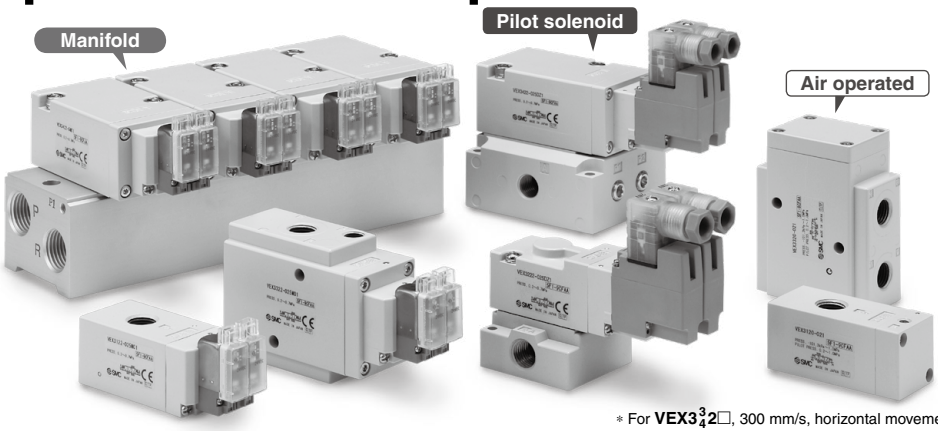
3 Port 3 Position Valve

VEX3 Series

Pilot Solenoid | **Air Operated**

CE RoHS

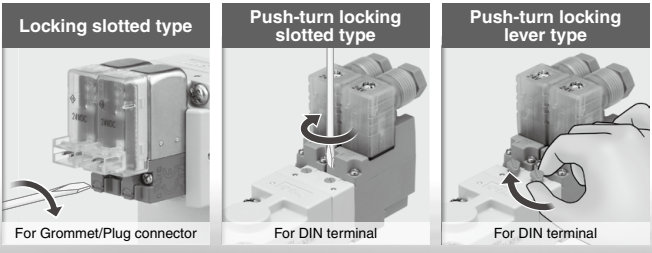
Intermediate stopping of cylinders up to ø125* is possible.



* For **VEX3$^{3}_{4}$2**□, 300 mm/s, horizontal movement

Power consumption: 1 w

3 Manual override options added



VEX

Variations

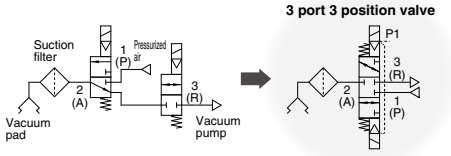
		Body size	Port size	Flow rate characteristics *1 C [dm³/(s·bar)]	Applicable cylinder *2 ø63	ø80	ø100	ø125
Body ported	VEX312□		1/4	3.5				
	VEX332□		3/8	8.7				
Base mounted	VEX322□		1/4	4.4				
	VEX342□		1/2	14				

*1 For 2 (A) → 3 (R) *2 For 300 mm/s, horizontal movement

Applications

Vacuum suction and release

The 3-port, 3-position double solenoid that permits vacuum suction, release, and suspension (closed) is ideal for a system where many valves are used.



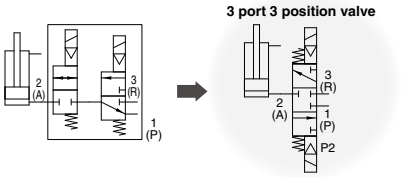
● There is no blow-by when switched from vacuum suction to vacuum release or vice versa.

⚠Caution

● When maintaining the vacuum of port 2(A), the vacuum may decrease due to leakage from the vacuum pad or piping. Conduct vacuum suction at the vacuum adsorption position. Furthermore, it cannot be used as an emergency cutoff valve.

Intermediate cylinder stops

3-position closed center type. A system with a more simple design, but the same size, is now available.



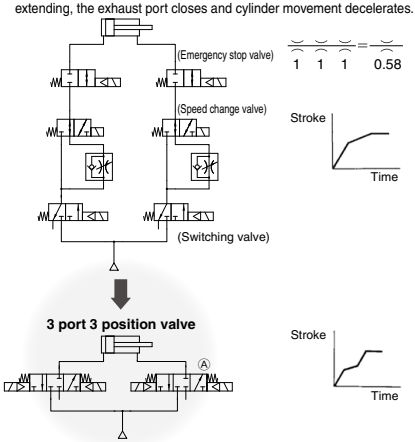
● A large capacity system without connection loss

1 1 = 0.71 (Valves and piping can be made smaller.)

Terminal deceleration and an intermediate speed change circuit can be produced easily.

The simple system configuration permits sharp response. The large capacity system configuration without connection loss allows the use of smaller valves and piping.

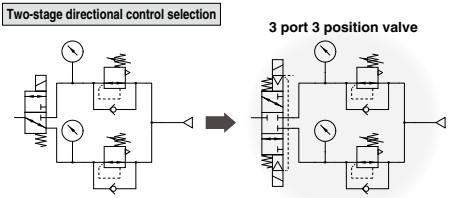
● For example, when solenoid ⓑ of valve Ⓐ is turned off while the cylinder is extending, the exhaust port closes and cylinder movement decelerates.



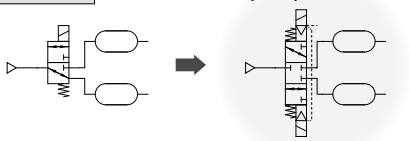
Universal porting could be used as a selector/divider valve.

The pressure balancing poppet valve that permits any flow direction allows sequential switching operation, preventing blow-by and air entrainment.

Two-stage directional control selection

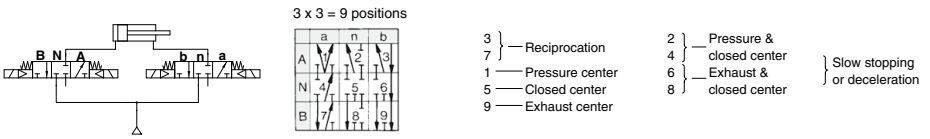


Direction divider



For operation control of double acting cylinders

Two 3-port 3-position valves driven by a double acting cylinder allow operation control in 9 positions (3 positions x 3 positions = 9 positions) including slow stopping, acceleration, and deceleration.

