CKD

SM-P00078-A/1

INSTRUCTION MANUAL

3,5 port pneumatic solenoid valve

MN3GA/B R SERIES
MN4GA/B R SERIES
MN3GD/E R SERIES
MN4GD/E R SERIES

- **Block manifold type**

- Please read this instruction manual carefully before using this product, especially the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessar

CKD Corporation

Safety precautions

When designing and manufacturing a device using CKD products, the manufacturer is obligated to manufacture a safe product by confirming safety of the system comprising the following items:

- Device mechanism
- Pneumatic or water control circuit
- Electric control that controls the above

It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

⚠ WARNING

1. This product is designed and manufactured as a general industrial machine part. It must be handled by someone having sufficient knowledge and experience.

2. Use this product within its specifications.

This product cannot be used beyond its specifications. Additionally, the product must not be modified or machined.
This product is intended for use in general industrial devices and parts. Use beyond such conditions is not considered. Consult with CKD for details when using the product beyond the unique specification range, outdoors, or in the following conditions or environments. In any case, measures for safety shall be provided when the vavle malfunctions.

① Use for special applications requiring safety including nuclear energy, railroad, aviation, ship, vehicle, medical equipment, equipment or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press machine, brake circuits, or for safeguard.
② Use for applications where life or assets could be adversely affected, and special safety measures are required.

3. Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.

SO4414, JIS B 8370 (pneumatic system rules)
JFPS2008 (principles for pneumatic cylinder selection and use)
Including High Pressure Gas Maintenance Law, Occupational Safety and Sanitation Laws, other safety rules, standards and regulations, etc.

4. Do not handle, pipe, or remove devices before confirming safety.

① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
② Note that there may be hot or charged sections even after operation is stopped.
③ When inspecting or servicing the device, turn off the energy source (air supply or water supply), and turn off power to the facility. Release any compressed air from the system, and pay enough attention to possible water leakage and leakage of electricity.
④ When starting or restarting a machine or device that incorporates pneumatic components, make sure that system safety, such as pop-out prevention measures, is secured.

5. Observe warnings and cautions on the pages below to prevent accidents.

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■**The safety cautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.**

DANGER :When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.

WARNING :When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

CAUTION :When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. In any case, important information that must be observed is explained.

Precautions with regard to guarantee

- **Guarantee period**

The guarantee period of our product shall be one (1) year after it is delivered to the place specified by the customer.

- **Guarantee coverage**

If any failure for which CKD CORPORATION is recognized to be responsible occurs within the above warranty period, a substitute or necessary replacement parts shall be provided free of charge, or the product shall be repaired free of charge at the plant of CKD CORPORATION.

However, the guarantee excludes following cases:

① Defects resulting from operation under conditions beyond those stated in the catalogue or specifications.
② Failure resulting from malfunction of the equipment and/or machine manufactured by other companies.
③ Failure resulting from wrong use of the product.
④ Failure resulting from modification or repairing that CKD CORPORATION is not involved in.
⑤ Failure resulting from causes that could not be foreseen by the technology available at the time of delivery.
⑥ Failure resulting from disaster that CKD is not responsible of.

Guarantee stated here covers only the delivered products. Any other damage resulting from failure of the delivered products is not covered by this guarantee.

- **Confirmation of product compatibility**

Our customer shall be responsible of confirming compatibility of our product used in our customer’s system, machinery or device.

UNPACKING (Chapter 3.)

⚠ CAUTION : Bags containing solenoid valves should be opened only when you are ready to connect the valves to the pipes immediately afterward.

・If bags are opened before the valves are ready to be connected to the pipes, the entry of foreign matter from the piping ports could cause the solenoid valves to fail or malfunction.

INSTALLATION (Chapter 4.)

⚠ CAUTION : If you have to use the product under conditions that are different from the specified conditions or if you intend to use the product for a special application, be sure to consult us about the product specifications before using the product.

INSTALLATION ENVIRONMENT (Section 4.1.)

⚠ CAUTION :

a) In a dusty environment, foreign matter may enter even through the exhaust port.

・Foreign matter may go into the inside of a solenoid valve by the direction of an exhaust port, which may cause inhalation of foreign matter near the exhaust port. Attach a silencer to the exhaust port or have the exhaust port face downward.

b) Keep the solenoid valve system dry. Take care to avoid direct contact with dripping water or splashes of cutting oil.

・If the solenoid valve system is wet by a direct contact with water or cutting oil, an electrical leak or burnt solenoid coils may result. Protect the solenoid valve system by using a cover or by installing it inside a paneled casing. If the cylinder rod is splashed with cutting oil, the oil may penetrate through the cylinder into the secondary side piping of the solenoid valve. This must be prevented to avoid malfunctions.

c) The coils will produce heat.

・Particularly if the solenoid valve system is installed in a control board or if the solenoid coils need to be energized for a long time, consider providing sufficient ventilation to release the heat. The coils can get very hot.

・The coil temperature may be raised with the ambient temperature and/or energization time, thus pay sufficient attention when touching the valves.

d) Do not use the solenoid valve system in an atmosphere that includes a corrosive gas or solvent vapors.

・Do not use the solenoid valve system in an atmosphere that includes a corrosive gas such as the sulfur dioxide gas or in an atmosphere that includes solvent vapors.

e) Vibration resistance and shock resistance

・Do not subject the solenoid valve system to vibrations 50m/s^2 or stronger or shocks 300m/s^2 or stronger.

f) Avoid using the solenoid valve system in a humid environment because the humidity is likely to cause condensation with a change in the temperature.

g) Do not use the normal type solenoid valves for an application that requires conformity with explosion-proof specifications. Choose explosion-proof solenoid valves instead.

h) The packing and gaskets may deteriorate sooner than usual if used in an atmosphere with a higher than normal density of ozone (for example, the atmosphere near a beach or in an area with frequent thunderstorms).

i) There is no resistance to surges caused by overvoltage from switching and lightning transients(CE Marking :IEC61000-4-5). Please take measures against surges on the equipment side. Please use in installation category 2 by the AC voltage.

INSTALLATION (Section 4.2.)

⚠ WARNING :

a) When installing a solenoid valve unit, never attempt to hold it in position by means of the pipes connected to it.
- Mount the solenoid valve by applying the mounting screws and/or mounting plate to the solenoid valve.

b) Tighten the screws with proper torque. If the assembly or tightening is not conducted properly, it may cause some air leakage, falling-off of products, screw damaging or deform of DIN rail.

⚠ CAUTION :

When mounting this product on the DIN rail, check the strength.
- If the manifold weights more than 1 kg, or when using in an environment with vibration or shock, fix the DIN rail onto the surface at 50 to 100mm spacing.
- If a DIN rail is not strong enough, directly mount the manifold on a manifold base.

PIPING (Section 4.3.)

⚠ CAUTION :

a) Observe the recommended tightening torque when connecting pipes.
- Observing the recommended tightening torque prevents air leakage and damage to the screw threads. To prevent damage to the screw threads, first use your hand to lightly tighten the screw and then use a tool to tighten the screw to the recommended torque.

b) Make sure that the pipes will not be disconnected at the joints by mechanical movements, vibrations or tension.
- If the exhaust piping of the pneumatic circuit is disconnected, the actuator speed control is disabled.
- If the above happens to a chuck holding mechanism, the chuck will open. The inadvertent opening of the chuck may cause a serious accident.

c) When supplying the compressed air for the first time after completing the piping, be sure to check every joint in the piping for air leakage.

d) When supplying the compressed air for the first time after completing the piping, increase the air pressure gradually but never introduce a highly-pressurized air suddenly.
- A sudden introduction of a highly-pressurized air may disconnect pipes at joints and/or cause the tubes to jump around, any of which may cause an injury.

e) Do not decrease the inside diameter of the piping from any of the solenoid valve exhaust ports to a diameter less than the exhaust pipe connecting port size.
- Normal operation of the actuator depends on the smoothness of the exhaust flow. With a manifold system, a restriction to the exhaust flow may prevent normal operation of other solenoid valves.

f) Removal of foreign matter
- Rust and other foreign matter in the pneumatic circuit may cause a malfunction or leakage from the valve seat. Insert a filter (maximum allowable particle size 5μm or less) immediately upstream of the solenoid valve.

g) Air supply
- Do not restrict the flow of air through the air supply piping. With a manifold system with multiple stations, a drop in the air supply pressure may cause trouble through a delay in the operation timing.

WIRING (Section 4.4.)

⚠ WARNING : When carrying out electrical connections, please perform disassembling and assembling work after reading the Instruction Manual carefully and with full understanding of its contents.

・Your understanding of the structure of solenoid valve and its operation principle is required in order to secure the safety.

⚠ CAUTION :

a) Before supplying the power, check the power supply voltage and the current type (AC or DC).

b) Do not apply stress to the lead wires.

・Undue stress may cause such problems as a break in the wire or disconnection of the contact terminal.

c) The voltage drop may be caused with the simultaneous energization and/or cable length. Confirm the voltage drop on the solenoid valve is with in 10% of its rated voltage.

d) Connect this product with the output unit. In case the product is connected with the input unit, it may result in serious trouble(s), not only on these apparatus but also on the peripheral equipments.

Check valve (Section 5.1.)

⚠ WARNING : The exhaust check valve blocks the back pressure from adjacent air device, etc. However, the structure does not allow the pressure seal to be held continuously, so do not use for purposes other than the back pressure block.

MANUAL OPERATION (Section 5.2.)

⚠ WARNING :

a) After using the manual override, be sure to reset the manual override to the original (OFF) position before resuming the operation of the device.

b) Before using the manual override, make sure that nobody is present near the cylinder to be activated.

c) After an operation, be sure to release the lock to turn the manual override OFF.

The lock is released (the manual override turned OFF) if the manual override protection cover is closed.

AIR QUALITY (Section 5.3.)

⚠ WARNING :

a) Do not supply anything other than compressed air.

b) Supply clean compressed air without any mixture of corrosive gas.

⚠ CAUTION :

a) Compressed air usually contains a large amount of drain, oxidized oil, tar, foreign matter, and rust from the piping. Filter out those elements in the supplied air because they may cause a malfunction and decrease service life. In addition, clean the exhaust before it is released to the air to minimize pollution.

b) Basically the product is designed as oilless specifications, however if you prefer to supply oil, use the class 1 turbine oil (additive-free) ISO VG32.
Once you have lubricated a pre-lubricated valve, the valve is no longer capable of running without being lubricated from the outside. Do not leave the valve without lubrication. Keep it lubricated.

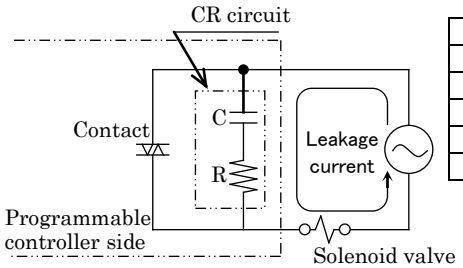
c) Do not use spindle oil or machine oil. They induce expansion of the rubber parts, which will cause malfunction.

ELECTRIC CIRCUIT (Section 5.4.)

⚠ CAUTION :

a) Check for the presence of any current leak from the external control device because it may cause malfunction.
- When a programmable controller or a similar control device is used, a current leak may prevent the normal returning of the valve when the solenoid is de-energized.

b) Restriction on current leak
- When controlling solenoid valves using a programmable controller or a similar control device, make sure that the current leak in the programmable controller output is equal to or less than the level shown in the table below. A current leak larger than the allowable level may cause malfunction.



AC100V	1.0 mA or less
AC200V	
DC3V	8.0 mA or less
DC5V	4.8 mA or less
DC12V	1.6 mA or less
DC24V	1.0 mA or less

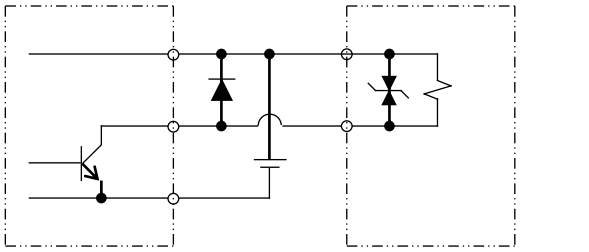
⚠ CAUTION :

a) The surge suppressor limits the surge voltage generating from the solenoid valve, which reaches several hundred volts, to a low voltage level bearable for output contacts. This function may be insufficient for some output circuits and the voltage may cause breakage or malfunction. Check the surge voltage limitation level of the solenoid valve in your circuit, the dielectric voltage and circuit configuration of the output devices and the delay for recovery to check for serviceability. If necessary, install another measures against surges. The 4GR Series solenoid valves equipped with a surge suppressor suppress the terminal-to-terminal reverse voltage surge generating upon shutoff, to the level shown in the table below.

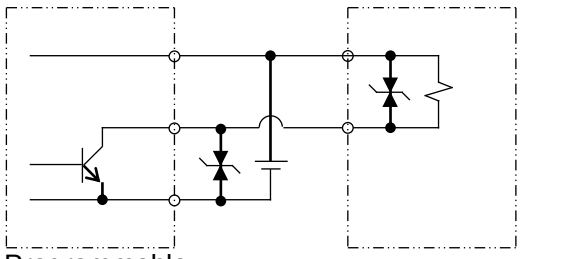
In case of 3V DC	About 6.2V
In case of 5V DC	About 13V
In case of 12V DC	About 27V
In case of 24V DC	About 47V
In case of option "S ", "E "	About 1V

b) If the output unit is of an NPN type, the output transistor is susceptible to the sum of the voltage specified in the table above and the source voltage. Install a contact protection circuit.

<Example 1 of output transistor protection circuit>



<Example 2 of output transistor protection circuit>



PERIODIC INSPECTION (Section 6.1.)

⚠ WARNING : Before providing maintenance service, cut the power and the supply of compressed air and confirm the residual pressure is released.

・The above is required to ensure safety.

⚠ CAUTION : Regularly perform the daily and periodic inspections to correctly maintain product performance.

・If the product is not correctly maintained, product performance may deteriorate dramatically, resulting in a shorter service life, fractures of components, and malfunctions.

DISASSEMBLY AND REASSEMBLY (Section 6.2.)

⚠ WARNING : Before increase or decrease block of manifold, cut the power and the supply of compressed air.

⚠ WARNING : Please avoid disassembling and reassembling the solenoid valve, otherwise the sealing and drip proof performance may deform.

・Disassembled and Reassembled product by the customer will not be guaranteed.

ADDITIONAL INSTALLATION OF A VALVE UNIT TO A REDUCED WIRING TYPE MANIFOLD (Section 6.3.)

⚠ WARNING : When disassembling or assembling the manifold, perform it after reading the Instruction Manual carefully and with full understanding of its contents.

・You are required to understand the structure of solenoid valve and its operation principle to secure the safety.

・A level of 2nd Class or more of Pneumatics Technology Certification is required.

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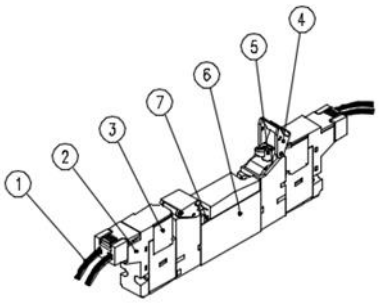
3,5 port pneumatic solenoid valve

MN3GA/B R SERIES, MN3GD/E R SERIES

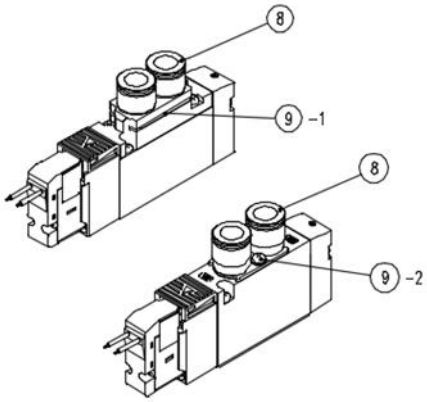
MN4GA/B R SERIES, MN4GD/E R SERIES

Instruction Manual No. SM-P00078-A

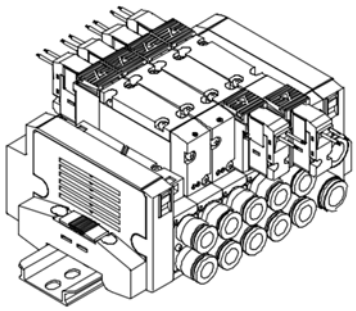
1. PRODUCT



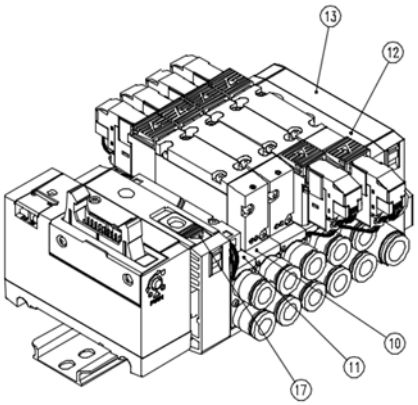
Base piping type



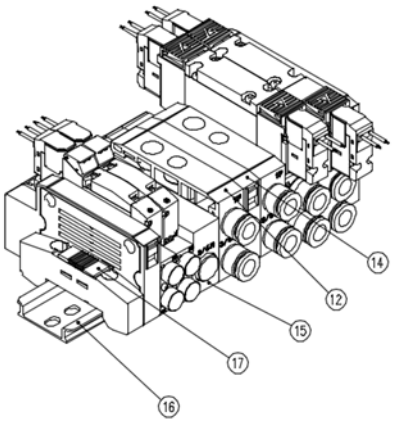
Body piping type



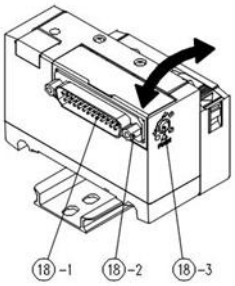
Individual wiring manifold type



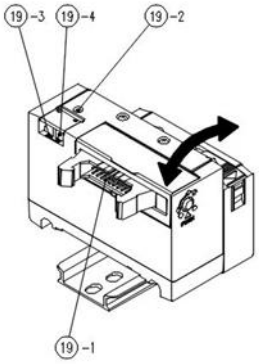
Reduced wiring manifold type



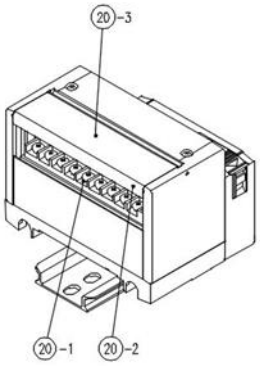
Mix – manifold type



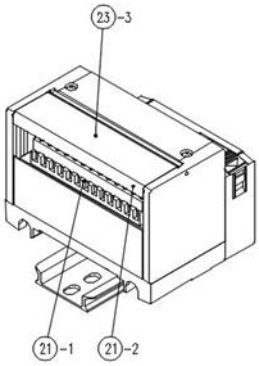
18.Dsub-connector(T30)



19. Flat cable connector (T50)



20.Common terminal block(T10)
M3 thread type



21.Common terminal block(T11)
Push tightening type

1) Solenoid valve individual

No.	Parts name	Description
1	Lead wire	No specification about the polarities.
2	Electric component cover	The green power indicator light on the top surface is lit when the power is supplied to the coil. (With E-type and A-type connectors only.)
3	Coil assembly	It varies depending on electric wire connection type and voltage.
4	Manual override protection cover	The protection cover prevents accidental operation of the manual override. The user must open the cover before operating the manual override.
5	Manual override	Allows a non-lock type operation (push and release) as well as a lock type (push and lock) operation.
6	Discrete valve	
7	Discrete valve mounting screw	Two screws are provided for each discrete valve so as to fix the discrete valves to various bases.
8	Fitting	A replaceable cartridge type push-in fitting.
9-1	Fitting stopper pin	Secures cartridge type push-in fitting or like. (4GA R SERIES)
9-2	Fitting fixing screw	Secures cartridge type push-in fitting or like. (4GD R SERIES)

2) Piping block

No.	Parts name	Description
10	Valve block with solenoid valve	A block of assembled solenoid valve unit and valve block (split resin base).
11	Valve block with masking plate	Removed when an additional valve unit is installed.
12	Air supply or exhaust block	A block with a supply and an exhaust port.
13	End block (L/R)	It has a function of common supply/exhaust flow plugging and a built-in muffler (option).
14	Partition block	Shuts off the supply and exhaust as required, and is used for different pressure circuits or the like.
15	Mix block	Allowed to stand in cases where 4G1 and 4G2 models are mounted on the manifold together.
16	DIN rail	Mounting rail
17	Retainer operation button	Operates the fixing bracket indirectly when fixing a solenoid valve manifold on a DIN rail.

3) Wiring block

No.	Parts name	Description
18	D sub-connector type(T30)	
18-1	D sub 25-pin connector	Combines the manifold valve control terminals.
18-2	Mounting screw	Locks the mating connector (M2.6).
18-3	Rotary connector operation button	Used when changing the wiring direction of the connector to the upper or transverse side. Press the button to release the lock, and the connector is made rotatable. When the connector is rotated to the predetermined position, the button returns to lock the connector again.
19	Flat cable type(T50)	
19-1	Flat cable connector	Combines the manifold valve control terminals.
19-2	Power indicator light	Lit when the power is supplied with right polarities.
19-3	Power terminal block	Used when an external power supply is required
19-4	Power polarity marking	
20	Common terminal stand Specifications for M3 thread(T10)	
20-1	Terminal block	A set of terminals to control the valves mounted on the manifold.
20-2	Cover.	Can be opened when wiring. To avoid electric shock, be sure to close it before energization.
20-3	Indicates the layout of the terminal block	Terminal block layout drawing Indicates the layout of the terminal block. Paper can be removed for use as a TAG for taking notes.
21	Terminal stand with 24 poles	Minus-head push fastening
21-1	Common terminal stand (24 poles)	A common stand for the control terminals of the manifold solenoid valve.
21-2	Cover	Can be opened when wiring. To avoid electric shock, be sure to close it before energization.
21-3	Indicates the layout of the terminal block	Terminal block layout drawing Indicates the layout of the terminal block. Paper can be removed for use as a TAG for taking notes.

2. PORT INDICATION AND SI UNIT SYSTEM

2.1 Port Indication

Each piping port is marked with ISO and JIS conformable piping port indication codes.

