Vacuum System Peripherals

Vacuum regulator, Electronic vacuum regulator, Directional control valve, Vacuum pressure switch, Pressure gauge for vacuum, Flow control equipment

Vacuum Regulator

Vacuum regulator: IRV ····· P.1276

Electronic Vacuum Regulator

Electronic vacuum regulator: ITV209□ ····· P.1277

Directional Control Valve

Selection guide of directional control valve (Ejector system/Vacuum pump system) ····· P.1278
V100/SYJ/VQZ/VK/VKF ····· P.1280
VX2/VX3 ····· P.1281
VT/VP/VG/VNB ····· P.1282
VEX3/VQD1000-V ····· P.1283
SJ3A6 ····· P.1284

Vacuum Pressure Switch

1. ZSE30A/ZSE40A/ZSE80/ZSE50F ····· P.1285
2. ZSE60F/ZSE3/ZSE1/ZSE2 ····· P.1286
3. PS1100/ZSP1/PSE200/300/530 ····· P.1287
4. PSE540/PFM ····· P.1288

Pressure Gauge for Vacuum

Pressure gauge for vacuum: GZ46 ····· P.1289

Flow Control Equipment

1. Speed controller: AS ····· P.1290
2. Check valve: AK ····· P.1290
3. Check valve with one-touch fitting: AKH ····· P.1290
4. Check valve, Bushing type: AKB ····· P.1290

Made to Order

1. Vacuum release valve with throttle valve: SY5A2R ····· P.1291
2. Vacuum release valve with throttle valve: SV1A4R-X8 ····· P.1295
3. Air suction filter (Filter volume: 1cm^3): FGZG220A ····· P.1296

Vacuum System Peripherals:
Vacuum Regulator: *IRV10/20*

RoHS

Refer to the catalog (CAT.ES60-20) IRV10/20 for details.

Allows adjustment of vacuum line pressure

Standard connections

Straight

Elbow

Single sided connections

Elbow

Straight

Specifications

Model		IRV10	IRV20
Fluid		Air	
Set pressure range (1)		–100 to –1.3 kPa	
Atmospheric intake consumption (2)		0.6ℓ/min (ANR) or less	
Knob resolution		0.13 kPa or less	
Ambient and fluid temperature		5 to 60°C	
VAC. side tubing O.D.		ø6, ø8 ø1/4", ø5/16"	ø6, ø8, ø10 ø1/4", ø5/16", ø3/8"
SET. side tubing O.D.			
Weight (without accessory)	**Standard connections**	135 g (IRV10-C08)	250 g (IRV20-C10)
	Single sided connections	125 g (IRV10A-C08)	250 g (IRV20A-C10)

Note 1) Note that the pressure range fluctuates depending on the vacuum pump pressure.
Note 2) Air is always supplied from the atmosphere.

How to Order

Standard connections

IRV 20 – □ C08 □ □

Body size

10	Max. flow 140 ℓ/min (ANR)
20	Max. flow 240 ℓ/min (ANR)

Fittings

Nil	Straight
L	Elbow

Connection tubing O.D.

Symbol	Tubing O.D.		IRV10	IRV20
C06	Metric	ø6	●	●
C08		ø8	●	●
C10		ø10	—	●
N07	Inch	ø1/4"	●	●
N09		ø5/16"	●	●
N11		ø3/8"	—	●

Accessory 1 (1)

Nil	None
B	With bracket
L	With bottom bracket

Note 1) Accessories are shipped together.

Accessory 2

Nil	None (1)		
G	With pressure gauge (2) (3) (With IRV10: GZ33-K-01, With IRV20: GZ43-K-01)		
ZN	(3) With digital pressure gauge	NPN open collector: 1 output	With ZSE30A-01-N-ML
ZP		PNP open collector: 1 output	With ZSE30A-01-P-ML
ZA		NPN open collector: 2 outputs	With ZSE30A-01-A-ML
ZB		PNP open collector: 2 outputs	With ZSE30A-01-B-ML

Note 1) Two plug nuts are mounted.
Note 2) Pressure gauge accuracy: Within ±3% of full scale
Note 3) Plug nut and gauge nut are included. (Refer to the catalog (CAT.ES60-20) back page 1 for details.) Accessories are shipped together.

Single sided connections

IRV 20 A – □ C08 □ □ □ – □

Body size

10	Max. flow 140 ℓ/min (ANR)
20	Max. flow 240 ℓ/min (ANR)

Single sided connections

A	Single sided connections

Fittings

Nil	Straight
L	Elbow

Connection tubing O.D.

Symbol	Tubing O.D.		IRV10A	IRV20A
C06	Metric	ø6	●	●
C08		ø8	●	●
C10		ø10	—	●
N07	Inch	ø1/4"	●	●
N09		ø5/16"	●	●
N11		ø3/8"	—	●

Made to order

Refer to page 10 in CAT.ES60-20.

Nil	Specification
X1	Integrated digital pressure switch for panel mounting

Accessory 2

Nil	None (1)		
G	With pressure gauge (2) (3) (With IRV10A: GZ33-K-01, With IRV20A: GZ43-K-01)		
ZN	(3) With digital pressure gauge	NPN open collector: 1 output	With ZSE30A-01-N-ML
ZP		PNP open collector: 1 output	With ZSE30A-01-P-ML
ZA		NPN open collector: 2 outputs	With ZSE30A-01-A-ML
ZB		PNP open collector: 2 outputs	With ZSE30A-01-B-ML

Note 1) Plug nuts are mounted.
Note 2) Pressure gauge accuracy: Within ±3% of full scale
Note 3) Gauge nut is included. Accessories are shipped together.

Accessory 1 (1)

Nil	None
B	With bracket
L	With bottom bracket

Note 1) Accessories are shipped together.

Vacuum System Peripherals:
Electronic Vacuum Regulator: *ITV209*□

Refer to Best Pneumatics No. 5 for details.

Straight type cable connector | **Right angle type cable connector**

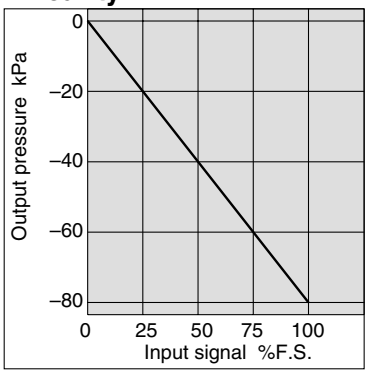
Specifications

Model		ITV2090	ITV2091
Power supply	Voltage	24 VDC ±10%	12 to 15 VDC
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less (6) Power supply voltage 12 to 15 VDC type: 0.18 A or less	
Min. supply vacuum pressure (1)		Set pressure –13.3 kPa	
Max. supply vacuum pressure		–101 kPa	
Set pressure range		–1.3 to –80 kPa	
Input signal	Current type (2)	4 to 20 mA DC, 0 to 20 mA DC	
	Voltage type	0 to 5 VDC, 0 to 10 VDC	
	Preset input	4 points	
Input impedance	Current type	250 Ω or less (3)	
	Voltage type	Approx. 6.5 kΩ	
	Preset input	Power supply voltage 24 VDC type: approx. 4.7 kΩ, 12 VDC type: approx. 2.0 kΩ	
Output signal (4) (Monitor output)	Analog output	1 to 5 VDC (Load impedance: 1 kΩ or more) 4 to 20 mA DC (Sink type) (Load impedance: 250 Ω or less) Output accuracy: Within ±6% (F.S.)	
	Switch output	NPN open collector output: Max. 30 V, 80 mA PNP open collector output: Max. 80 mA	
Linearity		Within ±1% (Full span)	
Hysteresis		Within 0.5% (Full span)	
Repeatability		Within ±0.5% (Full span)	
Sensitivity		Within 0.2% (Full span)	
Temperature characteristics		Within ±0.12% (Full span)/°C	
Output pressure display	Accuracy	±2% (F.S.), ±1 digit	
	Units	kPa Minimum display: 1 (5)	
Ambient and fluid temperature		0 to 50°C (No condensation)	
Enclosure		IP65	
Weight (7)		350 g	

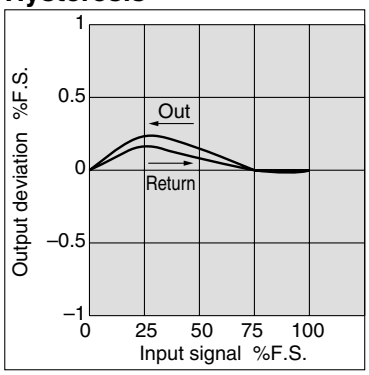
Note 1) The minimum supply vacuum pressure should be 13.3 kPa more than the maximum vacuum pressure setting value.
Note 2) 4 to 20 mA DC is not possible with the 2-wire type. Power supply voltage (24 VDC or 12 to 15 VDC) is required.
Note 3) This value does not include the over current circuit. If the over current circuit is included, the input impedance should be changed, depending on the input power supply. 350 Ω or less when the input power supply is 20 DC mA.
Note 4) Either analog output or switch output must be selected. Furthermore, when switch output is selected, either NPN output or PNP output must also be selected. Please note that the preset input type is not equipped with an output signal function.
Note 5) Please contact SMC regarding indication with other units of pressure.
Note 6) Max. current consumption is 0.16 A or less for communication specification.
Note 7) The weight is increased by about 80 g (by 100 g for PROFIBUS DP) for communication specification.

[Option]

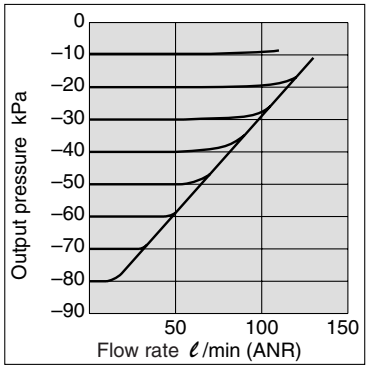
Linearity



Hysteresis



Flow Characteristics



Vacuum Supply Pressure MPa: –100 kPa

How to Order

ITV 209 0 – 0 1 □ 2 □ S 5 – □

Pressure range

9	–1.3 to –80 kPa

Power supply voltage

0	24 VDC
1	12 to 15 VDC

Note) Communication models are available only for 24 VDC.