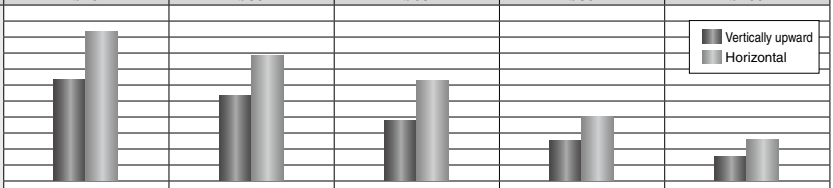
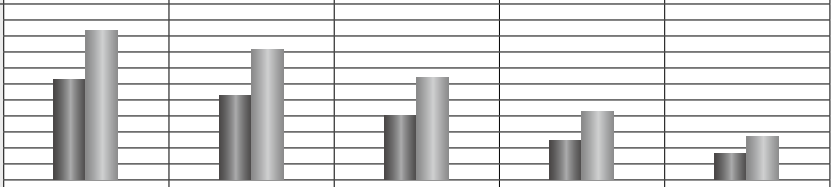
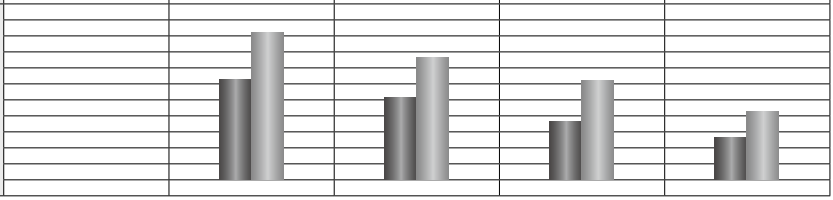


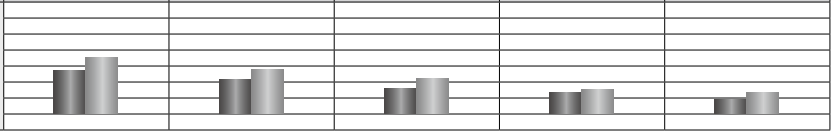
⚠ Caution ● This valve allows air leakage, and thus cannot be used for long term intermediate stops.

SMC

Cylinder Speed Chart

This chart is provided as guidelines only. For performance under various conditions, use SMC's Model Selection Software before making a judgment.

System	Average speed [mm/s]	Bore size: MB, CA2 series Pressure 0.5 MPa, Load ratio 50%, Stroke 500 mm				
		ø40	ø50	ø63	ø80	ø100
A	1000 900 800 700 600 500 400 300 200 100 0					
B	1000 900 800 700 600 500 400 300 200 100 0					
C	1000 900 800 700 600 500 400 300 200 100 0					

System	Average speed [mm/s]	Bore size: CS1/CS2 series Pressure 0.5 MPa, Load ratio 50%, Stroke 300 mm				
		ø125	ø140	ø160	ø180	ø200
D	600 500 400 300 200 100 0					

∗ Values at extension of a directly coupled cylinder when meter-out speed controllers are used with the needle full open.
∗ The average speed of the cylinder is obtained by dividing the stroke by the total stroke time.
∗ The load ratio is obtained by the following formula: ((Load mass x 9.8)/Theoretical output) x 100%

VEX

Conditions

System	Solenoid valve	Speed controller	Silencer	Tubing diameter x Length
A	VEX3 1/2 2□-02	AS4000-02	AN20-02	ø10 x 1 m
B				ø12 x 1 m
C	VEX3 3/4 2□-03/04	AS420-03	AN30-03	ø12 x 1 m
D		AS420-04	AN40-04	SGP15A x 1 m

3 Port 3 Position Valve
Body Ported
VEX3 Series

Air operated　　Pilot solenoid

How to Order

Air operated VEX3 [12] 0 − [01] [ ] 1 − [B]

Pilot solenoid VEX3 [12] [2] − [01] [ ] [5] [D] [ ] [ ] 1 − [B]

Operation type

1	External pilot solenoid
2	Internal pilot solenoid

Body size / Port size

Body size	Port	Port size 1(P), 2(A), 3(R)
12	01	1/8
	02	1/4
32	02	1/4
	03	3/8
	04	1/2

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

∗ DC specification of type D and DO is only available with 12 and 24 VDC.

Electrical entry

Grommet	L plug connector	M plug connector		DIN terminal
G: Lead wire length 300 mm	**L**: With lead wire (Length: 300 mm)	**M**: With lead wire (Length: 300 mm)	**MN**: Without lead wire	**D**: With connector
H: Lead wire length 600 mm	**LN**: Without lead wire	**LO**: Without connector	**MO**: Without connector	**DO**: Without connector
CE-compliant DC: CE	CE	CE	CE	CE
CE-compliant AC: —	—	—	—	—

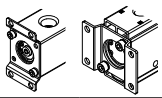
Light/surge voltage suppressor

Electrical entry for G, H, L, M		DC	AC
Nil	None	●	●
R	With surge voltage suppressor (Non-polar type)	●	—
U	With light/surge voltage suppressor (Non-polar type)	●	—
Z	With light/surge voltage suppressor	—	●

Electrical entry for D		DC	AC
Nil	None	●	●
S	With surge voltage suppressor	●	—
Z	With light/surge voltage suppressor	●	●

∗ DOZ is not available.
∗ There is no S option for AC mode, since a rectifier prevents surge voltage generation.

Option

Nil	None	—
B	Bracket (VEX312□ only)	
F	Foot bracket (VEX312□ and VEX332□ only)	VEX312□ VEX332□ 
N∗	Pilot exhaust (PE) silencer	

∗ Only with solenoid

Manual override

Nil	Non-locking push type	Grommet/ (L/M) plug connector  DIN terminal 
B	Locking slotted type	Grommet/ (L/M) plug connector 
D	Push-turn locking slotted type	DIN terminal 
E∗	Push-turn locking lever type	DIN terminal 

∗ Except external pilot solenoid

3 Port 3 Position Valve Base Mounted

VEX3 Series

Air operated Pilot solenoid

How to Order

Air operated VEX3 [22] 0 – [01] [ ] 1

Pilot solenoid VEX3 [22] [2] – [01] [ ] [5] [D] [ ] [ ] 1 – [ ]

Operation type

1	External pilot solenoid
2	Internal pilot solenoid

Body size / Port size

Body size	Port	Port size
22	Nil	Without sub-plate*
	01	1/8
	02	1/4
42	Nil	Without sub-plate*
	02	1/4
	03	3/8
	04	1/2

* With a gasket and 2 mounting bolts

Thread type

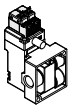
Nil	Rc
F	G
N	NPT
T	NPTF

Rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

* DC specification of type D and DO is only available with 12 and 24 VDC.

Option

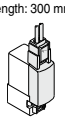
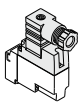
Nil	None	—
N	Pilot exhaust (PE) silencer	

Manual override

Nil	Non-locking push type	Grommet/ (L/M) plug connector  DIN terminal 
B	Locking slotted type	Grommet/ (L/M) plug connector 
D	Push-turn locking slotted type	DIN terminal 
E*	Push-turn locking lever type	DIN terminal 

* Except external pilot solenoid

Electrical entry

	Grommet	L plug connector	M plug connector	DIN terminal
	G: Lead wire length 300 mm 	L: With lead wire (Length: 300 mm) 	M: With lead wire (Length: 300 mm)  MN: Without lead wire 	D: With connector 
	H: Lead wire length 600 mm 	LN: Without lead wire  LO: Without connector 	MO: Without connector 	DO: Without connector 
CE-compliant DC		CE	CE	CE
CE-compliant AC		—	—	—

Light/surge voltage suppressor

Electrical entry for G, H, L, M		DC	AC
Nil	None	●	●
R	With surge voltage suppressor (Non-polar type)	●	—
U	With light/surge voltage suppressor (Non-polar type)	●	—
Z	With light/surge voltage suppressor	—	●

Electrical entry for D		DC	AC
Nil	None	●	●
S	With surge voltage suppressor	●	—
Z	With light/surge voltage suppressor	●	●

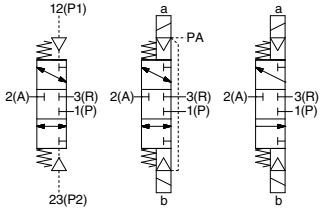
* DOZ is not available.
* There is no S option for AC mode, since a rectifier prevents surge voltage generation.

