Vacuum System Peripherals

Vacuum Regulator/Electronic Vacuum Regulator

Vacuum regulator: IRV10/20 ····· P.795
Electronic vacuum regulator: ITV009□/ITV209□ ····· P.795

Directional Control Valve

Selection guide of directional control valve (Ejector system/Vacuum pump system) ····· P.796
V100, SYJ, VQZ, VK, VX2, VX3 ····· P.798
VT/VP, VG342, VNB, VEX3 ····· P.799
VQD, VQD1000-V, SJ3A6, SY3A□R, SY5A□R ····· P.800

Vacuum Pressure Switch

ZSE20(F), ZSE20A(F), ZSE20B(F), ZSE10(F), ZSE20C(F)
PS1100/1200, PSE200/300/530/540, PFM, PFMV ····· P.801

Pressure Gauge for Vacuum

Pressure gauge for vacuum: GZ46/GZ46E ····· P.802

Flow Control Equipment

Speed controller: AS-X214 ····· P.804
Check valve: AK ····· P.804
Check valve with One-touch fitting: AKH ····· P.804
Check valve, Bushing type: AKB ····· P.804

Made to Order

Vacuum release valve with throttle valve: SY5A2R ····· P.805
Vacuum release valve with throttle valve: SV1A4R-X8 ····· P.809

Vacuum System Peripherals: Vacuum Regulator/Electronic Vacuum Regulator

RoHS

Vacuum Regulator

Series	Model	Set pressure range	Port size	Best Pneumatics
IRV series 	**IRV10**	–100 to –1.3 kPa	ø6, ø8 ø1/4", ø5/16"	**No. 6**
	**IRV20**		ø6, ø8, ø10 ø1/4", ø5/16", ø3/8"	

Electronic Vacuum Regulator

● Stepless control of vacuum pressure proportional to an electrical signal

Series	Model	Set pressure range	Input signal	Port size	Best Pneumatics
ITV009□ series 	**ITV009□**	–1 to –100 kPa	Current type: 4 to 20 mA DC (Sink type) Current type: 0 to 20 mA DC (Sink type) Voltage type: 0 to 5 VDC Voltage type: 0 to 10 VDC	Built-in One-touch fittings Metric size: ø4 Inch size: ø5/32	**No. 6**
ITV209□ series 	**ITV209□**	–1.3 to –80 kPa	Current type: 4 to 20 mA DC (Sink type) Current type: 0 to 20 mA DC (Sink type) Voltage type: 0 to 5 VDC Voltage type: 0 to 10 VDC Preset input: (4 points/16 points) 10 bit digital input CC-Link DeviceNet™ PROFIBUS DP RS-232C communication	1/4	**No. 6**

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.

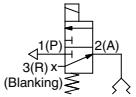
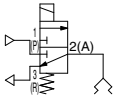
Solenoid valve	Valve construction	Ejector System: Vacuum release valve – Standard	Vacuum release valve – External pilot spec. (R)	Vacuum release valve – Vacuum spec. (V)	Supply valve – Standard	Supply valve – External pilot spec. (R)	Supply valve – Vacuum spec. (V)
Compact 3 port solenoid valve **V100, SYJ** Compact size: 10 mm (V100, SYJ300) 15 mm (SYJ500) 18 mm (SYJ700) Low power consumption: 0.1 W	V100	●	–	–	●	–	–
	SYJ300/500/700	–	●	–	–	●	–
3 port solenoid valve **VQZ** 10 mm: VQZ100 15 mm: VQZ200 18 mm: VQZ300	VQZ100/ 200/300	–	●	–	–	●	–
3 port solenoid valve **VK**		●	–	●	●	–	–
Compact 2 port solenoid valve **VX2**		●	–	●	●	–	–
Compact 3 port solenoid valve **VX31/32/33**		●	–	●	●	–	–
3 port solenoid valve **VT** VT307/317/325		●	–	●	●	–	–
3 port solenoid valve **VP** VP300/500/700		–	●	–	–	●	–
3 port solenoid valve **VG342**		–	●	–	–	●	–
Vacuum pilot 2 port valve **VNB□□□□V**		–	●	●	–	●	●
3 position valve **VEX3**		–	●	●	–	●	●
3/4 port solenoid valve **VQD** VQD1000/VQD100	VQD1000	–	–	–	●	–	–
	VQD100	–	–	●	●	–	●
Vacuum/release unit **VQD1000-V**		–	–	–	–	–	–
Vacuum release valve with throttle valve **SJ3A6**		–	●	–	–	●	–
Vacuum release valve with restrictor **SY3A□R/SY5A□R**		–	●	–	–	●	–
Vacuum release valve with restrictor/Body ported **SY5A2R**		● (Made to Order)	–	–	● (Made to Order)	–	–

