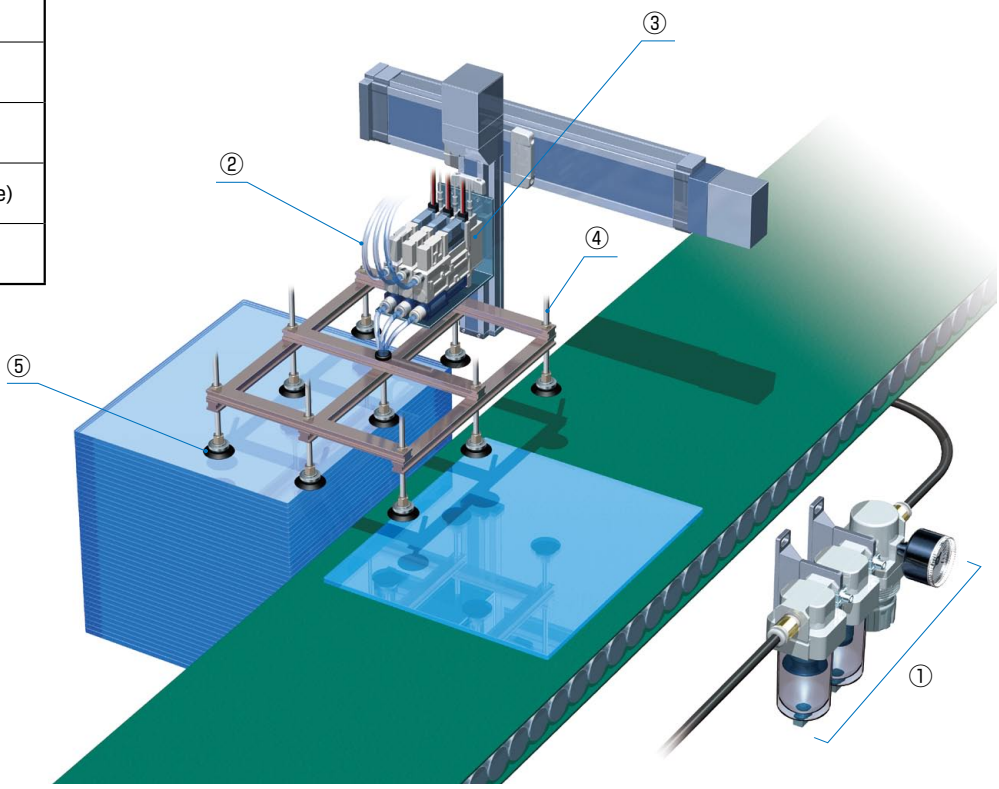
Trouble Check Sheet

Vacuum Circuit (Ejector Module)

Does not operate | Suction flow drops | Vacuum pressure drops | One point/ Reference

Check location	Description
①	Filter/Regulator
②	Tubing (Supply side)
③	Ejector module
④	Tubing (Vacuum side)
⑤	Vacuum Pad



Before checking Refer to Table (1), and confirm that all tubes are correctly connected to the “ejector unit.”

Check location		Detailed status	[Probable cause] and Actions
① Filter/Regulator		☐ IN and OUT tubing is connected in reverse.	[Insufficient pressure and flow rates] · Reconnect tubing.
		☐ Being used below the pressure range specification.	[Insufficient pressure and flow rates] · Set within supply pressure range.
② Supply side/Tubing		☐ There is bending or flattening in tubing.	[Insufficient pressure and flow rates] · Reconnect tubing. · Replace tubing.
③ Ejector module	Valve	☐ Specified power is not supplied.	[Insufficient voltage] [Broken wire] · Check the power supply
		☐ Light does not turn ON with electric signal.	
		☐ Cannot be switched by manual operation of the solenoid valve.	[Catching of foreign matter]→ Refer to table (2) · Replace solenoid valves (Valve assembly)
		☐ PE port is plugged.	[Operation trouble caused by pilot back pressure] → Refer to table (1) · Open or attach silencer.
		[When using ZA/ZB/ZQ series latching type] ☐ Solenoid is not set in original position.	[Not set in original position] → Refer to table (3)
④ Vacuum side/Tubing		☐ There is bending or flattening of tubing.	[Insufficient pressure and flow rates] · Reconnect tubing. · Replace tubing.

