Pneumatic components

Safety Precautions

Be sure to read this section before use.
Refer to Intro Page 59 for general precautions for using valves.

Product-specific cautions: 3, 5-port pilot operated valve 4G*, MN4G* Series

Design/selection

1. Surge suppressor

⚠CAUTION

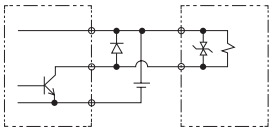
■ The surge suppressor attached to the solenoid valve is intended to protect the output contacts for the solenoid valve drive. There is no significant protection for the other peripheral devices, and devices could be damaged or could malfunction due to a surge. As well, surges generated by other devices may be absorbed and cause damage such as burning. Note the following points.

● The surge suppressor functions to limit solenoid valve surge voltage, which can reach several hundred volts, to a low voltage level that the output contact can withstand. Depending on the output circuit used, this may be insufficient and could result in damage or malfunction. Check whether the surge suppressor can be used within the surge voltage limit of the solenoid valve in use, the output device's withstand pressure and circuit structure, and by the degree of return delay time. When necessary, provide other surge countermeasures. 4G series solenoid valve with surge suppressor can also suppress inverse voltage surge that occurs when the product is turned OFF to the level shown in the table below.

Specification voltage	Inverse voltage when OFF
3 VDC	Approx. 6.2V
5 VDC	Approx. 13V
12 VDC	Approx. 27 V
24 VDC	Approx. 47V
When option "S" and "E" are selected	Approx. 1V

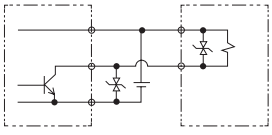
● If the output unit is an NPN, a surge voltage equaling the voltage shown in the table above plus the power supply voltage may be applied to the output transistor. Make sure to install a contact protection circuit or select option "S" to avoid the risk.

[Output transistor protection circuit: Installation example 1]



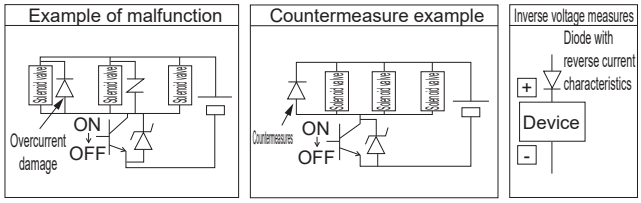
Programmable controller side Solenoid valve side

[Output transistor protection circuit: Installation example 2]



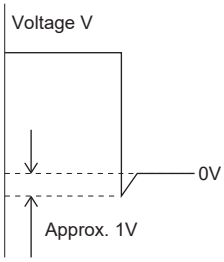
Programmable controller side Solenoid valve side

● If another device or solenoid valve is connected in parallel to the solenoid valve, the inverse voltage surge generated when the solenoid valve is OFF would apply to those devices. Even in the case of a solenoid valve with 24 VDC surge suppressor, a surge voltage may reach, negative tens of volts for some models. This inverse voltage may cause damage or malfunction to other components connected in parallel. Avoid parallel connection of devices susceptible to inverse polarity voltages, e.g., LED indicators. When driving several solenoid valves in parallel, the surge from other solenoid valves may enter the surge suppressor of one solenoid valve, and it may burn depending on the current value. When driving several solenoid valves with surge suppressors in parallel, surge current could concentrate at the surge suppressor with the lowest limit voltage and cause similar burning. Due to the variations in surge suppressor limit voltage that exist even among solenoid valves of the same model No., in the worst case the surge suppressor may burn out. Avoid driving multiple solenoid valves in parallel.



● The surge suppressor incorporated in the solenoid valve will often be short-circuited if it is damaged by an overvoltage or overcurrent from other solenoid valves. Where there is a failed surge suppressor, if a large current flows when the output is ON, in the worst case scenario, the output circuit or solenoid valve could be damaged or ignited. Do not continue energizing in a state of failure. Additionally, to prevent large currents from continuing to flow, connect an overcurrent protection circuit to the power supply and drive circuit, or use a power supply with overcurrent protection.

2. Surgeless



■ Surgeless reduces the solenoid valve surge voltage up to 1 V approx. by the built-in diode. In addition, there is no polarity.

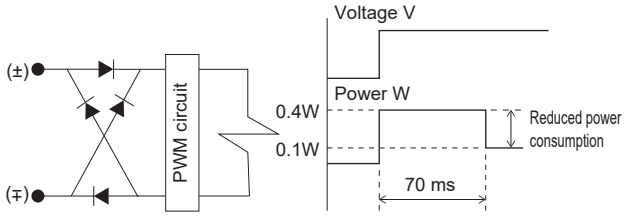
■ The built-in diode of the surgeless type may be damaged by an open/close surge such as a reed relay or switch. Provide open/close surge countermeasures, such as proximity relay or surge absorber

3. Low exoergic/energy saving circuit

■ The low exoergic/energy saving type includes a PWM circuit in the solenoid valve, which is designed to reduce the current value when the coil is held with suction. Power consumption is reduced to 1/4 compared to standard products, enabling use with continuous energization. There is no electrical polarity.

[Specifications for low exoergic/energy saving type]

Item		Current A	Power consumption W
When starting	12 VDC	0.033	0.4
	24 VDC	0.017	0.4
When holding	12 VDC	0.010	0.1
	24 VDC	0.005	0.1



⚠CAUTION

- Do not use this valve in an environment where vibration and impact exceed the specified range. This may result in valve malfunction.
- The energized state cannot be maintained if power is cut off instantaneously for 30 ms or less on the power source driving the solenoid valve. If any disturbance has caused up to 30 ms instantaneous power cut-off of the solenoid valve after being continuously energized, cut the power OFF for 50 ms or more before switching the solenoid valve ON again.
- Do not use this product by gradually raising the voltage. The valve will not operate.
- With the type with low exoergic/energy circuit, the built-in diode may be damaged by an open/close surge such as reed relay or switch. Provide measures for open/close surges, such as proximity relay or surge absorber.

4. AC voltage specifications

⚠CAUTION

- The models with AC voltage specifications have a built-in full-wave rectifier circuit. Depending on the type of SSR used to turn ON/OFF the solenoid valve, recovery failure of the valve may result. Use caution when selecting SSRs. (Consulting the manufacturer of the relay or PLC is recommended.)
- Use the 200 VAC specification E-connector with a single-phase 200 VAC. Check that adjacent solenoid valves do not continuously energize with 5 or more stations.

5. When using the product in combination with low sliding cylinders

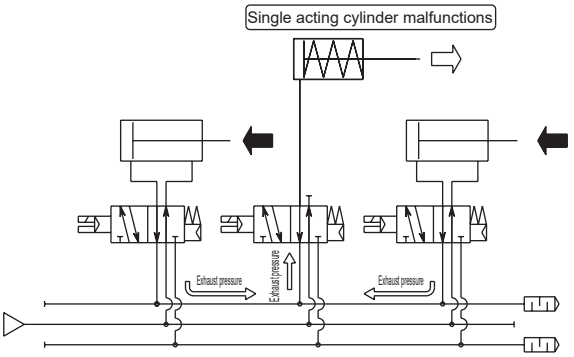
- Malfunctions could occur because of the exhaust pressure. Contact CKD.