Application	ISO	JIS
Supply port	1	P
Output port	4	A
Output port	2	B
Exhaust port	5	R1
Exhaust port	3	R2

- Installing position of the solenoid valve is free. The position of the 4(A) and 5(R1) ports for 4GR series are in reverse with 2(B) and 3(R2) ports respectively, compared with the 4K series. To avoid malfunction, please confirm the port symbol before piping.

2.2 Conversion between SI unit and Conventional Units

In this manual, values are expressed using the International System of Units (SI).
Use the table below to convert them into values expressed in conventional units.

Table of conversion between SI units and conventional units
(The values printed in Bolds fonts are values given in the International System of Units (SI)):

Example (converting a pressure value):
$1kgf/cm^2$ → **0.980665Mpa** **1MPa** → $1.01972\times10kgf/cm^2$

- Force

N	dyn	kgf
1	1×10^{5}	1.01972×10^{-1}
1×10^{-5}	1	1.01972×10^{-6}
9.80665	9.80665×10^{5}	1

- Stress

Pa or N/m^2	MPa or N/mm^2	kgf/mm^2	kgf/cm^2
1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
1×10^{6}	1	1.01972×10^{-1}	1.01972×10
9.80665×10^{6}	9.80665	1	1×10^{2}
9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

∗: $1Pa=1N/m^2$, $1MPa=1N/mm^2$

- Pressure

Pa	kPa	MPa	bar	kgf/cm^2	atm	mmH2O	MmHg or Torr
1	1×10^{-3}	1×10^{-6}	1×10^{-5}	1.01972×10^{-5}	9.86923×10^{-6}	1.01972×10^{-1}	7.50062×10^{-3}
1×10^{3}	1	1×10^{-3}	1×10^{-2}	1.01972×10^{-2}	9.86923×10^{-3}	1.01972×10^{2}	7.50062
1×10^{6}	1×10^{3}	1	1×10	1.01972×10	9.86923	1.01972×10^{5}	7.50062×10^{3}
1×10^{5}	1×10^{2}	1×10^{-1}	1	1.01972	9.86923×10^{-1}	1.01972×10^{4}	7.50062×10^{2}
9.80665×10^{4}	9.80665×10	9.80665×10^{-2}	9.80665×10^{-1}	1	9.67841×10^{-1}	1×10^{4}	7.35559×10^{2}
1.01325×10^{5}	1.01325×10^{2}	1.01325×10^{-1}	1.01325	1.01323	1	1.03323×10^{4}	7.60000×10^{2}
9.80665	9.80665×10^{-3}	9.80665×10^{-6}	9.80665×10^{-5}	1×10^{-4}	9.67841×10^{-5}	1	7.35559×10^{-2}
1.33322×10^{2}	1.33322×10^{-1}	1.33322×10^{-4}	1.33322×10^{-3}	1.35951×10^{-3}	1.31579×10^{-3}	1.35951×10	1

∗$1Pa=1N/m^2$

3. UNPACKING

⚠ CAUTION : Bags containing solenoid valves should be opened only when you are ready to connect the valves to the pipes immediately afterward.

- If bags are opened before the valves are ready to be connected to the pipes, the entry of foreign matter from the piping ports could cause the solenoid valves to fail or malfunction.

(1) Check the model number imprinted on the product to make sure that the product you received is exactly the product you ordered.
(2) Check the exterior of the product for any damage.
(3) Before using the product, read the supplied documentation.

4. INSTALLATION

⚠ CAUTION : If you have to use the product under conditions that are different from the specified conditions or if you intend to use the product for a special application, be sure to consult us about the product specifications before using the product.

4.1 Installation environment

⚠ CAUTION :

a) In a dusty environment, foreign matter may enter even through the exhaust port.
- Foreign matter may go into the inside of a solenoid valve by the direction of an exhaust port, which may cause inhalation of foreign matter near the exhaust port. Attach a silencer to the exhaust port or have the exhaust port face downward.

b) Keep the solenoid valve system dry. Take care to avoid direct contact with dripping water or splashes of cutting oil.
- If the solenoid valve system is wet by a direct contact with water or cutting oil, an electrical leak or burnt solenoid coils may result. Protect the solenoid valve system by using a cover or by installing it inside a paneled casing. If the cylinder rod is splashed with cutting oil, the oil may penetrate through the cylinder into the secondary side piping of the solenoid valve. This must be prevented to avoid malfunctions.

c) The coils will produce heat.
- Particularly if the solenoid valve system is installed in a control board or if the solenoid coils need to be energized for a long time, consider providing sufficient ventilation to release the heat. The coils can get very hot.
- The coil temperature may be raised with the ambient temperature and/or energization time, thus pay sufficient attention when touching the valves.

d) Do not use the solenoid valve system in an atmosphere that includes a corrosive gas or solvent vapors.
- Do not use the solenoid valve system in an atmosphere that includes a corrosive gas such as the sulfur dioxide gas or in an atmosphere that includes solvent vapors.

e) Vibration resistance and shock resistance
- Do not subject the solenoid valve system to vibrations 50m/s^2 or stronger or shocks 300m/s^2 or stronger.

f) Avoid using the solenoid valve system in a humid environment because the humidity is likely to cause condensation with a change in the temperature.

g) Do not use the normal type solenoid valves for an application that requires conformity with explosion-proof specifications. Choose explosion-proof solenoid valves instead.

h) The packing and gaskets may deteriorate sooner than usual if used in an atmosphere with a higher than normal density of ozone (for example, the atmosphere near a beach or in an area with frequent thunderstorms).

i) There is no resistance to surges caused by overvoltage from switching and lightning transients(CE Marking :IEC61000-4-5). Please take measures against surges on the equipment side. Please use in installation category 2 by the AC voltage.

4.2 Installation

⚠ WARNING : When mounting a valve, do not use a mounting method that relies on support from the piping.

・Mount and fix the valve body.

Tighten the screws with proper torque. If the assembly or tightening is not conducted properly, it may cause some air leakage, falling-off of products, screw damaging or deform of DIN rail.

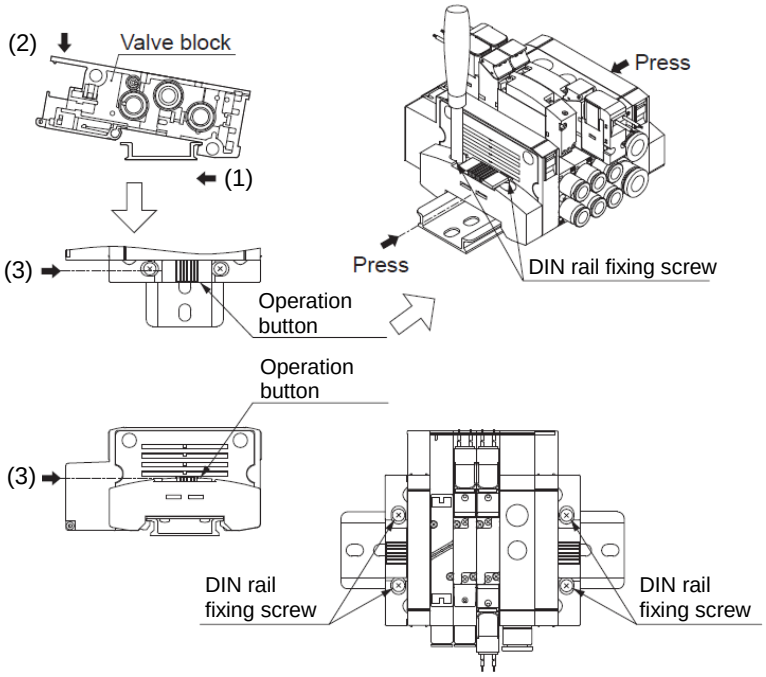
⚠ CAUTION : When mounting this product on the DIN rail, check the strength.

・If the manifold weights more than 1 kg, or when using in an environment with vibration or shock, fix the DIN rail onto the surface at 50 to 100mm spacing.

・If a DIN rail is not strong enough, directly mount the manifold on a manifold base.

Please secure enough space around the solenoid valve for mounting, dismounting and piping work.

- The block manifold is mounted on a DIN rail. If the manifold's total weight exceeds 1kg, or when using the MEVT in an environment with vibration or impact, fix the DIN rails on the mounting surface at pitch of 50 to 100mm. Check that there are no problems with installation.
  There is no restriction for installation or mounting, but vibration could loosen set screws and drop the manifold.
- How to mount and remove manifold
  Removal
  Loosen the four DIN rail fixing screws (two each on left/right total 4).
  Installation
  1. Set the jaws onto the DIN rail in the order of (1) (2).
  2. Press down in the direction of (3).
  3. Tighten the DIN rail fixing screws. (Tightening torque: 1.2 to 1.6 N·m).



4.3 Piping

⚠ CAUTION :

a) Observe the recommended tightening torque when connecting pipes.
- Observing the recommended tightening torque prevents air leakage and damage to the screw threads. To prevent damage to the screw threads, first use your hand to lightly tighten the screw and then use a tool to tighten the screw to the recommended torque.

b) Make sure that the pipes will not be disconnected at the joints by mechanical movements, vibrations or tension.
- If the exhaust piping of the pneumatic circuit is disconnected, the actuator speed control is disabled.
- If the above happens to a chuck holding mechanism, the chuck will open. The inadvertent opening of the chuck may cause a serious accident.

c) When supplying the compressed air for the first time after completing the piping, be sure to check every joint in the piping for air leakage.

d) When supplying the compressed air for the first time after completing the piping, increase the air pressure gradually but never introduce a highly-pressurized air suddenly.
- A sudden introduction of a highly-pressurized air may disconnect pipes at joints and/or cause the tubes to jump around, any of which may cause an injury.

e) Do not decrease the inside diameter of the piping from any of the solenoid valve exhaust ports to a diameter less than the exhaust pipe connecting port size.
- Normal operation of the actuator depends on the smoothness of the exhaust flow. With a manifold system, a restriction to the exhaust flow may prevent normal operation of other solenoid valves.

f) Removal of foreign matter
- Rust and other foreign matter in the pneumatic circuit may cause a malfunction or leakage from the valve seat. Insert a filter (maximum allowable particle size 5μm or less) immediately upstream of the solenoid valve.

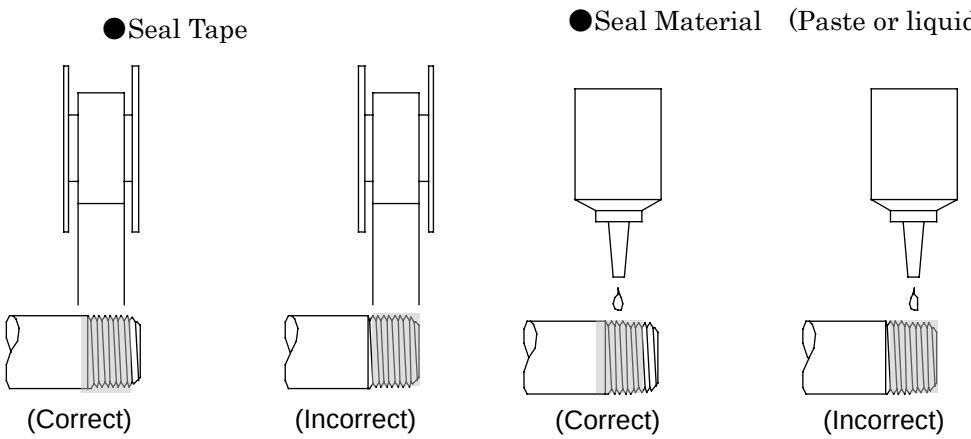
g) Air supply
- Do not restrict the flow of air through the air supply piping. With a manifold system with multiple stations, a drop in the air supply pressure may cause trouble through a delay in the operation timing.

Tightening torque

Size	Tightening torque N·m
M5	0.5 to 1
Rc1/8	3 to 5

4.3.1 Seal material

When using seal material, take care to avoid getting it in the pipes or overflowing on the exterior surface of the pipes.



When applying fluororesin sealing tape to the screw threads, wind the tape two or three times around the threads but leave the one or two threads at the pipe end uncovered. Firmly press the tape against the threads using the tip of your fingernail. When applying liquid type seal material, apply the material to all the threads except one or two threads at the pipe end and take care not to apply too much of it.

Never apply the seal material to the female threads in the device side piping port.

4.3.2 Flushing

Before connecting pipes, flush the interiors of the tubes, solenoid valves, and connected devices to remove foreign matter.

4.3.3 M5 screw fitting

An M5 screw fitting is sealed using a gasket (Model No. for the gasket only: FGS).Do not retighten the fitting screw when pressure is generated in the pneumatic circuit. Design and construct the piping system in such a way that the valves may be removed and reinstalled if a trouble should happen.

4.3.4 Blow circuit

Do not open the cylinder port circuit to the atmosphere because a drop in the air supply pressure may cause malfunction. Select the external pilot type design instead of the internal pilot type design. The lowest allowable pressure with the internal pilot type design is 0.2 MPa.

4.3.5 Exhaust port

Minimize the restriction to the flow of the exhaust air because such restriction may cause a delay in the cylinder response. If such a delay happens, the speed needs to be adjusted between the cylinder and solenoid valve.

4.3.6 Pipe connections

(1) Tubes to be used

For use with solenoid valves with push-in fitting, select tubes of the type specified by us:

Soft nylon tubes (F-1500 Series)

Urethane tubes (U-9500 Series)

Note: For Ø1.8 push-in fitting (C18), use UP-9402 (urethane).

(2) For installation at a site that has spatters in the air, select incombustible tubes or metal pipes.

(3) For a piping used for both hydraulic and pneumatic controls, select a hydraulic hose. When combining a spiral tube with a standard push-in fitting, fix the tube origin using a hose band. Otherwise the rotation of the tube will decrease the efficiency of the clamping.
For use in a high-temperature atmosphere, select fastener joints instead of push-in fitting.

(4) When selecting from tubes commercially available, carefully study the accuracy of the outside diameter as well as the wall thickness and the hardness. The hardness of a polyurethane tube should be 93° or more (as measured by a rubber hardness meter).
With a tube that does not have a sufficient accuracy of the outside diameter or the specified hardness, a decrease in the chucking force may cause disconnection or difficulty in inserting.

Tube dimensions

Outside diameter mm	Inside diameter mm	
	Nylon	Polyurethane
φ1.8	-	φ1.2
φ4	φ2.5	φ2
φ6	φ4	φ4
φ8	φ5.7	φ5
φ10	φ7.2	φ6.5

Outside diameter allowance

Soft or hard nylon	±0.1mm
Urethane φ1.8, φ3	±0.1mm
Urethane φ4, φ6	+0.1mm -0.15mm
Urethane φ8, φ10	+0.1mm -0.2mm

(5) Minimum bending radius of tubes

Observe the minimum bending radius of tubes. Neglecting the minimum bending radius may cause disconnection or leaks.

Tube bore	Minimum bending radius mm	
	Nylon	Polyurethane
φ1.8	-	4
φ4	10	10
φ6	20	20
φ8	30	30
φ10	40	40

(6) Cutting a tube

To cut a tube, use a tube cutter to cut the tube perpendicularly to the length of the tube. Inserting an obliquely cut end of a tube may cause air leakage.

(7) Tube connections

Do not bend the tube immediately at the joint connection point. Lead it out straight from the end of the joint for a length equal to or greater than the outside diameter of the tube. The tension applied sideways through the tube should not exceed 40N. (about 5N for C18, CL18 and CLL18).

(8) Blank plug to be used

For use with a solenoid valve with a push-in joint, select the blank plug specified by us:

Blank plug (PG-P2-B) : φ1.8 push-in joint

Blank plug (GWP□-B Series) : φ4 to 10 push-in joint

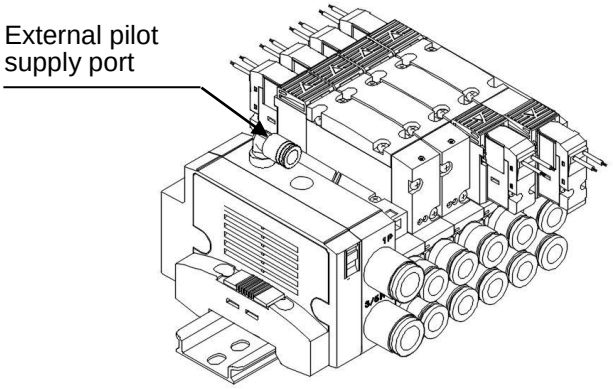
4.3.7 External pilot (K) piping port

The external pilot (K) type has a separate pilot air supply.φ 6 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	Supply port	12/14

- MN4G1R



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

4.4 Wiring

⚠ WARNING: When carrying out electrical connections, please perform disassembling and assembling work after reading the Instruction Manual carefully and with full understanding of its contents.

- Your understanding of the structure of solenoid valve and its operation principle is required in order to secure the safety.

⚠ CAUTION:

a) Before supplying the power, check the power supply voltage and the current type (AC or DC).

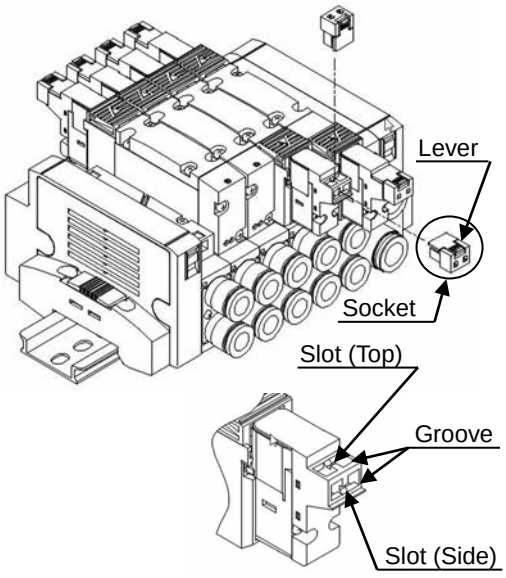
b) Do not apply stress to the lead wires.
   ・Undue stress may cause such problems as a break in the wire or disconnection of the contact terminal.

c) The voltage drop may be caused with the simultaneous energization and/or cable length. Confirm the voltage drop on the solenoid valve is with in 10% of its rated voltage.

d) Connect this product with the output unit. In case the product is connected with the input unit, it may result in serious trouble(s), not only on these apparatus but also on the peripheral equipments.

4.4.1 How to use E type connector

E type connector has top and side connecting portions to which sockets can be connected either from the top or side directions. The socket assembly is connected from the side direction at shipment. Select the connection direction based on installation environment.



1) How to mount and remove socket

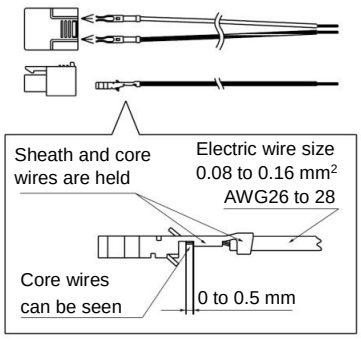
(1) When mounting the socket, hold the lever and socket with fingers and insertstraight into the square window on the connector body. Align the lever jaw with the groove on the connector body and lock it. When mounting from the top, position the socket so that the lever faces the front. When mounting from the side,position the socket so that the lever is in an upward direction.

(2) When removing the socket, press down the lever to release jaws from the groove, then pull straight out.

2) How to connect lead wire

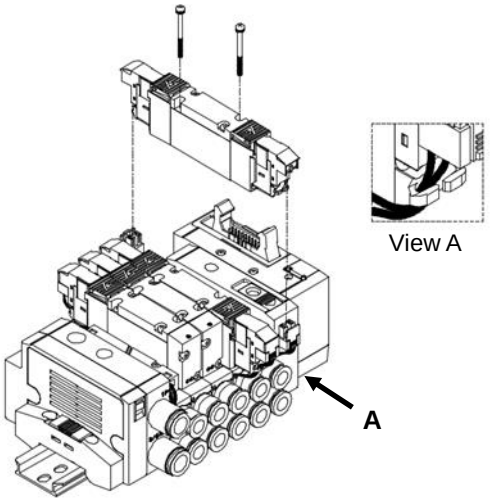
(1) Strip about 3 mm of the lead wire end. Align the end of core wires, insert them into the contact terminal, and crimp with a crimp tool. When crimping, check that both the sheath and core wires are held, and 0 to 0.5 mm of the core wire end is visible.

(2) 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.



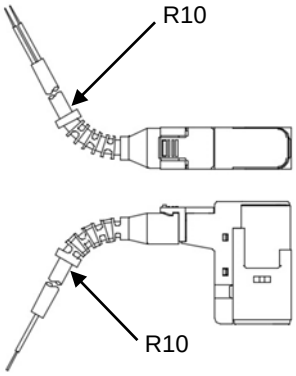
4.4.2 How to use A-connector

A type connector is a connector for exclusive use of reduced wiring manifold mounting, which can be connected from the bottom direction. When mounting or removing the socket, similar attention as how to use E type connector is required.



4.4.3 How to use E*J type connector (Socket with cover type)

Use the lead wire with limitation of bending dimension as shown in the figure below.



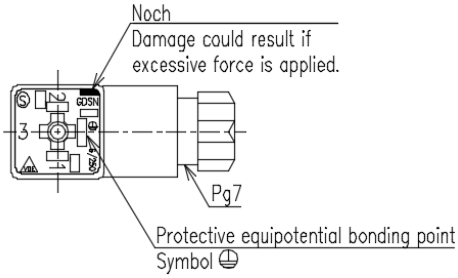
4.4.4 How to use DIN terminal box

1) Disassembly

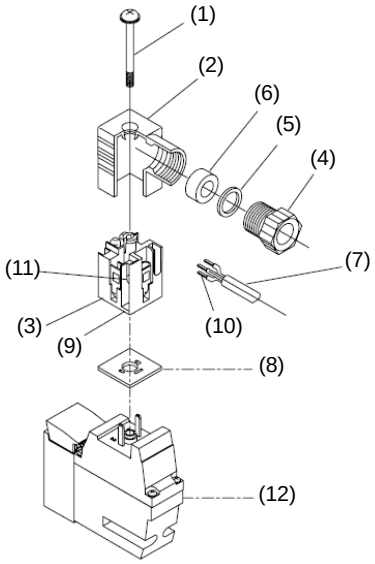
●Loosen screw (1) and pull cover (2) in the direction of screw (1) to remove the connector from coil assembly(12).

●Pull out screw (1) from 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.Take care not to apply excessive force as there is a risk of damage.



●Remove cable gland (4) and take out washer (5) and rubber packing (6).



2) Wiring

●Wiring preparation

・The applicable dimensions for cable (7) are the VCTF2 (3) core (φ 3.5 to 7.0) defined in JIS C3306.

