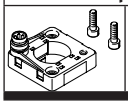
Pressure sensors SPAN

Ordering data – SPAN-B

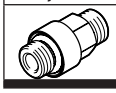
Electrical output	Accessories	Pneumatic connection	Part no.	Type
Switching output	Connecting cable			
Pressure measuring range: 0 ... –1 bar				
1x PNP/NPN, switchable	–	G1/8 male	8114752	SPAN-B-V1R-G18M-PN-L1
		R1/8 male	8114755	SPAN-B-V1R-R18M-PN-L1
		M5 female	8114758	SPAN-B-V1R-M5FAL-PN-L1
		Tubing O.D. 4 mm	8114761	SPAN-B-V1R-Q4-PN-L1
		G1/8 female	8114764	SPAN-B-V1R-G18FPM-PN-L1
	NEBS-L1G4-K-2.5-LE4	G1/8 male	8114767	SPAN-B-V1R-G18M-PN-L1+2.5S
		R1/8 male	8114770	SPAN-B-V1R-R18M-PN-L1+2.5S
		M5 female	8114773	SPAN-B-V1R-M5FAL-PN-L1+2.5S
		Tubing O.D. 4 mm	8114776	SPAN-B-V1R-Q4-PN-L1+2.5S
		G1/8 female	8114779	SPAN-B-V1R-G18FPM-PN-L1+2.5S
Pressure measuring range –1 ... +1 bar				
1x PNP/NPN, switchable	–	G1/8 male	8114751	SPAN-B-B2R-G18M-PN-L1
		R1/8 male	8114754	SPAN-B-B2R-R18M-PN-L1
		M5 female	8114757	SPAN-B-B2R-M5FAL-PN-L1
		Tubing O.D. 4 mm	8114760	SPAN-B-B2R-Q4-PN-L1
		G1/8 female	8114763	SPAN-B-B2R-G18FPM-PN-L1
	NEBS-L1G4-K-2.5-LE4	G1/8 male	8114766	SPAN-B-B2R-G18M-PN-L1+2.5S
		R1/8 male	8114769	SPAN-B-B2R-R18M-PN-L1+2.5S
		M5 female	8114772	SPAN-B-B2R-M5FAL-PN-L1+2.5S
		Tubing O.D. 4 mm	8114775	SPAN-B-B2R-Q4-PN-L1+2.5S
		G1/8 female	8114778	SPAN-B-B2R-G18FPM-PN-L1+2.5S
Pressure measuring range: -1 ... +10 bar				
1x PNP/NPN, switchable	–	G1/8 male	8114750	SPAN-B-B11R-G18M-PN-L1
		R1/8 male	8114753	SPAN-B-B11R-R18M-PN-L1
		M5 female	8114756	SPAN-B-B11R-M5FAL-PN-L1
		Tubing O.D. 4 mm	8114759	SPAN-B-B11R-Q4-PN-L1
		G1/8 female	8114762	SPAN-B-B11R-G18FPM-PN-L1
	NEBS-L1G4-K-2.5-LE4	G1/8 male	8114765	SPAN-B-B11R-G18M-PN-L1+2.5S
		R1/8 male	8114768	SPAN-B-B11R-R18M-PN-L1+2.5S
		M5 female	8114771	SPAN-B-B11R-M5FAL-PN-L1+2.5S
		Tubing O.D. 4 mm	8114774	SPAN-B-B11R-Q4-PN-L1+2.5S
		G1/8 female	8114777	SPAN-B-B11R-G18FPM-PN-L1+2.5S

Accessories – Ordering data

	Part no.	Type
Mounting bracket		
	8003354	SAMH-PU-A
Wall mounting		
	8035563	SAMH-PN-W

	Part no.	Type
Front panel mounting kit		
	8035561	SAMH-PN-F
Safety guard		
	8035560	SACC-PN-G
Electric adapter		
	8000326	SASC-P4-A-M8-A
Electric adapter		
	8000327	SASC-P4-A-M8-S

	Thread	Tubing O.D.	Part no.	Type
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

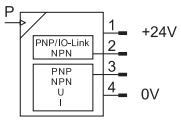
	Thread	Part no.	Type
Threaded fittings			
90° connection			
	G1/8 female to G1/8 female	8030209	NPFC-L-2G18-F
	R1/8 male to R1/8 male	8030223	NPFC-L-2R18-M
	M5 female to M5 male	8030215	NPFC-L-2M5-MF
Adapter			
	G1/8 male to G1/8 male	8133310	SASA-PN-A-MG18

	Wires	Cable length [m]	Part no.	Type
Connecting cables				
Socket, rectangular design L1				
	4	2.5	572576	NEBS-L1G4-K-2,5-LE4
		5	572577	NEBS-L1G4-K-5-LE4
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

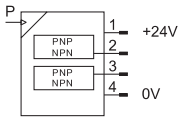
Pressure sensors SPAN

Data sheet

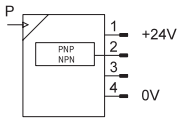
Variant with IO-Link and analogue outputs ... -PNLK-PNVBA



Variant with 2 switching outputs ... -PN-PN



Variant with 1 switching output ... -B-...-PN



- Compact design 30x30
- 14 pressure measuring ranges
- –1 ... +16 bar available
- Voltage 12/24 V DC
- Temperature range 0 ... +50°C
- Degree of protection IP40

SPAN-... SPAN-B-...

General technical data	
Certification	RCM
	c UL us - Listed (OL)[1]
Certificate issuing authority	UL E322346
CE marking (see declaration of conformity)	To EU EMC Directive
	To EU RoHS Directive
KC mark	KC EMC
Note on materials	RoHS-compliant

1) Not valid for SPAN-B

Input signal, measuring element		-B02	-B2	-B11	-V025	-V05	-V1	-P025	-P05	-P1	-P2	-P6	-P10	-P12	P16
Measured variable		Relative pressure													
Measurement method		Piezoresistive pressure sensor													
Pressure measuring range start value	[MPa]	–0.01	–0.1	–0.1	0										
	[bar]	–0.1	–1	–1	0										
	[psi]	–1.45	–14.5	–14.5	0										
Pressure measuring range end value	[MPa]	0.01	0.1	1	–0.025	–0.05	–0.1	0.025	0.05	0.1	0.2	0.6	1	1.2	1.6
	[bar]	0.1	1	10	–0.25	–0.5	–1	0.25	0.5	1	2	6	10	12	16
	[psi]	1.45	14.5	145	–3.62	–7.25	–14.5	3.62	7.25	14.5	29	87	145	174	232
Max. overload pressure	[MPa]	0.1	0.5	1.5	0.1	0.2	0.5	0.1	0.2	0.5	0.6	1.5	1.5	1.5	2.0
	[bar]	1	5	15	1	2	5	1	2	5	6	15	15	15	20
	[psi]	14.5	72.5	217.5	14.5	29	72.5	14.5	29	72.5	87	217.5	217.5	217.5	290
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]													
		Inert gases													
Note on the operating/pilot medium		Lubricated operation possible													
Temperature of medium	[°C]	0 ... +50													
Ambient temperature	[°C]	0 ... +50													

Output, general		-B02	-B2	-B11	-V025	-V05	-V1	-P025	-P05	-P1	-P2	-P6	-P10	-P12	P16
Accuracy FS	[%]	±1.5													±2
Repetition accuracy	[%]	±0.3													
Temperature coefficient	[%FS/K]	±0.05[1]													

1) For SPAN-B- ±0.1 [%FS/K]

Data sheet

Switching output				
SPAN-..		-PNLK-PNVBA	-PN-PN	-B-...-PN
Switching output		2x PNP or 2x NPN, switchable		1x PNP/NPN, switchable
Switching function		Window comparator		
		Threshold value comparator		
		Auto difference monitoring		–
Switching element function		N/C or N/O, switchable		
Max. output current	[mA]	100		80
Short circuit current rating		Yes		

Analogue output				
SPAN-...		-PNLK-PNVBA	-PN-PN	-B-...-PN
Analogue output	[V]	0 ... 10	–	–
	[V]	1 ... 5		
	[mA]	4 ... 20		
Max. load resistance of current output	[Ω]	500		
Min. load resistance of voltage output	[kΩ]	20		

IO-Link device to IEC 61131-9	
SPAN-...	-PNLK
Protocol	IO-Link
IO-Link	
Protocol version	Device V 1.1
Profile	Smart sensor profile
Function classes	Binary data channel (BDC)
	Process data variable (PDV)
	Identification
	Diagnostics
	Teach channel
Communication mode	COM2 (38.4 kBd)
SIO mode support	Yes
Port class	A
Process data width OUT	0 bytes
Process data width IN	2 bytes
Process data content IN	14 bit PDV (pressure measurement value)
	2 bit BDC (pressure monitoring)
Minimum cycle time	3 ms
Data memory required	0.5 KB

Electronics		SPAN-...	SPAN-B-...
Operating voltage range DC	[V]	15 ... 30	10.8 ... 30
Reverse polarity protection		For all electrical connections	
Electrical connection		Plug, 4-pin, square design	

Pressure sensors SPAN

Data sheet

Mechanics

SPAN	-G18M	-R18M	-N18M	-G18F	-M5F	-Q4
Type of mounting	Via thread					–
	Front panel mounting					
	Via wall/surface bracket					
Pneumatic connection	Female thread M5 (not for SPAN-B-...)			Female thread G1/8	Female thread M5	For tubing O.D. 4 mm
	Male thread G1/8	Male thread R1/8	Male thread 1/8NPT	–	–	–
Mounting position	Any					
Information on materials: Housing	Reinforced PA					
Materials in contact with the media	FPM					
	Nickel-plated brass					
	NBR					
	Reinforced PA					

Display/operation

SPAN	-PNLK	-PN-PN	-B-...-PN
Display type	Backlit LCD		
Displayable units[1]	MPa		
	kPa		
	bar		
	mbar		–
	psi		
	inchH_2O		–
	inchHg		
	kgf/cm²		–
	mmHg		
Setting options	Teach-in		
	IO-Link	–	–
	Display and buttons		
Protection against tampering	IO-Link	–	–
	PIN code		
Threshold value setting range [%]	0 ... 100		
Hysteresis setting range [%]	0 ... 90		

1) Dependent on pressure measuring range

Immission/emission

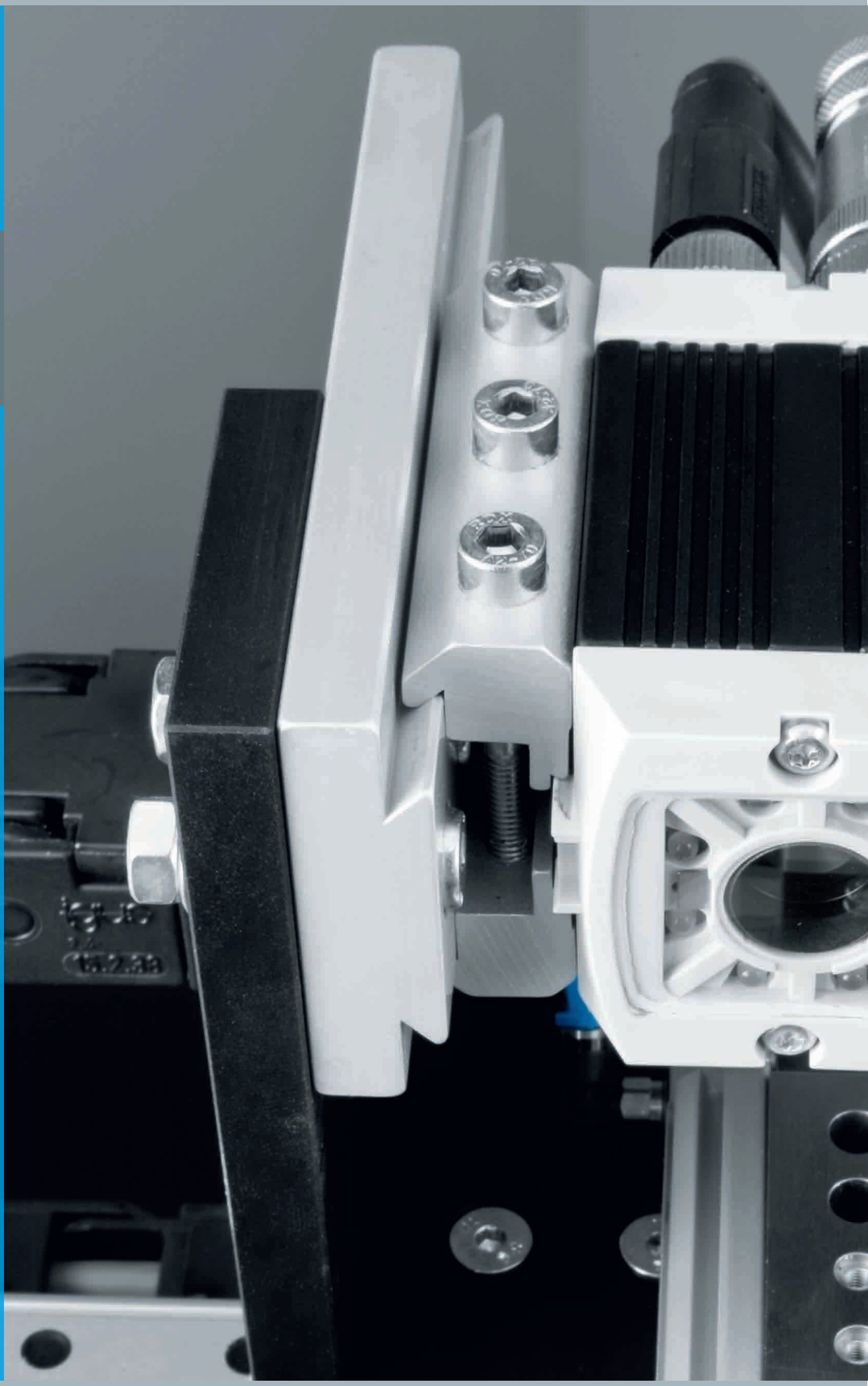
Degree of protection	IP40
Corrosion resistance class CRC[1]	2

1) Corrosion resistance class 2 to Festo standard 940070
Components subject to moderate corrosion stress. External visible parts with primarily decorative surface requirements which are in direct contact with the surrounding industrial environment or media such as coolants or lubricating agents.

Pressure sensors SPAN

09

Vision systems



Contents

Product overview

Controllers

	 **Controllers** **SBRD-Q**
Nominal operating voltage DC	24 V
Input/output interface, function	10x digital input, 2x digital inputs with integrated pull-up resistor, 8x digital output, Ground, Power supply
Camera interface, connection technology	USB 3.0 type A
Ethernet interface, protocol	TCP/IP
Ethernet interface, transmission rate	10 Mbit/s, 100 Mbit/s, 1000 Mbps
Storage capacity	32000000000 Byte
Description	• Space-saving controller with dual-core processor and PROFINET communication • Two camera interfaces for multi-camera tasks • Up to 256 test programs • Individual image recording and inspection or ongoing image recording and inspection • Detection of the position and the rotary orientation of parts, pick & place, quality inspection, measurement, reading bar-codes, data matrix codes and optical characters (OCR) • Powerful image processing software for fast and reliable results
online: →	**sbrd**

Camera heads

	 **Camera heads** **SBPB**
Sensor resolution	1600 x 1200 pixels (UXGA), 2456 x 2054 pixels (5MPix), 1280 x 1024 Pixels (SXGA)
Lens attachment	C mount
Sensor type	Colour, Monochrome
Frame rate (full image)	36, 60
Exposure time	9 ... 10000000 µs
Description	• High-quality, sturdy housing
online: →	**sbpb**

Vision sensors

	 **Code readers** **SBSC-B, SBSI-B**	 **Object sensors** **SBSC-Q, SBSI-Q**	 **Colour sensors** **SBSC-F, SBSI-F**	 **Universal sensors** **SBSC-U**
Sensor resolution	1280 x 1024 Pixels (SXGA), 736 x 480 Pixels WideVGA	1280 x 1024 Pixels (SXGA), 736 x 480 Pixels WideVGA	736 x 480 Pixels WideVGA	1280 x 1024 Pixels (SXGA), 736 x 480 Pixels WideVGA
Working distance	6 mm - infinite, 30 mm - infinite	6 mm - infinite, 30 mm - infinite	6 mm - infinite, 30 mm - infinite	
Field of view	Depends on the lens chosen, Min. 16 mm x 13 mm, Min. 5 x 4 mm, Min. 8 x 6 mm	Depends on the lens chosen, Min. 16 mm x 13 mm, Min. 5 x 4 mm, Min. 8 x 6 mm	Depends on the lens chosen, Min. 5 x 4 mm, Min. 8 x 6 mm	Depends on the lens chosen
Frame rate (full image)	40 fps, 50 fps	40 fps, 50 fps	40 fps	50 fps
Max. no. of inspection programs	8, 255	8, 255	8, 255	255
Description	• Reading 1D barcodes, 2D matrix codes and directly marked codes • Equipped with position trakking and additional inspection algorithms • High resolution of 1.3 megapixels • Vision sensor with integrated lighting/lens or with CS mount	• Easy quality inspection • 360° position tracking • Quick and powerful recognition algorithms • BLOB function for position sensing, quality inspection or counting multiple parts in the image • Calliper function for measuring products (distance, edge position) • Vision sensor with integrated lighting/lens or with CS mount	• 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	• Field of view can be individually determined using a suitable lens • OCR function (optical character recognition) • BLOB function for position sensing, quality inspection or counting multiple parts in the image • Calliper function for measuring products (distance, edge position) • Calibration function • Vision sensor with CS mount
online: →	sbsc-b	sbsc-q	sbsc-f	sbsc-u

Checkbox Compact

	 **Checkbox Compact** **CHB-C-N**
Sensor resolution	2048 pixels/line
Sensor type	CMOS line scan
Max. no. of inspection programs	256
Min. part length	1 mm
Max. part length	Dependent on belt speed and required resolution
Description	• Intelligent line camera with adaptive workpiece flow control and optical workpiece identification • For orientation recognition and quality inspection of small moving parts • Encoder connection • Teach-in function
online: →	chb-c-n

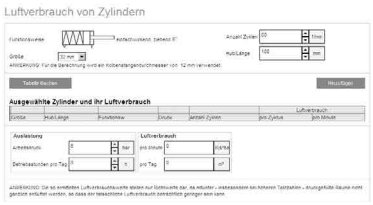
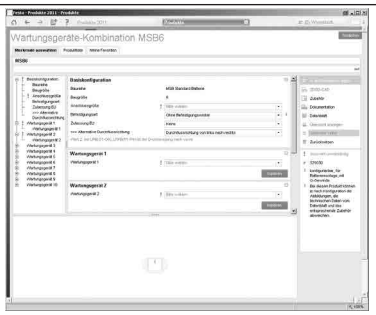
10

Compressed air preparation

Contents

Product overview

Software tools

Air consumption		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. This tool can be found • on our website at www.festo.com/catalogue by clicking on the blue icon "Engineering".
Configurator		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. A dynamic graphic generated on the basis of the configuration provides visual assistance in selecting the correct product features. The configurator is part of the electronic catalogue and is not available as a separate software program.

Service unit combinations: MS series

	 **Service unit combinations MSB4, MSB6, MSB9** ★	 **Service units MSE6-E2M**
Pneumatic connection 1	G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, NPT1 1/2-11 1/2, NPT1 1/4-11 1/2, NPT1-11 1/2, NPT1/2-14, NPT3/4-14	G1/2
Standard nominal flow rate	750 ... 18000 l/min	
Flow measuring range end value		5000 l/min
Pressure regulation range	0.5 ... 16 bar	
Operating pressure	0 ... 20 bar	3.5 ... 10 bar
Grade of filtration	0.01 ... 40 µm	
Fieldbus interface		2x socket, M12x1, 4-pin, D-coded, 2x RJ45 push-pull socket, AIDA, 2x SCRJ push-pull socket, AIDA, Sub-D socket, 9-pin
Description	• Combination of filter regulator, filter, lubricator, on/off valve, soft-start valve • Size 4, 6, 9	• Grid dimension 62 mm • Intelligent service unit component for optimising the use of compressed air as an energy medium in industrial automation technology • Combination of stop valve, flow sensor, pressure sensor and fieldbus node • Identification of production downtime and leakages • User-controlled shut-off and pressurisation • Equipped with measurement, control and diagnostic functions • Fieldbus connection (PROFIBUS DP, PROFINET IO, EtherNet/IP or EtherCAT®) via integrated fieldbus nodes enables connection to a higher-level controller
→ Page/online	**745**	**mse6**

Service unit combinations: MS series

	 **Energy efficiency module MSE6-D2M**	 **Energy efficiency module MSE6-C2M**
Pneumatic connection 1	G1/2	G1/2
Standard nominal flow rate		
Flow measuring range end value	5000 l/min	5000 l/min
Pressure regulation range		
Operating pressure	3.5 ... 13 bar	5 ... 11 bar
Grade of filtration		
Fieldbus interface		2x RJ45 push-pull socket, AIDA
Description	• Grid dimension 62 mm • Intelligent service unit component for optimising the use of compressed air as an energy medium in industrial automation technology • Combination of flow sensor and stop valve with pressure sensor • Identification of production downtime and leakages • User-controlled shut-off and pressurisation • Equipped with measurement, control and diagnostic functions • Fieldbus connection (PROFINET IO) via the fieldbus node of the energy efficiency module MSE6-C2M-...-M actuated via the CPX extension or CPX terminal	• Grid dimension 62 mm • Intelligent service unit component for optimising the use of compressed air as an energy medium in industrial automation technology • Combination of fieldbus node, flow sensor, proportional pressure regulator and stop valve with pressure sensor • Identification of production downtime and leakages • User-controlled shut-off and pressure regulation • Configurable rise limit for setpoint pressure • Equipped with measurement, control and diagnostic functions • Fieldbus connection (PROFINET IO) via integrated bus nodes enables connection to a higher-level controller • System extension by extending CPX row 1 interface for connecting an energy efficiency module MSE6-D2M or connecting digital and analogue CPX IO modules • Two digital inputs and outputs
→ **Page/online**	**mse6**	**mse6**

Filter regulators/lubricators: MS series

	 **Service unit combinations MSB4-FRC, MSB6-FRC** ★
Pneumatic connection 1	G1/2, G1/4, G1/8, G3/8
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 µm, 40 µm
Description	• Filter, regulator and lubricator functions in a single unit • High flow rate and highly efficient in removing contaminants • Good control characteristics with minimal pressure hysteresis • Sizes 4, 6
→ **Page/online**	**745**

Product overview

Filter regulators: MS series

	 **Filter regulators MS2-LFR, MS4-LFR, MS6-LFR, MS9-LFR, MS12-LFR** ★
Pneumatic connection 1	Internal, G1/2, G1/4, G1/8, G3/8, M5, QS-6
Standard nominal flow rate	140 ... 24000 l/min
Pressure regulation range	0.3 ... 16 bar
Operating pressure	0.8 ... 20 bar
Grade of filtration	5 µm, 40 µm
Description	• MS2-LFR, 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 control characteristics with minimal pressure hysteresis and primary pressure compensation • 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 • Size 2, 4, 6, 9, 12
➔ **Page/online**	**767, ms4-lfr**

Filters: MS series

	 **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	Internal, G1/2, G1/4, G1/8, G3/8	1 NPT, 1/2 NPT, 1 1/2 NPT, 3/4 NPT, 1 1/4 NPT, Manifold module, G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, G3/8	1 NPT, 1/2 NPT, 1 1/2 NPT, 3/4 NPT, 1 1/4 NPT, Manifold module, G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, G3/8	1 NPT, 1 1/2 NPT, 1/2 NPT, 3/4 NPT, 1 1/4 NPT, Manifold module, G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, G3/8
Standard nominal flow rate	1000 ... 16000 l/min	54 ... 23300 l/min	54 ... 23300 l/min	360 ... 7090 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar
Grade of filtration	5 µm, 40 µm	1 µm	0.01 µm	
Description	• Good particle and condensate separation • High flow rate performance with minimal pressure drop • Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain • Sizes 4, 6, 9, 12	• High-efficiency filter for exceptionally clean compressed air • Removing oil aerosols from compressed air • Optionally with differential pressure indicator for indication of contamination • Available with electronic filter contamination indicator • Sizes 4, 6, 9, 12	• High-efficiency filter for exceptionally clean compressed air • Removing oil aerosols from compressed air • Optionally with differential pressure indicator for indication of contamination • Available with electronic filter contamination indicator • Sizes 4, 6, 9, 12	• Removal of gaseous oil particles from compressed air using activated carbon • Air quality class at the output [1.4.1] to ISO 8573-1 • Eliminates 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**