6. Exhaust check valve

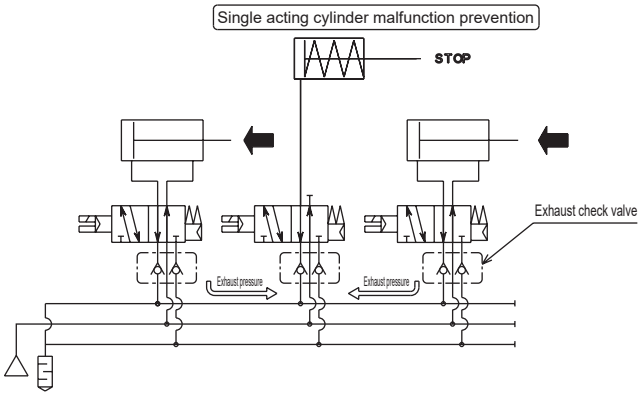
⚠**CAUTION**: The exhaust check valve is a check valve. If the cylinder rod is manually operated directly without pressurization, the check valve opens and the air flow is shut off, preventing cylinder rod adjustment.

Generally, the double acting cylinder connected at the manifold to single acting cylinders or ABR connection valves may malfunction when adversely affected by the exhaust pressure led in by operation of other cylinders. For the manifold of 4G series, the “exhaust check valve” integrated to prevent this malfunction can be selected, except for all ports closed valves and PAB connection valves. However, with components that are affected by a small amount of leakage or pressure of low sliding cylinders, etc., the functions may not operate properly.

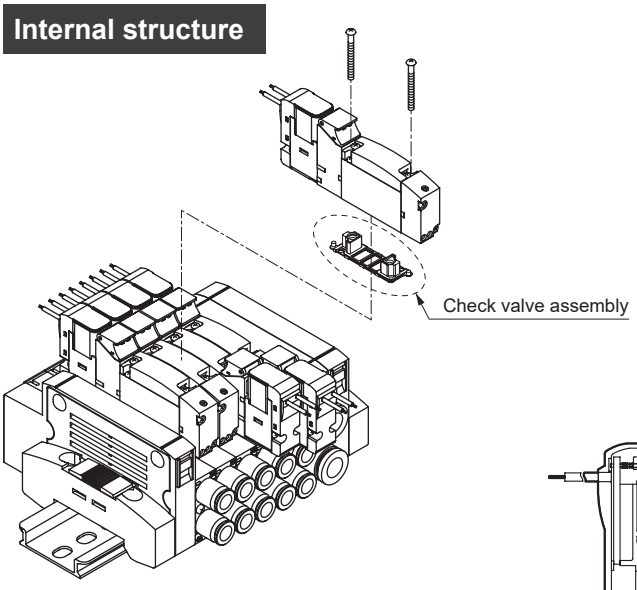
Example of pneumatic pressure system that may malfunction



4G series pneumatic pressure system



Internal structure

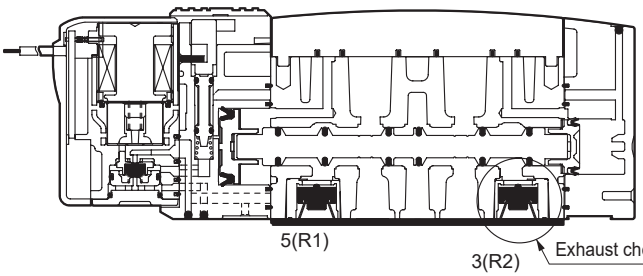


This figure is for 4GB219R

Standard specifications of check valve

Model No.		Flow path switching	Option (H)
4G	MN4G		
3GA*19R	3GA*10R	2-position single NC	Selected
3GA*119R	3GA*110R	2-position single NO	Selected
3G A/B*669R	3G A/B*660R	Two 3-port valves integrated NC/NC	Selected
4G A/B*19R	4G A/B*10R	2-position single	Selected
4G A/B*29R	4G A/B*20R	2-position double	Selected
4G A/B*39R	4G A/B*30R	3-position all ports closed	None
4G A/B*49R	4G A/B*40R	3-position ABR connection	Selected
4G A/B*59R	4G A/B*50R	3-position PAB connection	None

Note: Because 3-position all ports closed and PAB connection are not adversely affected by the exhaust pressure led in from other cylinders at the neutral position, installation of a check valve is not required.



Mounting, installation and adjustment

1. External pilot (K) piping port

⚠CAUTION

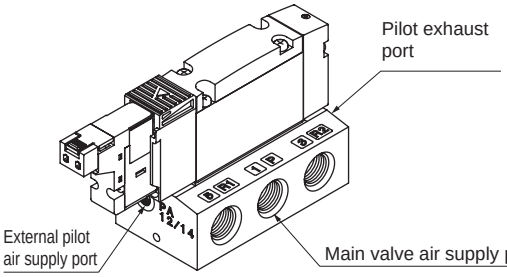
■ Metal base 4G A/B Series

● The external pilot (K) has a separate pilot air exhaust. M5 screw ports are used to supply and exhaust the pilot air, so check that the piping connection position is correct. Malfunctions could occur if the piping is incorrect.

Port indication

Applications		Indication (ISO standards)
Pilot air	Air supply port	12/14
	Exhaust port	82/84

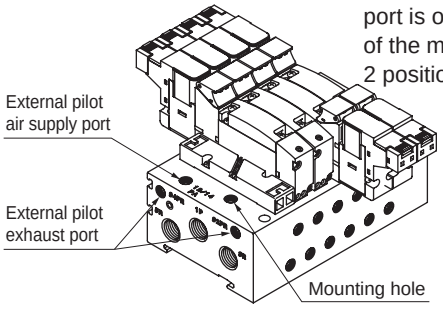
Discrete base piping



The position of external pilot air supply port is at the left side when the air supply port of the main valve is at the front.

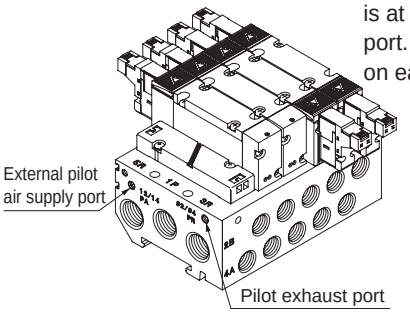
Manifold

M4G1



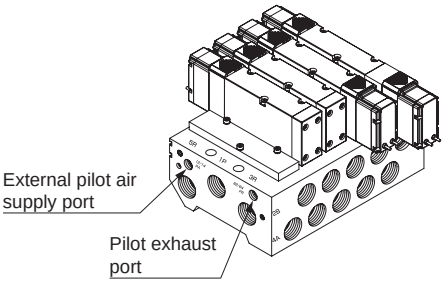
The port position of external pilot air supply port is on the top surface of the manifold. There are 2 positions on each side.

M4G2/3



The port position of external pilot air supply port is at the far side from A/B port. There are 2 positions on each end surface.

M4G4



The port position of external pilot air supply port is at the far side from A/B port. There are 2 positions on each end surface.