・The length of the cable lead wire sheath pealing is 10 mm.

・Both twisted wires and solid wires can be used for wiring.

・When using a twisted wire, avoid connecting a presoldered wire.

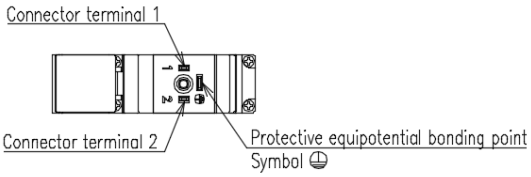
・When using crimp sleeve (10) at the end of the twisted wire, select H0.5/6 (0.3 to 0.5 mm2) or H0.75/6 (0.75 mm2) made by Weidmüeller Japan, or an equivalent product. Crimp sleeves are not included.

●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.



Coil assembly surface figure
(The AC type)

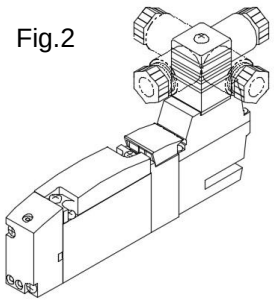
3) Assembly

・Set the wired terminal block (3) on cover (2).
(Push in untilit clicks.)

* Terminal block can be set in 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 disconnect.

Fig.2



・Place gasket (8) between the bottom part of terminal block (3) and the plug of coil assembly (12), insert the connector, insert screw (1) from over cover (2) and tighten it.
Remarks: The recommended tightening torque for screws is 0.4 to 0.45 N·m.

4.4.5 Centralized terminal block type :Wiring method T10/T11

1) Caution for centralized terminal block type (T10/T11)

(1) With the centralized terminal block type, common wires are treated inside beforehand. When using the independent contact PLC output unit, lay the common wires at the contact section.

(2) Check the correspondence of the number of stations with solenoid positions to prevent incorrect wiring. (Refer to the table below.)

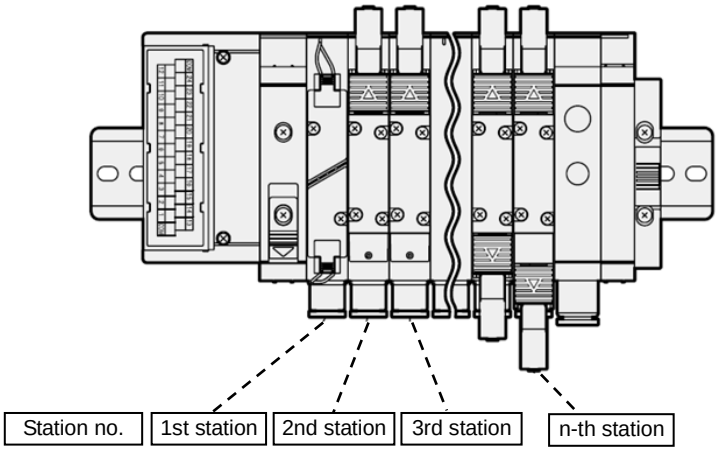
(3) Note that the correspondence cannot be applied if the point of solenoid stations exceeds 16 (T10) or 24 (T11).

(4) The manifold station nos. are set in order from left with the piping port facing forward.

(5) The voltage could drop because of simultaneous energizing or the cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.

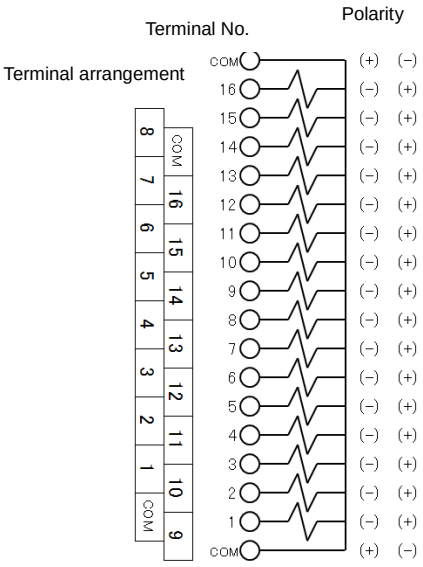
(6) For connection, use Y-terminal or ring terminal. For crimp terminal, please use the terminal for M3 with width 6.2mm or less. If you connect the lead wire directly, improper operation of the solenoid valve may be caused due to disconnection, contact failure, etc.

(7) Proper tightening torque of wiring screw T10:0.6N・m, T11:0.3N・m

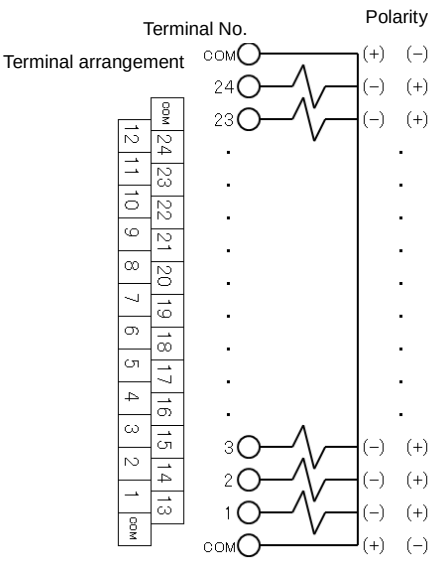


2) Internal wiring

T10((Up to 16 solenoids))



T11((Up to 24 solenoids))



3) Terminal array of wiring method T10 (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.

Terminal strip No.

COM	16	15	14	13	12	11	10	9
8	7	6	5	4	3	2	1	COM

<Standard wiring>

- For single solenoid valve

(Max. number of MF station: 16)

Terminal block No.	16	15	14	13	12	11	10	9
Valve No.	16a	15a	14a	13a	12a	11a	10a	9a
Terminal block No.	8	7	6	5	4	3	2	1
Valve No.	8a	7a	6a	5a	4a	3a	2a	1a

- For double solenoid valve

(Max. number of MF station: 8)

Terminal block No.	16	15	14	13	12	11	10	9
Valve No.	8b	8a	7b	7a	6b	6a	5b	5a
Terminal block No.	8	7	6	5	4	3	2	1
Valve No.	4b	4a	3b	3a	2b	2a	1b	1a

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 16)

Terminal block No.	16	15	14	13	12	11	10	9
Valve No.	12a	11b	11a	10a	9a	8a	7b	7a
Terminal block No.	8	7	6	5	4	3	2	1
Valve No.	6a	5a	4b	4a	3b	3a	2a	1a

<Double wiring>

- For single solenoid valve

(Max. number of MF station: 8)

Terminal block No.	16	15	14	13	12	11	10	9
Valve No.	(Empty)	8a	(Empty)	7a	(Empty)	6a	(Empty)	5a
Terminal block No.	8	7	6	5	4	3	2	1
Valve No.	(Empty)	4a	(Empty)	3a	(Empty)	2a	(Empty)	1a

- For double solenoid valve

(Max. number of MF station: 8)

Terminal block No.	16	15	14	13	12	11	10	9
Valve No.	8b	8a	7b	7a	6b	6a	5b	5a
Terminal block No.	8	7	6	5	4	3	2	1
Valve No.	4b	4a	3b	3a	2b	2a	1b	1a

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 16)

Terminal block No.	16	15	14	13	12	11	10	9
Valve No.	8b	8a	7b	7a	(Empty)	6a	(Empty)	5a
Terminal block No.	8	7	6	5	4	3	2	1
Valve No.	4b	4a	(Empty)	3a	2b	2a	1b	1a

4) Terminal array of wiring method T11 (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.

Terminal No.

COM	24	23	22	21	20	19	18	17	16	15	14	13
12	11	10	9	8	7	6	5	4	3	2	1	COM

<Standard wiring>

- For single solenoid valve

(Max. number of MF station: 24)

Terminal block No.	24	23	22	21	20	19	18	17	16	15	14	13
Valve No.	24a	23a	22a	21a	20a	19a	18a	17a	16a	15a	14a	13a
Terminal block No.	12	11	10	9	8	7	6	5	4	3	2	1
Valve No.	12a	11a	10a	9a	8a	7a	6a	5a	4a	3a	2a	1a

- For double solenoid valve

(Max. number of MF station: 12)

Terminal block No.	24	23	22	21	20	19	18	17	16	15	14	13
Valve No.	12b	12a	11b	11a	10b	10a	9b	9a	8b	8a	7b	7a
Terminal block No.	12	11	10	9	8	7	6	5	4	3	2	1
Valve No.	6b	6a	5b	5a	4b	4a	3b	3a	2b	2a	1b	1a

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 24)

Terminal block No.	24	23	22	21	20	19	18	17	16	15	14	13
Valve No.	18b	18a	17a	16a	15a	14a	13a	12b	12a	11b	11a	10a
Terminal block No.	12	11	10	9	8	7	6	5	4	3	2	1
Valve No.	9a	8a	7b	7a	6a	5a	4b	4a	3b	3a	2a	1a

<Double wiring>

- For single solenoid valve

(Max. number of MF station: 12)

Terminal block No.	24	23	22	21	20	19	18	17	16	15	14	13
Valve No.	(Empty)	12a	(Empty)	11a	(Empty)	10a	(Empty)	9a	(Empty)	8a	(Empty)	7a
Terminal block No.	12	11	10	9	8	7	6	5	4	3	2	1
Valve No.	(Empty)	6a	(Empty)	5a	(Empty)	4a	(Empty)	3a	(Empty)	2a	(Empty)	1a

- For double solenoid valve

(Max. number of MF station: 12)

Terminal block No.	24	23	22	21	20	19	18	17	16	15	14	13
Valve No.	12b	12a	11b	11a	10b	10a	9b	9a	8b	8a	7b	7a
Terminal block No.	12	11	10	9	8	7	6	5	4	3	2	1
Valve No.	6b	6a	5b	5a	4b	4a	3b	3a	2b	2a	1b	1a

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 24)

Terminal block No.	24	23	22	21	20	19	18	17	16	15	14	13
Valve No.	12b	12a	11b	11a	(Empty)	10a	(Empty)	9a	(Empty)	8a	7b	7a
Terminal block No.	12	11	10	9	8	7	6	5	4	3	2	1
Valve No.	(Empty)	6a	(Empty)	5a	4b	4a	3b	3a	(Empty)	2a	(Empty)	1a

4.4.6 D sub-connector : Wiring method T30

1) T30 connector

Connectors used for T30 wiring, called D sub-connector, is used widely for FA and OA devices. 25P type is an RS-232-C Standards designated connector especially used for personal computer communication.

2) Precautions for connector type T30

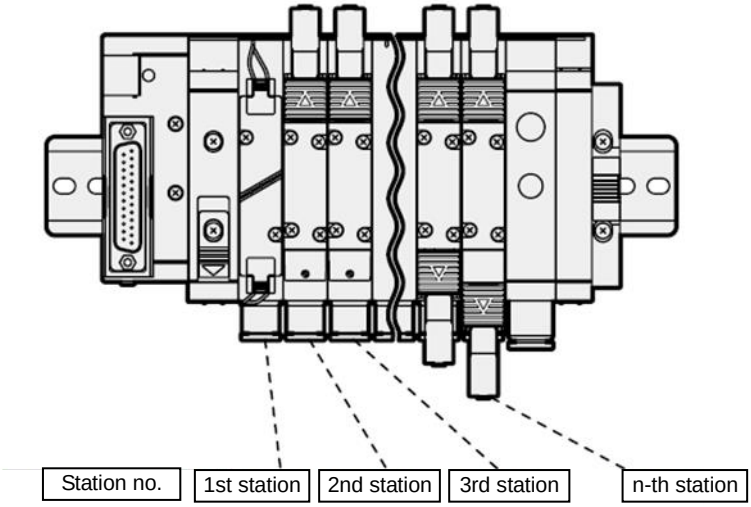
(1) Signal arrays of the PLC output unit must match signal arrays of the valve side.

(2) The working power is 12/24 VDC dedicated.

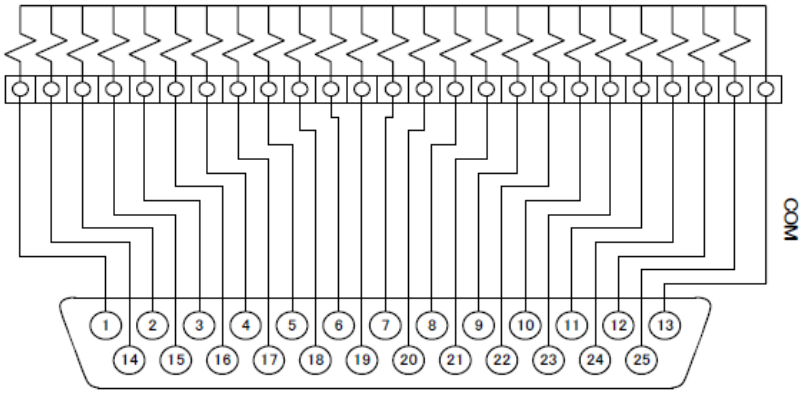
(3) If the number of solenoid exceeds 24this cannot be supported, which please bear in your mind in advance.

(4) The manifold station nos. are set in order from left with the piping port facing forward. (See figure.)

(5) The voltage could drop because of simultaneous energizing or the cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.



3) Internal circuit

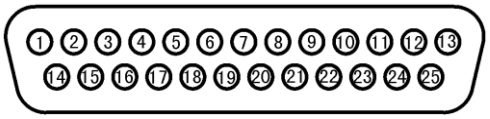


4) T30 connector pin array (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.

Connector pin no.



<Standard wiring>

- For single solenoid valve
  (Max. number of MF station: 24)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	3a	5a	7a	9a	11a	13a	15a	17a	19a	21a	23a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	2a	4a	6a	8a	10a	12a	14a	16a	18a	20a	22a	24a	

- For double solenoid valve
  (Max. number of MF station: 12)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	1b	2b	3b	4b	5b	6b	7b	8b	9b	10b	11b	12b	

- For mixed use (single/double solenoid mixure)
  (Max. number of solenoid: 24)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	3a	4a	5a	7a	8a	10a	11b	12b	14a	15b	17a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	2a	3b	4b	6a	7b	9a	11a	12a	13a	15a	16a	17b	

<Double wiring>

- For single solenoid valve
  (Max. number of MF station: 12)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	

- For double solenoid valve
  (Max. number of MF station: 12)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	1b	2b	3b	4b	5b	6b	7b	8b	9b	10b	11b	12b	

- For mixed use (single/double solenoid mixure)
  (Max. number of solenoid: 24)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	(Empty)	(Empty)	3b	4b	(Empty)	(Empty)	7b	(Empty)	(Empty)	(Empty)	11b	12b	

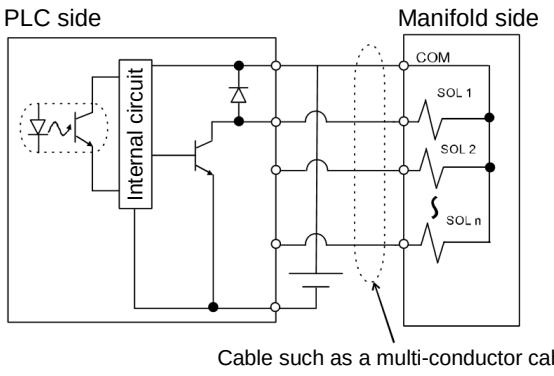
5) Connection to PLC

The common wiring has been internally done on the manifold side.

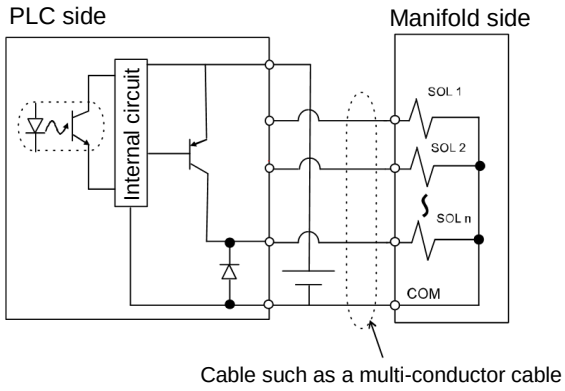
Since the electromagnetic valve has no polarity, it can be connected to either the NPN output or PNP output of the DC output unit of the PLC.

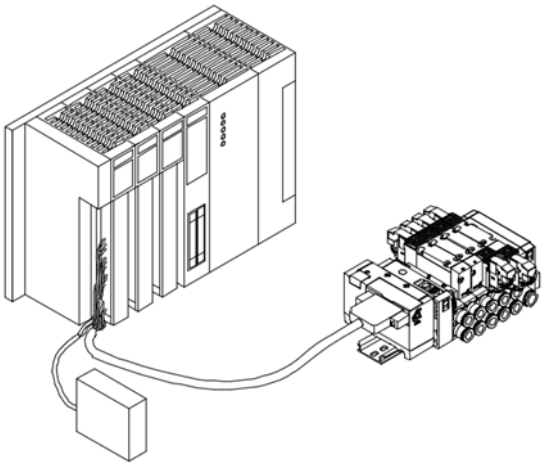
Wire each unit in the following manner.

●DC output unit (NPN output)



●DC output unit (PNP output)





6) Cable production

We recommend the following for the valve side in the production of the connection cable.

Name	Model	Manufacturer
D sub-connector socket solder type	HDBB-25S	Hirose Electric Co., Ltd.
D sub-connector socket solder type	JAZ-25S	Nippon Atchaku Tanshi
D sub-connector socket crimp type	CDB-25S	Hirose Electric Co., Ltd.
D sub-connector socket crimp type	JAC-25S	Nippon Atchaku Tanshi
Plug case (for the solder type) (with M2.6 screw)	HDB-CTF	Hirose Electric Co., Ltd.
Plastic cover with M2.6 screw	JCB-25M	Nippon Atchaku Tanshi

Avoid the use of the press-connect type as much as possible as it has small electric capacity and the fine core wire of the able causes large voltage drop.

7) CKD cable specifications

(CKD cables of the following models can be used) (Note1) (Note2)

Model 4GR－CABLE－D 0 0－1

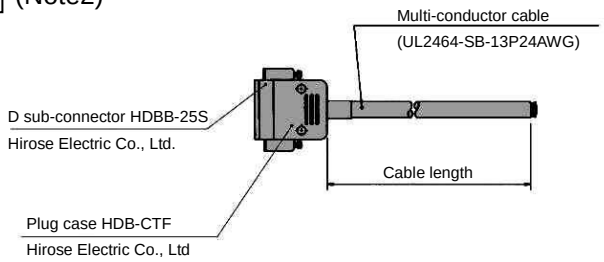
Note 1: User inteeface

0	Cut only
1	With round terminal for M3.5 screw

Note 2: Cable length

1	1m
3	3m
5	5m

● 4GR-CABLE-D00-1 (Note2)

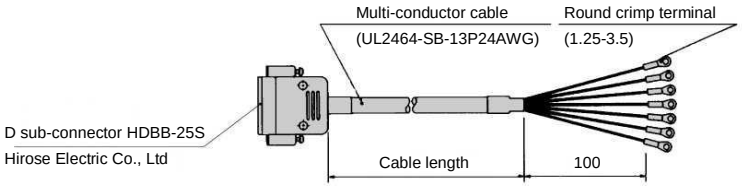


D sub-connector terminal no. and conductor

D sub-connector terminal no.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Conductor	Insulator color	Orange	Orange	Yellow	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green
	Mark type	1 point										2 point				
	Mark color	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black

D sub-connector terminal no.		16	17	18	19	20	21	22	23	24	25
Conductor	Insulator color	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green
	Mark type	2 point					3 point				
	Mark color	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black

● 4GR-CABLE-D01-1 (Note2)



D sub-connector terminal no. and conductor

D sub-connector terminal no.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Conductor	Insulator color	Orange	Orange	Yellow	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green
	Mark type	1 point										2 point				
	Mark color	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black
Mark tube no.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

D sub-connector terminal no.		16	17	18	19	20	21	22	23	24	25
Conductor	Insulator color	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green
	Mark type	2 point					3 point				
	Mark color	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black
Mark tube no.		16	17	18	19	20	21	22	23	24	25

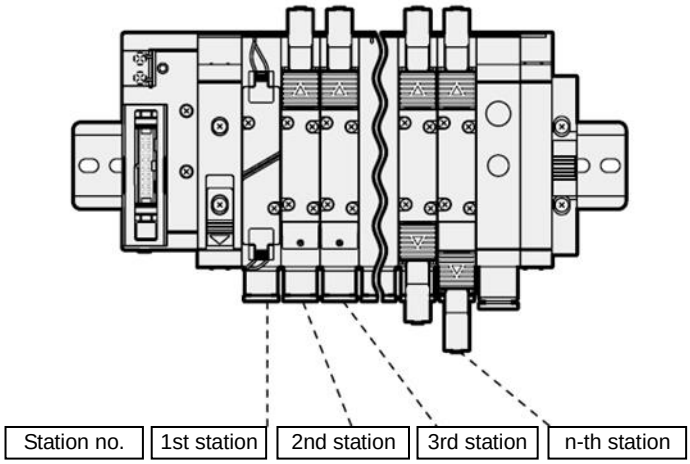
4.4.7 Flat cable connector type: Wiring method T50

1) T50 connector

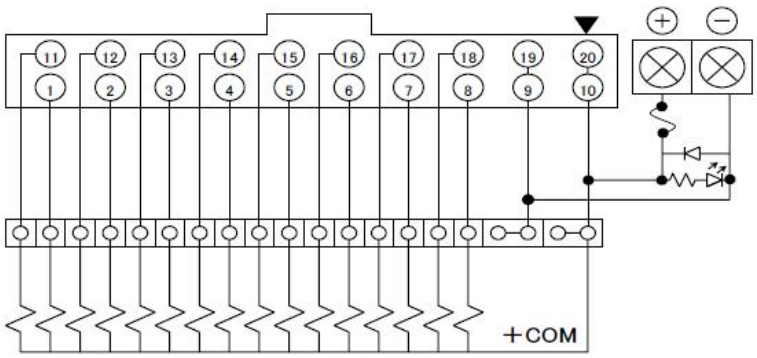
The connector used for T50 wiring method complies with MIL Standards (MIL-C-83503).
Wiring work is simplified with the pressure welded flat cable.
Pin no. is assigned differently based on the PLC manufacturer, but the function assignment is the same.
Layout using connectors and the triangular mark (▼) shown below as a reference. The ▼ mark is the reference for both the plug and socket.

