Compact Direct Operated 2 Port Solenoid Valve for Water, Air and Medium Vacuum Series VDW10/20

Features

- Ultra compact 2 port valves for air, vacuum and fluids.
- Choice of body and seals available.
- IP65 enclosure.
- Low weight.
- Piping variations: thread and one-touch fitting.

How to Order

VDW [1] [2] [A] [A] [A] [ ]

Fluid

2	For water
4	For medium vacuum

Size/Valve type

Symbol	Size	Valve type
1	Size 1	Single unit N.C.
2	Size 2	Single unit N.C.

Body material/Port size/Orifice diameter

Symbol	Body material	Standard port size	Orifice diameter
A	Resin (PPS) Note)	M5	1.0
B			1.6
C		ø3.2 One-touch fitting	1.0
D			1.6
E		ø4 One-touch fitting	1.0
F			1.6
G	Brass	M5	1.0
H			1.6
J	Stainless steel	M5	1.0
K			1.6
A	Resin (PPS) Note)	M5	1.6
B			2.3
C			3.2
D		ø4 One-touch fitting	1.6
E			2.3
F			3.2
G		ø6 One-touch fitting	1.6
H			2.3
J			3.2
K	Brass	M5	1.6
L			2.3
M			3.2
N		1/8	1.6
P			2.3
Q			3.2
R	Stainless steel	M5	1.6
S			2.3
T			3.2
U		1/8	1.6
V			2.3
W			3.2

Note) Medium vacuum is not available with Resin (PPS) body.

Bracket interchangeable with old type

—	No
XB	Yes

The brackets are interchangeable with brackets of old VDW10/20 series. For details of exterior dimensions, please contact SMC.

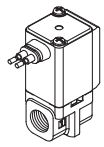
* Only for stainless steel (Select stainless steel when interchangeable product is necessary for water.)

Other option

Symbol	Low concentration ozone resistant (Seal material: FKM)	Oil-free	Thread	Note
—	—	—	Standard port size	
A	—	—	G	Port size 1/8
B			NPT	
C			M6	Port size M5
D	—	○	G	Port size 1/8
E			NPT	
F			M6	Port size M5
G	○	—	Standard port size	
H			G	Port size 1/8
J			NPT	
K			M6	Port size M5
L	○	○	Standard port size	
M			G	Port size 1/8
N			NPT	
P			M6	Port size M5
Z	—	○	Standard port size	

Note) Medium vacuum is FKM and oil-free as standard, so it is only possible with other options: A, B or C.

Voltage/Electrical entry

Symbol	Voltage	Electrical entry
A	24 VDC	Grommet 
B	100 VAC	
C	110 VAC	
D	200 VAC	
E	230 VAC	
Z1A	48 VAC	
Z1D	12 VDC	
Z1U	24 VAC	

Common Specifications (For water)

Valve type	N.C.
Seal material	NBR
Coil insulation type	Class B
Standard thread	Rc
Fluid temperature [°C]	1 to 50
Ambient temperature [°C]	-10 to 50

Note) With no freezing.

Common Specifications (For medium vacuum)

Valve type	N.C.
Seal material	FKM
Coil insulation type	Class B
Standard thread	Rc
Oil-free	
Fluid temperature [°C]	1 to 50
Ambient temperature [°C]	-10 to 50

Note) With no freezing.

Accesories and Related Products

Series PF2A - Digital flow switch for air - page 1309
Series PF3W - Digital flow switch for water - page 1317
Series ZSE/ISE□0A - Digital pressure switch for air - page 1273
Series ZSE/ISE80 - Digital pressure switch for fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Process Valves

How to Order

VDW [1] [0] [A] [A] [A] [ ]

Fluid

0	For air

Bracket interchangeable with old type

—	No
XB	Yes

The brackets are interchangeable with brackets of old VDW10/20 series. For details of exterior dimensions, please contact SMC.
∗ Only for aluminium.

Size/Valve type

Symbol	Size	Valve type
1	Size 1	Single unit N.C.
2	Size 2	Single unit N.C.

Body material/Port size/Orifice diameter

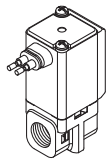
Symbol	Body material	Standard port size	Orifice diameter
A	Resin (PPS)	M5	1.0
B			1.6
C		ø3.2 One-touch fitting	1.0
D			1.6
E		ø4 One-touch fitting	1.0
F			1.6
A	Resin (PPS)	M5	1.6
B			2.3
C			3.2
D		ø4 One-touch fitting	1.6
E			2.3
F			3.2
G		ø6 One-touch fitting	1.6
H			2.3
J			3.2
K	Aluminium	M5	1.6
L			2.3
M			3.2
N		1/8	1.6
P			2.3
Q			3.2

Other option

Symbol	Low concentration ozone resistant (Seal material: FKM)	Oil-free	Special Thread	Note
—	—	—	Standard port size	
A	—	—	G	Port size 1/8
B			NPT	
C			M6	Port size M5
D	—	○	G	Port size 1/8
E			NPT	
F			M6	Port size M5
G	○	—	Standard port size	
H			G	Port size 1/8
J			NPT	
K			M6	Port size M5
L	○	○	Standard port size	
M			G	Port size 1/8
N			NPT	
P			M6	Port size M5
Z	—	○	Standard port size	

Voltage/Electrical entry

Symbol	Voltage	Electrical entry
A	24 VDC	Grommet
B	100 VAC	
C	110 VAC	
D	200 VAC	
E	230 VAC	
Z1A	48 VAC	
Z1D	12 VDC	
Z1U	24 VAC	



Common Specifications

Valve type	N.C.
Seal material	NBR
Coil insulation type	Class B
Standard thread	Rc
Fluid temperature [°C]	-10 Note) to 50
Ambient temperature [°C]	-10 to 50

Note) Dew point temperature -10°C or less.

Accesories and Related Products

Series PF2A - Digital flow switch for air - page 1309
Series PF3W - Digital flow switch for water - page 1317
Series ZSE/ISE□0A - Digital pressure switch for air - page 1273
Series ZSE/ISE80 - Digital pressure switch for fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Specifications

Valve specifications	Valve construction		Direct operated poppet
	Withstand pressure	MPa	2.0 (resin body type 1.5)
	Max. system pressure	MPa	1.0
	Body material		Aluminium, Resin, Brass, Stainless steel
	Seal material		NBR, FKM
	Enclosure		Dusttight, Low jetproof (IP65)
	Environment		Location without corrosive or explosive gases
Coil specifications	Rated voltage	AC	100 VAC, 200 VAC, 110 VAC, 230 VAC, (220 VAC, 240 VAC, 48 VAC, 24 VAC) Note)
		DC	24 VDC, (12 VDC) Note)
	Allowable voltage fluctuation		±10% of rated voltage
	Allowable leakage voltage	AC (With a full wave rectifier)	10% or less of rated voltage
		DC	2% or less of rated voltage
	Coil insulation type		Class B

Note) Voltage in ( ) indicates special voltage.

Water Model / Valve Specifications

Normally Closed (N.C.)
Brass, Stainless Steel Body Type

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics		Maximum operating pressure differential [MPa]	Weight [g]
				AV (x10^{-6}m^2)	Conversion Cv	Pressurized port 1	
1	M5	1.0	VDW12	0.96	0.04	0.9	Brass: 65 Stainless steel: 60
		1.6		1.70	0.07	0.4	
2	M5, 1/8	1.6	VDW22	1.70	0.07	0.7	Brass: 115 Stainless steel: 100
		2.3		4.30	0.18	0.4	
		3.2		7.20	0.30	0.2	

Resin Body Type

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics		Maximum operating pressure differential [MPa]	Weight [g]
				AV	Conversion Cv	Pressurized port 1	
1	M5 ø3.2 One-touch fitting ø4 One-touch fitting	1.0	VDW12	0.96	0.04	0.9	45
		1.6		1.70	0.07	0.4	
2	M5 ø4 One-touch fitting ø6 One-touch fitting	1.6	VDW22	1.70	0.07	0.7	80
		2.3		4.30	0.18	0.4	
		3.2		7.20	0.30	0.2	

Medium Vacuum-Model / Valve Specifications

Normally Closed (N.C.)

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics			Maximum operating pressure differential [MPa]		Weight [g]
				C [dm^3/(s·bar)]	b	Cv	Used with vacuum [Pa·abs]	Pressurized port 1	
1	M5	1.0	VDW14	0.14	0.40	0.04	0.1 to atmospheric pressure	0.9	Brass: 65 Stainless steel: 60
		1.6		0.30	0.25	0.07		0.4	
2	M5, 1/8	1.6	VDW24	0.30	0.45	0.07		0.7	Brass: 115 Stainless steel: 100
		2.3		0.58	0.45	0.18		0.4	
		3.2		1.10	0.38	0.30		0.2	

Air Model / Valve Specifications

Normally Closed (N.C.)
Aluminium Body Type

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics			Maximum operating pressure differential [MPa]	Weight [g]
				C [dm^3/(s·bar)]	b	Cv	Pressurized port 1	
2	M5, 1/8	1.6	VDW20	0.30	0.45	0.07	0.7	80
		2.3		0.58	0.45	0.18	0.4	
		3.2		1.10	0.38	0.30	0.2	

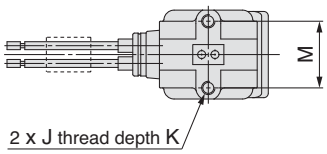
Resin Body Type (Built-in One-touch Fittings)

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics			Maximum operating pressure differential [MPa]	Weight [g]
				C [dm^3/(s·bar)]	b	Cv	Pressurized port 1	
1	M5 ø3.2 One-touch fitting ø4 One-touch fitting	1.0	VDW10	0.14	0.40	0.04	0.9	45
		1.6		0.30	0.25	0.07	0.4	
2	M5 ø4 One-touch fitting ø6 One-touch fitting	1.6	VDW20	0.30	0.45	0.07	0.7	80
		2.3		0.58	0.45	0.18	0.4	
		3.2		1.10	0.38	0.30	0.2	

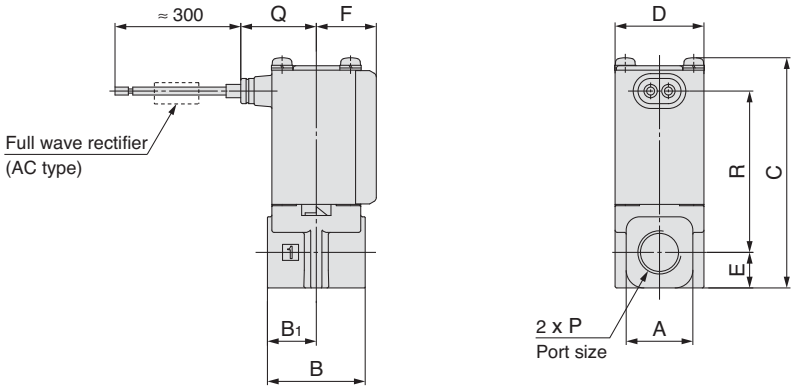
Dimensions

Body material	Aluminium

Grommet



Note) Bracket interchangeable with old type (VDW□□□□XB) only



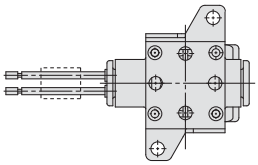
[mm]

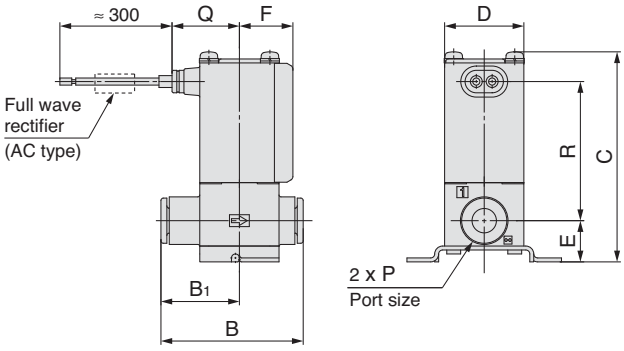
Model	Port size P	A	B	B_1	C	D	E	F	Mounting method			Electrical entry	
									J	K	M	Grommet	
												Q	R
VDW2	M5, 1/8	15	22	11	52	20	8	13.5	M3	5	15	17	36.5

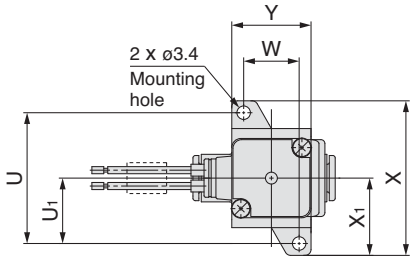
Dimensions

Body material Resin

With one-touch fittings
Grommet







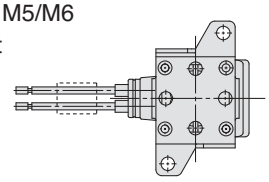
For information on handling one-touch fittings and appropriate tubing, refer KJ series one-touch fittings. The KJ series information can be downloaded from the following SMC website, http://www.smc.eu

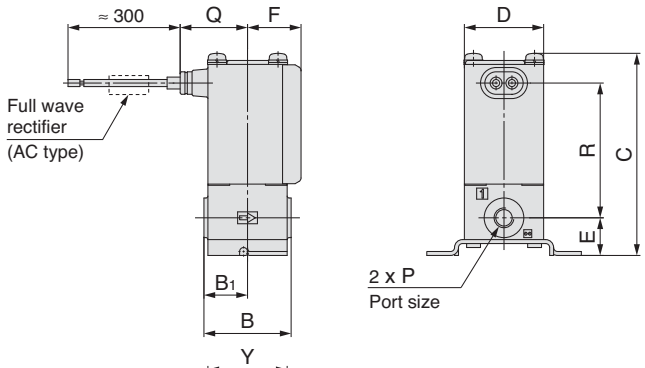
[mm]

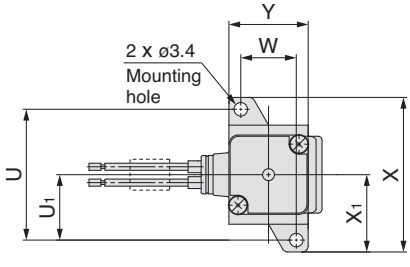
Model	One-touch fitting P	B	B_1	C	D	E	F
VDW1	ø3.2, ø4	32	17	46	15	9.5	11
VDW2	ø4, ø6	36	20	53	20	10.5	13.5

Model	One-touch fitting P	Mounting bracket dimensions						Electrical entry	
		U	U_1	W	X	X_1	Y	Grommet	
								Q	R
VDW1	ø3.2, ø4	28	14	11	34	17	17	15.5	30.5
VDW2	ø4, ø6	33	16.5	14	39	19.5	20	17	35

Port size M5/M6
Grommet







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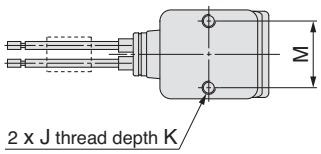
Model	Port size P	B	B_1	C	D	E	F
VDW1	M5(M6)	20	10	46	15	9.5	11
VDW2	M5(M6)	22	11	51	20	9.5	13.5

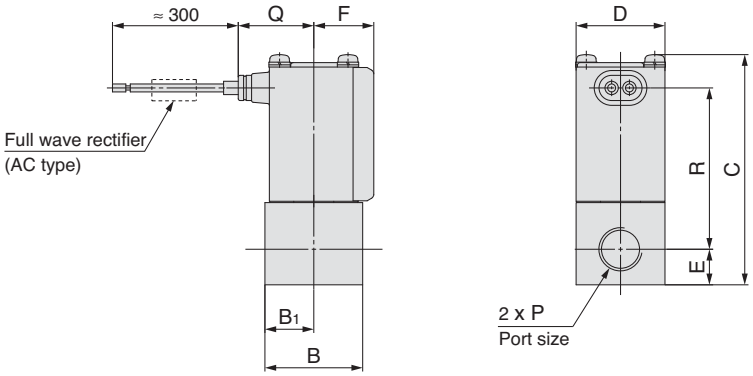
Model	Port size P	Mounting bracket dimensions						Electrical entry	
		U	U_1	W	X	X_1	Y	Grommet	
								Q	R
VDW1	M5(M6)	28	14	11	34	17	17	15.5	30.5
VDW2	M5(M6)	33	16.5	14	39	19.5	20	17	34

Dimensions

Body material: Brass

Grommet



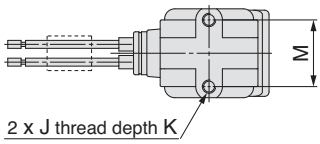


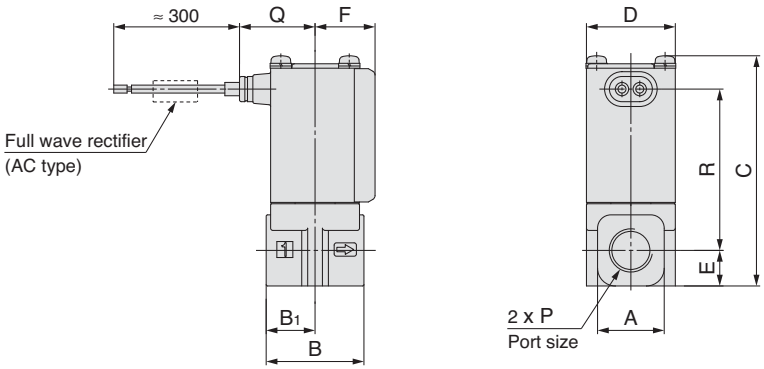
[mm]

Model	Port size P	B	B_1	C	D	E	F	Mounting method			Electrical entry	
								J	K	M	Grommet Q	Grommet R
VDW1	M5	20	10	42.5	15	6	11	M2.5	4	11	15.5	30
VDW2	M5, 1/8	22	11	52	20	8	13.5	M3	5	15	17	36.5

Body material: Stainless Steel

Grommet





[mm]

Model	Port size P	A	B	B_1	C	D	E	F	Mounting method			Electrical entry	
									J	K	M	Grommet Q	Grommet R
VDW1	M5	12	20	10	42.5	15	6	11	M2.5	4	11	15.5	30
VDW2	M5, 1/8	15	22	11	52	20	8	13.5	M3	5	15	17	36.5

Compact Direct Operated 3 Port Solenoid Valve For Water And Air Series VDW200/300

Features

- Compact 3 port valves for water and air
- Choice of body and seals available.
- IP40 enclosure.

How to Order Valves (3 Port Model)

VD W 2 50 – 1 G – 2 – 01 F □ □ – Q

For Water, Air, Vacuum

Series

2	200
3	300

Valve type

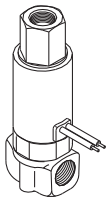
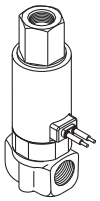
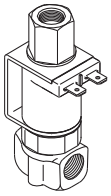
50	C.O. N.C. (2) N.O. (3) (1) IN

Voltage

Symbol	Voltage	Grommet / Tape winding	Faston™ terminal, Molded	Grommet / Molded
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	●	●	●

∗ Please consult with SMC regarding other voltages.

Electrical entry

G – Grommet / Tape winding	W – Grommet / Molded
 Magnet wire protection: Tape winding	 Magnet wire protection: Molded
F – Faston™ terminal / Molded	
 Magnet wire protection: Molded	

Bracket

—	None
F	Foot bracket

Material and insulation type

Symbol	Body material	Seal material	Coil insulation
-	Brass (C37)	NBR	Class B
A		FKM	
B		EPDM	
G	Stainless steel	NBR	
H		FKM	
J		EPDM	
L Note)		FKM	

Note) For deionized water: The armature assembly is a corrosion resistant construction.

Thread type

F	G

Port size

Symbol	Port size	Series 200	Series 300
M5	M5	○	—
01	1/8 (6A)	○	○
02	1/4 (8A)	—	○

Orifice size

Symbol	N.C. Orifice diameter [mm ø]	N.O. Orifice diameter [mm ø]	Series
1	1	1	200
2	1.6		
2	2	1.8	300
3	3		
4	4		

How to Order Brackets

VDW250	VDW20-15A-1
VDW350	VDW20-12-01A

Process Valves

Product Recommendation

Stocked items for fast delivery

VDW250-4G-1-01F-Q	VDW250-5G-2-01F-A-Q	VDW250-5G-2-M5-H-Q	VDW350-4G-3-02F-Q	VDW350-5G-3-01F-Q
VDW250-5G-1-01F-Q	VDW250-5G-2-01F-H-Q	VDW250-5G-2-M5-Q	VDW350-5G-2-01F-H-Q	VDW350-5G-3-02F-Q
VDW250-5G-1-M5-H-Q	VDW250-5G-2-01F-Q	VDW250-6G-2-01F-A-Q	VDW350-5G-2-01F-Q	VDW350-5G-4-02F-Q
VDW250-5G-1-M5-Q	VDW250-5G-2-M5-A-Q	VDW250-6G-2-01F-Q	VDW350-5G-3-01F-H-Q	

Accesories and Related Products

Series PF2A - Digital flow switch for air - page 1309
Series PF3W - Digital flow switch for water - page 1317
Series ZSE/ISE□0A - Digital pressure switch for air - page 1273
Series ZSE/ISE80 - Digital pressure switch for fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Standard Specifications

Valve specifications	Valve construction		Direct operated poppet
	Fluid Note 2)		Water (except waste water or agricultural water), Air, Low vacuum
	Withstand pressure [MPa]		2.0
	Ambient temperature [°C]		–10 to 50
	Fluid temperature [°C]		1 to 50 (No freezing)
	Environment		Location without corrosive or explosive gases
	Valve leakage [cm³/min]		0 (with water pressure) 1 (Air)
	Mounting orientation		Unrestricted
	Vibration/Impact [m/s²] Note 4)		30/150
Coil specifications	Rated voltage		24 VDC, 12 VDC, 100 VAC, 110 VAC, 200 VAC, 220 VAC (50/60 Hz)
	Allowable voltage fluctuation [%]		±10% of rated voltage
	Coil insulation type		Class B
	Enclosure	Grommet / Tape winding	Dust-proof (equivalent to IP40)
		Faston terminal / Molded	Dust-tight (equivalent to IP60) Note 5)
		Grommet / Molded	Dust-tight / Low jetproof (equivalent to IP65)
	Power consumption (W) Note 3)		3

Note 1) Please consult with SMC when used under conditions which may cause condensation on the exterior of the product.
Note 2) When used with deionized water, select "L" (Stainless steel, FKM) for the material type.
Note 3) Since the AC coil specification includes a rectifier element, there is no difference in power consumption between inrush and holding. 3.5 W in the case of 110/220 VAC
Note 4) Vibration resistance ····· No malfunction when tested with one sweep of 5 to 200 Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states.
Impact resistance ····· No malfunction when tested with a drop tester in the axial direction and at a right angle to the armature, one time each in energized and deenergized states.
Note 5) Since electrical connections are exposed, there is no water resistance.