■ Block manifold MN4G A/B Series

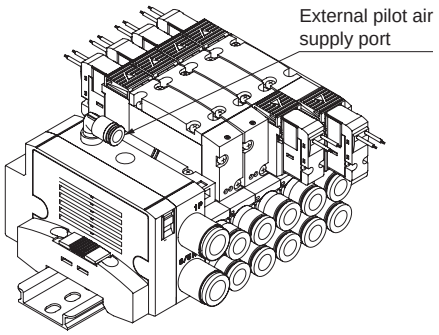
● The external pilot (K) has a separate pilot air supply. ø6 push-in fitting is used to supply the pilot air, so be careful that the piping connection position is correct. Malfunctions could occur if the piping is incorrect.

Port indication

Applications		Indication (ISO standards)
Pilot air	Air supply port	12/14

* Port A/B pressurization and port R pressurization are not possible.

MN4G2



The external pilot air supply port is the ø6 push-in fitting on the top of the supply and exhaust block.

■ Take care with supply pressure for the type with two 3-port valves integrated.

● The valving element of the type with two 3-port valves integrated is operated with the main (P port) supply pressure.

①Check that the main pressure (P port) is no higher than the pilot pressure (PA port).

②Check that the main pressure (P port) does not drop below 0.2 MPa.

Mounting, installation and adjustment

2. How to install discrete body piping (A)

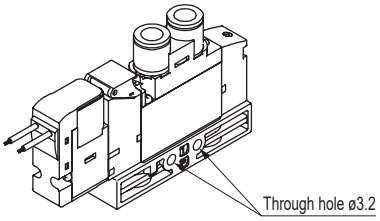
⚠ CAUTION

■ When directly installing the manifold

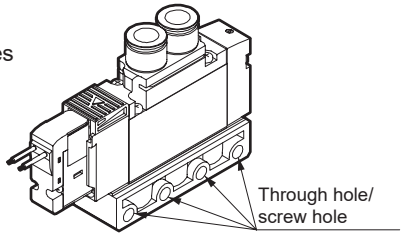
- The discrete body piping 4GA Series can be installed using the (a) through hole or (b) screw hole. When using the screw holes, be careful of the tightening torque.
- When installing the body piping type, it is not possible to fasten two or more stages together. If you need to use two or more layers for a contract, contact CKD for details.

Screw hole Tightening torque 0.7 to 1.2 N·m

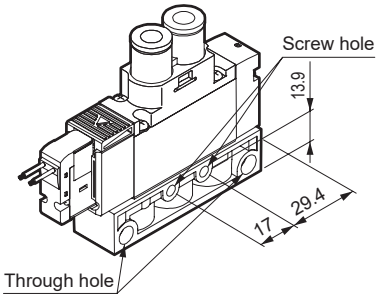
4GA1 Series
(a) 2 through holes



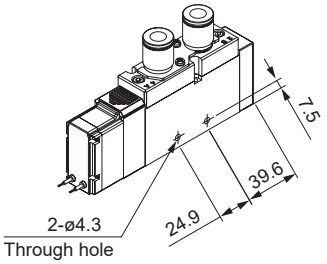
4GA2 Series
(a) Through hole
(b) 4 common screw holes



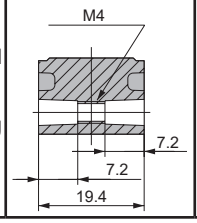
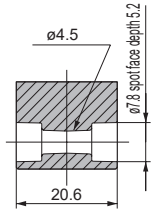
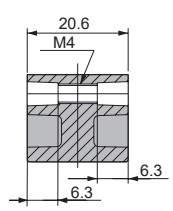
4GA3 Series
(a) Through hole
(b) 2 places each, dedicated for screws



4GA4 Series
(a) 2 through holes



Mounting hole shape

	4GA/D2	4GA/D3	
	(a) (b) Common use	(a) Through hole	(b) Screw hole
Sectional view of mounting hole			

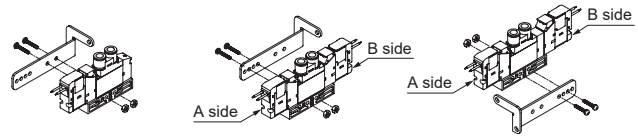
■ When installing the manifold with mounting plate (P)

- Installation method of the mounting plate (P) for discrete body piping differs among the single, double and 3-position. Be careful of the mounting direction and orientation as damage may result from incorrect mounting.

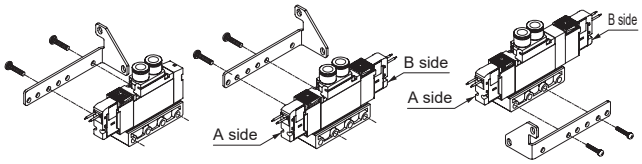
■ How to mount mounting plate (P)

- For grommet lead wire and E-connector (DC voltage)

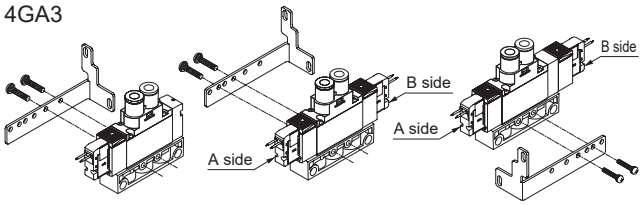
4GA1



4GA2

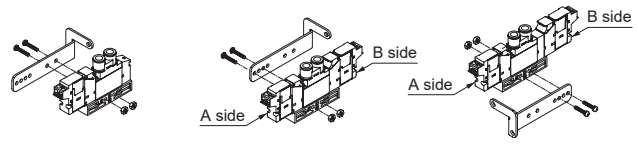


4GA3

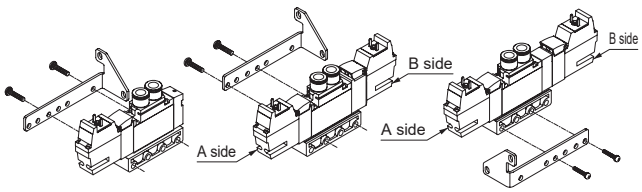


- For DIN terminal box and E-connector (AC voltage)

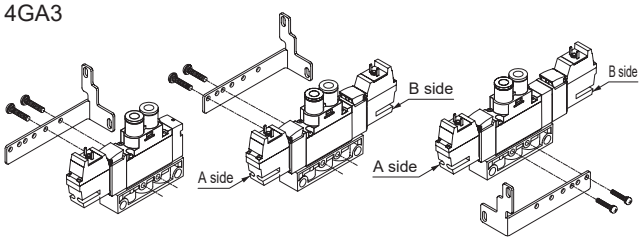
4GA1



4GA2



4GA3



Mounting (P) kit

	Kit model No.	Set parts
4GA1	4G1R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws, 2 nuts
4GA2	4G2R-MOUNT-PLATE-KIT	Mounting plate, 2 set screws
4GA3	4G3R-MOUNT-PLATE-KIT	Mounting plate, 2 set screws

Mounting, installation and adjustment

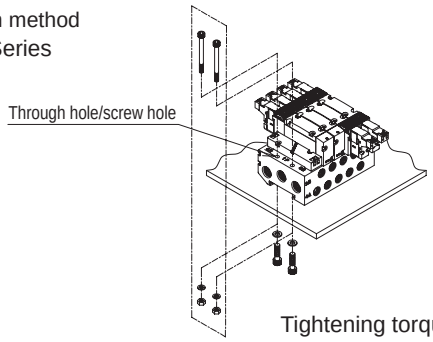
3. How to install manifold (Metal base 4G A/B Series)

⚠CAUTION

■When directly installing the manifold

● For installation of the M4G2/3 Series, there are two methods of tightening the manifold with bolts: after passing it through the upper side of the manifold base and after tightening it with the bolts from the back side. When using a female thread as shown in the table below, check the thread depth, select a mounting bolt with 10 screw-in threads or more, and be careful with the tightening torque. The screw could be damaged if incorrectly installed.