2) Precautions for connector type T50

(1) Signal arrays of the PLC output unit must match signal arrays of the valve side. Direct connections with the PLC are limited. Use the dedicated cable for each PLC manufacturer.
(2) The working power is 12/24 VDC dedicated.
(3) When connecting T50 type to a general output unit, use the + terminal (20, 10) of the 20P connector as the + side common, and use the NPN transistor output open collector type for the drive circuit.
(4) Do not connect this manifold to the input unit as major faults could occur in this device and in peripherals. Connect this manifold to the output unit.
(5) The manifold station nos. are set in order from left with b side solenoid side (cap side for single) facing forward. (See figure.)
(6) The voltage could drop because of simultaneous energizing or the cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.



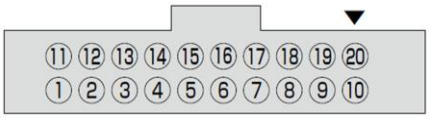
3)Internal wiring



4) T50 connector pin array (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.



<Standard wiring>

- For single solenoid valve

(Max. number of MF station: 16) *1 : − electric power supply *2 : + electric power supply

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	9a	10a	11a	12a	13a	14a	15a	16a	*1	*2
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	*1	*2

- For double solenoid valve

(Max. number of MF station: 8) *1 : − electric power supply *2 : + electric power supply

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	5a	5b	6a	6b	7a	7b	8a	8b	*1	*2
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	*1	*2

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 16) *1 : − electric power supply *2 : + electric power supply

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	7a	7b	8a	9a	10a	10b	11a	11b	*1	*2
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	*1	*2

<Double wiring>

- For single solenoid valve

(Max. number of MF station: 8) *1 :: − electric power supply *2 : + electric power supply

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	5a	(Empty)	6a	(Empty)	7a	(Empty)	8a	(Empty)	*1	*2
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	(Empty)	2a	(Empty)	3a	(Empty)	4a	(Empty)	*1	*2

- For double solenoid valve

(Max. number of MF station: 8) *1 : − electric power supply *2 : + electric power supply

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	5a	5b	6a	6b	7a	7b	8a	8b	*1	*2
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	*1	*2

- For mixed use (single/double solenoid mixure)

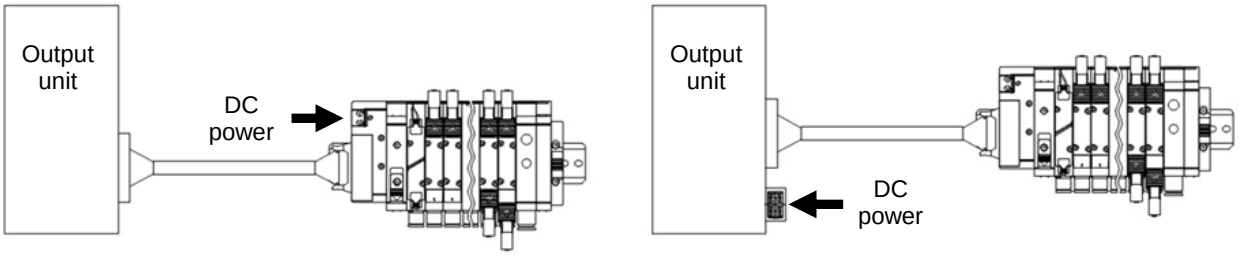
(Max. number of solenoid: 16) *1 : − electric power supply *2 : + electric power supply

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	5a	(Empty)	6a	(Empty)	7a	7b	8a	(Empty)	*1	*2
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	(Empty)	2a	(Empty)	3a	3b	4a	4b	*1	*2

5) Power supply

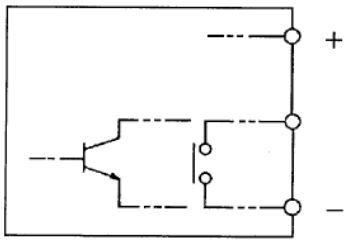
The terminal stand is designed to accept power supplied from an external source when such outside power supply is needed. Supply the power to the wiring block or the input/output unit in the manner as shown in the following drawings. The power indicator lamp comes on after the connection has been made correctly. For wiring, check the polarity marks on the cover. Wiring errors cause malfunctions.

M3x6 screws are used for the terminal stand. Use M3 screws 6.4 or less in width to fasten the crimp terminals at the tightening torque of 0.3 to 0.5 N･m.



6) Connection to PLC

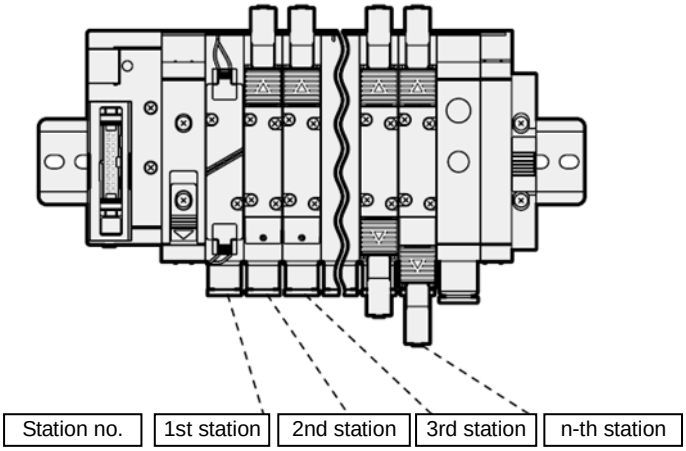
When making a connection to units other than the PLC mentioned above, make sure that the signal line and power line are wired correctly. Even if the connectors have the same shape, their pin arrangements may not be the same with different manufacturers or unit types. Check the pint arrangement before the wiring. For the output unit, use one with a contact between the minus side of the power source and the output point, or one with an NPN transistor open collector output.



4.4.8 Flat cable connector type : Wiring method T51/T52/T53

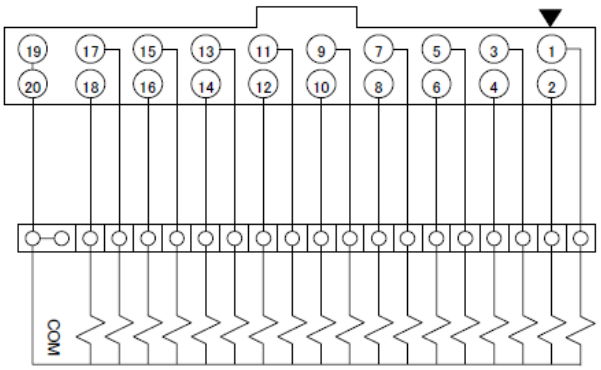
1) Precautions for connector type (T51/T52/T53)

(1) Signal arrays of the PLC output unit must match signal arrays of the valve side.
(2) The working power is 12/24 VDC dedicated.
(3) The T51/T52/T53 type is driven with a general output unit.
(4) Do not connect this manifold to the input unit as major faults could occur in this device and in peripherals. Connect this manifold to the output unit.
(5) The manifold station nos. are set in order from left with b side solenoid side (cap side for single) facing forward. (See figure.)
(6) The voltage could drop because of simultaneous energizing or the cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.

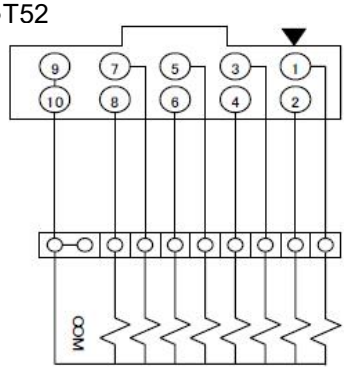


2) Internal wiring

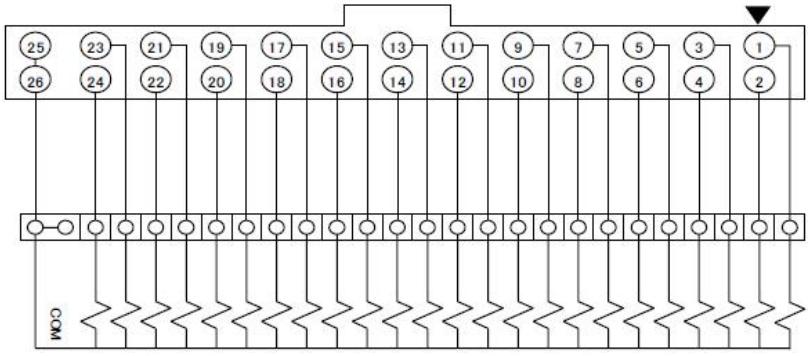
●T51



●T52



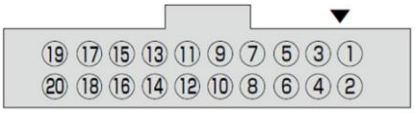
●T53



3) T51 connector pin array (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.



<Standard wiring>

- For single solenoid valve

(Max. number of MF station: 18)

Pin No.	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	17a	15a	13a	11a	9a	7a	5a	3a	1a
Pin No.	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	18a	16a	14a	12a	10a	8a	6a	4a	2a

- For double solenoid valve

(Max. number of MF station: 9)

Pin No.	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	9b	8b	7b	6b	5b	4b	3b	2b	1b

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 18)

Pin No.	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	12a	11a	10a	8a	7a	5a	4a	3a	1a
Pin No.	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	13a	11b	10b	9a	7b	6a	4b	3b	2a

<Double wiring>

- For single solenoid valve

(Max. number of MF station: 9)

Pin No.	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)

- For double solenoid valve

(Max. number of MF station: 9)

Pin No.	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	9b	8b	7b	6b	5b	4b	3b	2b	1b

- For mixed use (single/double solenoid mixure)

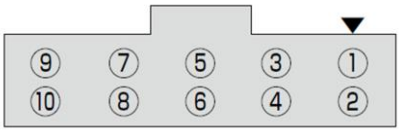
(Max. number of solenoid: 18)

Pin No.	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	(Empty)	(Empty)	7b	(Empty)	(Empty)	4b	3b	(Empty)	(Empty)

4) T52 connector pin array (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.



<Standard wiring>

- For single solenoid valve

(Max. number of MF station: 8)

Pin No.	9	7	5	3	1
Valve No.	COM	7a	5a	3a	1a
Pin No.	10	8	6	4	2
Valve No.	COM	8a	6a	4a	2a

- For double solenoid valve

(Max. number of MF station: 4)

Pin No.	9	7	5	3	1
Valve No.	COM	4a	3a	2a	1a
Pin No.	10	8	6	4	2
Valve No.	COM	4b	3b	2b	1b

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 8)

Pin No.	9	7	5	3	1
Valve No.	COM	5b	4b	3a	1a
Pin No.	10	8	6	4	2
Valve No.	COM	6a	5a	4a	2a

<Double wiring>

- For single solenoid valve

(Max. number of MF station: 4)

Pin No.	9	7	5	3	1
Valve No.	COM	4a	3a	2a	1a
Pin No.	10	8	6	4	2
Valve No.	COM	(Empty)	(Empty)	(Empty)	(Empty)

- For double solenoid valve

(Max. number of MF station: 4)

Pin No.	9	7	5	3	1
Valve No.	COM	4a	3a	2a	1a
Pin No.	10	8	6	4	2
Valve No.	COM	4b	3b	2b	1b

- For mixed use (single/double solenoid mixure)

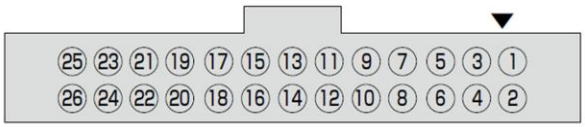
(Max. number of solenoid: 8)

Pin No.	9	7	5	3	1
Valve No.	COM	4a	3a	2a	1a
Pin No.	10	8	6	4	2
Valve No.	COM	4b	(Empty)	(Empty)	(Empty)

5) T53 connector pin array (example)

Max. station no. differs depending on the model. Check the individual specifications.

Note) The numbers in the valve no. 1a, 1b, 2a, 2b and so forth indicate the 1st station and the 2nd station. The alphabetic characters a and b indicate a side solenoid and b side solenoid.



<Standard wiring>

- For single solenoid valve

(Max. number of MF station: 24)

Pin No.	25	23	21	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	23a	21a	19a	17a	15a	13a	11a	9a	7a	5a	3a	1a
Pin No.	26	24	22	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	24a	22a	20a	18a	16a	14a	12a	10a	8a	6a	4a	2a

- For double solenoid valve

(Max. number of MF station: 12)

Pin No.	25	23	21	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	12a	11a	10a	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	26	24	22	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 24)

Pin No.	25	23	21	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	16a	15a	14a	12a	10a	9a	8a	7a	5b	4b	3a	1a
Pin No.	26	24	22	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	16b	15b	14b	13a	11a	9b	8b	7b	6a	5a	4a	2a

<Double wiring>

- For single solenoid valve

(Max. number of MF station: 12)

Pin No.	25	23	21	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	12a	11a	10a	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	26	24	22	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)	(Empty)

- For double solenoid valve

(Max. number of MF station: 12)

Pin No.	25	23	21	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	12a	11a	10a	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	26	24	22	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b

- For mixed use (single/double solenoid mixure)

(Max. number of solenoid: 24)

Pin No.	25	23	21	19	17	15	13	11	9	7	5	3	1
Valve No.	COM	12a	11a	10a	9a	8a	7a	6a	5a	4a	3a	2a	1a
Pin No.	26	24	22	20	18	16	14	12	10	8	6	4	2
Valve No.	COM	(Empty)	(Empty)	(Empty)	9b	8b	7b	(Empty)	5b	4b	(Empty)	(Empty)	(Empty)

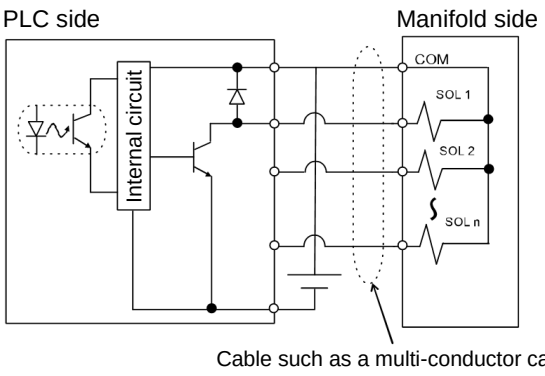
6) Connection to PLC

The common wiring has been internally done on the manifold side.

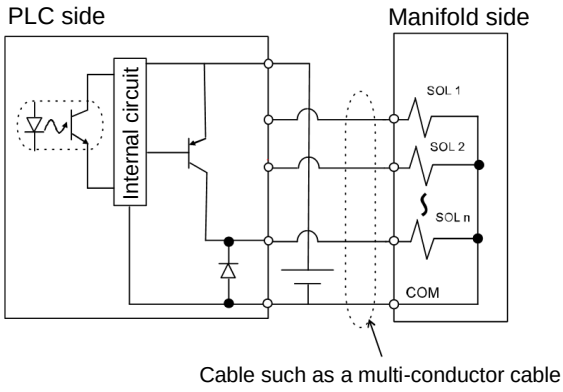
Since the electromagnetic valve has no polarity, it can be connected to either the NPN output or PNP output of the DC output unit of the PLC.

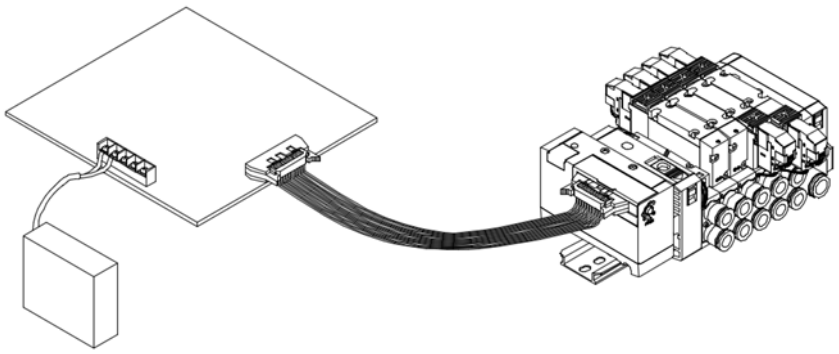
Wire each unit in the following manner.

● DC output unit (NPN output)



●DC output unit (PNP output)





7) Cable production

To produce a connecting cable, we recommend the following equipment for the valve side. Make a correct selection and connection of the cable according to the catalog data sheet. The equipment shown here all complies with the MIL standard (MIL-C-83503) ; thus, there are many others that can be also used for connection, but their locking mechanism may not be suitable.

If so, secure the lock lever with a hand.

・For T50/T51

- Socket XG4M-2030 (OMRON Corporation)
- Strain relief XG4T-2004 (OMRON Corporation)
- Loose wire press-connector XG5M-2032-N (OMRON Corporation)
- Loose wire press-connector XG5M-2035-N (OMRON Corporation)
- Loose wire press-connector Socket XG5N-201-U (OMRON Corporation)
- Loose wire press-connector Contact XG5W-0231,0232 (OMRON Corporation)

・For T52

- Socket XG4M-1031 (OMRON Corporation)
- Strain relief XG4T-1004 (OMRON Corporation)
- Loose wire press-connector XG5M-1031-N (OMRON Corporation)
- Loose wire press-connector XG5M-1034-N (OMRON Corporation)
- Loose wire press-connector Socket XG5N-101-U (OMRON Corporation)
- Loose wire press-connector Contact XG5W-0231,0232 (OMRON Corporation)

・For T53

- Socket XG4M-2630 (OMRON Corporation)
- Strain relief XG4T-2604 (OMRON Corporation)
- Loose wire press-connector XG5M-2632-N (OMRON Corporation)
- Loose wire press-connector XG5M-2635-N (OMRON Corporation)
- Loose wire press-connector Socket XG5N-261-U (OMRON Corporation)
- Loose wire press-connector Contact XG5W-0231,0232 (OMRON Corporation)

8) Cable

The system uses flat cables or slender multi-conductor cables.

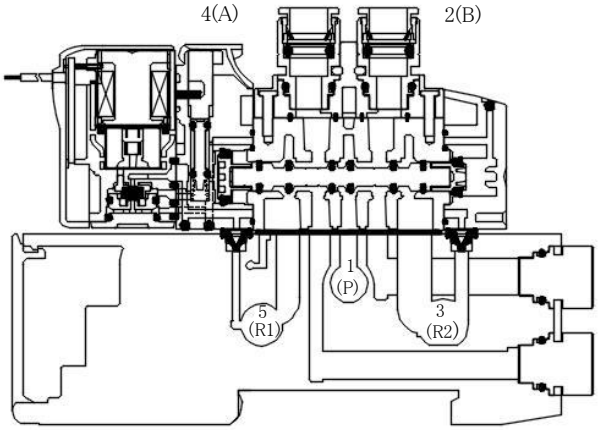
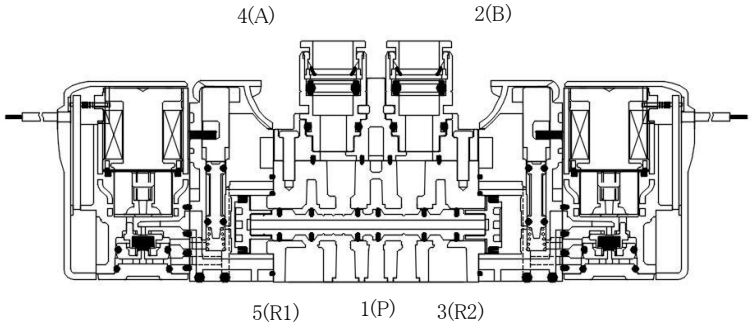
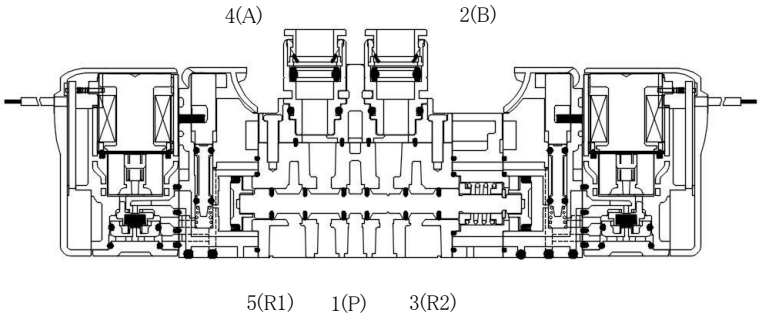
As these cables have fine core wires, it should be checked that they have enough mechanical strength and electric capacity.

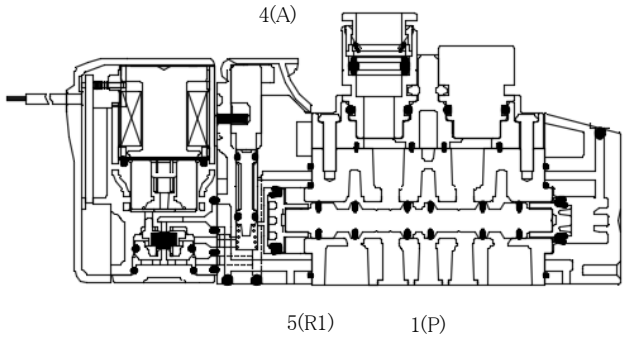
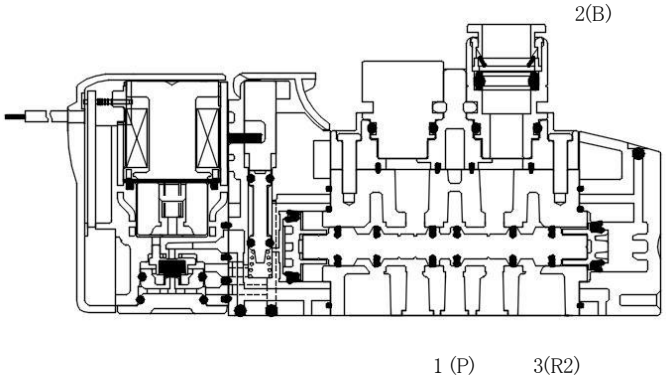
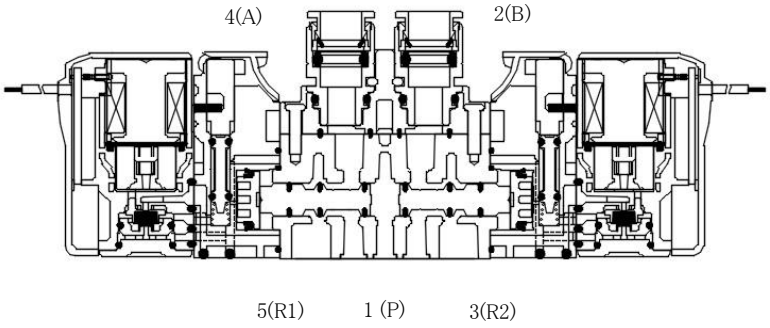
- Make sure to make a rounded corner (R) when bending the flat cable.
- The cable has large electric resistance (AWG28, approx. 0.22Ω/m).
  Pay special attention to voltage drop along the cable.
  If 16 solenoid valves are energized, voltage drop of approx. 0.1 V/m arises in the case of 24 V DC.