VEX

Air operated

Internal pilot solenoid / External pilot solenoid

Symbol



Specifications

Model		Body ported	VEX312□-01/02	VEX332□-02/03/04
		Base mounted	VEX322□-01/02	VEX342□-02/03/04
Operation type			Air operated, External pilot solenoid, Internal pilot solenoid	
Fluid			Air	
Air operated operating pressure range [MPa]	Operating pressure range		−101.2 kPa to 1.0	
	Pilot pressure range		0.2 to 1.0	
Internal pilot operating pressure range [MPa]			0.2 to 0.7	
External pilot operating pressure range [MPa]	Operating pressure range		−101.2 kPa to 1.0	
	Pilot pressure range		0.2 to 0.7	
Ambient and fluid temperature			0 to 50°C (Air operated: 60°C)	
Response time (Pilot pressure 0.5 MPa)			40 ms or less	60 ms or less Note 1)
Maximum operating frequency			3 Hz	
Mounting			Free	
Lubrication Note 2)			Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)	

Note 1) 96 ms or less for AC
Note 2) Non-lubricated specification is not available for this product.

Pilot Solenoid Valve Specifications

Model				VEX3121, VEX3221, VEX3321, VEX3421 VEX3122, VEX3222, VEX3322, VEX3422
Pilot valve				V114□, V115□
Electrical entry				Grommet (G), L plug connector (L), M plug connector (M), DIN terminal (D)
Rated coil voltage [V]	**AC (50/60 Hz)**			100 V, 110 V, 200 V, 220 V
	DC			3 V, 5 V, 6 V, 12 V, 24 V
Allowable voltage fluctuation				−10 to +10% of rated voltage*
Apparent power [VA]	**AC**	**G, L, M**	**100 V**	0.78 (With indicator light: 0.81)
			110 V	0.86 (With indicator light: 0.89)
			200 V	1.18 (With indicator light: 1.22)
			220 V	1.30 (With indicator light: 1.34)
		D	**100 V**	0.78 (With indicator light: 0.87)
			110 V	0.86 (With indicator light: 0.97)
			200 V	1.15 (With indicator light: 1.30)
			220 V	1.27 (With indicator light: 1.46)
Power consumption [W]	**DC**	**G, L, M**		1.0 (With indicator light: 1.1)
		D		1.0 (With indicator light: 1.1)

* Allowable voltage fluctuation for S and Z types 24 VDC: −7% to +10%
12 VDC: −4% to +10%

⚠ Caution

This is not a manual override. Do not press this button, as it can result in damage to the product. This applies to body sizes 1 and 2.

Flow Rate Characteristics/Weight

Model		Port size	Flow rate characteristics								Weight [kg]	
			1(P) → 2(A)		2(A) → 1(P)		3(R) → 2(A)		2(A) → 3(R)		Air operated	(External/Internal) Pilot solenoid
			C [dm³/(s·bar)]	b	C [dm³/(s·bar)]	b	C [dm³/(s·bar)]	b	C [dm³/(s·bar)]	b		
Body ported	**VEX312□-01**	1/8	2.4	0.19	2.4	0.31	2.3	0.36	2.5	0.22	0.1	0.2
	VEX312□-02	1/4	3.5	0.35	3.3	0.49	3.1	0.46	3.5	0.33	0.1	0.2
	VEX332□-02	1/4	4.1	0.36	4.3	0.42	4.1	0.41	4.6	0.25	0.3	0.4
	VEX332□-03	3/8	8.7	0.29	7.9	0.52	7.8	0.51	8.7	0.33	0.3	0.4
	VEX332□-04	1/2	9.8	0.37	9.6	0.52	9.1	0.53	11	0.37	0.3	0.4
Base mounted (With sub-plate)	**VEX322□-01**	1/8	3.3	0.34	3.5	0.39	3.3	0.37	3.5	0.36	0.2	0.3
	VEX322□-02	1/4	4.1	0.28	4.1	0.39	3.8	0.38	4.4	0.23	0.2	0.3
	VEX342□-02	1/4	8.1	0.34	7.9	0.39	8.2	0.33	8.1	0.37	0.6	0.7
	VEX342□-03	3/8	12	0.26	12	0.29	12	0.28	13	0.28	0.6	0.7
	VEX342□-04	1/2	13	0.20	13	0.24	12	0.29	14	0.20	0.6	0.7

Electrical entry
For Grommet, L/M plug connector

How to Order Pilot Valve Assembly

V1 1 4 A – 5 M □ □

Type of actuation

1	Normally closed

Specification

Nil	Standard (for AC)
A	Large flow type (for DC)

Rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)[115 VAC (50/60 Hz)]
4	220 VAC (50/60 Hz)[230 VAC (50/60 Hz)]
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

Manual override

Nil	Non-locking push
B	Locking slotted

Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
R	With surge voltage suppressor	○	—
U	With light/surge voltage suppressor	○	—
Z	With light/surge voltage suppressor	—	○

∗ There is no S option for AC, since a rectifier prevents surge voltage generation.

Electrical entry

24, 12, 6, 5, 3 VDC		
Grommet	L plug connector	M plug connector
G: Lead wire length 300 mm **H**: Lead wire length 600 mm	**L**: With lead wire (Length: 300 mm) **LN**: Without lead wire **LO**: Without connector	**M**: With lead wire (Length: 300 mm) **MN**: Without lead wire **MO**: Without connector

∗ LN and MN types are with 2 sockets.
∗ Refer to page 1737 for the different lead wire lengths of L and M plug connectors.
∗ Refer to page 1738 for the connector assembly with a dustproof cover for L and M plug connectors.

Electrical entry
For DIN terminal

How to Order Pilot Valve Assembly

V115 A – 5 D □

Specification

Nil	Standard (for AC)
A	Large flow type (for DC)

Rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)[115 VAC (50/60 Hz)]
4	220 VAC (50/60 Hz)[230 VAC (50/60 Hz)]
5	24 VDC
6	12 VDC

∗ DC specification of type D and DO is only available with 12 and 24 VDC.

Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor (Non-polar type)	○	—
Z	With light/surge voltage suppressor (Non-polar type)	○	○

∗ DOZ is not available.
∗ There is no S option for AC, since a rectifier prevents surge voltage generation.