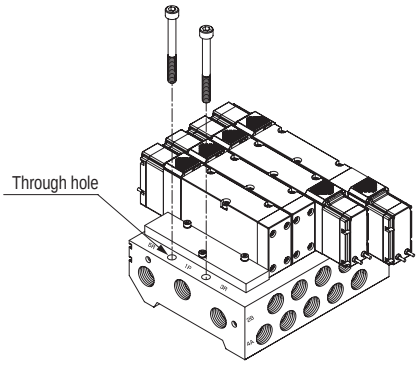
Installation method
M4G2/3 Series



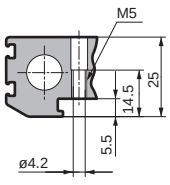
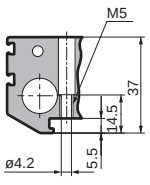
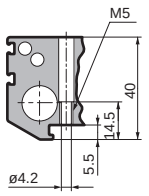
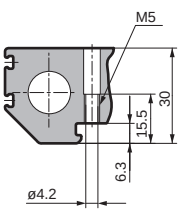
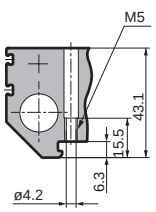
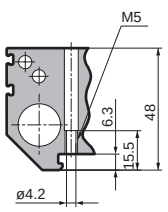
Tightening torque
1 to 1.5 N·m

M4G4 Series

● M4G A/B For installation of Series 4, tighten the manifold with bolts after passing them through the upper side of the manifold base.



Mounting hole shape (sectional view)

	Standard manifold (internal pilot)		External pilot
	M4GA (Body piping)	M4GB (Base piping)	M4G-K
M4G2			
M4G3			

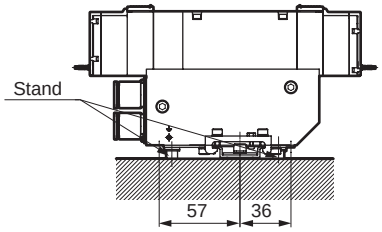
■When installing the manifold with DIN rail

M4G 1, 2, 3

● The manifold of the direct mounting specification can be changed to that of the DIN rail mounting specifications. Note that inappropriate mounting may result in falling off and damage of the manifold. If the manifold weighs more than 1 kg, or when using in an environment with vibration or impact, fix the DIN rail onto the surface at 50 to 100 mm intervals, and confirm that there is no problem with installation before starting operation. Use the individual specifications to calculate the weight. (CAUTION: Only the M4GB1 (page 119) is provided with a dedicated base for the direct mount type or DIN rail mount type. For mounting type, direct mount cannot be changed to DIN rail mounting, but the DIN rail mounting type can be direct mounted.) The upper limit of station No. for DIN rail mounting is 16.

M4G4

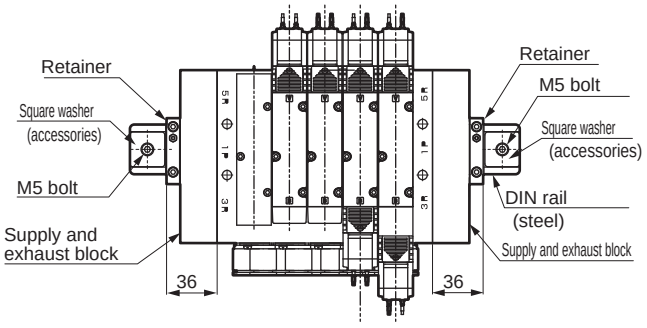
● For DIN rail mounting, stands are attached to either end of the supply and exhaust block in order to suppress vibration or impact. The range shown in the figure below allows the stands to be seated on the mounting surface of the DIN rail.(Secure a flat surface with width of 57 + 36mm).



(required range of flat surface)

Fix the DIN rail onto the mounting surface at 75 to 100 mm intervals with M5 bolts using attached square washers, and confirm that there is no problem with installation before starting operation. Install the valve so that the retainer, supply and exhaust blocks will not interfere with the M5 bolts. Steel is used for the DIN rail to ensure strength. When preparing your own rail, use a DIN rail made of steel.

Retainer tightening torque: 2.5 to 3.0 N·m

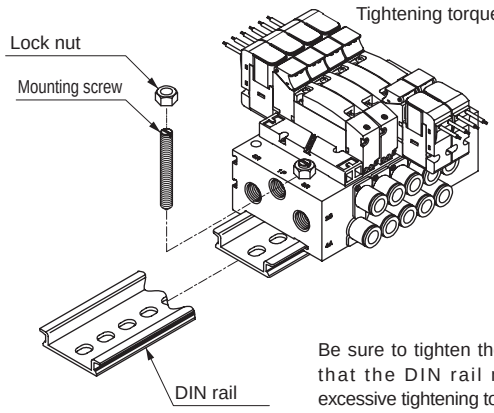


Note that inappropriate mounting may result in falling off and damage of the manifold. The upper limit of station No. for DIN rail mounting is 5.

Mounting, installation and adjustment

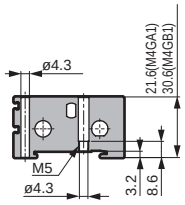
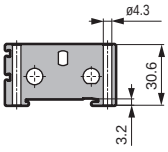
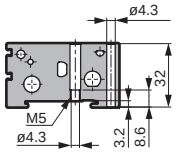
■How to mount DIN rail

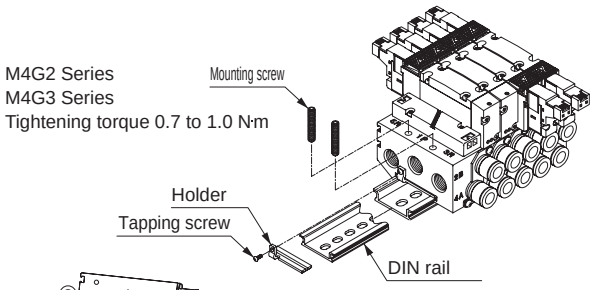
● Only the M4GB1 Series is provided with a dedicated base for the direct mount or DIN rail mount. For mounting, the direct mount cannot be changed to the DIN rail mounting, but the DIN rail mounting can be direct mounted.

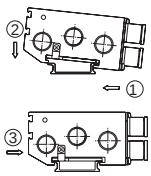


Be sure to tighten the lock nut. Note that the DIN rail may deform if excessive tightening torque is applied.