Caution on Model Selection

⚠ Caution

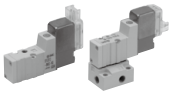
- Use a plug cap at R port of 2 port valve and 3 port valve for vacuum release valve and vacuum switching valve. (Except VEX3)
  1) Applications are different from vacuum holding valve.
  2) Refer to Best Pneumatics No. 9 for flow rate characteristics.

Vacuum Pump System

Vacuum switching valve			Divider valve of vacuum supply air			Port size	Best Pneumatics No.
							
Standard	External pilot spec. (R)	Vacuum spec. (V)	Standard	External pilot spec. (R)	Vacuum spec. (V)		
●	–	–	●	–	–	M3 x 0.5 M5 x 0.8 1/8, 1/4	No. 1-2
–	●	–	–	●	–		
–	●	–	–	●	–	M5 x 0.8 1/8, 1/4	No. 1-2
–	–	●	–	–	●	M5 x 0.8 1/8	No. 1-2
●	–	●	–	–	–	1/8 to 3/8	No. 9
●	–	●	●	–	●	1/8 to 3/8	No. 9
–	–	●	–	–	●	1/8 to 3/8	No. 1-2
–	●	–	–	●	–	1/8 to 1/2	No. 1-2
–	●	–	–	●	–	1/2 to 3/4	No. 1-2
						1	
–	●	●	–	●	●	3/8 to 2	No. 9
–	●	●	–	●	●	1/8 to 1/2	No. 1-2
–	–	●	–	–	●	M5 x 0.8	No. 1-2
–	–	●	–	–	●		
–	–	–	●	–	–	M5 x 0.8	No. 1-2
–	●	–	–	●	–	M5 x 0.8	No. 1-1
–	●	–	–	●	–	ø6, ø8	No. 1-1
● (Made to Order)	–	–	● (Made to Order)	–	–	ø6, ø8	No. 1-1

Vacuum System Peripherals:
Directional Control Valve/Solenoid Valve

Compact 3 Port Solenoid Valve V100, SYJ



Body ported Base mounted

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)

Refer to Best Pneumatics No. 1-2 for details.

Model

Piping specifications	Solenoid valve	Port size
Body ported	**SYJ312/322**	M3 x 0.5
	SYJ512/522	M5 x 0.8
	SYJ712/722	1/8
Base mounted (With sub-plate)	**V114/124 (A)**	M5 x 0.8
	SYJ314/324	M5 x 0.8
	SYJ514/524	1/8
	SYJ714/724	1/8, 1/4

3 Port Solenoid Valve VK

Body ported Base mounted

Compact size: Width 18 mm
Possible to use with vacuum

Refer to Best Pneumatics No. 1-2 for details.

Model

Piping specifications	Solenoid valve	Port size
Body ported	**VK332**	M5 x 0.8
	For vacuum:VK332V *	M5 x 0.8
Base mounted (With sub-plate)	**VK334**	1/8
	For vacuum:VK334V *	1/8

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

Compact 3 Port Solenoid Valve VX3 Series Options V & M For Medium Vacuum, Non Leakage

Refer to Best Pneumatics No. 9 for details.

Model

Size	Port size	Orifice dia. (mm ø)	Model
1	1/8, 1/4	1.5	VX31□□ M/V
		2.2	
		3	
2	1/4, 3/8	2.2	VX32□□ M/V
		3	
		4	
3	1/4, 3/8	2.2	VX33□□ M/V
		3	
		4	

For Vacuum Pad

Model	Port size Rc	Orifice dia. (ø)	
		Pressurised side	Vacuum side
VXV313□	1/8, 1/4	1.5	3
VXV324□	1/4, 3/8	2.2	4
VXV334□		2.2	4

3 Port Solenoid Valve VQZ100/200/300

Base mounted

Refer to Best Pneumatics No. 1-2 for details.