Table (1) Description and Application of Each Port

Port	Description	Application	Port	Description	Application
PV	Vacuum supply port	Supply port of compressed air for ejector operation	**V**	Vacuum port	Port to connect pads, etc.
PS	Pilot pressure supply port	Port which is not used in ejector system	**EXH**	Exhaust port	Exhaust port used during ejector operation
PD	Individual release pressure supply port	Supply port for individual setting of release pressure (Option)	**PE**	Pilot pressure exhaust port	Exhaust port used during valve switching operation

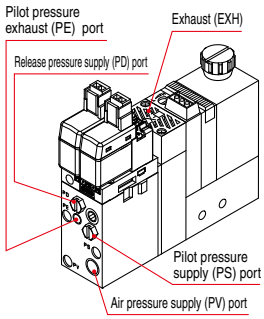
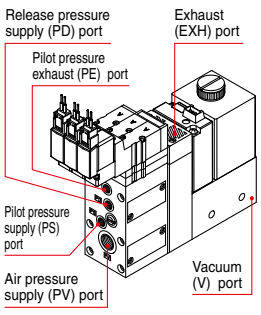
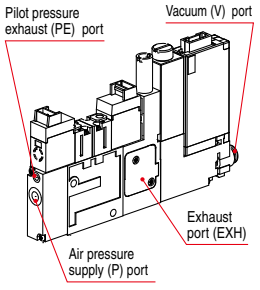
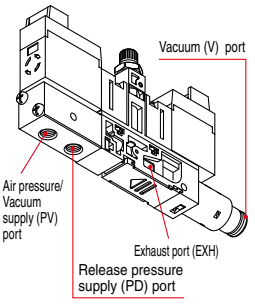
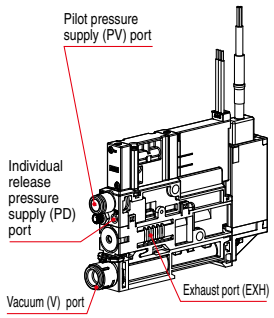
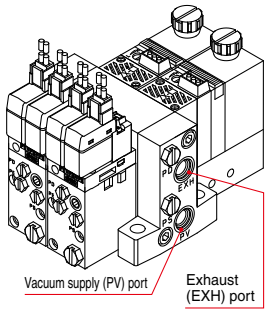
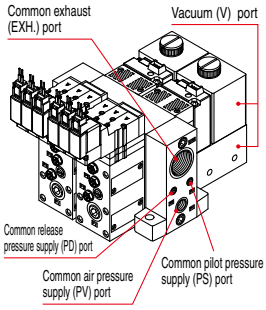
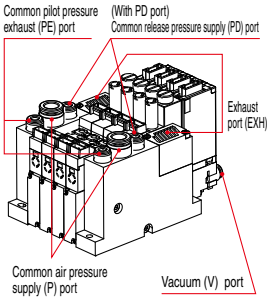
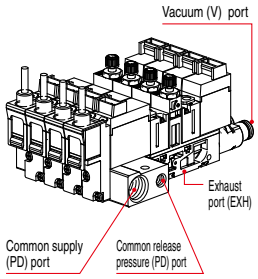
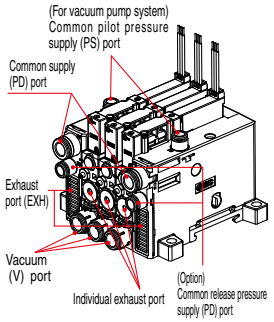
	ZX	ZR	ZQ	ZB	ZK2
Single Unit					
Manifold Specifications					

Table (2) "Release flow rate adjustment needle" and "Manual override" Operation Position