Mounting hole shape (sectional view)

Internal pilot		External pilot
M4GA/D1 M4GB/E1 (DIN rail mount)	M4GB/E1 (Direct mount)	M4GA1-K M4GB1-K
		





1. Holder mounting
   (Secure with bolts to prevent falling off)
2. Mounting screw temporarily fastened
3. Engage the jaws with the DIN rail in order from ① ②.
4. Press the operation button in the direction of ③.
5. Tighten the mounting screws.

DIN rail kit

	Model No.	Description
M4G1	4GA1R-BAA length - option D	DIN rail, mounting screw 2, lock nut 2
	4GB1R-BAA length - option D	
M4G2	4GA2R-BAA length - option D	DIN rail/holder 2, Tapping screw 2, mounting screw 4
	4GB2R-BAA length - option D	
M4G3	4GA3R-BAA length - option D	
	4GB3R-BAA length - option D	

Specify the length "0" when the DIN rail is not required. Specify the option "K" when using with the manifold base for external pilot.

Set the DIN rail length, referring to the working manifold dimensions and DIN rail length quick reference list (page 308).

4. How to install manifold (Block manifolds)

⚠CAUTION

■Mounting orientation

● The block manifold is mounted on a DIN rail. If the manifold's total weight exceeds 1kg, or when using in an environment with vibration or impact, fix the DIN rails on the mounting surface with a pitch of 50 to 100 mm. Check that there are no problems with installation.Although there is no restriction in mounting direction and orientation, attention should be paid to mounting screw loosening caused by resonance due to vibration that may cause the manifold to fall off during operation.

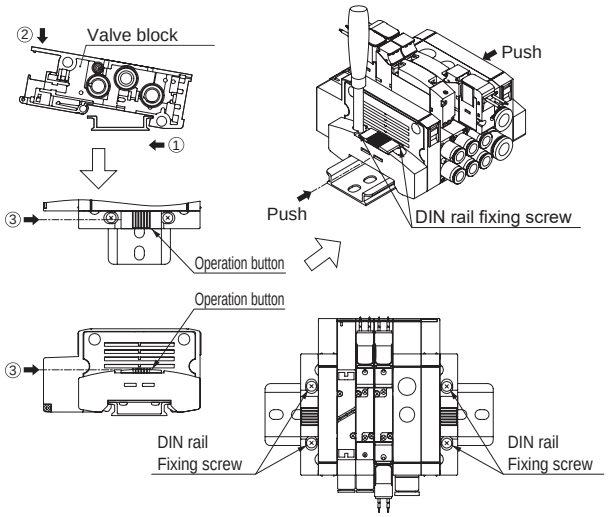
● How to mount and remove manifold

Removal

Loosen the four DIN rail fixing screws (two each on left/right).

Mounting

1. Engage the jaws with the DIN rail in order from ①②.
2. Press the operation button in the direction of ③.
3. Hold down the blocks so that there is no gap between them and fix the DIN rail with the set screws. (Recommended tightening torque 1.2 to 1.6N•m).



5. Lead wire connection

⚠CAUTION

■Lead wire standards differ depending on the type of electrical connections. Connect wires according to each lead wire to be used.

4G1 to 3

Electrical connection code	Description	Conductor size	Conductor sectional area	Outer ø of insulator	Outer ø of covering
Blank	Grommet lead wire	AWG#26	0.13 or equiv.	1.3	-
E □	E-connector (with lead wire)	AWG#26	0.13 or equiv.	1.3	-
E □ J	EJ-connector	AWG#24	0.2 or equiv.	1.1	3.7

4G4

Electrical connection code	Description	Conductor size	Conductor sectional area	Outer ø of insulator	Outer ø of covering
Blank	Grommet lead wire	AWG#20	0.52 or equiv.	1.8	-
E □	E-connector (with lead wire)	AWG#26	0.13 or equiv.	1.3	-
E □ J	EJ-connector	AWG#24	0.2 or equiv.	1.1	3.7

When installing the manifold and making electrical connections, check that tension by lead wires is not applied to the solenoid valve coil.

Mounting, installation and adjustment

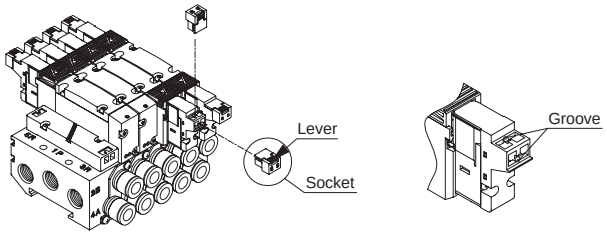
6. How to use E-connector

⚠CAUTION

■ The E-connector has top and side connectors to which sockets can be connected. The socket assembly is connected from the side direction at shipment. Select the connection direction based on the installation environment.

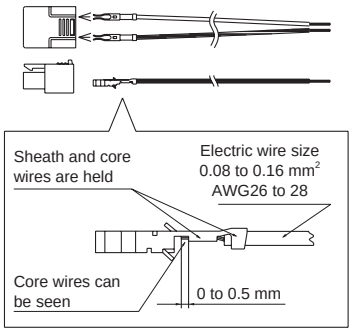
■ How to mount and remove socket

- When mounting the socket, hold the lever and socket with fingers and insert straight into the square window on the connector body. Align the lever jaw with the groove on the connector body and lock it. When mounting from the top, position the socket so that the lever faces the front. When mounting from the side, position the socket so that the lever is in an upward direction.
- When pulling out the socket, press down the lever to release its jaw from the groove, then pull straight out.



■ How to connect lead wire

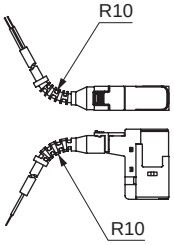
- Strip the end of the lead wire by about 3mm. Align the end of core wires, insert them into the contact terminal, and crimp with a crimp tool. When crimping, check that both the sheath and core wires are held, and 0 to 0.5 mm of the core wire end is visible.
- After crimping, position the contact terminal as shown below, and insert into the square window on the socket. The terminal locks when it is inserted to the end. After inserting, pull the terminal lightly to check that it is locked.



7. How to use E □ J type connector

⚠CAUTION

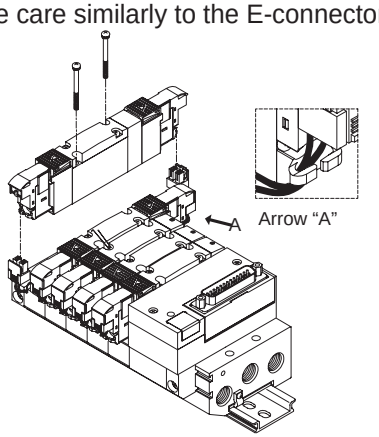
■ Use the lead wire with limited bending as shown in the figure below.



8. How to use A-connector

⚠CAUTION

■ The A-connector is dedicated for reduced wiring manifold mounting, which can be connected from the bottom direction. When mounting or removing the socket, take care similarly to the E-connector.