Regulators: MS series

	 **Pressure regulators MS2-LR, MS4-LR, MS6-LR, MS9-LR** ★	 **Pressure regulators MS12-LR**	 **Pressure regulators MS4-LRB, MS6-LRB**
Pneumatic connection 1	G1/2, G1/4, G1/8, G3/8, M5, QS-6	Sub-base	G1/2, G1/4
Standard nominal flow rate	170 ... 30000 l/min	12000 ... 22000 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	• High flow rate performance with minimal pressure drop • Good control characteristics with minimal pressure hysteresis and primary pressure compensation • With or without secondary exhausting • Lockable rotary knob • Optional pressure sensor and rotary knob pressure gauge • Sizes 2, 4, 6, 9	• Grid dimension 124 mm • High flow rate performance with minimal pressure drop • Good control characteristics with minimal pressure hysteresis and primary pressure compensation • With secondary exhausting • Lockable rotary knob • MS12-LR-...-PO: pneumatically actuated (pressure range determined by pilot regulator) • MS12-LR-...-PE6: electrically actuated (pilot control by proportional pressure regulator)	• To build a regulator manifold with through air supply for pressure ranges that can be adjusted independently of one another • Good control characteristics with minimal pressure hysteresis and primary pressure compensation • Lockable rotary knob • With or 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**	**771, ms4-lr**	**ms12-lr**	**ms4-lrb**

Regulators: MS series

	 **Precision pressure regulators MS6-LRP, MS6-LRPB**	 **Electrical pressure regulators MS6-LRE**
Pneumatic connection 1	G1/2, G1/4, G3/8	G1/2, G1/4
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	• As individual device and for manifold assembly • Manifold assembly with through air supply • Good control characteristics with minimal pressure hysteresis and primary pressure compensation • High secondary exhausting • Lockable rotary knob • Optionally with pressure sensor with display	• Grid dimension 62 mm • With integrated electric drive unit for remotely setting the outlet pressure • Constant output pressure even in the event of a power cut thanks to the fail-safe function • Available with control unit with display • Optional pressure sensor • With or without secondary exhausting
→ **Page/online**	**ms6-lrp**	**ms6-lre**

Product overview

Regulators: individual devices

	 **Precision pressure regulators** **LRP, LRPS**
Pneumatic connection 1	For sub-base Ø 7 mm, G1/4, G1/8
Standard nominal flow rate	240 ... 2300 l/min
Pressure regulation range	0.05 ... 10 bar
Operating pressure	1 ... 12 bar
Max. pressure hysteresis	0.02 bar
Description	• Lockable design • Good control characteristics with minimal pressure hysteresis and primary pressure compensation • High secondary exhausting
➔ Page/online	**775**

Lubricators: MS series

	 **Lubricators** **MS4-LOE, MS6-LOE, MS9-LOE, MS12-LOE**
Pneumatic connection 1	Internal, G1/2, G1/4, G1/8, G3/8
Standard nominal flow rate	1100 ... 27000 l/min
Operating pressure	1 ... 16 bar
Minimum flow rate for lubricator function	40 ... 400 l/min
Description	• 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

	 **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, G1/2, G1/4, G1/8, G3/8
Standard nominal flow rate	4300 l/min	5700 ... 16550 l/min	1200 ... 32000 l/min
Operating pressure	3 ... 10 bar	3 ... 16 bar	0 ... 20 bar
Actuation type	Electric	Electric	Manual
Description	• Reliable 2-channel exhausting with self-monitoring up to Performance Level e and category 4 to EN ISO 13849-1 • For reducing pressure quickly and reliably and for building up pressure gradually • SIL 3 • Adjustable pressure build-up time • Available with silencer • Supply voltage 24 V DC	• 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 • Size: 6, 9	• Manual 3/2-way valve for pressurising and exhausting pneumatic systems • A silencer can be attached or the exhaust air 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	ms6-sv-c	ms4-em1

On/off and soft-start valves: MS series

	 **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, G1/2, G1/4, G1/8, G3/8	Manifold module, G1/2, G1/4, G1/8, G3/8	Manifold module, G1/2, G1/4, G3/8
Standard nominal flow rate	1000 ... 32000 l/min	1000 ... 42000 l/min	1000 ... 42000 l/min
Operating pressure	3 ... 18 bar	2 ... 20 bar	3 ... 18 bar
Actuation type	Electric	Pneumatic	Electric
Description	• Electric 3/2-way valve for pressurising and exhausting pneumatic installations • A silencer can be attached or the exhaust air 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	• 2/2-way valve for slowly pressurising pneumatic systems (for use with on/off valves EM(1) and EE) • For building up pressure gradually • Adjustable pressure build-up time • Sizes 4, 6, 12	• 2/2-way valve for slowly pressurising pneumatic installations 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**	ms4-ee	ms4-dl	ms4-de

Product overview

Air dryers: MS series

	 **Membrane air dryers** **MS4-LDM1, MS6-LDM1**
Pneumatic connection 1	G1/2, G1/4
Standard nominal flow rate	50 ... 400 l/min
Operating pressure	3 ... 12.5 bar
Pressure dew point reduction	20 K
Description	• 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

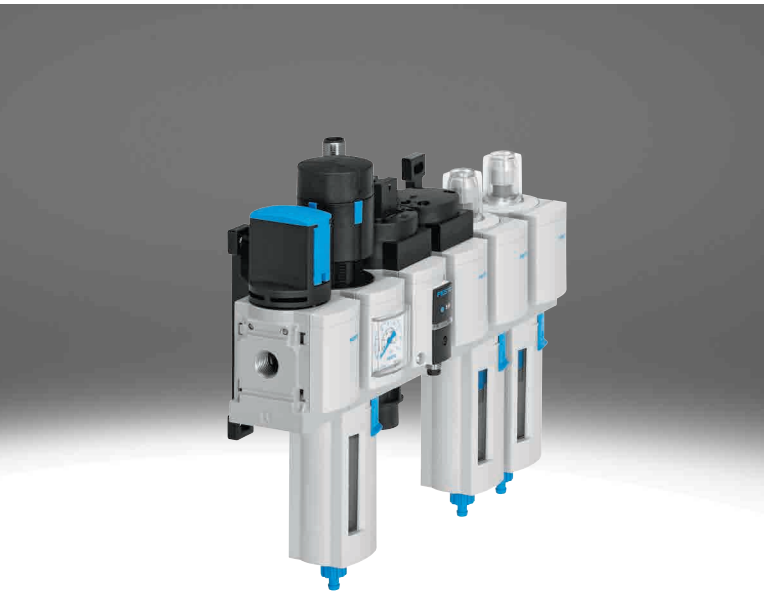
Compressed air distributors: MS series

	 **Branching modules** **MS4-FRM, MS6-FRM,** **MS9-FRM, MS12-FRM**	 **Distributor blocks** **MS4-FRM-FRZ,** **MS6-FRM-FRZ**
Pneumatic connection 1	G1/4, G1/2, G1, G2, NPT1-11 1/2, Manifold module, G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, G3/8, NPT1 1/2-11 1/2, NPT1 1/4-11 1/2, NPT1-11 1/2, NPT1/2-14, NPT3/4-14	G1/4, G1/2
Standard nominal flow rate in main flow direction 1->2	1200 ... 50000 l/min	4050 ... 14600 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar
Description	• 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	• Slim compressed air 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 size MS4 with pressure gauge with large rotary knob • Sizes 4, 6
➔ Page/online	ms*-frm	ms*-frm-frz

Condensate drains: MS series

	 **Water separators** **MS6-LWS, MS9-LWS, MS12-LWS**
Pneumatic connection 1	G1/2, G1/4, G3/8
Operating pressure	0.8 ... 16 bar
Description	• No replacement of filter cartridges necessary • Constantly high condensate separation (99%) up to the maximum flow rate • Available with fully automatic or fully automatic, electrically actuated condensate drain • Size 6, 9, 12
➔ Page/online	ms6-lws

Service unit combinations MSB



Highlights

+ Service unit combinations in sizes 4, 6 and 9
+ 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

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Service unit combinations MSB

Product range overview

MS series service unit components

Solutions for every application

With its large product range, highly effective components and a wide choice of functions, the MS series from Festo offers a complete concept for compressed air preparation. It is suitable for simple standard applications as well as application-specific solutions to the highest quality standards.

Available as individual components, pre-assembled combinations ex-stock, application-specific combinations or complete turnkey solutions. The five sizes in the MS series achieve maximum flow rates with minimum space requirements.

Freely combinable function modules

All the individual components, such as pressure regulators, on/off and soft-start valves with safety function, filters, pressure and flow sensors, dryers, sensors and lubricators, can be assembled into a suitable solution for every task. Their modular structure means that the components are freely combinable.

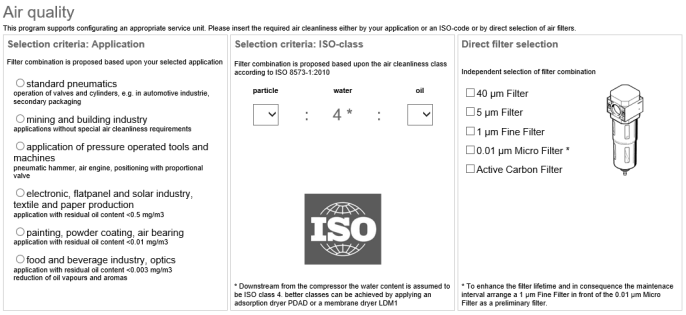
The simple connection method saves time when replacing individual modules without needing to dismantle the entire combination. Many of the components are also UL and ATEX certified.

CAD models and configurator

Convenient aids for planning and selecting application-specific individual components and combinations. The product configurator lets you configure customised solutions quickly and transfer the order data with no hassle.

Engineering tools

Selection tool for choosing the right service unit without oversizing, and with the right air quality class:
➔ www.festo.com/**engineering**



Size differences

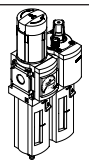
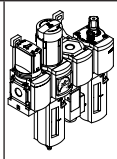
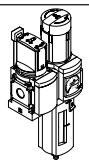
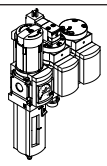
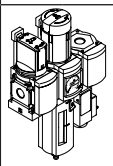
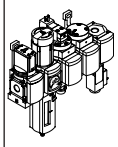
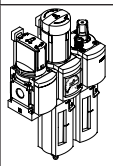
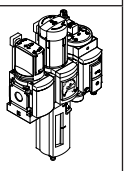
Size		MS2	MS4	MS6	MS9	MS12
Grid dimension	[mm]	25	40	62	90	124
Connection sizes		M5, QS-6	G1/8, G1/4, G3/8	G1/4, G3/8, G1/2, G3/4	G1/2, G3/4, G1, G1 1/4, G1 1/2	G1, G1 1/4, G1 1/2, G2
Standard nominal flow rate qnN[1)]	[l/min]	350	1800	6500	20000	22000

1) Using pressure regulator MS-LR as an example

MS series service units

Type	Description	Size	Pneumatic connection		
			Push-in connector	Female thread	Connecting plate with thread
Service units MSB-FRC					Technical data ➔ www.festo.com/**msb**
	Combinations of filter regulator and lubricator	4	–	G1/8, G1/4	–
		6	–	G1/4, G3/8, G1/2	–
Service units MSB					Technical data ➔ www.festo.com/**msb**
	7 combinations, predefined	4	–	G1/4	–
		6	–	G1/2	–
	Freely configurable combinations	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

Product range overview

Pre-configured combinations		MSB-FRC	# 1	# 2	# 3	# 4	# 5	# 6	# 7
Comprising:	Type								
Manually operated on-off valve	EM1	–	■	■	–	■	■	■	■
Filter regulator with pressure gauge, lockable	LFR	■	■	■	■	■	■	■	■
Solenoid actuated on-off valve	EE	–	–	–	■	–	■	–	–
Solenoid actuated on/off valve, with pressure sensor	EE	–	–	–	–	–	–	–	■
Pneumatically actuated soft-start valve	DL	–	–	–	■	–	■	–	–
Branching module with pressure switch	FRM	–	■	–	–	■	–	–	–
Branching module with pressure sensor	FRM	–	–	–	–	–	■	–	–
Lubricator	LOE	■	■	–	–	–	–	■	–
Mounting brackets	WP	■	■	■	■	■	■	■	■
Technical data ➔									

Freely configurable service unit combinations MSB

- 3 sizes:
  MSB4 – grid dimension 40 mm
  MSB6 – grid dimension 62 mm
  MSB9 – grid dimension 90 mm
- Threaded connections in the product housing or with connecting plates
- Type of mounting and flow direction can be optionally selected
- Can be configured in accordance with the ATEX directive for explosive atmospheres

Configurator

The configurator enables step-by-step configuration of complex service unit combinations. It is divided into a basic configuration and the individual service unit configurations.
The technical parameters for the entire service unit combination are defined using the features of the basic configuration. All service unit configurations define the service unit along with the general technical conditions.
You can navigate through your configuration using the structure [1]. All of the features available for selection are stored in drop-down lists [2]. Missing or incomplete information is indicated by an exclamation mark. Features shown against a grey background cannot be selected in the selected configuration ➔ table „Conditions and exclusion of features“.
If you select a feature shown against a grey background, red font will indicate that the configuration is incorrect.
A dynamic graphic [3] and the order code [4] (➔ type codes) are created in accordance with your current configuration.

Service unit combinations MSB

Product range overview

Information

The adjacent columns provide a brief overview of the available service units of a specific size.
You can find detailed information and all of the technical data in the documentation for the corresponding service unit. To do so, enter the code for the service unit (e.g. MS6-EE) in the search window in the product catalogue and select Documentation.

Note

Individual devices with selected features are available for the configurable service unit combinations. Further feature options can be selected via the configurable individual device.

Part No.	Type
531029	MSB4

- Filter regulator MS4-LFR
- Pressure regulator MS4-LR
- Pressure regulator for manifold assembly MS4-LRB
- Filter MS4-LF
- Fine and micro filter MS4-LFM
- Activated carbon filter MS4-LFX
- Lubricator MS4-LOE
- Manual on-off valve MS4-EM1
- Electric on-off valve MS4-EE
- Pneumatic soft-start valve MS4-DL
- Electric soft-start valve MS4-DE
- Membrane air dryer MS4-LDM1
- Branching module MS4-FRM

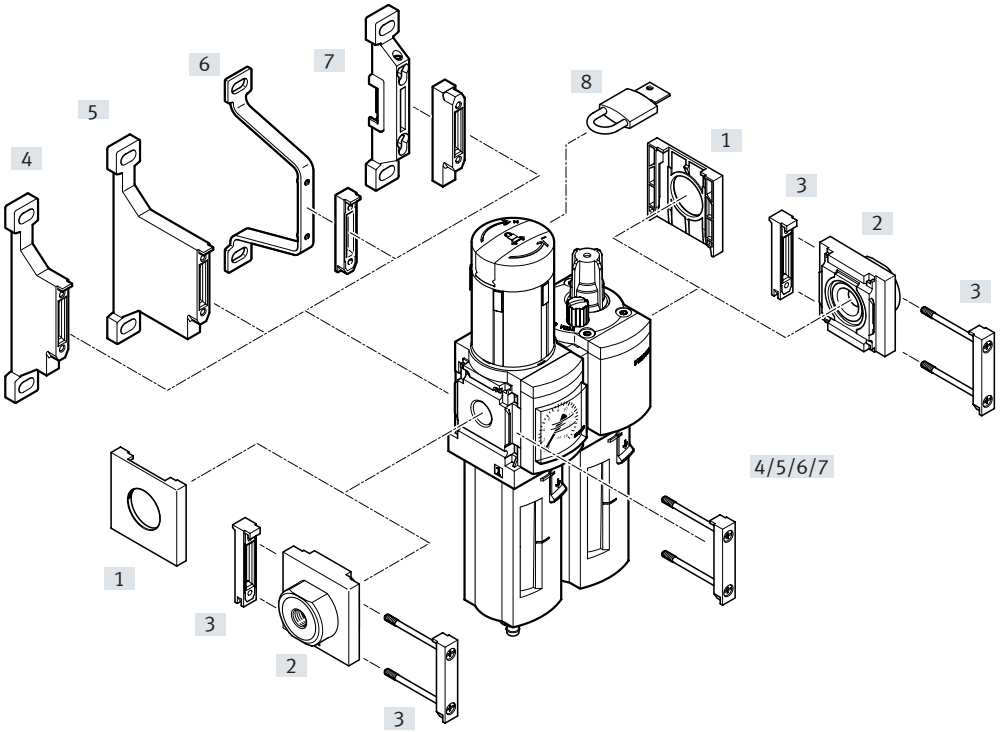
Part No.	Type
531030	MSB6

- Filter regulator MS6-LFR
- Pressure regulator MS6-LR
- Pressure regulator for manifold assembly MS6-LRB
- Precision pressure regulator MS6-LRP
- Precision pressure regulator for manifold assembly MS6-LRPB
- Electric pressure regulator MS6-LRE
- Filter MS6-LF
- Fine and micro filter MS6-LFM
- Activated carbon filter MS6-LFX
- Water separator MS6-LWS
- Lubricator MS6-LOE
- Manual on-off valve MS6-EM1
- Electric on-off valve MS6-EE
- Pneumatic soft-start valve MS6-DL
- Electric soft-start valve MS6-DE
- Soft-start and exhaust valve MS6-SV
- Membrane air dryer MS6-LDM1
- Branching module MS6-FRM
- Flow sensor SFAM-62

Part No.	Type
552938	MSB9

- Filter regulator MS9-LFR
- Pressure regulator MS9-LR
- Filter MS9-LF
- Fine and micro filter MS9-LFM
- Activated carbon filter MS9-LFX
- Water separator MS9-LWS
- Lubricator MS9-LOE
- Manual on-off valve MS9-EM
- Electric on-off valve MS9-EE
- Soft-start and exhaust valve MS9-SV
- Branching module MS9-FRM
- Flow sensor SFAM-90

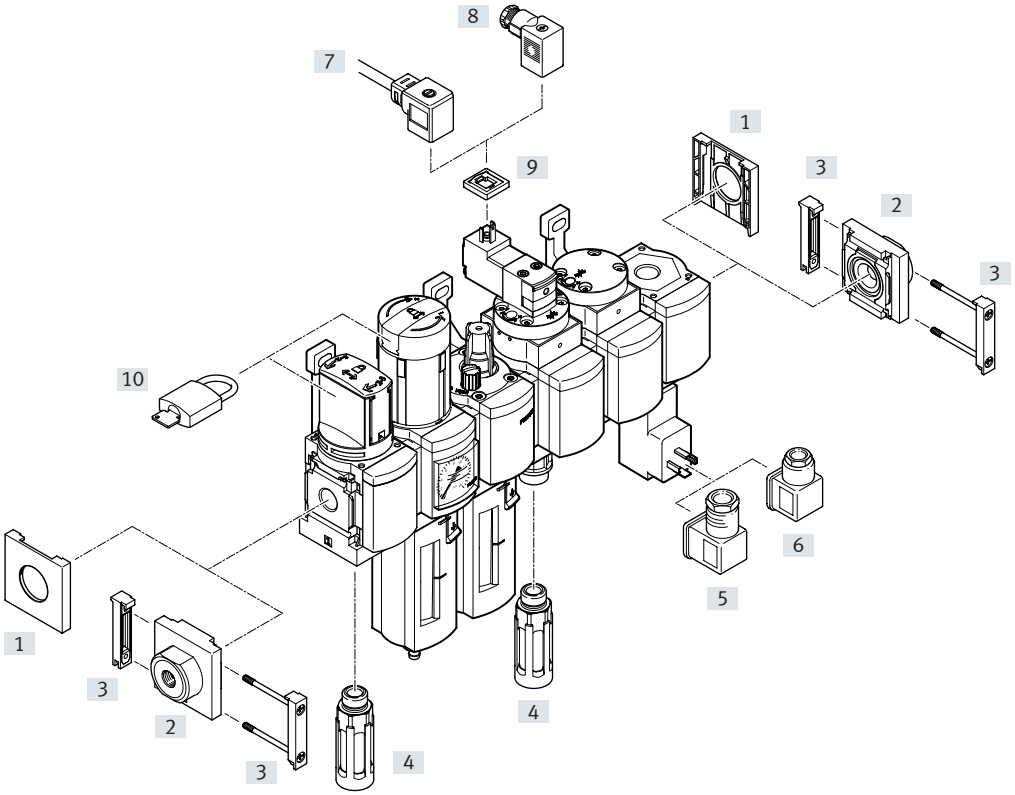
Peripherals overview – MSB-FRC



Mounting components and accessories		→ Page/ Internet
[1]	Cover cap MS4/6-END	765
[2]	Connecting plate Set MS4/6-AG...	
[3]	Module connector MS4/6-MV	766
[4]	Mounting bracket MS4/6-WP	

Mounting components and accessories		→ Page/ Internet
[5]	Mounting bracket MS4/6-WPB	766
[6]	Mounting bracket MS4/6-WPE	
[7]	Mounting bracket MS4/6-WPM	
[8]	Padlock LRVS-D	

Peripherals overview – MSB pre-configured and configurable combinations



Note
The range of accessories depends on the service unit selected.

Range of accessories
➔ Peripherals pages of the individual components

Mounting components and accessories		➔ Page/ Internet
[1]	Cover cap MS4/6-END	765
[2]	Connecting plate Set MS4/6-AG...	
[3]	Module connector MS4/6-MV	766
[4]	Silencer U	765
[5]	Angled plug socket PEV-1/4-WD-LED	
[6]	Plug socket MSSD-C-4P	

Mounting components and accessories		➔ Page/ Internet
[7]	Plug socket with cable KMEB	765
[8]	Plug socket MSSD-EB	
[9]	Illuminating seal MEB-LD	
[10]	Padlock LRVS-D	766
–	Mounting bracket MS4/6-WP/WPB/WPE/WPM	

Service unit combinations MSB

Ordering data – Combination FRC

At a glance

- Filter regulator MS...-LFR with pressure gauge and manual rotary or fully automatic condensate drain
- Lubricator MS...-LOE-R
- Mounting bracket MS...-WP

Flow rate:
850 ... 4,800 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
0.3 ... 7 bar and 0.5 ... 12 bar

- For filtered and unlubricated compressed air
- Output pressure is infinitely adjustable within the pressure regulation range
- High flow rate and highly efficient removal of contaminants
- Good regulating characteristics with minimal pressure hysteresis
- Setting values are secured by lokking the rotary knob
- Choice of filter cartridges: 5 µm or 40 µm

Size	Connection	Condensate drain	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	G1/4	Manual rotary	40	8042669	MSB4-1/4-FRC13:J120M1
MSB6	G1/4	Manual rotary	40	8042673	MSB6-1/4-FRC13:J120M1
Pressure regulation range 0.3 ... 7 bar, plastic bowl guard, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	G1/4	Manual rotary	40	531109	MSB4-1/4-FRC1:J5M1
MSB6	G1/4	Manual rotary	40	530230	MSB6-1/4-FRC1:J5M1
Pressure regulation range 0.5 ... 12 bar, plastic bowl guard, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	G1/8	Manual rotary	40	531133	MSB4-1/8-FRC5:J1M1
	G1/4		5	531121	MSB4-1/4-FRC7:J3M1
	G1/4		40	★ 531117	MSB4-1/4-FRC5:J1M1
	G1/4	Fully automatic	40	531119	MSB4-1/4-FRC6:J2M1
MSB6	G1/4	Manual rotary	40	530268	MSB6-1/4-FRC5:J1M1
	G3/8		40	530292	MSB6-3/8-FRC5:J1M1
	G1/4		5	530248	MSB6-1/4-FRC7:J3M1
	G1/4		40	★ 530244	MSB6-1/4-FRC5:J1M1
	G1/4	Fully automatic	40	530246	MSB6-1/4-FRC6:J2M1
Pressure regulation range 0.5 ... 12 bar, metal bowl, pressure gauge with outer scale in bar and inner scale in psi					
MSB6	G1/4	Manual rotary	40	530252	MSB6-1/4-FRC9:J11M2
			5	530234	MSB6-1/4-FRC11:J9M2
		Fully automatic	40	530232	MSB6-1/4-FRC10:J12M2
			5	530236	MSB6-1/4-FRC12:J10M2

Data sheet

General technical data			
Size		MSB4	MSB6
Pneumatic connection 1, 2		G⅛	–
		G¼	G¼
		–	G⅜
		–	G½
Design		Filter regulator with pressure gauge	
		Proportional standard mist lubricator	
Regulating function		Output pressure constant, with primary pressure compensation, with return flow function, with secondary venting	
Type of mounting		Via accessories	
Assembly position		Vertical ±5°	
Grade of filtration	[µm]	5	
		40	
Air purity class at the output		Compressed air in accordance with ISO 85731:2010 [6:4:–] (grade of filtration 5 µm)	
		Compressed air in accordance with ISO 85731:2010 [7:4:–] (grade of filtration 40 µm)	
Bowl guard		Plastic bowl guard	Plastic bowl guard
		–	Integrated as metal bowl
Condensate drains		Manual rotary	
		Fully automatic	
Actuator lock		Rotary knob with detent, lockable via accessories	
Pressure regulation range	[bar]	0.3 ... 7	
		0.5 ... 12	
Pressure indicator		With pressure gauge	

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Standard nominal flow rate qnN[1] [l/min]						
Size		MSB4		MSB6		
Pneumatic connection		G⅛	G¼	G¼	G⅜	G½
Pressure regulation range 0.3... 7 bar						
Grade of filtration	40 µm	–	1,400	–	–	4,800
Pressure regulation range 0.5... 12 bar						
Grade of filtration	5 µm	–	850	–	–	3,600
	40 µm	850	900	1,900	3,500	3,700

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar.
125 l/min must be available for the fully automatic condensate drain to close correctly.