Characteristic Specifications

Model	Port size	Orifice dia. [mm ø]	Max. operating pressure differential [MPa] Note 2)		Operating pressure range [MPa] Note 3)	Weight [kg]
			Pressure port 1	Pressure port 2, 3 Note 1)		
VDW200	M5 1/8 (6A)	1	0.9	0.3	0 to 1.0	0.12
		1.6	0.7	0.1		
VDW300	1/8 (6A) 1/4 (8A)	2	0.8	0.2		1/8: 0.27 1/4: 0.30
		3	0.4	0.1		
		4	0.2	0.05		

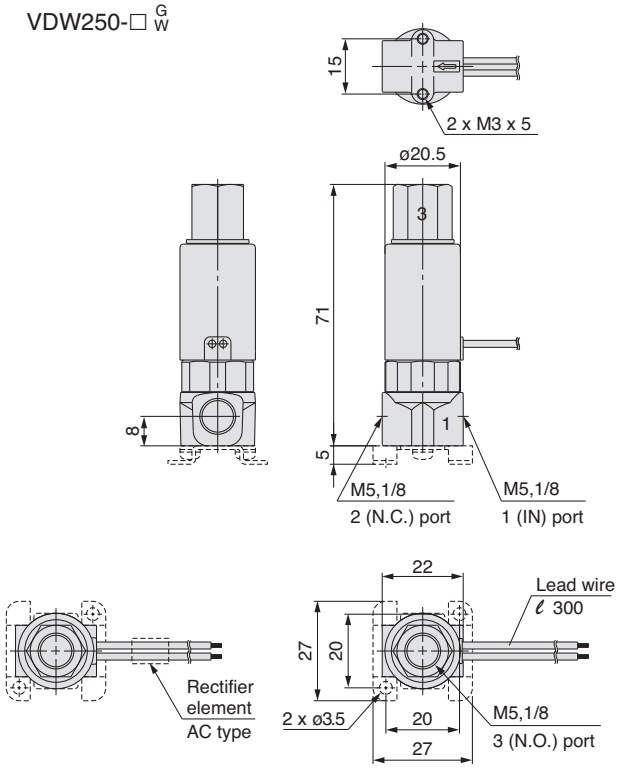
Note 1) Indicates the maximum operating pressure differential of pressure ports 2 and 3.
Note 2) The maximum operating pressure differential changes depending on the flow direction of the fluid.
Note 3) For low vacuum specifications, the operating pressure range is 1 Torr (1.33×10^2 Pa) to 1.0 MPa. Please consult with SMC if using below 1 Torr (1.33×10^2 Pa).

Flow Characteristics

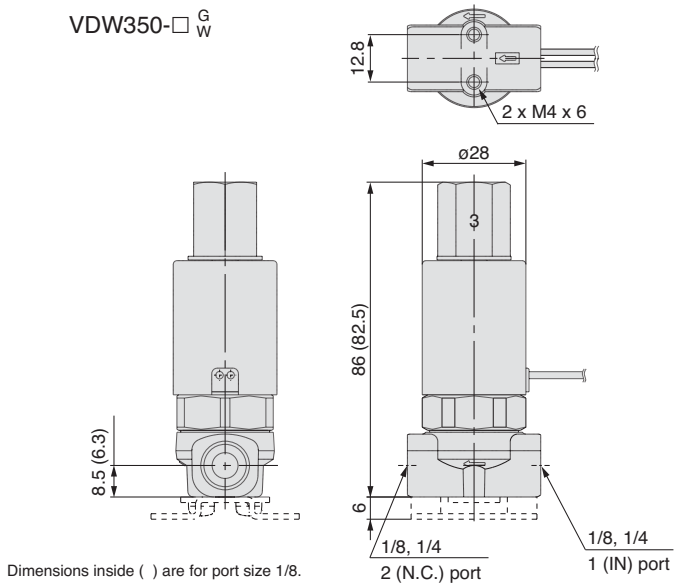
Model	Port size	Orifice dia. [mm ø]		Water				Air					
				1→2 (IN→N.C.)		1→3 (IN→N.O.)		1→2 (IN→N.C.)			1→3 (IN→N.O.)		
		N.C.	N.O.	Av x 10^{-6} m²	Cv converted	Av x 10^{-6} m²	Cv converted	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
VDW200	M5 1/8 (6A)	1	1	0.72	0.03	0.96	0.04	0.12	0.35	0.03	0.13	0.52	0.04
		1.6		1.9	0.08			0.31	0.45	0.09			
VDW300	1/8 (6A) 1/4 (8A)	2	1.8	3.8	0.16	3.1	0.13	0.52	0.52	0.16	0.38	0.50	0.12
		3		6.7	0.28			1.0	0.52	0.30			
		4		11	0.44			1.5	0.49	0.46			

Dimensions

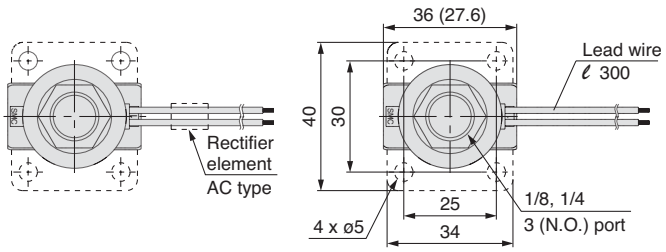
VDW250-□ G W



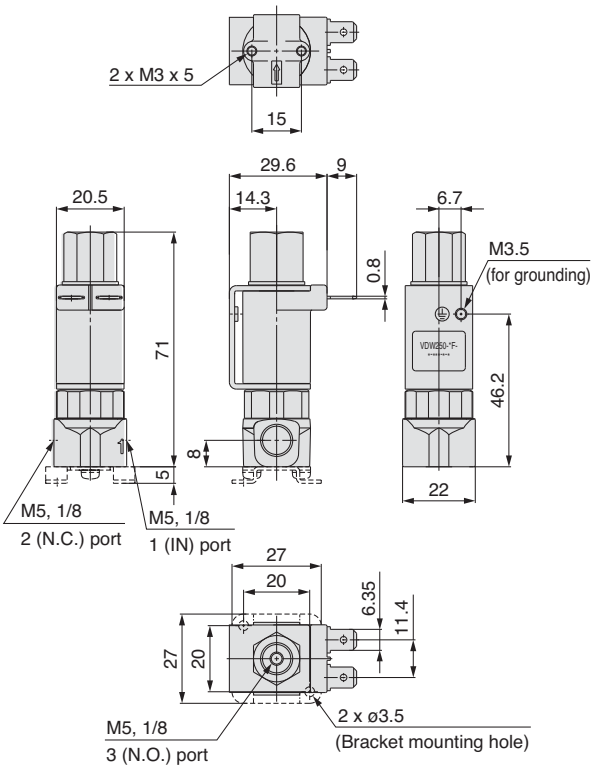
VDW350-□ G W



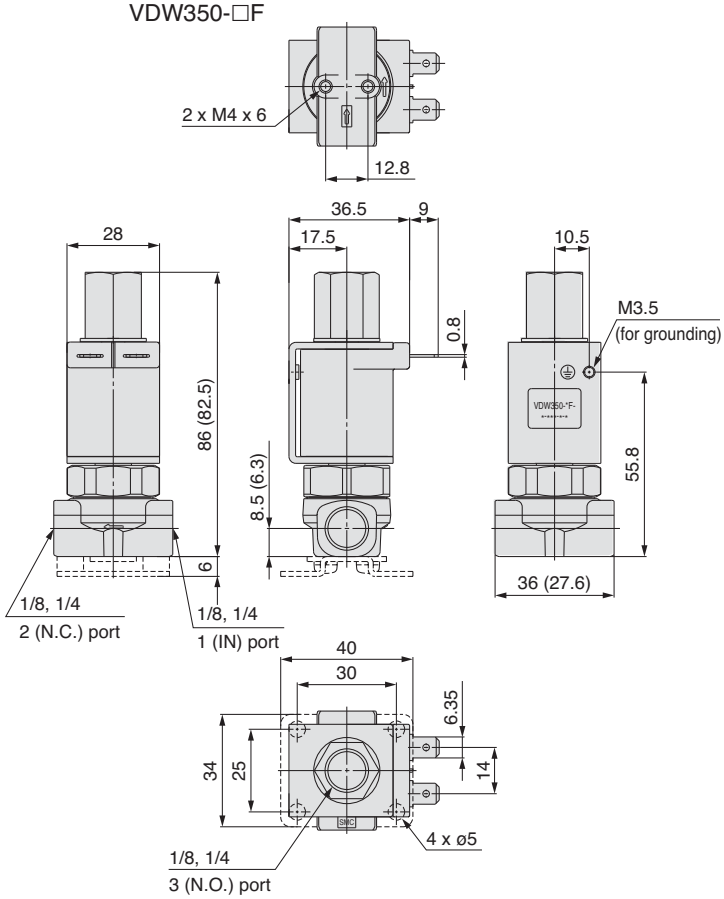
Dimensions inside ( ) are for port size 1/8.



VDW250-□F



VDW350-□F



Process Valves

Pilot Operated 2 Port Solenoid Valve for Air, Water and Oil Series VXD21/22

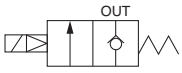
Features

- Wide selection of of body and seal materials for different fluids.
- 4 body sizes, ports from 1/4" to 1".
- with light and surge voltage suppressor available.
- Normally closed and normally open versions.
- Reduced power consumption (DC Specifications):

VXD21: 4.5W (VXD2140 to 2150) and
6W → 5.5W (VXD2130)
VXD22: 7W

- IP65 Enclosure.
- Low noise construction.
- Flame resistant UL94V-0 conformed.

Symbol



How to Order

DC: VXD 21 3 0 □ 02 F 5 D 1 □

AC/Class B coil (Built-in full-wave rectifier type): VXD 21 3 0 □ 02 F 1 D R1 □

- DC/AC (Except VXD2130 AC/ClassB) for water and oil
- Model/Orifice size: From ø10 to ø25. Refer to tables on next page
- Valve/Body configuration

0	N.C. / Single unit
2	N.O. / Single unit

∗ N.O. for VXD2130 is not available.

- Solenoid valve option: For list of options see table 1 next page
- Port size

Code	Size	Applicable model
02	G1/4	VXD2130-02F
03	G3/8	VXD214□-03F, VXD2130-03F
04	G1/2	VXD214□-04F, VXD2130-04F
06	G3/4	VXD215□-06F
10	G 1	VXD226□-10F

- Thread type

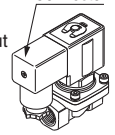
F	G

- Built-in full-wave rectifier type
- Bracket

-	None
B	With bracket

- Electrical entry

D - DIN terminal
DO - For Din without connector



∗ A surge voltage suppressor is integrated into the AC/Class B coil, as standard.

- Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC	B	24 VAC 50/60 Hz

Also available

Alternative electrical entries

Oil Free
Grommet,conduit and "with conduit terminal" entries are available

Expanded range of body materials

Please contact SMC for more details

Related Products

Series PF2A - Digital Flow Switch for Air - page 1309
Series PF3W - Digital Flow Switch for Water - page 1317
Series PA - Process Pump - page 1473
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series ZSE/ISE80 - Digital Pressure Switch for Fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Product Recommendation

Stocked items for fast delivery

VXD2130-02F-3DR1	VXD2130-03F-JDR1	VXD2140-03F-5DO1	VXD2140A-04F-JDR1	VXD2150A-06F-5DO1
VXD2130-02F-4DR1	VXD2130A-03F-5DO1	VXD2140-04F-3DR1	VXD2150-06F-3DR1	VXD2150A-06F-JDR1
VXD2130-02F-5D1	VXD2130-04F-3DR1	VXD2140-04F-4DR1	VXD2150-06F-4D1	VXD2260-10F-3DR1
VXD2130-02F-5DO1	VXD2130-04F-4DR1	VXD2140-04F-5D1	VXD2150-06F-4DR1	VXD2260-10F-4DR1
VXD2130-02F-BDR1	VXD2130-04F-5D1	VXD2140-04F-5D1-B	VXD2150-06F-5D1	VXD2260-10F-5D1
VXD2130A-02F-5DO1	VXD2130-04F-5DO1	VXD2140-04F-5DO1	VXD2150-06F-5D1-B	VXD2260-10F-5D1-B
VXD2130A-02F-BDOR1	VXD2130-04F-BDOR1	VXD2140-04F-BDR1	VXD2150-06F-5DO1	VXD2260-10F-5DO1
VXD2130-03F-3DR1	VXD2130-04F-BDR1	VXD2140-04F-JDOR1	VXD2150-06F-BDO1	VXD2260-10F-BDO1
VXD2130-03F-4DR1	VXD2130-04F-JDR1	VXD2142-04F-JDR1	VXD2150-06F-JDOR1	VXD2260-10F-BDR1
VXD2130-03F-5D1	VXD2140-03F-5D1	VXD2140A-04F-5D1	VXD2152-06F-JDR1	VXD2260-10F-JDR1
VXD2130-03F-BDR1	VXD2140-03F-5D1-B	VXD2140A-04F-5DO1	VXD2150A-06F-5D1	VXD2260A-10F-JDR1

Standard Specifications

Valve specifications	Valve construction		Pilot operated 2 port diaphragm type
	Withstand pressure [MPa]		8A to 25A: 5.0, 32A to 50A: 2.0
	Body material		Brass (C37), Stainless steel, CAC407
	Seal material		NBR, FKM, EPDM
	Enclosure		Dusttight, Low jetproof (equivalent to IP65)
	Environment		Location without corrosive or explosive gases
Coil specifications	Rated voltage	AC (Class B coil, Built-in full-wave rectifier type)	100 VAC, 200 VAC, 110 VAC, 220 VAC, 230 VAC, 240 VAC, 48 VAC
		AC (Class B coil/H coil) Note 2)	
		DC (Class B coil only)	24 VDC, 12 VDC
	Allowable voltage fluctuation		10% of rated voltage
	Allowable leakage voltage	AC (Class B coil, Built-in full-wave rectifier type)	10% or less of rated voltage
		AC (Class B coil/H coil) Note)	20% or less of rated voltage
		DC (Class B coil only)	2% or less of rated voltage
	Coil insulation type		Class B, Class H

Note) For the AC (Class B coil) of the VXD2130, built-in full-wave rectifier type is only applicable.

Solenoid Coil Specifications

Note) The values are for an ambient temperature of 20°C and at the rated voltage.

DC Specification

Model	Power consumption [W]	Temperature rise [°C] Note)
VXD2130	5.5	50
VXD214$^{0}_{2}$/215 $^{0}_{2}$	4.5	45
VXD226$^{0}_{2}$	7	45

AC Specification (Class B coil, built-in full-wave rectifier)

Model	Apparent power [VA]	Temperature rise [°C] Note)
VXD21	7	55
VXD22	9.5	60

There is no difference in apparent power due to the inrush, energisation, or frequency of the power, since the AC coil uses a rectifying circuit.

Normally Closed Specifications

Port size	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics		Max. system pressure [MPa]
				AC	DC	Av x $10^{-6}m^2$	Cv	
1/4 (8A)	10	VXD2130-02	0.02	0.9	0.7	46	1.9	1.5
3/8 (10A)	10	VXD2130-03				58	2.4	
	15	VXD2140-03		1.0	1.0	110	5.0	
1/2 (15A)	10	VXD2130-04		0.9	0.7	58	2.4	
	15	VXD2140-04		1.0	1.0	130	5.5	
3/4 (20A)	20	VXD2150-06				230	9.5	
1 (25A)	25	VXD2260-10				310	13	

Body Material Options (Table 1)

Fluid and application	Option symbol	Seal material	Body/Shading coil material	Push rod (N.O. only) material	Coil insulation type
Air	—	NBR	Brass (C37)/–	PPS	B
	G		Stainless steel/–		
Water	—	NBR	Brass (C37)/Cu		B
	G		Stainless steel/Ag		
Heated water	E	EPDM	Brass (C37)/Cu		H
	P		Stainless steel/Ag		
Oil Note 2)	A	FKM	Brass (C37)/Cu		B
	H		Stainless steel/Ag		
	D		Brass (C37)/Cu		H
	N		Stainless steel/Ag		

Operating Temperatures [°C] (Table 2)

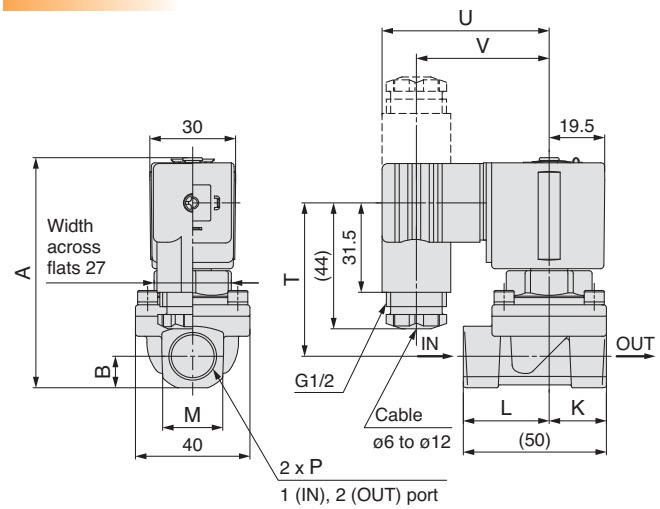
Power Source	Fluid/Body Material			Ambient Temperature
	Air —, G	Oil A, H	Water —, G, L	
AC	-10 to 60	-5 to 60	1 to 60	-10 to 60
DC	-10 to 60	-5 to 60	1 to 60	-10 to 60

Valve Specifications <Normally Open>

Port size	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]	Flow characteristics		Max. system pressure [MPa]
				AC, DC	Av x $10^{-6}m^2$	Cv converted	
3/8 (10A)	15	VXD2142-03	0.02	0.6	110	4.5	1.5
1/2 (15A)		VXD2142-04			130	5.5	
3/4 (20A)	20	VXD2152-06			230	9.5	
1 (25A)	25	VXD2262-10			310	13	

Process Valves

Dimensions VXD2130



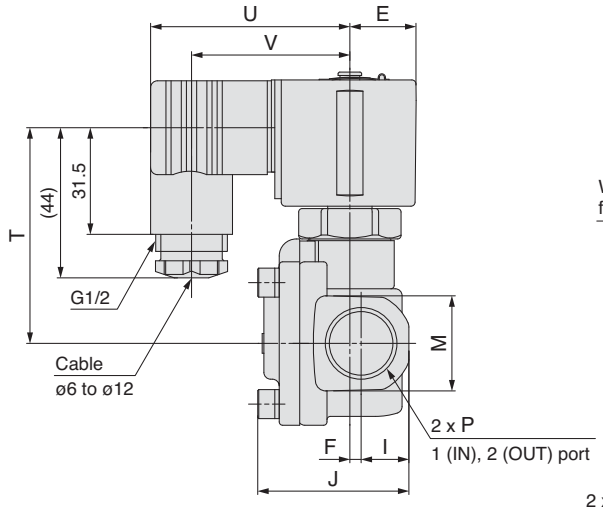
[mm]

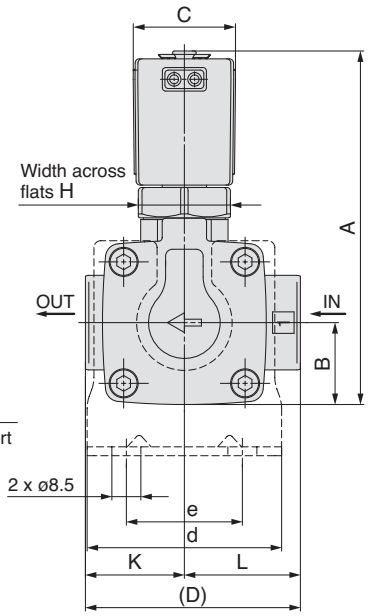
Model N.C.	Port size P	A	B	K	L	M
VXD2130	1/4, 3/8	80.5	11	20	30	22
	1/2	86	14.5	24	26	28

Model N.C.	Port size P	Electrical entry DIN terminal T	U	V
VXD2130	1/4, 3/8	54	58.5	46.5
	1/2	56	58.5	46.5

Dimensions

Normally closed (N.C.): VXD2140/2150/2260
Normally open (N.O.): VXD2142/2152/2262





[mm]

Model N.C.	Model N.O.	Port size P	A	B	C	D	E	F	H	I	J	K	L	M	Electrical entry DIN terminal T	U	V
VXD2140	VXD2142	3/8, 1/2	103.5 (110.5)	24	30	63	19.5	3.5	27	14	44.5	29	34	28	63.5 (65)	58.5	46.5
VXD2150	VXD2152	3/4	115 (122)	29	30	80	19.5	4.5	27	17	51.5	37	43	35	70 (71.5)	58.5	46.5
VXD2260	VXD2262	1	133 (140.5)	33	35	90	22.5	4.5	32	20	60	43	47	42	84 (85.5)	61.5	49.5

( ) denotes the value for N.O.

[mm]

Model N.C.	Model N.O.	Port size P	Bracket mounting a	b	d	e	f
VXD2140	VXD2142	3/8, 1/2	42	66	57	34	39
VXD2150	VXD2152	3/4	51	78	74	51	45.5
VXD2260	VXD2262	1	56	86	81	58	49.5

( ) denotes the value for N.O.

[mm]

Model Normally closed	Model Normally open	Electrical entry (AC/Class B coil) DIN terminal T	U	V
VXD2140	VXD2142	63.5 (65)	65.5	53.5
VXD2150	VXD2152	70 (71.5)	65.5	53.5
VXD2260	VXD2262	84 (85.5)	68.5	56.5

Pilot Operated 2 Port Solenoid Valve For Zero Pressure Differential Operation Series VXZ22/23

c US c UL US LISTED NRTL /C

Features

- Choice of normally open and normally closed porting.
- Five port size and 4 orifice size choices.
- Oil free option available.
- Suitable for air or a wide range of fluids.
- DC and two AC coil options.
- IP65 enclosure as standard.
- Brass or stainless body material.

Specifications

Brief explanation of zero operating pressure differential valves

The operating pressure differential is the difference in pressure between the inlet side of the valve and outlet side. In use this can vary between zero differential (eg 0.4MPa at both inlet and outlet sides) and a significant differential (example 0.7MPa on the inlet with the outlet open to atmosphere) The differential pressure tends to hold a two port valve closed.

The VX series shown in this catalogue are direct acting, so with larger orifice sizes the maximum operating pressure differential is limited by the ability of the coil to overcome the differential. Also shown in this catalogue is the VXD series. This has much larger orifice areas and actually uses the differential pressure to pilot assist the opening of the valve. Hence the VXD range has higher allowable maximum pressure differential but it is unable to function in a zero differential pressure situation.

The VXZ valves also have larger orifice size than the equivalent direct acting VX series, hence permitting a higher flow, without the penalty of restricted maximum operating pressure differential. A lift spring also permits correct operation even when the differential pressure falls to zero.

How to select VXZ Valves

Select body size, port size and orifice size using table 1.

Ø

Select body and seal options using table 2.

Ø

Check available Insulation class and coil type using table 2.

How to Order

DC	VXZ	22	3	0	□	02	F	5	D	1	□	
AC/Class B coil (Built-in full-wave rectifier type)	VXZ	22	3	0	□	02	F	1	D	R1	□	

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

0	N.C. / Single unit
2	N.O. / Single unit

Solenoid valve option
Refer to the table (2) shown below for availability.