9. DIN terminal box

⚠WARNING

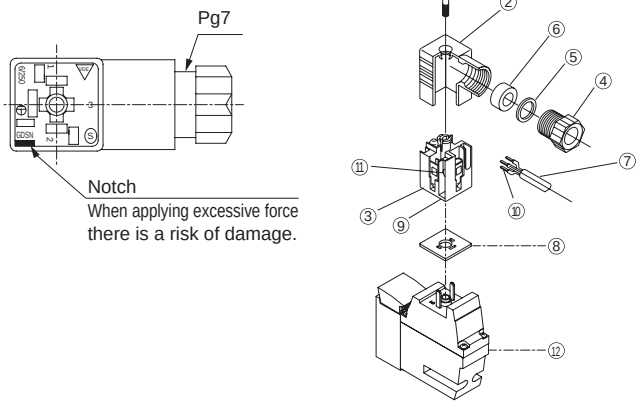
■ As there is a risk of electric shock when assembling or disassembling the terminal box, perform the assembly and/or disassembly after turning OFF the power supply.

⚠CAUTION

■ Disassembly

- Loosen screw ①and pull cover ②in the direction of screw ①to remove the connector from coil assembly ⑫.
- Remove screw ①from cover ②.
- Notch ⑨(next to the GDSN mark) can be found at the bottom of terminal block ③. Insert a compact flathead screwdriver in the gap between housing ② and terminal block ③ and pry to remove terminal block ③ from cover ② (Refer to Fig. 1). Remove the terminal block without applying excessive force. There is a risk of damage.
- Remove cable gland ④and take out washer ⑤and rubber packing ⑥.

Fig. 1 Exploded view



Mounting, installation and adjustment

■Wiring

● Wiring preparation

- The applicable dimensions for cable ⑦ are the VCTF2(3) core (ø3.5 to 7) defined in JIS C3306.
- The length of the lead wire stripping of the cable is 10 mm.
- Both stranded wires and solid wires can be used for wiring.
- When using a stranded wire, avoid connecting a pre-soldered wire.
- When using a crimp sleeve ⑩ at the end of the twisted wire, select H0.5/6 (0.3 to 0.5 mm^2) or H0.75/6 (0.75 mm^2) made by Weidmüller Japan, or an equivalent product. Crimp sleeves are not included.

● Wiring

- Pass cable ⑦ through cable gland ④, washer ⑤, and rubber packing ⑥ in this order, and insert it into cover ②.
- Connect it to terminals 1 and 2. There is no polarity.
- The recommended tightening torque is 0.2 to 0.25 N·m.
- Be sure to lay ground wiring for AC. However, DC type does not require ground wiring.

■Assembly

● Set the wired terminal block ③ on cover ②. (Push in until it clicks.)

* The terminal block can be set in any of the four different directions (Fig.2).

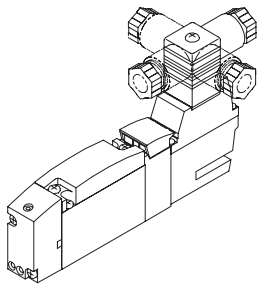
● Insert rubber packing ⑥, and washer ⑤, in this order into the cable through hole in cover ②, and securely tighten cable gland ④.

Remarks: The recommended tightening torque for the cable gland is 1.0 to 1.5 N·m.
Pull the cable to check that it does not become loose.

● Place gasket ⑧ between the bottom part of terminal block ③ and the plug of the coil assembly ⑫, insert the connector, insert screw ② from over the cover ① and tighten it.

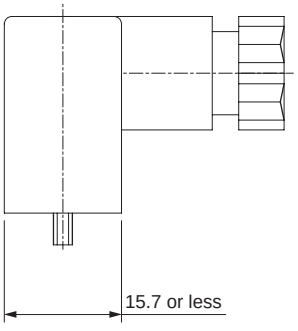
Remarks: The recommended tightening torque for screws is 0.4 to 0.45 N·m.

Fig. 2



■Terminal box

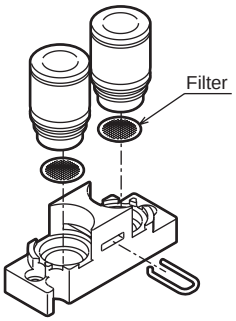
● When using terminal boxes not manufactured by CKD, make sure they conform to EN175301-803 Type C (former DIN 43650-C).
Select a terminal box with solenoid valve side dimensions (figure below) of 15.7 or less.



10. Port filter

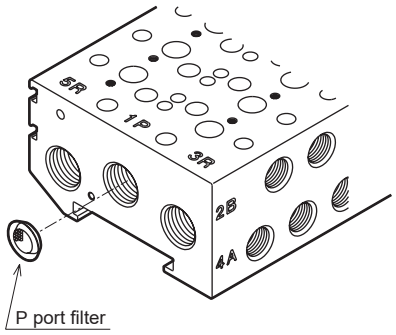
⚠CAUTION

■The port filter prevents the entry of foreign matter, and prevents problems from occurring in the valve. As this does not improve the quality of the compressed air, read Warnings and Precautions on Intro Pages 61 to 68, then mount, install, and adjust the filter accordingly.
Do not detach or press down the port filter forcibly. The filter could deform, causing problems. If contaminants and foreign matters are found on the filter surface, blow them lightly, or remove them by tweezers, etc.



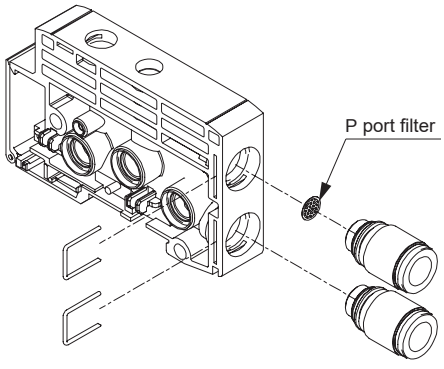
Example of A/B port filter option combination

M4G Series



P port filter (standard) example of embedding

MN4G Series



P port filter (standard) example of embedding

Use/maintenance

1. Continuous energizing

⚠CAUTION

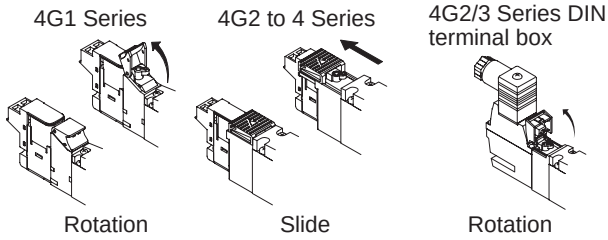
- When using in a continuously energized state for long periods, use the low exoergic/energy saving type.
- If a valve other than the low exoergic/energy saving type is used in a continuously energized state for long periods, the valve performance may deteriorate more quickly.
  Furthermore, use caution under the following working conditions likewise.
  - When the energized time exceeds non-energized time in intermittent operation
  - When one energizing session exceeds 30 minutes in intermittent operation

  Give sufficient consideration to heat dissipation when installing the product.
- When using the AC voltage in a continuously energized state, the temperature of the coil's outer surface will be high. It may cause burns. Do not touch it when it is energized.