Model/Metal Seal, Rubber Seal

Piping specifications	Solenoid valve		Port size
Base mounted (With sub-plate)	VQZ100	**VQZ115**	1/8
	VQZ 200	**VQZ215**	1/8, 1/4
		VQZ235	
		VQZ225	
		VQZ245	
	VQZ 300	**VQZ315**	1/4, 3/8
		VQZ335	
		VQZ325	
		VQZ345	

Compact 2 Port Solenoid Valve VX2 Series For Medium Vacuum

Refer to Best Pneumatics No. 9 for details.

Model

Size	Port size	Orifice dia. (mm ø)	Model
1	1/8, 1/4	2	VX214
		3	
		5	
2	1/4, 3/8	4	VX224
		7	
3	1/4, 3/8	5	VX234
		8	
		10	
	1/2	10	

3 Port Solenoid Valve VT, VP


VP542


VT307


VT325

Refer to Best Pneumatics No. 1-2 for details.

Model/Rubber Seal

Piping specifications	Solenoid valve	Port size
Body ported	**VT325(V)**	1/4, 3/8
	VT307(V)*	1/8, 1/4
	VT317(V)**	1/4
Body ported	**VP342**	1/8, 1/4
	VP542	1/4, 3/8
	VP742	3/8, 1/2
Base mounted	**VP344**	1/8, 1/4
	VP544	1/4, 3/8
	VP744	3/8, 1/2
Body ported	**VP3145**	3/8, 1/2, 3/4
	VP3165	3/4, 1, 1 1/4
	VP3185	1 1/4, 1 1/2, 2

* 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

Piping specifications	Solenoid valve	Port size
Body ported	**VG342**	1/2 to 3/4
		1
	For Vacuum: VG342R *	1/2 to 3/4
		1

* Operating pressure range: –101.2 kPa to 0.9 MPa

Refer to Best Pneumatics No. 1-2 for details.

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.

Refer to Best Pneumatics No. 9 for details.

Specifications (Vacuum pilot)

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

Model

Model	Port size Screw-in	Orifice dia ø [mm]
VNB2□4□-10A	3/8	11
VNB2□□□-10A		15
VNB2□4□-15A	1/2	11
VNB2□□□-15A		15
VNB3□4□-20A	3/4	14
VNB3□□□-20A		20

Model	Port size		Orifice dia ø [mm]
	Screw-in	Flange	
VNB4□4□-25A	1	–	16
VNB4□□□-25A			25
VNB5□4□-32A	1 1/4	–	22
VNB5□□□-32A			32
VNB5□4□-32F	–	32	22
VNB5□□□-32F			32
VNB6□4□-40A	1 1/2	–	28
VNB6□□□-40A			40
VNB6□4□-40F	–	40	28
VNB6□□□-40F			40
VNB7□4□-50A	2	–	33
VNB7□□□-50A			50
VNB7□4□-50F	–	50	33
VNB7□□□-50F			50

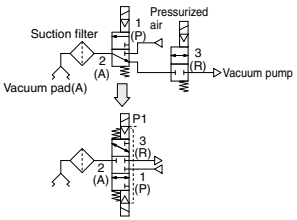
3 Position Valve VEX3

Refer to Best Pneumatics No. 1-2 for details.

Model

Model		Port size
Body ported	**VEX312□-01**	1/8
	VEX312□-02	1/4
	VEX332□-02	1/4
	VEX332□-03	3/8
	VEX332□-04	1/2
	VEX350□-04	1/2
Base mounted (With sub-plate)	**VEX322□-01**	1/8
	VEX322□-02	1/4
	VEX342□-02	1/4
	VEX342□-03	3/8
	VEX342□-04	1/2

Model		Port size
Body ported	**VEX350□-06**	3/4
	VEX350□-10	1
	VEX370□-10	1
	VEX370□-12	1 1/4
	VEX390□-14	1 1/2
	VEX390□-20	2



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.

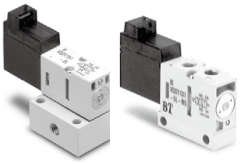
• Sequential switching operation prevents the inflow of pressurized air into the vacuum pump system.

⚠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. Furthermore, it cannot be used as an emergency cutoff valve.