Operating and environmental conditions					
Condensate drain		Manual rotary		Fully automatic	
Size		MSB4	MSB6	MSB4	MSB6
Operating pressure	[bar]	1.5 ... 14	1.5 ... 20	2 ... 12	2 ... 12
Operating medium		Compressed air in accordance with ISO 85731:2010 [–:4:–]		Compressed air in accordance with ISO 85731:2010 [7:4:–]	
		Inert gases			
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)			
Ambient temperature	[°C]	–10 ... +60		+5 ... +60	
Temperature of medium	[°C]	–10 ... +60		+5 ... +60	
Storage temperature	[°C]	–10 ... +60		–10 ... +60	
Corrosion resistance class CRC[1]		2			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Note
Materials → Data sheet for the individual components online

Service unit combinations MSB

Ordering data – Combination 1

At a glance

- On/off valve MS...-EM1, manually operated
- Filter regulator MS...-LFR with pressure gauge and manual rotary condensate drain
- Branching module MS...-FRM-Y with pressure switch without display
- Lubricator MS...-LOE-R
- Mounting bracket MS...-WP

Flow rate:
950 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
1 ... 12 bar

- For filtered and unlubricated compressed air
- Supply pressure can be switched on or off
- Output pressure is infinitely adjustable within the pressure regulation range
- The unit is vented when switched off
- Electrical pressure monitoring with adjustable switching pressure
- Removal of filtered and unlubricated compressed air at the branching module ports

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 1 ... 12 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	G1/4	Manual rotary	40	542295	MSB4-1/4:C3J1F3M1-WP

Data sheet

General technical data		
Size		MSB4
Pneumatic connection 1, 2, 3		G1/4
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary venting
Type of mounting		With accessories
Mounting position		Vertical ±5°
Grade of filtration	[µm]	40
Air quality class at the output		Compressed air to ISO 8573-1:2010 [7:4:–]
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

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN [l/min]		
Size		MSB4
Grade of filtration	40 µm	950

Operating and environmental conditions		
Condensate drain		Manual rotary
Size		MSB4
Operating pressure	[bar]	1.5 ... 14
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)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Storage temperature	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials → Data sheet for the individual components online

Ordering data – Combination 2

At a glance

- On/off valve MS...-EM1, manually operated
- Filter regulator MS...-LFR with pressure gauge and manual rotary or fully automatic condensate drain
- Mounting bracket MS...-WP

Flow rate:
950 ... 5500 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
0.5 ... 12 bar

- For filtered and unlubricated compressed air
- Supply pressure can be switched on or off
- Output pressure is infinitely adjustable within the pressure regulation range

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 0.5 ... 7 bar, pressure gauge with outer scale in MPa					
MSB4	G1/4	Manual rotary	40	8042668	MSB4-1/4:C3:J120-WP
MSB6	G1/2	Manual rotary	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	G1/4	Manual rotary	5	542304	MSB4-1/4:C3J3-WP
			40	★ 8025354	MSB4-1/4:C3:J1-WP
		Fully automatic	40	542298	MSB4-1/4:C3J2-WP
			5	542310	MSB4-1/4:C3J4-WP
MSB6	G1/2	Manual rotary	5	542280	MSB6-1/2:C3J3-WP
			40	★ 8025355	MSB6-1/2:C3:J1-WP
		Fully automatic	40	542274	MSB6-1/2:C3J2-WP
			5	542286	MSB6-1/2:C3J4-WP

Data sheet

General technical data Size		MSB4	MSB6
Pneumatic connection 1, 2, 3		G1/4	G1/2
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary venting	
Type of mounting		With accessories	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	5	
		40	
Air quality class at the output		Compressed air to ISO 8573-1:2010 [6:4:4] (grade of filtration 5 µm)	
		Compressed air to ISO 8573-1:2010 [7:4:4] (grade of filtration 40 µm)	
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	

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Service unit combinations MSB

Data sheet

Standard nominal flow rate qnN [l/min]					
Condensate drain		Manual rotary		Fully automatic	
Size		MSB4	MSB6	MSB4	MSB6
Pressure regulation range 0.5 ... 7 bar					
Grade of filtration	40 µm	1150	5500	–	–
Pressure regulation range 0.5 ... 12 bar					
Grade of filtration	5 µm	950	4800	950	4800
	40 µm	1700	5100	1000	5100

125 l/min must be available for the fully automatic condensate drain to close correctly.

Operating and environmental conditions					
Condensate drain		Manual rotary		Fully automatic	
Size		MSB4	MSB6	MSB4	MSB6
Operating pressure	[bar]	0.8 ... 14	0.8 ... 18	2 ... 12	2 ... 12
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)			
Ambient temperature	[°C]	–10 ... +60		+5 ... +60	
Temperature of medium	[°C]	–10 ... +60		+5 ... +60	
Storage temperature	[°C]	–10 ... +60		–10 ... +60	
Corrosion resistance class CRC[1]		2			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials ➔ Data sheet for the individual components online

Ordering data – Combination 3

At a glance

- Filter regulator MS...-LFR with pressure gauge and manual rotary or fully automatic condensate drain
- On/off valve MS...-EE-V24, solenoid actuated
- Soft-start valve MS...-DL, pneumatically actuated
- Mounting bracket MS...-WP

Flow rate:
750 ... 3100 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
4 ... 12 bar

- For filtered and unlubricated compressed air
- Gradual pressure build-up prevents sudden, unpredictable movements
- Output pressure is infinitely adjustable within the pressure regulation range
- The unit is vented when switched off

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 4 ... 12 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	G1/4	Manual rotary	40	531101	MSB4-1/4:J1D1A1-WP
MSB6	G1/2	Manual rotary	40	530222	MSB6-1/2:J1D1A1-WP
		Fully automatic	40	530224	MSB6-1/2:J2D1A1-WP

Data sheet

General technical data			
Size		MSB4	MSB6
Pneumatic connection 1, 2, 3		G1/4	G1/2
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary venting	
Type of mounting		With accessories	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	40	
Air quality class at the output		Compressed air to ISO 8573-1:2010 [7:4:4] (grade of filtration 40 µm)	
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	
Characteristic coil data		24 V DC: 1.5 W	24 V DC: 1.5 W

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN [l/min]			
Size		MSB4	MSB6
Grade of filtration	40 µm	750	3100

125 l/min must be available for the fully automatic condensate drain to close correctly.

Operating and environmental conditions				
Condensate drain		Manual rotary		Fully automatic
Size		MSB4	MSB6	MSB6
Operating pressure	[bar]	4.5 ... 14	4.5 ... 18	4.5 ... 12
Operating medium		Compressed air to ISO 8573-1:2010 [–:4:–]		Compressed air to ISO 8573-1:2010 [7:4:–]
		Inert gases		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Ambient temperature	[°C]	–10 ... +60		+5 ... +60
Temperature of medium	[°C]	–10 ... +60		+5 ... +60
Storage temperature	[°C]	–10 ... +60		–10 ... +60
Corrosion resistance class CRC[1)]		2		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials → Data sheet for the individual components online

Service unit combinations MSB

Ordering data – Combination 4

At a glance

- On/off valve MS...-EM1, manually operated
- Filter regulator MS...-LFR with pressure gauge and manual rotary or fully automatic condensate drain
- Branching module MS...-FRM-Y with pressure switch or MS...-FRM-AD7 with pressure sensor for status indication
- Mounting bracket MS...-WP

Flow rate:
1300 ... 5300 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
0.5 ... 12 bar

- For filtered and unlubricated compressed air
- Supply pressure can be switched on or off
- Output pressure is infinitely adjustable within the pressure regulation range
- Electrical pressure monitoring with adjustable switching pressure

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 0.5 ... 7 bar, pressure gauge with outer scale in MPa, branching module with pressure sensor					
MSB4	G1/4	Manual rotary	40	8042667	MSB4-1/4:C3:J120:F12-WP
MSB6	G1/2	Manual rotary	40	8042671	MSB6-1/2:C3:J120:F12-WP
Pressure regulation range 0.5 ... 10 bar, pressure gauge with outer scale in bar and inner scale in psi, branching module with pressure sensor					
MSB4	G1/4	Manual rotary	40	★8025356	MSB4-1/4:C3:J1:F12-WP
MSB6	G1/2	Manual rotary	40	★8025357	MSB6-1/2:C3:J1:F12-WP
Pressure regulation range 0.5 ... 12 bar, pressure gauge with outer scale in bar and inner scale in psi, branching module with pressure switch					
MSB4	G1/4	Manual rotary	40	542294	MSB4-1/4:C3J1F3-WP
		Fully automatic	40	542300	MSB4-1/4:C3J2F3-WP
MSB6	G1/2	Manual rotary	40	542270	MSB6-1/2:C3J1F3-WP
		Fully automatic	40	542276	MSB6-1/2:C3J2F3-WP

Data sheet

General technical data					
Size	MSB4		MSB6		
Branching module with	Pressure switch	Pressure sensor	Pressure switch	Pressure sensor	
Pneumatic connection 1, 2, 3	G1/4		G1/2		
Regulator function	Output pressure constant, with primary pressure compensation, with return flow, with secondary venting				
Type of mounting	With accessories				
Mounting position	Vertical ±5°				
Grade of filtration [µm]	40				
Air quality class at the output	Compressed air to ISO 8573-1:2010 [7:4:4] (grade of filtration 40 µm)				
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 [bar]	–	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 output pressure				

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Data sheet

Standard nominal flow rate qnN [l/min]					
Size		MSB4		MSB6	
Branching module with		Pressure switch	Pressure sensor	Pressure switch	Pressure sensor
Pressure regulation range 0.5 ... 7 bar					
Grade of filtration	40 µm	–	1750	–	5300
Pressure regulation range 0.5 ... 10 bar					
Grade of filtration	40 µm	–	1600	–	4500
Pressure regulation range 0.5 ... 12 bar					
Grade of filtration	40 µm	1300	–	4500	–

125 l/min must be available for the fully automatic condensate drain to close correctly.

Operating and environmental conditions							
Condensate drain		Manual rotary				Fully automatic	
Size		MSB4		MSB6		MSB4	MSB6
Branching module with		Pressure switch	Pressure sensor	Pressure switch	Pressure sensor	Pressure switch	Pressure switch
Operating pressure	[bar]	0.8 ... 14		0.8 ... 18		2 ... 12	2 ... 12
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)					
Ambient temperature	[°C]	–10 ... +60	0 ... +50	–10 ... +60	0 ... +50	+5 ... +60	
Temperature of medium	[°C]	–10 ... +60	0 ... +50	–10 ... +60	0 ... +50	+5 ... +60	
Storage temperature	[°C]	–10 ... +60				–10 ... +60	
Corrosion resistance class CRC[1]		2					

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials → Data sheet for the individual components online

Service unit combinations MSB

Ordering data – Combination 5

At a glance

- On/off valve MS...-EM1, manually operated
- Filter regulator MS...-LFR with pressure gauge and manual rotary or fully automatic condensate drain
- On/off valve MS...-EE-V24, solenoid actuated
- oft-start valve MS...-DL, pneumatically actuated
- Branching module MS...-FRM-Y with pressure switch without display
- Mounting bracket MS...-WP

Flow rate:
750 ... 3100 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
4 ... 12 bar

- For filtered and unlubricated compressed air
- Supply pressure can be switched on or off
- Output pressure is infinitely adjustable within the pressure regulation range
- Gradual pressure build-up prevents sudden, unpredictable movements
- The unit is vented when switched off
- Electrical pressure monitoring with adjustable switching pressure

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 4 ... 12 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	G1/4	Manual rotary	40	542293	MSB4-1/4:C3J1D1A1F3-WP
		Fully automatic	40	542299	MSB4-1/4:C3J2D1A1F3-WP
MSB6	G1/2	Manual rotary	40	542269	MSB6-1/2:C3J1D1A1F3-WP
			5	542281	MSB6-1/2:C3J3D1A1F3-WP
		Fully automatic	40	542275	MSB6-1/2:C3J2D1A1F3-WP
			5	542287	MSB6-1/2:C3J4D1A1F3-WP

Data sheet

General technical data

Size		MSB4	MSB6
Pneumatic connection 1, 2, 3		G1/4	G1/2
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary venting	
Type of mounting		With accessories	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	–	5
		40	
Air quality class at the output		Compressed air to ISO 8573-1:2010 [6:4:4] (grade of filtration 5 µm)	
		Compressed air to ISO 8573-1:2010 [7:4:4] (grade of filtration 40 µm)	
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	
Characteristic coil data		24 V DC: 1.5 W	24 V DC: 1.5 W

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN [l/min]

Size		MSB4	MSB6
Grade of filtration	5 µm	–	3000
	40 µm	750	3100

125 l/min must be available for the fully automatic condensate drain to close correctly.

Data sheet

Operating and environmental conditions					
Condensate drain		Manual rotary		Fully automatic	
Size		MSB4	MSB6	MSB4	MSB6
Operating pressure	[bar]	4.5 ... 14	4.5 ... 18	4.5 ... 12	4.5 ... 12
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)			
Ambient temperature	[°C]	–10 ... +60		+5 ... +60	
Temperature of medium	[°C]	–10 ... +60		+5 ... +60	
Storage temperature	[°C]	–10 ... +60		–10 ... +60	
Corrosion resistance class CRC[1]		2			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials ➔ Data sheet for the individual components online

Service unit combinations MSB

Ordering data – Combination 6

At a glance

- On/off valve MS...-EM1, manually operated
- Filter regulator MS...-LFR with pressure gauge and manual rotary or fully automatic condensate drain
- Lubricator MS...-LOE-R
- Mounting bracket MS...-WP

Flow rate:
750 ... 3100 l/min

Temperature range:
–10 ... +60°C

Pressure regulation range:
1 ... 12 bar

- For filtered and unlubricated compressed air
- Supply pressure can be switched on or off
- Output pressure is infinitely adjustable within the pressure regulation range

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 1 ... 12 bar, pressure gauge with outer scale in bar and inner scale in psi					
MSB4	G1/4	Manual rotary	40	542296	MSB4-1/4:C3J1M1-WP
MSB6	G1/2	Manual rotary	40	542272	MSB6-1/2:C3J1M1-WP
		Fully automatic	40	542278	MSB6-1/2:C3J2M1-WP

Data sheet

General technical data			
Size		MSB4	MSB6
Pneumatic connection 1, 2, 3		G1/4	G1/2
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary venting	
Type of mounting		With accessories	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	40	
Air quality class at the output		Compressed air to ISO 8573-1:2010 [7:4:–] (grade of filtration 40 µm)	
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	

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN [l/min]			
Size		MSB4	MSB6
Grade of filtration	40 µm	750	3100

125 l/min must be available for the fully automatic condensate drain to close correctly.

Operating and environmental conditions				
Condensate drain		Manual rotary		Fully automatic
Size		MSB4	MSB6	MSB6
Operating pressure	[bar]	1.5 ... 14	1.5 ... 18	2 ... 12
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)		
Ambient temperature	[°C]	–10 ... +60		+5 ... +60
Temperature of medium	[°C]	–10 ... +60		+5 ... +60
Storage temperature	[°C]	–10 ... +60		–10 ... +60
Corrosion resistance class CRC[1)]		2		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials → Data sheet for the individual components online

Ordering data – Combination 7

At a glance

- On/off valve MS...-EM1, manually operated
- Filter regulator MS...-LFR with pressure gauge and manual rotary condensate drain
- On/off valve MS...-EE-10V24P-AD7, solenoid actuated, with pressure sensor for status indication
- Mounting bracket MS...-WP

Flow rate:
1400 ... 4400 l/min

Temperature range:
0 ... +50°C

Pressure regulation range:
0.5 ... 10 bar

- For filtered and unlubricated compressed air
- Supply pressure can be switched on or off
- Output pressure is infinitely adjustable within the pressure regulation range
- When the unit is switched off, quick venting ensures rapid pressure reduction
- Electrical pressure monitoring with adjustable switching pressure

Size	Connection	Condensate drain	Degree of filtration [µm]	Part No.	Type
Pressure regulation range 0.5 ... 7 bar, pressure gauge with outer scale in MPa					
MSB4	G1/4	Manual rotary	40	8042666	MSB4-1/4:C3:J120:D14-WP
MSB6	G1/2	Manual rotary	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	G1/4	Manual rotary	40	★ 8025358	MSB4-1/4:C3:J1:D14-WP
MSB6	G1/2	Manual rotary	40	★ 8025359	MSB6-1/2:C3:J1:D14-WP

Data sheet

General technical data			
Size		MSB4	MSB6
Pneumatic connection 1, 2, 3		G1/4	G1/2
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary venting	
Type of mounting		With accessories	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	40	
Air quality 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 status indication for displaying the output pressure and with electrical output	
		Via pressure gauge for indicating the output pressure	

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Electrical data – On/off valve MS...-EE-10V24P-AD7		
Characteristic coil data		24 V DC: 1.8 W; perm. voltage fluctuations –15%/+10%
Electrical connection		M12x1 to IEC 61076-2-101
Degree of protection for solenoid coil		IP65
Duty cycle	[%]	100

Standard nominal flow rate qnN [l/min]			
Size		MSB4	MSB6
Pressure regulation range 0.5 ... 7 bar			
Grade of filtration	40 µm	1600	4400
Pressure regulation range 0.5 ... 10 bar			
Grade of filtration	40 µm	1400	4000

Service unit combinations MSB

Data sheet

Operating and environmental conditions			
Condensate drain		Manual rotary	
Size		MSB4	MSB6
Operating pressure	[bar]	0.8 ... 14	0.8 ... 18
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)	
Ambient temperature	[°C]	0 ... +50	
Temperature of medium	[°C]	0 ... +50	
Storage temperature	[°C]	–10 ... +60	
Corrosion resistance class CRC[1)]		2	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Note
Materials ➔ Data sheet for the individual components online

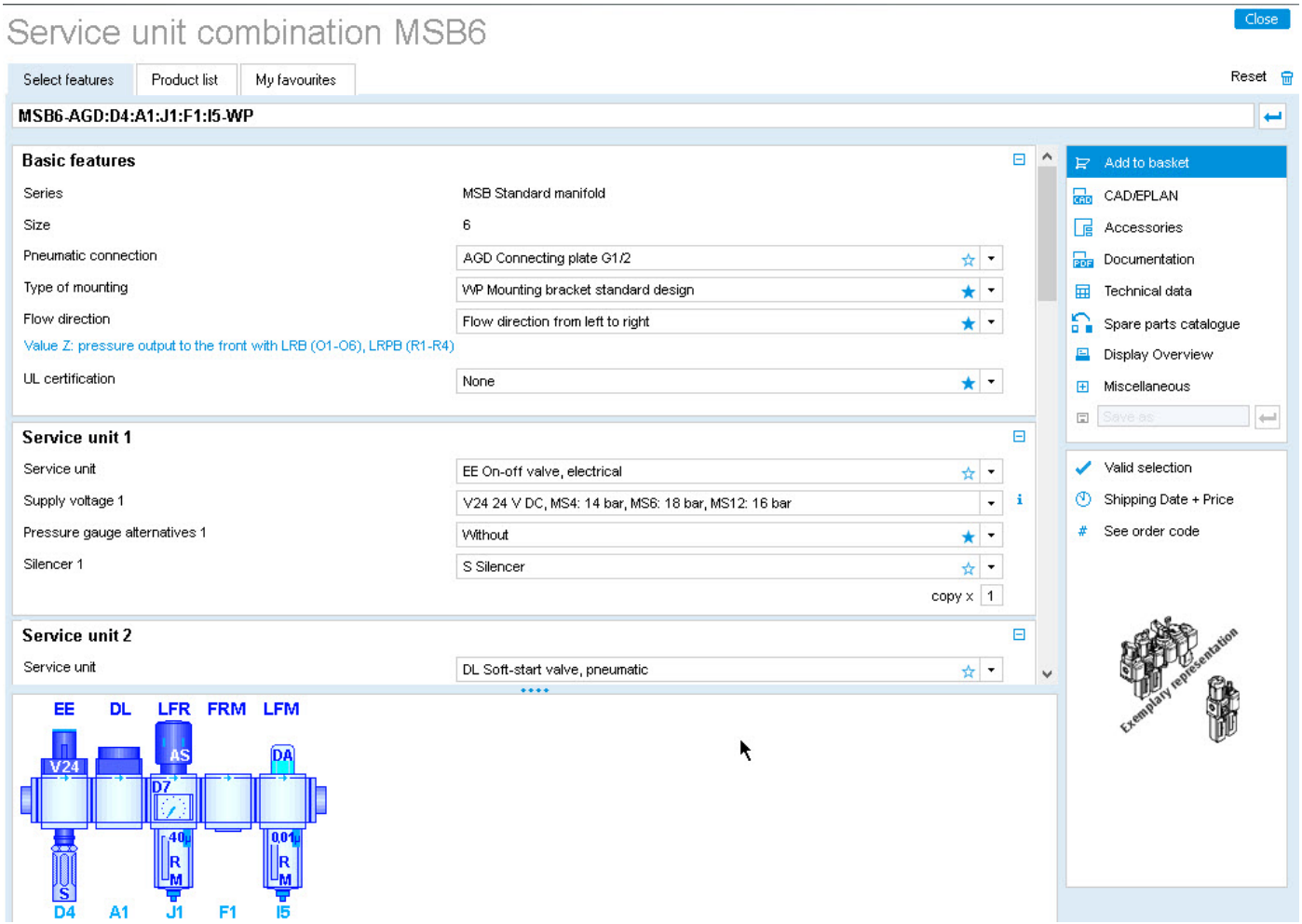
Ordering data – Freely configurable combinations

At a glance

- 3 sizes:
  MSB4 – grid dimension 40 mm
  MSB6 – grid dimension 62 mm
  MSB9 – grid dimension 90 mm
- Threaded connections in the product housing or with connecting plates
- Type of mounting and flow direction can be optionally selected
- Can be configured in accordance with the ATEX directive for explosive atmospheres

Configurator

The configurator enables step-by-step configuration of complex service unit combinations. It is divided into a basic configuration and the individual service unit configurations.
The technical parameters for the entire service unit combination are defined using the features of the basic configuration. All service unit configurations define the service unit along with the general technical conditions.
All of the features available for selection are stored in drop-down lists 1.
Missing or incomplete information is indicated by an exclamation mark. Features shown against a grey background cannot be selected in the selected configuration ➔ table „Conditions and exclusion of features“.
If you select a feature shown against a grey background, red font will indicate that the configuration is incorrect.
A dynamic graphic 2 and the order code 3 are created in accordance with your current configuration.



Service unit combinations MSB

Ordering data – Freely configurable combinations

Information

The adjacent columns provide a brief overview of the available service units of a specific size.
You can find detailed information and all of the technical data in the documentation for the corresponding service unit. To do so, enter the code for the service unit (e.g. MS6-EE) in the search window in the product catalogue and select Documentation.

Note

Individual devices with selected features are available for the configurable service unit combinations. Further feature options can be selected via the configurable individual device.