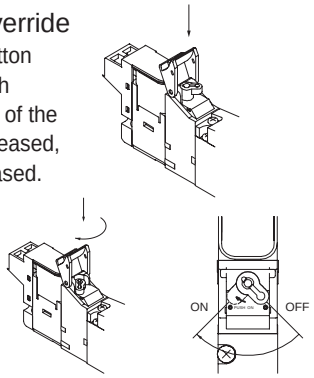
2. Manual override

⚠WARNING

- The 4G Series is a pilot operated solenoid valve. If air is not supplied to the P port, the main valve will not be switched even if the manual override is operated.
- Manual override protective cover is provided as standard. The protective cover is closed when shipped. Therefore, the manual override device cannot be seen when delivered. Open the protective cover to operate the manual override. Note that the protective cover will not close unless the locking manual override is released.
- Manual override is used for both non-locking and locking. Holding down and turning the button locks the valve. For locking, be sure to press down and turn. If manual override is turned without being pressed down, it could be damaged or air could leak.
- Opening and closing the manual protective cover
  Do not excessively force the manual protective cover when opening and closing it. Excessive external force could cause failures. (Below 5 N)

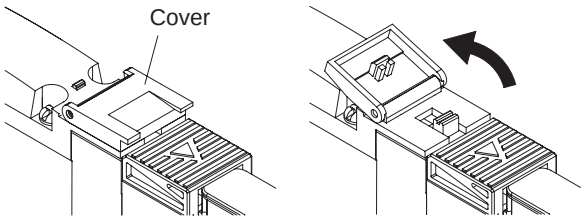


- How to operate manual override
  - When operating the push-button non-locking mechanism, push straight down in the direction of the arrow until it stops. When released, the manual operation is released.
  - Push & locking operation
    Push manual override and turn 90° in the direction of the arrow. The function is not canceled even when the button is released.

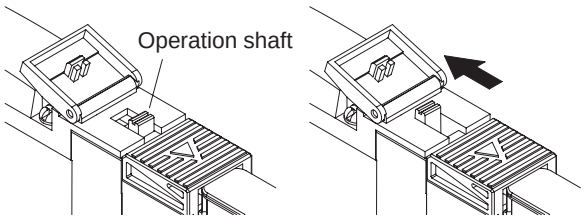


- When conducting manual operations, make sure that there are no people near the operating cylinder.
- How to operate manual override for residual pressure exhaust option

(1) How to open and close the cover
Do not use excessive force when opening and closing the cover.
Excessive external force may cause damage (less than 5 N).



(2) How to operate residual pressure exhaust manual override
For residual pressure exhaust, push the operation shaft in the direction of the arrow.
For the non-locking type (option X), let go of it to release the operation shaft.
For the locking type (option X1), letting go will not release the operation shaft.
(Be careful not to forget to put it back.)



Use/maintenance

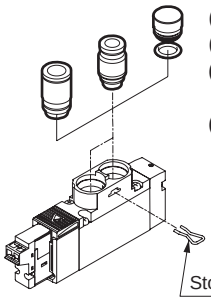
3. How to replace cartridge fitting

⚠CAUTION

■Check procedures before changing the push-in fitting size. If installed incorrectly, or if the tightening of the mounting screw is insufficient, air leakage could occur.

■Body piping (A)

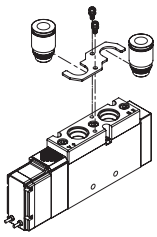
4G1, 2, 3



(1) Remove the stopper pin with a screwdriver.
(2) Pull the joint out.
(3) Insert the joint for replacement vertically until it reaches the back.
(4) Insert the stopper pin. Pull on the fitting to confirm that it is properly installed.

	Size	Tightening torque (N·m)
4G1	M1.7	0.18 to 0.22
4G2	M2.5	0.25 to 0.30
4G3	M3	0.6 to 0.7

4G4

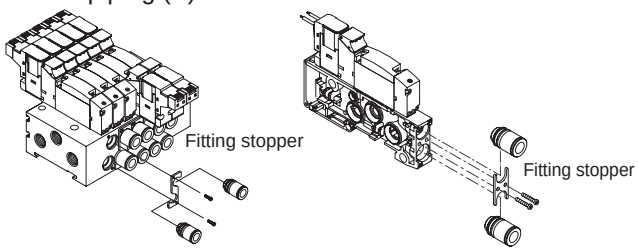


(1) Remove the mounting screw.
(2) Pull out the stopper plate and fitting together.
(3) Align the groove of the replacement fitting with the stopper plate and assemble them temporarily.
(4) Assemble the stopper plate with the fitting, and tighten the mounting screw.

Pull on the fitting to confirm that it is properly installed.

	Size	Tightening torque (N·m)
4G4	M3	0.7

■Base piping (B)



(1) Remove the mounting screw.
(2) Pull out the stopper plate and fitting together.
(3) Align the groove of the replacement fitting with the stopper plate and assemble them temporarily.
(4) Assemble the stopper plate with the fitting, and tighten the mounting screw. Pull on the fitting to confirm that it is properly installed.

Model No. of cartridge push-in fitting

Model	Part name		Model No.
4G1	ø1.8 barbed		4G1R-JOINT-CF
	ø1.8 straight		4G1R-JOINT-C18
	ø4 straight		4G1R-JOINT-C4
	ø6 straight		4G1R-JOINT-C6
	ø8 straight		4G1R-JOINT-C8
	ø1.8 elbow		4G1R-JOINT-CL18,CLL18
	ø4 elbow		4G1R-JOINT-CL4,CLL4
	ø6 elbow		4G1R-JOINT-CL6,CLL6
	ø1/8” straight		4G1R-JOINT-C3N
	ø5/32” straight		4G1R-JOINT-C4N
	ø1/8” elbow	(*1)	4G1R-JOINT-CL3N,CLL3N
	ø5/32” elbow	(*1)	4G1R-JOINT-CL4N,CLL4N
	Plug cartridge		4G1R-JOINT-CPG
4G2	ø4 straight		4G2R-JOINT-C4
	ø6 straight		4G2R-JOINT-C6
	ø8 straight		4G2R-JOINT-C8
	ø10 straight	(*2)	4G2R-JOINT-C10
	ø6 elbow		4G2R-JOINT-CL6,CLL6
	ø8 elbow		4G2R-JOINT-CL8,CLL8
	ø1/4” straight		4G2R-JOINT-C6N
	ø5/16” straight		4G2R-JOINT-C8N
	ø1/4” elbow	(*1)	4G2R-JOINT-CL6N,CLL6N
	ø5/16” elbow	(*1)	4G2R-JOINT-CL8N,CLL8N
	Plug cartridge		4G2R-JOINT-CPG
4G3	ø6 straight		4G3R-JOINT-C6
	ø8 straight		4G3R-JOINT-C8
	ø10 straight		4G3R-JOINT-C10
	ø8 elbow		4G3R-JOINT-CL8,CLL8
	ø10 elbow		4G3R-JOINT-CL10,CLL10
	ø5/16” straight		4G3R-JOINT-C8N
	ø3/8” straight		4G3R-JOINT-C10N
4G4	ø8 straight		4G4-JOINT-C8
	ø10 straight		4G4-JOINT-C10
	ø12 straight		4G4-JOINT-C12

*1: Custom order. *2: Common product with the 4G3 ø10 straight.