Vacuum break flow adjustment needle — Manual override

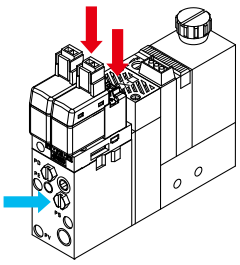
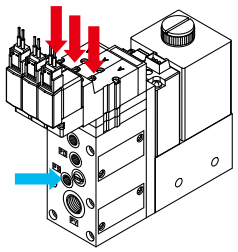
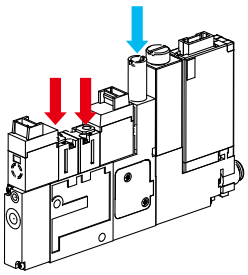
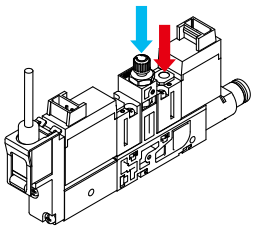
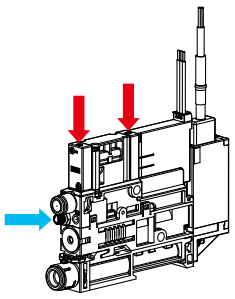
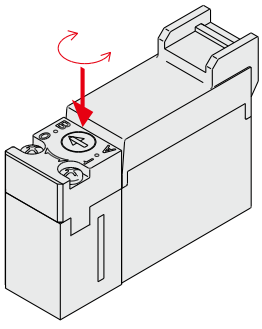
ZX	ZR	ZQ	ZB	ZK2
				

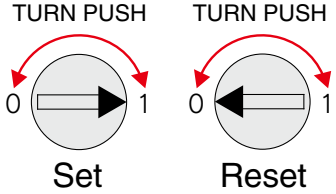
Table (3) Notes for "Latching type"

The position may have changed to the set position due to impact during transfer or mounting. Confirm the original position by supplying power or manual override before use.

Latching	Operating	Indicator light (when energized)
Set	Vacuum generation	Orange
Reset	Vacuum suspension	Green

■Push-lock Type (Tool required) 〈Latching Type〉





·When the manual override switch is turned to the right to align the ▶ mark to 1 and pushed, the switch can be locked in the set state (flow path P → A).
·When the manual override switch is turned to the left to align the ◀ mark to 0 and pushed, the switch returns to the reset state (flow path A → R). (Reset state when shipped)

Turn the manual override switch first then push. If the manual override switch is turned forcibly while pushed it will cause damage.