Part No.	Type
531029	MSB4

- Filter regulator MS4-LFR
- Pressure regulator MS4-LR
- Pressure regulator for manifold assembly MS4-LRB
- Filter MS4-LF
- Fine and micro filter MS4-LFM
- Activated carbon filter MS4-LFX
- Lubricator MS4-LOE
- Manual on-off valve MS4-EM1
- Electric on-off valve MS4-EE
- Pneumatic soft-start valve MS4-DL
- Electric soft-start valve MS4-DE
- Membrane air dryer MS4-LDM1
- Branching module MS4-FRM

Part No.	Type
531030	MSB6

- Filter regulator MS6-LFR
- Pressure regulator MS6-LR
- Pressure regulator for manifold assembly MS6-LRB
- Precision pressure regulator MS6-LRP
- Precision pressure regulator for manifold assembly MS6-LRPB
- Electric pressure regulator MS6-LRE
- Filter MS6-LF
- Fine and micro filter MS6-LFM
- Activated carbon filter MS6-LFX
- Water separator MS6-LWS
- Lubricator MS6-LOE
- Manual on-off valve MS6-EM1
- Electric on-off valve MS6-EE
- Pneumatic soft-start valve MS6-DL
- Electric soft-start valve MS6-DE
- Soft-start and exhaust valve MS6-SV
- Membrane air dryer MS6-LDM1
- Branching module MS6-FRM
- Flow sensor SFAM-62

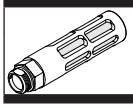
Part No.	Type
552938	MSB9

- Filter regulator MS9-LFR
- Pressure regulator MS9-LR
- Filter MS9-LF
- Fine and micro filter MS9-LFM
- Activated carbon filter MS9-LFX
- Water separator MS9-LWS
- Lubricator MS9-LOE
- Manual on-off valve MS9-EM
- Electric on-off valve MS9-EE
- Soft-start and exhaust valve MS9-SV
- Branching module MS9-FRM
- Flow sensor SFAM-90

Accessories – Ordering data

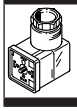
Silencer U

Technical data ➔ online: **u**

	Description	Pneumatic connection	Part No.	Type
	for MS4-EM1/EE	G1/4	6842	U-1/4-B
	for MS6-EM1/EE	G1/2	6844	U-1/2-B

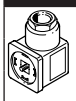
Angled socket PEV

Technical data ➔ online: **pev**

	Description	Operating voltage range	Electrical connection	Switching status display	Part No.	Type
	for PEV-1/4-...-OD	15 .... 30 V DC	4-pin	Yellow LED	164274	PEV-1/4-WD-LED-24
		≤ 230 V AC ≤ 180 V DC	4-pin	Yellow LED	164275	PEV-1/4-WD-LED-230

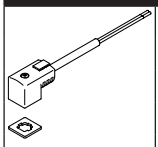
Plug socket MSSD

Technical data ➔ online: **mssd**

	Description	Operating voltage range	Electrical connection	Type of mounting cable connection	Part No.	Type
	for PEV-1/4-...-OD	≤ 250 V AC/DC	3-pin	Clamping screws	171157	MSSD-C-4P
	for MS4/6-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	151687	MSSD-EB
			4-pin	Insulation displacement technology	192745	MSSD-EB-S-M14

Plug socket with cable KMEB

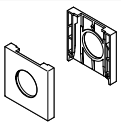
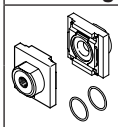
Technical data ➔ online: **kmeb**

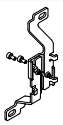
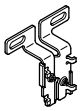
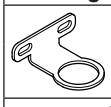
	Description	Operating voltage range	Electrical connection	Switching status display	Cable length [m]	Part No.	Type
	for MS4/6-EE/DE	24 V DC	2-pin	LED	2.5	547268	KMEB-3-24-2,5-LED
					5	547269	KMEB-3-24-5-LED
				–	2.5	547270	KMEB-3-24-2,5
					5	547271	KMEB-3-24-5
			3-pin	LED	2.5	151688	KMEB-1-24-2,5-LED
					5	151689	KMEB-1-24-5-LED
					10	193457	KMEB-1-24-10-LED
		230 V AC	3-pin	–	2.5	151690	KMEB-1-230AC-2,5
					5	151691	KMEB-1-230AC-5

Illuminating seal MEB-LD

Technical data ➔ online: **meb**

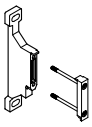
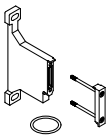
	Description	Operating voltage range	Part No.	Type
	for plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	151717	MEB-LD-12-24DC
		230 V DC/AC ±10%	151718	MEB-LD-230AC

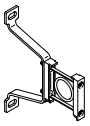
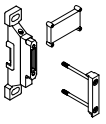
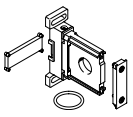
	Size		Part No.	Type
Cover cap MS-END				
	MS4		538779	MS4-END
	MS6		538780	MS6-END
Mounting plate MS-AEND				
	MS4		542966	MS4-AEND
	MS6		535408	MS6-AEND
Connecting plate MS-AG				
	MS4	G1/4	526069	MS4-AGB
	MS6	G1/2	526082	MS6-AGD

	Size	Part No.	Type
Mounting bracket MS-WB			
	MS4	532185	MS4-WB
	MS6	532196	MS6-WB
Mounting bracket MS-WBM			
	MS4	526062	MS4-WBM
Mounting bracket MS-WR			
	MS4	526064	MS4-WR
	MS6	526075	MS6-WR
Hex nut MS-WRS			
	MS4	532187	MS4-WRS
	MS6	532188	MS6-WRS

Service unit combinations MSB

Accessories – Ordering data

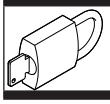
	Size	Part No.	Type
Module connector MS-MV			
For connecting modules			
	MS4	★ 532798	MS4-MV
	MS6	★ 532799	MS6-MV
Module connector MS-MVM			
For connecting the modules with rotary knob underneath			
	MS4	★ 532800	MS4-MVM
	MS6	★ 532801	MS6-MVM
Mounting bracket MS-WP			
	MS4	★ 532184	MS4-WP
	MS6	★ 532195	MS6-WP
Mounting bracket MS-WPB			
	MS4, For large wall gap	★ 526063	MS4-WPB
	MS6, For large wall gap	★ 526074	MS6-WPB

	Size		Part No.	Type
Mounting bracket MS-WPE				
	MS4	For large wall gap	558869	MS4-WPE
	MS6	For large wall gap	1025936	MS6-WPE
Mounting bracket 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

Pressure gauges MA

	Nominal size	Pneumatic connection	Indicating range [bar]	Indicating range [psi]	Part No.	Type
	Pressure gauge MA, DIN EN 837-1					
	40	R1/4	0 ... 16	0 ... 232	187080	MA-40-16-R1/4-EN
		G1/4	0 ... 16	0 ... 232	183901	MA-40-16-G1/4-EN
	Pressure gauge MA, DIN EN 837-1, with red-green range					
	40	R1/8	0 ... 16	–	525726	MA-40-16-R1/8-E-RG
	50	R1/4	0 ... 16	–	525729	MA-50-16-R1/4-E-RG

Padlock LRVS-D

	Description	Weight [g]	Part No.	Type
	for filter or pressure regulators	120	193786	LRVS-D

Filter regulators MS2-LFR

Highlights

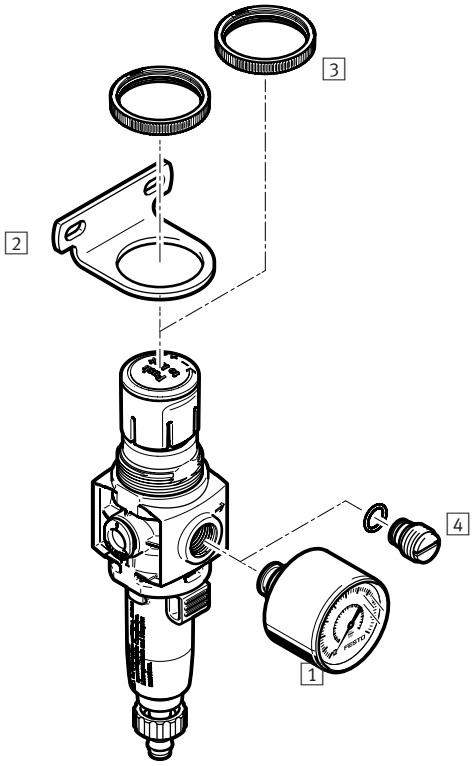
+ Directly actuated diaphragm regulator
+ Good control characteristics with minimal pressure hysteresis and primary pressure compensation
+ Good particle and condensate separation
+ With secondary venting
+ High flow rate

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Filter regulators MS2-LFR

Peripherals overview



		→ Page/ Internet
1	Pressure gauge PAGN	769
2	Mounting bracket MS2-WR	
3	Nut MS2-WRS	
4	Plug screw MS2-G18S	
–	Filter cartridge LFP	

Type code explanation

001	Series
MS	Standard service unit

002	Size
2	Grid dimension 25 mm

003	Service function
LFR	Filter regulator

004	Pneumatic connection
M5	Female thread M5
QS6	Push-in connector for tubing O.D. 6 mm

005	Pressure regulation range
D6	Pressure regulation range 0.5 ... 7 bar

006	Pressure gauge/adapter
AR	Pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge

007	Pressure gauge scale
	None
BAR	Display unit [bar/psi]
MPA	Display unit [MPa]

008	Grade of filtration
C	5 µm

009	Condensate drain
M	Manual rotary

010	Version
B	Basic

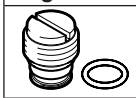
Ordering data

Pressure regulation range 0.5 ... 7 bar, rotary knob with detent

Size	Pneumatic connection 1, 2	Condensate drain	Part No.	Type
Pressure gauge, display unit [bar/psi]				
MS2	M5	Manual rotary	8086641	MS2-LFR-M5-D6-AR-BAR-C-M-B
	QS-6	Manual rotary	8086644	MS2-LFR-QS6-D6-AR-BAR-C-M-B
Pressure gauge, display unit [MPa]				
MS2	M5	Manual rotary	8086642	MS2-LFR-M5-D6-AR-MPA-C-M-B
	QS-6	Manual rotary	8086645	MS2-LFR-QS6-D6-AR-MPA-C-M-B
Adapter for EN pressure gauge ⅛, without pressure gauge				
MS2	M5	Manual rotary	8086643	MS2-LFR-M5-D6-A8-C-M-B
	QS-6	Manual rotary	8086646	MS2-LFR-QS6-D6-A8-C-M-B

Accessories – Ordering data

	Indicating range	Part no.	Type
Precision pressure gauge PAGN			
	0 ... 10 bar 0 ... 145 psi	8088991	PAGN-23-10-G18S
	0 ... 1 MPa	8088992	PAGN-23-1M-G18S
Mounting bracket MS2-WR			
	–	8087978	MS2-WR
Nut MS2-WRS			
	–	8098037	MS2-WRS

	Indicating range	Part no.	Type
Plug screw MS2-G18S			
	–	8095766	MS2-G18S
Filter cartridge LFP			
	–	526818	LFP-D-MICRO-5M

Data sheet

Flow rate:
140 ... 310 l/min

Temperature range:
–5 ... +50°C

Operating pressure:
1 ... 10 bar

With this device, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Regulator lock for protecting the values against adjustment

General technical data		With pressure gauge	With adapter for EN pressure gauge 1/8, without pressure gauge
Pneumatic connection 1, 2		M5	
		QS-6	
Design		Filter regulator with pressure gauge	Filter regulator without pressure gauge
Regulating function		Output pressure constant, with return flow action, with secondary venting	
Type of mounting		With accessories	
		In-line installation	
		Front panel mounting	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	5	
Air quality class at the outlet		Compressed air to ISO 85731:2010 [6:4:4]	
Condensate drain		Manual rotary	
Actuator lock		Rotary knob with detent	
Pressure regulation range	[bar]	0.5 ... 7	
Max. pressure hysteresis	[bar]	0.25	
Pressure indicator		With pressure gauge	G1/8 prepared
Max. condensate volume	[ml]	3	

Characteristic flow rate values			
Pneumatic connection 1, 2		M5	QS-6
Standard nominal flow rate qnN[1)]	[l/min]	140	310

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar

Filter regulators MS2-LFR

Data sheet

Operating and environmental conditions			
Pneumatic connection 1, 2		M5	QS-6
Operating pressure	[bar]	1 ... 10	1 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Ambient temperature	[°C]	–5 ... +50	
Temperature of medium	[°C]	–5 ... +50	
Storage temperature	[°C]	–5 ... +50	
Corrosion resistance class CRC[1)]		1	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials	
Housing	PA
Rotary knob	POM
Bowl	PC
Filter	PE
Separating disc	POM
Valve tappet	Wrought aluminium alloy, NBR
Diaphragm	NBR
Spring	High-alloy steel
Seals	NBR
Note on materials	RoHS-compliant

Pressure regulators MS2-LFR

Highlights

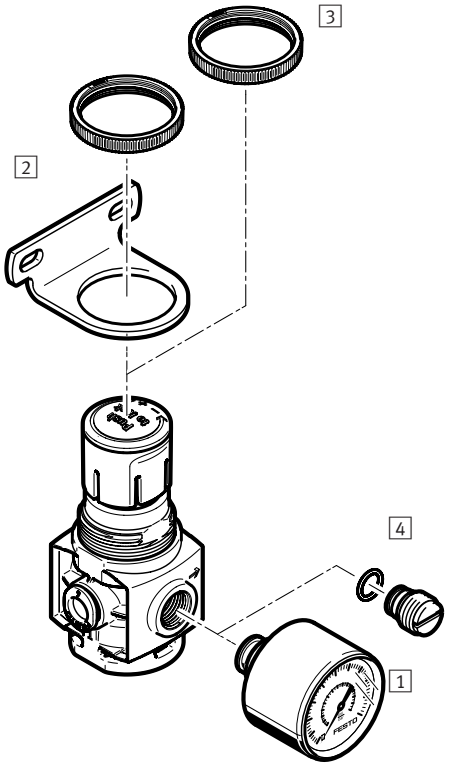
+ High flow rate performance with minimal pressure drop
+ Good control characteristics with minimal pressure hysteresis and primary pressure compensation
+ With secondary venting
+ Lockable rotary knob
+ Withor without pressure gauge

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Pressure regulators MS2-LFR

Peripherals overview



		→ Page/ Internet
1	Pressure gauge PAGN	773
2	Mounting bracket MS2-WR	
3	Nut MS2-WRS	
4	Plug screw MS2-G18S	

Type code explanation

001	Series
MS	Standard service unit

002	Size
2	Grid dimension 25 mm

003	Service function
LR	Pressure regulator

004	Pneumatic connection
M5	Female thread M5
QS6	Push-in connector for tubing O.D. 6 mm

005	Pressure regulation range
D6	Pressure regulation range 0.5 ... 7 bar

006	Pressure gauge/adapter
AR	Pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge

007	Pressure gauge scale
	None
BAR	Display unit [bar/psi]
MPA	Display unit [MPa]

008	Version
B	Basic

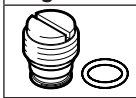
Ordering data

Pressure regulation range 0.5 ... 7 bar, rotary knob with detent

Size	Pneumatic connection 1, 2	Part No.	Type
Pressure gauge, display unit [bar/psi]			
MS2	M5	8086628	MS2-LR-M5-D6-AR-BAR-B
	QS-6	8086638	MS2-LR-QS6-D6-AR-BAR-B
Pressure gauge, display unit [MPa]			
MS2	M5	8086636	MS2-LR-M5-D6-AR-MPA-B
	QS-6	8086639	MS2-LR-QS6-D6-AR-MPA-B
Adapter for EN pressure gauge 1/8, without pressure gauge			
MS2	M5	8086637	MS2-LR-M5-D6-A8-B
	QS-6	8086640	MS2-LR-QS6-D6-A8-B

Accessories – Ordering data

	Indicating range	Part no.	Type
Precision pressure gauge PAGN			
	0 ... 10 bar 0 ... 145 psi	8088991	PAGN-23-10-G18S
	0 ... 1 MPa	8088992	PAGN-23-1M-G18S
Mounting bracket MS2-WR			
	–	8087978	MS2-WR

	Indicating range	Part no.	Type
Nut MS2-WRS			
	–	8098037	MS2-WRS
Plug screw MS2-G18S			
	–	8095766	MS2-G18S

Data sheet

Flow rate:
170 ... 350 l/min

Temperature range:
–5 ... +50°C

Operating pressure:
1 ... 10 bar

With this device, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Regulator lock for protecting the values against adjustment

General technical data			
		With pressure gauge	With adapter for EN pressure gauge 1/8, without pressure gauge
Pneumatic connection 1, 2		M5	
		QS-6	
Design		Directly actuated diaphragm regulator	
Regulating function		Outlet pressure constant, with return flow action, with secondary venting	
Type of mounting		With accessories	
		In-line installation	
		Front panel mounting	
Mounting position		Optional	
Actuator lock		Rotary knob with detent	
Pressure regulation range	[bar]	0.5 ... 7	
Max. pressure hysteresis	[bar]	0.25	
Pressure indicator		With pressure gauge	G1/8 prepared

Characteristic flow rate values			
Pneumatic connection 1, 2		M5	QS-6
Standard nominal flow rate qnN[1)]	[l/min]	170	350

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar

Pressure regulators MS2-LFR

Data sheet

Operating and environmental conditions			
Pneumatic connection 1, 2		M5	QS-6
Operating pressure	[bar]	1 ... 10	1 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Ambient temperature	[°C]	–5 ... +50	
Temperature of medium	[°C]	–5 ... +50	
Storage temperature	[°C]	–5 ... +50	
Corrosion resistance class CRC[1)]		1	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials	
Housing	PA
Bottom cover	PA
Rotary knob	POM
Valve tappet	Wrought aluminium alloy, NBR
Diaphragm	NBR
Spring	High-alloy steel
Seals	NBR
Note on materials	RoHS-compliant

Precision pressure regulators LRP, LRPS

Highlights

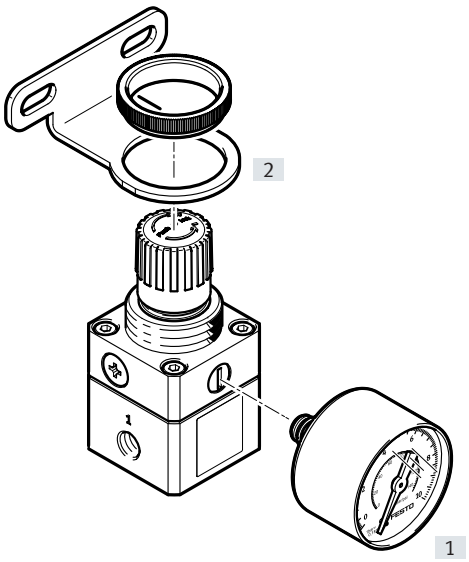
+ Lockable design
+ Good control characteristics with minimal pressure hysteresis and primary pressure compensation
+ High secondary exhausting

Precision pressure regulators LRP, LRPS

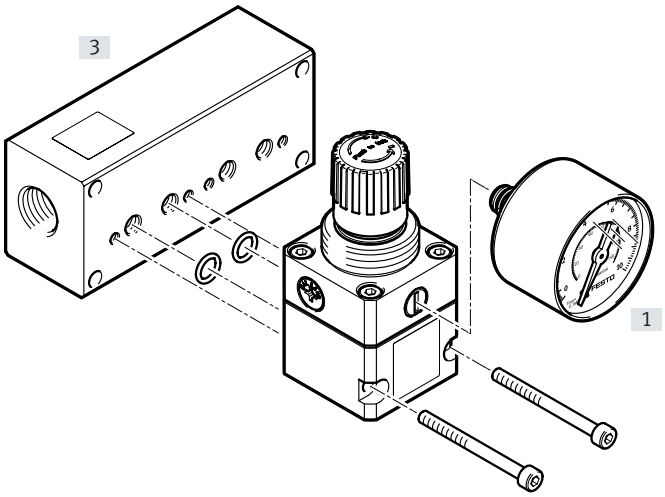
Peripherals overview

Size 40

Precision pressure regulator LRP-1/8-6

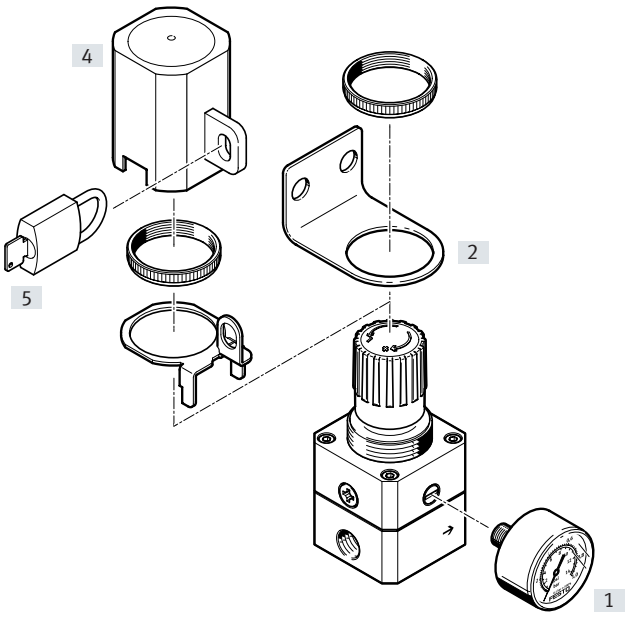


Precision pressure regulator LRP-7.0-6

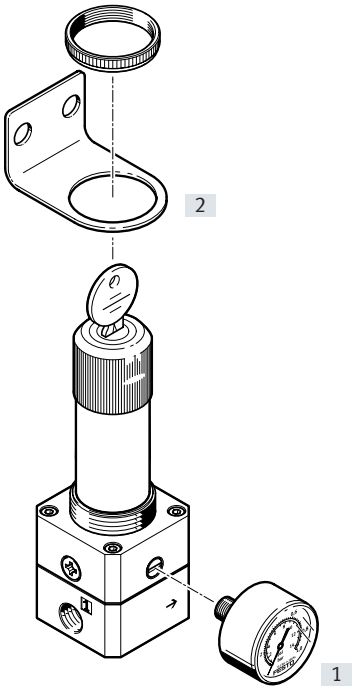


Size 50

Precision pressure regulator LRP



Precision pressure regulator LRPS



			→ Page/Internet
[1]	Precision pressure gauge PAGN	Precision pressure gauge MAP	777
[2]	Mounting bracket MS4-WR	Mounting bracket HR	
[3]	Manifold block for manifold assembly of 2 or 4 valves MRS	–	
[4]	–	Regulator lock with locking plate LRVS-LRP	
[5]	–	Padlock LRVS-D	

Type code explanation

001	Series	
LRP	Precision pressure regulator	
LRPS	Precision pressure regulator, lockable	

002	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
7.0	For sub-base diameter 7 mm	

003	Pressure regulation range	
0,7	Up to 0.7 bar	
2,5	Up to 2.5 bar	
4	Up to 4 bar	
6	Up to 6 bar	
10	Up to 10 bar	

004	EU certification	
	None	
EX4	II 2GD	

Ordering data

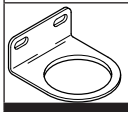
Size 40

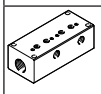
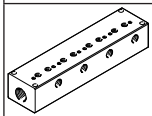
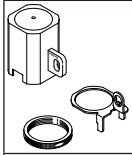
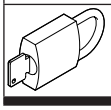
Pressure regulation range [bar]	Pneumatic connection 1, 2	Part no.	Type
0.1 ... 6	G1/8	2416371	★ LRP-1/8-6
	For sub-base with a diameter of 7 mm	2418761	★ LRP-7.0-6

Size 50

Pressure regulation range [bar]	Precision pressure regulator LRP		Lockable precision pressure regulator LRPS	
	Part no.	Type	Part no.	Type
0.05 ... 0.7	159500	LRP-1/4-0.7	194690	LRPS-1/4-0.7
0.05 ... 2.5	162834	LRP-1/4-2.5	194691	LRPS-1/4-2.5
0.05 ... 4	159501	LRP-1/4-4	194692	LRPS-1/4-4
0.1 ... 10	159502	LRP-1/4-10	194693	LRPS-1/4-10
For use in potentially explosive areas in zones 1, 2 as well as 21, 22				
0.05 ... 0.7	549918	LRP-1/4-0.7-EX4		
0.05 ... 2.5	549919	LRP-1/4-2.5-EX4		
0.05 ... 4	549920	LRP-1/4-4-EX4		
0.1 ... 10	549921	LRP-1/4-10-EX4		

Accessories – Ordering data

	Indicating range	Part no.	Type
Precision pressure gauge PAGN/MAP			
	0 ... 10 bar	2849914	PAGN-40-10-R18-1.6
	0 ... 1 MPa	2849916	PAGN-40-1M-R18-1.6
	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
Mounting bracket MS-WR			
	–	★ 526064	MS4-WR
	–	159503	HR-1/4-P

	Pneumatic connection	Part no.	Type
Manifold block MRS			
For manifold assembly of 2 valves			
	G3/8	2844247	MRS-2
For manifold assembly of 4 valves			
	G3/8	2844348	MRS-4
Regulator lock LRVS			
	–	193785	LRVS-LRP-1/4
Padlock LRVS-D			
	–	193786	LRVS-D

Precision pressure regulators LRP, LRPS

Data sheet

At a glance

Flow rate:
300 ... 2300 l/min

Temperature range:
–10 ... +60°C

Operating pressure:
1 ... 12 bar

- Precision pressure adjustment possible both in static and dynamic applications
- Pressure hysteresis of < 0.02 bar for flow rate characteristic curves
- Good response characteristics during rapid changes to input pressure and flow rate
- Input pressure fluctuations are almost entirely compensated
- Product variants LRP-...-EX4 can be used in zones 1 and 2 of explosive gas atmospheres and in zones 21 and 22 of explosive dust atmospheres

General technical data

Type	LRP-1/8-6	LRP-7.0-6	LRP/LRPS-1/4- 0.7	LRP/LRPS-1/4- 2.5	LRP/LRPS-1/4- 4	LRP/LRPS-1/4- 10
Pneumatic connection 1, 2	G1/8	For sub-base with a diameter of 7 mm	G1/4			
Design	Piloted precision diaphragm regulator					
Regulator function	Output pressure constant, with secondary exhausting					
Type of mounting	Via accessories					
	Front panel mounting					
	In-line installation					
Mounting position	Any					
Actuator lock	Rotary knob with detent					
	–		Rotary knob with integrated lock			
Pressure regulation range [bar]	0.1 ... 6		0.05 ... 0.7	0.05 ... 2.5	0.05 ... 4	0.1 ... 10
Max. pressure hysteresis [bar]	0.02					
Pressure indicator	Prepared for G1/8					

Standard nominal flow rate[1] qnN [l/min]

Type	LRP-1/8-6	LRP-7.0-6	LRP/LRPS-1/4- 0.7	LRP/LRPS-1/4- 2.5	LRP/LRPS-1/4- 4	LRP/LRPS-1/4- 10
Standard nominal flow rate [l/min]	300[1]	240[2]	800[3]	1800[3]	2000[3]	2300[3]

1) Measured at p1 = 8 bar and p2 = 6 bar, Δp2 = 100 mbar.
2) Measured on manifold block MRS-4 at p1 = 8 bar and p2 = 6 bar, Δp2 = 100 mbar.
3) Measured at p1 = 12 bar and Δp2 = 100 mbar.