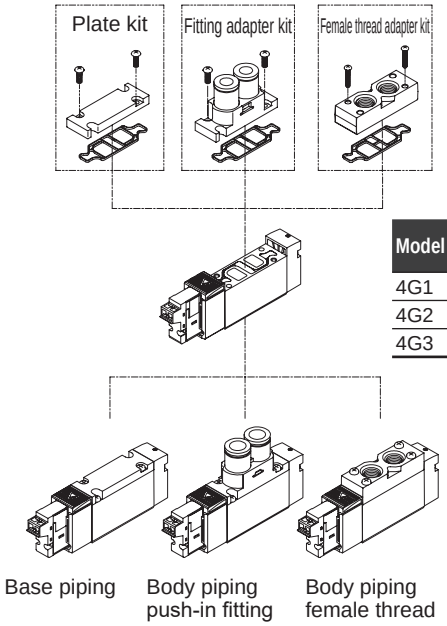
Use/maintenance

4. How to change piping connection specification

⚠ CAUTION

4G1, 2, 3

■ When replacing the plate or fitting adapter on the body, changing the body piping and base piping, or changing the push-in fitting and female thread of body piping, be sure to use appropriate tightening torque since air may leak if the mounting screws are loose.



Model	Size	Tightening torque (N·m)
4G1	M1.7	0.18 to 0.22
4G2	M2.5	0.25 to 0.30
4G3	M3	0.6 to 0.7

Plate kit

Model	Kit model No.	Set parts
4GB1	4G1R-PLATE-KIT	Plate, gasket, 2 mounting screws
4GB2	4G2R-PLATE-KIT	Plate, gasket, 2 mounting screws
4GB3	4G3R-PLATE-KIT	Plate, gasket, 2 mounting screws

Fitting adaptor kit

4G1 R-JNT-ADAPTOR-KIT- C4 NC - F

Ⓐ Model No.
Ⓑ Port size
Ⓒ NC/NO
Ⓓ Option

Code	Description	Ⓐ Model No. 3G1	3G2	3G3	4G1	4G2	4G3
Ⓑ Port size							
CF	ø1.8 barbed	●			●		
C18	ø1.8 straight	●			●		
C4	ø4 straight	●	●			●	
C6	ø6 straight	●	●	●		●	●
C8	ø8 straight		●	●		●	●
C10	ø10 straight			●			●
C3N	ø1/8" straight	●			●		
C4N	ø5/32" straight	●			●		
C6N	ø1/4" straight		●			●	
C8N	ø5/16" straight		●	●		●	●
C10N	ø3/8" straight			●			●
Ⓒ NC/NO							
NC	For 3GA □10	●	●	●			
NO	For 3GA □110	●	●	●			
Blank	Other than 3GA □10 or 3GA □ 110				●	●	●
Ⓓ Option							
Blank		●	●	●	●	●	●
F	A/B port filter built in	●	●	●	●	●	●

Note: Fitting adapter (with fittings), gasket and 2 mounting screws are in a set.

Female thread adaptor kit

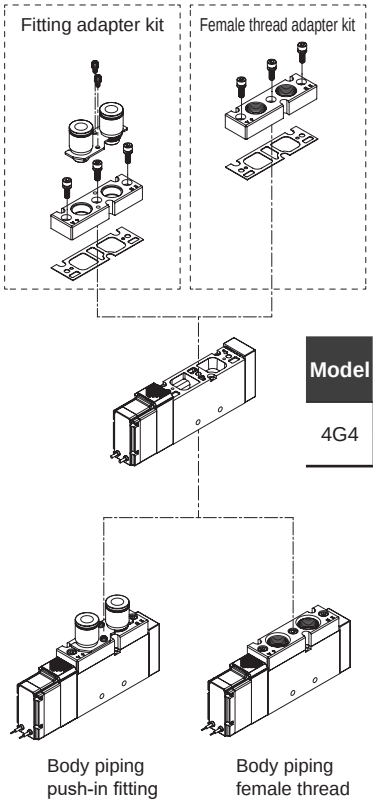
Model	Kit model No.	Set parts
4G1	4G1R - FML - ADAPTOR - KIT - bore size - option	Female screw adaptor, gasket, 2 mounting screws
4G2	4G2R - FML - ADAPTOR - KIT - bore size - option	Female screw adaptor, gasket, 2 mounting screws
4G3	4G3R - FML - ADAPTOR - KIT - bore size - option	Female screw adaptor, gasket, 2 mounting screws, 2 body mounting screws

Specify the option "F" when using the A/B port filter integrated.

Use/maintenance

4G4

■When replacing the fitting adapter on the body piping or changing the push-in fitting and female thread of body piping, be sure to use appropriate tightening torque since air may leak if the mounting screws are loose.



Model	Size	Tightening torque (N·m)
4G4	M3	0.7
	M4	2.6

Fitting adapter kit

Model	Part name	Kit model No.	Set parts
4GA4	ø8 fitting adaptor kit	4GA4 - JNT - ADAPTOR - KIT - C8 - option	Fitting adapter 2 push-in fittings Fitting stopper plate Gasket 2 mounting screws 3 adapter mounting screws
	ø10 fitting adaptor kit	4GA4 - JNT - ADAPTOR - KIT - C10 - option	
	ø12 fitting adaptor kit	4GA4 - JNT - ADAPTOR - KIT - C12 - option	

Specify the option "F" when using the A/B port filter integrated.

Female thread adapter kit

Model	Kit model No.	Set parts
4G4	4GA4 - FML - ADAPTOR - KIT - port size - option	Female thread adapter, gasket, 3 adapter mounting screws

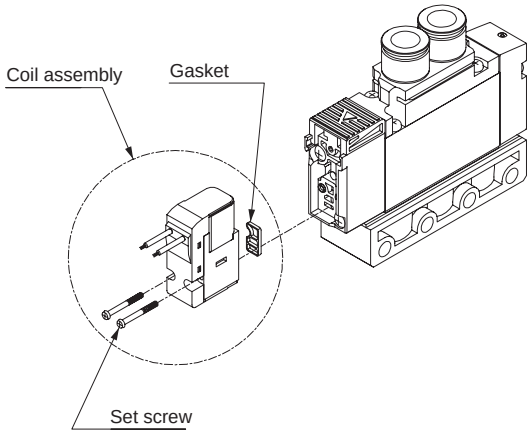
Specify the option "F" when using the A/B port filter integrated.

5. How to replace coil

⚠WARNING

■Grommet lead wire, E type and EJ type connector coil assemblies

Replace the coil by removing the set screws shown below. Loosening other screws could cause operation failures.
When installing, check that the gasket is installed on the coil side and tightening torque is proper.
Improper installation could result in air leakage or operation failures.



■DIN terminal box coil assembly

Replace the coil assembly by removing the set screws shown below. Loosening other screws could cause operation failures. When installing, check that the gasket is installed on the coil assembly side and tightening torque is proper.
Improper installation could result in air leakage or operation failures.
The coil assembly of grommet lead wire, E-connector specification and DIN terminal box specification cannot be replaced.
Recommended tightening torque 0.15 to 0.19 N·m