Electrical entry

D	DIN terminal	With connector
DO	(Type D)	Without connector

How to Order Sub-plate and Base Gasket

Body size	22	42
Sub-plate	**VEX1 – 9 – 2 A □** **Port size**: Symbol: **A** 1/8, **B** 1/4 **Thread type**: Symbol: **Nil** Rc, **F** G, **N** NPT, **T** NPTF	**VEX4 – 2A – 1 A □** **Port size**: Symbol: **A** 1/4, **B** 3/8, **C** 1/2 **Thread type**: Symbol: **Nil** Rc, **F** G, **N** NPT, **T** NPTF
Base gasket	**VEX1 – 11 – 2**	**VEX4 – 4**

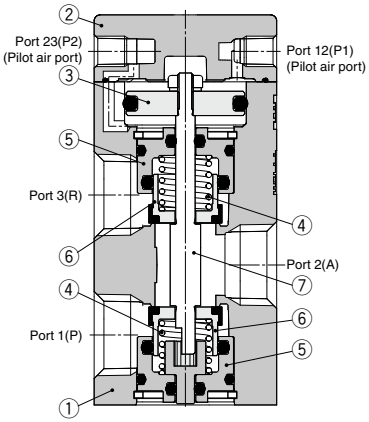
Options/Part Number

Description		Part number			
		VEX312□-$^{01}_{02}$	**VEX322□-$^{01}_{02}$**	**VEX332□-$^{02}_{03}_{04}$**	**VEX342□-$^{02}_{03}_{04}$**
Bracket (With bolt and washer)	**B**	VEX1-18-1A	—	—	—
Foot bracket (With bolt and washer)	**F**	VEX1-18-2A	—	VEX3-32-2A	—
Pilot exhaust (PE) silencer Note)	**N**	AN120-M5			

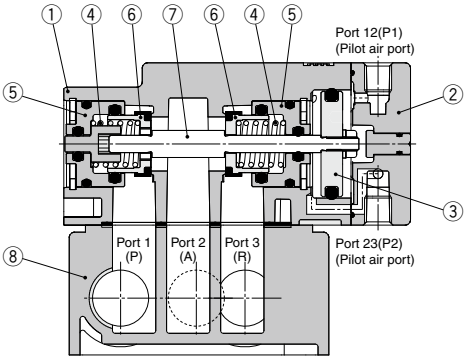
Note) Only with solenoid

Construction

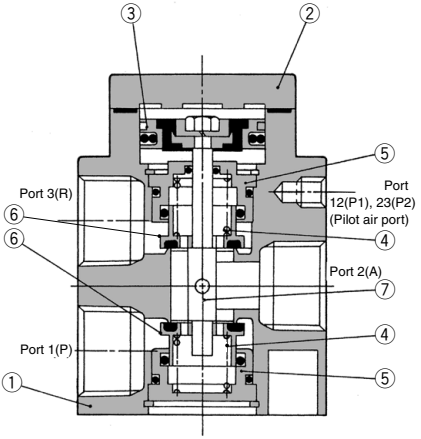
VEX3120 (Air operated)



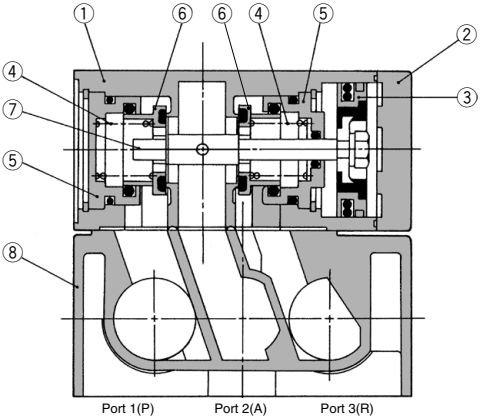
VEX3220 (Air operated)



VEX3320 (Air operated)



VEX3420 (Air operated)



Component Parts

No.	Description	Material
1	**Body**	Aluminum alloy
2	**Cover**	Aluminum alloy
3	**Working piston**	Aluminum alloy
4	**Center spring**	Stainless steel
5	**Valve guide**	Aluminum alloy
6	**Poppet valve**	Aluminum alloy, Rubber
7	**Shaft**	Stainless steel
8	**Sub-plate (Refer to page 1727.)**	Aluminum alloy

Working Principle

Fig. (1) A ⟷ R

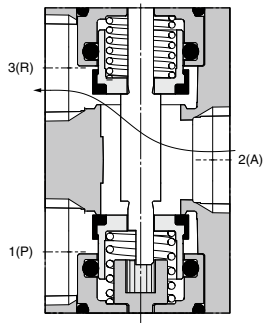


Fig. (2) Closed center

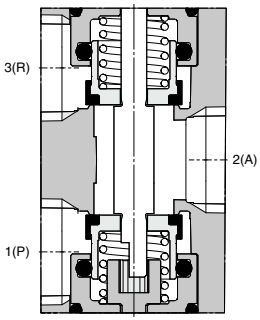
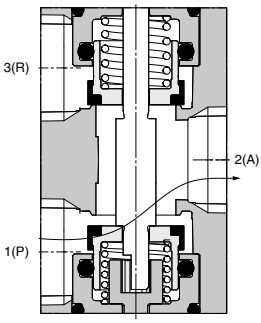