Operating and environmental conditions

Type	LRP-1/8-6	LRP-7.0-6	LRP/LRPS-1/4- 0.7	LRP/LRPS-1/4- 2.5	LRP/LRPS-1/4- 4	LRP/LRPS-1/4- 10
Operating pressure [bar]	1 ... 8		1 ... 12			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
	Inert gases					
Note on operating/pilot medium	Lubricated operation not possible					
Ambient temperature [°C]	–10 ... +60					
Temperature of medium [°C]	–10 ... +60					
Storage temperature [°C]	–10 ... +60					
Corrosion resistance class CRC[1]	2					

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

Materials

[1]	Housing	Aluminium
[2]	Knurled nut	Aluminium
[3]	Rotary knob	PA
–	Diaphragm, seals	NBR
Note on materials		RoHS-compliant

Precision pressure regulators LRP, LRPS

11

Electrical connector technology

Contents

Product overview

Connecting cables, universal

Connecting cables
NEBU

Electrical connection, connection type	Socket, Cable, Plugs
Electrical connection, cable outlet	Angled, can be aligned in increments of 15°, Straight, Angled
Electrical connection, design	Round
Electrical connection, connection technology	M8x1, A-coded to EN 61076-2-104, G7/8 coded to NFPA/T3.5.29 R1-2007, Open end, M12x1, A-coded to EN 61076-2-101
Electrical connection, number of pins/wires	3, 4, 5, 8
Cable length	0.1 ... 30 m
Description	• Designs for static, standard, energy chain and robot applications • Versions with switching status indication • Designs for connecting sensors and actuators
➔ Page/online	**nebu**

Connecting cables for motors

Motor, encoder, resolver cables
NEBM

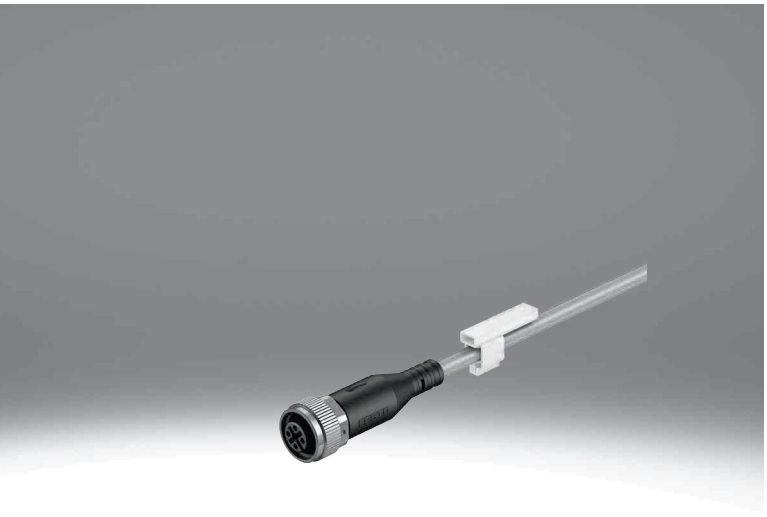
Electrical connection, connection type	Plugs and cables, Hybrid socket, Socket, Cable, Plugs
Electrical connection, cable outlet	Straight, Angled
Electrical connection, design	Angular, Round
Electrical connection, connection technology	RJ45 and open end, Connection pattern F1, Connection pattern H6, coded for motor, Connection pattern H7, coded for motor brake, Connection pattern L4, Connection pattern L5, Connection pattern RE, RJ45, ITT M3, Sub-D, Open end, M12x1, A-coded to EN 61076-2-101, M16x0.75, M23x1, M40x1.5
Electrical connection, number of pins/wires	2, 4, 6, 8, 9, 10, 12, 14, 15, 18, 28, 31
Cable length	0.2 ... 100 m
Description	• For servo motors EMME-AS, EMMT-AS, EMMS-AS and stepper motor EMMS-ST • For motor controllers CMMS-ST, CMMO-ST, CMMP-AS • Suitable for use with energy chains
➔ Page/online	**nebm**

Connecting cables for sensors

Connecting cables
NEBB

Electrical connection, connection type	Socket, Cable
Electrical connection, cable outlet	Straight, Angled
Electrical connection, design	Round
Electrical connection, connection technology	M8x1, A-coded to EN 61076-2-104, Open end, M12x1, A-coded to EN 61076-2-101
Electrical connection, number of pins/wires	3, 4, 5
Cable length	2.5 ... 10 m
Description	• Degree of protection IP65, IP68, IP69K, when mounted
➔ Page/online	**783**

Connecting cables NEBB



Highlights

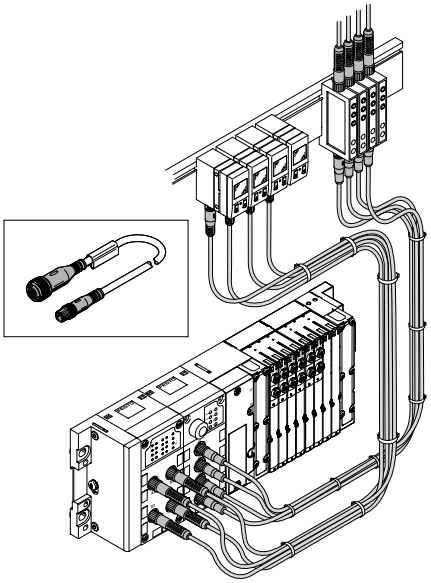
+ Design for connecting sensors and actuators
+ For static applications
+ Degree of protection IP65, IP68, IP69K, when mounted
+ Pre-configuredVorkonfektioniert

Connecting cables NEBB

Product range overview

Function	Version	Type	Connection technology 2 (on the right)	Cable characteristic	Length
Electrical connecting cable	**Electrical connection 1 (on the left), socket M8**				
	3-pin	NEBB-M8G3 NEBB-M8W3	Open cable end	For static applications	2 m, 5 m, 10 m
	4-pin	NEBB-M8G4 NEBB-M8W4	Open cable end	For static applications	2 m, 5 m, 10 m
	Electrical connection 1 (on the left), socket M12				
	5-pin	NEBB-M12G5 NEBB-M12W5	Open cable end	For static applications	2 m, 5 m, 10 m

Features



Standard applications are characterised by fixed cable installation or small to medium mechanical loads. The connecting cable can even be used for simple applications with energy chains with larger radii.
The cable sheath of the connecting cables is made of polyurethane, is free of halogen, oil resistant and optimised for installation in contact with pneumatic tubing; free of phosphoric acid ester.

- The connecting cable is tested for resistance to bending according to the Festo standard; test conditions are available on request.
- The connecting cable has been tested on an energy chain over 5 million cycles and at a bending radius of 75 mm.

Type code explanation

001	Series	
NEBB	Connecting cable	

002	Connection technology left, field device side	
M8	Socket M8x1 A-coded, EN 61076-2-104	
M12	Socket M12x1 A-coded, EN 61076-2-101	

003	Cable outlet left	
G	Straight	
W	Angled	

004	Number of pins/wires on the left	
3	3	
4	4	
5	5	

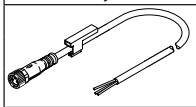
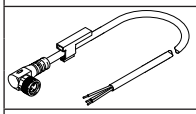
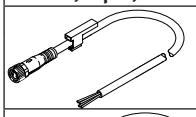
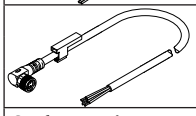
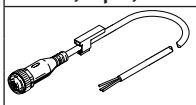
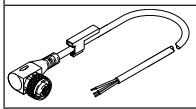
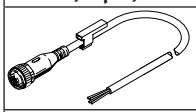
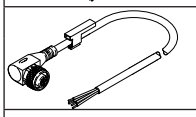
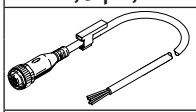
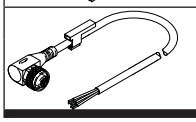
005	Cable characteristic	
P	Basic	

006	Cable length [m]	
2.5	2.5	
5	5	
10	10	

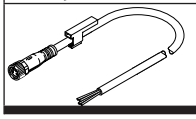
007	Connection technology right, controller side	
LE	Open end	

008	Number of pins/wires on the right	
3	3	
4	4	
5	5	

Ordering data

	Outlet direction	Cable length [m]	Part no.	Type
Socket, 3-pin, M8 – open cable end, 3-wire				
	Straight	2.5	8066658	NEBB-M8G3-P-2.5-LE3
		5	8066659	NEBB-M8G3-P-5-LE3
		10	8066660	NEBB-M8G3-P-10-LE3
	Angled	2.5	8066664	NEBB-M8W3-P-2.5-LE3
		5	8066665	NEBB-M8W3-P-5-LE3
		10	8066666	NEBB-M8W3-P-10-LE3
Socket, 4-pin, M8 – open cable end, 4-wire				
	Straight	2.5	8066661	NEBB-M8G4-P-2.5-LE4
		5	8066662	NEBB-M8G4-P-5-LE4
		10	8066663	NEBB-M8G4-P-10-LE4
	Angled	2.5	8066667	NEBB-M8W4-P-2.5-LE4
		5	8066668	NEBB-M8W4-P-5-LE4
		10	8066669	NEBB-M8W4-P-10-LE4
Socket, 5-pin, M12 – open cable end, 3-wire				
	Straight	2.5	8066670	NEBB-M12G5-P-2.5-LE3
		5	8066671	NEBB-M12G5-P-5-LE3
		10	8066672	NEBB-M12G5-P-10-LE3
	Angled	2.5	8066679	NEBB-M12W5-P-2.5-LE3
		5	8066680	NEBB-M12W5-P-5-LE3
		10	8066681	NEBB-M12W5-P-10-LE3
Socket, 5-pin, M12 – open cable end, 4-wire				
	Straight	2.5	8066673	NEBB-M12G5-P-2.5-LE4
		5	8066674	NEBB-M12G5-P-5-LE4
		10	8066675	NEBB-M12G5-P-10-LE4
	Angled	2.5	8066682	NEBB-M12W5-P-2.5-LE4
		5	8066683	NEBB-M12W5-P-5-LE4
		10	8066684	NEBB-M12W5-P-10-LE4
Socket, 5-pin, M12 – open cable end, 5-wire				
	Straight	2.5	8066676	NEBB-M12G5-P-2.5-LE5
		5	8066677	NEBB-M12G5-P-5-LE5
		10	8066678	NEBB-M12G5-P-10-LE5
	Angled	2.5	8066685	NEBB-M12W5-P-2.5-LE5
		5	8066686	NEBB-M12W5-P-5-LE5
		10	8066687	NEBB-M12W5-P-10-LE5

Accessories – Ordering data

	Outlet direction	Part no.	Type
Plug connectors			
	Plug connectors for self-assembly	–	➔ Internet: necu
		–	➔ Internet: sea
Inscription labels			
	Inscription labels 23 mm for inscription label holder, 34 pieces, in frames	541598	ASLR-L-423

Connecting cables NEBB

Data sheet

General technical data	
Conforms to standard	EN 61076-2-104
	Wire colours and connection numbers to EN 60947-5-2
Cable designation	With inscription label holders
Degree of protection to EN 60529	IP65, IP68, IP69K
Note on degree of protection	In assembled state

Technical data – Electrical connection 1						
Function		Field device side				
Design		Round				
Connection type		Plug				
Cable outlet		Straight				
Connection technology		M8x1, A-coded to EN 61076-2-104		M12x1, A-coded to EN 61076-2-101		
Number of pins/wires		3	4	3	4	5
Assigned pins/wires		3	4	3	4	5
Type of mounting		Screw lock				

Technical data – Electrical						
Electrical connection 1		Plug M8x1		Plug M12x1		
		3-pin	4-pin	3-pin	4-pin	5-pin
Operating voltage range	[V DC]	0 … 60	0 … 30	0 … 250	0 … 250	0 … 60
	[V AC]	0 … 60	0 … 30	0 … 250	0 … 250	0 … 60
Surge resistance	[kV]	1.5	0.8	2.5	2.5	1.5
Current rating	[A]	4	4	4	4	4

Technical data – Cable						
Electrical connection 1		Plug M8x1		Plug M12x1		
		3-pin	4-pin	3-pin	4-pin	5-pin
Cable characteristic		For static applications				
Cable testing conditions		Test conditions on request				
Bending radius, fixed cable installation	[mm]	≥14	≥14	≥12	≥14	≥14
Cable diameter	[mm]	4.5	4.5	3.8	4.5	4.5
Cable composition	[mm²]	3x 0.25	4x 0.25	3x 0.25	4x 0.25	5x 0.25
Conductor nominal cross section	[mm²]	0.25				

Technical data – Electrical connection 2						
Function		Controller side				
Connection type		Cable				
Connection technology		Open end				
Number of pins/wires		3	4	5		
Assigned pins/wires		3	4	3	4	5
Wire ends		Sheath removed, cut off bluntly				

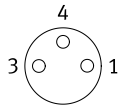
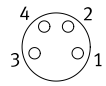
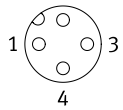
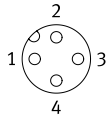
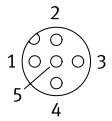
Materials	
Housing	TPE-U(PUR)
Housing colour	Black
Cable sheath	PVC
Cable sheath colour	Grey
Insulating sheath	PVC
Screw lock	Nickel-plated brass
Seals	NBR
Pin contacts	Gold-plated copper base alloy
Note on materials	RoHS-compliant
	Free of copper and PTFE
	Halogen-free

Data sheet

Operating and environmental conditions		
Ambient temperature	[°C]	–25 ... +70
Corrosion resistance CRC[1]		2
Pollution degree		3

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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.

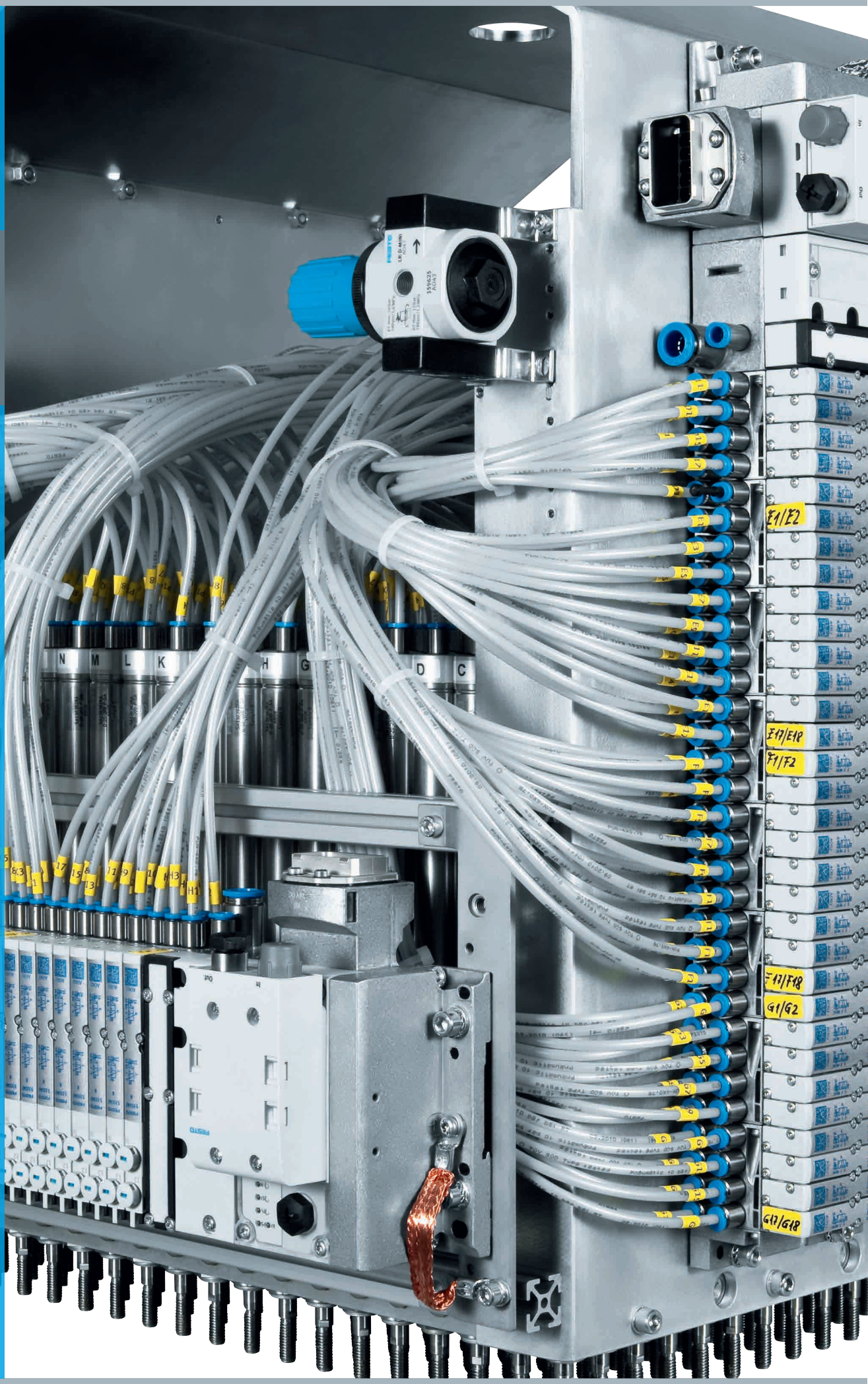
Circuitry (socket view)

Electrical connection 1	Pin	Wire colour[1]	Pin	Electrical connection 2
Electrical connection, socket, 3-pin, M8 – open cable end, 3-wire				
	1	BN	–	–
	3	BU	–	
	4	BK	–	
Electrical connection, socket, 4-pin, M8 – open cable end , 4-wire				
	1	BN	–	–
	2	WH	–	
	3	BU	–	
	4	BK	–	
Electrical connection, socket, 5-pin, M12 – open cable end, 3-wire				
	1	BN	–	–
	3	BU	–	
	4	BK	–	
Electrical connection, socket, 5-pin, M12 – open cable end , 4-wire				
	1	BN	–	–
	2	WH	–	
	3	BU	–	
	4	BK	–	
Electrical connection, socket, 5-pin, M12 – open cable end , 5-wire				
	1	BN	–	–
	2	WH	–	
	3	BU	–	
	4	BK	–	
	5	GY	–	

1) to IEC 757

12

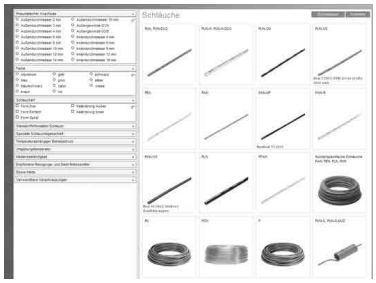
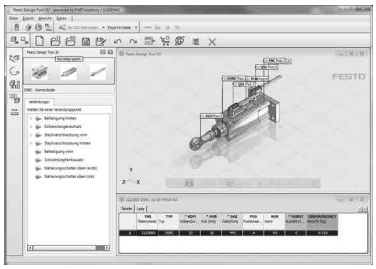
Pneumatic Fittings system



Contents

Product overview

Software tools

Product finder for tubing		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. This tool can be found on our website under www.festo.com/catalogue by clicking on the blue icon “Product Finder”.
Festo Design Tool 3D		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 as a single order item, either completely pre-assembled or as individual parts in a single box. This considerably reduces your bill of materials, and downstream processes such as product ordering, order picking and assembly are significantly simplified. 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 on our website at www.festo.com/FDT-3D in the countries listed above.

Standard O.D. tubing

Plastic tubing
PUN-H, PUN-H-DUO ★

Outside diameter	2 ... 16 mm
Inside diameter	1.2 ... 11 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar
Ambient temperature	-35 ... 60°C
Description	• Polyurethane • High resistance to microbes and hydrolysis • Food-safe, see www.festo.com/sp/pun-h -› “Certificates” tab • Suitable for use with energy chains • Also available as DUO plastic tubing • Operating medium: compressed air, vacuum, water
➔ Page/online	**793**

Push-in fittings

	 **Push-in fittings NPQE**	 **Push-in fittings, Mini series QSM, QSMC, QSMF, QSML, QSMP, QSMS, QSMT, QSMX, QSMY** ★	 **Push-in fittings, standard QS, QSF, QSS, QSC, QSH, QSL, QST, QSW, QSX, QSY** ★
Pneumatic connection 1	Male thread M3, M5, M7, R1/8, R1/4, R3/8, R1/2 Female thread M5, G1/8, G1/4, G3/8, G1/2 For tubing O.D. 3 mm, 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 16 mm Push-in sleeve QS-4, QS-6, QS-8, QS-10	Male thread M8x1.25, Female thread M3, M5, For tubing O.D. 2 mm, 3 mm, 4 mm, 6 mm, Male thread G1/8, M3, M5, M6, M6x0.75, M7, M8x0.75, R1/8, Push-in sleeve QS-2, QS-3, QS-4, QS-6	Female thread G1/2, G1/4, G1/8, G3/8, For tubing O.D. 10 mm, 12 mm, 16 mm, 4 mm, 6 mm, 8 mm, Male thread G1/2, G1/4, G1/8, G3/4, G3/8, M5, R1/2, R1/4, R1/8, R3/8, Push-in sleeve QS-10, QS-12, QS-16, QS-4, QS-6, QS-8
Pneumatic connection 2	For tubing O.D. 3 mm, 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 16 mm Push-in sleeve QS-4, QS-6, QS-8, QS-10	For tubing O.D. 2 mm, 3 mm, 4 mm, 6 mm	Female thread G1/2, G1/4, G1/8, G3/8, For tubing O.D. 10 mm, 12 mm, 16 mm, 22 mm, 4 mm, 6 mm, 8 mm, Push-in sleeve QS-10, QS-12, QS-16, QS-4, QS-6, QS-8
Operating pressure for entire temperature range	-0.95 ... 8 bar	-0.95 ... 6 bar	-0.95 ... 14 bar
Ambient temperature	-5 ... 60°C	-10 ... 80°C	-20 ... 80°C
Description	• PBT or brass • Operating medium: compressed air, vacuum • Tapered thread in accordance with JIS B0203 and compatible with pressure-tight media to DIN EN 10226	• Mini series • Compact for maximum component density in confined installation spaces • PBT and nickel-plated brass • Operating medium: compressed air, vacuum	• Standard series • Wide range of variants: wide selection for maximum flexibility in standard applications • PBT and nickel-plated brass • Operating media: compressed air, vacuum, (water)
→ Page/online	**803**	**qsm**	**qs**

Product overview

Plastic tubing PUN-H

Highlights

+ Extremely flexible polyurethane tubing
+ High resistance to stress cracks
+ High resistance to microbes and hydrolysis
+ Suitable for energy chains
+ Also available as DUO plastic tubing
+ Operating media compressed air, vacuum

★	Festo core product range Solves the majority of your automation tasks	With the Festo Core Range, we have selected the most important products and functions from our product catalogue, and added the quickest delivery, worldwide .
Worldwide:	Always in stock	Easy and fast to select and solving the majority of your automation tasks, the Core Range offers you the best value with the expected high Festo quality.
Superb:	Festo quality at an attractive price	
Easy:	Simplified procurement and warehousing	

Just look for the star!

Plastic tubing PUN-H

Product range overview

Application

Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types.

Note

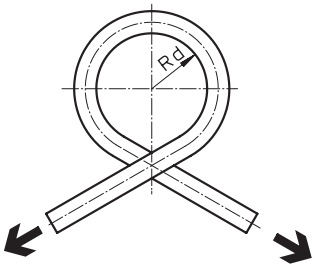
Tubing diameters that are too big or too small as well as bending radii that are too small result in flow rate losses.
One of the most important rules when selecting tubing is therefore that it should be as long as necessary and as short as possible.
Make sure therefore that in practice tubing is laid loosely and is not stretched.

Tools for bundling tubing or for avoiding bending/pinching the tubing are available as accessories:
- Tubing strap PB
- Spiral tubing binder PKB
- Tubing support NPAW
- Tubing support PKS
- Multi-tube holder KK

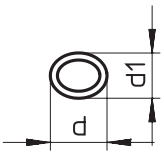
Other accessories include connecting tools for tubing:
- Pipe and tubing cutter ZRS
- Tubing cutter PAN-V0S for flame-retardant plastic tubing PAN-V0
- Connecting pliers ZMS/disconnecting pliers ZDS for connecting/disconnecting the plastic tubing and barbed fitting

Measurement method

Flow-relevant bending radius Rd

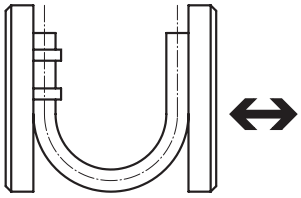


The tube is bent in the direction of its own curve until the tubing outer diameter is flattened by 5%.
Rd is then calculated mathematically. The flow rate is not reduced until Rd is reached.



Cross section flattened by bending the tube.
d = non-deformed tubing O.D.
d1 = deformed tubing O.D.