Table (4) How to remove the sound absorbing material

➡ Sound absorbing material

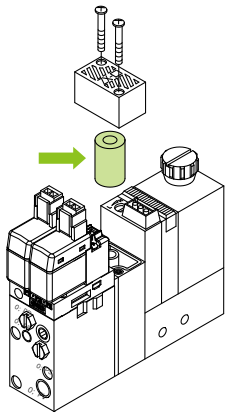
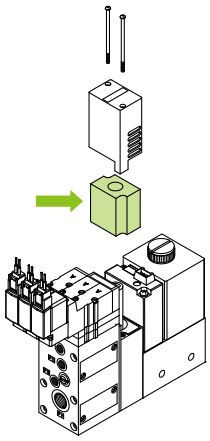
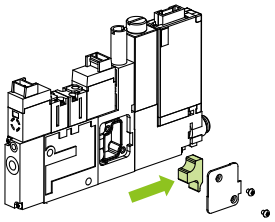
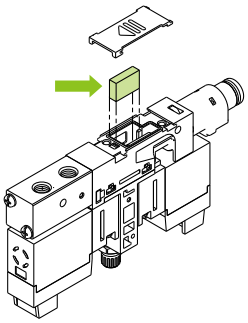
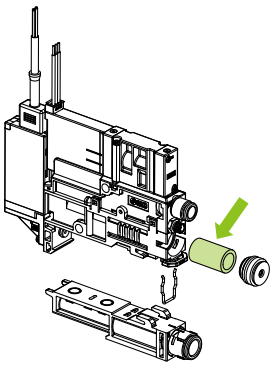
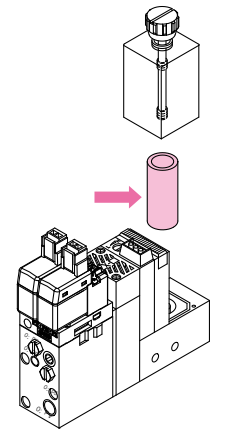
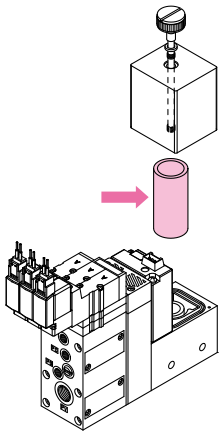
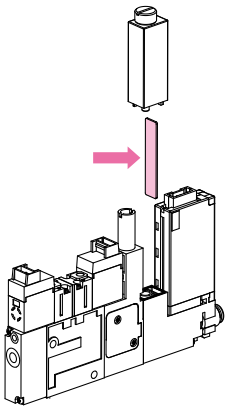
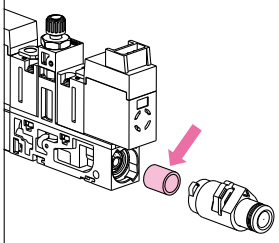
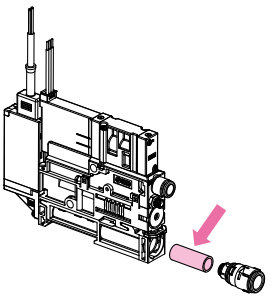
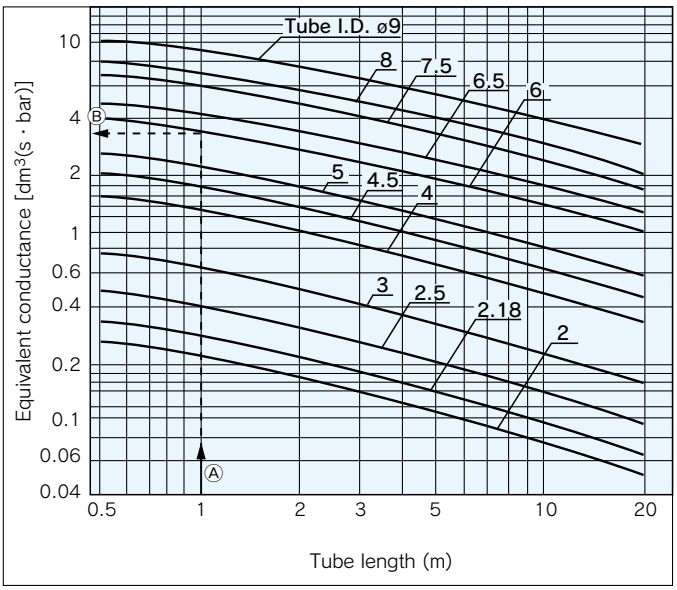
ZX	ZR	ZQ	ZB	ZK2
				

Table (5) How to remove the air suction filter

➡ Air suction filter

ZX	ZR	ZQ	ZB	ZK2
				

Selection Graph Conductance by Tube I.D.



How to read the graph

Example: Tube size ø8/ø6 and 1 meter length

<Selection Procedure>

By extending leftward from the point at which the 1 meter tube length on the horizontal axis intersects the line for a tube I.D. ø6, the equivalent conductance of approximately 3.6 [dm3/(s·bar)] can be obtained on the vertical axis.

Equivalent conductance ≈ 3.6 [dm3/(s·bar)]

◎ = Excellent --- Not affected at all, or almost no effect
○ = Good --- Affected a little, but adequate resistance depending on conditions
△ = Avoid usage if possible
× = Unsuitable for usage. Severely affected.

