



Pneumatic components (F.R. unit)

Safety Precautions

Always read this section before use.

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder switch
MN3E
MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R.
Precision R
Press gauge
Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

Design & selection

⚠ WARNING

- Use this product in accordance with the specifications range.
The products in this catalog are designed to be used only in a compressed air system. Using with pressure or temperature exceeding the specification range may result in damage or operation faults. (Refer to specifications)
Contact CKD when using fluids other than compressed air.
- Install the product where it is not exposed to rain, water or direct sunlight.
- Do not use this product in a corrosive environment. Using in such an environment could lead to damage or operation faults.
- If ambient temperature is less than 5°C, moisture in the circuit could freeze and lead to operation faults, etc. Remove moisture to prevent freezing.
- Avoid using this product in environments where ozone is generated.

⚠ CAUTION

- Confirm that the product withstands the working environment.
 - This product cannot be used in environments where functional obstacles could occur.
Such environments include high temperature, chemical atmosphere, or where chemical, vibration, or gas is present.
Environment where ozone is generated.

- Understand compressed air features before designing a pneumatic circuit.
 - The same functions as mechanical, hydraulic, and electrical methods cannot be anticipated when instantaneous holding of emergency stop is required.
 - Pop-out, air discharge, or leakage due to air compression and expansion could occur.
 - Design the circuit so that compressed air in the system is exhausted.
- Indicate the maintenance conditions in the device's instruction manual.
 - The product's function can drop markedly with working status, working environment, and maintenance, and can prevent safety from being attained. With correct maintenance, the product functions can be used to the fullest.
- Check for leakage current to avoid malfunction caused by the leakage current.
 - When using a programmable controller, leakage current may cause a malfunction.
- Due to the characteristics of compressed air, the system accepts small leakage as tolerance if it does not affect the performance. Contact CKD if no leakage should be accepted.

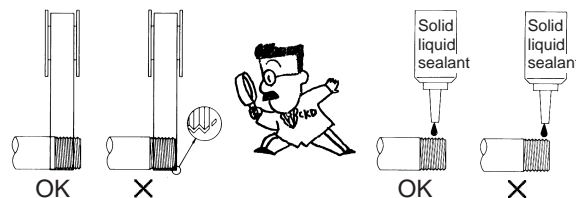
Mounting / Installation / adjustment

Piping

⚠ CAUTION

- Open the package in a clean room.
The product is packaged in a clean room, and should be opened just before piping in the clean room.
- Do not remove the package or seat cap on the piping port until just before piping the product.
 - If the piping port cap is removed from the piping port before piping work is started, foreign matter could enter the pneumatic component from the piping port and result in faults or faulty operation.
- When connecting pipes, wrap sealing tape in the opposite direction from threads starting 2 mm or more inside from the end of piping threads.

- If sealing tape protrudes from piping threads, it could be cut when screwed in. This could cause the tape to enter the solenoid valve and lead to faults.



When using a liquid sealant, make sure that it does not adhere to the plastic bowl because the plastic bowl could break and cause a hazard.

- Check that the pipe connected to the pneumatic component is not displaced due to vibration, looseness, or pull force.
 - Displaced pipe results in a hazardous state.

- Observe the following precautions when using nylon tubes or urethane tubes for piping material.
 - When using the standard push-in fitting on the spiral tube, fix the base of the tube with a hose band. Rotation occurs, causing a reduction in holding force.
 - Use a spigot fitting for high-temperature fluid. The push-in fitting cannot be used.
- When mounting pneumatic components, do not use a mounting method that relies on support from the piping.
- Around the pneumatic component, keep space for mounting, removal, wiring, and piping work.
- Install an air filter just before the pneumatic component in the circuit.
- Connect piping so that connections are not dislocated by system movement, vibration, or tension.
- Any foreign matter that has entered during piping must be removed so it does not enter the pneumatic component.
- Always flush just before piping pneumatic component.
 - Any foreign matter that has entered the pipes during piping must be removed so that it does not enter the pneumatic component.
- When supplying compressed air for the first time after connecting pipes, do not apply high pressure suddenly.
 - Piping connection could be dislocated or the piping tube jump about leading to accidents.
 - CAUTION: If compressed air is supplied too slowly, sealing pressure may not be generated depending on the internal sealing mechanism of the solenoid valve and may cause air leakage.

- After connecting pipes, check pipe connections for air leaks before supplying compressed air.
 - Apply a leakage detection agent on pipe connections with a brush, and check for air leaks. Make sure that the leak detection agent does not adhere to the plastic bowl because the plastic bowl could break and cause a hazard.
- Use proper torque to tighten the pipes when connecting them.
 - To prevent air leak and to protect threads from damage.
 - First tighten the screw by hand to ensure that threads are not damaged, then use a tool.

[Recommended values]

Port thread	Tightening torque N·m
M3	0.3 to 0.6
M5	1 to 1.5
Rc 1/8	3 to 5
Rc 1/4	6 to 8
Rc 3/8	13 to 15
Rc 1/2	16 to 18
Rc 3/4	19 to 40
Rc 1	41 to 70



- Remove the dust-proof seal of piping port just before starting piping.
 - Removing it before starting piping work may cause foreign matter to enter the inside from the piping port, resulting in failure or malfunction.

During use & maintenance

⚠ CAUTION

- Pneumatic components must be disassembled and assembled by a qualified worker.
 - Personnel involved in this step must have passed the Pneumatic Pressure Skill Test Class 2 or higher.
- Read the relevant product instruction manual thoroughly and fully familiarize yourself with work before disassembling or assembling the pneumatic component.
 - Personnel must be fully familiar with pneumatic component structure and operational principles and safety requirements.

- Be sure to turn power OFF, stop supplying compressed air, and check that there is no residual pressure before starting maintenance.
 - This is required to ensure safety.
 - Do not perform residual pressure exhaust inside clean room.
- Quality of air
 - Use CKD clean air system components appropriate for your application.
 - Use compressed air that does not contain oxidized oil, tar, carbon, etc., from the air compressor.
 - Use compressed air that does not contain solid foreign matter.

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F.R.(module
unit)Clean
F.RPrecision
RPress gauge
Diff. press gaugeElectro-
pneumatic RSpeed
controllerAuxiliary
valveFitting/
tubeClean
air unitPressure
sensorFlow rate
sensorValve for
air blow

Ending