Input signal/Communication signal

0	Current type 4 to 20 mA DC
1	Current type 0 to 20 mA DC
2	Voltage type 0 to 5 VDC
3	Voltage type 0 to 10 VDC
4	Preset input
CC	CC-Link
DN	DeviceNet™
PR	PROFIBUS DP
RC	RS-232C communication

Monitor output

Nil	Without (In the case of communication models)
0	Without (In the case of preset input)
1	Analog output 1 to 5 VDC
2	Switch output/NPN output
3	Switch output/PNP output
4	Analog output 4 to 20 mA DC (Sink type)

Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

Port size

2	1/4

Accessory (Bracket)

Nil	Without bracket
B	Flat bracket
C	L-bracket

Cable connector type

S	Straight type 3 m
L	Right angle type 3 m
N	Without cable connector

Note) Order communication cable (other than RS-232C) separately. See below.

Pressure display unit

5	kPa

Note) For the communication models, CC, DN, PR and RC, only "Nil" is available as it does not have a pressure display.

CE compliant

Nil	—
Q	CE compliant

Vacuum System Peripherals:
Directional Control Valve

A guide for selecting the solenoid valve model to accommodate the system
An array of solenoid valves (2/3 port valve) for controlling the ejector/external vacuum supply system

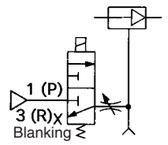
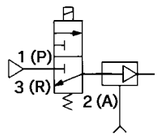
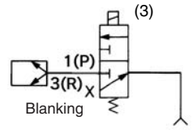
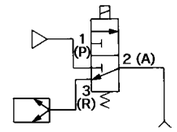
How to read the chart

The solenoid valves are available in the following constructions: the standard product (for general use), the external pilot specification, and the vacuum specification. Select the optimal model in accordance with your circuit configuration and the effective area. For detailed specifications of these products, refer to the respective catalog that is available separately.

Caution on Model Selection

⚠Caution

- Use a plug cap at R port of 2 port valve and 3 port valve for vacuum release valve and vacuum switching valve. (Except VEX 3)
  1) Leakage 1 cm³/min or less
  2) Leakage: 10^{-6} Pam³/sec (at pressure differential of 0.1 MPa)
  3) Applications are different from vacuum holding valve.
  4) Refer to front matter 32 of Best Pneumatics No. 1 for flow characteristics.
  5) Conversion from sonic conductance C: Effective area S = 5.0 x C

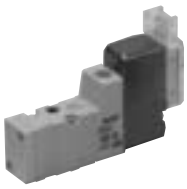
System	Ejector System						Vacuum Pump System									
	Vacuum release valve			Supply valve			Vacuum switching valve			Divider valve of vacuum supply air						
Circuit construction																
Solenoid valve	Valve construction	Standard	External pilot spec. (R)	Vacuum spec. (V)	Standard	External pilot spec. (R)	Vacuum spec. (V)	Standard	External pilot spec. (R)	Vacuum spec. (V)	Standard	External pilot spec. (R)	Vacuum spec. (V)	Flow characteristics C(dm³/(s·bar))	Effective area (mm²)	Port size	Best Pneumatics No.
Compact 3 port solenoid valve V100, SYJ Compact size: 10 mm (V100, SYJ300) 15 mm (SYJ500) 18 mm (SYJ700) Low power consumption: 0.1 W	V100	●	–	–	●	–	–	●	–	–	●	–	–	—	0.14	M3 x 0.5 M5 x 0.8 1/8, 1/4	No.1
	SYJ300/500/700	–	●	–	–	●	–	–	●	–	–	●	–	0.41 to 2.8	—		
3 port solenoid valve VQZ 10 mm: VQZ100 15 mm: VQZ200 18 mm: VQZ300	VQZ100/200/300	–	●	–	–	●	–	–	●	–	–	●	–	1.7 to 4.5	—	M5 x 0.8 1/8, 1/4	No.1
3 port solenoid valve VK VKF		●	–	–	●	–	–	–	–	●	–	–	●	0.47 to 0.85	—	M5 x 0.8 1/8	No.1
Compact 2 port solenoid valve VX2		●	–	●(1)	●	–	–	●(1)	–	●(2)	–	–	–	0.58 to 11	—	1/8 to 3/8	No.7
Compact 3 port solenoid valve VX31/32/33		●	–	–	●	–	–	●(1)	–	●(2)	●(1)	–	●(2)	0.29 to 1.6	—	1/8 to 3/8	No.7
3 port solenoid valve VT VT307/317/325		●	–	–	●	–	–	–	–	●	–	–	●	0.63 to 5.5	—	1/8 to 3/8	No.1
3 port solenoid valve VP VP300/500/700		–	●	–	–	●	–	–	●	–	–	●	–	3.5 to 15.1	—	1/8 to 1/2	Catalog CAT.ES11-97
3 port solenoid valve VG342		–	●	–	–	●	–	–	●	–	–	●	–	26 to 38	—	1/2 to 3/4	No.1
														—	210	1	
Vacuum pilot 2 port valve VNB□□□□V		–	●	●	–	●	●	–	●	●	–	●	●	9.6 to 35 (VNB2 to 3)	130 to 770 (VNB4 to 7)	3/8 to 2	No.7
3 position valve VEX3		–	●	●	–	●	●	–	●	●	–	●	●	2.4 to 13	—	1/8 to 1/2	No.1
Vacuum/release unit VQD1000-V		–	–	–	–	–	–	–	–	–	–	–	–	0.27	—	M5 x 0.8	No.1
Vacuum release valve with throttle valve SJ3A6		–	●	–	–	●	–	–	●	–	–	●	–	0.4	—	M5 x 0.8	No.1

Note 1) For up to –101.2 kPa of vacuum, it can be used as the standard product (1 cm³/min max. leakage).
Above that, it will be the V specification (10^{-5} cm³/sec max. leakage).

Vacuum System Peripherals:
Directional Control Valve/Solenoid Valve

Compact 3 port solenoid valve
V100, SYJ

Possible to use with vacuum up to at –100 kPa
Compact size: Width 10 mm (V100, SYJ300)
Width 15 mm (SYJ500)
Width 18 mm (SYJ700)
Low power consumption 0.1W (With energy saving circuit)


Body ported

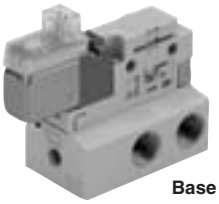

Base mounted

Model

Refer to Best Pneumatics No. 1 for details.

Piping specifications	Solenoid valve	Port size	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
Body ported	**SYJ312/322**	M3 x 0.5	—	0.9
	SYJ512/522	M5 x 0.8	0.53	—
	SYJ712/722	1/8	2.8	—
Base mounted (With sub-plate)	**V114/124 (A)**	M5 x 0.8	0.037	—
	SYJ314/324	M5 x 0.8	0.41	—
	SYJ514/524	1/8	1.2	—
	SYJ714/724	1/8, 1/4	2.9	—

3 port solenoid valve
VQZ100/200/300


Base mounted

Model/Metal Seal, Rubber Seal

Refer to Best Pneumatics No. 1 for details.

Piping specifications	Solenoid valve		Port size	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
Base mounted (With sub-plate)	VQZ100	**VQZ115**	1/8	0.87	—
	VQZ 200	**VQZ215**	1/8, 1/4	1.7	—
		VQZ235		2.3	
		VQZ225		1.7	
		VQZ245		2.5	
	VQZ 300	**VQZ315**	1/4, 3/8	3.0	—
		VQZ335		4.5	
		VQZ325		2.9	
		VQZ345		4.4	

3 port solenoid valve
VK

Compact size: Width 18 mm
Possible to use with vacuum


Body ported


Base mounted

Model

Refer to Best Pneumatics No. 1 for details.

Piping specifications	Solenoid valve	Port size	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
Body ported	**VK332**	M5 x 0.8	0.47	—
	For vacuum: VK332V *	M5 x 0.8	0.47	—
Base mounted (With sub-plate)	**VK334**	1/8	0.85	—
	For vacuum: VK334V *	1/8	0.85	—

* Vacuum specification: Operating pressure range –101.2 kPa to 0.1 MPa
* Low wattage style (2 W DC) and long period energized style available.

3 port solenoid valve
VKF

Compact size: Width 18 mm
Possible to use with vacuum


Body ported


Base mounted

Model

Refer to Best Pneumatics No. 1 for details.

Piping specifications	Solenoid valve	Port size	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
Body ported	**VKF332**	M5 x 0.8	0.67	—
	For vacuum: VKF332V *	M5 x 0.8	0.67	—
Base mounted (With sub-plate)	**VKF334**	1/8	0.68	—
	For vacuum: VKF334V *	1/8	0.68	—

* Vacuum specification: Operating pressure range –101.2 kPa to 0.1 MPa
* Low wattage style (2 W DC) and long period energized style available.

Compact 2 port solenoid valve
Series VX2 options V & M
For medium vacuum, non leakage

Leakage: 10^{-6} Pam³/sec
(at pressure differential of 0.1 MPa)
Pressure: 0.1 Pa • abs (medium vacuum)

Model

Refer to Best Pneumatics No. 7 for details.