Thread type

F	G

Port size
Refer to the table (1) shown below for availability.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC	B	24 VAC 50/60 Hz

Built-in full-wave rectifier type

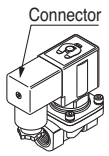
Bracket

-	None
B	With bracket

* Bracket is not removable.

Electrical entry

D	- DIN terminal
DO	- For Din without connector



* A surge voltage suppressor is integrated into the AC/Class B coil, as standard.

Also available

Alternative electrical entries

Oil Free

Expanded range of body materials

Please contact SMC for more details

Product Recommendation

Stocked items for fast delivery

VXZ2230-02F-3DR1	VXZ2230-03F-5DO1	VXZ2240-04F-5DO1	VXZ2350-06F-4DR1	VXZ2360-10F-4DR1
VXZ2230-02F-4DR1	VXZ2230-03F-BDR1	VXZ2240-04F-5DO1-B	VXZ2350-06F-5D1	VXZ2360-10F-5D1
VXZ2230-02F-5D1	VXZ2230-03F-JDOR1	VXZ2240-04F-BDR1	VXZ2350-06F-5DO1	VXZ2360-10F-5DO1
VXZ2230-02F-5DO1	VXZ2230-03F-JDR1	VXZ2240-04F-JDOR1	VXZ2350-06F-BDR1	VXZ2360-10F-BDR1
VXZ2230-02F-BDR1	VXZ2230A-03F-JDR1	VXZ2240-04F-JDR1	VXZ2350-06F-JDOR1	VXZ2360-10F-JDOR1
VXZ2230A-02F-5D1	VXZ2232-03F-5D1	VXZ2240A-04F-5D1	VXZ2350-06F-JDR1	VXZ2360-10F-JDR1
VXZ2232-02F-5D1	VXZ2240-04F-3DR1	VXZ2240A-04F-JDR1	VXZ2350A-06F-3DR1	VXZ2360A-10F-5D1
VXZ2230-03F-3DR1	VXZ2240-04F-4DOR1	VXZ2242-04F-4DR1	VXZ2350A-06F-5D1	VXZ2360A-10F-5DO1
VXZ2230-03F-4DR1	VXZ2240-04F-4DR1	VXZ2242-04F-5D1	VXZ2352-06F-4DR1	VXZ2362-10F-5D1
VXZ2230-03F-5D1	VXZ2240-04F-5D1	VXZ2242-04F-5DO1	VXZ2352-06F-5D1	
VXZ2230-03F-5D1-B	VXZ2240-04F-5D1-B	VXZ2350-06F-3DR1	VXZ2360-10F-3DR1	

Related Products

Series PF2A - Digital Flow Switch for Air - page 1309
Series PF3W - Digital Flow Switch for Water - page 1317
Series PA - Process Pump - page 1473
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series ZSE/ISE80 - Digital Pressure Switch for Fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Tables

Table (1) Model - Orifice size - Port Size
Normally Closed (N.C.) / Normally Open (N.O.)

Solenoid valve (Port size)			Orifice symbol (Diameter)				Material	
Model	VXZ22	VXZ23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)	Body	Seal
Port no. (Port size)	02 (1/4)	—	●	—	—	—	Brass (C37), Stainless steel	NBR FKM EPDM
	03 (3/8)	—	●	—	—	—		
	04 (1/2)	—	—	●	—	—		
	—	06 (3/4)	—	—	●	—		
	—	10 (1)	—	—	—	●		

Table (2) Standard Body Option

Option symbol	Applicable to	Valve seal material	Valve body material	Coil insulation type	
—	Gases of water	NBR	Brass	B	
G			Stainless steel		
E	Water	EPDM	Brass	H	Hot water (AC only)
P			Stainless steel		
A	Oil	FKM	Brass	B	
H			Stainless steel		
D			Brass	H	
N			Stainless steel		

Common Specifications

Valve specifications	Valve construction		Zero differential pressure type pilot operated 2 port diaphragm type
	Withstand pressure [MPa]		5.0
	Body material		Brass (C37), Stainless steel
	Seal material		NBR, FKM, EPDM
	Enclosure		Dust - tight, Low jetproof (equivalent to IP65)
	Environment		Location without corrosive or explosive gases
	Vibration resistance/Impact resistance [m/s^2]		30/150 or less
Coil specifications	Rated voltage	AC (Class B coil, Built-in full-wave rectifier type)	100 VAC, 200 VAC, 110 VAC, 220 VAC, 230 VAC, 240 VAC, 48 VAC
		AC (Class H coil)	
		DC (Class B coil only)	24 VDC, 12 VDC
	Allowable voltage fluctuation		±10% of rated voltage
	Allowable leakage voltage	AC (Class B coil, Built-in full-wave rectifier type)	10% or less of rated voltage
		AC (Class H coil)	20% or less of rated voltage
		DC (Class B coil only)	2% or less of rated voltage
	Coil insulation type		Class B, Class H

Solenoid Coil Specifications

DC Specification (Class B coil only)

Model	Power consumption [W]	Temperature rise [°C] Note)
VXZ22	7	45
VXZ23	10.5	60

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

AC Specification (Class B coil, Built-in full-wave rectifier type)

Model	Apparent power (VA) Note 2)	Temperature rise [°C] Note 1)
VXZ22	9.5	60
VXZ23	12	65

Note 1) The value at ambient temperature of 20°C and when the rated voltage is applied.
Note 2) There is no difference in the frequency and the inrush and energised apparent power, since a rectifying circuit is used in the AC spec. (Class B coil, Built-in full-wave rectifier type).

Gases Specifications

Normally Closed (N.C.)

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics			Max. system pressure [MPa]	Weight [g]
				AC	DC	C	b	Cv		
1/4 (8A)	10	VXZ2230-02	0	1.0	0.7	8.5	0.44	2.4	1.5	550
3/8 (10A)		VXZ2230-03				11.0	0.42	2.8		
1/2 (15A)	15	VXZ2240-04				23.0	0.34	6.0		760
3/4 (20A)	20	VXZ2350-06				38.0	0.20	9.5		1300

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics	Max. system pressure [MPa]	Weight [g]
				AC	DC	Effective area [mm²]		
1 (25A)	25	VXZ2360-10	0	1.0	0.7	215	1.5	1480

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Normally Open (N.O.)

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics			Max. system pressure [MPa]	Weight [g]
				AC	DC	C	b	Cv		
1/4 (8A)	10	VXZ2232-02	0	0.7	0.6	8.5	0.44	2.4	1.5	600
3/8 (10A)		VXZ2232-03				11.0	0.42	2.8		
1/2 (15A)	15	VXZ2242-04				23.0	0.34	6.0		850
3/4 (20A)	20	VXZ2352-06				38.0	0.20	9.5		1370

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics	Max. system pressure [MPa]	Weight [g]
				AC	DC	Effective area [mm²]		
1 (25A)	25	VXZ2362-10	0	0.7	0.6	215	1.5	1550

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Ambient and Fluid Temperature

Power source	Fluid temperature [°C]	Ambient temperature [°C]
	Solenoid valve option symbol	
	-, G	
AC/Class B coil	–10 to 60 Note)	–10 to 60
DC	–10 to 60 Note)	–10 to 60

Note) Dew point temperature: –10°C or less.

Valve Leakage Rate

Internal Leakage

Seal material	Leakage rate (Air)
NBR	1 cm³/min or less

External Leakage

Seal material	Leakage rate (Air)
NBR	1 cm³/min or less

Oil Specifications

Normally Closed (N.C.)

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics		Max. system pressure [MPa]	Weight [g]
				AC	DC	Av x $10^{-6}m^2$	Cv converted		
1/4 (8A)	10	VXZ2230-02	0	0.7		46	1.9	1.5	550
3/8 (10A)		VXZ2230-03				58	2.4		
1/2 (15A)	15	VXZ2240-04				130	5.3		760
3/4 (20A)	20	VXZ2350-06				220	9.2		1300
1 (25A)	25	VXZ2360-10				290	12.0		1480

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Normally Open (N.O.)

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics		Max. system pressure [MPa]	Weight [g]
				AC	DC	Av x $10^{-6}m^2$	Cv converted		
1/4 (8A)	10	VXZ2232-02	0	0.7	0.6	46	1.9	1.5	600
3/8 (10A)		VXZ2232-03				58	2.4		
1/2 (15A)	15	VXZ2242-04				130	5.3		850
3/4 (20A)	20	VXZ2352-06				220	9.2		1370
1 (25A)	25	VXZ2362-10				290	12.0		1550

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Ambient and fluid Specifications

Power source	Fluid temperature [°C]		Ambient temperature [°C]
	Solenoid valve option symbol		
	A, H	D, N	
AC/Class B coil	–5 to 60	—	–10 to 60
AC/Class H coil	—	–5 to 100	–10 to 60
DC	–5 to 60	—	–10 to 60

Note) Kinematic viscosity: 50 mm^2/s or less

Valve Leakage Rate

Internal Leakage

Seal material	Leakage rate (Oil)
FKM	0.1 cm^3/min or less

External Leakage

Seal material	Leakage rate (Oil)
FKM	0.1 cm^3/min or less

Water Specifications

Normally Closed (N.C.)

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics		Max. system pressure [MPa]	Weight [g]
				AC	DC	Av x $10^{-6}m^2$	Cv converted		
1/4 (8A)	10	VXZ2230-02	0	1.0	0.7	46	1.9	1.5	550
3/8 (10A)		VXZ2230-03				58	2.4		
1/2 (15A)	15	VXZ2240-04				130	5.3		760
3/4 (20A)	20	VXZ2350-06			1.0	220	9.2		1300
1 (25A)	25	VXZ2360-10				290	12.0		1480

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Normally Open (N.O.)

Port size (Nominal size)	Orifice size [mmø]	Model	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]		Flow characteristics		Max. system pressure [MPa]	Weight [g]
				AC	DC	Av x $10^{-6}m^2$	Cv converted		
1/4 (8A)	10	VXZ2232-02	0	0.7	0.6	46	1.9	1.5	600
3/8 (10A)		VXZ2232-03				58	2.4		
1/2 (15A)	15	VXZ2242-04				130	5.3		850
3/4 (20A)	20	VXZ2352-06				220	9.2		1370
1 (25A)	25	VXZ2362-10				290	12.0		1550

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Ambient and Fluid Temperature

Power source	Fluid temperature [°C]		Ambient temperature [°C]
	Solenoid valve option symbol		
	-, G, L	E, P	
AC/Class B coil	1 to 60	—	–10 to 60
AC/Class H coil	—	1 to 99	–10 to 60
DC	1 to 60	—	–10 to 60

Note) With no freezing

Valve Leakage Rate

Internal Leakage

Seal material	Leakage rate (Water)
NBR, FKM, EPDM	0.1 cm^3/min or less

External Leakage

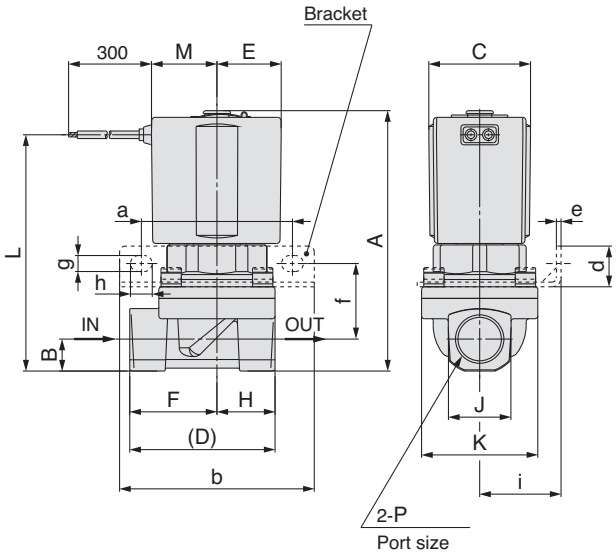
Seal material	Leakage rate (Water)
NBR, FKM, EPDM	0.1 cm^3/min or less

For more product options and details see our specific catalogues or on-line information.

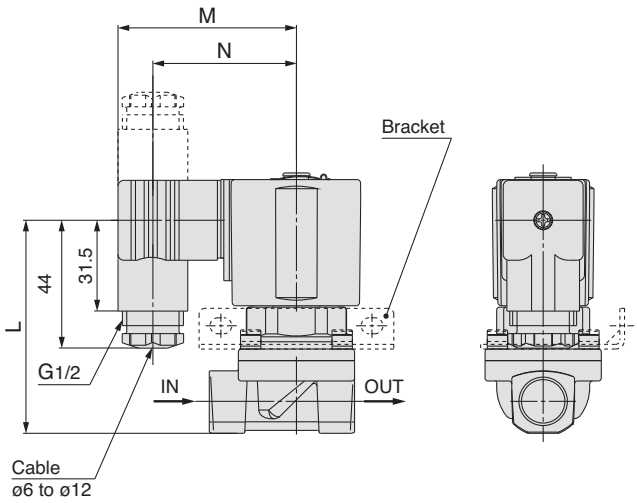
Dimensions/Body Material: Brass, Stainless Steel

Normally closed (N.C.): VXZ21□0/VXZ22□0/VXZ23□0
Normally open (N.O.): VXZ21□2/VXZ22□2/VXZ23□2

Grommet: G



DIN terminal: D



[mm]

Model		Port size P	A	B	C	D	E	F	H	J	K	Electrical entry (DC, AC/Class H coil)				
												Grommet		DIN terminal		
N.C.	N.O.											L	M	L	M	N
VXZ2230	VXZ2232	1/4, 3/8	90 (97)	11	35	50	22.5	30	20	22	40	81.5 (83)	22.5	73.5 (75)	61.5	49.5
VXZ2240	VXZ2242	1/2	98 (105)	14	35	63	22.5	37	26	29.5	52	89.5 (91)	22.5	81.5 (83)	61.5	49.5
VXZ2350	VXZ2352	3/4	110 (117.5)	18	40	80	25	47.5	32.5	36	65	101.5 (103.5)	25.5	93.5 (95.5)	64	52
VXZ2360	VXZ2362	1/1	116.5 (123)	21	40	90	25	55	35	40.5	70	108 (109)	25.5	100 (101)	64	52

( ) denotes the value for N.O.

[mm]

Model		Port size P	a	b	d	e	f	g	h	i	Electrical entry (AC/Class B coil)*				
											Grommet		DIN terminal		
N.C.	N.O.										N	Q	N	Q	R
VXZ2230	VXZ2232	1/4, 3/8	52	67	14	1.6	26	5.5	7.5	28	77.5	33	73.5	68.5	56.5
VXZ2240	VXZ2242	1/2	60	75	17	2.3	33	6.5	8.5	35	85.5	33	81.5	68.5	56.5
VXZ2350	VXZ2352	3/4	68	87	22	2.6	40	6.5	9	43	97.5	36	93.5	71	59
VXZ2360	VXZ2362	1/1	73	92	22	2.6	45.5	6.5	9	45	104	36	100	71	59

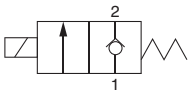
* Coil with built-in full-wave rectifier (electrical option "R")

Direct Operated 2 Port Solenoid Valve Series VX21/22/23

Features

- Special body materials: Aluminium and Resin bodies can be selected in the valve for air. Brass C37 and stainless steel bodies are available in the rest of the types.
- Compact and lightweight
- Low power consumption: 4.5 W in size 1; 7.0 W in size 2 and 10.5 W in size 3 (about half of the consumption of the competence's valves).
- Low-noise construction: the noise of the valve during its operation has been reduced by incorporating a rubber bumper.
- Large flow rate.

Symbol



How to Order

VX2 [1] [2] [A] [A] [A] [XB]

Bracket

—	Without interchangeable bracket with old VX21/22/23 Series
XB	With interchangeable bracket with old VX21/22/23 Series

Fluid

2	For water
3	For oil
4	For medium vacuum

Oil-free spec.–Thread type

Symbol	Seal material FKM	Oil-free spec.	Thread type
A	—	—	G
D	—	●	G
F	●	—	G
K	●	●	G

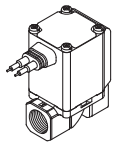
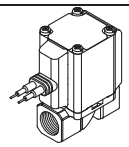
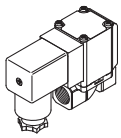
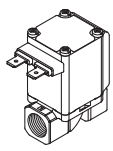
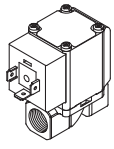
Note) Oil model is FKM as standard.
Vacuum model is FKM and Oil-free as standard

Size/Valve type / Body material/Port size/Orifice diameter/Pressure

Symbol	Size	Valve type	Symbol	Body material	Port size	Orifice diameter	Max. operating pressure diff. [Mpa] Note)
1	Size 1	Single unit N.C.	A	C37 (Brass)	1/8	2	1.0
			B			3	0.6
			C			5	0.2
			D		1/4	2	1.0
			E			3	0.6
			F			5	0.2
			H	Stainless steel	1/8	2	1.0
			J			3	0.6
			K			5	0.2
			L		1/4	2	1.0
			M			3	0.6
			N			5	0.2
2	Size 2	Single unit N.C.	A	C37 (Brass)	1/4	4	1.0
			B			7	0.15
			D		3/8	4	1.0
			E			7	0.15
			H	Stainless steel	1/4	4	1.0
			J			7	0.15
			L		3/8	4	1.0
			M			7	0.15
3	Size 3	Single unit N.C.	A	C37 (Brass)	1/4	5	1.0
			B			8	0.3
			C			10	0.1
			D		3/8	5	1.0
			E			8	0.3
			F			10	0.1
			G		1/2	10	0.1
			H	Stainless steel	1/4	5	1.0
			J			8	0.3
			K			10	0.1
			L		3/8	5	1.0
			M			8	0.3
			N			10	0.1
			P		1/2	10	0.1

Note) Vacuum model used with vacuum (Pa·abs), operating pressure range: 0.1 to atmospheric pressure.

Voltage/Electrical entry

Symbol	Voltage	Electrical entry
A	24 VDC	Grommet 
Z1U	24 VAC	Grommet (With surge voltage suppressor) 
C	110 VAC	
E	230 VAC	
F	24 VDC	
G	24 VDC	DIN terminal (With surge voltage suppressor) 
J	110 VAC	
L	230 VAC	
Z1V	24 VAC	
Y	24 VDC	Faston terminal 
Z3A	24 VDC	DIN terminal without DIN connector 
Z3C	110 VAC	
Z3E	230 VAC	
Z3V	24 VAC	

For more product options and details see our specific catalogues or on-line information.

How to Order

VX2 [1] [0] [A] [A] [A]

Fluid

0	For air

Size/Valve type

Symbol	Size	Valve type
1	Size 1	Single unit N.C.
2	Size 2	Single unit N.C.
3	Size 3	Single unit N.C.

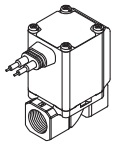
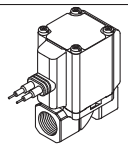
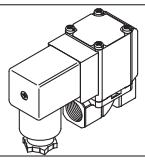
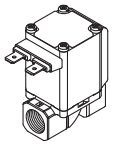
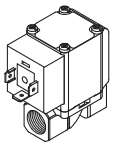
Body material/Port size/Orifice diameter/Pressure

Symbol	Body material	Port size	Orifice diameter	Max. operating pressure diff. [Mpa] Note)
A	Aluminium	1/8	2	1.0
B			3	0.6
C			5	0.2
D		1/4	2	1.0
E			3	0.6
F			5	0.2
H	Resin	ø6 one-touch fitting	2	1.0
J			3	0.6
K			5	0.2
L		ø8 one-touch fitting	2	1.0
M			3	0.6
N			5	0.2
A	Aluminium	1/4	4	1.0
B			7	0.15
D		3/8	4	1.0
E			7	0.15
H	Resin	ø8 one-touch fitting	4	1.0
J			7	0.15
L		ø10 one-touch fitting	4	1.0
M			7	0.15
A	Aluminium	1/4	5	1.0
B			8	0.3
C			10	0.1
D		3/8	5	1.0
E			8	0.3
F			10	0.1
G		1/2	10	0.1
H	Resin	ø10 one-touch fitting	5	1.0
J			8	0.3
K			10	0.1
L		ø12 one-touch fitting	5	1.0
M			8	0.3
N			10	0.1

Seal material – Oil-free spec.–Thread type

Symbol	Seal material FKM	Oil-free spec.	Thread type
A	–	–	G
D	–	●	G
F	●	–	G
K	●	●	G

Voltage/Electrical entry

Symbol	Voltage	Electrical entry
A	24 VDC	Grommet 
Z1U	24 VAC	Grommet (With surge voltage suppressor) 
C	110 VAC	
E	230 VAC	
F	24 VDC	
G	24 VDC	DIN terminal (With surge voltage suppressor) 
J	110 VAC	
L	230 VAC	
Z1V	24 VAC	
Y	24 VDC	Faston terminal 
Z3A	24 VDC	DIN terminal without DIN connector 
Z3C	110 VAC	
Z3E	230 VAC	
Z3V	24 VAC	

Product Recommendation

Stocked items for fast delivery

VX212AGAXB	VX212ELAXB	VX222DGAXB	VX213MGAXB
VX212BGAXB	VX212EZ1VAXB	VX222EFAXB	VX223AGAXB
VX212CGAXB	VX212MGAXB	VX232DGAXB	VX214CGAXB
VX212EFAXB	VX222AGAXB	VX213AGAXB	VX214EGAXB
VX212EGAXB	VX222AJAXB	VX213EZ3VAXB	

Related Products

Series PF2A - Digital Flow Switch for Air - page 1309
Series PF3W - Digital Flow Switch for Water - page 1317
Series PA - Process Pump - page 1473
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series ZSE/ISE80 - Digital Pressure Switch for Fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Fluid and Ambient Temperature

Fluid	Fluid temperature [°C]	Ambient temperature [°C]
Air	-10 to 60	-20 to 60
Water, Vacuum	1 to 60	-20 to 60
Oil	-5 Note 3) to 60	-20 to 60

Note 1) Dew point temperature: –10°C or less , Note 2) With no freezing
Note 3) Kinematic viscosity: 50mm²/s or less

Specifications

Valve specifications	Valve construction		Direct operated poppet
	Withstand pressure		2.0 (resin body type 1.5)
	Body material		Aluminium, Resin, C37 (Brass), Stainless steel
	Seal material		NBR, FKM
	Enclosure		Dusttight, Low jetproof (IP65) Note 1)
	Environment		Location without corrosive or explosive gases
Coil specifications	Rated voltage	AC	110 VAC, 230 VAC, 24 VAC (220 VAC, 240 VAC, 48 VAC) Note 2)
		DC	24 VDC (12 VDC) Note 2)
	Allowable voltage fluctuation		±10% of rated voltage
	Coil insulation type		Class B

Note 1) Electrical entry "Faston" type terminal is IP40.
Note 2) Voltage in ( ) indicates special voltage.

Process Valves

Air- Model/Valve Specifications

Normally Closed (N.C.)