5. PROPER OPERATION

5.1 Description of operation

1) Valve operation

	Operation diagram (4GA1 R series as an example)	Description of operation
N4G**10R Single		De-energized. (As shown in the diagram) 1(P) → 2(B) 4(A) → 5(R1) Energized 1(P) → 4(A) 2(B) → 3(R2)
N4G**20R Double		SOL a is energized 1(P)→4(A) 2(B)→3(R2) SOL b is energized. (As shown in the diagram) 1(P)→2(B) 4(A)→5(R1) The change-over position is retained even after the power is cut off.
N4G**30R N4G**40R N4G**50R 3-position		4G**30R De-energized 1(P), 4(A), 2(B), 5(R1), 3(R2) close 4G**40R De-energized 1(P) close 4(A), 2(B) → 5(R1), 3(R2) 4G**50R De-energized 1(P) → 4(A), 2(B) 5(R1), 3(R2) close

	Operation diagram (4GA1 R series as an example)	Description of operation
N3G**10R Normally closed		De-energized. (As shown in the diagram) 4(A) → 5(R1) Energized 1(P) → 4(A)
N3G**110R Normally opened		De-energized. (As shown in the diagram) 1(P) → 2(B) Energized 2(B) → 3(R2)
N3G※※660R N3G※※670R N3G※※760R N3G※※770R Dual 3port valve Integrated type		3G※※660R De-energized. 4(A) → 5(R1) 2(B) → 3(R2) SOL a Energized. 1(P) → 4(A) SOL b Energized. 1(P) → 2(B) 3G※※670R De-energized. 4(A) → 5(R1) 1(P) → 2(B) SOL a Energized. 1(P) → 4(A) SOL b Energized. 2(B) → 3(R2) 3G※※760R De-energized. 1(P) → 4(A) 2(B) → 3(R2) SOL a Energized. 4(A) → 5(R1) SOL b Energized. 1(P) → 2(B) 3G※※770R De-energized. 1(P) → 4(A) 1(P) → 2(B) SOL a Energized. 4(A) → 5(R1) SOL b Energized. 5(B) → 3(R2)

2) Manifold operation

The main and pilot exhaust gases are collected in the manifold base and discharged from the exhaust port.

3) Check valve

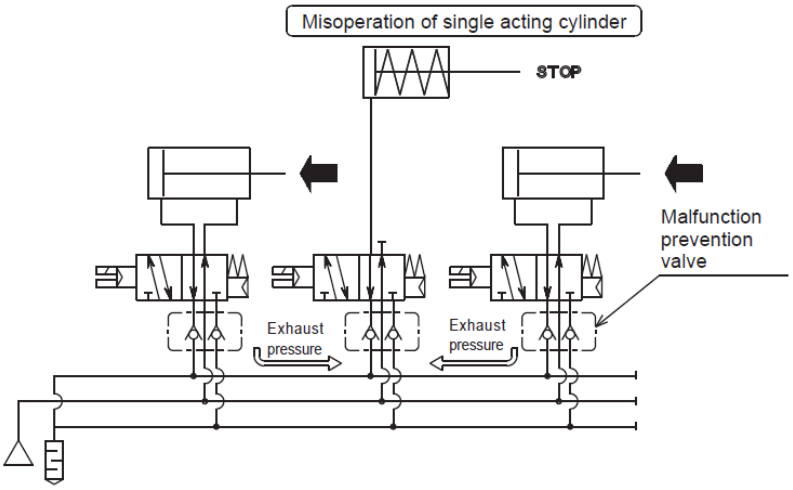
A PR check valve is provided as a standard option. An exhaust malfunction prevention valve is provided when optionally selecting the symbol H.

The PR check valve prevents malfunction of the solenoid valve due to pilot back pressure.

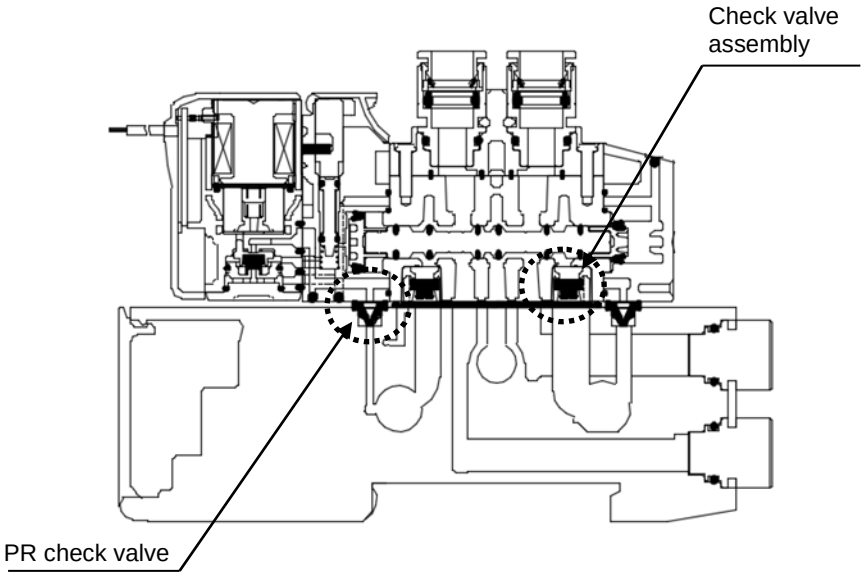
A single and/or a double cylinder connected to an ABR connection valve by the manifold may malfunction due to introduction of back pressure generated when other cylinders are driven. To prevent this malfunction, a gasket with a “malfunction prevention valve” can be selected. It cannot be selected for all-port block valves and PAB connection valves through which no back pressure is introduced.

Note: Check valve is a check valve. Note that when operating the cylinder rod directly without pressurized, the check valve opens and the cylinder rod does not move.

4G R series as an example of air pressure system



Internal structure



5.2 Manual operation

⚠ WARNING :

a) After using the manual override, be sure to reset the manual override to the original (OFF) position before resuming the operation of the device.
b) Before using the manual override, make sure that nobody is present near the cylinder to be activated.
c) After an operation, be sure to release the lock to turn the manual override OFF.
The lock is released (the manual override turned OFF) if the manual override protection cover is closed.

(1) The 4G R series is a pilot operated solenoid valve. If air is not supplied to P port, the main valve does not switch even if the manual override is operated.

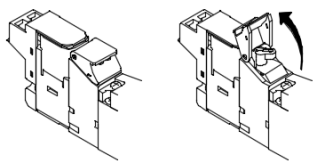
(2) Manual override protective cover is provided as standard. Since the manual override protective cover is closed when shipped out of the factory, the manual override is protected and cannot be seen when delivered. Open the protective cover and manually operate the device.
Note that the protection cover does not close unless the locking manual operating device is unlocked.

(3) Manual override is used for both non-locking and locking. The lock is applied by pressing down and turning manual override. For locking, be sure to press down and turn. If turned without being pressed down, it could damage the manual override device or air could leak.

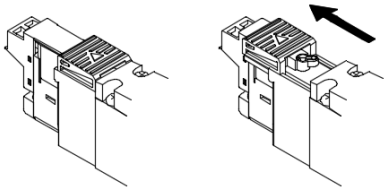
5.2.1 Opening and closing the manual protective cover.

Do not apply excessive force to the manual protection cover when opening and closing the cover.
Excessive external force could cause failures. (Below 5 N)

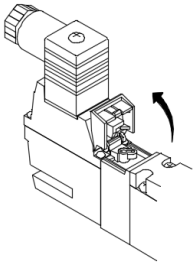
●4G1 R Series



●4G2R Series

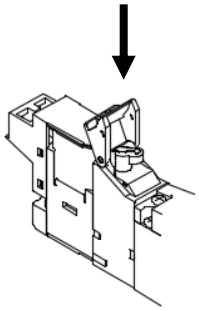


●4G2R Series DIN terminal box type



5.2.2 How to operate manual override

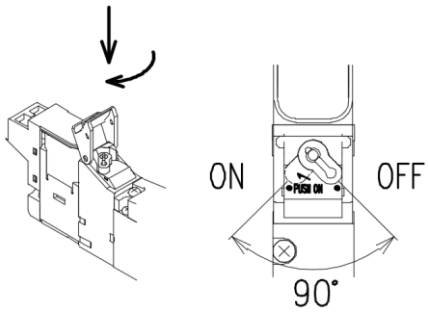
(1) Push & non-locking operation
Push straight in the direction of the arrow until it stops.
Manual override is unlocked when released.



(2) Push & locking operation

Push manual override and turn 90° in the direction of the arrow.

Manual override is not unlocked even when released.



5.3 Air quality

⚠ WARNING :

a) Do not supply anything other than compressed air.
b) Use clean compressed air that does not contain corrosive gases.

⚠ CAUTION :

a) Compressed air usually contains a large amount of drain, oxidized oil, tar, foreign matter, and rust from the piping. Filter out those elements in the supplied air because they may cause a malfunction and decrease service life. In addition, clean the exhaust before it is released to the air to minimize pollution.
b) Basically the product is designed as oil less specifications, however if you prefer to supply oil, use the class 1 turbine oil (additive-free) ISO VG32. Once you have lubricated a pre-lubricated valve, the valve is no longer capable of running without being lubricated from the outside. Do not leave the valve without lubrication. Keep it lubricated.
c) Do not use spindle oil or machine oil. They induce expansion of the rubber parts, which will cause malfunction.

5.3.1 Lubrication

Generally, the 4G R -series does not require any lubrication. If the lubrication is required, use additive-free turbine oil grade 1 (ISO-VG32).If the product is lubricated excessively or if the pressure is significantly low, the response time may be delayed. The response time indicated in the catalog shows the data obtained when the product is not lubricated and the pressure is 0.5 MPa.

5.3.2 Super-dry air

The super-dry air may cause the lubricant to scatter, resulting in short service life. The super-dry air means that the humidity class is 3 or less. (JIS B8392-1/ISO 8573-1)

5.3.3 Drain

(1) If the temperature inside the pneumatic piping or pneumatic device drops, the drain may occur.
(2) If the drain enters the air passage inside the pneumatic device, this may block the passage instantaneously, causing a malfunction.
(3) The drain may generate rust, causing the pneumatic device to malfunction.
(4) The drain may flush the lubricant, causing lubrication failure.

5.3.4 Contaminant

1) Use compressed air that does not contain oxidized oil, tar, carbon, etc., from the air compressor.
   (1) If oxidized oil, tar, or carbon enter the pneumatic components and solidify, resistance at the sliding section will increase, and could lead to operation faults.
   (2) If the supplied lubricant mixes in with oxidized oil, tar, carbon, etc., the sliding section of the pneumatic components could be worn.
2) Use compressed air that does not contain solid foreign matter.
   (1) Solid foreign matter in compressed air could enter the air compressor and cause wear at the sliding section or could cause sticking.

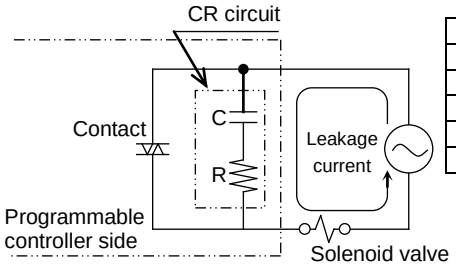
5.3.5 Improvement of air quality

The compressed air includes a large amount of drain (water, oxidized oil, tar, and/or foreign mater). This drain may cause the pneumatic device to malfunction. Therefore, the air must be dehumidified by the after cooler and dryer, foreign matter is removed through the air filter, and tar must also be removed through the air filter for the tar removal to improve the air quality (air cleaning).

5.4 Electric circuit

⚠ CAUTION :

a) Check for the presence of any current leak from the external control device because it may cause malfunction.
   ・When a programmable controller or a similar control device is used, a current leak may prevent the normal returning of the valve when the solenoid is de-energized.
b) Restriction on current leak
   ・When controlling solenoid valves using a programmable controller or a similar control device, make sure that the current leak in the programmable controller output is equal to or less than the level shown in the table below. A current leak larger than the allowable level may cause malfunction.



AC100V	1.0 mA or less
DC200V	
DC3V	8.0 mA or less
DC5V	4.8 mA or less
DC12V	1.6 mA or less
DC24V	1.0 mA or less

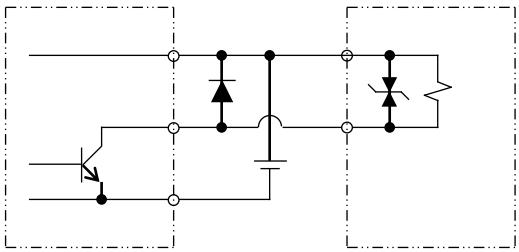
⚠ CAUTION :

a) The surge suppressor limits the surge voltage generating from the solenoid valve, which reaches several hundred volts, to a low voltage level bearable for output contacts. This function may be insufficient for some output circuits and the voltage may cause breakage or malfunction. Check the surge voltage limitation level of the solenoid valve in your circuit, the dielectric voltage and circuit configuration of the output devices and the delay for recovery to check for serviceability. If necessary, install another measures against surges. The 4GR Series solenoid valves equipped with a surge suppressor suppress the terminal-to-terminal reverse voltage surge generating upon shutoff, to the level shown in the table below.

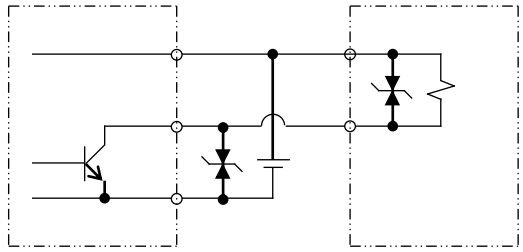
In case of 3V DC	About 6.2V
In case of 5V DC	About 13V
In case of 12V DC	About 27V
In case of 24V DC	About 47V
In case of option "S ", "E "	About 1V

b) If the output unit is of an NPN type, the output transistor is susceptible to the sum of the voltage specified in the table above and the source voltage. Install a contact protection circuit.

<Example 1 of output transistor protection circuit>



<Example 2 of output transistor protection circuit>

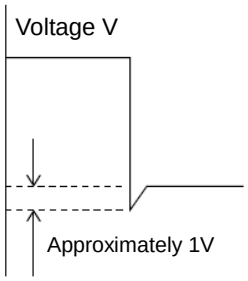


(1) When energizing the double-solenoid type instantaneously, the energizing time must be 0.1 sec. or longer.
However, the cylinder may malfunction under load conditions on the secondary side. Therefore, it is recommended to perform the energizing or manual operation until the cylinder reaches the stroke end position.

(2) When energizing continuously, the temperature of the manifold surface increases.
This is not abnormal, but appropriate ventilation or heat radiation measures must be considered.

5.4.2 Surge-less type

Surge-less type (option "S ") has the function of reducing a surge voltage of the solenoid valve to approximately 1V by an incorporated diode. It has no polarity.



5.4.3 Low exoergic and energy saving circuit type

⚠ CAUTION :

a) Never use this type under environment where vibrations and impacts are applied exceeding the specification range. Such usage will result in malfunction of the valve.

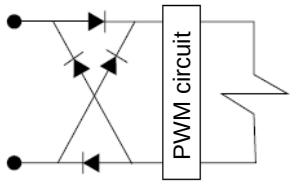
b) When a momentary power failure for 30 ms or less occurs to a power supply unit of the solenoid valve, a conducting state cannot be maintained. On occurrence of disturbance, therefore, that causes a momentary power failure for 30 ms or less to the power supply unit of the solenoid valve in a continuous conducting state, turn OFF the power for 50 ms or more in order to turn ON the solenoid valve again.

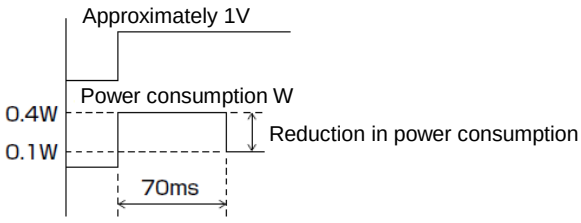
c) Do not use this type raising the voltage gradually. The valve fails to be actuated.

1) The solenoid valve of the low exoergic and energy saving circuit type, which has a built-in PWM circuit, is structured to lower the electric power required when attracted and held by the coil. Power consumption is reduced to 1/4 compared with the standard valves.

＜Low exoergic and energy saving circuit type＞

Item		Current A	Power consumption W
At start up	DC12V	0.033	0.4
	DC24V	0.017	0.4
At holding	DC12V	0.017	0.1
	DC24V	0.008	0.1





5.4.4 AC voltage specification

⚠ CAUTION :

a) AC voltage specifications have a built-in full wave rectified bridge.
In case of using SSR for ON/OFF of the solenoid valve, return failure of solenoid valve may occur depending on its type.Please be careful when selecting SSR.

6. MAINTENANCE

6.1 Periodic inspection

⚠ WARNING:	Before conducting maintenance, turn the power off, stop the supply of compressed air and make sure that there is no residual pressure. ・Observe the condition to ensure safety.

⚠ CAUTION:	Conduct daily inspections and regular inspections to ensure that maintenance control is performed correctly. ・If maintenance is not correctly controlled, the product's functions could drop markedly and lead to a shortened life, damage, malfunctions, faults, and accidents.

1) To use the solenoid valve system under optimum conditions, perform a periodic inspection once or twice a year.

2) Check the screws for loosening and the joints in the piping for integrity of the sealing. Regularly remove the drain from the air filters.

(1) Pressure management of supplied compressed air:
Is the set pressure supplied?
Does the pressure gauge indicate the set pressure during operation of the device?

(2) Control of pneumatics filter:
Is the drain correctly discharged?
Is the bowl or element clean enough to use?

(3) Control of compressed air leaks from piping connections:
Is the state of the connection, especially at movable sections, normal?

(4) Valve operational status control:
Are operations delayed? Is exhaust normal?

(5) Control of pneumatic actuator operation:
Are operations smooth? Is the end stopping status normal? Is the connecting portion with the load normal?

(6) Control of lubricator:
Is the oil rate correctly adjusted?

(7) Control of lubricant:
Is the regular lubricant supplied?

6.2 Disassembly and reassembly

⚠ WARNING: Before increase or decrease block of manifold, cut the power and the supply of compressed air.

⚠ WARNING: Please avoid disassembling and reassembling the solenoid valve, otherwise the sealing and drip proof performance may deform.

・Disassembled and Reassembled product by the customer will not be guaranteed.

6.2.1 Replacement of solenoid valve

When replacing the solenoid valve, pay special attention so that the gasket, PR check valve is not fallen down.

<Removing procedure>

1) Remove the socket (signal wire).
2) Loosen the mounting screw (2 locations).
3) Remove the valve from the valve block.

	Nominal designation of thread	Recommended tightening torque [N·m]
4G1	M1.7	0.18～0.22
4G2	M2.5	0.25～0.33

<Mounting procedure>

For mounting valves, reverse the removing procedure. Refer to the chart at right, for the recommended tightening torque of the mounting screw.

6.2.2 How to replace coil

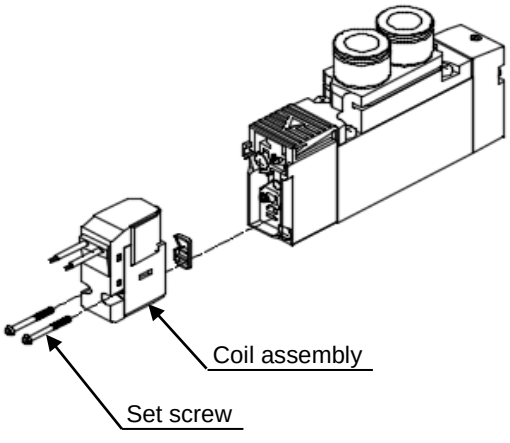
Replace the coil by removing the set screw shown below. Loosening other screws could cause operation failures. When installing, check that the gasket is installed on the coil side, and tightening torque is proper.

Improper installation could result in air leakage or operation failures.

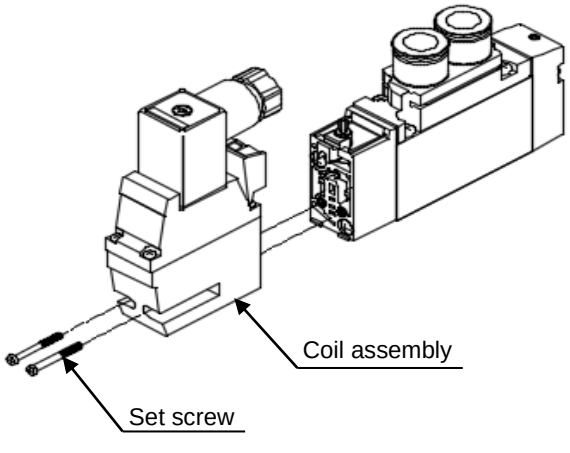
The coil assemblies can not be replaced as DIN terminal box types are not compatible with others.

Recommended tightening torque 0.15 to 0.19 [N·m]

・Grommet lead wire, E/EJ-connector coil assembly



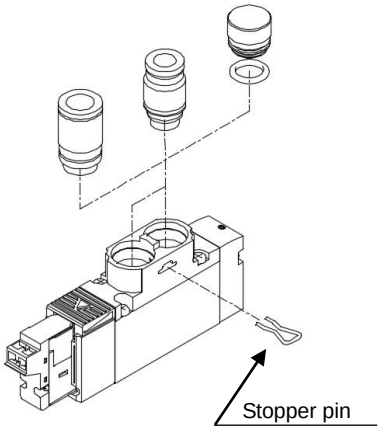
・DIN terminal box coil assembly



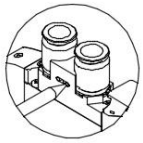
6.2.3 How to replace cartridge fitting (4GA/B R、4GD/E R)

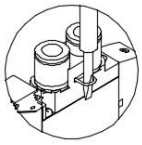
Check procedures before changing the push-in fitting size. If installed not correctly, or if the tightening of the set screw is insufficient, leakage could be occurred.