3/4 Port Solenoid Valve VQD

Unprecedented high speed, with stable response times (ON: 4 ms, OFF: 2 ms, Dispersion accuracy ±1 ms) Available in vacuum applications (Up to –101.2 kPa)



Base mounted　　Body ported

Model　　**Refer to the Best Pneumatics No. 1-2 for details.**

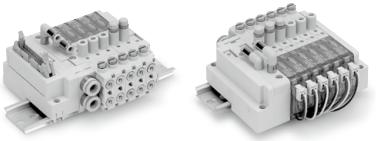
Piping specifications	Solenoid valve		Port size
Body ported	VQD1000	VQD1121	M5 x 0.8
Base mounted (With sub-plate)		VQD1151	
		VQD1251	
	VQD100	VQD115	

∗ Operating pressure range: 0 to 0.7 MPa for standard products, -101.2 kPa to 0.7 MPa for vacuum specification

Vacuum Release Valve with Throttle Valve SJ3A6

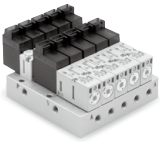
2 spool valves included.
Possible to control vacuum adsorption and release by a valve.

- Current consumption 0.15 W (With energy saving circuit)
- Width 10 mm (Same as SJ3000 Series)
- 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.)



For details, refer to the Best Pneumatics No. 1-1.

Vacuum/Release Unit VQD1000-V



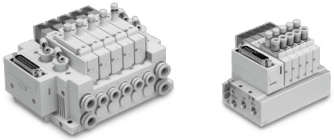
- **Response speed**
  13 msec (at 500 mm∗)/
  18.5 msec (at 1000 mm∗)
  ∗ Distance from a unit to a workpiece (Piping I.D. ø2.5)
- **Smooth removal of workpiece without overshoot**
  No blow off of workpiece by release air
- **No need to adjust the timing for switch-over vacuum and positive pressure.**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

For details, refer to page 265 or the Best Pneumatics No. 1-2.

Vacuum Release Valve with Restrictor SY3A□R/SY5A□R

Vacuum suction and release can be controlled with a single valve!

- Can be mounted on the same manifold with the standard valve.
  ∗: When the individual EXH spacer is used.



Connector connecting base　　Metal base

For details, refer to the Best Pneumatics No. 1-1.

Body Ported Vacuum Release Valve with Restrictor Made to Order SY5A2R

- **Line for vacuum adsorption transfer**
- **Built-in restrictor in the vacuum release valve**
- **Single unit**
  External pilot type dual 2 port solenoid valve
- **Manifold**
  SS5Y5-20-type (Individual wiring type),
  SS5Y5-20P-type (Flat ribbon cable type) Manifold

Vacuum System Peripherals:
Vacuum Pressure Switch

For details, refer to the Best Pneumatics No. 8.

3-Screen Display
High-Precision Digital Pressure Switch
ZSE20(F)

3-Screen Display
High-Precision Digital Pressure Switch For General Fluids
ZSE20C(F)

Pressure Sensor
PSE530

3-Screen Display
High-Precision Digital Pressure Switch
ZSE20A(F)

Air Checker
Electronic Pressure Switch
PS1100/1200

Compact Pneumatic Pressure Sensor
PSE540

3-Screen Display
High-Precision Digital Pressure Switch
ZSE20B(F)

3-Screen Display
Multi-channel Digital Sensor Monitor
PSE200A

2-Color Indicator
Digital Flow Switch PF2M

Compact Digital Pressure Switch
ZSE10(F)

3-Screen Display
Sensor Monitor
PSE300A

Flow Sensor PFMV

Vacuum System Peripherals: Pressure Gauge for Vacuum: *GZ46/GZ46E Series*

RoHS

GZ46

GZ46-2

⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions.

Selection

⚠Caution

1. **Make sure that no direct impact or vibrations are applied to the body.**
2. **If operating under pressure pulsations or in high frequency operations, please contact SMC.**

Mounting

⚠Caution

1. **During transport and installation, do not apply shock to the product, such as by dropping doing so will affect its precision.**
2. **Regarding the installation posture, place it perpendicular to the ground, with the zero point on the reading of a pressure gauge facing down.**
3. **Do not install it in an area that is exposed to high temperature or humidity, because doing so will lead to improper operation.**
4. **To screw in the pressure gauge, make sure to turn the gauge by placing a wrench over the square wrench flats.**

   If the pressure gauge is screwed in by holding it on some other area, air leakage or damage may result.