Aluminum Body Type

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics			Maximum operating pressure differential [MPa]	Weight Note) [g]
				C [dm³/[s·bar]]	b	Cv		
1	1/8, 1/4	2	VX210	0.63	0.63	0.23	1.0	220
		3		1.05	0.68	0.41	0.6	220
		5		2.20	0.39	0.62	0.2	220
2	1/4, 3/8	4	VX220	1.90	0.52	0.62	1.0	340
		7		3.99	0.44	1.08	0.15	340
3	1/4, 3/8	5	VX230	1.96	0.55	0.75	1.0	450
		8		5.67	0.33	1.58	0.3	450
		10		5.74	0.64	2.21	0.1	450
	1/2	10		8.42	0.39	2.21	0.1	470

Resin Body Type (Built-in One-touch Fittings)

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics			Maximum operating pressure differential [MPa]	Weight Note) [g]
				C [dm³/[s·bar]]	b	Cv		
1	C6	2	VX210	0.82	0.44	0.23	1.0	220
		3		1.25	0.34	0.35	0.6	220
		5		1.45	0.43	0.40	0.2	220
	C8	2		0.82	0.44	0.23	1.0	220
		3		1.81	0.40	0.41	0.6	220
		5		2.11	0.32	0.56	0.2	220
2	C8	4	VX220	1.69	0.40	0.47	1.0	340
		7		3.14	0.34	0.84	0.15	340
	C10	4		1.68	0.49	0.50	1.0	340
		7		3.54	0.36	0.90	0.15	340
3	C10	5	VX230	2.50	0.44	0.70	1.0	460
		8		2.77	0.82	1.22	0.3	460
		10		5.69	0.46	1.54	0.1	460
	C12	5		2.50	0.44	0.70	1.0	460
		8		2.56	0.88	1.38	0.3	460
		10		5.69	0.64	1.76	0.1	460

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Medium Vacuum- Model/Valve Specifications

Normally Closed (N.C.)

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics			Operating pressure range		Note) Weight [g]
				C [dm³/[s·bar]]	b	Cv	① Used with vacuum [Pa·abs]	② Used with pressure [MPa]	
1	1/8, 1/4	2	VX214	0.63	0.63	0.23	0.1 to atmospheric pressure	0 to 1.0	220
		3		1.05	0.68	0.41		0 to 0.6	220
		5		2.20	0.39	0.62		0 to 0.2	220
2	1/4, 3/8	4	VX224	1.90	0.52	0.62		0 to 1.0	340
		7		3.99	0.44	1.08		0 to 0.15	340
3	1/4, 3/8	5	VX234	1.96	0.55	0.75		0 to 1.0	450
		8		5.67	0.33	1.58		0 to 0.3	450
		10		5.74	0.64	2.21		0 to 0.1	450
	1/2	10		8.42	0.39	2.21		0 to 0.1	470

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Water- Model/Valve Specifications

Normally Closed (N.C.)

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics		Maximum operating pressure differential [MPa]	Weight Note) [g]
				AV	Conversion Cv		
1	1/8, 1/4	2	VX212	5.5	0.23	1	300
		3		10.0	0.42	0.6	300
		5		15.0	0.63	0.2	300
2	1/4, 3/8	4	VX222	15.0	0.63	1	460
		7		26.0	1.08	0.15	460
3	1/4, 3/8	5	VX232	18.0	0.75	1	580
		8		38.0	1.58	0.3	580
		10		53.0	2.21	0.1	580
	1/2	10		53.0	2.21	0.1	630

Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Oil- Model/Valve Specifications

Normally Closed (N.C.)

Size	Port size	Orifice diameter [mmø]	Model	Flow-rate characteristics		Maximum operating pressure differential [MPa]	Weight Note) [g]
				AV	Conversion Cv		
1	1/8, 1/4	2	VX213	5.5	0.23	1	300
		3		10.0	0.42	0.6	300
		5		15.0	0.63	0.2	300
2	1/4, 3/8	4	VX223	15.0	0.63	1	460
		7		26.0	1.08	0.15	460
3	1/4, 3/8	5	VX233	18.0	0.75	1	580
		8		38.0	1.58	0.3	580
		10		53.0	2.21	0.1	580
	1/2	10		53.0	2.21	0.1	630

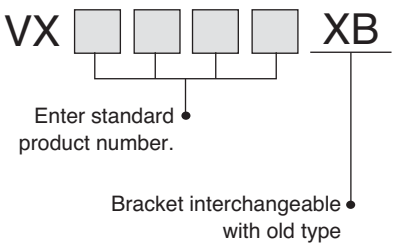
Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.

Accessories

Bracket interchangeable with old type

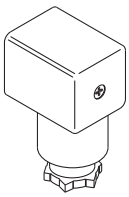
The brackets are interchangeable with brackets of old VX21/22/23 series.
For details of exterior dimensions, please contact SMC.

* Only for C37 (Brass) and stainless steel Select brass (C37), in the type “for Water”, when interchangeable product is necessary for air.



DIN Connector Part No.

Without electrical option	C18312G6GCU
With electrical option (light)	GDM2A – L



Electrical option

L	With light

Rated voltage

1	100 VAC, 110 VAC
2	200 VAC, 220 VAC 230 VAC, 240 VAC
5	24 VDC
6	12 VDC
15	48 VAC

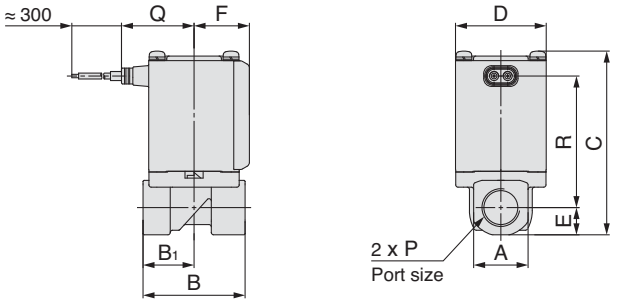
Gasket for DIN Connector: VCW20-1-29-1

Lead Wire Assembly for Faston Terminal (Set of 2 pcs.):
VX021S-1-16FB

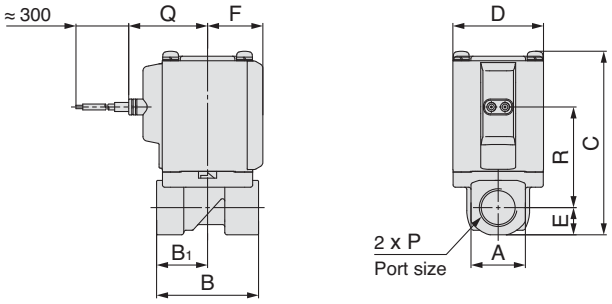
Dimensions

Body Material: Aluminium

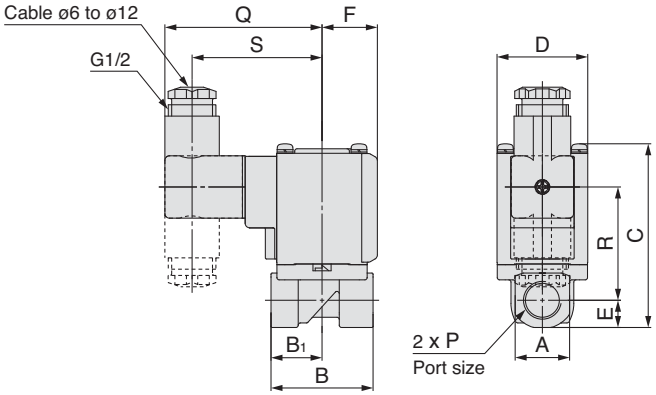
Grommet (DC)



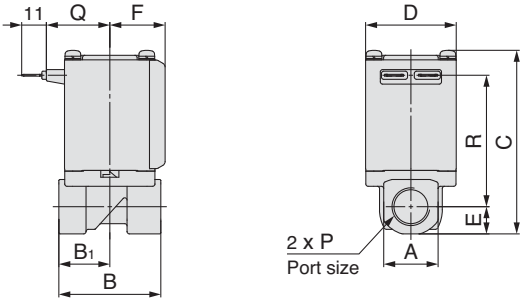
Grommet (with surge voltage suppressor)



DIN terminal



Faston type

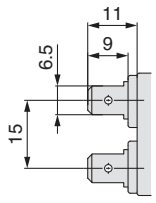


[mm]

Size	Port size P	A	B	B1	C	D	E	F	Electrical entry			
									Grommet		Grommet (with surge voltage suppressor)	
									Q	R	Q	R
1	1/8, 1/4	19	43	21	61	30	9.5	20	27	42	30	28.5
2	1/4, 3/8	24	45	22.5	76	35	12	22	29.5	53.5	32.5	39.5
3	1/4, 3/8	24	45	22.5	81	40	12	24.5	32	58	35	44.5
	1/2	30	50	25	86.5	40	15	24.5	32	61	35	47.5

Size	Port size P	Electrical entry				
		DIN terminal			Faston type	
		Q	R	S	Q	R
1	1/8, 1/4	64.5	34	52.5	23	42
2	1/4, 3/8	67	45	55	25.5	53.5
3	1/4, 3/8	69.5	50	57.5	28	58
	1/2	69.5	53	57.5	28	61

Terminal part
Faston connector
250 Series

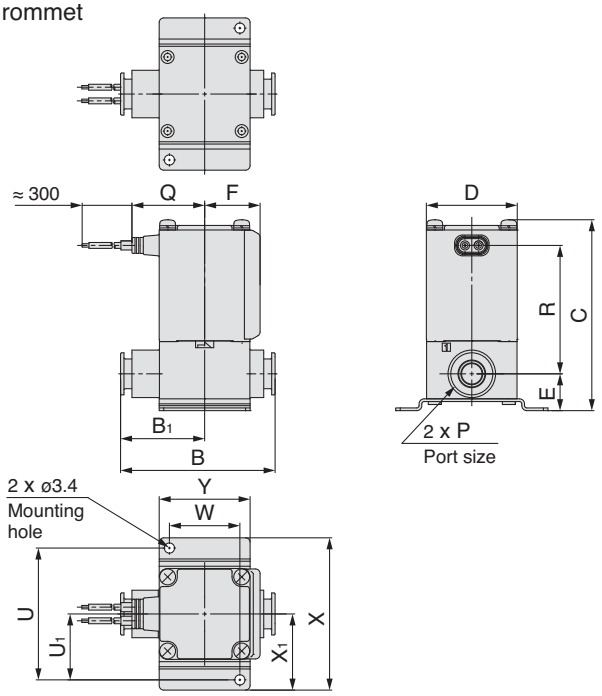


Process Valves

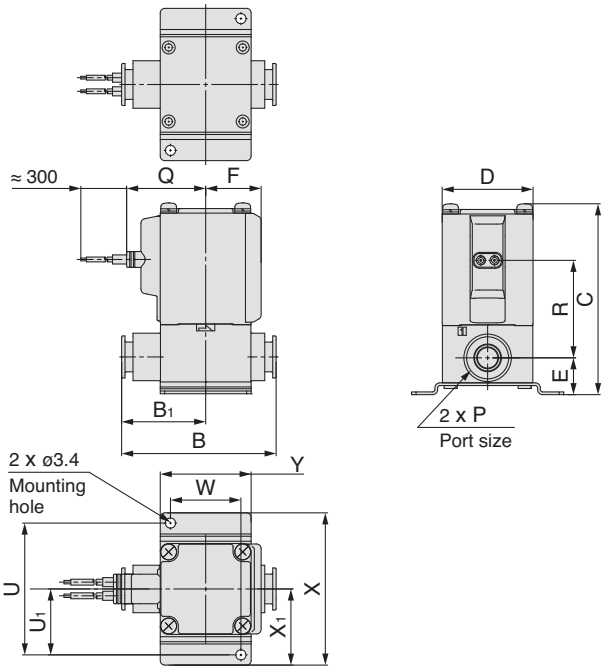
Dimensions

Body Material: Resin

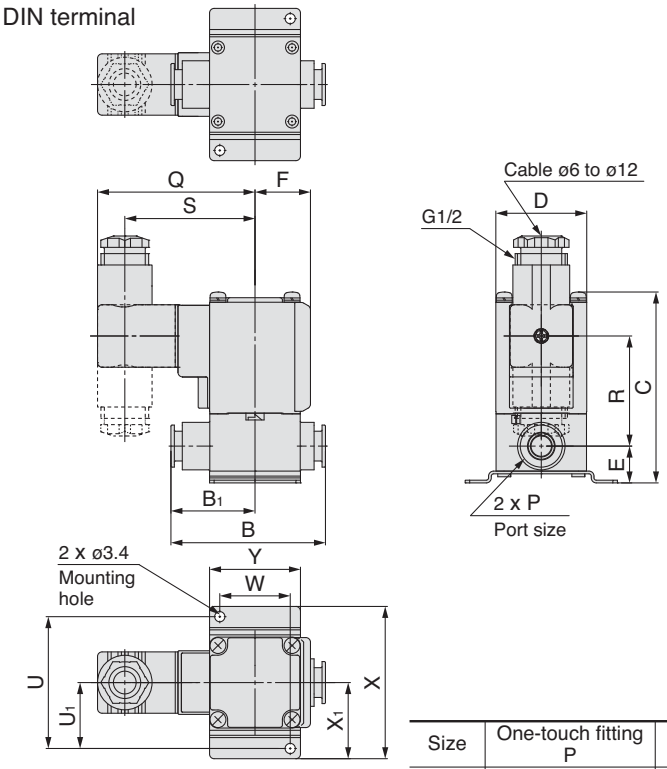
Grommet



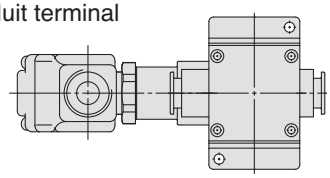
Grommet (with surge voltage suppresor)



DIN terminal



Conduit terminal



[mm]

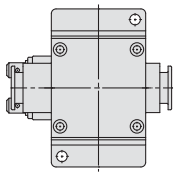
Size	One-touch fitting P	B	B1	C	D	E	F	Mounting bracket dimensions					
								U	U1	W	X	X1	Y
1	C6, C8	53.5	29	65.5	30	13.5	20	45	22.5	22	52	26	30
2	C8, C10	66	36	76.5	35	15	22	53	26.5	27	62	31	35
3	C10, C12	68	37	84	40	16.5	24.5	58	29	31	67	33.5	40

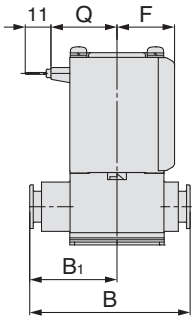
Size	One-touch fitting P	Electrical entry						
		Grommet		Grommet (with surge voltage suppressor)		DIN terminal		
		Q	R	Q	R	Q	R	S
1	C6, C8	27	42.5	30	29	64.5	34.5	52.5
2	C8, C10	29.5	51	32.5	37	67	43	55
3	C10, C12	32	56.5	35	43	69.5	48.5	57.5

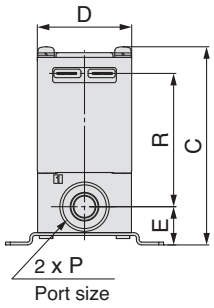
Dimensions

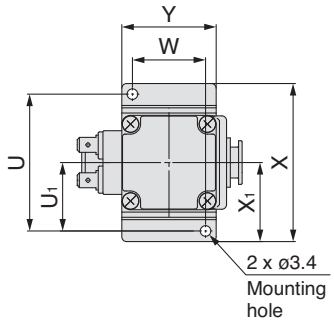
Body Material: Resin

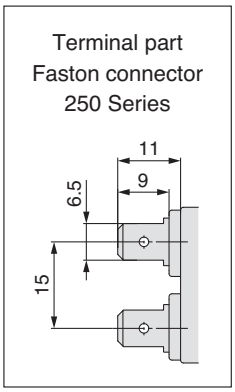
Faston type











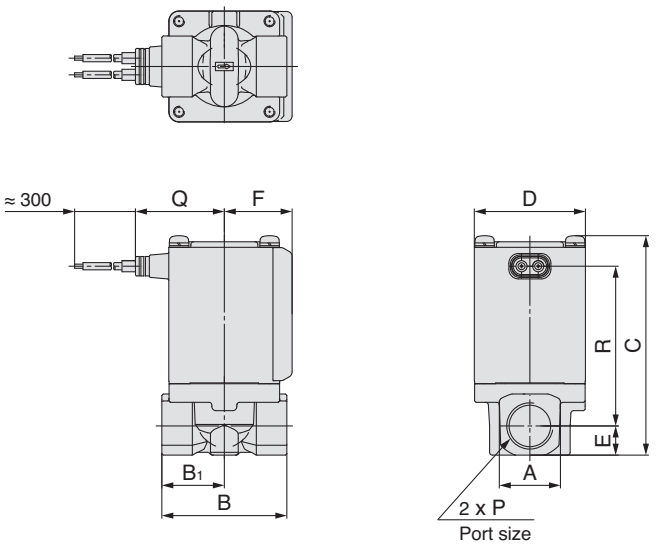
[mm]

Size	One-touch fitting P	B	B_1	C	D	E	F	Mounting bracket dimensions						Electrical entry Faston type	
								U	U_1	W	X	X_1	Y	Q	R
1	C6, C8	53.5	29	65.5	30	13.5	20	45	22.5	22	52	26	30	23	42.5
2	C8, C10	66	36	76.5	35	15	22	53	26.5	27	62	31	35	25.5	51
3	C10, C12	68	37	84	40	16.5	24.5	58	29	31	67	33.5	40	28	56.5

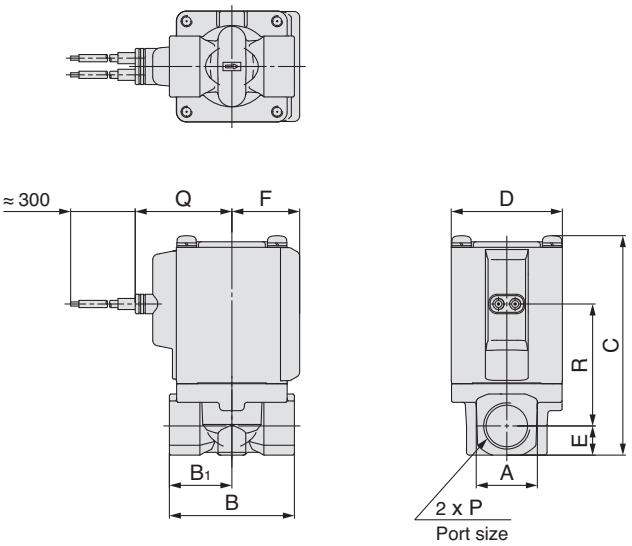
Dimensions

Body Material: C37 (Brass), Stainless Steel

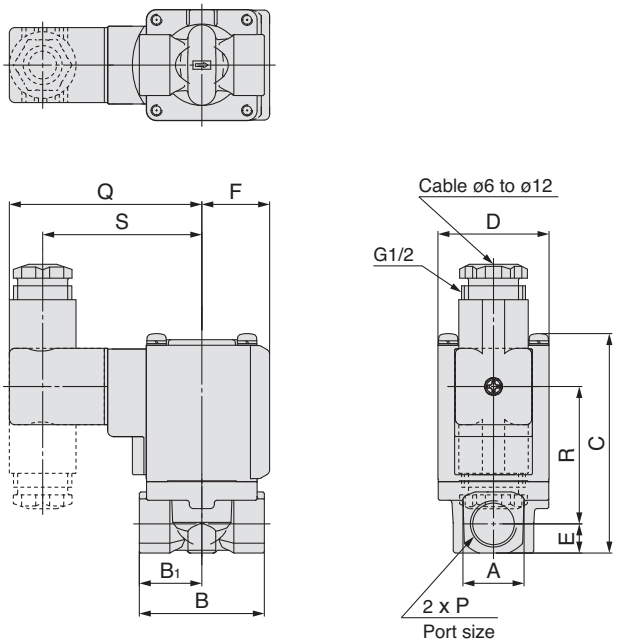
Grommet



Grommet (with surge voltage suppressor)



DIN terminal



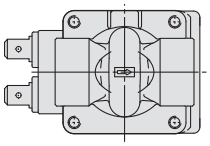
[mm]

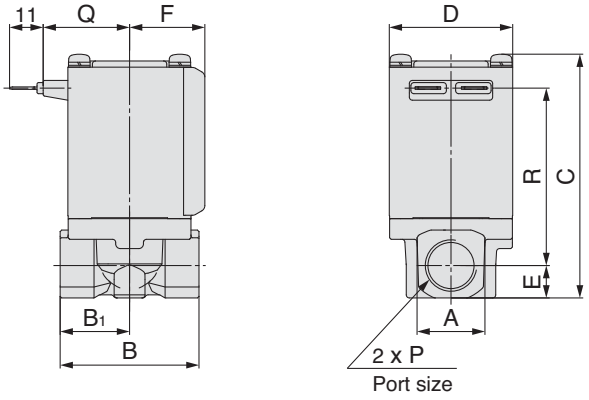
Size	Port size P	A	B	B_1	C	D	E	F	Electrical entry						
									Grommet		Grommet (with surge voltage suppressor)		DIN terminal		
									Q	R	Q	R	Q	R	S
1	1/8, 1/4	19	43	21	61	30	9.5	20	27	42	30	28.5	64.5	34	52.5
2	1/4, 3/8	22	45	22.5	74.5	35	10.5	22	29.5	53.5	32.5	39.5	67	45	55
3	1/4, 3/8	22	45	22.5	79	40	10.5	24.5	32	57.5	35	44	69.5	49.5	57.5
	1/2	29.5	50	25	85.5	40	14	24.5	32	61	35	47.5	69.5	53	57.5

Dimensions

Body Material: C37 (Brass), Stainless Steel

Faston type

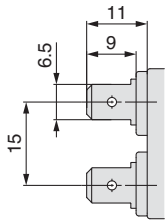




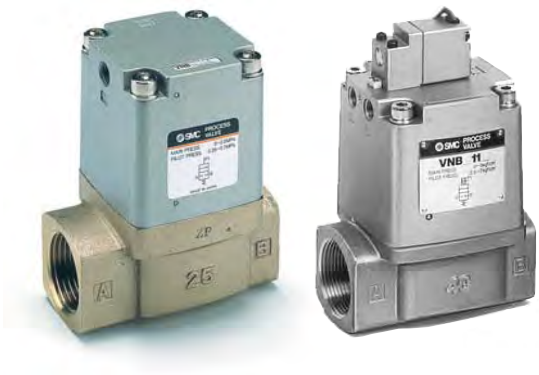
[mm]

Size	Port size P	A	B	B1	C	D	E	F	Electrical entry Faston type Q	Electrical entry Faston type R
1	1/8, 1/4	19	43	21	61	30	9.5	20	23	42
2	1/4, 3/8	22	45	22.5	74.5	35	10.5	22	25.5	53.5
3	1/4, 3/8	22	45	22.5	79	40	10.5	24.5	28	57.5
	1/2	29.5	50	25	85.5	40	14	24.5	28	61

Terminal part
Faston connector
250 Series



2 Port Valve for Flow Control - Process Valve
Series VNB

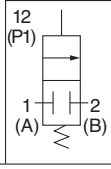
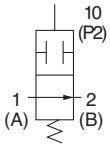
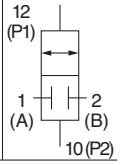


Features

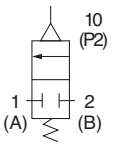
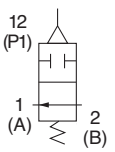
- External pilot solenoid option.
- Robust poppet construction.
- Wide variety of suitable fluids, due to body and seal options.
- Sizes from 1/8" to 2".
- NC, NO, CO porting options.