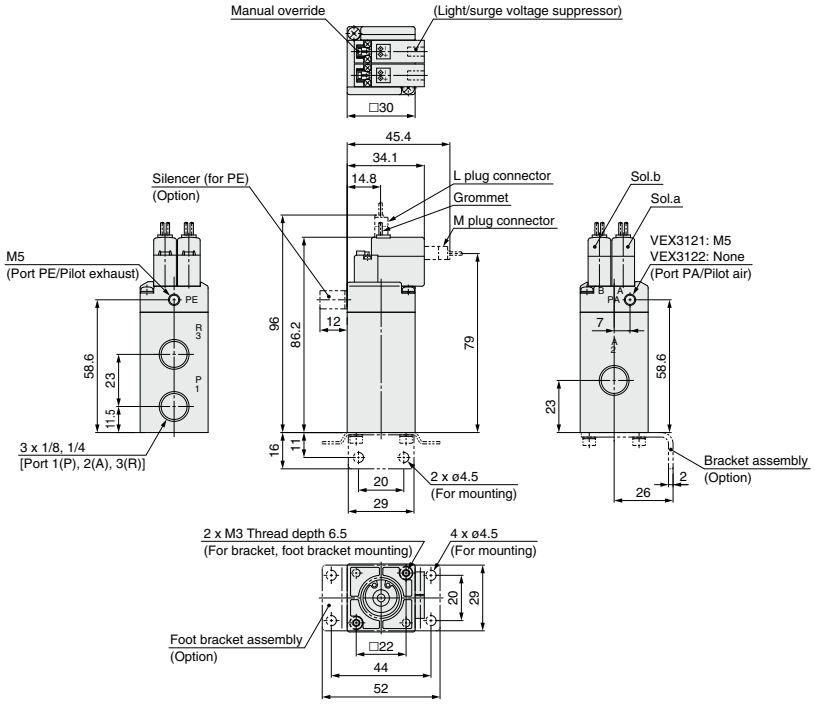
Fig. (3) P ⟷ A



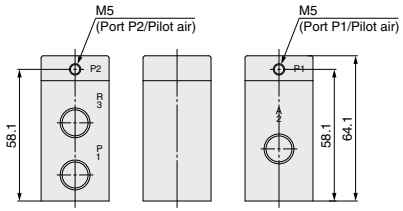
- This is a 3-port switch valve in which the shaft ⑦ extending from the driving piston ③ opens/closes a pair of poppet valves ⑥. The poppet valve has a pressure balancing mechanism in which port 2(A) pressure is constantly applied from the back and the center spring ④ is acting as a backup.
- When neither the pilot solenoid valve “a” nor “b” are energized (or when air is exhausted both from the port 12(P1) and 23(P2) of the air operated type), no force will act on the working piston, and the spring closes the poppet valve, thus the valve assumes the closed center position (Fig. (2)).
- When the pilot solenoid valve “a” is energized (or when pressurized air enters through the port 12(P1) of the air operated type), pilot air that enters the space above the working piston pushes down the piston and opens the lower poppet valve, thus connecting the port 1(P) and port 2(A) (Fig. (3)). The upper poppet valve continues to close the port 3(R) by means of pressure balance and the spring.
- When the pilot solenoid valve “b” is energized (or when pressurized air enters through the port 23(P2) of the air operated type), the pilot air that enters the space under the working piston pushes the piston upward and opens the upper poppet valve, thus connecting the port 2(A) and port 3(R) (Fig. (1)). The lower poppet valve continues to close the port 1(P) by means of pressure balance and the spring.

Dimensions: Body Ported/VEX312□

External pilot solenoid: VEX3121 Internal pilot solenoid: VEX3122



Air operated: VEX3120

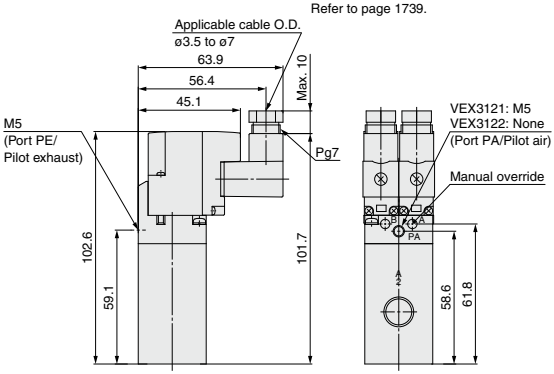


DIN terminal (D)

⚠ Caution

How to Use DIN Terminal Connector

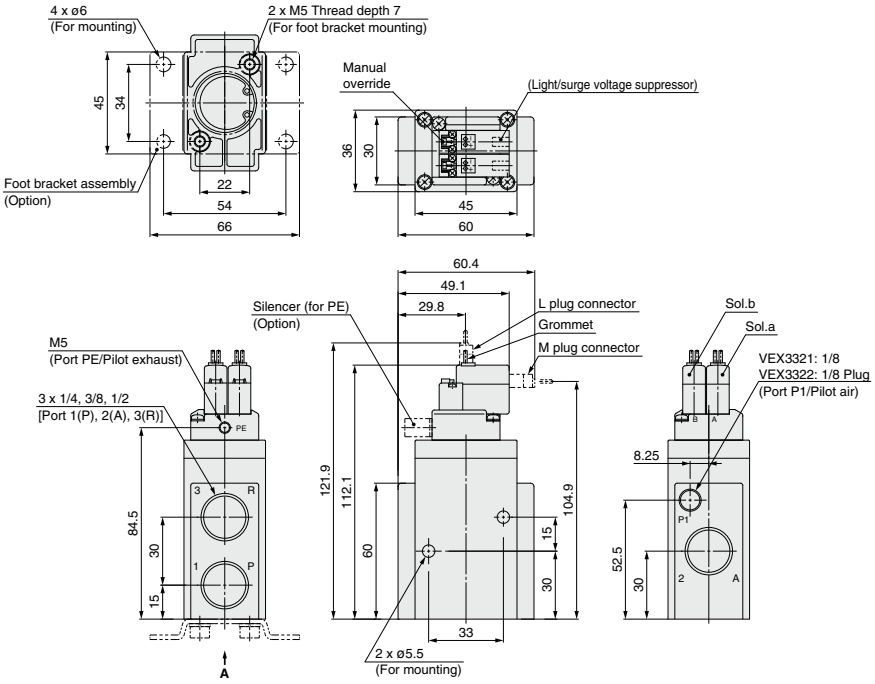
Refer to page 1739.



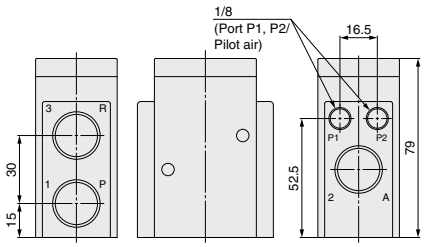
Dimensions: Body Ported/VEX332□

External pilot solenoid: VEX3321 Internal pilot solenoid: VEX3322

A perspective drawing



Air operated: VEX3320

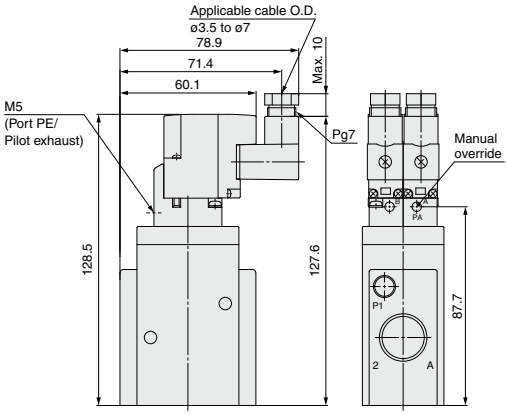


DIN terminal (D)

⚠ Caution

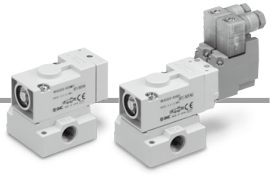
How to Use DIN Terminal Connector

Refer to page 1739.