Standard Specifications

Model		GZ46	GZ46E
Type		Back side thread	
Port size (1)		R 1/8, R 1/4 (Option: M = M5 x with thread)	
Fluid (2) (5)		Air	
Indication precision (6)		±3%	
Fluid contact part cleaning		—	Wetted parts degrease washing
Material (4)	Case (Surface treatment)	Rolled steel (Black melamine painted)	
	Clear cover (Surface treatment)	Polycarbonate Part no.: G46-00-00-3	Polycarbonate (Hard coated) Part no.: G46-00-00-2
	Stud (Surface treatment)	Brass	Brass (Electroless nickel plated) (3)
	Bourdon tube	Brass	
Weight [kg]		0.078	0.08
Attachment: With cover ring assembly	C	Part no.: 1305104-1A	
	C1	Part no.: 1305104-3A	

Note 1) When mounting a pressure gauge, use caution not to tighten excessively. Excessive tightening will cause product failure. Use a pipe tape for sealing. Recommended tightening torque: R 1/8: Set between 7 to 9 N·m, R 1/4: 12 to 14 N·m respectively.
Note 2) When using other fluids, please consult with SMC for fluid compatibility information concerning corrosive potential.
Note 3) Movable parts (gear and etc.) in the pressure gauge are made of brass.
Note 4) X3 (wetted parts stainless steel) specifications are not available.
Note 5) Avoid freezing as this may cause a malfunction.
Note 6) The guaranteed temperature range is 23°C ±5°C.

Model (Standard)

Model	Pressure range (1) kPa	Indication unit	Connection thread	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 cover ring 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 1) Do not apply more excessive pressure than max. pressure display. It will be a cause of malfunction.

Model (Made to Order)

Please consult with SMC for models other than shown below, as delivery times may be extended.

Model	Pressure range (1) kPa	Indication unit	Connection thread	Note
GZ46-K1K-01 to 02	–100 to 100	kPa	R 1/8, 1/4	—

Note 1) Do not apply more excessive pressure than max. pressure display. It will be a cause of malfunction.

How to Order

GZ46 ❶ – ❷ ❸ K – 01 ❹ ❺ – ❻

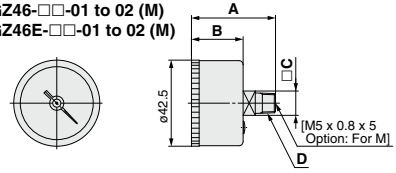
- **Pressure gauge for vacuum**
- **Pressure unit for vacuuum (kPa)**

	Symbol	Description	❶ Specifications GZ46	❶ Specifications GZ46E (Oil-free, external parts copper-free)
			—	
+				
❷ Pressure unit for positive pressure	Nil	—	●	●
	K	kPa	●	●
+				
❸ Display pressure range	Nil	–100 to 0 kPa	●	●
	1	–100 to 100 kPa	●	●
	2	–100 to 200 kPa	●	●
+				
❹ Connection thread	01	R 1/8	●	●
	02	R 1/4	●	●
+				
❺ Option	Nil	—	●	●
	M (1)	With M5 (Female thread)	●	●
+				
❻ Attachment Note 2)	Nil	Without cover ring assembly	●	●
	C	Clear cover has no protrusion. (Clear cover is irremovable.)	●	●
	C1	Clear cover has protrusion. (Clear cover is removable.)	●	●

Note 1) To use the pressure gauge with M5 (female thread), attach the joint when piping the tube.
Note 2) For pressure gauges with the cover ring assembly, it is recommended to select the option M so as to perform the piping.

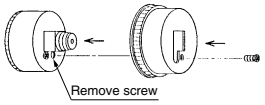
Dimensions

GZ46-□□-01 to 02 (M)
GZ46E-□□-01 to 02 (M)



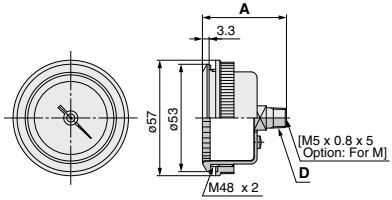
Model	A	B	□C	D
GZ46-□□-01 (M)	41.5	25.5	12	R 1/8
GZ46-□□-02 (M)	45.5	25.5	14	R 1/4
GZ46E-□□-01 (M)	40.5	24.5	12	R 1/8
GZ46E-□□-02 (M)	44.5	24.5	14	R 1/4

How to mount the cover ring assembly



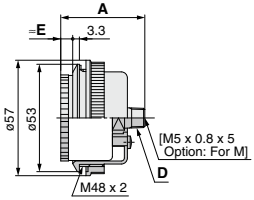
1. Remove the small screw (1 position) from the pressure gauge.
2. Place the cover ring on the pressure gauge.
3. Using the small screw that is provided with the cover ring, install the cover ring. The installation torque is 0.6 to 0.7 N·m. For reinstallation, the tightening torque is 0.5 to 0.6 N·m.