Symbol

Symbols

Type \ Valve type	N.C.	N.O.	C.O.
	Normally closed	Normally open	Double acting
	VNB□0 1/4	VNB□02	VNB□03
Air operated			

Symbols (Vacuum pilot type)

Type \ Valve type	N.C.	N.O.
	Normally closed	Normally open
	VNB□01□V	VNB□02□V
Air operated		

How to Order

Seal material

A	NBR seals
B	FKM seals
C	EPR seals

Body option

–	Standard
V*	Vacuum pilot
S	Stainless steel body
L	Aluminum body

(*) Symbol V is for vaccuum pilot valve specification, for both main pressure and pilot pressure, valve size 2 to 7.

Thread type

F	G ported

Air operated: EVNB [2] [0] [1] [A] [ ] – [F] [15A]

External pilot solenoid: EVNB [2] [1] [1] [A] [ ] – [F] [15A] – [1] [D] – Q

Electrical entry

D	DIN connector

Rated voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other: Less than 250 VAC and 50 VDC

Valve size / Valve type / Port size

Symbol	Orifice size [mm]...	Symbol 1 N.C. 0.5 MPa	Symbol 2 N.O.	Symbol 3 Note) C.O.	Symbol 4 N.C. 1 MPa	Symbol	Port size G
1	ø7	—	●	●	●	6A	1/8
		—	●	●	●	8A	1/4
		—	●	●	●	10A	3/8
2	ø11	—	—	—	●	10A	3/8
	ø15	●	●	●	—		
	ø11	—	—	—	●	15A	1/2
	ø15	●	●	●	—		
3	ø14	—	—	—	●	20A	3/4
	ø20	●	●	●	—		
4	ø16	—	—	—	●	25A	1
	ø25	●	●	●	—		
5	ø22	—	—	—	●	32A	1 1/4
	ø32	●	●	●	—		
6	ø28	—	—	—	●	40A	1 1/2
	ø40	●	●	●	—		
7	ø33	—	—	—	●	50A	2
	ø50	●	●	●	—		

Product Recommendation

Stocked items for fast delivery

EVNB102B-F8A	EVNB204B-F10A	EVNB204BS-F15A	EVNB401AS-F25A	EVNB601A-F40A
EVNB104A-F8A	EVNB214A-F10A-5D-Q	EVNB211A-F15A-5D-Q	EVNB401B-F25A	EVNB602B-F40A
EVNB104B-F8A	EVNB201A-F15A	EVNB214A-F15A-5D-Q	EVNB401BS-F25A	EVNB604A-F40A
EVNB104BS-F8A	EVNB201AS-F15A	EVNB301A-F20A	EVNB402A-F25A	EVNB604B-F40A
EVNB114A-F8A-5D-Q	EVNB201B-F15A	EVNB301B-F20A	EVNB402B-F25A	EVNB611A-F40A-5D-Q
EVNB102AS-F10A	EVNB201BS-F15A	EVNB302AS-F20A	EVNB404A-F25A	EVNB614A-F40A-5D-Q
EVNB104A-F10A	EVNB202A-F15A	EVNB304A-F20A	EVNB404AS-F25A	EVNB701A-F50A
EVNB104AS-F10A	EVNB202AS-F15A	EVNB304AS-F20A	EVNB404B-F25A	EVNB701B-F50A
EVNB114A-F10A-5D-Q	EVNB202B-F15A	EVNB304B-F20A	EVNB411A-F25A-5D-Q	EVNB704A-F50A
EVNB201A-F10A	EVNB204A-F15A	EVNB311A-F20A-5D-Q	EVNB414A-F25A-5D-Q	EVNB704B-F50A
EVNB201B-F10A	EVNB204AS-F15A	EVNB314A-F20A-5D-Q	EVNB501A-F32A	EVNB711A-F50A-5D-Q
EVNB204A-F10A	EVNB204B-F15A	EVNB401A-F25A	EVNB501B-F32A	EVNB714A-F50A-5D-Q

Related Products

Series V100 - Valves - page 353
Series SYJ300/500/700 - Valves - page 369
Series PF2A - Digital Flow Swith for Air- page 1309
Series PF3W - Digital Flow Swith for Water - page 1317
Series PA - Process Pump - page 1473
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series ZSE/ISE80- Digital Pressure Switch for Fluids - page 1290
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Specifications

Model

Model	Port size	Orifice size ø [mm]	Flow rate [Nℓ/min]	Flow rate Effective area [mm²]	Weight [kg] Air operated	Weight [kg] External pilot solenoid
VNB1□□□-6A	1/8	7	687.05	13	0.3	0.4
VNB1□□□-8A	1/4		981.50	18		
VNB1□□□-10A	3/8		1275.95	23		
VNB2□4□-10A		11	2453.75	45	0.6	0.7
VNB2□□□-10A		15	3729.70	70		
VNB2□4□-15A	1/2	11	2944.50	55		
VNB2□□□-15A		15	4907.50	90		
VNB3□4□-20A	3/4	14	4907.50	90	0.9	1.0
VNB3□□□-20A		20	7852.00	140		
VNB4□4□-25A	1	16	6870.50	130	1.4	1.5
VNB4□□□-25A		25	11778.0	220		
VNB5□4□-32A	1 1/4	22	10796.50	210	2.5	2.6
VNB5□□□-32A		32	17667.0	320		
VNB6□4□-40A	1 1/2	28	18648.50	330	4.1	4.2
VNB6□□□-40A		40	27482.0	500		
VNB7□4□-50A	2	33	28463.50	520	6.3	6.4
VNB7□□□-50A		50	42204.50	770		

Valve specifications

Fluids			Water, Oil, Air, Vaccum, etc.
Fluid temperature	VNB□□□A		–5 to 60°C (1)
	VNB□□□ B/C		–5 to 99°C (1) (Water, oil etc. Only air operated)
Ambient temperature			–5 to 50°C(Air operated type: 60°C) (1)
Proof pressure			1.5MPa
Applicable press. range (3)	VNB□□1□		Low vacuum to 0.5MPa
	VNB□□ 3/4 □		Low vacuum to 1MPa
External pilot air	Press.	VNB□□ 1/4 □	0.25 to 0.7MPa
		VNB□□ 2/3 □	0.1 to 0.5MPa
	Lubrication		Not required (Use turbine oil No.1 (ISO VG32), if lubricated.) (2)
	Temperature		–5 to 50°C (Air operated: 60°C) (1)
Mounting orientation			Unrestricted (4)

Note 1) No freezing
Note 2) Lubrication is not allowed in case of seal material EPR.
Note 3) The pressure differential between Port 1 (A) and 2 (B) must not exceed the maximum operating pressure.
Note 4) For external pilot solenoid, it is recommended that the pilot solenoid valve be oriented either vertically upward or horizontally.

Option Specifications

Vacuum pilot valve VNB□□□□V

(Valve size 2 to 7)

It is used when the valve is to be operated by the main vacuum in the absence of pressurized air.

Valve specifications

Fluid	Vacuum
Pressure range	1 to 760 Torr
Pilot pressure range	1 to 400 Torr

Process Valves

For more product options and details see our specific catalogues or on-line information.

Specifications

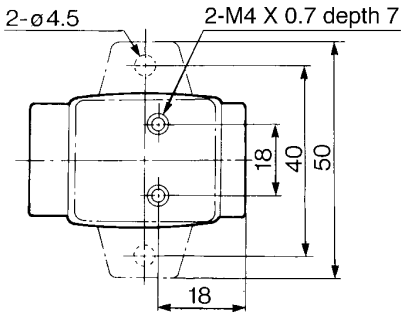
Pilot Solenoid Specifications

Port size			6A to 25A	32A to 50A
Pilot solenoid valve			SF4-□□□-23	VO307□-DZ-Q
Electrical entry			DIN connector	DIN connector
Coil rated voltage	AC (50/60Hz)		100V, 110V, 200V, 220V, 280V	
	DC		12V, 24V	
Allowable voltage			–15% to +10%of rated voltage	
Coil insulation			Class B or equivalent (130°C)	
Temperature rise			≤35°C (Application of rated voltage)	≤70°C (Application of rated voltage)
Apparent power	AC	Inrush	5.6VA(50Hz), 5.0VA(60Hz)	12VA(50Hz), 10.5VA(60Hz)
		Holding	3.4VA(50Hz), 2.3VA(60Hz)	7.5VA(50Hz), 6VA(60Hz)
Power consumption	DC		1.8W	4.8W
Manual override			Non-locking push style Others (Option)	Non-locking push style

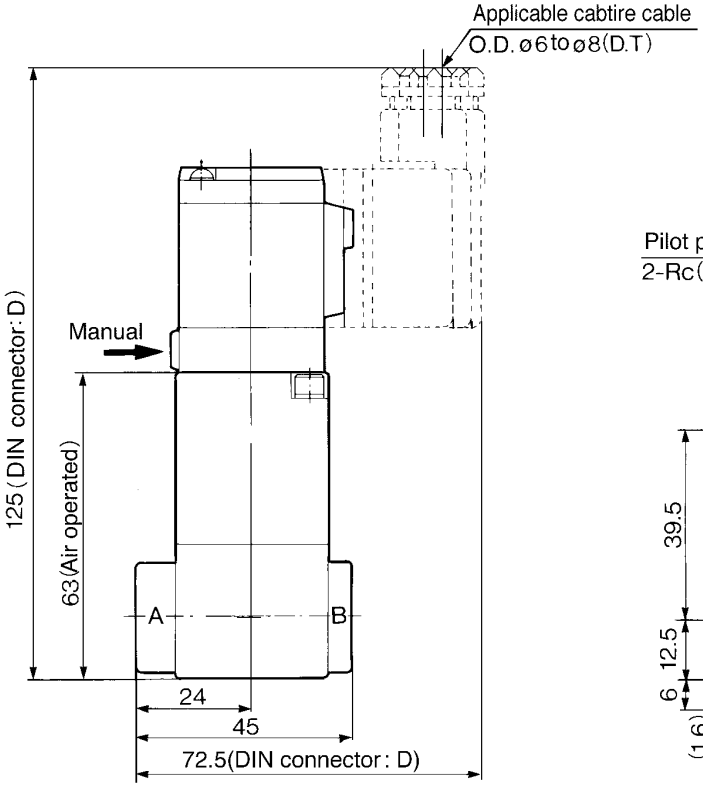
Dimensions

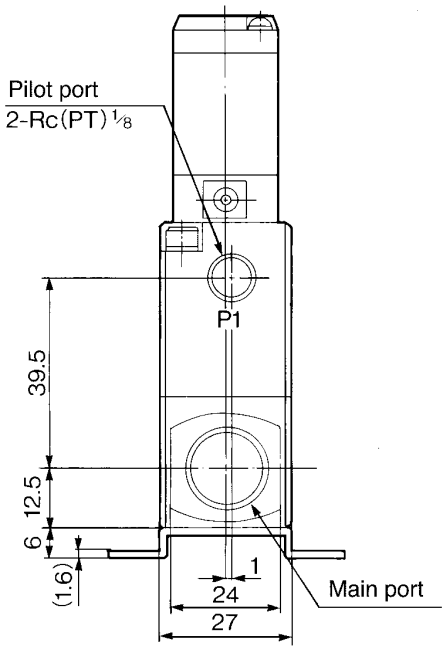
Port size 6A, 8A, 10A

Standard



Model	Main port
VNB100□-F6A	1/8
VNB100□-F8A	1/4
VNB100□-F10A	3/8

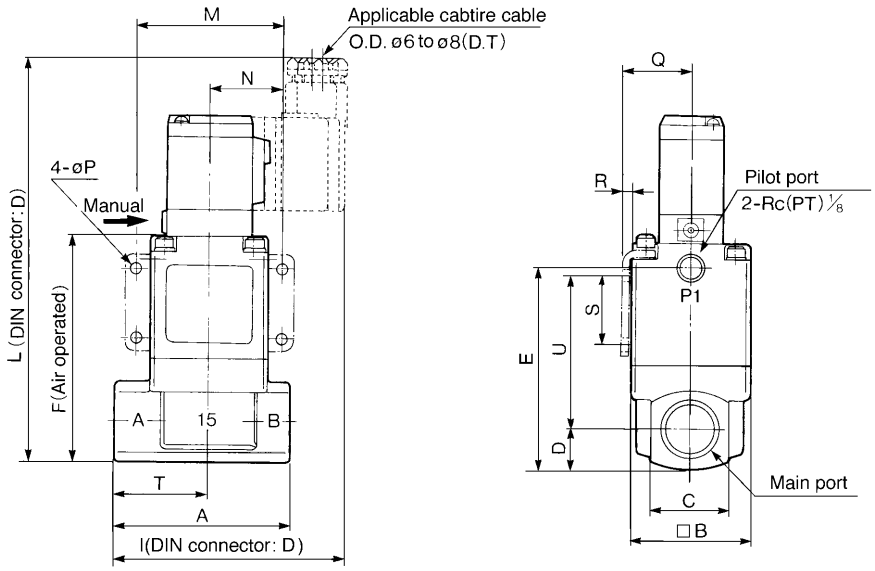




Dimensions

Port size 10A, 15A, 20A, 25A

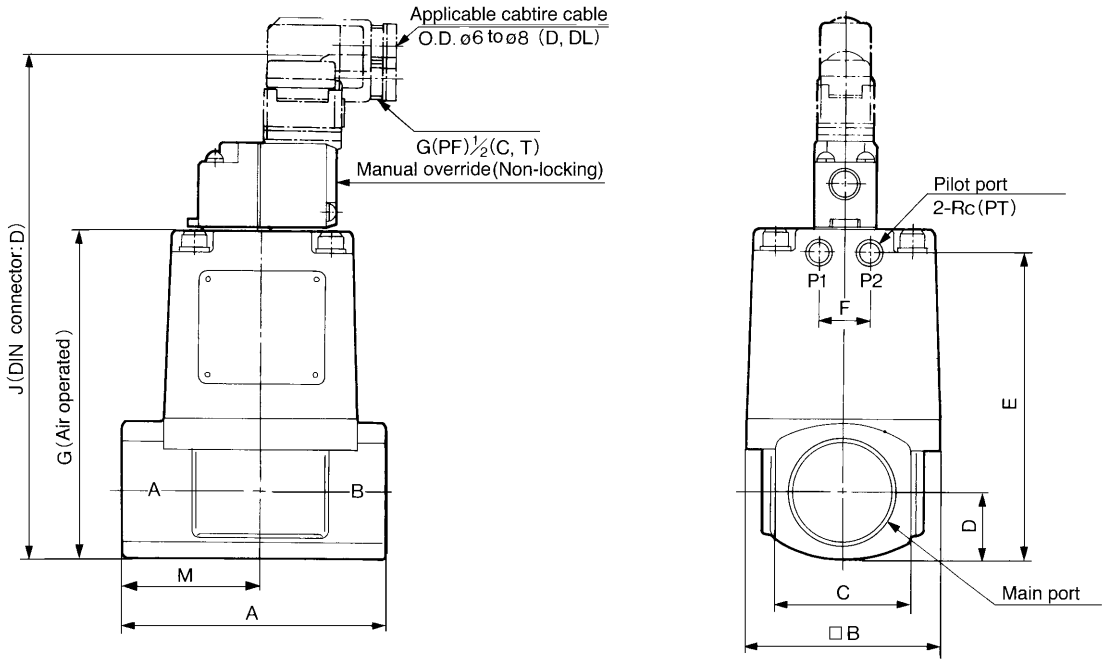
Standard



Model	Main Port	A	B	C	D	E	F	I	L	M	N	P	Q	R	S	T	U
VNA2□□□-F10A	3/8	63	42	28	14	72.5	80.5	82.5	142.5	52	26	4.5	24.3	2.3	25	34	55
VNA2□□□-F15A	1/2																
VNA3□□□-F20A	3/4	80	50	35	17.5	84	92	91.5	154	62	31	5.5	28.3	2.3	30	43	60.5
VNA4□□□-F25A	1	90	60	40	20	100	108	97.5	170	72	36	6.5	33.3	2.3	35	49	73

Port size 10A, 15A, 20A, 25A

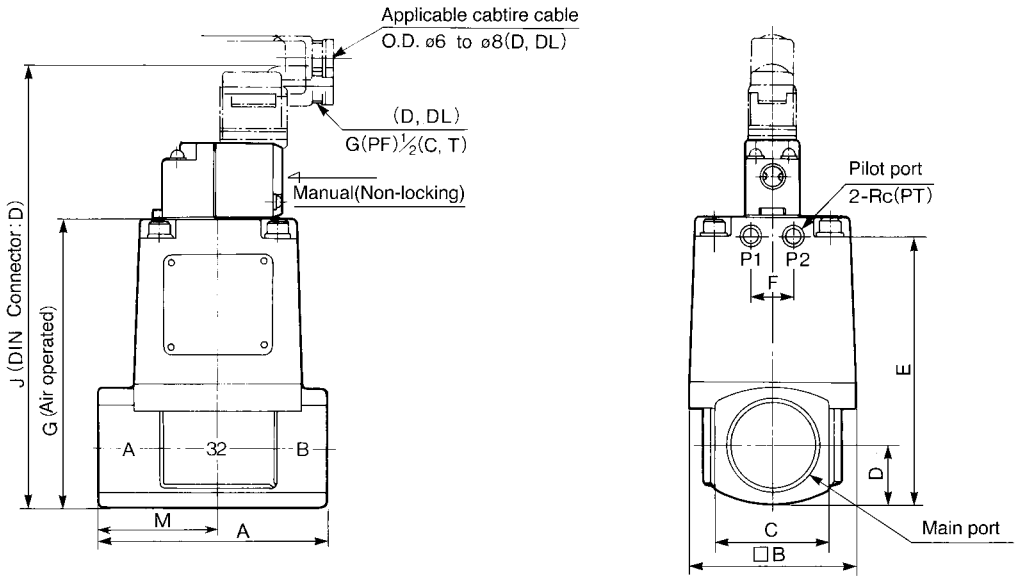
Vacuum Pilot



Model	Main Port	Pilot port Rc(PT)	A	B	C	D	E	F	G	J	M
VNA5□□□-F32A	1 1/4	1/8	105	77	53	26.5	120.5	20	129.5	219.5	55
VNA6□□□-F40A	1 1/2	1/4	120	96	60	30	137	24	147	237	63
VNA7□□□-F50A	2	1/4	140	113	74	37	160	24	170	260	74

Dimensions

Port size 32A, 40A, 50A
Standard/ Vacuum Pilot



Model	Main port	Pilot port Rc(PT)	A	B	C	D	E	F	G	J	M
VNB5□□□□-32A	1 1/4	1/8	105	77	53	26.5	120.5	20	129.5	219.5	55
VNB6□□□□-40A	1 1/2	1/4	120	96	60	30	137	24	147	237	63
VNB7□□□□-50A	2	1/4	140	113	74	37	160	24	170	260	74

Steam Valve: 2 Port Valve For Steam
Series VND

Features

- Temperatures up to 180°C are possible.
- PTFE seals as standard.
- Seven body sizes, ports from 1/8" to 2".
- Choice of brass or stainless body material.
- Functions NO and NC can be chosen.
- Air pilot operated robust poppet design.
- High flow capacities.

How to Order

Air operated

EVND [2] 0 [0] D [S] — [F] [15A] — [L]

Body option	
–	Standard
S	Stainless steel body

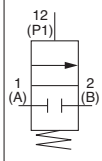
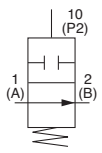
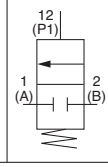
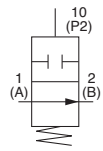
Thread type	
F	G Ported

Option	
–	None
S	With visual verification of operation

Valve size / Valve type / Port size

Symbol	Orifice size [mm]	Symbol 0 N.C.	Symbol 2 N.O.	Symbol 4 N.C.	Symbol	Port size [G]
1	ø7	–	●	●	6A	1/8
		–	●	●	8A	1/4
		–	●	●	10A	3/8
2	ø15	●	●	–	10A	3/8
		●	●	–	15A	1/2
3	ø20	●	●	–	20A	3/4
4	ø25	●	●	–	25A	1
5	ø32	●	●	–	32A	1 1/4
6	ø40	●	●	–	40A	1 1/2
7	ø50	●	●	–	50A	2

Symbols

Valve size \ Valve type	N.C. Normally closed	N.O. Normally open
VND1		
VND 2 3 4 5 6 7		

Product Recommendation

Stocked items for fast delivery

EVND104D-F8A-L	EVND104DS-F10A-L	EVND200DS-F15A	EVND400D-F25A	EVND600D-F40A-L
EVND104DS-F8A-L	EVND200D-F10A-L	EVND200DS-F15A-L	EVND400D-F25A-L	EVND700D-F50A-L
EVND104D-F10A	EVND200D-F15A	EVND300D-F20A-L	EVND400DS-F25A-L	
EVND104DS-F10A	EVND200D-F15A-L	EVND300DS-F20A-L	EVND500D-F32A-L	

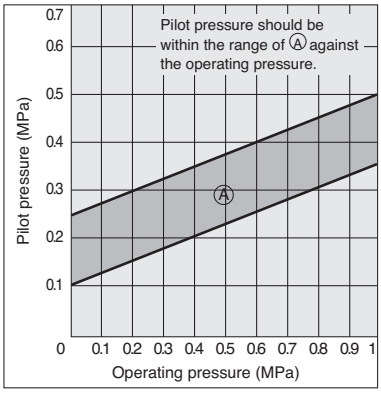
Related Products

Series V100 - Valves - page 353
Series SYJ300/500/700 - Valves - page 369
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Valve Specifications

Fluid			Steam
Fluid temperature			–5 to 180°C No Freezing
Ambient temperature			–5 to 60°C No Freezing
Proof pressure			1.5 MPa
Operating pressure range			0 to 0.97 MPa
External pilot air	Pressure	N.C.	0.3 to 0.7 MPa
		N.O.	0.1 + 0.25 x (Operating pressure) to 0.25 + 0.25 x (Operating pressure) MPa Refer to below "Graph (1)".
	Lubrication		Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)
	Temperature		–5 to 60°C *

Graph (1)
VND□ 02 D Pilot Pressure (N.O. type)



Flow Characteristics

Model	Port size	Flange Note)	Orifice size ø [mm]	Flow characteristics Av x 10^{-5}	Weight [kg]
VND10□D-6A	1/8	–	7	26	0.3
VND10□D-8A	1/4	–		28	
VND10□D-10A	3/8	–		31	
VND20□D-10A		–	15	120	0.6
VND20□D-15A	1/2	–		130	
VND30□D-20A	3/4	–	20	240	0.9
VND40□D-25A	1	–	25	380	1.4
VND50□D-32A	1 1/4	–	32	440	2.3
VND60□D-40A	1 1/2	–	40	920	3.6
VND70□D-50A	2	–	50	1500	5.7

How to Order Brackets

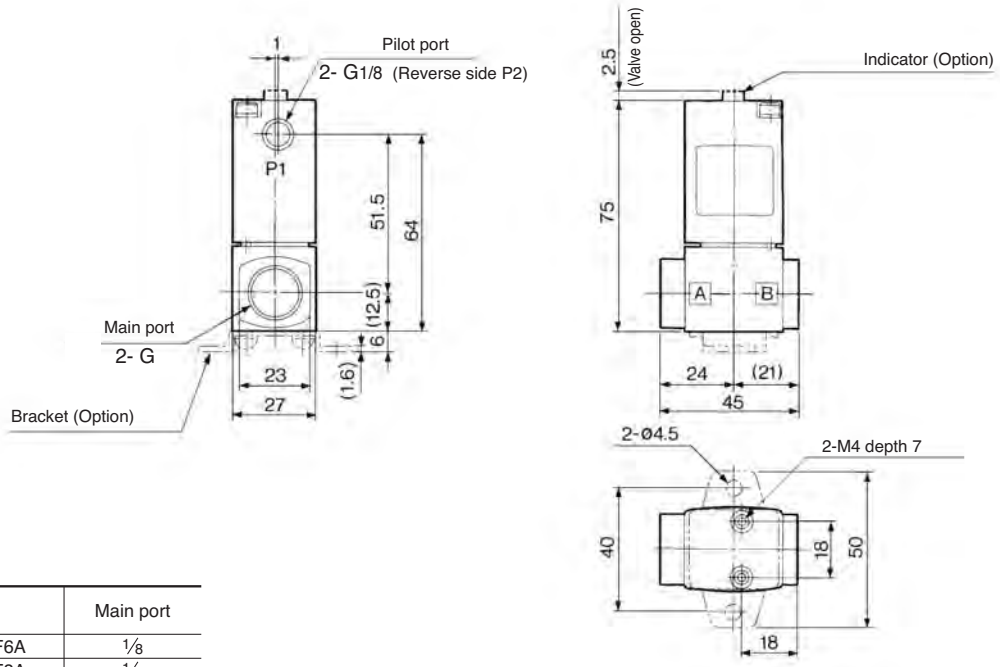
Valve Body Size	Mounting Bracket Assemblies
1	VN1-16
2	VN2-16
3	VN3-16
4	VN4-16

For more product options and details see our specific catalogues or on-line information.