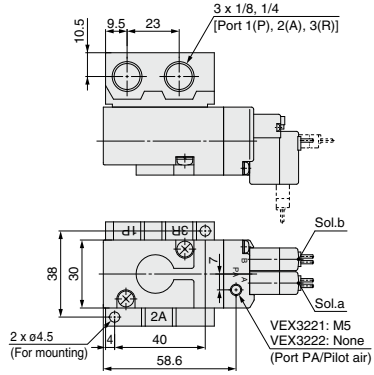


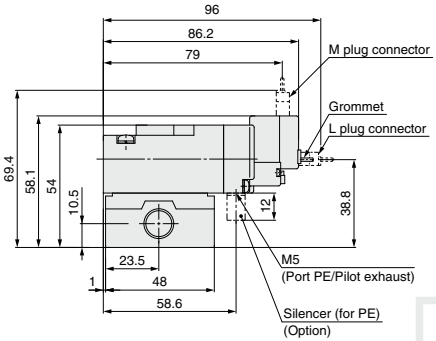
VEX

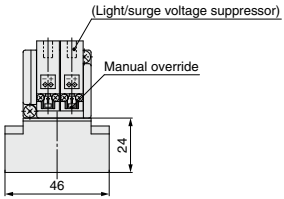
Dimensions: Base Mounted/VEX322□



External pilot solenoid: VEX3221 Internal pilot solenoid: VEX3222





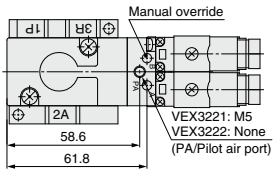


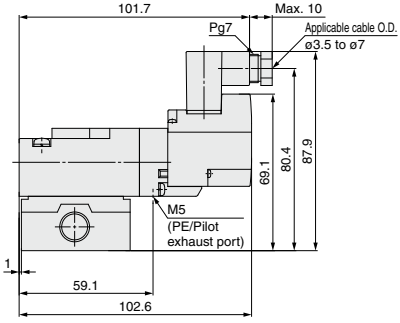
DIN terminal (D)

⚠ Caution

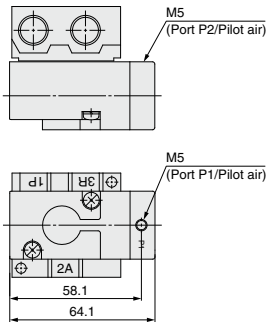
How to Use DIN Terminal Connector

Refer to page 1739.



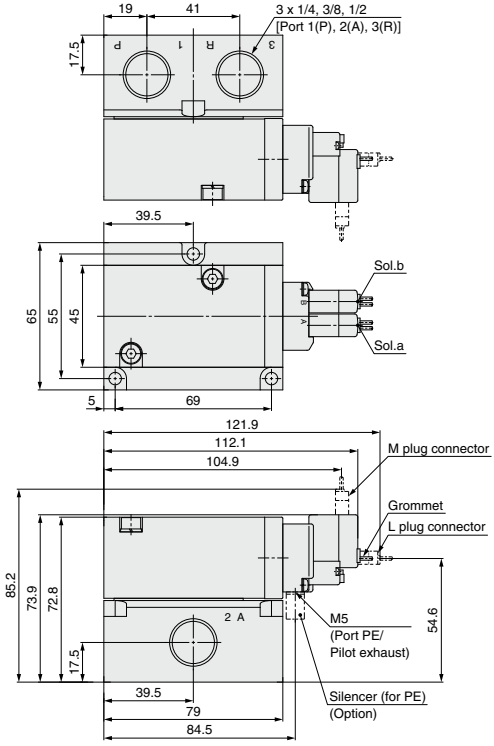


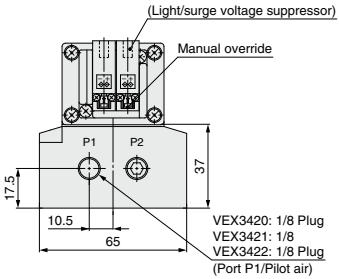
Air operated: VEX3220



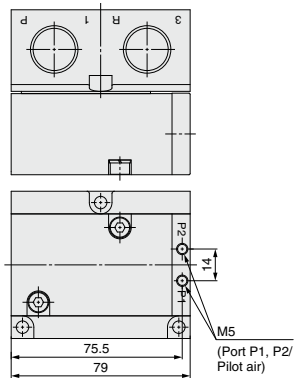
Dimensions: Base Mounted/VEX342□

External pilot solenoid: VEX3421 Internal pilot solenoid: VEX3422

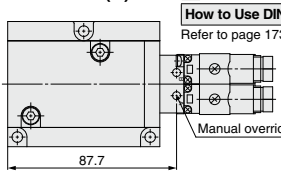




Air operated: VEX3420



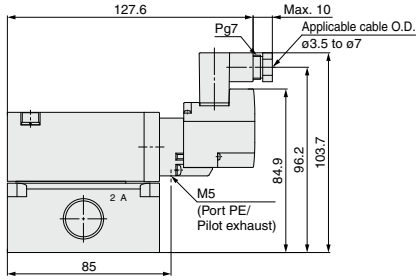
DIN terminal (D)



⚠ Caution

How to Use DIN Terminal Connector

Refer to page 1739.



VEX

3 Port 3 Position Valve/*VEX3 Series*
Manifold Specifications

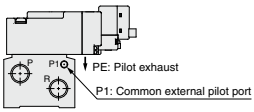
Specifications

Model		VVEX2	VVEX4		
Applicable valve		VEX3220, VEX3222	VEX3420, VEX3422		
Valve stations Note)		2 to 8 stations	2 to 6 stations		
Port specification		Common SUP, EXH			
Manifold pilot type		Internal pilot, Common external pilot			
Common external pilot port size		M5 x 0.8 Length of thread 5			
Port size	**1(P)**	1/4	3/8	3/8	1/2
	3(R)				
	2(A)		1/4	3/8	3/8
Applicable blanking plate		VEX1-17-3A (With gasket, screw)	VEX4-5-3A (With gasket, screw)		

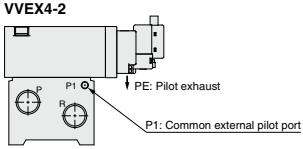
Note) When the VVEX2 series is used with 5 stations or more, or the VVEX4 series is used with 4 stations or more, apply pressure to the port P on both ends and exhaust from the port R on both ends.

Common External Pilot Piping

VVEX2-2



VVEX4-2



How to Order Manifold Base

VVEX 2 – 1 – 6 – 02 □

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

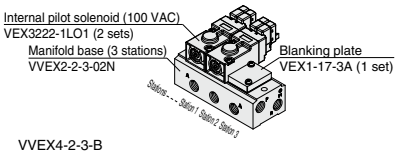
Body size / **Manifold pilot type** / **Valve stations** / **Port size**

Body size	Pilot type		Applicable valve	Valve stations		Port size			
						Port	1(P)	3(R)	2(A)
2	1	Internal pilot	VEX3222 Air operated: VEX3220 Note)	2	2 stations	02	1/4		
				⋮	⋮				
	2	Common external pilot		6	6 stations				
				⋮	⋮				
				8	8 stations				
4	1	Internal pilot	VEX3422 Air operated: VEX3420 Note)	2	2 stations	A	3/8		1/4
				⋮	⋮	B	3/8		
	2	Common external pilot		6	6 stations	C	1/2		3/8

Note) Air operated
The VEX3220 and VEX3420 (air operated) are used. Distinction between the pilots (internal or common external pilot) of the manifold base does not matter. Either may be used.