With cover ring assembly (For panel mounting)
GZ46-□□-01 to 02 (M)-C
GZ46E-□□-01 to 02 (M)-C

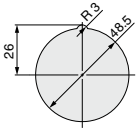


Model	A	D
GZ46-□□-01 (M)-C	41.5	R 1/8
GZ46-□□-02 (M)-C	45.5	R 1/4
GZ46E-□□-01 (M)-C	41.5	R 1/8
GZ46E-□□-02 (M)-C	45.5	R 1/4

GZ46-□□-01 to 02 (M)-C1
GZ46E-□□-01 to 02 (M)-C1



Panel fitting dimensions
Plate thickness Max. 3.5 t



Model	A	=E	D
GZ46-□□-01 (M)-C1	41.5	6	R 1/8
GZ46-□□-02 (M)-C1	45.5	6	R 1/4
GZ46E-□□-01 (M)-C1	40.5	5	R 1/8
GZ46E-□□-02 (M)-C1	44.5	5	R 1/4

Vacuum System Peripherals:
Flow Contorol Equipment

Refer to the Best Pneumatics No. 7 for details.

Speed Controller: AS-X214

Possible to control vacuum release air

With One-touch fitting

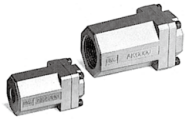
The tubing can be removed and installed through One-touch operation.
The body can be screwed in directly to the equipment that you are using.
As a result, the piping labor can be dramatically reduced.

Port size Rc	Applicable tubing O.D. (mm)					
	3.2	4	6	8	10	12
M5 x 0.8	●	●	●	—	—	—
1/8	●	●	●	●	●	—
1/4	—	●	●	●	●	—
3/8	—	—	●	●	●	●
1/2	—	—	—	—	●	●

∗Flow rate: Same as controlled flow of the standard product.

Check Valve: AK

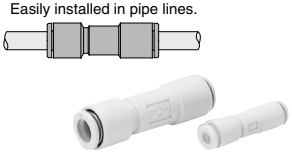
Large valve capacity
Low cracking pressure/0.02 MPa



Model	Port size Rc
AK2000	1/8, 1/4
AK4000	1/4, 3/8, 1/2
AK6000	3/4, 1

Check Valve with One-touch Fitting: AKH
Straight type

Easily installed in pipe lines.



Metric size

Model		Applicable tubing O.D.
AKH	**04-00**	ø4
	06-00	ø6
	08-00	ø8
	10-00	ø10
	12-00	ø12

Inch size

Model		Applicable tubing O.D.
AKH	**03-00**	5/32
	07-00	1/4
	09-00	5/16
	11-00	3/8
	13-00	1/2

Check Valve with One-touch Fitting: AKH
Male connector type

Can be used directly on equipment.

Metric size

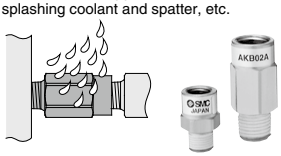
Model		Applicable tubing O.D.	Port size R				
			M5	1/8	1/4	3/8	1/2
AKH	**04□**	ø4	●	●			
	06□	ø6	●	●	●		
	08□	ø8		●	●	●	
	10□	ø10			●	●	●
	12□	ø12				●	●

Inch size

Model		Applicable tubing O.D.	Port size NPT				
			10-32 UNF	1/8	1/4	3/8	1/2
AKH	**03□**	ø5/32	●	●			
	07□	ø1/4	●	●	●		
	09□	ø5/16		●	●	●	
	11□	ø3/8			●	●	●
	13□	ø1/2				●	●

Check Valve: AKB
Bushing type

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



R thread

Model		Female thread Rc	Male thread R			
			1/8	1/4	3/8	1/2
AKB	**01□**	1/8	●			
	02□	1/4		●		
	03□	3/8			●	
	04□	1/2				●

NPT thread

Model		Female thread NPT	Male thread NPT			
			1/8	1/4	3/8	1/2
AKB	**01□**	1/8	●			
	02□	1/4		●		
	03□	3/8			●	
	04□	1/2				●

Vacuum System Peripherals:
Made to Order

Made to Order

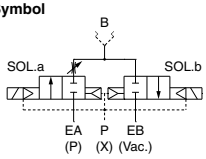
1 Vacuum Release Valve with Restrictor: SY5A2R

- Line for vacuum adsorption transfer
- Built-in restrictor 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 restrictor is fully open.