Process Valves

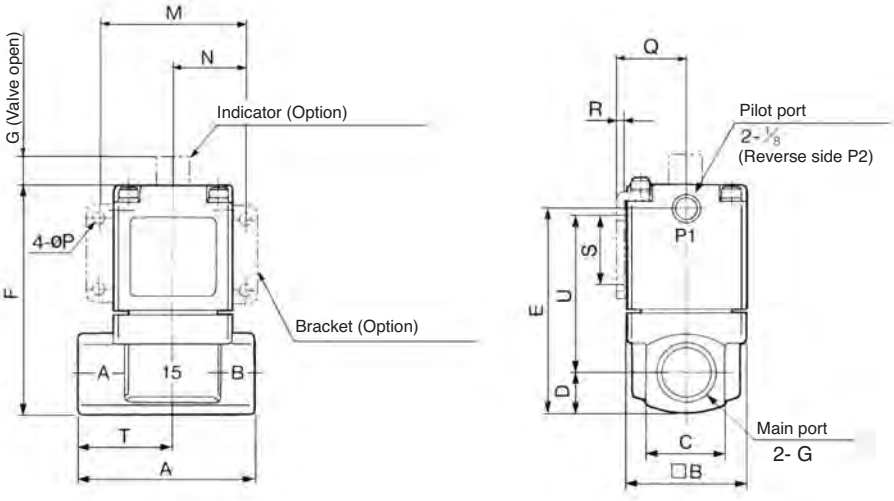
Dimensions

Port size 6A, 8A, 10A



Model	Main port
VND10□D-F6A	1/8
VND10□D-F8A	1/4
VND10□D-F10A	3/8

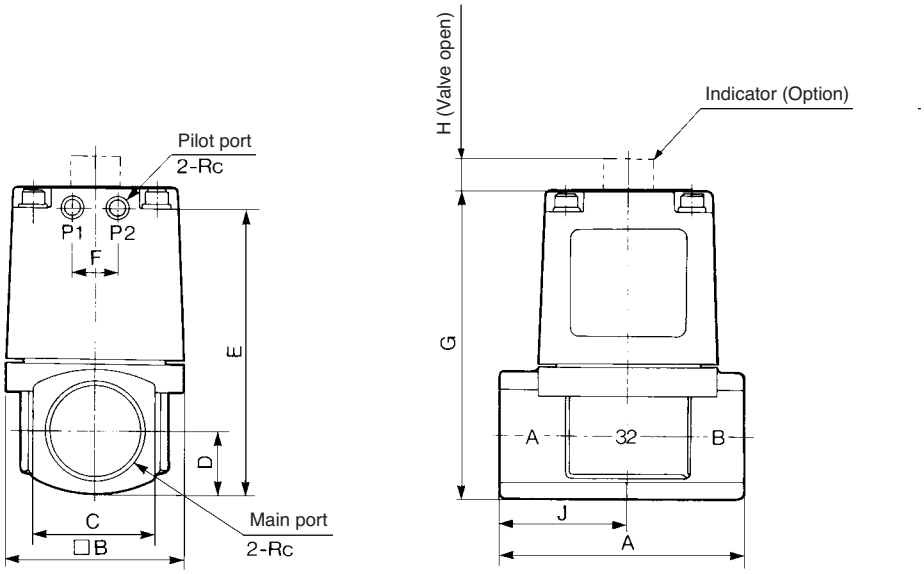
Port size 10A, 15A, 20A, 25A



Model	Main port	A	B	C	D	E	F	G	M	N	P	Q	R	S	T	U
VND20□D-F10A	3/8	63	42	28	14	73.5	81.5	4	52	26	4.5	24.3	2.3	25	34	56
VND20□D-F15A	1/2															
VND30□D-F20A	3/4	80	50	35	17.5	85	93	5	62	31	5.5	28.3	2.3	30	43	61.5
VND40□D-F25A	1	90	60	40	20	101	109	6	72	36	6.5	33.3	2.3	35	49	74

Dimensions

Port size | 32A, 40A, 50A



Model	Main port Rc	Pilot port Rc	A	B	C	D	E	F	G	H	J
VND50□D-F32A	1 1/4	1/8	105	77	53	26.5	121.5	20	130.5	8	55
VND60□D-F40A	1 1/2	1/4	120	96	60	30	138	24	148	10	63
VND70□D-F50A	2	1/4	140	113	74	37	161	24	171	12	74

Process Pump
Series PA3000/5000

Features

- Compact, large capacity diaphragm type pump (PA3000:Up to 20 ℓ/min, PA5000 up to 45 ℓ/min).
- Compatible with a wide variety of fluids.
- Easy adjustament of discharge pressure and flow rate with adjustament of the pilot air pressure.
- Self-priming type makes priming unnecessary.

How to Order

PA 3 1 1 0 – F 03

Body size

3	3/8 standard
5	1/2 standard

Liquid contact body material

1	ADC12 (aluminum)
2	SCS14 (stainless steel)

Diaphragm material

Symbol	Diaphragm material	Applicable actuation	
		Automatically operated	Air operated
1	PTFE	●	●
2	NBR	●	–

Actuation

0	Automaticaly operated
3	Air operated

Thread type

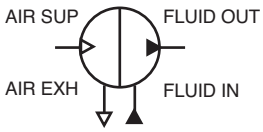
F	G

Connection port size

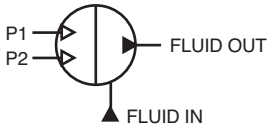
03	3/8 (10A): PA3
04	1/2 (15A): PA5
06	3/4 (20A): PA5

Symbol

Automatically operated type



Air operated type



Product Recommendation

Stocked items for fast delivery

PA3110-F03	PA3210-F03	PA3213-F03	PA5120-F04	PA5110-F06
PA3120-F03	PA3220-F03	PA5110-F04	PA5210-F04	PA5210-F06

Related Products

Series AN - Silencer- page 556
Series PF3W - Digital Flow Swith for Water - page 1317
Series ZSE/ISE80 - Digital Pressure Switch for Fluids - page 1290
Series VNB - 2 Port Air Operated Valves - page 1466
Series VXZ - Pilot Operated 2 Port Solenoid Valves - page 1451
Series AW - Filter Regulator - page 1088
Series SY - Valves - page 65, 101, 417
Series VQ - Valves - page 241
Series SYJ300/500/700 - Valves - page 369
Series VHS- Hand Valve - page 552
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Specifications Automatically Operated type

Model		Automatically operated type			
		PA31□0	PA32□0	PA51□0	PA52□0
Port size	Main fluid suction/ discharge port	3/8		1/2, 3/4	
	Pilot air supply/ exhaust port	G 1/4			
Material	Liquid contact areas	ADC12	SCS14	ADC12	SCS14
	Diaphragm	PTFE, NBR			
	Check valve	PTFE, PFA			
Discharge rate		1 to 20ℓ/min		5 to 45ℓ/min	
Average discharge pressure		0 to 0.6MPa			
Pilot air consumption		Maximum 200ℓ/min (ANR)		Maximum 300ℓ/min (ANR)	
Suction lifting range	Dry	Up to 1m (interior of pump dry)		Up to 2m (interior of pump dry)	
	Wet	Up to 6m (liquid inside pump)			
Fluid temperature		0 to 60°C (with no freezing)			
Ambient temperature		0 to 60°C (no freezing)			
Noise value		Max. 92 dB(A) (80dB(A): With silencer AN20)		Max. 89 dB(A) (78dB(A): With silencer AN20)	
Pilot air pressure		0.2 to 0.7MPa			
Withstand pressure		1.05MPa			
Mounting position		Horizontal (with mounting foot at bottom)			
Weight		1.7kg	2.2kg	3.5kg	6.5kg

* Each of the values above indicates use at ordinary temperatures with fresh water.

Specifications Air Operated Type

Model			Air operated type			
			PA3113	PA3213	PA5113	PA5213
Port size	Main fluid suction/ discharge port		Rc 3/8		Rc 1/2, 3/4	
	Pilot air supply/ exhaust port		G 1/4			
Material	Liquid contact areas		ADC12	SCS14	ADC12	SCS14
	Diaphragm		PTFE			
	Check valve		PTFE, PFA			
Discharge rate			0.1 to 12ℓ/min		1 to 24ℓ/min	
Average discharge pressure			0 to 0.4MPa			
Pilot air consumption rate			Maximum 150ℓ/min (ANR)		Maximum 250ℓ/min (ANR)	
Suction lifting range Note1)		Dry	Up to 1m (interior of pump dry)		Up to 0.5m (interior of pump dry)	
		Wet	Up to 6m (liquid inside pump)			
Fluid temperature			0 to 60°C (with no freezing)			
Ambient temperature			0 to 60°C (no freezing)			
Pilot air pressure			0.1 to 0.5MPa			
Withstand pressure			0.75MPa			
Mounting position			Horizontal (with mounting foot at bottom)			
Weight			1.7kg	2.2kg	3.5kg	6.5kg
Recommended operating cycles			1 to 7Hz (0.2 to 1Hz also possible depending on conditions Note 2))			
Pilot air solenoid valve recommended Cv factor Note 3)			0.20		0.45	

∗ Each of the values above indicates use normal temperatures with fresh water.

Note 1) With cycles at 2Hz or more

Note 2) After initial suction of liquid operating at 1 to 7Hz, it can be used with operation at lower cycles. Since a large quantity of liquid will be pumped out, use a suitable throttle in the discharge port if problems occur.

Note 3) With a low number of operating cycles, even a valve with a small Cv factor can be operated.

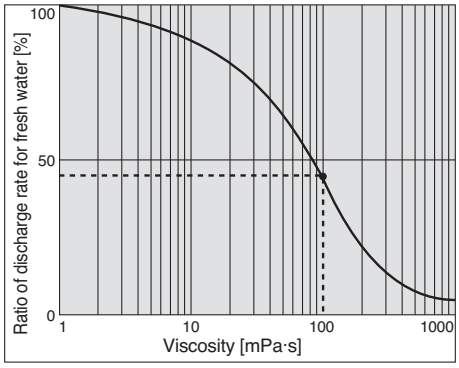
Materials

Models \ Liquid contact area	Body	Aluminium (ADC12)		Stainless steel (SCS14)	
	Diaphragm	Fluororesin	Nitrile rubber	Fluororesin	Nitrile rubber
Series PA3000		PA3110	PA3120	PA3210	PA3220
Series PA5000		PA5110	PA5120	PA5210	PA5220

Flow Characteristics

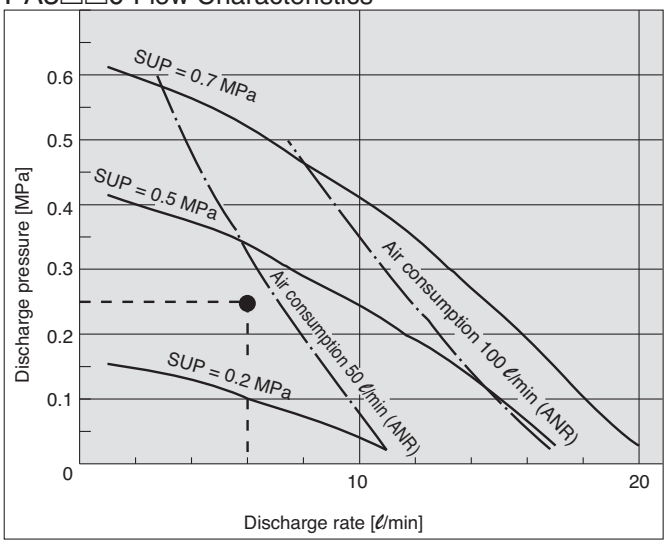
Viscosity characteristics

(flow rate correction for viscous fluids)

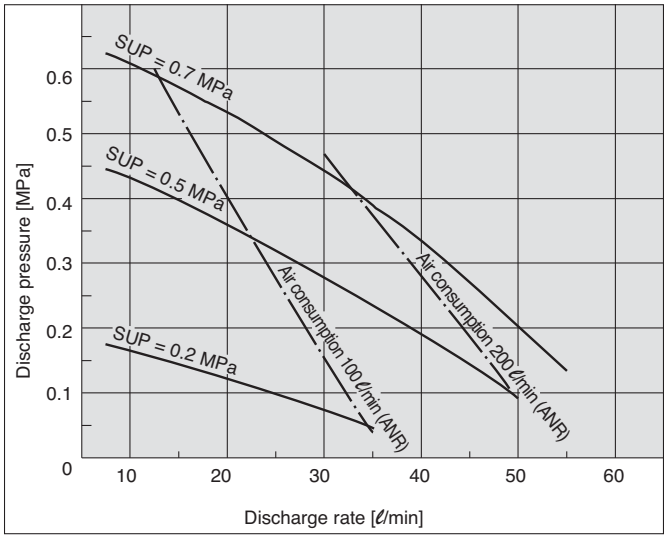


Performance Curve: Automatically Operated Type

PA3□□0 Flow Characteristics



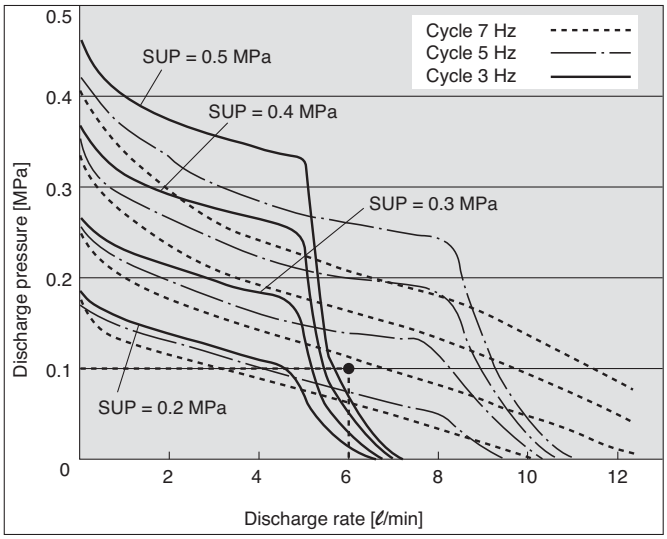
PA5□□0 Flow Characteristics



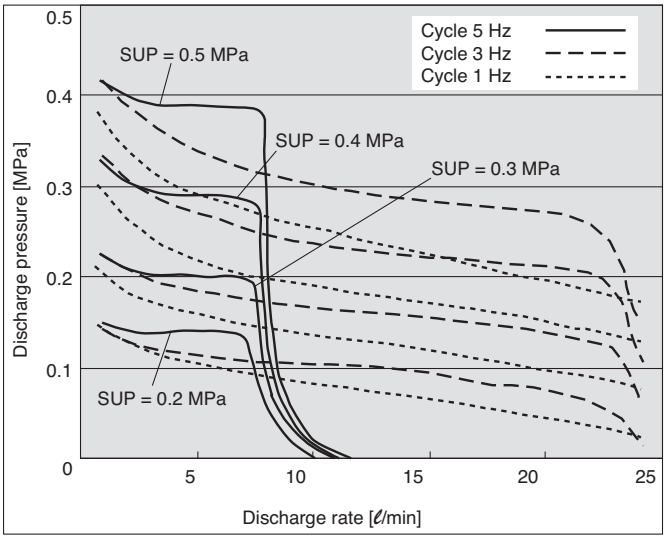
Performance Curve: Air Operated Type

Performance Curve: Air Operated Type

PA3□13 Flow Characteristics

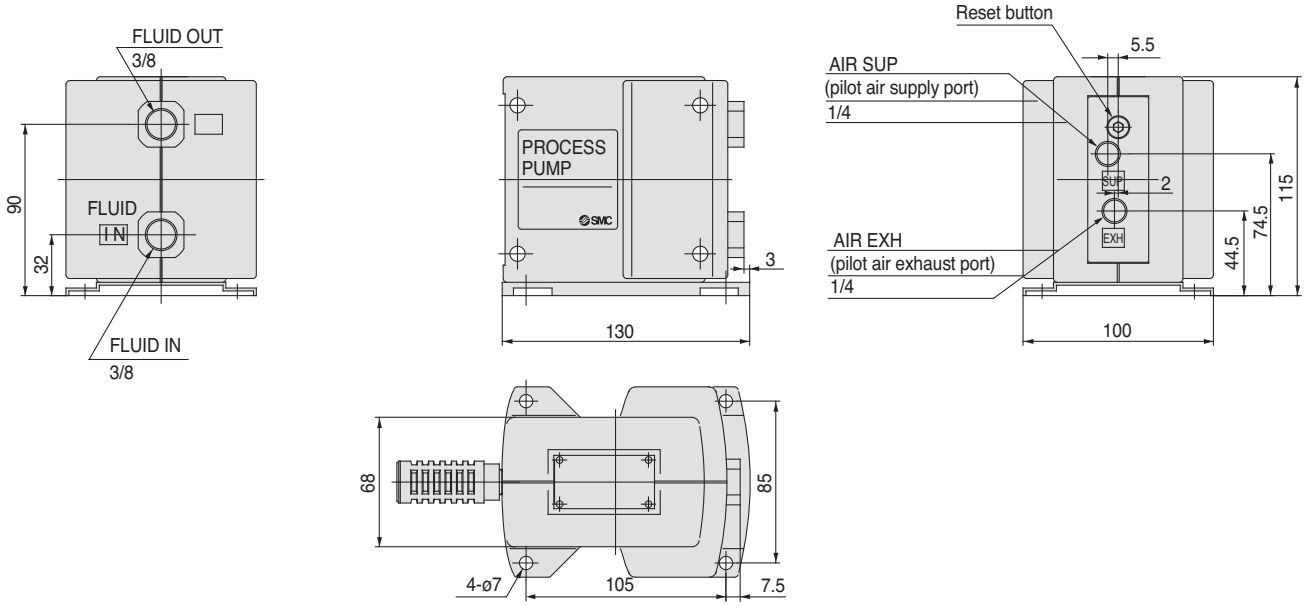


PA5□13 Flow Characteristics

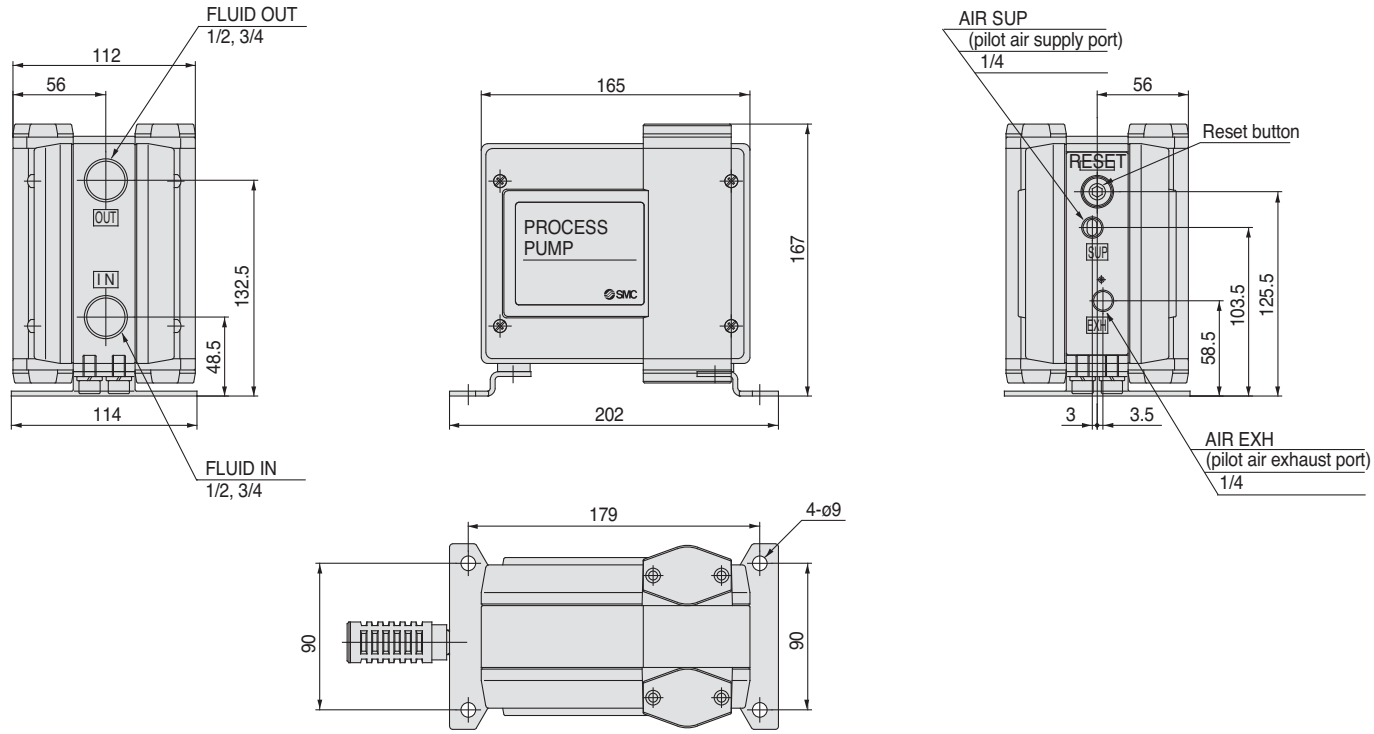


Dimensions

PA3000



PA5000



Electro-Pneumatic Positioner (Lever type / Rotary type)
Series IP8000/8100

Features

- Lever arm and rotary shaft versions.
- 4~20mA current input.
- IP65 splashproof construction.
- Single or double acting
- ATEX version available

How to Order

ATEX directive compliance and connection

X14	ATEX directive category 2 Intrinsically safe explosion-proof item Air connection port: 1/4 NPT Conduit connection port: M20 x 1.5 With blue cable gland

Option

Symbol	Option	Applicable model	
		IP8000-X14	IP8100-X14
—	—	●	●
L	Low temperature (–40 to 60°C)	●	●
W	With internal opening indicator plate	—	●

ATEX Directive Intrinsically Safe Explosion proof: IP8 [000] – 0 [3] [0] – [ ] – X14 – [ ]

Standard: IP8 [000] – 0 [3] [0] – [ ] – [ ]

Type

000	Electro-pneumatic lever type
100	Electro-pneumatic rotary type

Pressure gauge

Symbol	Pressure
0	None
1	0.2 MPa
2	0.3 MPa
3	1.0 MPa

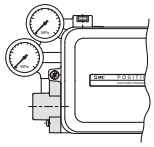
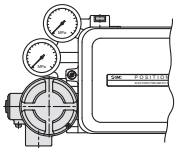
Connection

Symbol	Air	Electric	Applicable model	
			IP8□00-0□0	IP8□00-0□1
—	Rc1/4	G1/2	●	●
M	Rc1/4	M20 x 1.5	●	—
N	Rc1/4	1/2NPT	●	—

Lever type
IP8000

Rotary type
IP8100

Construction Note 1)

0	1
No terminal box	With terminal box (ExdIIBT5) TIIS (Japan) explosion-proof item
	

Accessories Note 2)

Symbol	Accessories	Applicable model	
		IP8000	IP8100
—	None (Standard)	●	●
A	ø0.7 Output restriction with pilot valve Note 3)	●	●
B	ø1.0 Output restriction with pilot valve Note 3)	●	●
C	Fork lever-type fitting M Note 4)	—	●
D	Fork lever-type fitting S Note 5)	—	●
E	For stroke 35 to 100 mm with lever unit Note 6)	●	—
F	For stroke 50 to 140 mm with lever unit Note 6)	●	—
G	Compensation spring (A) Note 7)	●	●
H	With external scale plate	—	●
J	With opening current transmission (4 to 20 mA DC)/Positive operation Note 8)	—	●
JR	With opening current transmission (4 to 20 mA DC))/Reverse operation Note 8)	—	●

Note 1) For construction No.1(with terminal box), the ambient and fluid temperatures are as follows:
- ExdIIBT5: –20 to 60°C
- Non-explosion proof (non hazardous locations only): –20 to 80°C

The positioner body is EXdIIBT5 labeled.