Minimum bending radius Rmin



The tube fixed to the base plate is bent until the deformation results in a kink. The measured value is the minimum bending radius Rmin. This Rmin results in significant reductions in flow rate.

Product range overview

Type	Material	Outside ⌀ [mm]	Colour														
			Silver	Blue	Translucent blue	Black	Translucent black	Yellow	Translucent yellow	Green	Translucent green	Red	Translucent red	Brown	White	Natural	Blue/black
PUN-H	Polyurethane	2	–	–	–	■	–	–	–	–	–	■	–	–	–	■	–
		3, 4, 6, 8, 10, 12, 14, 16	■	■	■	■	■	■	■	■	■	■	■	(■)[1]	(■)[1]	■	–
PUN-H-DUO	Polyurethane	4, 6, 8, 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	■

Type	Operating medium			Food-safe	Fire test of materials	Antistatic	Halogen-free	Contact with electric cables	Suitable for energy chains	Approved by the German technical Control Board (TÜV)	Maritime classification	Resistance				Flexibility	Shore hardness3)
	Compressed air, vacuum	Water	Mineral oil									Chemicals	Microbes	UV radiation	Hydrolysis		
PUN-H	■	–	–	–	–	–	■	■	++	–	–	+	++	++[2]	++	+++	D 52 ±3
	■	■	–	■	UL94 HB	–	■	■	++	■	–	+	++	++[2]	++	+++	D 52 ±3
PUN-H-DUO	■	■	–	■	UL94 HB	–	■	■	++	■	–	+	++	+	++	++	D 52 ±3

1) Product options in brackets can only be ordered using the modular product system.
2) For colour: black
3) Values are determined using test boards. Values determined using tubing may vary.

+++ Highly suitable
++ Suitable
+ Limited suitability (on request)
– Not suitable

Ordering – Modular product system

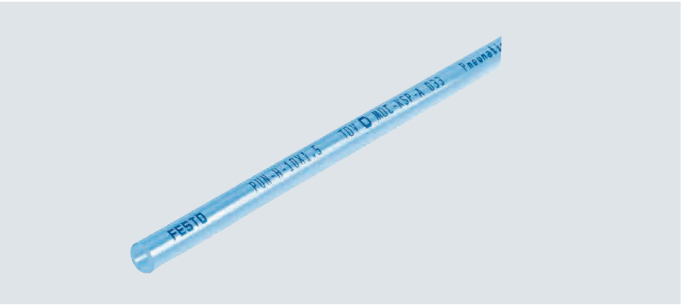
Ordering table (minimum order quantity 3000 m with tubing O.D. ≤ 8 mm, 1500 mm with tubing O.D. > 8 mm, rounded value 25 m)

Size	3	4	6	8	10	12	14	16	Conditions	Code	Enter code
Module no.	553573										
Function	Polyurethane tubing, standard O.D.									PUN	PUN
Alternative material characteristic	Hydrolysis-resistant									-H	
Tubing O.D. [mm]	3, 4, 6, 8, 10, 12, 14, 16									-...	
Colour	Silver									-SI	
	Blue									-BL	
	Translucent blue									-TBL	
	Black									-SW	
	Translucent black									-TSW	
	Yellow									-GE	
	Translucent yellow									-TGE	
	Green									-GN	
	Translucent green									-TGN	
	Red									-RT	
	Translucent red									-TRT	
	Natural									-NT	
Packaging unit [m]	100									-100	
	200						–	–		-200	
	300					–	–	–		-300	
	400				–	–	–	–		-400	
	500			–	–	–	–	–		-500	

Plastic tubing PUN-H

Ordering data

Plastic tubing PUN-H
With O.D. 3 ... 16 mm



Outside ø [mm]	Inside ø [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part no.	Type	PU[1] [m]
2	1.2	5	8	0.0024	Natural	133038	PUN-H-2x0.4-NT	50
					Black	133039	PUN-H-2x0.4-SW	50
					Red	133040	PUN-H-2x0.4-RT	50
3	2.1	6	12	0.0042	Natural	197375	PUN-H-3x0.5-NT	50
					Natural	558263	PUN-H-3x0.5-NT-500	500
					Blue	197382	PUN-H-3x0.5-BL	50
					Blue	558256	PUN-H-3x0.5 BL-500	500
					Black	197389	PUN-H-3x0.5-SW	50
					Black	558249	PUN-H-3x0.5-SW-500	500
					Silver	558277	PUN-H-3x0.5-SI	50
					Silver	558270	PUN-H-3x0.5-SI-500	500
					Red	558284	PUN-H-3x0.5-RT	50
					Green	558291	PUN-H-3x0.5-GN	50
					Yellow	558298	PUN-H-3x0.5-GE	50
4	2.6	8	16	0.0085	Natural	★ 197376	PUN-H-4x0.75-NT	50
					Natural	558264	PUN-H-4x0.75-NT-500	500
					Blue	★ 197383	PUN-H-4x0.75-BL	50
					Blue	558257	PUN-H-4x0.75-BL-500	500
					Translucent blue	★ 8048671	PUN-H-4x0.75-TBL	50
					Translucent blue	8048672	PUN-H-4x0.75-TBL-500	500
					Black	★ 197390	PUN-H-4x0.75-SW	50
					Black	558250	PUN-H-4x0.75-SW-500	500
					Translucent black	★ 8048673	PUN-H-4x0.75-TSW	50
					Translucent black	8048674	PUN-H-4x0.75-TSW-500	500
					Silver	★ 558278	PUN-H-4x0.75-SI	50
					Silver	558271	PUN-H-4x0.75-SI-500	500
					Red	558285	PUN-H-4x0.75-RT	50
					Translucent red	8048675	PUN-H-4x0.75-TRT	50
					Translucent red	8048676	PUN-H-4x0.75-TRT-500	500
					Green	558292	PUN-H-4x0.75-GN	50
					Translucent green	8048677	PUN-H-4x0.75-TGN	50
					Translucent green	8048678	PUN-H-4x0.75-TGN-500	500
					Yellow	558299	PUN-H-4x0.75-GE	50
					Translucent yellow	8048679	PUN-H-4x0.75-TGE	50
					Translucent yellow	8048680	PUN-H-4x0.75-TGE-500	500

1) Packaging unit

Ordering data

Outside ø [mm]	Inside ø [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part no.	Type	PU[1] [m]
6	4	10	26	0.0183	Natural	★ 197377	PUN-H-6x1-NT	50
					Natural	558265	PUN-H-6x1-NT-500	500
					Blue	★ 197384	PUN-H-6x1-BL	50
					Blue	558258	PUN-H-6x1-BL-500	500
					Translucent blue	★ 8048681	PUN-H-6x1-TBL	50
					Translucent blue	8048682	PUN-H-6x1-TBL-500	500
					Black	★ 197391	PUN-H-6x1-SW	50
					Black	558251	PUN-H-6x1-SW-500	500
					Translucent black	★ 8048683	PUN-H-6x1-TSW	50
					Translucent black	8048684	PUN-H-6x1-TSW-500	500
					Silver	★ 558279	PUN-H-6x1-SI	50
					Silver	558272	PUN-H-6x1-SI-500	500
					Red	558286	PUN-H-6x1-RT	50
					Translucent red	8048685	PUN-H-6x1-TRT	50
					Translucent red	8048686	PUN-H-6x1-TRT-500	500
					Green	558293	PUN-H-6x1-GN	50
					Translucent green	8048687	PUN-H-6x1-TGN	50
					Translucent green	8048688	PUN-H-6x1-TGN-500	500
					Yellow	558300	PUN-H-6x1-GE	50
					Translucent yellow	8048689	PUN-H-6x1-TGE	50
					Translucent yellow	8048690	PUN-H-6x1-TGE-500	500
8	5.7	21	37	0.0287	Natural	★ 197378	PUN-H-8x1.25-NT	1 … 50
					Natural	558266	PUN-H-8x1.25-NT-400	400
					Blue	★ 197385	PUN-H-8x1.25-BL	1 … 50
					Blue	558259	PUN-H-8x1.25-BL-400	400
					Translucent blue	★ 8048691	PUN-H-8x1.25-TBL	50
					Translucent blue	8048692	PUN-H-8x1.25-TBL-400	400
					Black	★ 197392	PUN-H-8x1.25-SW	1 … 50
					Black	558252	PUN-H-8x1.25-SW-400	400
					Translucent black	★ 8048693	PUN-H-8x1.25-TSW	50
					Translucent black	8048694	PUN-H-8x1.25-TSW-400	400
					Silver	★ 558280	PUN-H-8x1.25-SI	1 … 50
					Silver	558273	PUN-H-8x1.25-SI-400	400
					Red	558287	PUN-H-8x1.25-RT	1 … 50
					Translucent red	8048695	PUN-H-8x1.25-TRT	50
					Translucent red	8048696	PUN-H-8x1.25-TRT-400	400
					Green	558294	PUN-H-8x1.25-GN	1 … 50
					Translucent green	8048697	PUN-H-8x1.25-TGN	50
					Translucent green	8048698	PUN-H-8x1.25-TGN-400	400
					Yellow	558301	PUN-H-8x1.25-GE	1 … 50
					Translucent yellow	8048699	PUN-H-8x1.25-TGE	50
					Translucent yellow	8048700	PUN-H-8x1.25-TGE-400	400

1) Packaging unit

Plastic tubing PUN-H

Ordering data

Outside ø [mm]	Inside ø [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part no.	Type	PU[1] [m]
10	7	28	52	0.0465	Natural	★ 197379	PUN-H-10x1.5-NT	1 … 50
					Natural	558267	PUN-H-10x1.5-NT-300	300
					Blue	★ 197386	PUN-H-10x1.5-BL	1 … 50
					Blue	558260	PUN-H-10x1.5-BL-300	300
					Translucent blue	★ 8048701	PUN-H-10x1.5-TBL	50
					Translucent blue	8048702	PUN-H-10x1.5-TBL-300	300
					Black	★ 197393	PUN-H-10x1.5-SW	1 … 50
					Black	558253	PUN-H-10x1.5-SW-300	300
					Translucent black	★ 8048703	PUN-H-10x1.5-TSW	50
					Translucent black	8048704	PUN-H-10x1.5-TSW-300	300
					Silver	★ 558281	PUN-H-10x1.5-SI	1 … 50
					Silver	558274	PUN-H-10x1.5-SI-300	300
					Red	558288	PUN-H-10x1.5-RT	1 … 50
					Translucent red	8048705	PUN-H-10x1.5-TRT	50
					Translucent red	8048706	PUN-H-10x1.5-TRT-300	300
					Green	558295	PUN-H-10x1.5-GN	1 … 50
					Translucent green	8048707	PUN-H-10x1.5-TGN	50
					Translucent green	8048708	PUN-H-10x1.5-TGN-300	300
					Yellow	558302	PUN-H-10x1.5-GE	1 … 50
					Translucent yellow	8048709	PUN-H-10x1.5-TGE	50
					Translucent yellow	8048710	PUN-H-10x1.5-TGE-300	300
12	8	33	62	0.0729	Natural	★ 197380	PUN-H-12x2-NT	1 … 50
					Natural	558268	PUN-H-12x2-NT-200	200
					Blue	★ 197387	PUN-H-12x2-BL	1 … 50
					Blue	558261	PUN-H-12x2-BL-200	200
					Translucent blue	★ 8048711	PUN-H-12x2-TBL	50
					Translucent blue	8048712	PUN-H-12x2-TBL-200	200
					Black	★ 197394	PUN-H-12x2-SW	1 … 50
					Black	558254	PUN-H-12x2-SW-200	200
					Translucent black	★ 8048713	PUN-H-12x2-TSW	50
					Translucent black	8048714	PUN-H-12x2-TSW-200	200
					Silver	★ 558282	PUN-H-12x2-SI	1 … 50
					Silver	558275	PUN-H-12x2-SI-200	200
					Red	558289	PUN-H-12x2-RT	1 … 50
					Translucent red	8048715	PUN-H-12x2-TRT	50
					Translucent red	8048716	PUN-H-12x2-TRT-200	200
					Green	558296	PUN-H-12x2-GN	1 … 50
					Translucent green	8048717	PUN-H-12x2-TGN	50
					Translucent green	8048718	PUN-H-12x2-TGN-200	200
					Yellow	558303	PUN-H-12x2-GE	1 … 50
					Translucent yellow	8048719	PUN-H-12x2-TGE	50
					Translucent yellow	8048720	PUN-H-12x2-TGE-200	200

1) Packaging unit
Can only be ordered by the metre.

Ordering data

Outside ø [mm]	Inside ø [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part no.	Type	PU[1] [m]
14	9.8	38	78	0.091	Natural	570388	PUN-H-14x2-NT	1 ... 50
					Blue	570386	PUN-H-14x2-BL	1 ... 50
					Black	570387	PUN-H-14x2-SW	1 ... 50
16	11	38	88	0.123	Natural	197381	PUN-H-16x2.5-NT	1 ... 50
					Natural	558269	PUN-H-16x2.5-NT-100	100
					Blue	197388	PUN-H-16x2.5-BL	1 ... 50
					Blue	558262	PUN-H-16x2.5-BL-100	100
					Black	197395	PUN-H-16x2.5-SW	1 ... 50
					Black	558255	PUN-H-16x2.5-SW-100	100
					Silver	558283	PUN-H-16x2.5-SI	1 ... 50
					Silver	558276	PUN-H-16x2.5-SI-100	100
					Red	558290	PUN-H-16x2.5-RT	1 ... 50
					Green	558297	PUN-H-16x2.5-GN	1 ... 50
					Yellow	558304	PUN-H-16x2.5-GE	1 ... 50

1) Packaging unit
Can only be ordered by the metre.

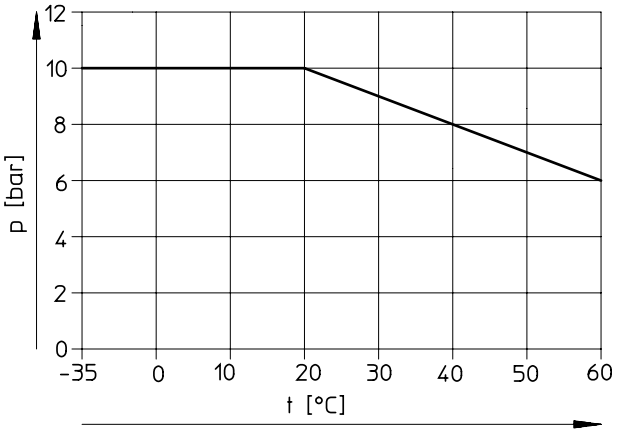
Plastic tubing PUN-H

Data sheet

Operating and environmental conditions										
Type		PUN-H-2	PUN-H-3	PUN-H-4	PUN-H-6	PUN-H-8	PUN-H-10	PUN-H-12	PUN-H-14	PUN-H-16
Outside ø	[mm]	2	3	4	6	8	10	12	14	16
Pneumatic connection										
For push-in connector	[mm]	2	3	4	6	8	10	12	14	16
For barbed fitting with union nut	[mm]	–	–	3	4	6	–	–	–	–
Temperature-dependent operating pressure	[bar]	–0.95 ... +10 ➔ graph below								
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]								
		–	Water as per manufacturer's declaration[1]							
Ambient temperature	[°C]	–35 ... +60								
Fire test of materials		–	UL94 HB							
Certification[1]		–	German Technical Control Board (TÜV)							
Tubing characteristics		Suitable for energy chains in applications with high cycle rates								
Tubing test conditions		Suitability for energy chains: › 5 million cycles to Festo standard 942021								

1) Additional information: www.festo.com/sp ➔ Certificates.

Operating pressure p as a function of temperature t



Accessories

Type		➔ Internet
	**Recommended fitting**	
	Push-in fitting QS[1]	qs
	Push-in fitting NPQH[2]	npqh
	Push-in fitting NPQR[4]	npqr
	Click fitting NPKA[5]	npka
	Well suited	
	Push-in fitting CRQS[3]	crqs
	Push-in fitting NPQP[4]	npqp
	Push-in fitting NPQM[2]	npqm
	Fitting NPCK[6]	npck
	Quick connector CK[7]	ck
	Limited suitability	
	Push-in fitting QS-V0[4]	qs-v0

1) Not for O.D. 14 mm
2) Not for O.D. 3/16 mm
3) Not for O.D. 3/14 mm
4) Not for O.D. 3/14/16 mm
5) For O.D. 6 mm only
6) For O.D. 4/6/8/10 mm only
7) For O.D. 4/6/8 mm only

Materials	
Shore hardness	D 52 ±3
Tubing	TPE-U(PU)
Note on materials	RoHS-compliant
	Copper/PTFE-free

Ordering data

DUO tubing PUN-H-DUO

Highly flexible paired plastic tubing characterised by great resistance to abrasion and kinks.

Two lengths of tubing are fused together into a tubing pair. For fitting, the paired tubing is separated as required at both ends.

Outside ø [mm]	Inside ø [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part no.	Type	PU[1] [m]
4	2.6	8	16	0.017	Blue/black	197396	PUN-H-4x0.75-DUO	50
6	4	10	26	0.0366		197397	PUN-H-6x1-DUO	50
8	5.7	21	37	0.0574		197398	PUN-H-8x1.25-DUO	1 ... 50
10	7	28	52	0.093		197399	PUN-H-10x1.5-DUO	1 ... 50

Data sheet

Operating and environmental conditions

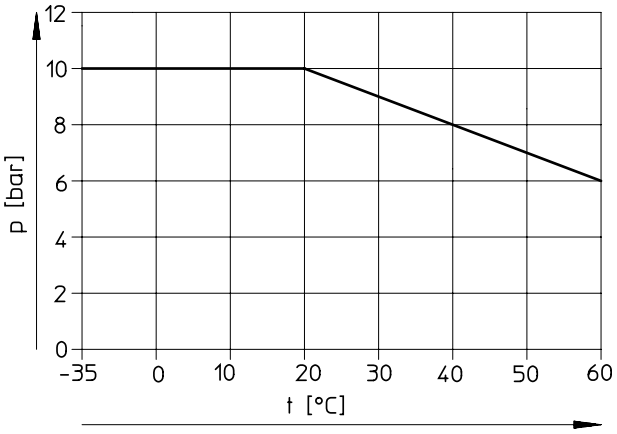
Type		PUN-H-4-...-DUO	PUN-H-6-...-DUO	PUN-H-8-...-DUO	PUN-H-10-...-DUO
Outside ø	[mm]	4	6	8	10
Pneumatic connection					
For push-in connector	[mm]	4	6	8	10
For barbed fitting with union nut	[mm]	3	4	6	–
Temperature-dependent operating pressure	[bar]	–0.95 ... +10 ➔ graph below			
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]			
		Water as per manufacturer's declaration[1]			
Ambient temperature	[°C]	–35 ... +60			
Food-safe[1]		See supplementary material information			
Fire test of materials		UL94 HB			
Certification[1]		German Technical Control Board (TÜV)			
Tubing characteristics		Suitable for energy chains in applications with high cycle rates			
Tubing test conditions		Suitability for energy chains: › 5 million cycles to Festo standard 942021			

1) Additional information: www.festo.com/sp ➔ Certificates.

Plastic tubing PUN-H-DUO

Data sheet

Operating pressure p as a function of temperature t



Accessories

Type		→ Internet
	**Recommended fitting**	
	Push-in fitting QS	qs
	Push-in fitting NPQH	npqh
	Push-in fitting NPQR	npqr
	Well suited	
	Push-in fitting CRQS	crqs
	Push-in fitting NPQP	npqp
	Push-in fitting NPQM	npqm
	Click fitting NPKA[1]	npka
	Fitting NPCK	npck
	Quick connector CK[2]	ck
	Limited suitability	
	Push-in fitting QS-V0	qs-v0

1) For O.D. 6 mm only

2) For O.D. 4/6/8 mm only

Materials	
Shore hardness	D 52 ±3
Tubing	TPE-U(PU)
Note on materials	RoHS-compliant
	Copper/PTFE-free

Push-in fittings NPQE

Highlights

+ PBT or brass
+ Operating medium: compressed air, vacuum
+ Tapered thread in accordance with JIS B0203 and compatible with pressure-tight media to DIN EN 10226

Push-in fittings NPQE

Product range overview

Type	Version	Design	Connection D1				Connection D2
			M thread	R thread	G thread	Tubing O.D.	Tubing O.D.
NPQE-D	Push-in fitting	Straight	■	■	–	–	■
	Push-in connector		–	–	–	■	■
NPQE-L	Push-in fitting	L-shape	■	■	–	–	■
	Push-in connector		–	–	–	■	■
NPQE-T	Push-in fitting	T-shape	■	■	–	–	■
	Push-in connector		–	–	–	■	■
NPQE-Y	Push-in fitting	Y-shape	–	■	–	–	■
	Push-in connector		–	–	–	■	■
NPQE-X	Push-in connector	X-shape	–	–	–	■	■
NPAP-QE	Safety clip	–	–	–	–	–	–

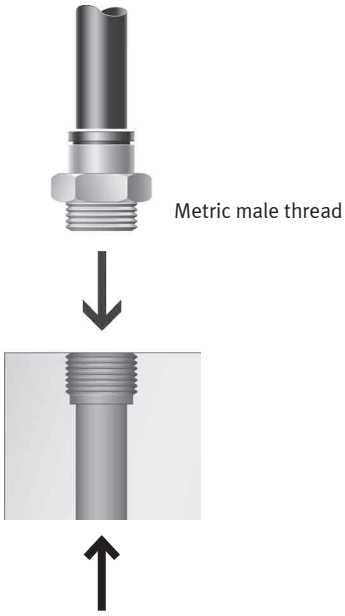
Features

Low-cost push-in fittings for pneumatic applications with a temperature range up to 60°C and a pressure range up to 8 bar.
Tubing O.D. of 3, 4, 6, 8, 10, 12, 14 and 16 mm with connecting threads M3, M5, M7 and R1/8 ... R1/2.

Which fitting fits which thread?

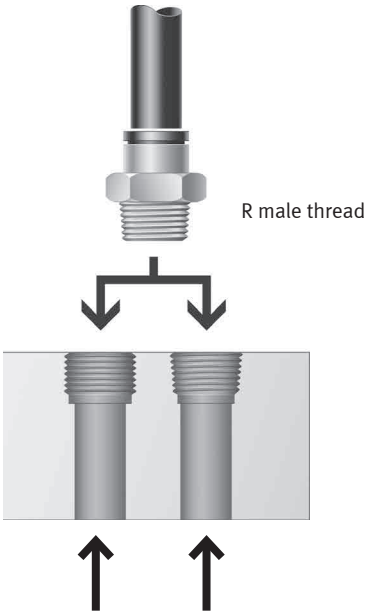
Metric thread

- Threads are comparable with G threads and are fitted as cylindrical metric thread
- Sealing is guaranteed via an O-ring.



R thread based on JIS B0203 and compatible with pressure-tight media to EN 10226.

- Self-sealing thread
- Sealing via coated threads
- No additional sealing surface required
- Smaller installation dimensions since there is no need for an offset for the sealing surface
- Can be reused up to 3 times.