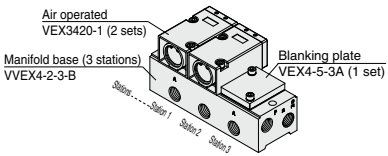
Example for ordering a manifold base:
The valve and blanking plate for manifold arrangement should be specified in order from the left side of the manifold base (with the port 2(A) on your side).
(Example) VVEX2-2-3-02N
* VEX3222-1LO1 2 pcs.
* VEX1-17-3A——1 pc.

} Pilot solenoid



VVEX4-2-3-B
* VEX3420-1——2 pcs.
* VEX4-5-3A——1 pc.

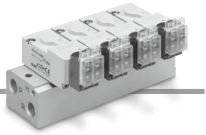
} Air operated



VEX3 Manifold (Size 2, 4) Pilot Type

Manifold pilot type	Manifold base part number	Applicable valve part number	Operating pressure range	Pilot pressure range
Air operated type	VVEX□-□-□-□	VEX3220, VEX3420	–101.2 kPa to 1.0 MPa	0.2 to 1.0 MPa
Internal pilot type	VVEX□-1-□-□	VEX3222, VEX3422	0.2 to 0.7 MPa	—
Common external pilot type	VVEX□-2-□-□	VEX3222, VEX3421	–101.2 kPa to 1.0 MPa	0.2 to 0.7 MPa
Individual external pilot type	VVEX□-□-□-□	VEX3221	–101.2 kPa to 1.0 MPa	

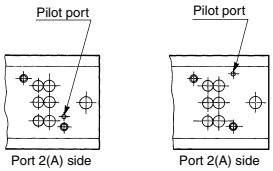
Note) If external pilot types are used, the common external pilot type manifold base is recommended.



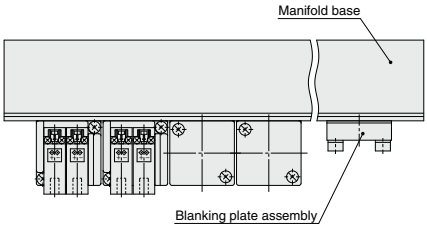
Dimensions: Manifold/VVEX2-□

VVEX2-1 Applicable valve: VEX3220/3222
VVEX2-2 Applicable valve: VEX3220/3222

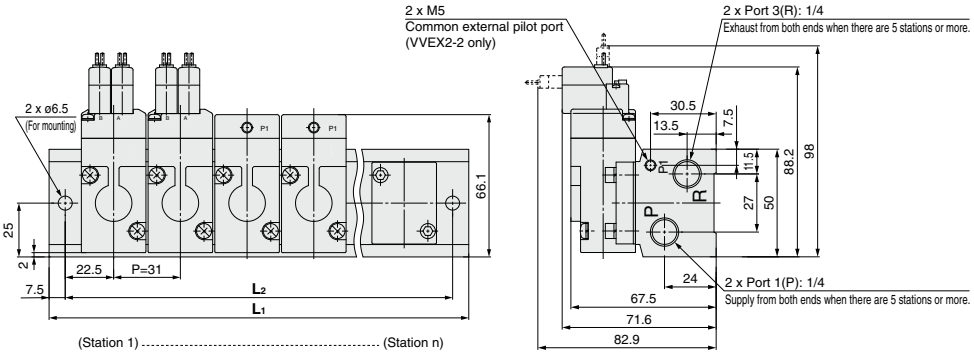
Valve mounting surface



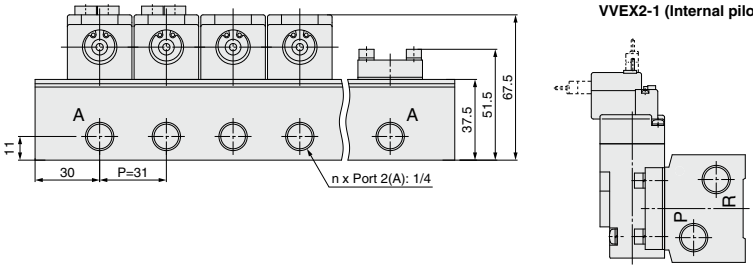
Internal pilot **Common external pilot**



VVEX2-2 (Common external pilot)

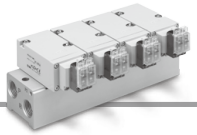


VVEX2-1 (Internal pilot)



L Dimensions Formula: L_1=31n+29, L_2=31n+14 n: Stations

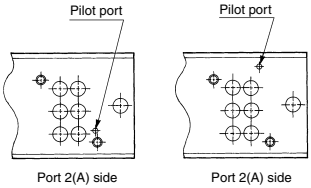
L dimension \ Station	2	3	4	5	6	7	8
L_1	91	122	153	184	215	246	277
L_2	76	107	138	169	200	231	262



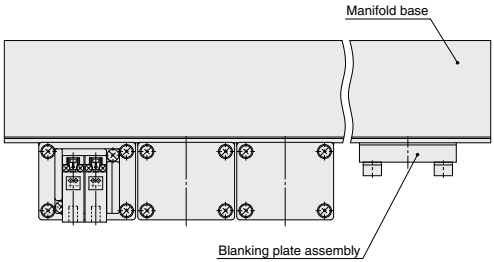
Dimensions: Manifold/VEX4-□

VVEX4-1 Applicable valve: VEX3420/3422
VVEX4-2 Applicable valve: VEX3420/3422

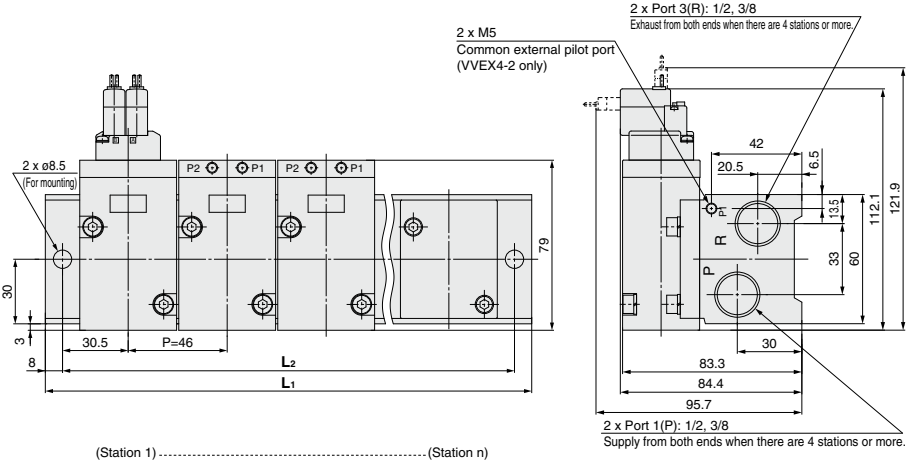
Valve mounting surface



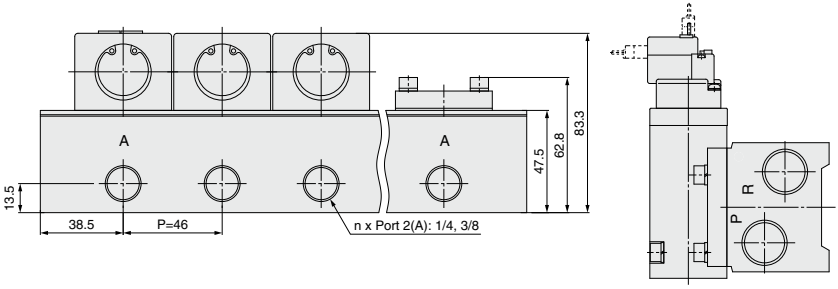
Internal pilot **Common external pilot**