Orifice dia. (mm ø)	Valve specifications	Model	Port size Rc	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
2	N.C.	VX2110 M V	1/8	0.59	—
	N.O.	VX2112 M V			
3	N.C.	VX2120 M V	1/8, 1/4	1.2	—
	N.O.	VX2122 M V			
	N.C.	VX2220 M V	1/4, 3/8	1.2	—
	N.O.	VX2222 M V			
	N.C.	VX2320 M V			
	N.O.	VX2322 M V			
4.5	N.C.	VX2130 M V	1/8, 1/4	2.3	—
	N.O.	VX2132 M V			
	N.C.	VX2230 M V	1/4, 3/8	2.3	—
	N.O.	VX2232 M V			
	N.C.	VX2330 M V			
	N.O.	VX2332 M V			
6	N.C.	VX2240 M V	1/4, 3/8	4.1	—
	N.O.	VX2242 M V			
	N.C.	VX2340 M V			
	N.O.	VX2342 M V			
8	N.C.	VX2250 M V	1/4, 3/8	6.4	—
	N.C.	VX2350 M V			
10	N.C.	VX2260 M V	1/4	8.8	—
			3/8, 1/2	11	—
	N.C.	VX2360 M V	1/4	8.8	—
			3/8, 1/2	11	—

Compact 3 port solenoid valve
Series VX3 options V & M
For medium vacuum, non leakage

Leakage: 10^{-6} Pam³/sec
(at pressure differential of 0.1 MPa)
Pressure: 0.1 Pa • abs (medium vacuum)

Model (N.C./N.O./C.O.)

Refer to Best Pneumatics No. 7 for details.

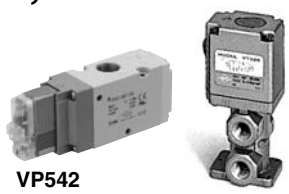
Orifice dia. (mm ø)	Model	Port size Rc	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
1.5	VX311 0 2 4 M V-01	1/8	0.29	—
2.2	VX312 0 2 4 M V-01		0.60	—
3	VX313 0 2 4 M V-01		0.82	—
1.5	VX311 0 2 4 M V-02	1/4	0.29	—
2.2	VX312 0 2 4 M V-02		0.60	—
	VX3224 M V-02		0.64	—
	VX3324 M V-02			—
3	VX313 0 2 4 M V-02		0.82	—
	VX3234 M V-02		1.1	—
	VX3334 M V-02			—
4	VX3244 M V-02		1.6	—
	VX3344 M V-02			
2.2	VX3224 M V-03	3/8	0.64	—
	VX3324 M V-03			—
3	VX3234 M V-03		1.1	—
	VX3334 M V-03			—
4	VX3244 M V-03		1.6	—
	VX3344 M V-03			—

For Vacuum Pad

Refer to Best Pneumatics No. 7 for details.

Model	Port size Rc	Orifice dia. (ø)		Flow characteristics	
		Pressurised side	Vacuum side	R→A	A→P
VXV313□	1/8 , 1/4	1.5	3	0.29	0.82
VXV324□	1/4 , 3/8	2.2	4	0.64	1.6
VXV334□		2.2	4		

3 port solenoid valve
VT, VP



VP542 VT325

VT317

Model/Rubber Seal

Refer to Best Pneumatics No. 1 for details.
Refer to the catalog (CAT.ES11-97) for the VP series.

Piping specifications	Solenoid valve	Port size	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
Body ported	**VT325(V)**	1/4, 3/8	5.5	—
	VT307(V)*	1/8, 1/4	0.71	—
	VT317(V)**	1/4	2.4	—
Body ported	**VP342**	1/8, 1/4	3.5 to 4.2	—
	VP542	1/4, 3/8	7.9 to 8.9	—
	VP742	3/8, 1/2	11.9 to 15.1	—
Base mounted	**VP344**	1/8, 1/4	3.6 to 3.9	—
	VP544	1/4, 3/8	7.5 to 8.8	—
	VP744	3/8, 1/2	12.9 to 14.7	—
Body ported	**VP3145**	3/8, 1/2, 3/4	19 to 28	—
	VP3165	3/4, 1, 1 1/4	—	230 to 310
	VP3185	1 1/4, 1 1/2, 2	—	570 to 650

* Low wattage (2 W DC) type and long period energized type available.
** Long period energized type available.
V: Vacuum specification: Operating pressure range –101.2 kPa to 0.1 MPa

3 port solenoid valve
VG342

VG342

Model/Rubber Seal

Refer to Best Pneumatics No. 1 for details.

Piping specifications	Solenoid valve	Port size	Flow characteristics C (dm³/(s·bar))	Effective area (mm²)
Body ported	**VG342**	1/2 to 3/4	26 to 38	—
		1	—	210
	For Vacuum: VG342R *	1/2 to 3/4	26 to 38	—
		1	—	210

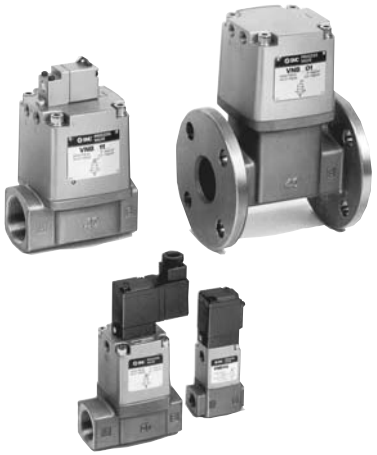
* Operating pressure range: –101.2 kPa to 0.9 MPa

Vacuum pilot 2 port valve
VNB□□□□V

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

Specifications (Vacuum pilot)

Fluid	Vacuum
Operating pressure range	–101 kPa to atmospheric pressure
Pilot pressure range	–101 to –47.9 kPa



Model

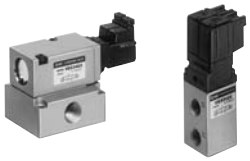
Refer to Best Pneumatics No. 7 for details.

Model	Port size	Orifice dia ø [mm]	Flow characteristics				Mass [kg]	
			Measured by air			Measured by water		
			C[dm³/(bar,sec)]	b	Cv	Av x 10⁻⁶m²	Air operated	External pilot solenoid
VNB2□4□-10A	3/8	11	9.6	0.40	2.6	71	0.6	0.7
VNB2□□□-10A		15	17	0.32	4.0	110		
VNB2□4□-15A	1/2	11	9.6	0.40	2.6	76		
VNB2□□□-15A		15	19	0.24	4.8	140		
VNB3□4□-20A	3/4	14	18	0.42	5.4	140	0.9	1.0
VNB3□□□-20A		20	35	0.13	7.4	270		

Model	Port size		Orifice dia ø [mm]	Flow characteristics		Mass [kg]	
	Screw-in	Flange		Cv	Effective area (mm²)	Air operated	External pilot solenoid
VNB4□4□-25A	1	–	16	7	130	1.4	1.5
VNB4□□□-25A			25	12	220		
VNB5□4□-32A	1 1/4	–	22	11	210	2.5	2.6
VNB5□□□-32A			32	18	320		
VNB5□4□-32F	–	32	22	11	210	5.7	5.8
VNB5□□□-32F			32	18	320		
VNB6□4□-40A	1 1/2	–	28	19	330	4.1	4.2
VNB6□□□-40A			40	28	500		
VNB6□4□-40F	–	40	28	19	330	7.7	7.8
VNB6□□□-40F			40	28	500		
VNB7□4□-50A	2	–	33	29	520	6.3	6.4
VNB7□□□-50A			50	43	770		
VNB7□4□-50F	–	50	33	29	520	11.4	11.5
VNB7□□□-50F			50	43	770		

3 position valve
VEX3

Air operated type



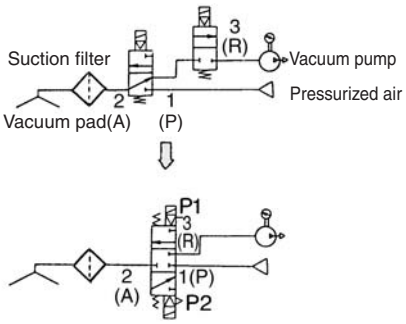
Internal/External pilot solenoid type

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

Specifications

Refer to Best Pneumatics No. 1 for details.

Model						
	Body ported	VEX312□-01/02	VEX332□-02/03/04	VEX350□-04/06/10	VEX370□-10/12	VEX390□-14/20
	Base mounted	VEX322□-01/02	VEX342□-02/03/04	–	–	–
Operation		Air operated, External pilot solenoid, Internal pilot solenoid				
Fluid		Air				
Proof pressure		1.5 MPa				
Operating pressure range	Air operated	Low vacuum Vac. to 1.0 MPa				
		External pilot pressure 0.2 to 1.0 MPa				
	External pilot solenoid	Low vacuum Vac. to 1.0 MPa				
		External pilot pressure 0.2 to 0.7MPa	External pilot pressure 0.2 to 0.9 MPa			
	Internal pilot solenoid	0.2 to 0.7MPa	0.2 to 0.9 MPa			

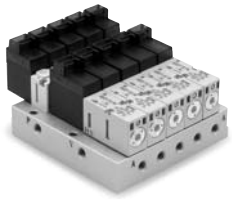


- **Sequential switching operation prevents the inflow of pressurized air into the vacuum pump system.**

⚠Caution

- **To maintain the vacuum of port A via the closed center, be aware that the vacuum could be decreased due to leakage from the vacuum pad and the piping.**

Vacuum/release unit
VQD1000-V



- **Response speed**
  13 msec (at 500 mm*)/
  18.5 msec (at 1000 mm*)
  * Distance from a unit to a workpiece (Piping I.D. ø2.5)
- **Smooth removal of workpiece without overshoot**
  No blow off of workpiece by release air
- **No need to adjust the timing for switch-over vacuum and positive pressure.**
  (Single signal control)
- **No need to set a restriction circuit for release air**

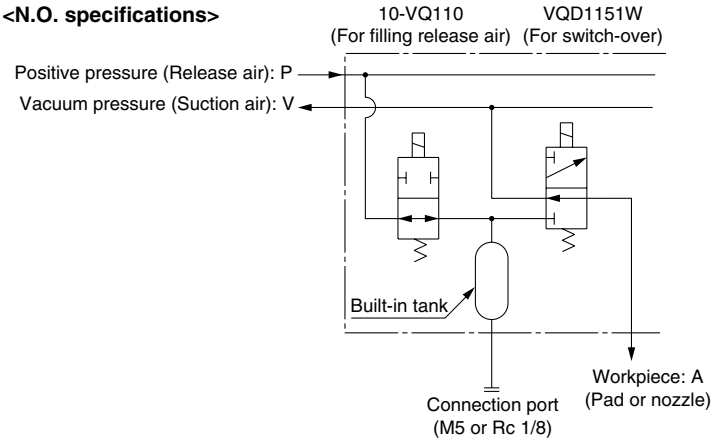
Specifications

Refer to Best Pneumatics No. 1 for details.