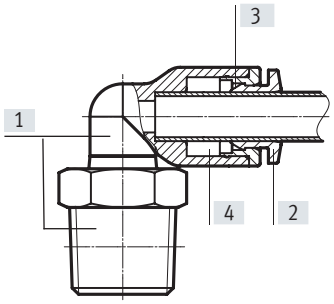
Data sheet

General technical data	
Design	Push-pull principle
Mounting position	Any
Type of seal on screwed trunnion	Sealing ring for M thread
	Coating for R thread
Nominal tightening torque [Nm]	0.3 ±5% for M3 male thread
	0.8 ±5% for M5 male thread
	2 ±5% for M7 male thread

Operating and environmental conditions	
Operating pressure for entire temperature range [bar]	–0.95 ... 8
Operating medium	Compressed air to ISO 8573-1:2010[7:4:4]
Note on operating/pilot medium	Lubricated operation possible
Ambient temperature [°C]	–5 ... +60
Corrosion resistance class CRC[1)]	1

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials



Type		Push-in fitting NPQE-D, push-in bulkhead connector NPQE-H	Push-in fitting NPQE-L/NPQE-LH/NPQE-LL/NPQE-T/NPQE-LQ/NPQE-LT/NPQE-Y	Push-in connector NPQE-D/NPQE-L/NPQE-T/NPQE-Y/NPQE-X, push-in cap NPQE-P	Push-in sleeve NPQE-D, blanking plug NPQE-P, safety clip NPAP-QE
[1]	Housing	Brass		–	
		-	PBT		
[2]	Releasing ring	POM (colour: blue)			–
[3]	Tube retaining claw	Stainless steel			–
[4]	Tubing seal	NBR			–
–	Threaded seal	NBR for M thread		–	
		PTFE for R thread		–	
–	O-ring	NBR for M thread		–	
Note on materials		RoHS-compliant			
		Contains paint-wetting impairment substances			

Push-in fittings NPQE

Ordering data

Push-in fitting NPQE-D

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Male thread	For tubing O.D.				
D1	D2	[mm]			
Metric thread with sealing ring					
M3	3	1	8112906	NPQE-D-M3-Q3-P10	10
	4	1	8112907	NPQE-D-M3-Q4-P10[2]	10
M5	3	2	8112908	NPQE-D-M5-Q3-P10	10
	4	2.3	8112909	NPQE-D-M5-Q4-P10[2]	10
	6	2.3	8112910	NPQE-D-M5-Q6-P10[2]	10
M7	4	3	8112911	NPQE-D-M7-Q4-P10[2]	10
	6	3.5	8112912	NPQE-D-M7-Q6-P10[2]	10
R thread					
R1/8	4	3	8112913	NPQE-D-R18-Q4-P10[2]	10
	6	4	8112914	NPQE-D-R18-Q6-P10[2]	10
	8	5	8112915	NPQE-D-R18-Q8-P10	10
	10	5	8112916	NPQE-D-R18-Q10-P10	10
	12	5	8112917	NPQE-D-R18-Q12-P10	10
R1/4	4	3	8112918	NPQE-D-R14-Q4-P10	10
	6	4	8112919	NPQE-D-R14-Q6-P10	10
	8	6	8112920	NPQE-D-R14-Q8-P10	10
	10	6	8112921	NPQE-D-R14-Q10-P10	10
	12	6	8112922	NPQE-D-R14-Q12-P10	10
R3/8	6	4	8112923	NPQE-D-R38-Q6-P5	5
	8	6	8112924	NPQE-D-R38-Q8-P5	5
	10	8	8112925	NPQE-D-R38-Q10-P5	5
	12	8	8112926	NPQE-D-R38-Q12-P5	5
	14	8	8112927	NPQE-D-R38-Q14-P5	5
	16	8	8112928	NPQE-D-R38-Q16-P5	5
R1/2	6	4	8112929	NPQE-D-R12-Q6-P5	5
	8	6	8112930	NPQE-D-R12-Q8-P5	5
	10	8	8112931	NPQE-D-R12-Q10-P5	5
	12	8	8112932	NPQE-D-R12-Q12-P5	5
	14	10	8112933	NPQE-D-R12-Q14-P5	5
	16	10	8112934	NPQE-D-R12-Q16-P5	5

1) Packaging unit per part
2) Not suitable for safety clip NPAP-QE

Push-in fitting NPQE-D, female thread with external hex

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Male thread	For tubing O.D.				
D1	D2	[mm]			
Metric thread					
M5	3	2.2	8112984	NPQE-D-M5F-Q3-P10	10
	4	2.5	8112985	NPQE-D-M5F-Q4-P10[2]	10
G thread					
G1/8	4	2.5	8112986	NPQE-D-G18F-Q4-P10	10
	6	4.5	8112987	NPQE-D-G18F-Q6-P10	10
	8	6	8112988	NPQE-D-G18F-Q8-P10	10
	10	8	8112989	NPQE-D-G18F-Q10-P10	10
G1/4	4	2.5	8112990	NPQE-D-G14F-Q4-P10	10
	6	4.5	8112991	NPQE-D-G14F-Q6-P10	10
	8	6	8112992	NPQE-D-G14F-Q8-P10	10
	10	8	8112993	NPQE-D-G14F-Q10-P10	10
	12	10	8112994	NPQE-D-G14F-Q12-P10	10
G3/8	6	4.5	8112995	NPQE-D-G38F-Q6-P5	5
	8	6	8112996	NPQE-D-G38F-Q8-P5	5
	10	8	8112997	NPQE-D-G38F-Q10-P5	5
	12	10	8112998	NPQE-D-G38F-Q12-P5	5
G1/2	12	10	8112999	NPQE-D-G12F-Q12-P5	5
	16	14	8113000	NPQE-D-G12F-Q16-P5	5

Push-in connector NPQE-D

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
For tubing O.D.					
D1	D2	[mm]			
3	3	2.2	8113103	NPQE-D-Q3-E-P10	10
4	4	2.3	8113105	NPQE-D-Q4-E-P10[2]	10
6	6	4	8113107	NPQE-D-Q6-E-P10[2]	10
8	8	7.1	8113110	NPQE-D-Q8-E-P10	10
10	10	9.3	8113113	NPQE-D-Q10-E-P10	10
12	12	10	8113116	NPQE-D-Q12-E-P10	10
14	14	13	8113119	NPQE-D-Q14-E-P5	5
16	16	13	8113120	NPQE-D-Q16-E-P5	5
Reducing					
4	3	2.3	8113104	NPQE-D-Q4-Q3-P10[2]	10
6	4	2.3	8113106	NPQE-D-Q6-Q4-P10[2]	10
8	4	3.5	8113108	NPQE-D-Q8-Q4-P10	10
	6	5.3	8113109	NPQE-D-Q8-Q6-P10	10
10	6	5.3	8113111	NPQE-D-Q10-Q6-P10	10
	8	7.1	8113112	NPQE-D-Q10-Q8-P10	10
12	8	7.1	8113114	NPQE-D-Q12-Q8-P10	10
	10	9.3	8113115	NPQE-D-Q12-Q10-P10	10
14	10	9.3	8113117	NPQE-D-Q14-Q10-P5	5
	12	10	8113118	NPQE-D-Q14-Q12-P5	5

1) Packaging unit per part
2) Not suitable for safety clip NPAP-QE

Ordering data

Push-in connector NPQE-D, with push-in sleeve

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
For tubing O.D. D1	Push-in sleeve D2	[mm]			
3	QS-4	2.5	8113183	NPQE-D-Q3-S4-P10	10
4	QS-6	3.5	8113184	NPQE-D-Q4-S6-P10	10
	QS-8	3.5	8113185	NPQE-D-Q4-S8-P10	10
6	QS-8	5	8113186	NPQE-D-Q6-S8-P10	10
	QS-10	5.5	8113187	NPQE-D-Q6-S10-P10	10
	QS-12	4.6	8113189	NPQE-D-Q6-S12-P10	10
8	QS-10	7	8113188	NPQE-D-Q8-S10-P10	10
	QS-12	7.5	8113190	NPQE-D-Q8-S12-P10	10
10	QS-12	8.5	8113191	NPQE-D-Q10-S12-P10	10

Push-in sleeve NPQE-D

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Push-in sleeve					
D1	D2	[mm]			
QS-4	QS-4	2.5	8113210	NPQE-D-S4-E-P10	10
QS-6	QS-6	4	8113212	NPQE-D-S6-E-P10	10
QS-8	QS-8	6	8113214	NPQE-D-S8-E-P10	10
QS-10	QS-10	7.5	8113216	NPQE-D-S10-E-P10	10
QS-12	QS-12	9	8113219	NPQE-D-S12-E-P10	10
QS-16	QS-16	13	8113221	NPQE-D-S16-E-P5	5
Reducing					
QS-6	QS-4	2.5	8113211	NPQE-D-S6-S4-P10	10
QS-8	QS-6	4	8113213	NPQE-D-S8-S6-P10	10
QS-10	QS-8	6	8113215	NPQE-D-S10-S8-P10	10
QS-12	QS-8	6	8113217	NPQE-D-S12-S8-P10	10
	QS-10	7.5	8113218	NPQE-D-S12-S10-P10	10
QS-16	QS-12	9	8113220	NPQE-D-S16-S12-P5	5

Push-in bulkhead connector NPQE-H

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
For tubing O.D.					
D1	D2	[mm]			
3	3	2.2	8113121	NPQE-H-Q3-E-P10	10
4	4	2.5	8113122	NPQE-H-Q4-E-P10	10
6	6	4.5	8113123	NPQE-H-Q6-E-P10	10
8	8	6	8113124	NPQE-H-Q8-E-P10	10
10	10	8	8113125	NPQE-H-Q10-E-P10	10
12	12	10	8113126	NPQE-H-Q12-E-P10	10

Blanking plug NPQE-P

Pneumatic connection	Part no.	Type	PE[1]
Push-in sleeve			
D1			
QS-3	8113203	NPQE-P-S3-P10	10
QS-4	8113204	NPQE-P-S4-P10	10
QS-6	8113205	NPQE-P-S6-P10	10
QS-8	8113206	NPQE-P-S8-P10	10
QS-10	8113207	NPQE-P-S10-P10	10
QS-12	8113208	NPQE-P-S12-P10	10
QS-16	8113209	NPQE-P-S16-P5	5

Push-in cap NPQE-P

Pneumatic connection	Part no.	Type	PE[1]
For tubing O.D. D1			
3	8113171	NPQE-P-Q3-P10	10
4	8113172	NPQE-P-Q4-P10	10
6	8113173	NPQE-P-Q6-P10	10
8	8113174	NPQE-P-Q8-P10	10
10	8113175	NPQE-P-Q10-P10	10
12	8113176	NPQE-P-Q12-P10	10

Push-in L-fitting NPQE-L

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2	[mm]			
Metric thread with sealing ring					
M3	3	1	8112935	NPQE-L-M3-Q3-P10	10
	4	1	8112936	NPQE-L-M3-Q4-P10[2]	10
M5	3	2.2	8112937	NPQE-L-M5-Q3-P10	10
	4	2.3	8112938	NPQE-L-M5-Q4-P10[2]	10
	6	2.3	8112939	NPQE-L-M5-Q6-P10[2]	10
M7	4	2.3	8112940	NPQE-L-M7-Q4-P10[2]	10
	6	2.3	8112941	NPQE-L-M7-Q6-P10[2]	10
R thread					
R1/8	4	3.4	8112942	NPQE-L-R18-Q4-P10	10
	6	4	8112943	NPQE-L-R18-Q6-P10	10
	8	6	8112944	NPQE-L-R18-Q8-P10	10
	10	6.5	8112945	NPQE-L-R18-Q10-P10	10
	12	6.5	8112946	NPQE-L-R18-Q12-P10	10
R1/4	4	3.4	8112947	NPQE-L-R14-Q4-P10	10
	6	4	8112948	NPQE-L-R14-Q6-P10	10
	8	6	8112949	NPQE-L-R14-Q8-P10	10
	10	8.5	8112950	NPQE-L-R14-Q10-P10	10
	12	8.5	8112951	NPQE-L-R14-Q12-P10	10
R3/8	6	4	8112952	NPQE-L-R38-Q6-P5	5
	8	6	8112953	NPQE-L-R38-Q8-P5	5
	10	9.3	8112954	NPQE-L-R38-Q10-P5	5
	12	9.5	8112955	NPQE-L-R38-Q12-P5	5
	14	11.5	8112956	NPQE-L-R38-Q14-P5	5
	16	11.5	8112957	NPQE-L-R38-Q16-P5	5
R1/2	6	4	8112958	NPQE-L-R12-Q6-P5	5
	8	6	8112959	NPQE-L-R12-Q8-P5	5
	10	9.3	8112960	NPQE-L-R12-Q10-P5	5
	12	9.5	8112961	NPQE-L-R12-Q12-P5	5
	14	13	8112962	NPQE-L-R12-Q14-P5	5
	16	13	8112963	NPQE-L-R12-Q16-P5	5

Push-in fittings NPQE

Ordering data

Push-in L-fitting NPQE-L, female thread with external hex

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
Female thread D1	For tubing O.D. D2				
Metric thread					
M5	4	2.5	8113001	NPQE-L-M5F-Q4-P10	10
G thread					
G1/8	4	2.5	8113002	NPQE-L-G18F-Q4-P10	10
	6	4.5	8113003	NPQE-L-G18F-Q6-P10	10
	8	6	8113004	NPQE-L-G18F-Q8-P10	10
	10	8	8113005	NPQE-L-G18F-Q10-P10	10
G1/4	6	4.5	8113006	NPQE-L-G14F-Q6-P10	10
	8	6	8113007	NPQE-L-G14F-Q8-P10	10
	10	8.5	8113008	NPQE-L-G14F-Q10-P10	10
G3/8	8	6	8113009	NPQE-L-G38F-Q8-P5	5
	10	8	8113010	NPQE-L-G38F-Q10-P5	5

Push-in L-connector NPQE-L

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
For tubing O.D.					
D1	D2				
3	3	2.2	8113127	NPQE-L-Q3-E-P10	10
4	4	2.3	8113128	NPQE-L-Q4-E-P10[2]	10
6	6	4	8113129	NPQE-L-Q6-E-P10[2]	10
8	8	7.1	8113130	NPQE-L-Q8-E-P10	10
10	10	9.3	8113131	NPQE-L-Q10-E-P10	10
12	12	10	8113132	NPQE-L-Q12-E-P10	10
14	14	13	8113133	NPQE-L-Q14-E-P5	5
16	16	14.3	8113134	NPQE-L-Q16-E-P5	5

Push-in L-connector NPQE-L, with push-in sleeve

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
For tubing O.D. D1	Push-in sleeve D2				
3	QS-3	1.5	8113192	NPQE-L-Q3-S3-P10	10
	QS-4	2.2	8113193	NPQE-L-Q3-S4-P10	10
4	QS-4	2.5	8113194	NPQE-L-Q4-S4-P10[2]	10
	QS-6	3	8113195	NPQE-L-Q4-S6-P10[2]	10
6	QS-6	4	8113196	NPQE-L-Q6-S6-P10[2]	10
	QS-8	4	8113197	NPQE-L-Q6-S8-P10	10
8	QS-8	6	8113198	NPQE-L-Q8-S8-P10	10
	QS-10	6	8113199	NPQE-L-Q8-S10-P10	10
10	QS-10	9.3	8113200	NPQE-L-Q10-S10-P10	10
	QS-12	9.3	8113201	NPQE-L-Q10-S12-P10	10
12	QS-12	9.5	8113202	NPQE-L-Q12-S12-P10	10

Push-in L-fitting NPQE-LH, hollow bolt with external hex

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2				
Metric thread with sealing ring					
M5	4	1.8	8113030	NPQE-LH-M5-Q4-P10	10
M5	6	1.8	8113031	NPQE-LH-M5-Q6-P10	10
R thread					
R1/8	4	3	8113032	NPQE-LH-R18-Q4-P10	10
	6	4	8113033	NPQE-LH-R18-Q6-P10	10
	8	4	8113034	NPQE-LH-R18-Q8-P10	10
	10	4	8113035	NPQE-LH-R18-Q10-P10	10
R1/4	4	3.5	8113036	NPQE-LH-R14-Q4-P10	10
	6	4	8113037	NPQE-LH-R14-Q6-P10	10
	8	5	8113038	NPQE-LH-R14-Q8-P10	10
	10	5	8113039	NPQE-LH-R14-Q10-P10	10
	12	5	8113040	NPQE-LH-R14-Q12-P10	10
R3/8	6	4	8113041	NPQE-LH-R38-Q6-P5	5
	8	5	8113042	NPQE-LH-R38-Q8-P5	5
	10	6.5	8113043	NPQE-LH-R38-Q10-P5	5
	12	6.5	8113044	NPQE-LH-R38-Q12-P5	5
R1/2	10	8	8113045	NPQE-LH-R12-Q10-P5	5
	12	8	8113046	NPQE-LH-R12-Q12-P5	5
	16	8	8113047	NPQE-LH-R12-Q16-P5	5

Push-in L-fitting, long NPQE-LL, male thread with external hex

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2				
Metric thread with sealing ring					
M3	4	1	8113011	NPQE-LL-M3-Q4-P10[2]	10
M5	4	2.3	8113012	NPQE-LL-M5-Q4-P10[2]	10
	6	2.3	8113013	NPQE-LL-M5-Q6-P10[2]	10
M7	4	2.3	8113014	NPQE-LL-M7-Q4-P10[2]	10
	6	2.3	8113015	NPQE-LL-M7-Q6-P10[2]	10
R thread					
R1/8	4	3.4	8113016	NPQE-LL-R18-Q4-P10	10
	6	4	8113017	NPQE-LL-R18-Q6-P10	10
	8	6	8113018	NPQE-LL-R18-Q8-P10	10
	10	6.5	8113019	NPQE-LL-R18-Q10-P10	10
	12	6.5	8113020	NPQE-LL-R18-Q12-P10	10
R1/4	4	3.4	8113021	NPQE-LL-R14-Q4-P10	10
	6	4	8113022	NPQE-LL-R14-Q6-P10	10
	8	6	8113023	NPQE-LL-R14-Q8-P10	10
	10	8.5	8113024	NPQE-LL-R14-Q10-P10	10
	12	8.5	8113025	NPQE-LL-R14-Q12-P10	10
R3/8	8	6	8113026	NPQE-LL-R38-Q8-P5	5
	10	9.3	8113027	NPQE-LL-R38-Q10-P5	5
	12	9.5	8113028	NPQE-LL-R38-Q12-P5	5
R1/2	12	9.5	8113029	NPQE-LL-R12-Q12-P5	5

Ordering data

Push-in T-fitting NPQE-T

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2	[mm]			
Metric thread with sealing ring					
M3	4	1	8113048	NPQE-T-M3-Q4-P10 [2]	10
M5	4	2.2	8113049	NPQE-T-M5-Q4-P10 [2]	10
	6	2.2	8113050	NPQE-T-M5-Q6-P10 [2]	10
R thread					
R1/8	4	3.4	8113051	NPQE-T-R18-Q4-P10	10
	6	4	8113052	NPQE-T-R18-Q6-P10	10
	8	6	8113053	NPQE-T-R18-Q8-P10	10
	10	6.5	8113054	NPQE-T-R18-Q10-P10	10
	12	6.5	8113055	NPQE-T-R18-Q12-P10	10
R1/4	4	3.4	8113056	NPQE-T-R14-Q4-P10	10
	6	4	8113057	NPQE-T-R14-Q6-P10	10
	8	6	8113058	NPQE-T-R14-Q8-P10	10
	10	8.5	8113059	NPQE-T-R14-Q10-P10	10
	12	8.5	8113060	NPQE-T-R14-Q12-P10	10
R3/8	8	6	8113061	NPQE-T-R38-Q8-P5	5
	10	9.3	8113062	NPQE-T-R38-Q10-P5	5
	12	9.5	8113063	NPQE-T-R38-Q12-P5	5
R1/2	10	9.3	8113064	NPQE-T-R12-Q10-P5	5
	12	9.5	8113065	NPQE-T-R12-Q12-P5	5
	16	13	8113066	NPQE-T-R12-Q16-P5	5

Push-in T-connector NPQE-T

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
For tubing O.D.					
D1	D2	[mm]			
3	3	2.2	8113135	NPQE-T-Q3-E-P10	10
4	4	2.3	8113137	NPQE-T-Q4-E-P10 [2]	10
6	6	4	8113140	NPQE-T-Q6-E-P10 [2]	10
8	8	7.1	8113144	NPQE-T-Q8-E-P10	10
10	10	9.3	8113148	NPQE-T-Q10-E-P10	10
12	12	12.3	8113152	NPQE-T-Q12-E-P10	10
16	16	14.3	8113154	NPQE-T-Q16-E-P5	5
Increasing					
3	4	2.2	8113136	NPQE-T-Q3-Q4-P10 [2]	10
4	6	2.3	8113139	NPQE-T-Q4-Q6-P10 [2]	10
	8	3.5	8113142	NPQE-T-Q4-Q8-P10	10
6	8	5.3	8113143	NPQE-T-Q6-Q8-P10	10
	10	5.3	8113146	NPQE-T-Q6-Q10-P10	10
8	10	7.1	8113147	NPQE-T-Q8-Q10-P10	10
	12	7.1	8113150	NPQE-T-Q8-Q12-P10	10
10	12	9.3	8113151	NPQE-T-Q10-Q12-P10	10
12	16	10	8113153	NPQE-T-Q12-Q16-P5	5
Reducing					
6	4	2.3	8113138	NPQE-T-Q6-Q4-P10 [2]	10
8	6	5.3	8113141	NPQE-T-Q8-Q6-P10	10
10	8	7.1	8113145	NPQE-T-Q10-Q8-P10	10
12	10	9.3	8113149	NPQE-T-Q12-Q10-P10	10

Push-in T-fitting NPQE-LQ, additional push-in connector, in-line

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2	[mm]			
Metric thread with sealing ring					
M5	4	2.2	8113067	NPQE-LQ-M5-Q4-P10 [2]	10
	6	2.2	8113068	NPQE-LQ-M5-Q6-P10 [2]	10
R thread					
R1/8	4	3.4	8113069	NPQE-LQ-R18-Q4-P10	10
	6	4	8113070	NPQE-LQ-R18-Q6-P10	10
	8	6	8113071	NPQE-LQ-R18-Q8-P10	10
	10	6.5	8113072	NPQE-LQ-R18-Q10-P10	10
	12	6.5	8113073	NPQE-LQ-R18-Q12-P10	10
R1/4	4	3.4	8113074	NPQE-LQ-R14-Q4-P10	10
	6	4	8113075	NPQE-LQ-R14-Q6-P10	10
	8	6	8113076	NPQE-LQ-R14-Q8-P10	10
	10	8.5	8113077	NPQE-LQ-R14-Q10-P10	10
	12	8.5	8113078	NPQE-LQ-R14-Q12-P10	10

Push-in T-fitting NPQE-LT, additional female thread, in-line

Pneumatic connection		Nominal width	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2	[mm]			
Metric thread with sealing ring					
M5	4	1.8	8113090	NPQE-LT-M5-Q4-P10	10
	6	1.8	8113091	NPQE-LT-M5-Q6-P10	10
R thread					
R1/8	4	3	8113092	NPQE-LT-R18-Q4-P10	10
	6	4	8113093	NPQE-LT-R18-Q6-P10	10
	8	4	8113094	NPQE-LT-R18-Q8-P10	10
	10	4	8113095	NPQE-LT-R18-Q10-P10	10
R1/4	6	4	8113096	NPQE-LT-R14-Q6-P10	10
	8	5	8113097	NPQE-LT-R14-Q8-P10	10
	10	5	8113098	NPQE-LT-R14-Q10-P10	10
	12	5	8113099	NPQE-LT-R14-Q12-P10	10
R3/8	10	6.5	8113100	NPQE-LT-R38-Q10-P5	5
	12	6.5	8113101	NPQE-LT-R38-Q12-P5	5
R1/2	12	8	8113102	NPQE-LT-R12-Q12-P5	5

Push-in fittings NPQE

Ordering data

Push-in Y-fitting NPQE-Y

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
Male thread D1	For tubing O.D. D2				
R thread					
R1/8	4	2.6	8113079	NPQE-Y-R18-Q4-P10	10
	6	4.6	8113080	NPQE-Y-R18-Q6-P10	10
	8	6	8113081	NPQE-Y-R18-Q8-P10	10
	10	5	8113082	NPQE-Y-R18-Q10-P10	10
R1/4	4	2.6	8113083	NPQE-Y-R14-Q4-P10	10
	6	4.6	8113084	NPQE-Y-R14-Q6-P10	10
	8	6	8113085	NPQE-Y-R14-Q8-P10	10
	10	8	8113086	NPQE-Y-R14-Q10-P10	10
R3/8	10	8	8113087	NPQE-Y-R38-Q10-P5	5
	12	9	8113088	NPQE-Y-R38-Q12-P5	5
R1/2	12	9	8113089	NPQE-Y-R12-Q12-P5	5

Push-in Y-connector NPQE-Y

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
For tubing O.D.					
D1	D2				
3	3	2.2	8113155	NPQE-Y-Q3-E-P10	10
4	4	2.3	8113157	NPQE-Y-Q4-E-P10 [2]	10
6	6	4	8113159	NPQE-Y-Q6-E-P10 [2]	10
8	8	8.2	8113162	NPQE-Y-Q8-E-P10	10
10	10	8.2	8113165	NPQE-Y-Q10-E-P10	10
12	12	12.3	8113168	NPQE-Y-Q12-E-P10	10
16	16	13	8113170	NPQE-Y-Q16-E-P5	5
Reducing					
4	3	2.2	8113156	NPQE-Y-Q4-Q3-P10 [2]	10
6	4	2.3	8113158	NPQE-Y-Q6-Q4-P10 [2]	10
8	4	3	8113160	NPQE-Y-Q8-Q4-P10	10
	6	6.2	8113161	NPQE-Y-Q8-Q6-P10	10
10	6	4.6	8113163	NPQE-Y-Q10-Q6-P10	10
	8	8.2	8113164	NPQE-Y-Q10-Q8-P10	10
12	8	6	8113166	NPQE-Y-Q12-Q8-P10	10
	10	10.3	8113167	NPQE-Y-Q12-Q10-P10	10
16	12	12.3	8113169	NPQE-Y-Q16-Q12-P5	5

Push-in X connector NPQE-X

Pneumatic connection		Nominal width [mm]	Part no.	Type	PE[1]
For tubing O.D.					
D1	D2				
3	3	2.2	8113177	NPQE-X-Q3-E-P10	10
4	4	3.5	8113178	NPQE-X-Q4-E-P10	10
6	6	5	8113179	NPQE-X-Q6-E-P10	10
8	8	7	8113180	NPQE-X-Q8-E-P10	10
10	10	9.3	8113181	NPQE-X-Q10-E-P10	10
12	12	10	8113182	NPQE-X-Q12-E-P10	10