VVEX4-2 (Common external pilot)



VVEX4-1 (Internal pilot)



L Dimensions

L1=46n+31, L2=46n+15 n: Stations

L dimension / Station	2	3	4	5	6
L1	123	169	215	261	307
L2	107	153	199	245	291

Specific Product Precautions 1

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

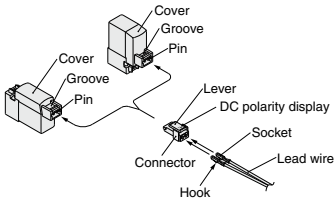
Connectors for VEX3 Series Body Sizes 12, 22, 32 and 42

How to Use Plug Connector

⚠ Caution

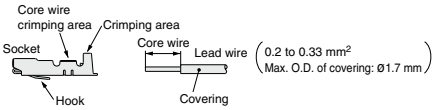
1. Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.
Use an exclusive crimping tool for crimping.
(Please contact SMC for special crimping tools.)



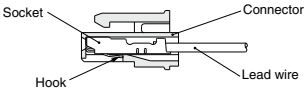
3. Attaching and detaching sockets with lead wires

● Attaching

Insert the sockets into the square holes of the connector (⊕, ⊖ indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

● Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.



Plug Connector Lead Wire Length

Standard length is 300 mm, but the following lengths are also available.

How to Order Connector Assembly

For DC: SY100 – 30 – 4A – □
For 100 VAC: SY100 – 30 – 1A – □
For 200 VAC: SY100 – 30 – 2A – □
For other voltages of AC: SY100 – 30 – 3A – □
Without lead wire: SY100 – 30 – A
(with connector and 2 of sockets only)

● Lead wire length

Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

How to Order

Enter the part number for a plug connector solenoid valve without connector together with the part number for a connector assembly.

<Example> Lead wire length 2000 mm

<For DC>	**<For AC>**
VEX3122-015LO1	VEX3122-011LO1
SY100-30-4A-20	SY100-30-1A-20

VEX3 Series
Specific Product Precautions 2

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

Connector Assembly with Cover

⚠ Caution

Connector assembly with dustproof protective cover

- Effective to prevention of short circuit failure due to the entry of foreign matter into the connector.
- Chloroprene rubber for electrical use, which provides outstanding weather resistance and electrical insulation, is used for the cover material. However, do not allow contact with cutting oil etc.
- Simple and unencumbered appearance by adopting a round-shaped cord.

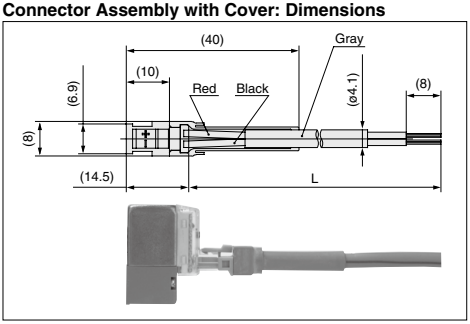
How to Order

SY100−68−A − □

Lead wire length

Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

Connector Assembly with Cover: Dimensions



How to Order

Enter the part number for a plug connector solenoid valve without connector together with the part number for a connector assembly with cover.

<Example> Lead wire length 2000 mm
VEX3122-015LO1
SY100-68-A-20

Surge Voltage Suppressor

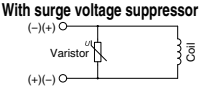
⚠ Caution

<For DC>

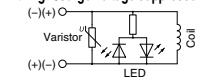
Grommet, L/M Plug Connector

■Non-polar type

With surge voltage suppressor (□R)

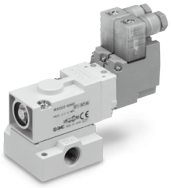


With light/surge voltage suppressor (□U)

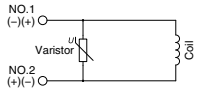


(The non-polar type can be used with the connections made either way.)

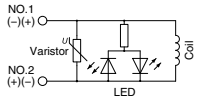
DIN Terminal



With surge voltage suppressor (DS)



With light/surge voltage suppressor (DZ)



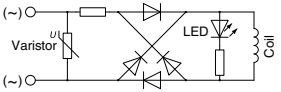
DIN terminal has no polarity.

<For AC>

(There is no S option since a rectifier prevents surge voltage generation.)

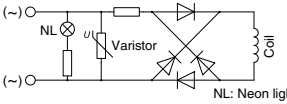
Grommet, L/M Plug Connector

With light (□Z)



DIN Terminal

With light (DZ)



Note) Surge voltage suppressor of varistor has residual voltage corresponding to the protective element and rated voltage; therefore, protect the controller side from the surge. The residual voltage of the diode is approximately 1 V.

Specific Product Precautions 3

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

How to Use DIN Terminal Connector

⚠ Caution

Connection

1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the terminal screws (slotted screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
4. Secure the cord by fastening the ground nut.

⚠ Caution

When making connections, take note that using other than the supported size (ø3.5 to ø7) heavy-duty cord will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

⚠ Caution

Changing the entry direction

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90° intervals).

∗ When equipped with a light, be careful not to damage the light with the cord's lead wires.

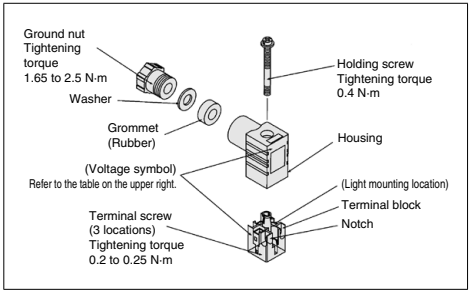
Precautions

Plug in and pull out the connector vertically without tilting to one side.

Compatible cable

Cord O.D.: ø3.5 to ø7

(Reference) 0.5 mm², 2-core or 3-core, equivalent to JIS C 3306



DIN Connector Part Number

⚠ Caution

<Type D>

Without light	SY100-61-1

With light

Rated voltage	Voltage symbol	Part number
24 VDC	24 V	SY100-61-3-05
12 VDC	12 V	SY100-61-3-06
100 VAC	100 V	SY100-61-2-01
200 VAC	200 V	SY100-61-2-02
110 VAC	110 V	SY100-61-2-03
220 VAC	220 V	SY100-61-2-04

Circuit Diagram with Light