Symbol



Specifications

Valve type		External pilot type, 3 position 3 port valve
Type of actuation		Normally closed
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/Weight

B port Port size Note 1)	Effective area: mm²		Weight (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 restrictor is fully open.

How to Order

Single unit: External pilot type 3 position 3 port 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)

Note 3) Refer to the SY5000 series catalog.

- CE-compliant Note 3)
- Bracket

Nil	Without bracket
F2	With bracket (F2)

Bracket part no.: SX5000-16-8A

- B-port port size

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

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

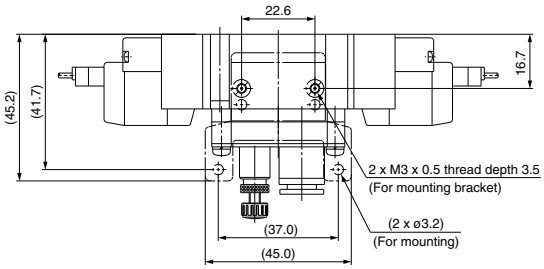
- Thread type Note 4)
- CE-compliant Note 4)

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

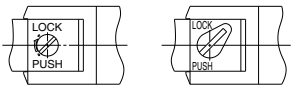
Example
SS5Y5-20-05 ····· 1 set
∗SY5A2R-5LOU-C6 ··· 5 sets
→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

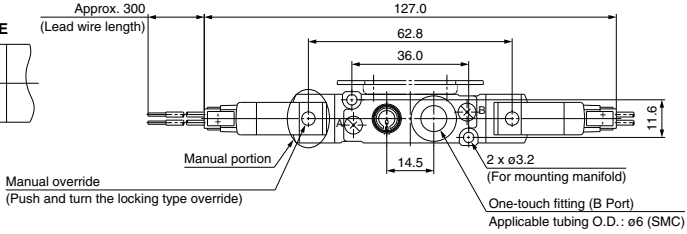
1 Vacuum Release Valve with Restrictor/SY5A2R