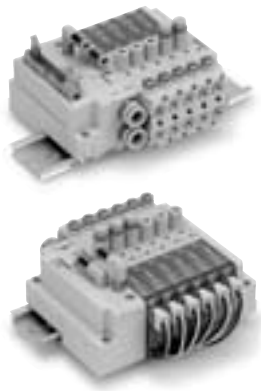
Valve construction			Direct operated poppet
Fluid			Air, Inert gas/Compatible with low ozone
Operating pressure range	Suction (Negative pressure)		0 to –100 kPa
	Release (Positive pressure)		0 to 0.7 MPa
Response time Note)	N.O. specifications	Suction (OFF)	2 ±1 msec
		Release (ON)	4 ±1 msec
	N.C. specifications	Suction (ON)	4 ±1 msec
		Release (OFF)	2 ±1 msec

Note) Based on JIS B 8375-1981 (Use clean air).

<N.O. specifications>



Vacuum release valve with throttle valve
SJ3A6



2 spool valves included.
Possible to control vacuum adsorption and release by a valve.

- Current consumption 0.15 W (With energy saving circuit)
- Width 10 mm (Same as Series SJ3000)
- With throttle valve that can control the flow rate of release air
- Replaceable filters are built in the vacuum side and release side respectively
- With a pressure detection port that enables users to connect a pressure switch, etc.
- Can be mounted with a 4 port solenoid valve SJ2000/3000 (Made to Order).
  (Please contact SMC for details.)
- Possible to switch pressure of two wiring systems by applying different positive pressures to 1 (P) port and 3/5 (E).
  (In this case, flow rate is adjustable only at the P port side.)

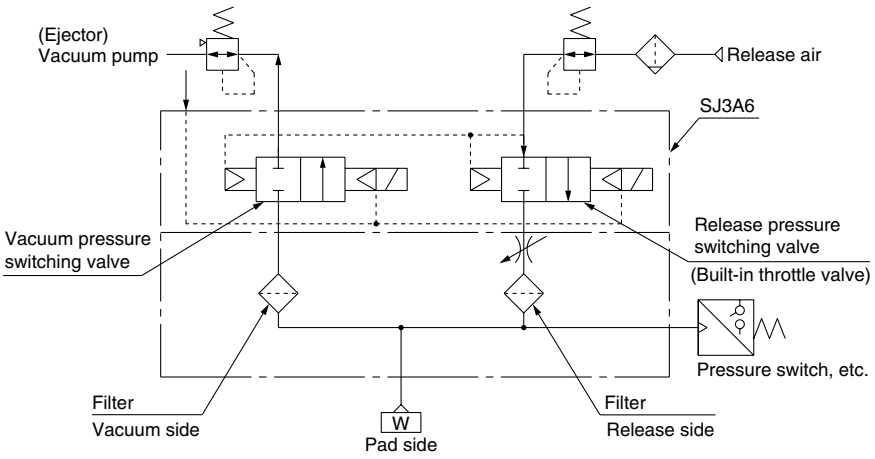
Specifications

Refer to Best Pneumatics No. 1 for details.

Valve construction		3 position, 3 port valve with throttle valve
Fluid		Air
Operating pressure range Mpa	**Release pressure port 1 (P)**	0.25 to 0.7
	Vacuum pressure port 3/5 (E)	–100 kPa to 0.7 (1)
	Pilot X port	0.25 to 0.7 (2)

Note 1) Can be used with positive pressure depending on applications.
Note 2) Pressure of the pilot X port must be the same as that of the release port 1 (P) or more.

Adsorption Transfer System Circuit Example



Vacuum System Peripherals:
Vacuum Pressure Switch

Refer to Best Pneumatics No. 6 for details.

● 2-Color Display High Precision Digital Pressure Switch: ZSE30A(F)

Model		ZSE30A (Vacuum pressure)	ZSE30AF (Compound pressure)
Rated pressure range		0.0 to –101.0 kPa	–100.0 to 100.0 kPa
Display/Set pressure range		10.0 to –105.0 kPa	–105.0 to 105.0 kPa
Proof pressure		500 kPa	
Setting/Display resolution		0.1 kPa	
Fluid		Air/Non-corrosive gas/Non-flammable gas	
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Current consumption		40 mA or less	
Switch output		NPN or PNP open collector output: 1 output NPN or PNP open collector output: 2 outputs (Selection)	
	Max. load current	80 mA	
	Max. applied voltage	28 V (With NPN output)	
	Residual voltage	1 V or less (With load current of 80 mA)	
	Response time	2.5 ms or less (Response time selections with anti-chattering function: 20 ms, 100 ms, 500 ms, 1000 ms, 2000 ms)	
	Short circuit protection	With short circuit protection	

● 2-Color Display High-Precision Digital Pressure Switch: ZSE40A(F)

Model		ZSE40A (Vacuum pressure)	ZSE40AF (Compound pressure)
Rated pressure range		0.0 to –101.3 kPa	–100.0 to 100.0 kPa
Display/Set pressure range		10.0 to –105.0 kPa	–105.0 to 105.0 kPa
Proof pressure		500 kPa	
Set pressure resolution		0.1 kPa	
Applicable fluid		Air/Non-corrosive gas/Non-flammable gas	
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Current consumption		45 mA or less	
Switch output		NPN or PNP open collector output: 2 outputs (Selection)	
	Max. load current	80 mA	
	Max. applied voltage	25 V (With NPN output)	
	Residual voltage	1 V or less (With load current of 80 mA)	
	Response time	2.5 ms (Response time selections with anti-chattering function: 20 ms, 100 ms, 500 ms, 1000 ms, 2000 ms)	
	Short circuit protection	With short circuit protection	

● 2-Color Display Digital Pressure Switch for General Fluids: ZSE80

Model		ZSE80 (Vacuum pressure)	ZSE80F (Compound pressure)
Rated pressure range		0.0 to –101.0 kPa	–100.0 to 100.0 kPa
Display/Set pressure range		10.0 to –111.1 kPa	–110.0 to 110.0 kPa
Proof pressure		500 kPa	
Applicable fluid		Fluid that will not corrode stainless steel 630 and 304	
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Current consumption		45 mA or less	
Switch output		NPN 1 output, NPN 2 outputs, PNP 1 output, PNP 2 outputs	
	Max. load current	80 mA	
	Max. applied voltage	28 V (With NPN output)	
	Residual voltage	1 V or less (With load current of 80 mA)	
	Response time	2.5 ms (Response time selections with anti-chattering function: 20 ms, 100 ms, 500 ms, 1000 ms, 2000 ms)	
	Short circuit protection	With short circuit protection	

● High-Precision Digital Pressure Switch for General Fluids: ZSE50F

Model		ZSE50F
Rated pressure range		–100.0 to 100.0 kPa
Display/Set pressure range		–100.0 to 100.0 kPa
Proof pressure		500 kPa
Set pressure resolution		0.1 kPa
Applicable fluid		Fluid that will not corrode stainless steel 630 and 304
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Current consumption		55 mA or less
Switch output		NPN or PNP open collector output: 2 outputs
	Max. load current	80 mA
	Max. applied voltage	30 V (With NPN output)
	Residual voltage	1 V or less (With load current of 80 mA)
	Response time	2.5 ms or less (Response time selections with anti-chattering function: 24 ms, 192 ms, 768 ms)
	Short circuit protection	With short circuit protection

Refer to Best Pneumatics No. 6 for details.

● High-Precision Digital Pressure Switch for General Fluids: ZSE60F

Model		ZSE60F (Compound pressure)
Rated pressure range		–100.0 to 100.0 kPa
Set pressure range		–100.0 to 100.0 kPa
Proof pressure		500 kPa
Set pressure resolution kPa		0.1
Applicable fluid		Fluid that will not corrode stainless steel 630 and 304
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Current consumption		55 mA or less
Switch output		NPN or PNP open collector output (2 outputs)
	Max. load current	80 mA
	Max. applied voltage	30 V (With NPN output)
	Residual voltage	1 V or less (With load current of 80 mA)
	Response time	2.5 ms or less (Response time selections with anti-chattering function: 24 ms, 192 ms, 768 ms)
	Short circuit protection	With short circuit protection

● LCD Readout Digital Pressure Switch: ZSE3

Model	ZSE3
Pressure setting range	0 to –101 kPa
Maximum operating pressure	200 kPa
Set pressure resolution	1 kPa
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Current consumption	25 mA or less

● Compact Pressure Switch: ZSE1

Model	ZSE1
Pressure setting range	0 to –101 kPa
Proof pressure	500 kPa
Temperature characteristics	±3% F.S.
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Current consumption	17 mA or less at 24 VDC, 2 output: 25 mA or less at 24 VDC
Port size	01: R $^1/_8$, M5 x 0.8, T1: NPTF $^1/_8$, M5 x 0.8, 00: ZM ejector mounted style
Operating temperature range	0 to 60°C (No condensation or freezing)

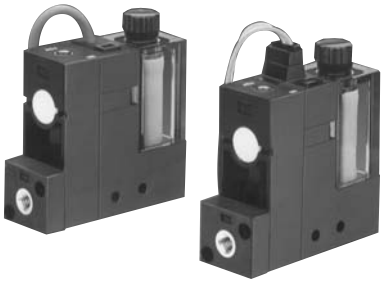
● Compact Pressure Switch: ZSE2

Model	ZSE2
Pressure setting range	0 to –101 kPa
Proof pressure	500 kPa
Operating voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Operation indicator light	Lights up when ON (Red)
Current consumption	17 mA or less (When 24 VDC is ON)
Operating temperature range	0 to 60°C (No condensation or freezing)
Port size	01: R $^1/_8$, M5 x 0.8, T1: NPTF $^1/_8$, M5 x 0.8 0X: With suction filter (For mounting on ZM unit) 0R: Base mounted style (For mounting on ZR unit)

Refer to Best Pneumatics No. 6 for details.