Note 2) If two or more accessories are required, the part numbers should be made according to alphabetical order. (ex. IP8100-011-AG)

Note 3) "A" is applied to approx 90cm^3-capacity actuator.
"B" is applied to approx 180cm^3-capacity actuator.

Note 4) Fork lever-type fitting MX (Connection thread: M6 x 1) for IP8100-0□0-□-X14.

Note 5) Fork lever-type fitting SX (Connection thread: M6 x 1) for IP8100-0□0-□-X14.

Note 6) Standard lever is not attached.

Note 7) It is to be used together with "A" or "B" when tending to overshoot by the use of "A" or "B".
It is mounted to the body as a replacement of the standard compensation spring.

Note 8) Symbol J/JR is with terminal box, non-explosion proof specification. Select 1 for Construction. Positive operation signifies clockwise rotational direction by the main actuator shaft when positioner cover is viewed from the front.

Product Recommendation

Stocked items for fast delivery

IP8000-030-Q	IP8100-000-H-Q

Related Products

Series G - Pressure Gauge - www.smc.eu
Series AF - Air Filter- page 1082
Series AW - Filter Regulator - page 1088
Series IR - Precision Regulator - page 1095
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Specifications Note 1)

Type / Item	IP8000		IP8100	
	Electro-Pneumatic Positioner			
	Lever type lever feedback		Rotary type cam feedback	
	Single action	Double action	Single action	Double action
Input current	4 to 20 mA DC (Standard) Note 2)			
Min. operating current	—			
Intra-terminal voltage	—			
Max. supplied power	—			
Input resistance	235 ±15Ω (4 to 20 mA DC)			
Supply air pressure	0.14 to 0.7 MPa			
Standard stroke	10 to 85 mm (Allowable deflection angle 10 to 30°)		60 to 100° Note 3)	
Sensitivity Note 4)	Within 0.1% F.S.	Within 0.5% F.S.		
Linearity Note 4)	Within ±1% F.S.	Within ±2% F.S.		
Hysteresis Note 4)	Within 0.75% F.S.	Within 1% F.S.		
Repeatability Note 4)	Within ±0.5% F.S.			
Coefficient of temperature	Within 0.1% F.S./C			
Supply pressure fluctuation	Within 0.3% F.S./0.01 MPa			
Output flow Note 5)	80 ℓ/min (ANR) or more (SUP = 0.14 MPa) 200 ℓ/min (ANR) or more (SUP = 0.4 MPa)			
Air consumption Note 5)	5 ℓ/min (ANR) or less (SUP = 0.14 MPa) 11 ℓ/min (ANR) or less (SUP = 0.4 MPa)			
Ambient and fluid temperature	General structure: –20 to 80°C			
	TIIS explosion-proof: –20 to 60°C ATEX intrinsically safe explosion-proof: –20 to 80°C (T5) –20 to 60°C (T6) –40 to 60°C (T6)/-L type low-temperature specification			
Explosion proof construction Note 6)	TIIS explosion-proof construction (ExdIIBT5) ATEX intrinsically safe explosion-proof construction (II2G Ex ibIICT5/T6)			
ATEX intrinsically safe explosion-proof parameter (current circuit)	Ui ≤ 28 V, Ii ≤ 125 mA, Pi ≤ 1.2 W, Ci ≤ 0 nF, Li ≤ 0 mH			
Exterior covering enclosure	JISF8007, IP65 (conforms to IEC Pub.60529)			
Transmission method Note 6)	—			
Air connection port	Rc 1/4 female thread, NPT 1/4 female thread			
Electrical connection port Note 7)	G 1/2 female thread, M20 x 1.5 female thread, NPT 1/2 female thread			
Material/coating	Aluminum diecast body/baking finish with denatured epoxy resin			
Weight	2.4 kg (Without terminal box)/2.6 kg (With terminal box)			

Note 1) Specification values are given at normal temperature (20°C).
Note 2) 1/2 Split range (Standard)
Note 3) Stroke adjustment: 0 to 60°, 0 to 100°
Note 4) Characteristics relating to accuracy differ depending on combination with other constituent loop equipment, such as positioners and actuators.
Note 5) (ANR) indicates JIS B0120 standard air.
Note 6) Model selection required for explosion proof construction and HART transmission.
Note 7) Thread type can be specified by model selection.

Optional Specifications

Item		Type: IP8100-0□1-J/JR (Non-explosion proof)
		Electro-Pneumatic Positioner
Analogue output	Wiring	2-line
	Output signal	4 to 20 mA DC
	Power supply voltage	12 to 35 V DC
	Load resistance	(Power supply voltage –12 V) 20 mA DC or less
	Accuracy	±2% F.S. or less Note 1)
	Hysteresis	Within 1% F.S.
Alarm output 1, 2	Wiring	—
	Applicable standards	—
	Power supply voltage	—
	Load resistance	—
	Alarm ON	—
	Alarm OFF (Leakage current)	—
	Response time	—

Note 1) Indicates analogue output accuracy with respect to actuator angle.

For more product options and details see our specific catalogues or on-line information.

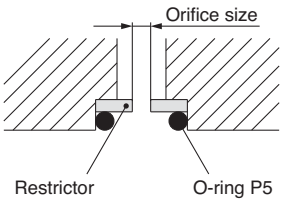
Accessories / Option

Pilot valve with output restriction (IP8000 / 8100)

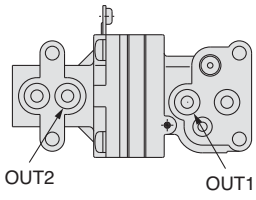
In general, mounting on a small-size actuator may cause hunting. For prevention, a pilot valve with a built-in output restriction is available. The restriction is removable.

Actuator Capacity	Orifice size	Part number	Pilot unit part number	Model selection accessory
90 cm^3	ø0.7	P36801080	P565010-18	A
180 cm^3	ø1	P36801081	P565010-19	B

Note) Output orifice not required for Smart Positioner regardless of actuator capacity.



Restrictor mounting diagram



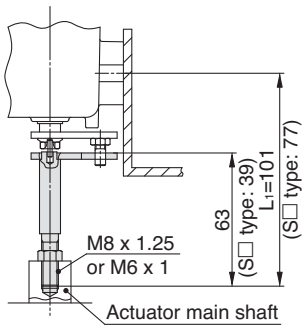
Pilot valve bottom view

Fork lever-type fittings (IP8100)

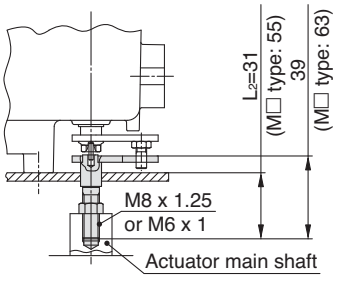
2 types of rotary type IP8100 fork lever-type fittings, that differ by installation dimensions dependent on bracket installation method, and 2 types of installation portion thread sizes, are available.
When installing on the side surface, using fork lever assembly M provides interchangeability with the installation dimensions of SMC IP610 positioner. When installing on the rear surface, using fork lever assembly S also provides interchangeability with the installation dimensions of SMC IP610 positioner.

Part name	Unit number	Installation portion thread size	Model selection accessory
Fork lever assembly M	P368010-24	M8 x 1.25	C
Fork lever assembly S	P368010-25		D
Fork lever assembly MX	P368010-36	M6 x 1	C Note)
Fork lever assembly SX	P368010-37		D Note)

Note) Installation portion thread size is M6 x 1 for IP8100-0□0-X14 when accessory C or D are selected.



Side mounting with the fork lever assembly M□



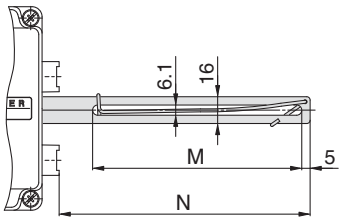
Rear mounting with the fork lever assembly S□

External feedback lever (IP8000)

Different feedback levers are available dependent upon valve strokes. Order according to the valve stroke.

Feedback lever types

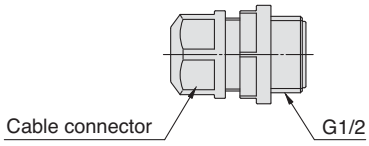
Stroke	Unit number IP8000	Size M	Size N	Model selection accessory
10 to 85 mm	P368010-20	125	150	Standard accessory
35 to 100 mm	P368010-21	110	195	E
50 to 140 mm	P368010-22	110	275	F
6 to 12 mm	P368010-260	75	75	Available as special order



Resin connector (Non-explosion proof specification)

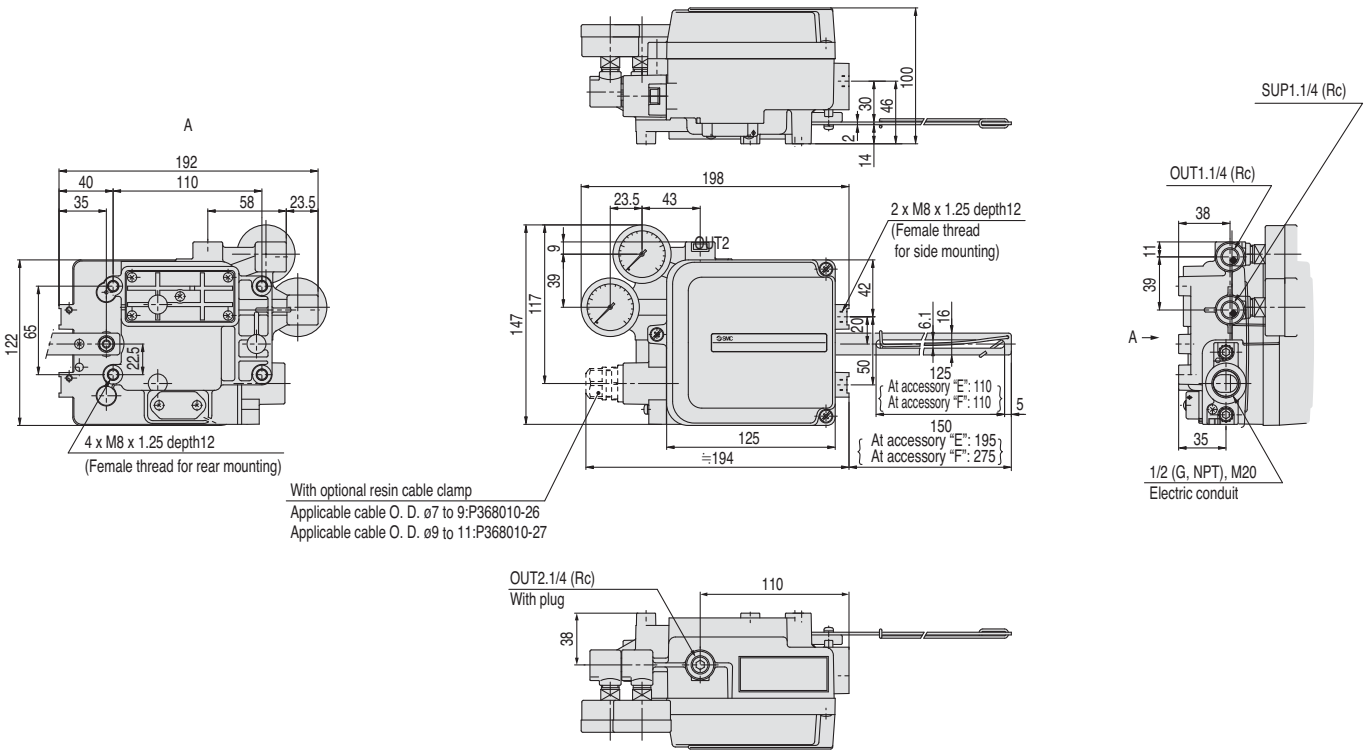
Optional cable connectors are available for different cable sizes. These are not for explosion proof applications. Recommended for use in indoor applications.

Part name	Part number	Suited cable outer diameter
Resin-made cable clamp unit (A)	P368010-26	ø7 to ø9
Resin-made cable clamp unit (B)	P368010-27	ø9 to ø11

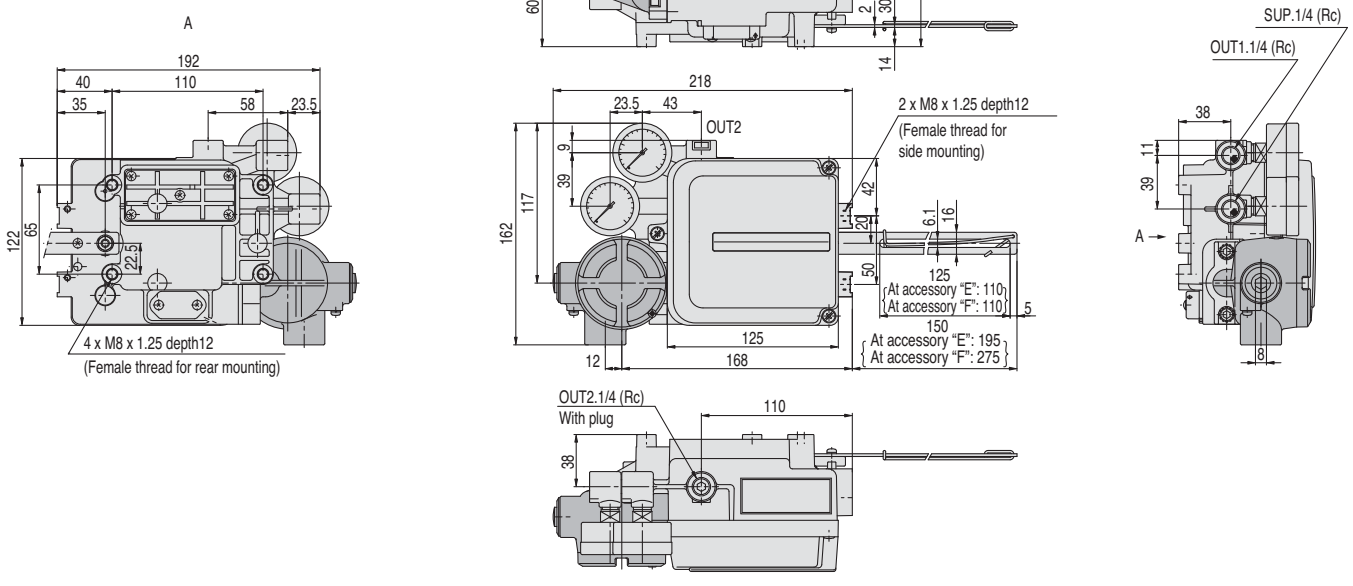


Dimensions

IP8000 (Lever type)
IP8000-0□0 (Without terminal box)

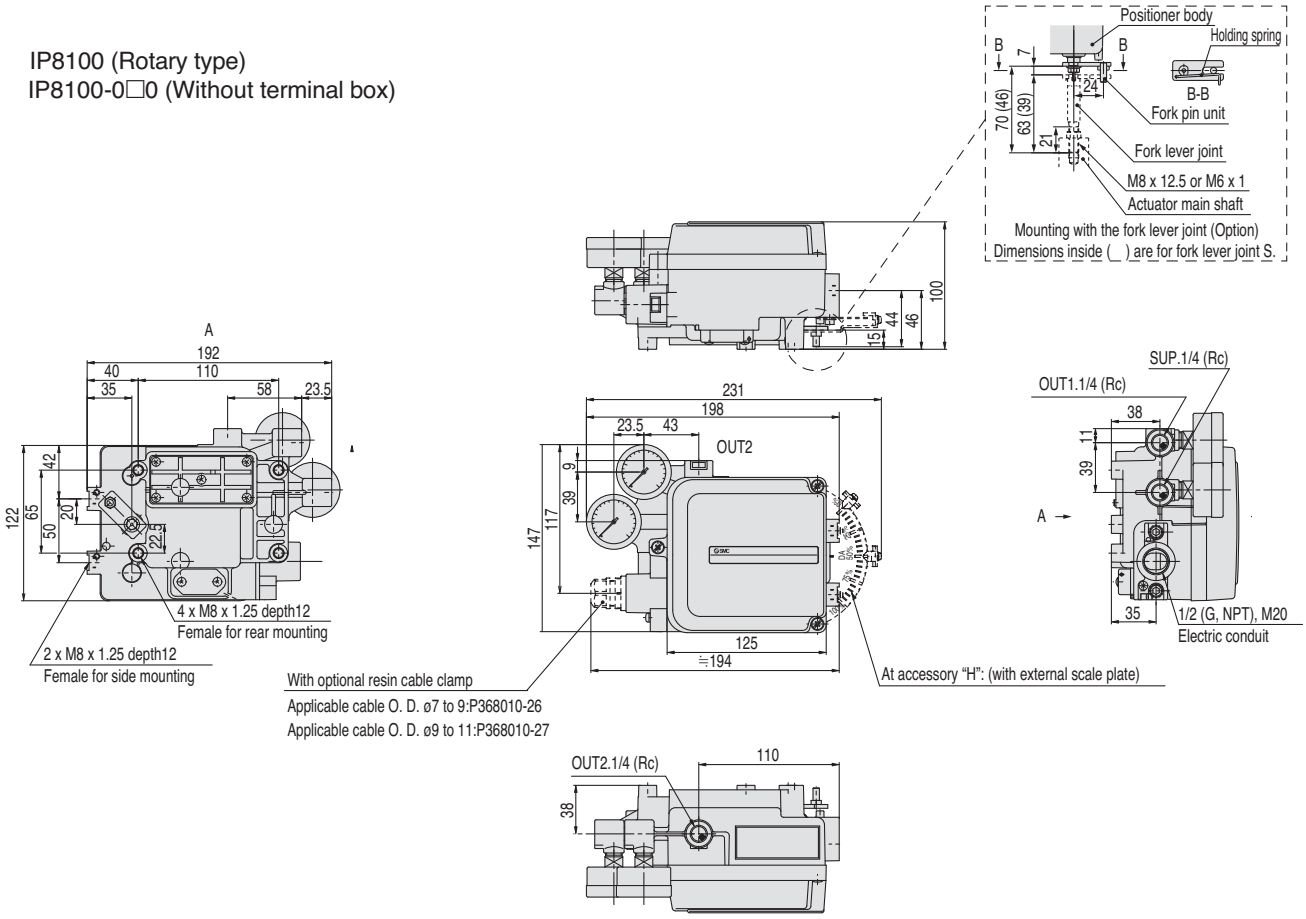


IP8000-0□1 (With terminal box)

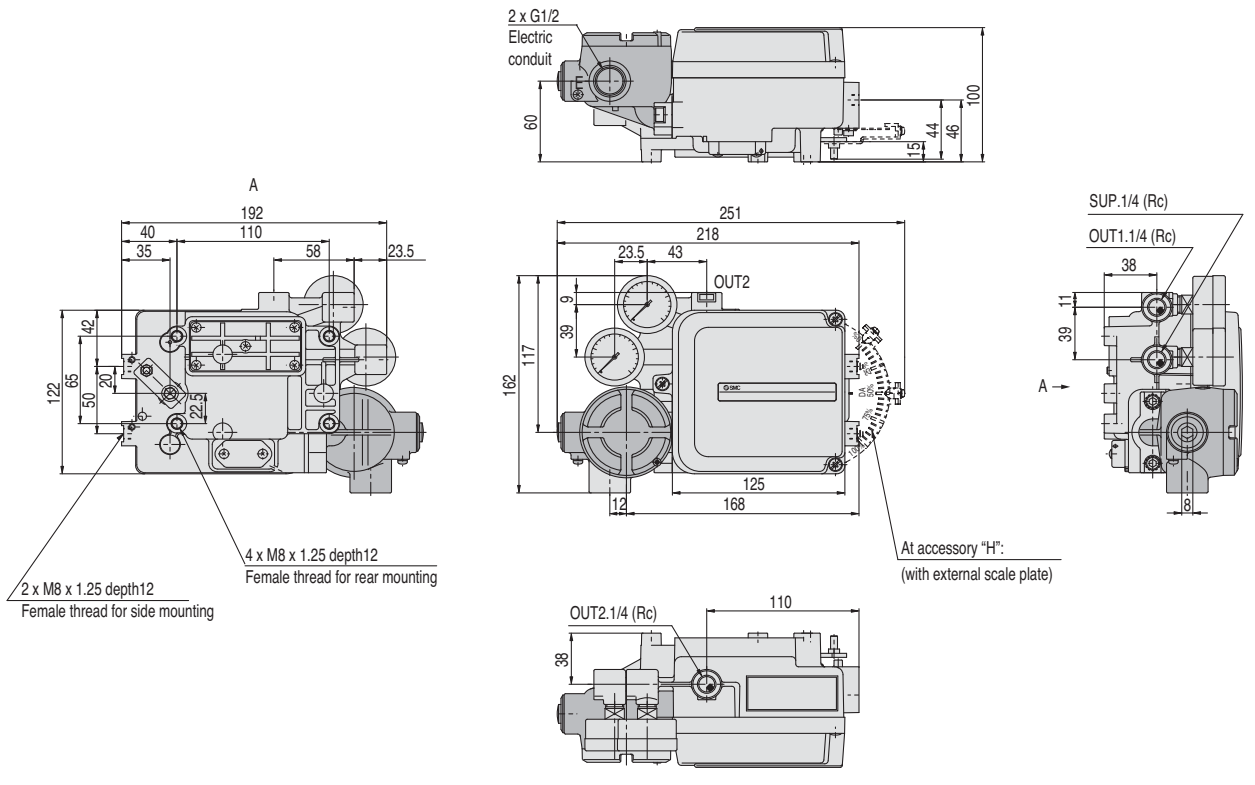


Dimensions

IP8100 (Rotary type)
IP8100-0□0 (Without terminal box)



IP8100-0□1 (With terminal box)



Smart Positioner (Lever type / Rotary type)
Series IP8001/8101

Features

- Easy remote parameter change and monitoring by the insertion of a built-in microcomputer and sensor.
- Easy zero and span adjustments thanks to an integrated auto-calibration function. Calibration by just clicking a button.
- Monitor output and software alarm for remote sensing.
- HART communication, enabling remote information exchange and switching signal from the mechanical to the smart positioner.
- ATEX compliant.