Rubber Material and Properties

General name		NBR (Nitrile rubber)	Silicone rubber	Urethane rubber	FKM (Fluoro rubber)	CR (Chloroprene rubber)	EPR (Ethylene-propylene rubber)	Conductive NBR (Nitrile rubber)	Conductive silicone rubber	Conductive silicone sponge	Conductive CR sponge (Chloroprene sponge)
Main features		Good oil resistance, abrasion resistance, and aging resistance	Excellent heat resistance, and cold resistance	Excellent mechanical strength	Best heat resistance, and chemical resistance	Well balanced weather resistance, ozone resistance, and chemical resistance	Good aging resistance, ozone resistance, and electrical properties	Good oil resistance, abrasion resistance, and aging resistance. Conductive	Excellent heat resistance, and cold resistance. Conductive	Excellent heat insulation, and impact resilience	Excellent impact resilience, and sound insulation. Flame retardance
Pure gum property (specific gravity)		1.00-1.20	0.95-0.98	1.00-1.30	1.80-1.82	1.15-1.25	0.86-0.87	1.00-1.20	0.95-0.98	0.4g/cm^3	0.161g/cm^3
Physical properties of blended gum	Impact resilience	○	◎	◎	△	◎	○	○	◎	× to △	× to △
	Abrasion resistance	◎	× to △	◎	◎	◎	○	◎	× to △	×	×
	Tear resistance	○	× to △	◎	○	○	△	○	× to △	×	×
	Flex crack resistance	○	× to ○	◎	○	○	○	○	× to ○	×	×
	Maximum operation temperature °C	120	200	60	250	150	150	100	200	180	120
	Minimum operation temperature °C	0	−30	0	0	−40	−20	0	−10	−30	−20
	Volume resistivity (Ωcm)	—	—	—	—	—	—	10^4 or less	10^4 or less	4.8×10^4	3.8×10^4
	Heat aging	○	◎	△	◎	○	○	○	◎	△	△
	Weather resistance	○	◎	◎	◎	◎	○	○	◎	△	△
	Ozone resistance	△	◎	◎	◎	○	◎	△	◎	△	△
	Gas permeability resistance	○	× to △	× to △	× to △	○	× to △	○	× to △	×	×
Chemical resistance Oil resistance	Gasoline/Gas oil	◎	× to △	◎	◎	○	×	◎	× to △	×	×
	Benzene/Toluene	× to △	×	× to △	◎	× to △	×	× to △	×	×	×
	Alcohol	◎	◎	△	△ to ◎	◎	◎	◎	◎	△	△
	Ether	× to △	× to △	×	× to △	× to △	○	× to △	× to △	×	×
	Ketone (MEK)	×	○	×	×	△ to ○	◎	×	○	×	×
	Ethyl acetate	× to △	△	× to △	×	× to △	◎	× to △	△	×	×
Alkaline resistance Acid resistance	Water	◎	○	△	◎	◎	◎	◎	○	○	○
	Organic acid	× to △	○	×	△ to ○	× to △	×	× to △	○	×	×
	Organic acid of high concentration	△ to ○	△	×	◎	○	○	△ to ○	△	×	×
	Organic acid of low concentration	○	○	△	◎	◎	◎	○	○	×	×
	Strong alkali	○	◎	×	○	◎	◎	○	◎	△	△
	Weak alkali	○	◎	×	○	◎	◎	○	◎	△	△

* The indicated physical properties, chemical resistance and other numerical values are only approximate values used for reference. They are not guaranteed values.
· The above general characteristics may change according to the working conditions and the working environment.
· When determining the material, carry out adequate confirmation and verification in advance.
· SMC will not bear responsibility concerning the accuracy of data or any damage arising from this data.

Color and Identification (ZP/ZP2)

General name	NBR (Nitrile rubber)	Silicone rubber	Urethane rubber	FKM (Fluoro rubber)	CR (Chloroprene rubber)	EPR (Ethylene-propylene rubber)	Conductive NBR (Nitrile rubber)	Conductive silicone rubber	Conductive silicone sponge	Conductive CR sponge (Chloroprene sponge)
Color of rubber	Black	White	Brown	Black	Black	Black	Black	Black	Black	Black
Identification (Dot or stamp)	—	—	—	· Green 1 dot · Ⓕ	· Red 1 dot · Ⓒ	· Ⓔ	· Silver 1 dot	· Silver 2 dots	—	—
Rubber hardness HS (±5°)	A50/S	Other than Heavy duty A40/S Heavy duty A50/S	A60/S	A60/S	A50/S	A50/S	A50/S	A50/S	20	15

Color and Identification (ZP3)

General name	NBR (Nitrile rubber)	Silicone rubber	Urethane rubber	FKM (Fluoro rubber)	Conductive NBR (Nitrile rubber)	Conductive silicone rubber
Color of rubber	Black	White	Brown	Black	Black	Black
Identification (Dot)	—	—	—	· Green 1 dot	· Silver 1 dot	· Pink 1 dot
Rubber hardness HS (±5°)	A60/S					

Note) The hardness of rubber shall conform to JIS K 6253. The hardness of sponge shall conform to SRIS 0101.