● Air Checker Electronic Pressure Switch: PS1100

Model	PS1100-R06L
Switch output	Present prss. ≤ Setting prss.: ON
Max. operating pressure	1 MPa
Set pressure range	–0.1 to 0.4 MPa
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas
Operation indicator light	ON: When red LED turns on
Temperature characteristics	±3% F.S.
Repeatability	±1% F.S.
Hysteresis	4% F.S. or less
Load voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less
Load current	5 to 40 mA
Leakage	1 mA or less
Internal voltage drop	5 V or less
Operating temperature range	0 to 60°C (No condensation)



● Adsorption Confirmation Switch: ZSP1

Model	ZSP1-S	ZSP1-B
Applicable fluid	Air	
Rated pressure range	–20 to –101 kPa	
Applicable adsorption nozzle dia.	ø0.3 to ø0.7	ø0.5 to ø1.2
Hysteresis	0.5 kPa	
Internal orifice	ø0.5	ø0.8
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Switch output	NPN Open collector 30 V, 80 mA	

● Multi-channel Controller: Series PSE200

Model	PSE200	PSE201
Switch output	NPN open collector	PNP open collector
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Current consumption	55 mA or less (Current consumption for sensor is not included.)	
Power supply voltage for sensor	[Power supply voltage] –1.5 V	
Power supply current for sensor	40 mA maximum (100 mA maximum for the total power supply current when 4 sensors are input.)	

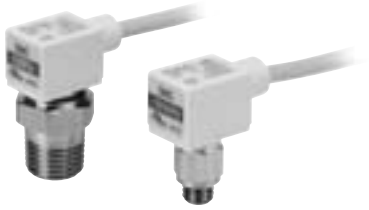
● Pressure Sensor Controller: PSE300

Model	PSE30□					
Display/Set pressure (differential pressure) range	–101 to 101 kPa	10 to –101 kPa	–10 to 100 kPa	–0.1 to 1 MPa	–50 to 500 kPa	–0.2 to 2 kPa
Pressure range	For compound pressure	For vacuum	For low pressure	For positive pressure		For slight differential pressure
Rated pressure (differential pressure) range	–100 to 100 kPa	0 to –101 kPa	0 to 100 kPa	0 to 1 MPa	0 to 500 kPa	0 to 2 kPa
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)					
Current consumption	50 mA or less (Current consumption for sensor is not included.)					

● Pressure Sensor: PSE530

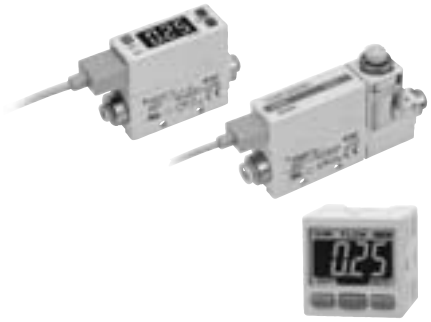
Model	PSE531-M5
Rated pressure range	0 to –101 kPa
Proof pressure	500 kPa
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Current consumption	15 mA or less
Output specifications	Analog output (1 to 5 V, Output impedance: Approx. 1 kΩ)

Refer to Best Pneumatics No. 6 for details.



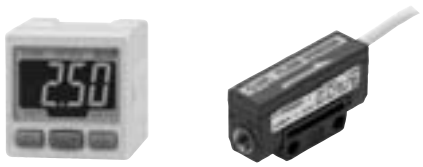
● Compact Pneumatic Pressure Switch: PSE540

Model	PSE541	PSE543
Rated pressure range	0 to –101 kPa	–100 to 100 kPa
Proof pressure	500 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas	
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Current consumption	15 mA or less	
Output specifications	Analog output (1 to 5 V, Output impedance: Approx. 1 kΩ)	



● 2-Color Display Digital Flow Switch: PFM

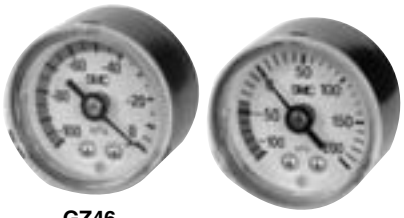
Model		PFM710	PFM725	PFM750	PFM711
	Integrated type				
	Separate sensor unit	PFM510	PFM525	PFM550	PFM511
	Separate monitor unit	PFM3□□			
Applicable fluid		Dry air, N_2, Ar, CO_2 (Air quality degrees: JIS B8392.1-1. 1.2 to 1.6.2, ISO8573.1-1. 1.2 to 1.6.2)			
Rated flow rate range (Flow rate range)	Dry air, N_2, Ar	0.2 to 10 ℓ/min	0.5 to 25 ℓ/min	1 to 50 ℓ/min	2 to 100 ℓ/min
	CO_2	0.2 to 5 ℓ/min	0.5 to 12.5 ℓ/min	1 to 25 ℓ/min	2 to 50 ℓ/min



● Flow Sensor: PFMV

Series	Set flow rate range (ℓ/min)
PFMV	0 to 0.5
	0 to 1
	0 to 3
	–0.5 to 0.5
	–1 to 1
	–3 to 3
Features	• Adsorption confirmation of tiny workpiece • Repeatability ±2% F.S. or less • Response speed 5 ms or less, Withstand pressure 500 kPa • Grease-free, RoHS-compliant • Compatible with all flow rates with a voltage monitor

Vacuum System Peripherals:
Pressure Gauge for Vacuum: *Series GZ46*



GZ46 GZ46-2

Specifications

Model		GZ46	GZ46E
Type		Back screw	
Connecting (1)		R 1/8 R 1/4 (Option: M = with M5 x thread)	
Fluid (2)		Air	
Indication accuracy		±3% F.S. (Full span)	
Parts washing		—	Wetted parts degrease washing
Material	**Case (Surface treatment)**	Rolled steel (Black melamine coating)	
	Clear cover (Surface treatment)	Polycarbonate Part no: G46-00-00-3	Polycarbonate (Hard coated) Part no: G46-00-00-2
	Body	Brass	Brass (Electroless nickel plated) (3)
	Bourdon tube	Brass	
With attachment cover assembly	**C**	Part no: 1305104-1A	
	C1	Part no: 1305104-3A	

Note 1) When attaching the pressure gauge, make sure not to fasten excessively, since it could cause the gauge to leak or to become damaged.
Use port tape as sealant. Recommended fastening torque = R 1/8: 7 to 9 N·m, R 1/4: 12 to 14 N·m.
Note 2) Please consult with SMC if other fluids are used, a corrosive problem may result.
Note 3) Mobile parts (gear, etc) inside the pressure gauge is made of brass.

How to Order

GZ 46 E – K 1 K – 01 M — C

Pressure gauge for vacuum Model

Symbol	O.D.
46	ø42.5

Specifications

Symbol	Specifications
Nil	—
E	External parts oil-free Copper/Fluorine-free

Pressure unit for positive pressure

Symbol	Unit
Nil	—
K	kPa

Note) Symbol A, which stands for pressure unit, mmHg for both positive and vacuum pressure is no longer sold for use in Japan after the new Weight and Measurement Act was implemented.

Display pressure range

Symbol	Unit: kPa
Nil	–100 to 0
1	–100 to 100
2	–100 to 200

Note) X3 (wetted parts) is not stainless steel specifications.

Pressure unit for vacuum

Symbol	Unit
K	kPa

Connecting

Symbol	Size
01	R 1/8
02	R 1/4

Option

Symbol	Specifications
Nil	—
M	M5 (Female thread)

Note) Use M5 female thread for panel mounting.

Attachment (Covering assembly)

Symbol	Specifications
Nil	Without covering assembly
C	Clear cover has no protrusion (Clear cover is irremovable.)
C1	Clear cover has no protrusion (Clear cover is removable.)

Model (Stock item)

Model	Pressure range Note) kPa	Unit	Connecting	Note
GZ46-K-01 to 02	–100 to 0	kPa	R 1/8, 1/4	—
GZ46-K-01 to 02-C, C1	–100 to 0	kPa	R 1/8, 1/4	With covering assembly
GZ46-K-01 to 02M	–100 to 0	kPa	R 1/8, 1/4 M5 (Female thread)	—
GZ46E-K-01 to 02M	–100 to 0	kPa	R 1/8, 1/4 M5 (Female thread)	—
GZ46-K2K-01 to 02	–100 to 200	kPa	R 1/8, 1/4	—

Note) Do not apply pressure that exceeds max. display pressure, since it would cause the gauge to malfunction.

Model (Made to order)

Other versions (not including models below) can be made on a made-to-order basis. Please consult with SMC for details, as delivery times may be extended.

Model	Pressure range Note) kPa	Unit	Connecting	Note
GZ46-K1K-01 to 02	–100 to 100	kPa	R 1/8, 1/4	—

Note) Do not apply pressure that exceeds max. display pressure, since it would cause the gauge to malfunction.