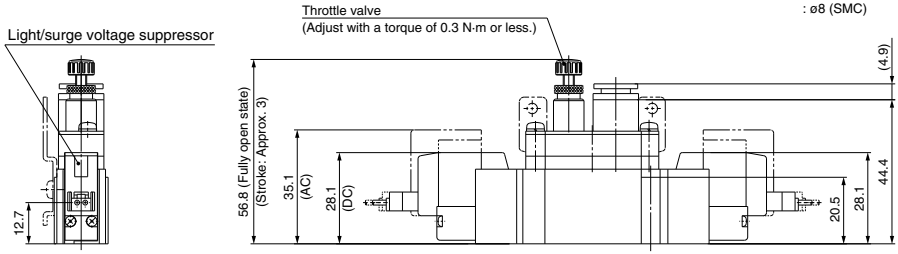
Dimensions/Single Unit: SY5A2R



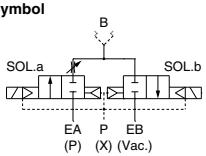
Details of Manual Portion

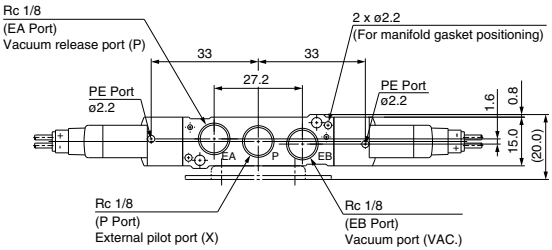






Symbol

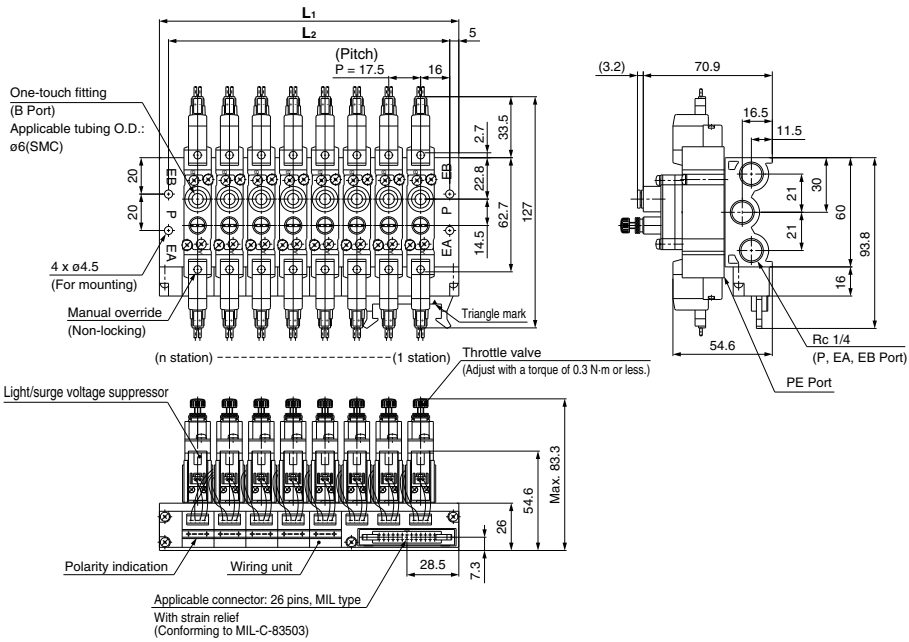




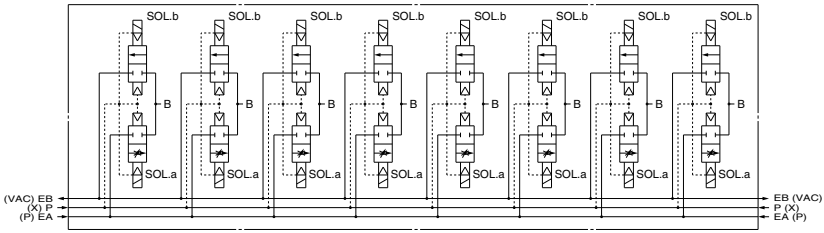
[Remarks for valves]

Note 1) Refer to the Best Pneumatics No. 1-1 SY series 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/Manitold: SS5Y5-20P-Stations-□□-□

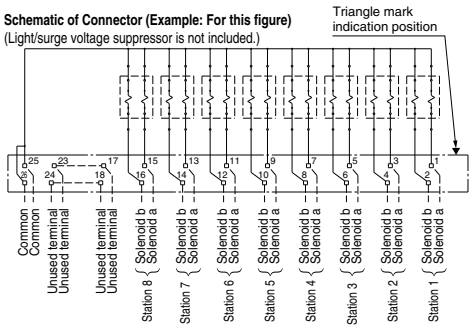


Pneumatic Circuit



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 SY5000/500 series on a manifold.

Specific Product Precautions

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions.

How to Use Manifold

⚠ Caution

<20/20P Type>

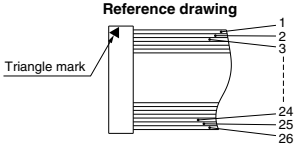
A piping port is different from that for the standard product. When not connected properly, the product will not operate properly.

[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.)**

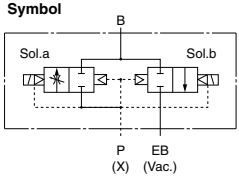
Reference drawing



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 SV1000 series**

Symbol



SP
ZCUK
AMJ
AFJ
AMV
ZH
-X185
Related Products

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
Weight		73 g

Note) Specifications other than the above are the same as SV1000 series (Standard).

How to Order

Refer to How to Order SV1000 Series (Standard).

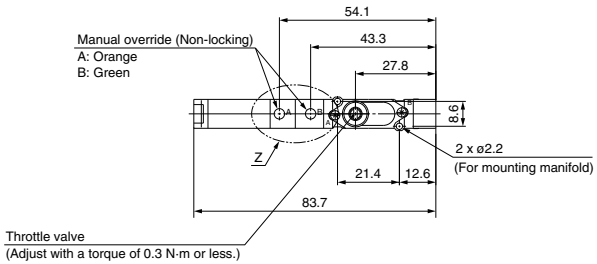
SV1A4R − □ F □ □ − X8

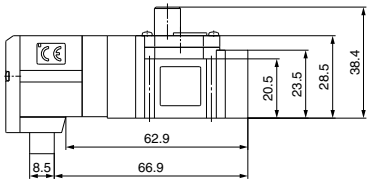
Rated voltage
Manual override
Light/surge voltage suppressor

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 back page 50 before handling.