1) Direct piping (4GA R) type
   (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 and confirm that it is installed correctly.



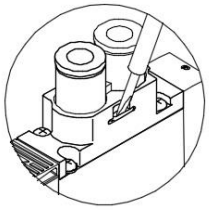
4GA1 R

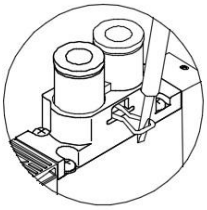




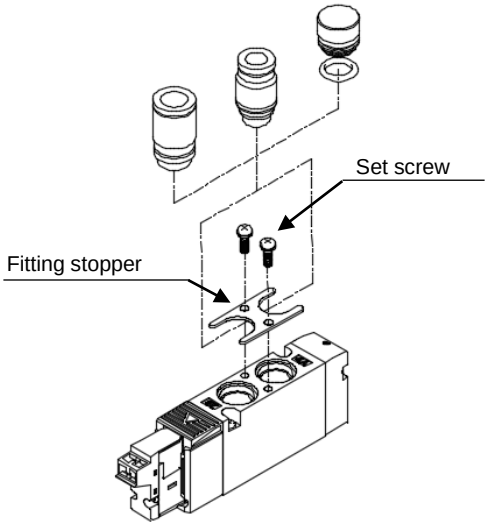
Remove the stopper Pin by pushing it out from behind.

4GA2 R





2) Direct piping (4GD R) type
   (1) Remove the mounting screws.
   (2) Pull out the fitting stopper and joint at the same time.
   (3) Adjust the groove on the joint for replacement to the fitting stoper, and assemble them temporarily.
   (4) Mount the fitting stopper and joint at the same time, and then tighten the set screw firmly.
   Pull the joint to check the mounting status.



Model number	Size	Tightening torque (N･m)
4G1 R	M1.7	0.18～0.22
4G2 R	M2.5	0.25～0.30

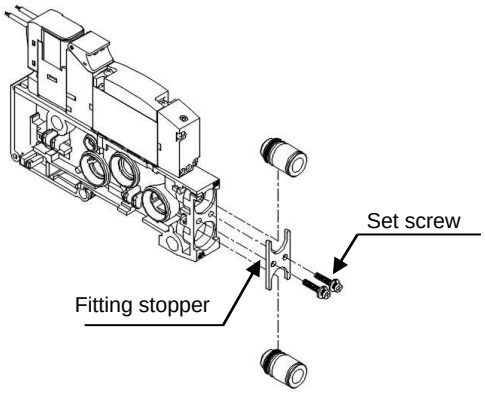
3) Base piping (4GB R、4GE R) type

(1) Remove the set screw.

(2) Pull out the fitting stopper with the joint.

(3) Align the groove of the replacement fitting with the fitting stopper and assemble them temporarily.

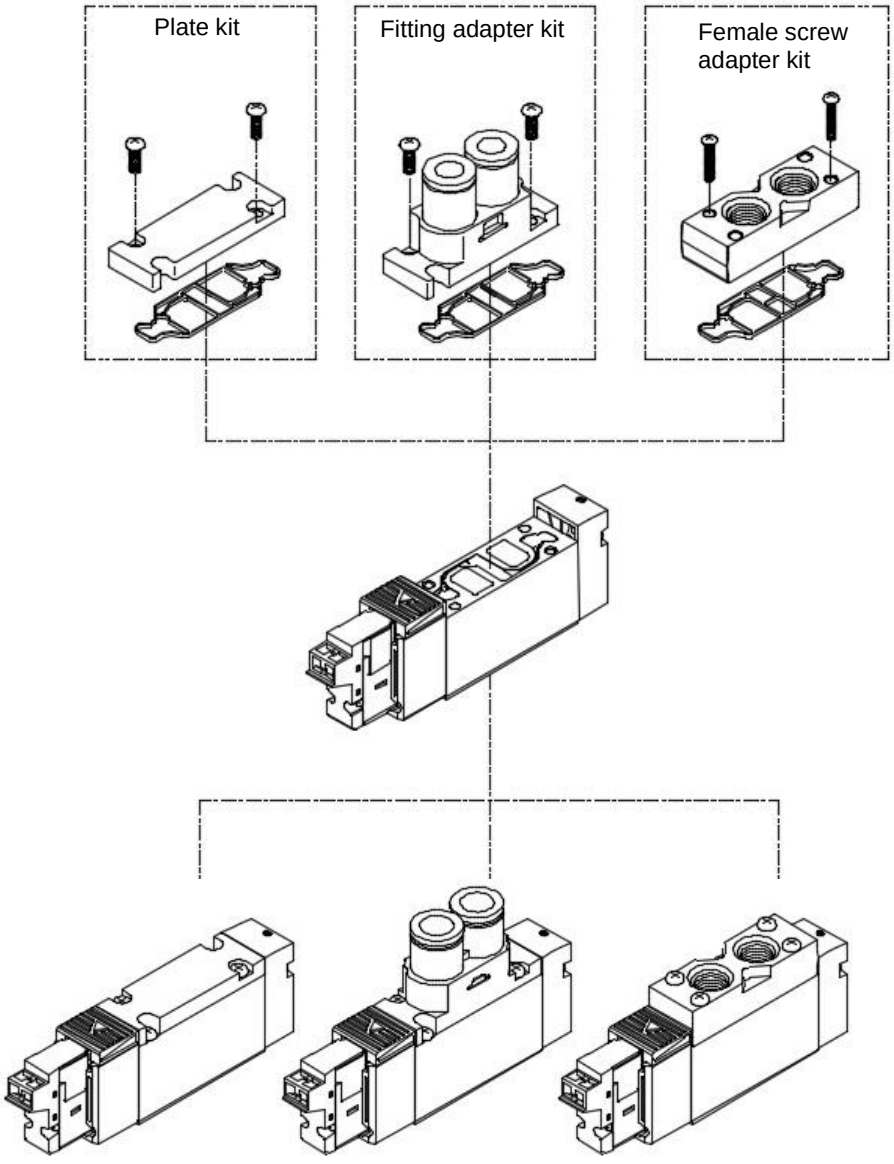
(5) Assemble the fitting stopper with the fitting, and tighten the set screw. Pull on the fitting and confirm that it is installed correctly.



Model number	Size	Tightening torque (N·m)
4G1 R	M1.7	0.18～0.22
4G2 R	M2.5	0.25～0.30

6.2.4 How to change piping connection specification (4GA/B R)

When replacing the plate or fitting adaptor attached to the body to change the type between the body piping specification and the base piping specification, or to change the type between the push-in fitting specification and the female specification for the body piping type, pay attention to the tightening torque because air could leak if the tightening of the set screw is insufficient at the time of replacement.



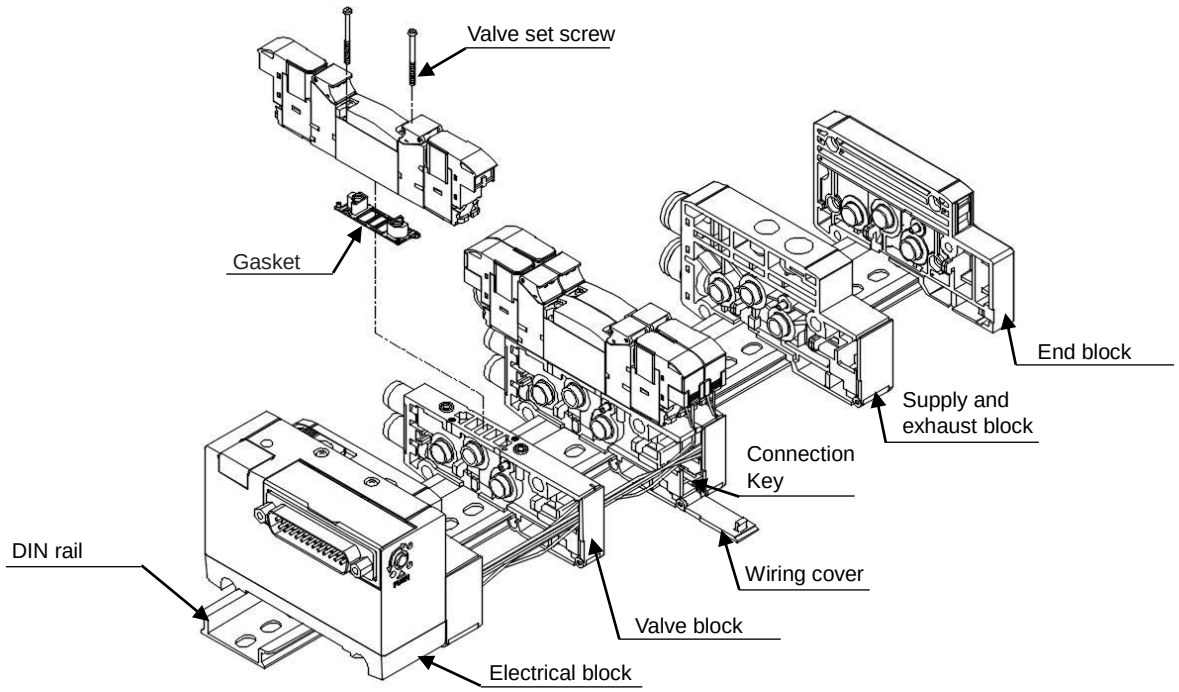
Model number	Size	Tightening torque(N･m)
4G1 R	M1.7	0.18 to 0.22
4G2 R	M2.5	0.25 to 0.30

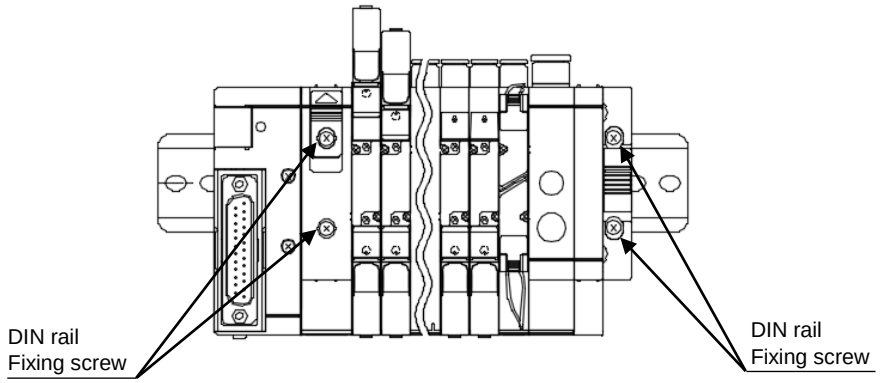
6.3 How to expand reduced wiring manifold

⚠ WARNING: When disassembling or assembling the manifold, perform it after reading the Instruction Manual carefully and with full understanding of its contents.

- ・You are required to understand the structure of solenoid valve and its operation principle to secure the safety.
- ・A level of 2nd Class or more of Pneumatics Technology Certification is required.

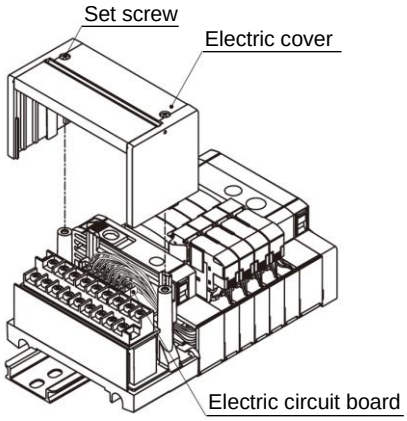
6.3.1 exploded view of block manifold



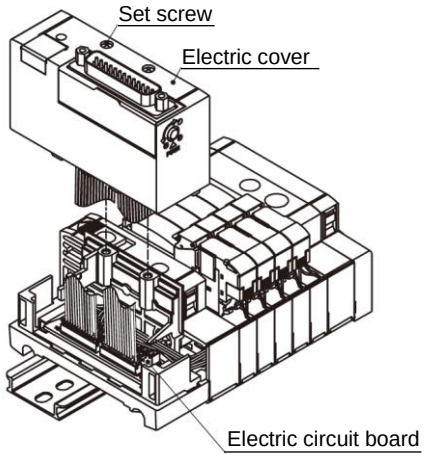


6.3.2 Removing the electric cover

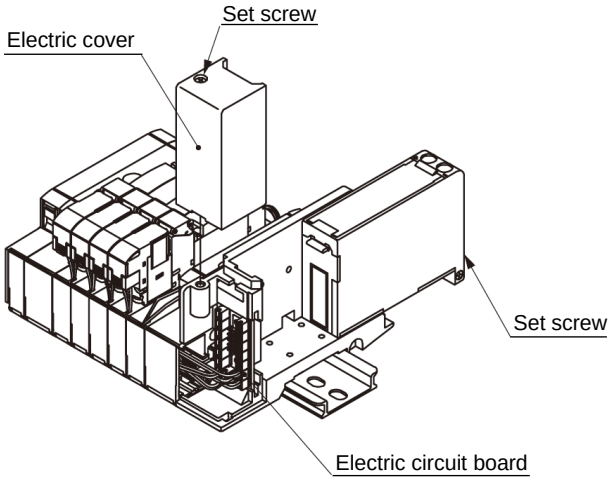
・ T10/T11



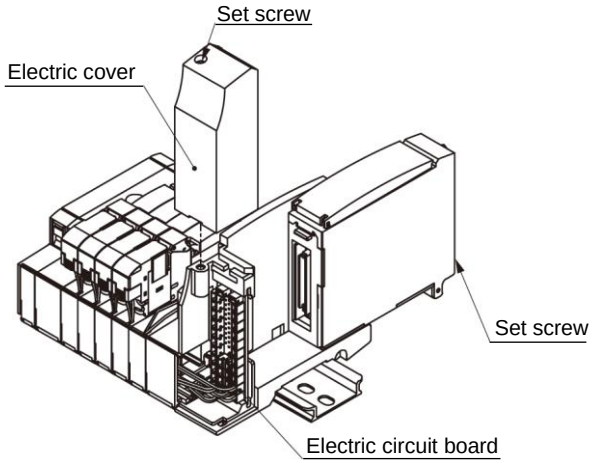
・T30、T5*/T6*



・T7*



・T8*



6.3.3 Increasing the valve blocks

1) Loosen the retainer's DIN rail set screws. (Refer to the exploded view)
2) Open the reduced wiring cover
3) Pull the connecting key for the position to be expanded until it clicks, and disengage the connection between blocks.
4) Remove the cover of the electrical block to expose the electric circuit board.
(Removing the electric cover)
5) Connect the signal line (socket assembly) (Note1) to the electric circuit board (Note2), and set the signal line to the valve block. (Fig. 1)
Note 1 Refer to 8.4(8) Selection of expansion socket assembly.
Note 2 Refer to 6.3.4 Connection procedure of electric circuit board.
6) Mount the valve block to be added to the DIN rail.
7) Press so that there is no gap between blocks, and press the key to engage.
8) While taking care about line bite of cable, close the wiring cover, and tighten the cover of the electrical block. (tightening torque: 0.35 to 0.50 N·m)
9) Press the operation button toward the direction of arrow(3).
The build-in DIN rail fixing bracket slides to a fixing position.
10) While holding down so that there is no gap between blocks, tighten DIN rail set screws (recommended tightening torque 1.2 to 1.6 N·m).

※ Up to two stations can be expanded at a position before the farthest position from the wiring block.

Fig.1

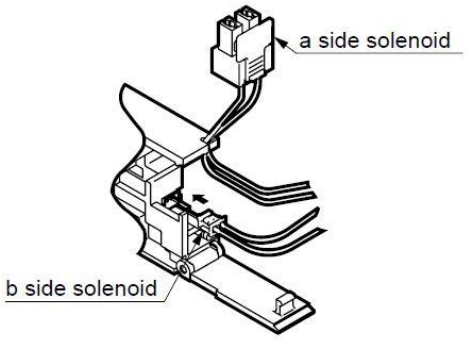
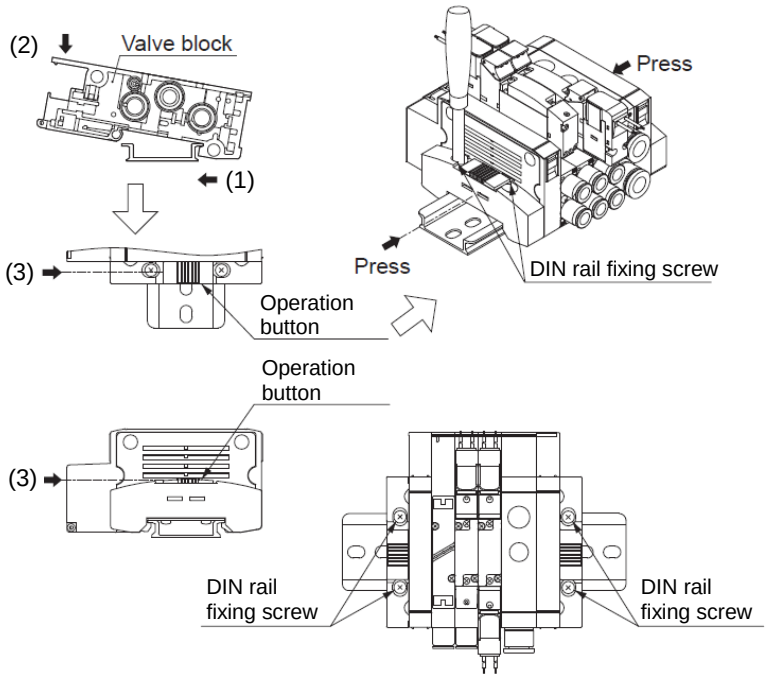
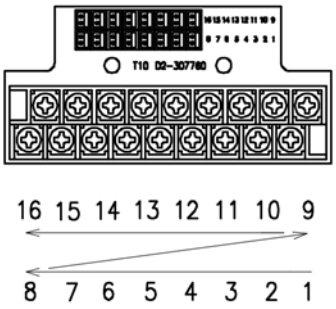


Fig.2



6.3.4 Connection procedure of electric circuit board

The corresponding rules for connector and valve on the electric base vary depending on the reduced wiring specifications (T10, T11, T30, T50, T51, T52, T53, T6*, T7*). For connector wiring, check the connector no. printed on the base.
For wiring of mix (consolidation), the manifold configuration as shown in the right figure is indicated as an example.

<table>
<tr><th></th><th>Electric circuit board assembly
Wire to order of arrow</th><th>Compatibility with valves</th></tr>
<tr><td>T10</td><td> 
</td><td>
1) In case of a single solenoid valve
(Max. number of MF station: 16)
<table>
<tr><td>Connector No.</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td></tr>
<tr><td>Valve No.</td><td>16a</td><td>15a</td><td>14a</td><td>13a</td><td>12a</td><td>11a</td><td>10a</td><td>9a</td></tr>
<tr><td>Connector No.</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>Valve No.</td><td>8a</td><td>7a</td><td>6a</td><td>5a</td><td>4a</td><td>3a</td><td>2a</td><td>1a</td></tr>
</table>
2) In case of a double solenoid valve
(Max. number of MF station: 8)
<table>
<tr><td>Connector No.</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td></tr>
<tr><td>Valve No.</td><td>8b</td><td>8a</td><td>7b</td><td>7a</td><td>6b</td><td>6a</td><td>5b</td><td>5a</td></tr>
<tr><td>Connector No.</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>Valve No.</td><td>4b</td><td>4a</td><td>3b</td><td>3a</td><td>2b</td><td>2a</td><td>1b</td><td>1a</td></tr>
</table>
3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 16)
<table>
<tr><td>Connector No.</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td></tr>
<tr><td>Valve No.</td><td>Empty</td><td>Empty</td><td>Empty</td><td>Empty</td><td>Empty</td><td>Empty</td><td>7b</td><td>7a</td></tr>
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<tr><td>Valve No.</td><td>6a</td><td>5b</td><td>5a</td><td>4b</td><td>4a</td><td>3a</td><td>2a</td><td>1a</td></tr>
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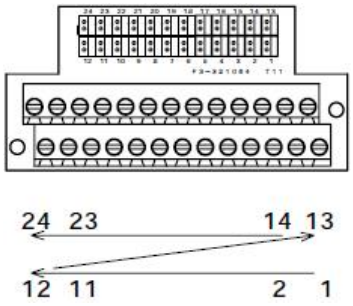
<tr><td>T11</td><td> 
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1) In case of a single solenoid valve
(Max. number of MF station: 24)
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<tr><td>Valve No.</td><td>24a</td><td>23a</td><td>22a</td><td>21a</td><td>20a</td><td>19a</td><td>18a</td><td>17a</td><td>16a</td><td>15a</td><td>14a</td><td>13a</td></tr>
<tr><td>Connector No.</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>Valve No.</td><td>12a</td><td>11a</td><td>10a</td><td>9a</td><td>8a</td><td>7a</td><td>6a</td><td>5a</td><td>4a</td><td>3a</td><td>2a</td><td>1a</td></tr>
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2) In case of a double solenoid valve
(Max. number of MF station: 12)
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</table>
3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 24)
<table>
<tr><td>Connector No.</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td><td>16</td><td>15</td><td>14</td><td>13</td></tr>
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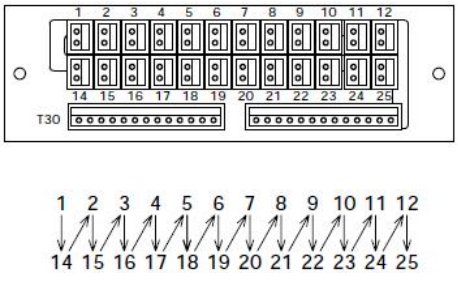
<tr><td>T30</td><td> 
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1) In case of a single solenoid valve
(Max. number of MF station: 24)
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2) In case of a double solenoid valve
(Max. number of MF station: 12)
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3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 24)
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<tr><td>Connector No.</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr>
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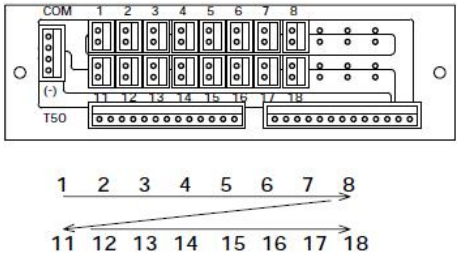
T6*</td><td> 
</td><td>1) In case of a single solenoid valve
(Max. number of MF station: 16)
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2) In case of a double solenoid valve
(Max. number of MF station: 8)
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3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 16)
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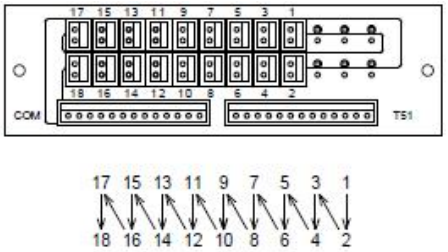
<tr><td>T51</td><td> 
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(Max. number of MF station: 9)
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3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 18)
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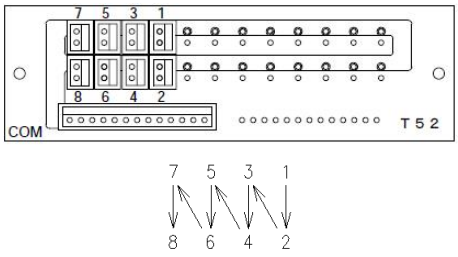
<tr><td>T52</td><td> 
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(Max. number of MF station: 4)
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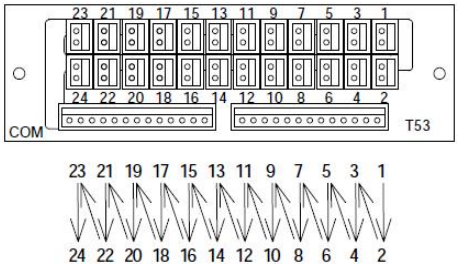
Wire to order of arrow</th><th>Compatibility with valves</th></tr>
<tr><td>T53</td><td> 
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(Max. number of MF station: 24)
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<tr><td>Connector No.</td><td>24</td><td>22</td><td>20</td><td>18</td><td>16</td><td>14</td><td>12</td><td>10</td><td>8</td><td>6</td><td>4</td><td>2</td></tr>
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2) In case of a double solenoid valve
(Max. number of MF station: 12)
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<tr><td>Valve No.</td><td>12a</td><td>11a</td><td>10a</td><td>9a</td><td>8a</td><td>7a</td><td>6a</td><td>5a</td><td>4a</td><td>3a</td><td>2a</td><td>1a</td></tr>
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(Max. number of solenoid: 24)
<table>
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<tr><td>Connector No.</td><td>24</td><td>22</td><td>20</td><td>18</td><td>16</td><td>14</td><td>12</td><td>10</td><td>8</td><td>6</td><td>4</td><td>2</td></tr>
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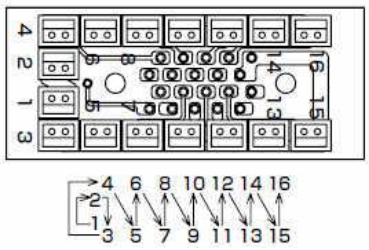
<tr><td>T7※</td><td> 
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2) In case of a double solenoid valve
(Max. number of MF station: 8)
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<tr><td>Valve No.</td><td>1b</td><td>2b</td><td>3b</td><td>4b</td><td>5b</td><td>6b</td><td>7b</td><td>8b</td></tr>
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<tr><td>Valve No.</td><td>1a</td><td>2a</td><td>3a</td><td>4a</td><td>5a</td><td>6a</td><td>7a</td><td>8a</td></tr>
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3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 16)
<table>
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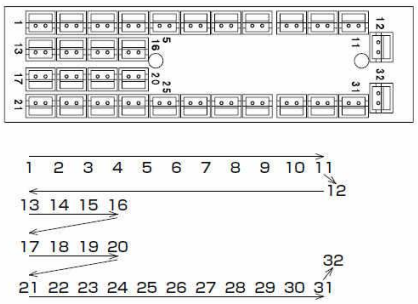
<tr><td>T8※</td><td> 
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(Max. number of MF station: 20)
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(Max. number of MF station: 16)
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3) In case of a mixture (Mixed installation of single and double)
(Max. number of solenoid: 32)
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</table></td></tr>
</table>