Selection

⚠ Caution

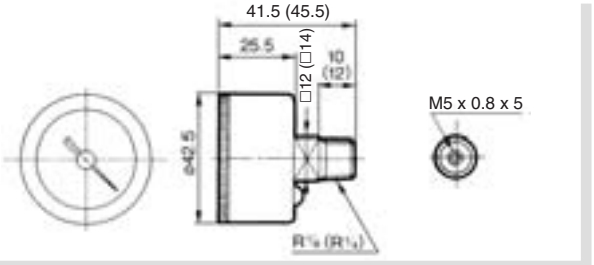
1. Do not expose the gauge to shocks or vibrations.
2. Please contact SMC if the gauge is exposed to pressure pulsations or high frequency operation.

Mounting

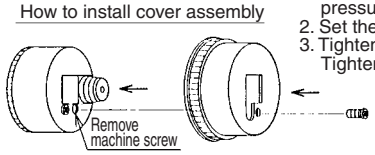
⚠ Caution

1. During transport and installation, make sure the gauge is not exposed to shock, such as dropping, to maintain precision.
2. To ensure the proper posture of the gauge, the zero point of the graduation on the gauge must face downward and perpendicular to the ground.
3. Do not install the gauge in an area that is exposed to high temperatures or humidity.
4. When attaching the pressure gauge, make sure to place a wrench directly on the squared off portion. If a force is applied to some other area to screw in the gauge, it could cause the gauge to leak or to become damaged.

Dimensions

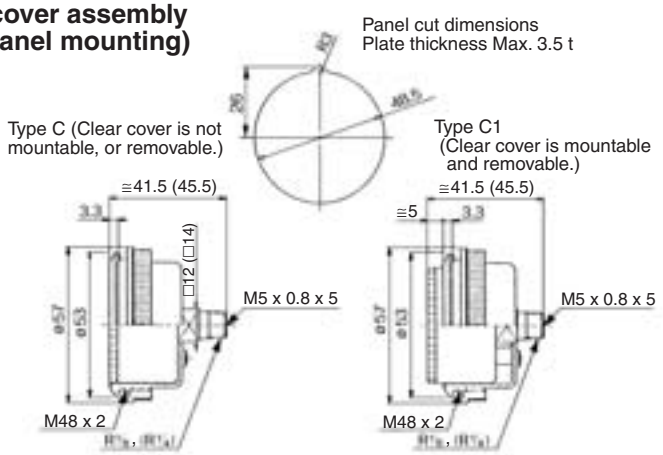


How to install cover assembly



1. Remove machine screw (1 location) of pressure gauge.
2. Set the cover on pressure gauge.
3. Tighten the machine screw to cover. Tightening torque is 0.3 to 0.5 N·m.

With cover assembly (For panel mounting)



( ): Port size is R 1/4

Vacuum System Peripherals:
Flow Contorol Equipment

Refer to Best Pneumatics No. 6 for details.

Speed controller
AS
Possible to control vacuum release air

With one-touch fitting
The tubing can be removed and installed through One-touch operation.
The body can be screwed in directly to the equipment that you are using.
As a result, the piping labor can be dramatically reduced.

Elbow type

Model		Port size Rc	Applicable tubing O.D. (mm)					
Elbow type	Universal type		3.2	4	6	8	10	12
AS1201F-M5-□□-X214	AS1301F-M5-□□-X214	M5 x 0.8	●	●	●	—	—	—
AS2201F-01-□□S-X214	AS2301F-01-□□S-X214	1/8	●	●	●	●	●	—
AS2201F-02-□□S-X214	AS2301F-02-□□S-X214	1/4	—	●	●	●	●	—
AS3201F-03-□□S-X214	AS3301F-03-□□S-X214	3/8	—	—	●	●	●	●
AS4201F-04-□□S-X214	AS4301F-04-□□S-X214	1/2	—	—	—	—	●	●

∗Dimensions: Same dimensions as mentioned in pages 420 and 421 of Best Pneumatics No. 6.
∗Flow rate: Same as controlled flow of the standard product.

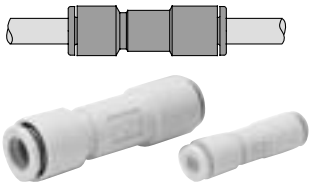
Check valve
AK
Large valve capacity
Low cracking pressure/0.02 MPa

Series AK

Model	Port size Rc	Effective area (mm²)
AK2000	1/8, 1/4	27.5 (Rc 1/4)
AK4000	1/4, 3/8, 1/2	95 (Rc 1/2)
AK6000	3/4, 1	230 (Rc 1)

Check valve with One-touch fitting
Straight type: AKH

Easily installed in pipe lines.



Metric size

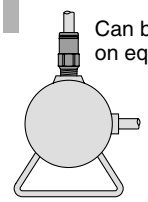
Model		Applicable tubing O.D.	Effective area (mm²)
AKH	04-00	ø4	2.8
	06-00	ø6	6.5
	08-00	ø8	14
	10-00	ø10	24
	12-00	ø12	34

Inch size

Model		Applicable tubing O.D.	Effective area (mm²)
AKH	03-00	5/32	2.8
	07-00	1/4	6.5
	09-00	5/16	14
	11-00	3/8	24
	13-00	1/2	34

Check valve with One-touch fitting
Male connector type: AKH

Can be used directly on equipment.



Metric size

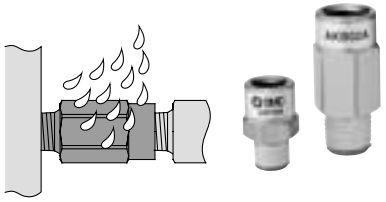
Model		Applicable tubing O.D.	Port size R					Effective area (mm²)
			M5	1/8	1/4	3/8	1/2	
AKH	04□	ø4	●	●				2.8
	06□	ø6	●	●	●			6.5 (R 1/8)
	08□	ø8		●	●	●		14 (R 1/4)
	10□	ø10			●	●	●	24
	12□	ø12				●	●	34

Inch size

Model		Applicable tubing O.D.	Port size NPT					Effective area (mm²)
			10-32 UNF	1/8	1/4	3/8	1/2	
AKH	03□	ø5/32	●	●				2.8
	07□	ø1/4	●	●	●			6.5 (NPT 1/8)
	09□	ø5/16		●	●	●		14 (NPT 1/4)
	11□	ø3/8			●	●	●	24
	13□	ø1/2				●	●	34

Check valve
Bushing type: AKB

Can be used in applications with splashing coolant and spatter, etc.



R thread

Model		Female thread Rc	Male thread R				Effective area (mm²)
			1/8	1/4	3/8	1/2	
AKB	01□	1/8	●				6.5
	02□	1/4		●			14
	03□	3/8			●		24
	04□	1/2				●	34

NPT thread

Model		Female thread NPT	Male thread NPT				Effective area (mm²)
			1/8	1/4	3/8	1/2	
AKB	01□	1/8	●				6.5
	02□	1/4		●			14
	03□	3/8			●		24
	04□	1/2				●	34

Vacuum System Peripherals: Made to Order

Made to Order

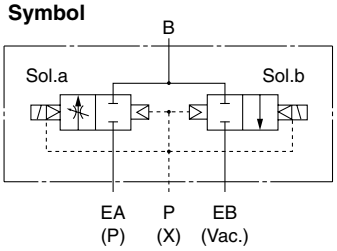
1 Vacuum Release Valve with Throttle Valve: SY5A2R

- Line for vacuum adsorption transfer
- Built-in throttle valve in the vacuum release valve
- Can be mounted on the SS5Y5-20-type (Individual wiring type) and SS5Y5-20P-type (Flat ribbon cable type) Manifold
- Valve effective area

B port Port size Note 1)	Effective area: mm²	
	EA→B Note 2)	B→EB
C6	4.4	6.8
C8	4.5	7.0

Note 1) Refer to the part numbers for the port size.
Note 2) When the built-in throttle valve is fully open.

Symbol



Specifications

Valve type		External pilot type, Dual 2 port solenoid valve
Type of actuation		Normally closed (N.C. valve)
Fluid		Air
Operating pressure range	**P (External pilot pressure)**	0.15 to 0.7 MPa
	EA (Vacuum release pressure)	0 to 0.7 MPa
	EB (Vacuum)	–100 kPa to 0 MPa
Pilot valve exhaust method		Pilot valve individual exhaust
Ambient and fluid temperature		–10 to 50°C (No condensation)

Effective Area/Mass

B port Port size Note 1)	Effective area: mm²		Mass (g)
	EA→B Note 2)	B→EB	
C6	4.4	6.8	94
C8	4.5	7.0	88

Note 1) Refer to the part numbers for the port size.
Note 2) When the built-in throttle valve is fully open.

How to Order

Single unit: External pilot type dual 2 port solenoid valve

SY5A2R □ – 5 L □ □ – C6 – □ □

- **Coil specifications** Note 3)
- **Rated voltage** Note 3)
- **Electrical entry** Note 3)
- **Light/surge voltage suppressor** Note 3)
- **Manual override** Note 3)
- **B-port port size**

C6	ø6 One-touch fitting
C8	ø8 One-touch fitting

- **Bracket**

Nil	Without bracket
F2	With bracket (F2)

Bracket part no.: SX5000-16-8A

- **CE compliant** Note 3)

Note 3) Refer to the Series SY5000 catalog.

Manifold: Body ported bar stock (20/20P type)

∗ Specify the part numbers for valves and options together beneath the manifold base part number in order starting from the first station.