How to Order

ATEX directive compliance

52	ATEX directive category 1 Intrinsically safe explosion-proof item

Specifications

4	Intrinsically safe explosion proof (ATEX) + output function + HART transmission function

ATEX Directive Intrinsically Safe Explosion proof: **52 – IP8 [001] – 0 [3] 4 – [ ] – [ ] – [ ]**

Standard: **IP8 [001] – 0 [3] [0] – [ ] – [ ]**

Lever type
IP8001

Rotary type
IP8101

Type

001	Smart lever type
101	Smart rotary type

Pressure gauge

Symbol	Pressure gauge	Applicable model	
		IP8001	IP8101
1	0.2 MPa	●	—
2	0.3 MPa	●	—
3	1.0 MPa	●	●

Specifications

0	Basic type
2	With output function {Analogue (4 to 20 mA DC) output + Alarm output x 2}
3	With HART transmission function

ATEX temperature

Symbol	ATEX temperature	Applicable model	
		IP8001	IP8101
—	T4	●	●
T6	T5/T6	●	●

Connection

Symbol	Air	Electric
—	Rc1/4	G1/2
M Note)	Rc1/4	M20 x 1.5
N	Rc1/4	1/2NPT

Note) When the symbol is M for 52- ATEX directive items, a blue cable gland is included with the electrical connection.

Accessories Note 1)

Symbol	Accessories	Applicable model	
		IP8001	IP8101
—	None (Standard)	●	●
C	Fork lever-type fitting M	—	●
D	Fork lever-type fitting S	—	●
E	For stroke 35 to 100 mm with lever unit Note 2)	●	—
F	For stroke 50 to 140 mm with lever unit Note 2)	●	—
H	With external scale plate	—	●
W	Body with LCD window	●	●

Note 1) If two or more accessories are required, the part numbers should be given in alphabetical order. (ex. IP8101-010-CH)
Note 2) Standard lever is not attached.

Product Recommendation

Stocked items for fast delivery

IP8101-030-Q	IP8101-032-Q	IP8101-033-Q
IP8001-030-Q	IP8001-032-Q	IP8001-033-Q

Related Products

Series G - Pressure Gauge - www.smc.eu
Series AF - Air Filter- page 1082
Series AW - Filter Regulator - page 1088
Series IR - Precision Regulator - page 1095
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

For more product options and details see our specific catalogues or on-line information.

Specifications Note 1)

Item \ Type	IP8001	IP8101
	Smart Positioner	
	Lever type	Rotary type
	Single action / Double action	
Input current	4 to 20 mA DC (Standard) Note 2)	
Min. operating current	3.85 mA DC or more	
Intra-terminal voltage	12 V DC (equivalent to 600 input resistance, at 20 mA DC)	
Max. supplied power	1 W (Imax: 100 mA DC, Vmax: 28 V DC)	
Input resistance	—	
Supply air pressure	0.14 to 0.7 MPa	0.3 to 0.7 MPa
Standard stroke	10 to 85 mm (Allowable deflection angle 10 to 30°)	60 to 100° Note 3)
Sensitivity Note 4)	Within 0.2% F.S.	
Linearity Note 4)	Within ±1% F.S.	
Hysteresis Note 4)	Within 0.5% F.S.	
Repeatability Note 4)	Within ±0.5% F.S.	
Coefficient of temperature	Within 0.05% F.S./C	
Supply pressure fluctuation	— Note 5)	
Output flow Note 6)	80 ℓ/min (ANR) or more (SUP = 0.14 MPa)	200 ℓ/min (ANR) or more (SUP = 0.4 MPa)
Air consumption Note 6)	2 ℓ/min (ANR) or less (SUP = 0.14 MPa) 4 ℓ/min (ANR) or less (SUP = 0.4 MPa)	11 ℓ/min (ANR) or less (SUP = 0.4 MPa)
Ambient and fluid temperature	General structure: –20 to 80°C	
	ATEX intrinsically safe explosion-proof –20 to 80°C (T4/T5) –20 to 60°C (T6)	
Explosion proof construction Note 7)	ATEX intrinsically safe explosion-proof construction (II1G Ex iaIICT4/T5/T6)	
ATEX intrinsically safe explosion-proof parameter (current circuit)	Ui ≤ 28 V, Ii ≤ 100 mA, Pi ≤ 0.7 W, Ci ≤ 12.5 nF, Li ≤ 1.5 mH	
Exterior covering enclosure	JISF8007, IP65 (conforms to IEC Pub.60529)	
Transmission method Note 7)	HART transmission	
Air connection port	Rc 1/4 female thread	
Electrical connection port Note 8)	G 1/2 female thread, M20 x 1.5 female thread, NPT 1/2 female thread	
Material/coating	Aluminum diecast body/baking finish with denatured epoxy resin	
Weight	2.6 kg	

Note 1) Specification values are given at normal temperature (20°C).
Note 2) 1/2 Split range (Standard)
Note 3) Stroke adjustment: 0 to 60°, 0 to 100°
Note 4) Characteristics relating to accuracy differ depending on combination with other constituent loop equipment, such as positioners and actuators.
Note 5) While there is no output changes due to pressure fluctuations, when the pressure supply setting is changed following calibration, once again adjust balance current and perform calibration.
Note 6) (ANR) indicates JIS B0120 standard air.
Note 7) Model selection required for explosion proof construction and HART transmission.
Note 8) Thread type can be specified by model selection.

Optional Specifications

Item \ Type		IP8□01-0□2	52-IP8□01-0□4
		Smart Positioner	
Analogue output	Wiring	2-line	
	Output signal	4 to 20 mA DC	
	Power supply voltage	10 to 28 V DC	
	Load resistance	0 to 750	
	Accuracy	±0.5% F.S. or less Note 1)	
	Hysteresis	—	
Alarm output 1, 2	Wiring	2-line	
	Applicable standards	—	DIN19234/NAMUR Standard
	Power supply voltage	10 to 28 V DC	5 to 28 V DC
	Load resistance	10 to 40 mA DC	(Constant current output)
	Alarm ON	R = 350Ω ±10%	≥2.1 mA DC
	Alarm OFF (Leakage current)	0.5 mA DC or less	≤1.2 mA DC
	Response time	50 msec or less	

Note 1) Indicates analogue output accuracy with respect to LCD display position value (P value).

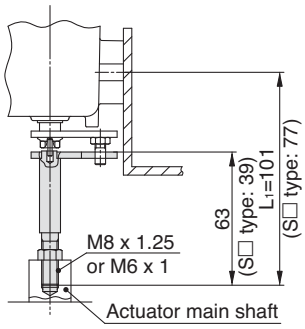
Accessories / Option

Fork lever-type fittings (IP8101)

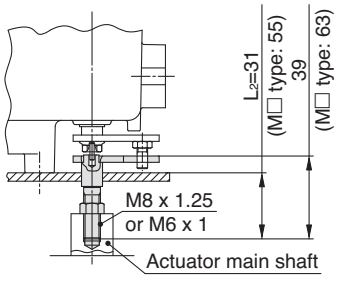
2 types of rotary type IP8101 fork lever-type fittings, that differ by installation dimensions dependent on bracket installation method, and 2 types of installation portion thread sizes, are available.
When installing on the side surface, using fork lever assembly M provides interchangeability with the installation dimensions of SMC IP610 positioner. When installing on the rear surface, using fork lever assembly S also provides interchangeability with the installation dimensions of SMC IP610 positioner.

Part name	Unit number	Installation portion thread size	Model selection accessory
Fork lever assembly M	P368010-24	M8 x 1.25	C
Fork lever assembly S	P368010-25		D
Fork lever assembly MX	P368010-36	M6 x 1	C Note)
Fork lever assembly SX	P368010-37		D Note)

Note) Installation portion thread size is M6 x 1 for IP8100-0□0-X14 when accessory C or D are selected.



Side mounting with the fork lever assembly M□

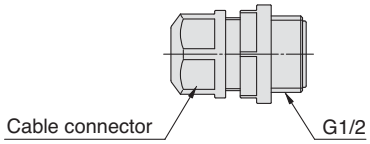


Rear mounting with the fork lever assembly S□

Resin connector (Non-explosion proof specification)

Optional cable connectors are available for different cable sizes. These are not for explosion proof applications. Recommended for use in indoor applications.

Part name	Part number	Suited cable outer diameter
Resin-made cable clamp unit (A)	P368010-26	ø7 to ø9
Resin-made cable clamp unit (B)	P368010-27	ø9 to ø11

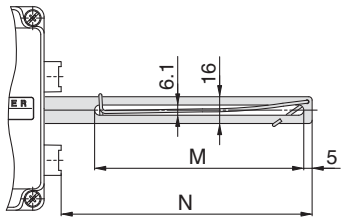


External feedback lever (IP8001)

Different feedback levers are available dependent upon valve strokes. Order according to the valve stroke.

Feedback lever types

Stroke	Unit number IP8001	Size M	Size N	Model selection accessory
10 to 85 mm	P565010-323	125	150	Standard accessory
35 to 100 mm	P565010-324	110	195	E
50 to 140 mm	P565010-325	110	275	F
6 to 12 mm	P565010-329	75	75	Available as special order

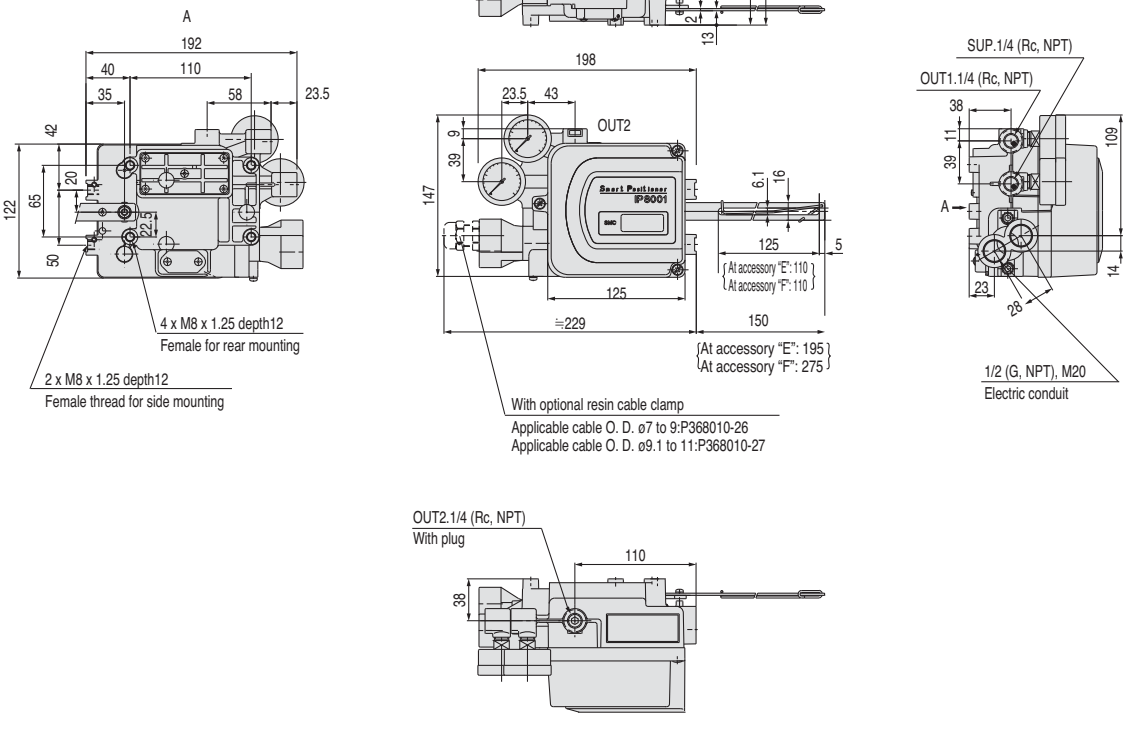


Process Valves

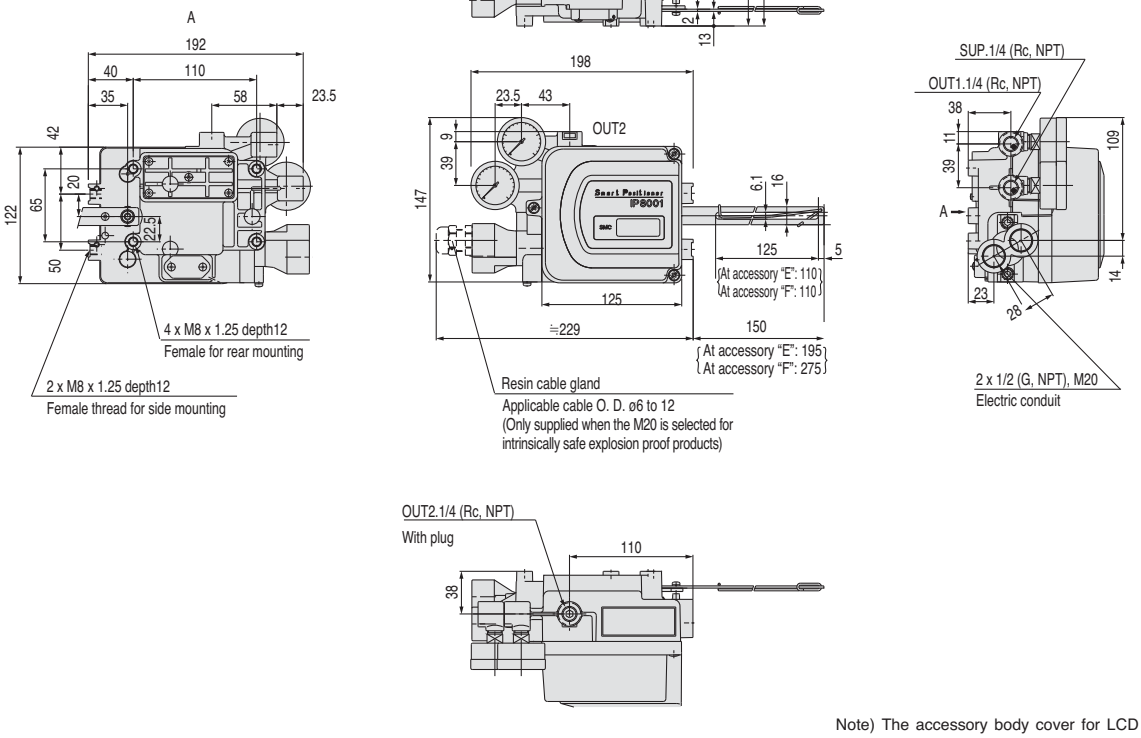
Dimensions

IP8001 (Lever type)

IP8001-$^{0\square0}_{0\square3}$ -W



□-IP8001-$^{0\square2}_{0\square4}$-W

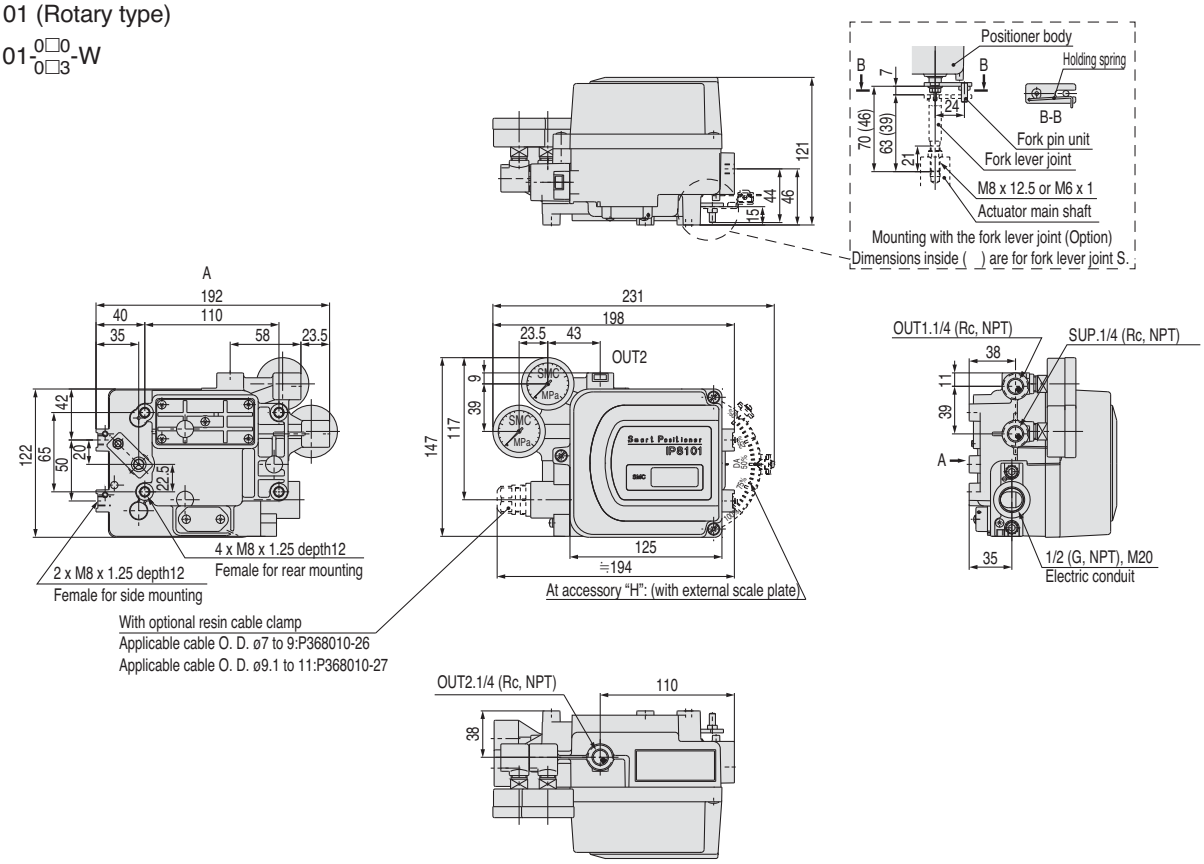


Note) The accessory body cover for LCD with viewing panel can be selected irrespective of specifications.

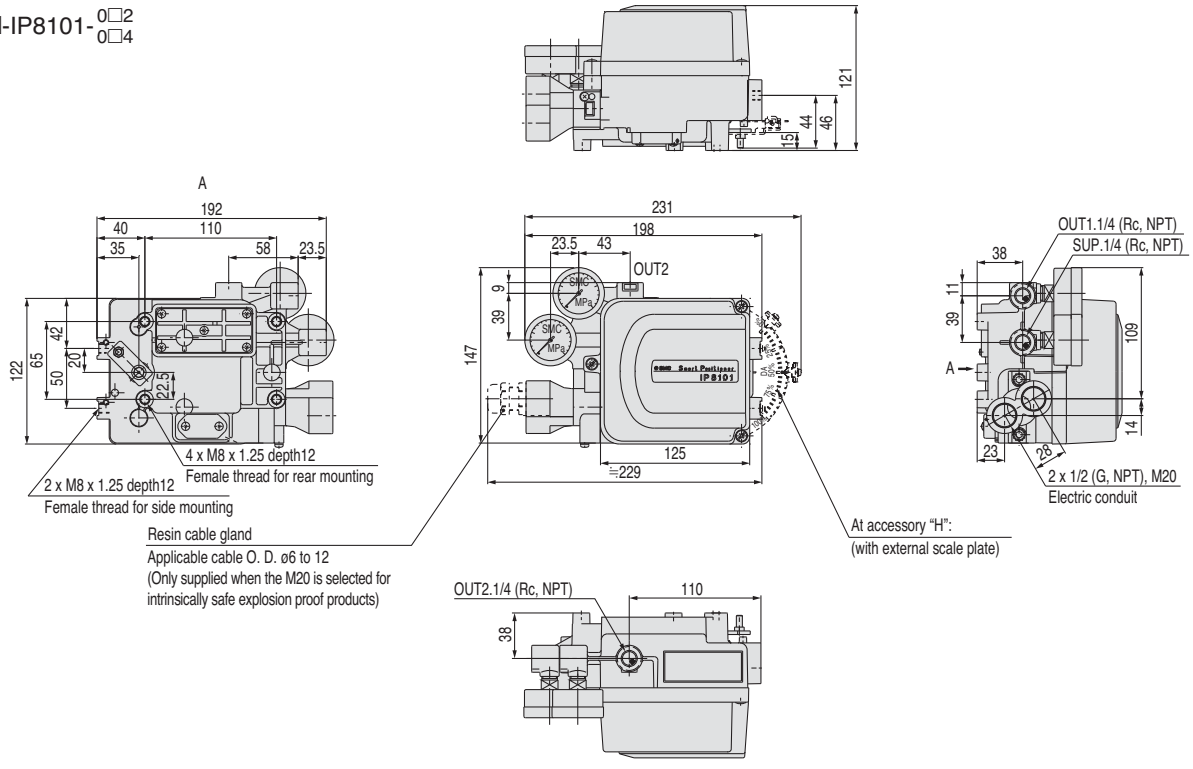
Dimensions

IP8101 (Rotary type)

IP8101-$^{0\square0}_{0\square3}$-W



□-IP8101-$^{0\square2}_{0\square4}$



Note) The accessory body cover for LCD with viewing panel can be selected irrespective of specifications.