7. TROUBLE SHOOTING

TROUBLE SHOOTING

Motion troubles	Suspected cause	Remedies
Does not actuate	No electric signals	Turn on the power
	Damage to signal wiring system	Repair the control circuit
	Excessive fluctuating range of current or voltage	Reaffirm the power capacity. (within ±10% of voltage fluctuation)
	The circuit is not wired correctly	Wire the circuit correctly
	All pilot exhaust port is closed	Rectify the piping system
Malfunctions	Excessive leakage current	Correct control circuit and / or set a bleed circuit
	Chattering	Inspect switching system and / or tighten each loosen terminal screw
	Voltage deviates than specified on the name plate	Rectify the voltage to meet the specification
	Damaged or short circuited coil	Replace the coil
	Erroneous shut off pressure source	Turn on the power source
	Insufficient pressure	Reset the pressure reducer valve or install a pressure raising valve
	Insufficient flow of fluid	Rectify the size of pipe or install a surge tank
	Pressure supplied through exhaust port	Change the piping to an external pilot system
	Erroneous piping, erroneous omitting some piping	Rectify the piping system
	Speed control valve completely closed by error	Reset the needle valve
	A port B port is directly released to an open atmosphere.	Install pipe joints to A and B ports with diameter equal to or smaller than that of to P port joint
	Valve is frozen	Add remedies of avoiding freezing (Heating system or dehumidifying system etc.)
	Delayed return of a plunger (Excessive oil, existence of tar)	Check the quality of the lubricant (Turbine oil type1, ISO VG 32 or equivalent) Rectify the quantity of lubricant drip Install a tar removing filter
	Clogged-up exhausting port with dust	Install a cover or silencer and clean it regularly
High actuating pressure is required	Bulged or decomposed packings	Check the quality of the lubricant (Turbine oil type1, ISO VG 32 or equivalent) Relocate the valves away from splashing area of cutting coolant Keep organic chemicals away from valves.
	Release of A and / or B port to an open atmosphere directly	Check the piping. Apply more grease.
	Foreign particles cut into packing lips	Remove the foreign particle away from the packing.

8. PRODUCT SPECIFICATIONS AND HOW TO CODE MODEL NUMBERS

8.1 Product specifications

1) Common specifications

Model number / Item		4G1 R･4G2 R
Valve type and operation		Pilot operated type soft spool valve
Working fluid		Compressed air
Max. working pressure MPa		0.7
Min. working pressure MPa		0.2 [Note 3]
Proof pressure MPa		1.05
Ambient temperature ℃		-5～55 (No freezing)
Fluid temperature ℃		5～55
Manual operating device		Non-locking/locking common type (standard)
Pilot exhaust method	Internal pilot	Main valve/pilot valve common exhaust type
	External pilot	Main valve/pilot valve individual exhaust type
Lubrication [Note 1]		Not required
Degree of protection [Note 2]		Dust-proof
Vibration resistance m/s^2		50 or less
Shock resistance m/s^2		300 or less
Atmosphere		Containing corrosive gas is not permissible

Note 1: In case of lubrication, please use turbine oil 1st grade ISO VG32.
Excess lubrication or intermittent lubrication may cause unsteady operation.

Note 2: The protective structure is dust-proof, but not drip-proof. Check that water drops or oil, etc., do not come into contact. IP65 (jet-proof type) is used for DIN terminal box specifications. It is precondition that the outer diameter of applicable specified cord and tightening torque shall be used to fix it in place. As the structure is not durable to continuous pouring of water, protect it with a cover box.

Note 3: The working pressure range is 0 to 0.7 MPa when the external pilot (option symbol: K) is selected. Set the external pilot air pressure between 0.2 and 0.7 MPa.

2) Electric specifications

Model number / Item		4G1 R･4G2 R					
Rated voltage		DC24V	DC12V	DC5V	DC3V	AC100V	AC200V
Voltage fluctuation range		±10%					
Holding Current A [Note 4]	Standard	0.015 (0.017)	0.030 (0.034)	0.072 (0.082)	0.120 (0.136)	0.009 (0.009)	0.006 (0.006)
	With low exoergic/ Energy-saving circuit	0.005	0.010	-		-	
Power Consumption W [Note 4]	Standard	0.35(0.40)		0.35(0.40)		-	
	With low exoergic/ Energy-saving circuit	0.1		-		-	
Apparent power VA [Note 4] [Note 5]	Standard	-		-		0.93 (0.98)	1.4
Thermal class		B					
Surge absorber [Note 5]		Option					
Indicator		Light (option)					

Note 4: The values in ( ) include the light.

Note 5: The DIN terminal box type has a built-in lamp surge suppressor as a standard option.
The values within the parentheses are applicable to such type.

3) Response time

Model number		4GA/B R SERIES				4GD/E R SERIES			
Item		4GA/B1 R		4GA/B2 R		4GD/E1 R		4GD/E2 R	
		ON	OFF	ON	OFF	ON	OFF	ON	OFF
Dual 3port valve integrated type		9	12	12	29	12	15	15	30
2-position	Single	12	12	19	19	15	25	20	30
	Double	9	—	18	—	15	—	20	—
3-position	ABR port connection	8	15	17	30	20	30	25	35

Values include the light surge suppressor. Response time is the value at an air supply of 0.5 MPa, 20℃, and oil-free.
Changes based on pressure and quality of oil.

4) Flow characteristics

Model no.	Position type		1(P)→4(A)/2(B)		4(A)/2(B)→5(R1)/3(R2)	
			C[dm^3/(s/bar)]	b	C[dm^3/(s/bar)]	b
MN3GA1 R MN3GD1 R MN4GA1 R MN4GD1 R	Dual 3port valve integrated type		0.87	0.37	1.0 (0.68)	0.14 (0.22)
	2-position		0.98	0.33	1.2 (0.71)	0.11 (0.27)
	3-position	All ports closed	0.92	0.34	1.0 -	0.16 -
		ABR port connection	0.92	0.29	1.1 (0.69)	0.13 (0.22)
		PAB port connection	1.1	0.35	1.1 -	0.17 -
MN3GA2 R MN3GD2 R MN4GA2 R MN4GD2 R	Dual 3port valve integrated type		1.7	.037	2.2 (1.6)	0.13 (0.21)
	2-position		2.2	0.21	2.5 (1.7)	0.19 (0.10)
	3-position	All ports closed	2.0	0.25	2.3 -	0.10 -
		ABR port connection	2.0	0.27	2.5 (1.7)	0.18 (0.12)
		PAB port connection	2.3	0.31	2.3 -	0.16 -
MN3GB1 R MN3GE1 R MN4GB1 R MN4GE1 R	Dual 3port valve integrated type		0.86	0.35	1.0 (0.66)	0.15 (0.25)
	2-position		1.0	0.30	1.1 (0.72)	0.11 (0.26)
	3-position	All ports closed	0.96	0.32	1.0 -	0.14 -
		ABR port connection	0.96	0.29	1.2 (0.71)	0.11 (0.30)
		PAB port connection	1.1	0.31	1.0 -	0.15 -
MN3GB2 R MN3GE2 R MN4GB2 R MN4GE2 R	Dual 3port valve integrated type		1.7	0.42	2.2 (1.6)	0.15 (0.19)
	2-position		2.4	0.35	2.5 (1.7)	0.19 (0.19)
	3-position	All ports closed	2.2	0.38	2.3 -	0.17 -
		ABR port connection	2.2	0.38	2.5 (1.7)	0.18 (0.20)
		PAB port connection	2.3	0.29	2.3 -	0.15 -

Note 1: Effective cross-sectional area S and sonic conductance C are converted as S 5.0 × C.

Note 2: Values for 2-position, dual 3 port valve integrated type, and ABR connection are the values when check valve is integrated.

5) Weight

(1)4GA/B R SERIES

Item			3GA1 R	3GA2 R	3GA3 R	4GA1 R	4GA2 R	4GA3 R	3GB1 R 4GB1 R	3GB2 R 4GB2 R	4GB3 R
2-position	single	grommet lead wire	48 (41)	104 (74)	142 (100)	48 (41)	109 (79)	151 (109)	80 (38)	156 (74)	215 (96)
		E-connector	50 (43)	106 (76)	144 (102)	50 (43)	111 (81)	153 (111)	82 (40)	158 (76)	217 (98)
		DIN terminal box	—	141 (111)	177 (135)	—	146 (116)	186 (144)	—	193 (111)	249 (130)
	double	grommet lead wire	—	—	—	65 (58)	127 (97)	174 (128)	97 (55)	173 (91)	233 (114)
		E-connector	—	—	—	69 (62)	131 (101)	178 (132)	101 (59)	177 (95)	237 (118)
		DIN terminal box	—	—	—	—	169 (139)	214 (168)	—	216 (134)	273 (154)
3-position	All ports blocked	grommet lead wire	—	—	—	67 (60)	139 (109)	183 (141)	98 (56)	184 (102)	242 (123)
		E-connector	—	—	—	71 (64)	143 (113)	187 (145)	102 (60)	188 (106)	246 (127)
		DIN terminal box	—	—	—	—	181 (151)	223 (181)	—	227 (145)	282 (163)

(2)4GD/E R SERIES

Item			3GD1 R	3GD2 R	3GD3 R	4GD1 R	4GD2 R	4GD3 R	3GE1 R 4GE1 R	3GE2 R 4GE2 R	4GE3 R
2-position	single	grommet lead wire	48 (41)	110 (80)	144 (102)	48 (41)	115 (85)	153 (111)	80 (38)	158 (76)	221 (102)
		E-connector	50 (43)	112 (82)	146 (104)	50 (43)	117 (87)	155 (113)	82 (40)	160 (78)	223 (104)
		DIN terminal box	—	147 (117)	178 (136)	—	152 (122)	187 (145)	—	195 (113)	255 (136)
	double	grommet lead wire	—	—	—	65 (58)	133 (103)	175 (129)	97 (55)	175 (93)	240 (121)
		E-connector	—	—	—	69 (62)	137 (107)	179 (133)	101 (59)	179 (97)	244 (125)
		DIN terminal box	—	—	—	—	176 (146)	215 (169)	—	218 (136)	280 (161)
3-position	All ports blocked	grommet lead wire	—	—	—	67 (60)	145 (115)	184 (142)	98 (56)	186 (104)	249 (130)
		E-connector	—	—	—	71 (64)	149 (119)	188 (146)	102 (60)	190 (108)	253 (134)
		DIN terminal box	—	—	—	—	188 (158)	224 (182)	—	229 (147)	289 (170)

・Values in ( ) do not include a piping adaptor. Values for E type connector include the socket assembly. For EJ type connector, add 16g/connector to E type connector weight

・The weight of dual 3 port valve integrated type is the same as that of 2-position double.

●Block

(1)MN4GA/B R SERIES

Item			Model no	Weight (g)
	specifications			
Valve block with solenoid valve	MN4GA1 R Direct ported	Individual wiring	N3GA110R-C6-3	70
			N3GA1110R-C6-3	70
			N4GA110R-C6-3	70
			N4GA120R-C6-3	87
			N4GA1(3/4/5)0R-C6-3	91
			N3GA1(66/67/76/77)0R-C6-3	87
		Reduced wiring	N3GA110R-C6-A2N-3	72
			N3GA1110R-C6-A2N-3	72
			N4GA110R-C6-A2N-3	72
			N4GA120R-C6-A2N-3	91
			N4GA1(3/4/5)0R-C6-A2N-3	95
			N3GA1(66/67/76/77)0R-C6-A2N-3	91
	MN4GB1 R Base ported	Individual wiring	N4GB110R-C6	67
			N4GB120R-C6	84
			N4GB1(3/4/5)0R-C6	85
			N3GB1(66/67/76/77)R-C6-3	84
		Reduced wiring	N4GB110R-C6-A2N-3	69
			N4GB120R-C6-A2N-3	88
			N4GB1(3/4/5)0R-C6-A2N-3	89
			N3GB1(66/67/76/77)R-C6-A2N-3	88
Valve block with solenoid valve	MN4GA2 R Direct ported	Individual wiring	N3GA210R-C8-3	129
			N3GA2110R-C8-3	129
			N4GA210R-C8-3	129
			N4GA220R-C8-3	147
			N4GA2(3/4/5)0R-C8-3	159
			N4GA2(66/67/76/77)R-C8-3	147
		Reduced wiring	N3GA210R-C8-A2N-3	131
			N3GA2110R-C8-A2N-3	131
			N4GA210R-C8-A2N-3	131
			N4GA220R-C8-A2N-3	151
			N4GA2(3/4/5)0R-C8-A2N-3	163
			N4GA2(66/67/76/77)R-C8-A2N-3	151
	MN4GB2 R Base ported	Individual wiring	N4GB210R-C8	128
			N4GB220R-C8	145
			N4GB2(3/4/5)0R-C8	156
			N4GB2(66/67/76/77)R-C8-3	145
		Reduced wiring	N4GB210R-C8-A2N-3	130
			N4GB220R-C8-A2N-3	149
			N4GB2(3/4/5)0R-C8-A2N-3	160
			N4GB2(66/67/76/77)R-C8-A2N-3	149

(2)MN4GD/E R SERIES

Item			Model no	Weight (g)
	specifications			
Valve block with solenoid valve	MN4GD1 R Direct ported	Individual wiring	N3GD110R-C6-3	70
			N3GD1110R-C6-3	70
			N4GD110R-C6-3	70
			N4GD120R-C6-3	87
			N4GD1(3/4/5)0R-C6-3	89
			N3GD1660R-C6-3	87
		Reduced wiring	N3GD110R-C6-A2N-3	72
			N3GD1110R-C6-A2N-3	72
			N4GD110R-C6-A2N-3	72
			N4GD120R-C6-A2N-3	91
			N4GD1(3/4/5)0R-C6-A2N-3	93
			N3GD1660R-C6-A2N-3	91
	MN4GE1 R Base ported	Individual wiring	N4GE110R-C6-3	68
			N4GE120R-C6-3	84
			N4GE1(3/4/5)0R-C6-3	85
			N3GE1660R-C6-3	84
		Reduced wiring	N4GE110R-C6-A2N-3	70
			N4GE120R-C6-A2N-3	88
			N4GE1(3/4/5)0R-C6-A2N-3	89
			N3GE1660R-C6-A2N-3	88
Valve block with solenoid valve	MN4GD2 R Direct ported	Individual wiring	N3GD210R-C8-3	135
			N3GD2110R-C8-3	135
			N4GD210R-C8-3	135
			N4GD220R-C8-3	154
			N4GD2(3/4/5)0R-C8-3	166
			N3GD2660R-C8-3	154
		Reduced wiring	N3GD210R-C8-A2N-3	137
			N3GD2110R-C8-A2N-3	137
			N4GD210R-C8-A2N-3	137
			N4GD220R-C8-A2N-3	157
			N4GD2(3/4/5)0R-C8-A2N-3	169
			N3GD2660R-C8-A2N-3	157
	MN4GE2 R Base ported	Individual wiring	N4GE210R-C8-3	132
			N4GE220R-C8-3	147
			N4GE2(3/4/5)0R-C8-3	158
			N3GE2660R-C8-3	147
		Reduced wiring	N4GE210R-C8-A2N-3	134
			N4GE220R-C8-A2N-3	151
			N4GE2(3/4/5)0R-C8-A2N-3	162
			N3GE2660R-C8-A2N-3	151

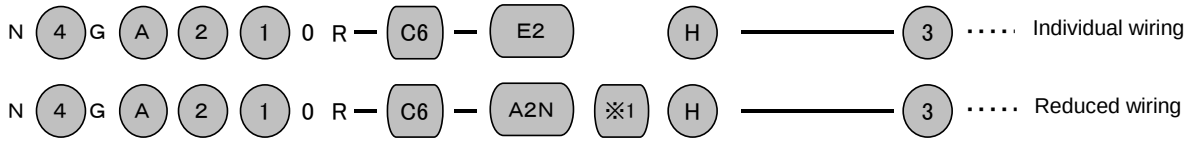
(3)MN4GA/B R、MN4GD/E R SERIES

Valve block with masking plate	MN4GA1 R、MN4GD1 R	N4GA1R-MP	34
	MN4GA2 R、MN4GD2 R	N4GA2R-MP	66
	MN4GB1 R、MN4GE1 R	N4GB1R-MP-C6	37
	MN4GB2 R、MN4GE2 R	N4GB2R-MP-C8	69
Air supply or exhaust block	MN4GA/B1 R、MN4GD/E1 R	N4G1R-Q-8	58
	MN4GA/B1 R	N4G1R-QK-8	60
	MN4GA/B2 R、MN4GD/E2 R	N4G2R-Q-10	83
	MN4GA/B2 R	N4G2R-QK-10	85
End block	MN4GA/B1 R、MN4GD/E1 R	N4G1R-E※	60
		N4G1R-EX※	60
	MN4GA/B2 R、MN4GD/E2 R	N4G2R-E※	84
		N4G2R-EX※	85
Partition block	MN4GA/B1 R、MN4GD/E1 R	N4G1R-S	45
	MN4GA/B2 R、MN4GD/E2 R	N4G2R-S	60
Electrical block	MN4GA/B1 R、MN4GD/E1 R	N4G1R-T10(R)	207
		N4G1R-T30(R)	165
		N4G1R-T50(R)	167
		N4G1R-T6※	295
		N4G1R-T7※	203
		N4G1R-T8※	229
	MN4GA/B2 R、MN4GD/E2 R	N4G2R-T10(R)	223
		N4G2R-T30(R)	182
		N4G2R-T50(R)	184
		N4G2R-T6	312
		N4G2R-T7※	204
		N4G2R-T8※	242
MIX block	MN4GA/BX12 R、MN4GD/EX12 R	N4G12R-MIX	49

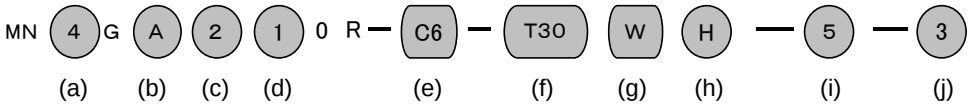
8.2 How to code model numbers

(Sample) N4GA110R-C6-E2-3

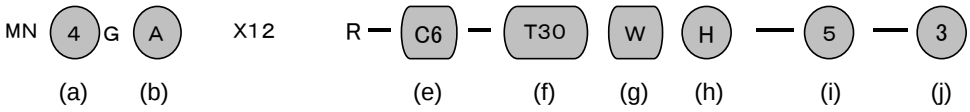
●Valve block with solenoid valve



●Manifold model no.



●Mix manifold model no.