SS5Y5 – 20 P – 08 – □ – □

- **Manifold type**

Nil	Individual wiring type
P	Flat ribbon cable type

- **Stations** Note 5)

03	3 stations
⋮	⋮
20	20 stations

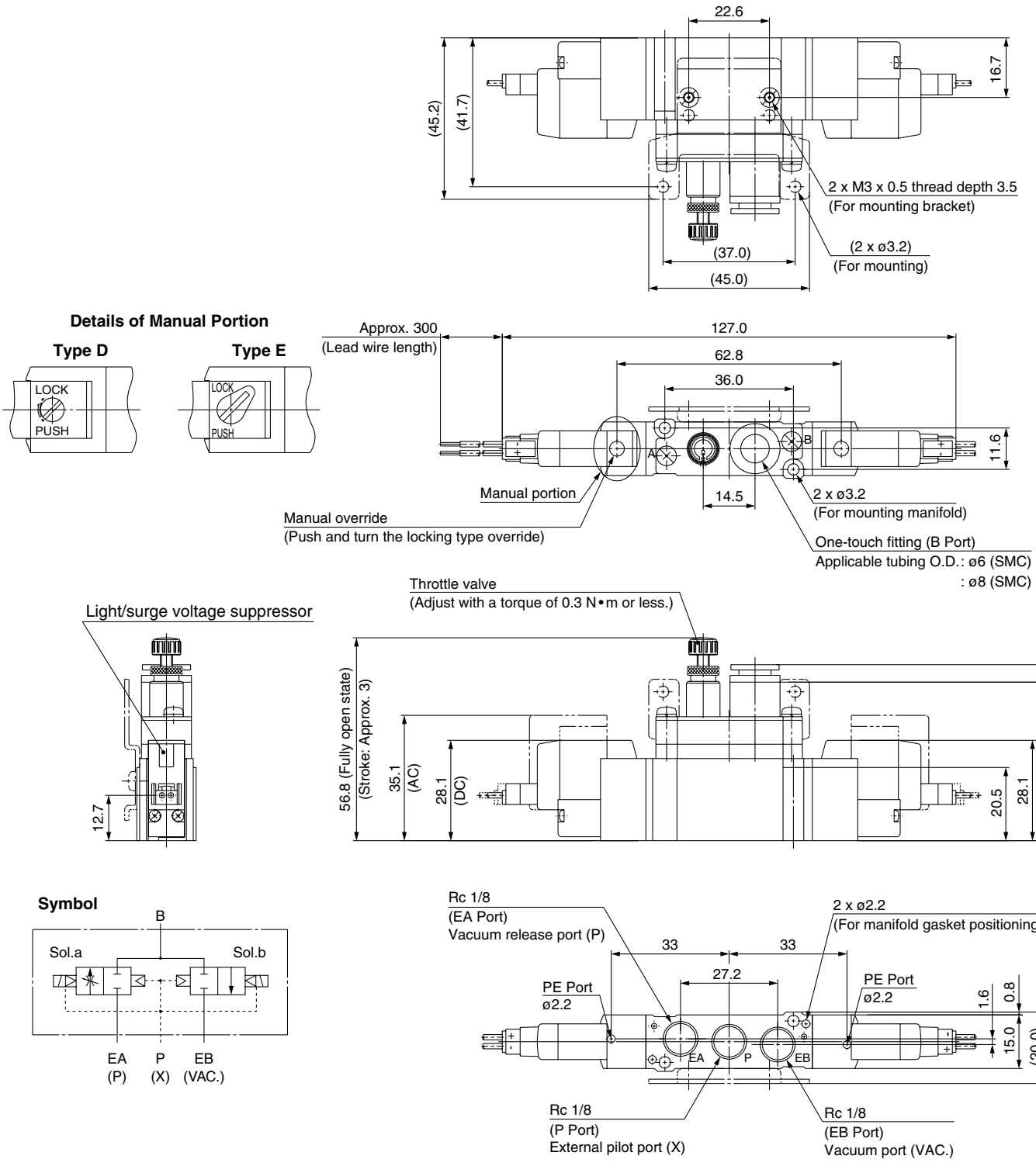
- **Thread type** Note 4)
- **CE compliant** Note 4)

Example
SS5Y5-20-05 ····· 1 set
∗SY5A2R-5LOU-C6 ··· 5 sets
→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Note 4) Refer to the Series SY5000 catalog.
Note 5) 20P (Flat ribbon cable type): Max. 12 stations

1 External Pilot Type, Dual 2 Port Solenoid Valve: Single Unit/Manifold

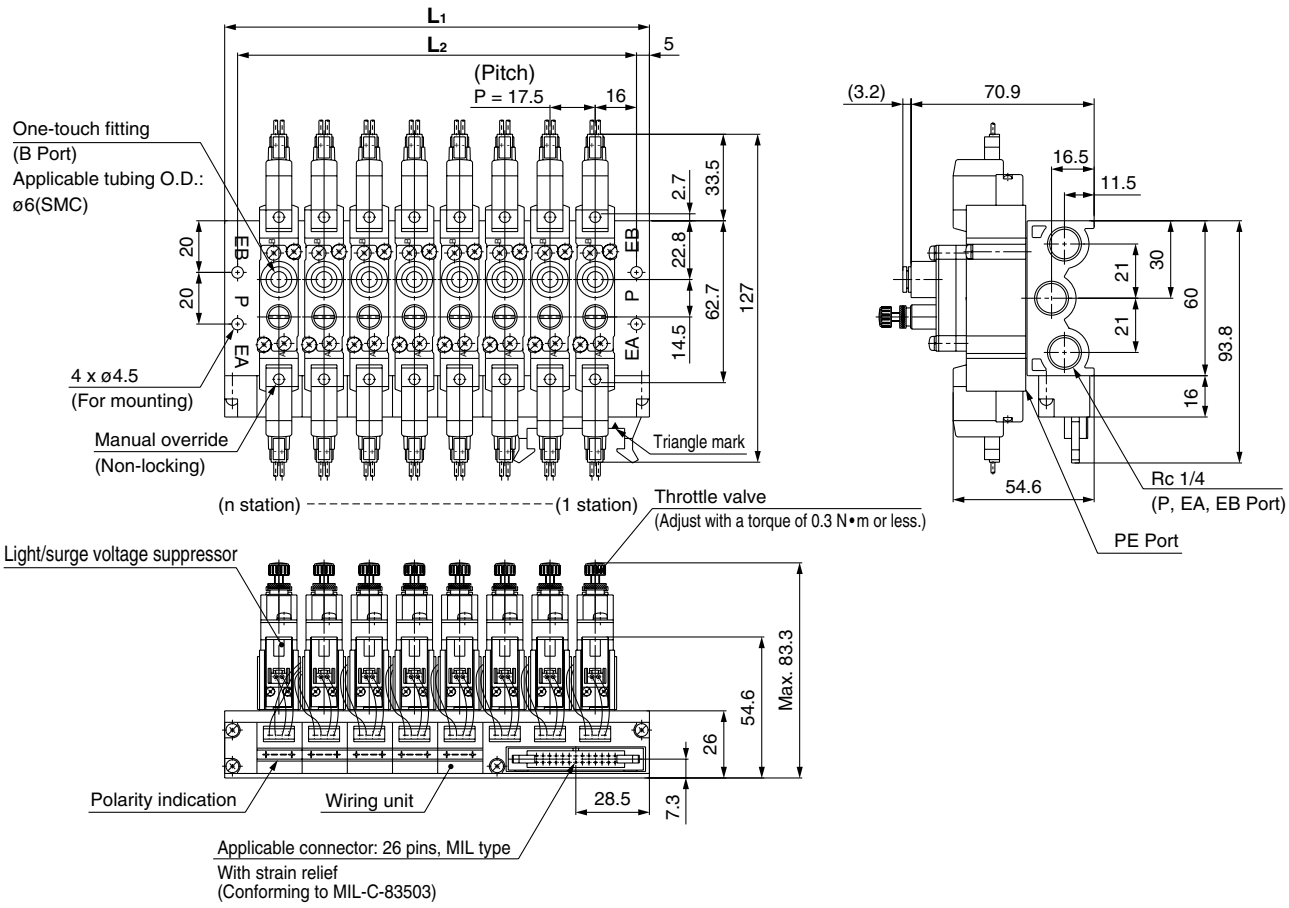
Dimensions/SY5A2R



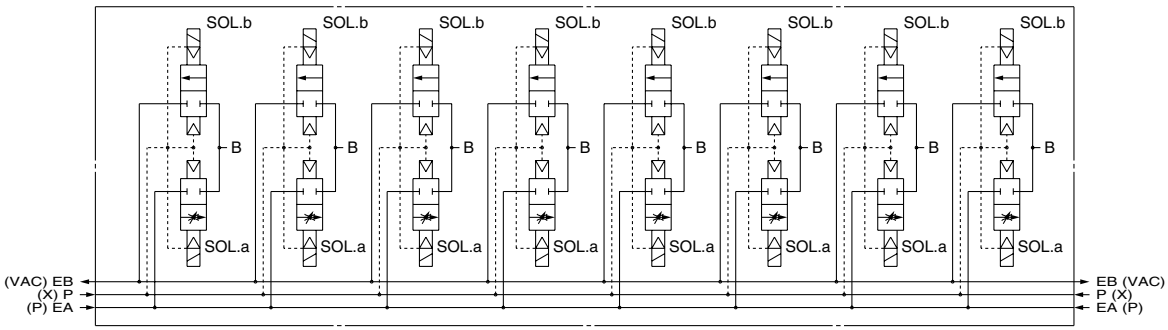
[Remarks for valves]

Note 1) Refer to Best Pneumatics No. 1 Series SY for the details of electrical entry and electrical circuit with a light/surge voltage suppressor.
Note 2) Diagrams above are compatible with SY5A2R-□L□□□-□□-(F2).
Note 3) When mounted with brackets, the product is mounted in a place specified with one dot chain lines.
Note 4) Applicable pilot valves are SY114/SY115-□□□.