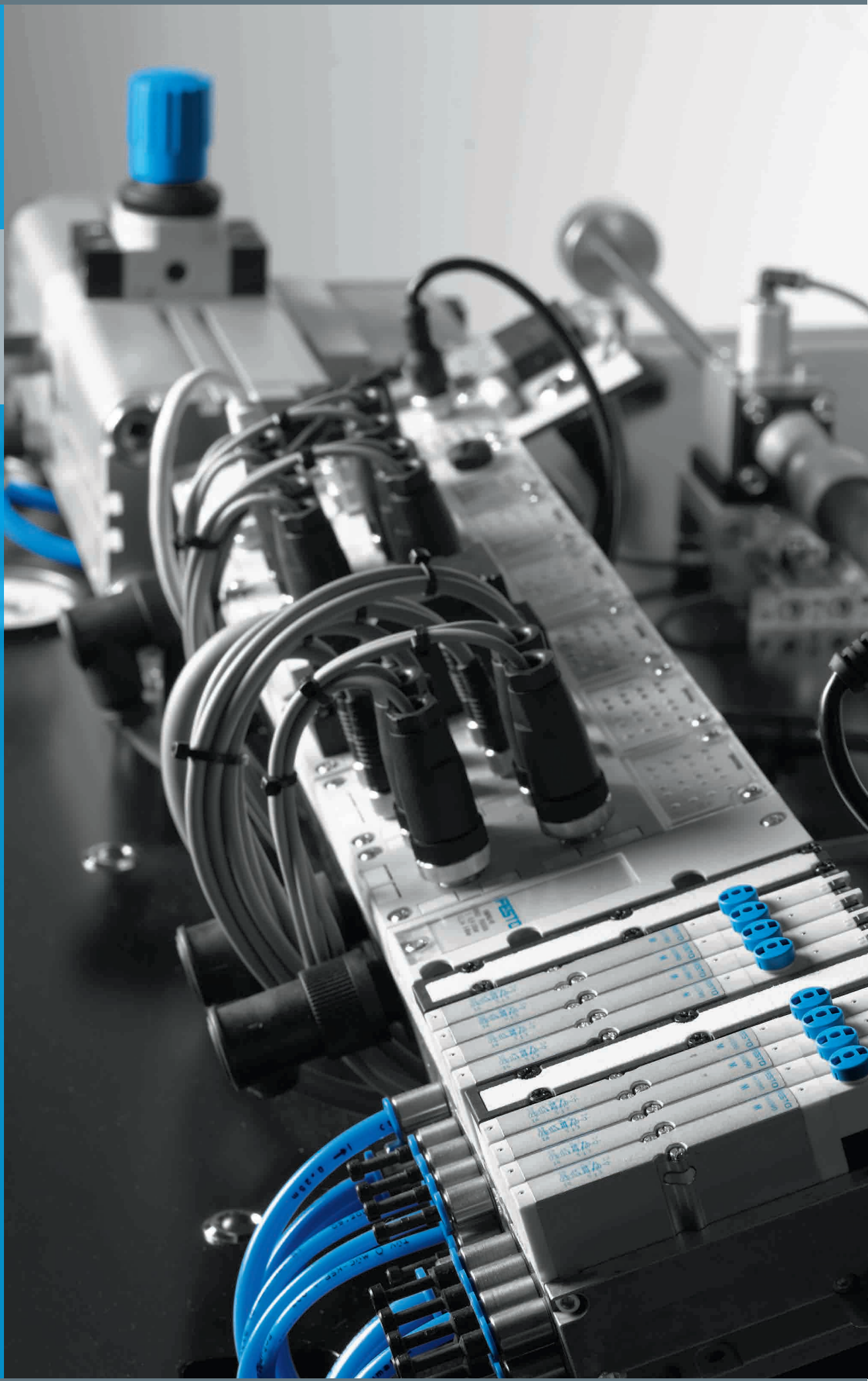
Safety clip NPAP-QE

Pneumatic connection	Part no.	Type	PE[1]
For tubing O.D.			
4	8113228	NPAP-QE-S-Q4-P10	10
6	8113229	NPAP-QE-S-Q6-P10	10
8	8113230	NPAP-QE-S-Q8-P10	10
10	8113231	NPAP-QE-S-Q10-P10	10
12	8113232	NPAP-QE-S-Q12-P10	10
16	8113233	NPAP-QE-S-Q16-P10	10

Push-in fittings NPQE

13

Control technology and software



Contents

Product overview

Software tools

Commissioning software Festo Automation Suite

Quickly and reliably to a ready-to-use drive system – the Festo Automation Suite combines the parameterisation, programming and maintenance of Festo components in one program and enables the entire drive package, from the mechanical system to the controller, to be commissioned. Perfect for making industrial automation simple, efficient and seamless.

Plug-in automation system CPX-E

- Controller programming in CODESYS as a system expansion for SoftMotion – up to robotic applications
- Just 2 mouse clicks instead of 100: greatly simplified integration of the servo controller CMMT-AS into the control program with CPX-E-CEC

Conveniently install the plug-in using the software

This tool can be found on our website at www.festo.com/AutomationSuite

Electrical peripherals

	 **Automation systems CPX-AP** ★	 **Terminal CPX**	 **Fieldbus modules CTEU**	 **Automation systems CPX-E**
Protocol		INTERBUS, DeviceNet, PROFIBUS, CANopen, CC-Link, Ether-Net/IP, PROFINET, EtherCAT, ModbusTCP	AS-Interface, CANopen, CC-Link, CPI-B, DeviceNet, EtherCAT, EtherNet/IP, PROFINET, Modbus® TCP, PROFIBUS DP	
Electrical actuation		Fieldbus, Integrated controller		Fieldbus, Integrated controller
Max. address capacity, inputs	1024 ... 2048 Byte	64 Byte	2 ... 64 Byte	64 Byte
Maximum address volume for outputs	1024 ... 2048 Byte	64 Byte	2 ... 64 Byte	64 Byte
Parameterisation		Diagnostic behaviour, Fail-safe response, Forcing of channels, Signal setup	IO-Link mode, Activate diagnostics, Diagnostic behaviour, Fail-safe and idle response, Fail-safe 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
Operating voltage range DC		18 ... 30 V	18 ... 31.6 V	
Description	• Powerful remote I/O system links up to 500 modules/valve terminals to the bus of your choice: PROFINET, EtherNet/IP, EtherCAT®, PROFIBUS • Real time-capable, bus cycle from 15 µs • IO-Link® master and engineering tool for easy integration of IO-Link® devices • Advanced diagnostics with cloud connection and optional Festo dashboards	• 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 interlinking block with individual linking • Analogue inputs and outputs, 2-way/4-way, with optional HART protocol	• For valve terminals VTUB-12, VTUG, MPA-L, CPV, VTOC • Can be expanded into the installation system CTEL • Fieldbus-typical LEDs, interfaces and switching elements • Isolated power supply for electronics and valves	• 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/0.5A) • Analogue input modules (current, voltage), analogue output modules (current, voltage) • Modern programming with CoDeSys V3 to IEC 61131-3 • Integration of SoftMotion functions (SoftMotion) • Compact I/O assembly • Easy mounting of the control system
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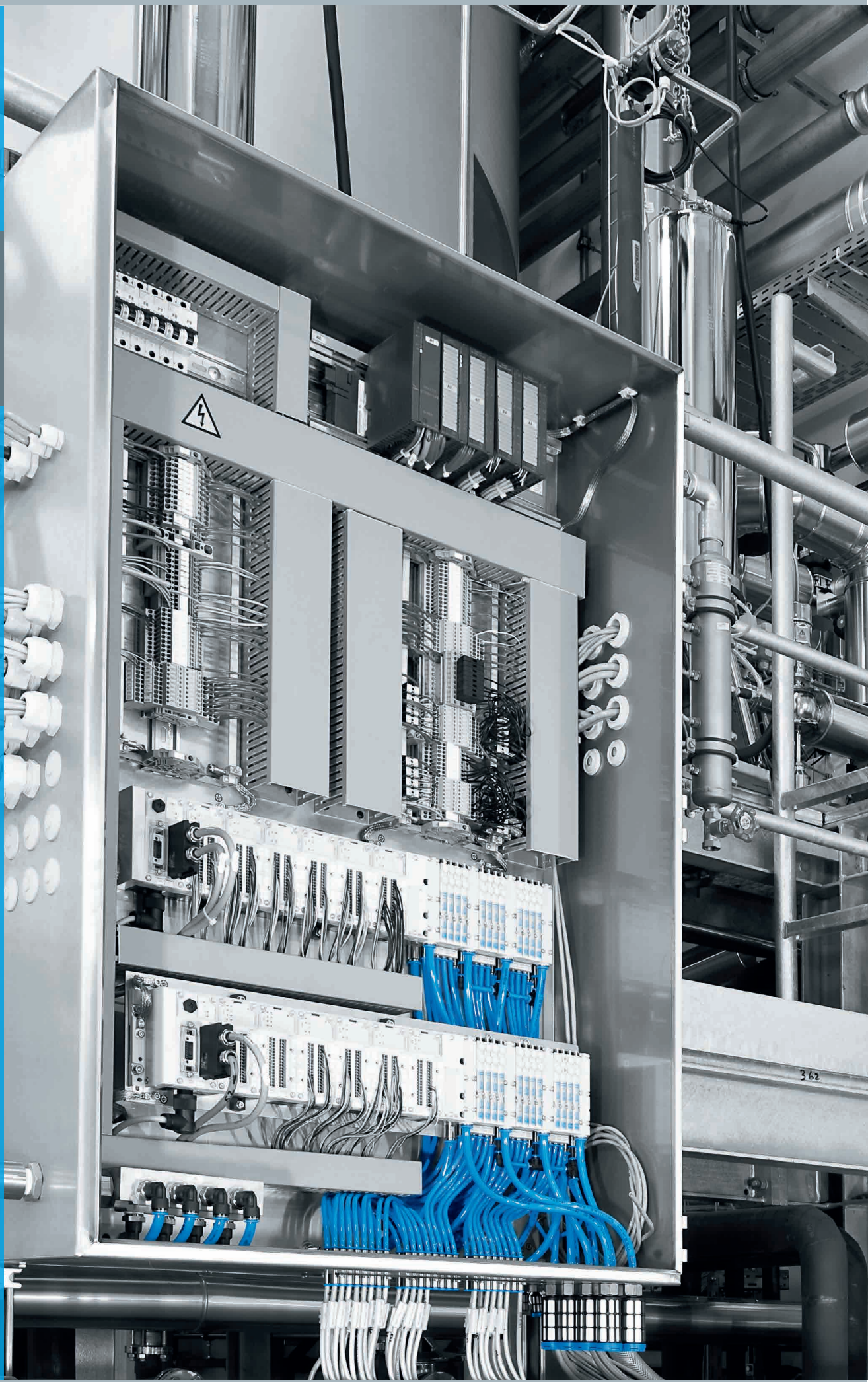
Product overview

14

Ready-to-install solutions



Contents

Product overview

Control cabinets

Type	 Factory automation	 Process automation	 Control cabinets for controllers
Technical data	• Simple to complex control cabinet designs • Application-specific combination of components • 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 electro-pneumatic – UL-508A • Implementation of safety functions • Different bus technologies	• Simple to complex control cabinet designs • Application-specific combination of components • Different operating voltages • 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 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 • Heating or cooling elements • Intrinsically safe valve terminal technology • Hot swap inspection window	• Simple to complex control cabinet designs • 1 ... 31 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 – AATEX 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
Description	• Control cabinets made to measure • Pneumatic, electric, combined • Individually configured • Adapted to requirements in industrial automation • Design and sizing included	• Control cabinets made to measure • Pneumatic, electric, combined • Individually configured • Adapted to requirements in process automation • Design and sizing included	• Made-to-measure control cabinets for handling systems • Software package for third-party devices included • Individually configurable • Adapted to requirements for handling solutions

Mounting plates and assemblies

Type	 Mounting plates	 Assemblies
Technical data	• Customised 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: – 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	• Combination of various pneumatic and/or electrical components to create a single unit • Application-specific combination of components • Accessories mounted on sub-assembly • Use of the latest innovations and technologies • Ready-to-install • Fully tested, with test certificate • Complete documentation • Design conforms to: – EN 60204-1 – AATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic – UL-508A • Implementation of safety functions
Description	• Machine-specific pre-assembly of pneumatic and electrical components on support plate • Tubing and wiring included • Defined interfaces for easy installation directly in the system	• Pneumatic and electrical components pre-assembled to create a function unit • Can be combined from around 30,000 catalogue components • Connections included • For integration in machines

Product overview

Integration solutions

Type	 Manifold duct plates	 Cartridge solutions	 Function blocks
Technical data	• Freely selectable manifold duct plate shape • Combination of over 30,000 catalogue components • High density of components • No tubing • Variable positioning of mechanical, pneumatic and electrical interfaces • Integration of customised components • Available with protective cover • Fully tested • Ready-to-install • Complete documentation • Implementation of safety functions	• Space-saving thanks to extremely compact design • Pneumatic functions integrated in a single compact housing • Housing in different materials • No tubing required • Minimal cabling required • Significant design freedom • Variable integration options on and within the machine • Sturdy design • Fully tested • Ready-to-install • Complete documentation	• 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
Description	• Ideal for a large number of pneumatic connections in an extremely compact space • No tubing • Compact • Easy to service • Immune to malfunction	• Integration of various pneumatic functions in one component • No need for single housings • Ideal for applications that require a highly compact design	• 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

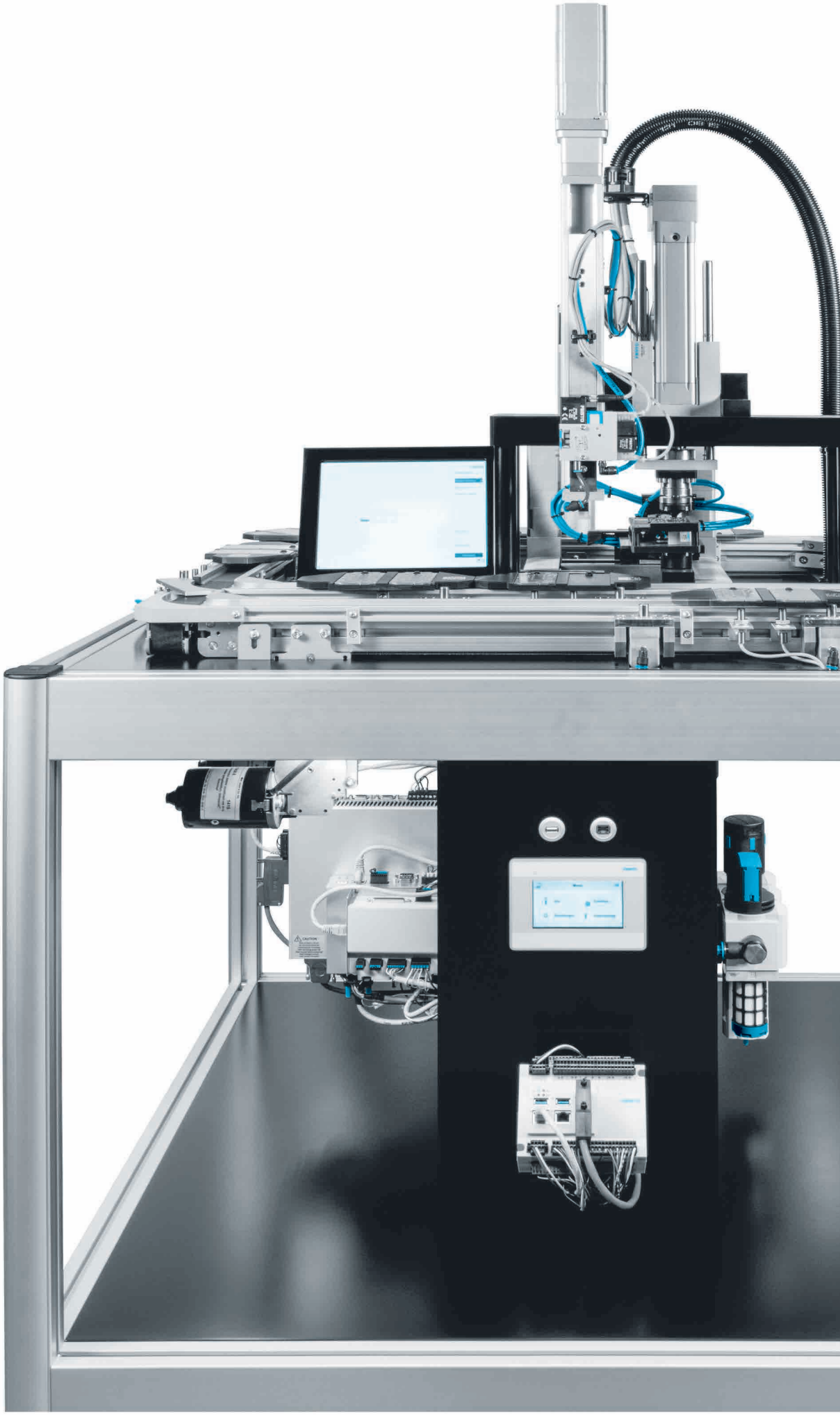
Integration solutions

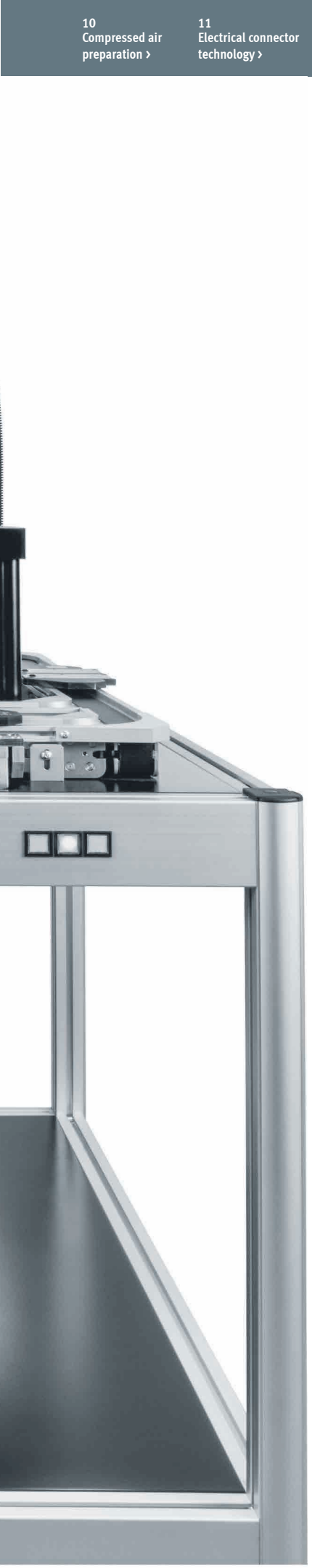
Type	 Sheet-metal constructions and special housings	 Profile solutions
Technical data	• Sheet-metal constructions – Customised shape and size – Reduced weight and number of assembly parts • Special housing – Customised shape – Customised dimensions – Various materials – Compact, space-optimised format – 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	• 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, easy to realise construction • Optional: profile as mechanical mounting element for other components or as a supporting part of the machine frame
Description	• Reduced weight thanks to optimal use of materials with sheet-metal constructions • Protection against environmental influences and unauthorised access • Ideally combined as a control cabinet directly in the system	• 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

Product overview

15

Function-specific systems

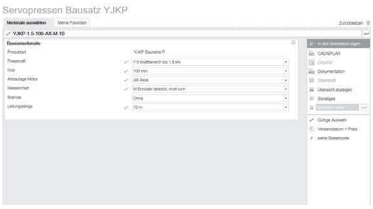




Contents

Product overview

Software tools

Configurator		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. A dynamic graphic generated on the basis of the configuration provides visual assistance in selecting the correct product features. The configurator is part of the electronic catalogue and is not available as a separate software program.
CODESYS		CODESYS for standardised programming of embedded devices according to IEC 61131-3. It makes your life easier with simple commissioning, fast programming and parameterisation. The benefits: • Hardware-neutral software platform for quick and easy configuration, programming and commissioning of pneumatic and electrical 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. • User-friendly IEC function block extension. • Re-use of existing application parts. The parameterisation software can be found at www.festo.com › “Support Portal” tab › “CODESYS” search term › “Software” tab.

Function-specific systems

Servo press kits
YJKP

Function	Press-fitting
Working stroke	100 ... 400 mm
Rated load at max. dynamic response	
Pressing force	0 ... 17 kN
Feed speed	0 ... 250 mm/s
Accuracy in ± % FS	0.5 %FS
Protocol	EtherNet/IP, Modbus TCP, TCP/IP, PROFINET
Description	• 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 • 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
→ Page/online	yjkp

Handling solutions

	 **Balancer kits YHBP**
Stroke range	100 ... 1990 mm
Cylinder diameter	50 ... 200 mm
Max. travel speed	1 m/s
Load	25 ... 999 kg
Operating pressure	4 ... 8 bar
Nominal operating voltage DC	24 V
Description	• 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
online: →	yhbp

16

Other pneumatic components

Contents

Product overview

Silencers

Type	 **Silencer AMTE** ★	 **Silencer U** ★	 **Silencer UC**	 **Silencer AMTC**
Information on silencer insert materials	Bronze	PE, Bronze	PE	PE
Pneumatic connection	1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, G1, G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, UNF10-32	3/4 NPT, G1, G1/2, G1/4, G1/8, G3/4, G3/8, PK-3, PK-4	G1/4, G1/8, G3/8, M5, M7, QS-10, QS-3, QS-4, QS-6, QS-8	Cartridge 10 mm
Noise level	55 ... 95 dB(A)	70 ... 90 dB(A)	58 ... 68 dB(A)	58 dB(A)
Description	• Long or short design • Metal version • Operating medium compressed air • High temperature resistance up to 80°C • Slim width • Many different variants • Universal applications	• Compact design, polymer or die-cast • Barbed fitting or threaded connection • Operating medium compressed air	• Polymer version • Operating medium compressed air • For solenoid valves CPE • Threaded connection or push-in sleeve for push-in fitting QS	• For valve terminal VTUB-12 • Attached via pin (spring clip, included in the delivery of the valve) • Polymer version • Operating medium compressed air
→ Page/online	amte	u	uc	amtc

Silencers

Type	 **Silencer UO**	 **Silencer UOS-1**	 **Silencer UOM, UOMS**
Information on silencer insert materials	PE	PE	PU foam
Pneumatic connection	G1/4, G1/8, M7	G1	G1/4, G3/8
Noise level			
Description	• Special open minimal resistance silencer • For vacuum generators • Facilitates trouble-free operation of the vacuum generator • Operating medium compressed air	• Safety silencer for MS6-SV, MS series • Operating medium compressed air	• 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	uo	uos	uom

Air reservoirs

Type	 **Air reservoir VZS**	 **Air reservoir CRVZS**
Volume	20 l l	0.1 l l, 0.4 l l, 0.75 l l, 10 l l, 2 l l, 20 l l, 5 l l
Information on air reservoir materials	Powder-coated steel	High-alloy stainless steel
Conforms to standard	EN 286-1	AD 2000
Condensate drain connection	G3/8	G3/8
Description	• Compensation of pressure fluctuations and as accumulators in the event of sudden air consumption • Providing large quantities 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 medium: compressed air, vacuum	• Corrosion-resistant • Compensation of pressure fluctuations and as accumulators in the event of sudden air consumption • Providing large quantities of compressed air for supplying fast pulsing drives • With connection for condensate drain in some cases • Food-safe, see www.festo.com/sp/crvzs -› “Certificates” tab • Designs to EU Pressure Equipment Directive EN 286-1 • Operating medium: compressed air, vacuum
➔ Page/online	vzs	crvzs

Air guns

Type	 **Low consumption air gun LSP**	 **Air nozzle LPZ**
Exhaust function	Metered blowing	
Pneumatic connection	Female thread G1/4	Male thread M12x1.25
Information on housing materials	Wrought aluminium alloy, PA6 reinforced	Aluminium, Brass, Die-cast zinc, Chrome-plated, Nickel-plated
Description	• Precise, infinitely variable, lever-operated flow metering • Interchangeable nozzles • Operating medium compressed air	• 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

17

Services

Contents

After Sales and Technical Support Services

Type	 Commissioning	 Maintenance
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	Implementation of the following preventive maintenance measures to DIN 31051: • Inspections – Checking for damage and wear characteristics – Checking of mechanical, pneumatic and electrical connections and connectors – Checking of lubrication – Checking of compressed air preparation – Carrying out of component-specific inspections • Service – Lubrication/relubrication of guides – Tightening of connectors – Replacement of air filters – Replacement of silencers – Carrying out of component-specific preventive maintenance tasks • Repair – Troubleshooting – Solution finding – Error elimination – Elimination of leakages – Replacement or repair of components
Description	• Support with professional commissioning of Festo automation solutions • Competent briefing of staff responsible for the machine	• Preventive and corrective maintenance • Directly on your system • For high machine availability and rapid assistance should the worst happen

After Sales and Technical Support Services

Type	 Repair service	 Technical support
Services	• Inspection • Analysis of economic efficiency • Repair or replacement of faulty components or wearing parts • Leakage testing • Functional test 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.	• Technical advice: answering technical questions or solving technical problems – Online support – Hotline support • Technical customer support: technical support on site – Remote support – On-site support
Description	• Send high-quality components and assemblies to Festo for repair • Extended service life • Reduced costs	• Your technical questions answered • Technical support on site

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