(a)No.of port		(b) Piping direction		(c) Model no.		(d) Solenoid position		(e) Port size	
Symbol	Discription	Symbol	Discription	Symbol	Discription	Symbol	Discription	Symbol	Discription
3	3-port valve	A	Top(Direct piping)	1	MN4G1R	1	2-position single	See Table1	
4	5-port valve	B	Side(Base piping)	2	MN4G2R	2	2-position double		
		D	Top(Direct piping)			3	3-position all ports closed		
		E	Side(Base piping)			4	3-position ABR connection		
						5	3-position PAB connection		
						1	Normal close NC (3GA,3GD)		
						11	Normal close NO (3GA,3GD)		
						66	Dual 3 port valve integrated type(NC－NC)		
						67	Dual 3 port valve integrated type(NC－NO)		
						76	Dual 3 port valve integrated type(NO－NC)		
						77	Dual 3 port valve integrated type(NO－NO)		
						8	Mix		

[※1] is applyed to the body of the reduced wiring specifications.
It will attach the “socket assembly A” and” relay socket assembly”.
Please select "None" if it is not necessary.
For more information, please refer to the Page74.

(f) Electric connection	(g) Terminal and connectorpin wiring		(h) Option	(i) Station no.		(j) Rated voltage	
See Table2	Blank	Individual wiring , Reduced wiring standard wiring	See Table3	Symbol	Discription	Symbol	Discription
	W	Reduced wiring double wiring		2～24	Station no.	1	AC100V
	W1	Reduced wiring double wiring (With single spare wiring)				2	AC200V
						3	DC24V
						4	DC12V

Refer to catalog for details.

+Table1 (e) Port size

Symbol	Discription	
Variation	A/B port Millimeter fitting・M5・Rc thread	
CF	φ 1.8 barbed fitting for fiber tube	
C18	φ 1.8 push-in fitting for fiber tube	
C4	φ 4 push-in fitting	
C6	φ 6 push-in fitting	
C8	φ 8 push-in fitting	
CL18	L type φ 1.8 push-in fitting for fiber tube upward)	
CL4	L type φ 4 push-in fitting (upward)	
CL6	L type φ 6 push-in fitting (upward)	
CL8	L type φ 8 push-in fitting (upward)	
CD18	L type φ 1.8 push-in fitting for fiber tube (downward)	
CD4	L type φ 4 push-in fitting (downward)	
CD6	L type φ 6 push-in fitting (downward)	
CD8	L type φ 8 push-in fitting (downward)	
CX	Push-in fitting mix	
M5	M5	
06	Rc1/8	
Single side plugged specifications	A port	B port
CFNC	φ 1.8 barbed fitting for fiber tube	ブラグ
C18NC	φ 1.8 push-in fitting for fiber tube	
C4NC	φ 4 push-in fitting	
C6NC	φ 6 push-in fitting	
C8NC	φ 8 push-in fitting	
CFNO	ブラグ	φ 1.8 barbed fitting for fiber tube
C18NO		φ 1.8 push-in fitting for fiber tube
C4NO		φ 4 push-in fitting
C6NO		φ 6 push-in fitting
C8NO		φ 8 push-in fitting
CL18NC	L type φ 1.8 push-in fitting for fiber tube upward)	ブラグ
CL4NC	L type φ 4 push-in fitting (upward)	
CL6NC	L type φ 6 push-in fitting (upward)	
CL8NC	L type φ 8 push-in fitting (upward)	
CL18NO	ブラグ	L type φ 1.8 push-in fitting for fiber tube upward)
CL4NO		L type φ 4 push-in fitting (upward)
CL6NO		L type φ 6 push-in fitting (upward)
CL8NO		L type φ 8 push-in fitting (upward)
CD18NC	L type φ 1.8 push-in fitting for fiber tube (downward)	ブラグ
CD4NC	L type φ 4 push-in fitting (downward)	
CD6NC	L type φ 6 push-in fitting (downward)	
CD8NC	L type φ 8 push-in fitting (downward)	
CD18NO	ブラグ	L type φ 1.8 push-in fitting for fiber tube (downward)
CD4NO		L type φ 4 push-in fitting (downward)
CD6NO		L type φ 6 push-in fitting (downward)
CD8NO		L type φ 8 push-in fitting (downward)
Variation	A/B port Inch fitting・M5・Inch thread	
C3N	φ1/8inch push-in fitting	
C4N	φ5/32inch push-in fitting	
C6N	φ1/4inch push-in fitting	
C8N	φ5/16inch push-in fitting	
CL3N	L type φ1/8inch push-in fitting (upward)	
CL4N	L type φ5/32inch push-in fitting (upward)	
CL6N	L type φ1/4inch push-in fitting (upward)	
CL8N	L type φ5/16inch push-in fitting (upward)	
CXN	Push-in fitting mix	
06N	1/8NPT	
Single side plugged specifications	A port	B port
C3NCN	φ1/8inch push-in fitting	ブラグ
C4NCN	φ5/32inch push-in fitting	
C6NCN	φ1/4inch push-in fitting	
C8NCN	φ5/16inch push-in fitting	
C3NON	ブラグ	φ1/8inch push-in fitting
C4NON		φ5/32inch push-in fitting
C6NON		φ1/4inch push-in fitting
C8NON		φ5/16inch push-in fitting
CL3NCN	L type φ1/8inch push-in fitting (upward)	ブラグ
CL4NCN	L type φ5/32inch push-in fitting (upward)	
CL6NCN	L type φ1/4inch push-in fitting (upward)	
CL8NCN	L type φ5/16inch push-in fitting (upward)	
CL3NON	ブラグ	L type φ1/8inch push-in fitting (upward)
CL4NON		L type φ5/32inch push-in fitting (upward)
CL6NON		L type φ1/4inch push-in fitting (upward)
CL8NON		L type φ5/16inch push-in fitting (upward)
Variation	G thread	
06G	G1/8	

Refer to catalog for details.

Table2 (f) Electric connection

Individual wiring

Symbol	Discription	
Blank	Grommet lead wire (300 mm)	
B	DIN terminal box (Pg7)	with surge suppressor/light
BN	DIN terminal box (Pg7) (Without DIN terminal box)	with surge suppressor/light
E type connector (upward/lateral direction common)		
E0	Lead wire (300 mm)	
E00	Lead wire (500 mm)	
E01	Lead wire (1000 mm)	
E02	Lead wire (2000 mm)	
E03	Lead wire (3000 mm)	
E0N	Without lead wire (without socket)	
E1	Without lead wire (with socket/terminal)	
E2	Lead wire (300 mm)	with surge suppressor/light
E20	Lead wire (500 mm)	with surge suppressor/light
E21	Lead wire (1000 mm)	with surge suppressor/light
E22	Lead wire (2000 mm)	with surge suppressor/light
E23	Lead wire (3000 mm)	with surge suppressor/light
E2N	Without lead wire (without socket)	with surge suppressor/light
E3	Without lead wire (with socket/terminal)	with surge suppressor/light
EJ type connector (socket with cover, upward/lateral direction common)		
E01J	Lead wire (1000 mm)	
E02J	Lead wire (2000 mm)	
E03J	Lead wire (3000 mm)	
E21J	Lead wire (1000 mm)	with surge suppressor/light
E22J	Lead wire (2000 mm)	with surge suppressor/light
E23J	Lead wire (3000 mm)	with surge suppressor/light

Reduced wiring

Symbol	Discription	
T10	Common terminal block (M3 thread)	Left side specifi cations
T10R		Right side specifi cations
T11	Common terminal block (push tightening)	Left side specifi cations
T11R		Right side specifi cations
T30	D sub-connector	Left side specifi cations
T30R		Right side specifi cations
T50	20 pin flat cable connector (with power supply terminal)	Left side specifi cations
T50R		Right side specifi cations
T51	20 pin flat cable connector (without power supply terminal)	Left side specifi cations
T51R		Right side specifi cations
T52	10 pin flat cable connector (without power supply terminal)	Left side specifi cations
T52R		Right side specifi cations
T53	26 pin flat cable connector (without power supply terminal)	Left side specifi cations
T53R		Right side specifi cations
T6A0	UNIWIRE SYSTEM	NPN 8 points
T6A1		NPN 16 points
T6C0	CompoBus/S	NPN 8 points
T6C1		NPN 16 points
T6E0	S-LINK	NPN 8 points
T6E1		NPN 16 points
T6G1	CC-Link	NPN 16 points
T6J0	UNIWIRE H SYSTEM	NPN 8 points
T6J1		NPN 16 points
T7C0	CompoBus/S	NPN 8 points
T7C1		NPN 16 points
T7D1	DeviceNet(Thin type)	NPN 16 points
T7E0	S-LINK(Thin type)	NPN 8 points
T7E1		NPN 16 points
T7G1	CC-Link (Thin type)	NPN 16 points
T7L1	SAVE NET(Thin type)	NPN 16 points
T7S1	CompoNet(Thin type)	NPN 16 points
T7SP1		PNP 16 points
T8D1	DeviceNet (Thin type)	NPN 16 points
T8D2		NPN 32 points
T8DP1		PNP 16 points
T8DP2		PNP 32 points
T8G1	CC-Link (Thin type)	NPN 16 points
T8G2		NPN 32 points
T8GP1		PNP 16 points
T8GP2		PNP 32 points
T8P1	PROFIBUS-DP (Thin type)	NPN 16 points
T8P2		NPN 32 points
T8PP1		PNP 16 points
T8PP2		PNP 32 points
T8EC1	EtherCAT (Thin type)	NPN 16 points
T8EC2		NPN 32 points
T8ECP1		PNP 16 points
T8ECP2		PNP 32 points
T8EN1	EtherNet/IP (Thin type)	NPN 16 points
T8EN2		NPN 32 points
T8ENP1		PNP 16 points
T8ENP2		PNP 32 points

Refer to catalog for details.

Table3 (h) Option

Symbol	Discription
Blank	Non-locking/locking common manual override
M	Non-locking manual override
H	With malfunction prevention valve
K	External pilot
A	Ozone/cutting oil proof
S	Surgeless
E	Low exoergic and energy saving circuit
L	With piping adaptor
Q	Reduced wiring mall
F	A/B port filter integrated
Z1	Air supply spacer
Z2	In stop valve spacer
Z3	Exhaust spacer
Z6	Spacer type pilot check valve

Refer to catalog for details.

8.3 Related products

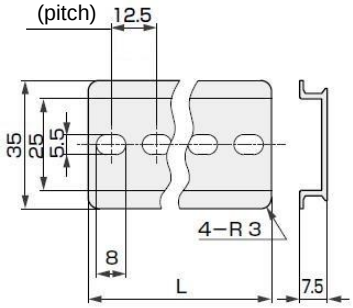
1) Mounting rail

All the angular corners are rounded.

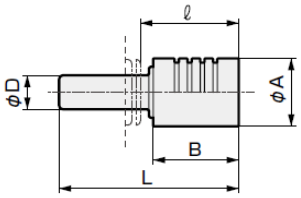
The mounting rail is cut at a mounting pitch of 12.5 mm.

N4GR-BAA＜Length＞

- The min. length is 87.5 mm.
- Select the length in pitches of 12.5 mm.

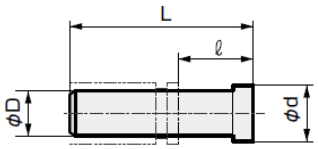


2) Silencer



Model no	D	L	A	B	ℓ
SLW-H6	ϕ6	41	16	20	23.5
SLW-H8	ϕ8	42	16	20	23
SLW-H10	ϕ10	53	20	27	31.5

3) Blanking plug



Model no	D	L	ℓ	d
PG-P2-B	ϕ1.8	20	13	5
GWP4-B	ϕ4	27	16	6
GWP6-B	ϕ6	29	11.5	8
GWP8-B	ϕ8	33	14	10
GWP10-B	ϕ10	40	18.5	12

Refer to catalog for details.

8.4 Kit parts

1) Related Parts

Parts name	Model no.
Coil assembly （For Individual wiring）	4GR－Wiring type－Option－COIL-Voltage Voltage: 1：AC100V, 2：AC200V, 3：DC24V, 4：DC12V Option: Blank：standard type, A：Ozone-resistant Wiring type: Blank：Grommet lead wire, E※：E-connector, E※J：EJ-type connector, B：DIN terminal box
Coil assembly （For Reduced wiring）	4GR－ A2N －Option－COIL-Voltage Voltage: 3：DC24V, 4：DC12V Option: Blank：standard type, A：Ozone-resistant
E type connector assembly	4GR－SOCKET－ASSY－Wiring type－Voltage Voltage: 1：AC100V, 3：DC24V, 4：DC12V Wiring type: E※：E-connector
socket assembly with cover	4GR－SOCKET－ASSY－Wiring type Wiring type: E※J：EJ-type connector
DIN terminal box	4GR-TERMINAL-BOX-Voltage Voltage: 1：AC100V, 2：AC200V, 3：DC24V, 4：DC12V

Refer to catalog for details.

2) Cartridge type push-in fitting model no.

Model no.	Parts name	Model no.
4G1 R	φ1.8 barbed type	4G1R-JOINT-CF
	φ1.8 straight type	4G1R-JOINT-C18
	φ4 straight type	4G1R-JOINT-C4
	φ6 straight type	4G1R-JOINT-C6
	φ1.8 Elbow type	4G1R-JOINT-CL18,CLL18
	φ4 Elbow type	4G1R-JOINT-CL4,CLL4
	φ6 Elbow type	4G1R-JOINT-CL6,CLL6
	φ1/8 Inch straight type	4G1R-JOINT-C3N
	φ5/32 Inch straight type	4G1R-JOINT-C4N
	φ1/8 Inch straight type note1	4G1R-JOINT-CL3N,CLL3N
	φ5/32 Inch straight type note1	4G1R-JOINT-CL4N,CLL4N
	Plug cartridge	4G1R-JOINT-CPG
4G2 R	φ4 straight type	4G2R-JOINT-C4
	φ6 straight type	4G2R-JOINT-C6
	φ8 straight type	4G2R-JOINT-C8
	φ6 Elbow type	4G2R-JOINT-CL6,CLL6
	φ8 Elbow type	4G2R-JOINT-CL8,CLL8
	φ1/4 Inch straight type	4G2R-JOINT-C6N
	φ5/16 Inch straight type	4G2R-JOINT-C8N
	φ1/4 Inch elbow type note1	4G2R-JOINT-CL6N,CLL6N
	φ5/16 Inch elbow type note1	4G2R-JOINT-CL8N,CLL8N
	Plug cartridge	4G2R-JOINT-CPG
N4G1R-Q	φ6 straight type	N4G1R-Q-JOINT-6
	φ8 straight type	N4G1R-Q-JOINT-8
	φ6 Elbow type	N4G1R-Q-JOINT-6L,6LL
	φ8 Elbow type	N4G1R-Q-JOINT-8L,8LL
	φ1/4 Inch straight type	N4G1R-Q-JOINT-6N
	φ5/16 Inch straight type	N4G1R-Q-JOINT-8N
	φ1/4 Inch elbow type note1	N4G1R-Q-JOINT-6LN,6LLN
	φ5/16 Inch elbow type note1	N4G1R-Q-JOINT-8LN,8LLN
	Plug cartridge	N4G1R-Q-JOINT-PG
N4G2R-Q	φ8 straight type	N4G2R-Q-JOINT-8
	φ10 straight type	N4G2R-Q-JOINT-10
	φ8Elbow type	N4G2R-Q-JOINT-8L,8LL
	φ10 Elbow type	N4G2R-Q-JOINT-10L,10LL
	φ5/16 Inch straight type	N4G2R-Q-JOINT-8N
	φ3/8 Inch straight type	N4G2R-Q-JOINT-10N
	φ5/16 Inch elbow type note1	N4G2R-Q-JOINT-8LN,8LLN
	φ3/8 Inch elbow type note1	N4G2R-Q-JOINT-10LN,10LLN
	Plug cartridge	N4G2R-Q-JOINT-PG
N4GR-QK	φ6 straight type	N4GR-QK-JOINT-6
	φ6 Elbow type	N4GR-QK-JOINT-6L

note1 custom order product.

Refer to catalog for details.

3) Masking plate kit

Model no	Kit model no.	Set parts
4G1 R	4G1R-MP	Masking plate, gasket 1, set screws 2
4G2 R	4G2R-MP	Masking plate, gasket 1, set screws 2

4) Female screw adaptor kit

4G[1]R－FML－ADAPTOR－KIT－[M5]－[F]

Model no.	Port size	Kit model no.
4GA1※0R 3GA1660R	M5	4G1R-FML-ADAPTOR-KIT-M5-[Note 1]
3GA110R		4G1R-FML-ADAPTOR-KIT-M5NC-[Note1]
3GA1110R		4G1R-FML-ADAPTOR-KIT-M5NO-[Note1]
4GA2※0R 3GA2660R	Rc1/8	4G2R-FML-ADAPTOR-KIT-06-[Note1]
3GA210R		4G2R-FML-ADAPTOR-KIT-06NC-[Note1]
3GA2110R		4G2R-FML-ADAPTOR-KIT-06NO-[Note1]

Note 1･･･ F:A/B port filter integrated, Blank：Without A/B port filter (standard)

5) Fitting adaptor kit

4G[1]R－JNT－ADAPTOR－KIT－[C4]－[F]

Model no.	Port size	Kit model no.
4GA1※0R 3GA1660R	C4	4G1R-JNT-ADAPTOR-KIT-C4-[Note1]
	C6	4G1R-JNT-ADAPTOR-KIT-C6-[Note1]
3GA110R	C4	4G1R-JNT-ADAPTOR-KIT-C4NC-[Note1]
	C6	4G1R-JNT-ADAPTOR-KIT-C6NC-[Note1]
3GA1110R	C4	4G1R-JNT-ADAPTOR-KIT-C4NO-[Note1]
	C6	4G1R-JNT-ADAPTOR-KIT-C6NO-[Note1]
4GA2※0R 3GA2660R	C4	4G2R-JNT-ADAPTOR-KIT-C4-[Note1]
	C6	4G2R-JNT-ADAPTOR-KIT-C6-[Note1]
	C8	4G2R-JNT-ADAPTOR-KIT-C8-[Note1]
3GA210R	C4	4G2R-JNT-ADAPTOR-KIT-C4NC-[Note1]
	C6	4G2R-JNT-ADAPTOR-KIT-C6NC-[Note1]
	C8	4G2R-JNT-ADAPTOR-KIT-C8NC-[Note1]
3GA2110R	C4	4G2R-JNT-ADAPTOR-KIT-C4NO-[Note1]
	C6	4G2R-JNT-ADAPTOR-KIT-C6NO-[Note1]
	C8	4G2R-JNT-ADAPTOR-KIT-C8NO-[Note1]

Note 1･･･ F:A/B port filter integrated, Blank：Without A/B port filter (standard)

6) Plate kit

Model no.	Kit model no.	Set parts
3GB1R･4GB1R	4G1R-MP	Plate, gasket, set screw 2
3GB2R･4GB2R	4G2R-MP	Plate, gasket, set screw 2

Refer to catalog for details.

7) DIN rail

Model no.	Description
N4GR-BAA [Note1]	DIN rail 1

Note1･･･ Rail length

DIN rail length

Rail length	Mounting pitch	Rail length	Mounting pitch
87.5	75	300	287.5
100	87.5	312.5	300
112.5	100	325	312.5
125	112.5	337.5	325
137.5	125	350	337.5
150	137.5	362.5	350
162.5	150	375	362.5
175	162.5	387.5	375
187.5	175	400	387.5
200	187.5	412.5	400
212.5	200	425	412.5
225	212.5	437.5	425
237.5	225	450	437.5
250	237.5	462.5	450
262.5	250	475	462.5
275	262.5	487.5	475
287.5	275	500	487.5

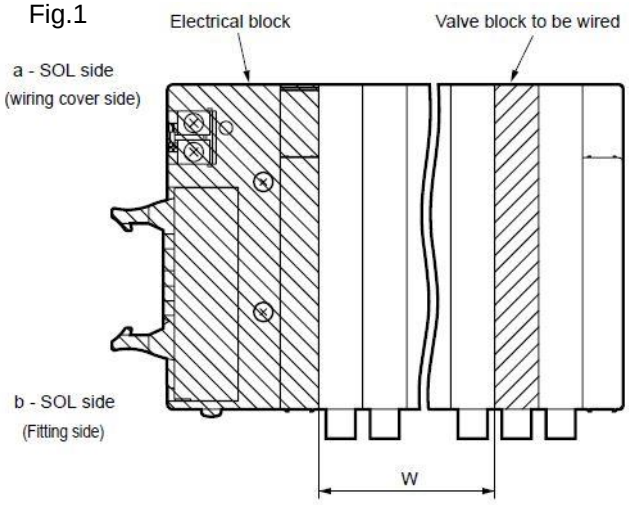
8) Selection of expansion socket assembly

Calculate the distance W between the expansion position and the electrical block (Fig. 1), select a cable with appropriate length from <Table 1>. Be careful that the required socket assembly differs between a side solenoid and b side solenoid.

Although Fig. 1 shows the electrical block with left side specifications,

similarly calculate the distance W between the expansion position and the electrical block for the right side specifications.

Fig.1



Calculation of W

・For MN4G1 R

W＝(10.5×n)＋(16×m)＋(10.5×l)

・For MN4G2 R

W＝(16×n)＋(18×m)＋(10.5×l)

n: number of valve blocks

m: number of supply and exhaust blocks

l: number of partition blocks

・For MN4GX12 R

Calculate W using the mix block width of 16.

<Model no. of expansion socket assembly>

For a side solenoid

N4GR－SOCKET－ASSY－A－Selection no

For b side solenoid

N4GR－RELAY－SOCKET－Selection no

<Table1> W length - Selection no. corresponding table

Station no.	Wiring no		
	T10/11	T30/5*/6*(R)	T7*/T8*
2		0	25 or less
3	20 or less	Over 0 to 30	Over 25 to 55
4	Over 20 to 70	Over 30 to 80	Over 55 to 105
5	Over 70 to 120	Over 80 to 130	Over 105 to 155
6	Over 120 to 170	Over 130 to 180	Over 155 to 205
7	Over 170 to 260	Over 180 to 270	Over 205 to 295
8	Over 260 to 350	Over 270 to 360	Over 295 to 385
9	Over 350 to 450	Over 360 to 460	Over 385 to 485
10	Over 450 to 570	Over 460 to 580	Over 485 to 605

Refer to catalog for details.