Dimensions/SS5Y5-20P-Stations-□□-□

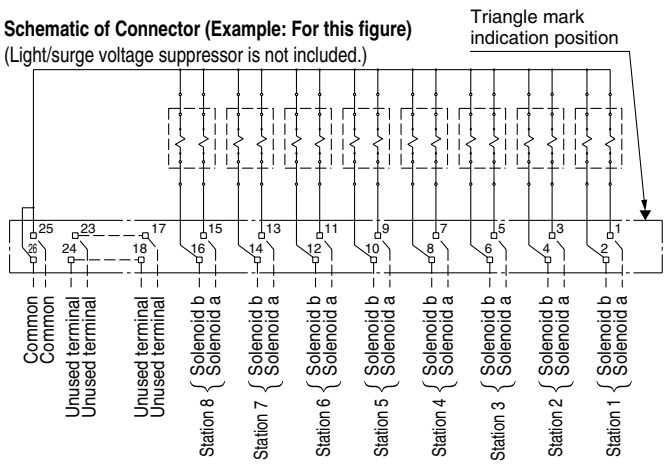


Pneumatic Circuit



Schematic of Connector (Example: For this figure)

(Light/surge voltage suppressor is not included.)



L: Dimensions: mm

n: Stations

L \ n	3	4	5	6	7	8	9	10	11	12
L1	77	94.5	112	129.5	147	164.5	182	199.5	217	234.5
L2	67	84.5	102	119.5	137	154.5	172	189.5	207	224.5
□□	03	04	05	06	07	08	09	10	11	12

∗ Applicable blanking plate assembly part no.:
SS5Y5-20-□□: SY5000-26-20A (with screws and gaskets)
SS5Y5-20P-□□: SY5000-26-21A (with screws, gaskets and dust cap)
∗ The product cannot be mounted with standard products Series SY5000/500 on a manifold.

Series SS5Y5-20□-□-□
Specific Product Precautions

Be sure to read before handling.
Refer to front matters 38 and 39 for Safety Instructions.

How to Use Manifold

⚠ Caution

<20/20P Type>

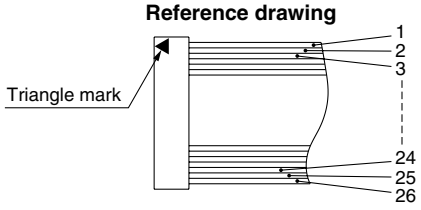
A piping port is different from that for the standard product. When not connected properly, the product will not operate properly.

[P port: External pilot port, EA port: Vacuum release pressure port, EB port: Vacuum suction port]

<20P Type>

1. **If a large amount of drainage is included in the supply air, it may cause electrical trouble since a wiring unit is located in the place where exhaust from the PE port directly goes through. Be sure to control the supply air.**
2. **For more than 10 stations, both poles of the common should be wired.**
3. **When replacing a solenoid valve, etc., be sure to mount it by placing the solenoid a side on the connector (MIL type) side.**
4. **Terminal no. is not indicated on the connector.**
5. **The terminal no. indicated in the connection schematic of connector, as shown in the reference, means a correlation of 1, 2, 3...26 from the triangle mark side on the flat ribbon cable of connector. (Refer to the reference drawing.)**

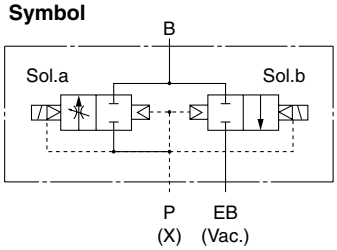
Reference drawing



2 Vacuum Release Valve with Throttle Valve: SV1A4R-X8

- **For vacuum adsorption transfer**
- **With a throttle valve that can control the flow rate of release air (Slotted type is used to ensure safety.)**
- **Possible to block release air and vacuum at the same time (3 position function)**
- **Compatible with manifold Series SV1000**

Symbol



Specifications

Common specifications

Type of actuation		Internal pilot type 3 position, 3 port solenoid valve
Valve type		Normally closed (N.C.)
Fluid		Air
Operating pressure range	**P (Vacuum release pressure)**	0.15 to 0.7 MPa
	EB (Vacuum pressure)	–100 kPa to 0 MPa (Atmospheric pressure)
Ambient and fluid temperature		–10 to 50°C
Allowable voltage fluctuation		–10 to +10%
Electrical entry		Plug-in type
Mass		73 g

Note) Specifications other than the above are the same as Series SV1000

How to Order

Refer to How to Order Series SV1000 (Standard).

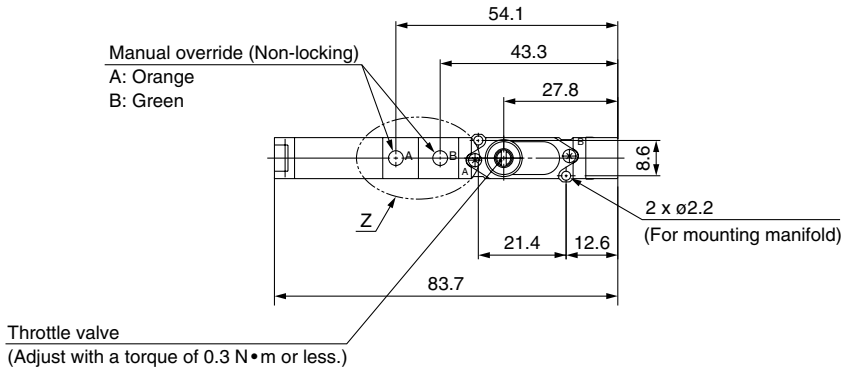
SV1A4R – □ F □ □ – X8

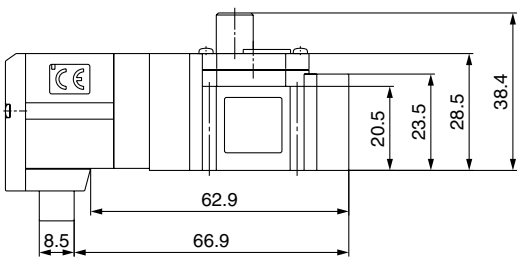
- Rated voltage
- Light/surge voltage suppressor
- Manual override

Note) Please contact SMC when the product is mounted with a standard 5 port solenoid valve on a manifold.

Dimensions

Dimensions other than the throttle valve for vacuum release are the same as the standard product (SV1000).





Note) Use the manifold that the product is mounted on after mounting a plug to the A port.

⚠ For safe operation, be sure to read the Safety Instructions on front matters 38 and 39 before handling.

3 Air Suction Filter (Filter volume: 1 cm³)/FGZG220A-B□□□

- **Used to shorten the response time of vacuum adsorption**

  Shorten the arrival time of vacuum pressure when adsorbing the workpiece by reducing the volume of the filter used for the vacuum adsorption system. This product is mainly used for the semiconductor manufacturing equipment handler (Reducing the cycle time of the equipment).

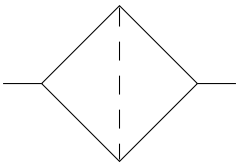
- **Volume of air suction filter: 1 cm³**

Application Example

When the standard air suction filter (ZFB) volume is 5 cm³, the volume is reduced to 4 cm³ by using this filter (volume: 1 cm³).
This volume (4 cm³) is equivalent to ø4 mm tubing (I.D. 2.5 mm) and length of approx. 800 mm.

Specifications

Fluid	Air, Nitrogen
Operating pressure	Negative pressure
Withstand pressure	0.5 MPa
Ambient and fluid temperature	0 to 60°C (No freezing)
Nominal filtration	010: 10 μm, 020: 20 μm 040: 40 μm, 070: 70 μm
Element differential pressure resistance	0.15 MPa



JIS Symbol

How to Order

Air Suction Filter **FGZG220A − B 010**

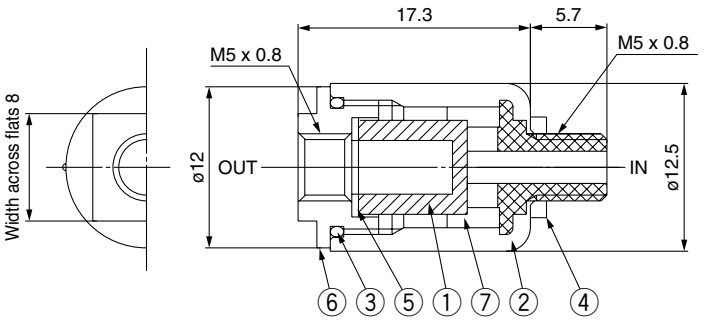
Element with Cylindrical Base (Replacement element part no.) **EBW − 7 − 8 − 1.5 − 010**

Nominal filtration

010	10 μm
020	20 μm
040	40 μm
070	70 μm

Note 1) Replace the filter element when the pressure drops approximately 0.02 MPa.
Note 2) During disassembly and assembly, confirm that there are no scratches or damage, etc, on the O-ring.
Note 3) When disassembling, a wrench (nominal size 8) is required. Please consult with SMC for information not specified such as how to replace (disassemble) elements, etc.

Dimensions



Description

No.	Description	Material
1	**Element with cylindrical base**	BC
2	**Case**	Transparent nylon
3	**O-ring**	NBR
4	**Seal**	Nylon
5	**Seal**	NBR
6	**Cover**	A2017
7	**Element guide**	PTFE

Note 1) Verify the directions for IN and OUT that are indicated on the body to ensure a proper connection.
It is not possible to ensure the sealing performance of the filter element if connections are reversed.
Note 2) When an element becomes clogged, stop operation, change the inside pressure to atmospheric pressure, and then replace the element (element with cylindrical base).
Note 3) Do not use in a line where a pressurized condition is maintained since the body may be damaged.
Note 4) Do not use the product in an atmosphere and place where there is direct contact with chemicals. It may cause damage to the body. (Alcohol, acetone, etc. also cause damage, so be sure for the product not to be close to them.)

⚠ For safe operation, be sure to read the Safety Instructions on front matters 38 and 39 before handling.