



To Use This Product Safely

Be sure to read this before use.

When designing and manufacturing equipment that uses our products, it is your responsibility to verify the safety of the entire system-operated by the equipment's mechanical mechanisms, pneumatic or water control circuits, and the electrical controls that manage them-and to build safe equipment. To use our products safely, it is essential to select, use, and handle them correctly, and to perform appropriate maintenance. To ensure the safety of the equipment, always observe the warnings and precautions. Furthermore, please verify the overall safety of your equipment to ensure it is manufactured safely.

WARNING

- 1 This product is designed and manufactured as a device/component for general industrial machinery. Therefore, handling should be done by a person with sufficient knowledge and experience.
- 2 Always use the product within its specified range.

Do not use the product outside of its specifications. Never modify or perform additional machining on the product. This product is designed for use in general industrial machinery and components. Therefore, its application does not extend to outdoor use (excluding outdoor specification products) or use under the conditions and environments listed below. (However, if you consult with us prior to use and agree to the product specifications, its use may be permitted. In such cases, be sure to implement safety measures to prevent hazards in the event of a failure.)

 - ① Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, components or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
 - ② Use in applications where a significant impact on people or property is anticipated and where safety is particularly required.
- 3 Observe organization standards and regulations, etc., related to the safety of the device design and control, etc.

ISO 4414, JIS B 8370 (Pneumatic fluid power - General rules and safety requirements for systems and their components)
JFPS 2008 (Guidelines for Selection and Use of Pneumatic Cylinders)
High Pressure Gas Safety Act, Industrial Safety and Health Act, and other safety rules, organizational standards, and regulations.
- 4 Never handle this product or remove piping and equipment until safety has been confirmed.
 - ① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
 - ② Even when operation is stopped, high-temperature or live parts may exist, so proceed with caution.
 - ③ For equipment inspections and maintenance, shut off the energy sources such as the supply air or water and the power supply of the relevant equipment, exhaust the compressed air in the system, and be careful to avoid water and electrical leakage.
 - ④ When starting or restarting a machine or device that incorporates pneumatic components, make sure to secure system safety, such as pop-out prevention measures.
- 5 To prevent accidents, be sure to follow the warnings and precautions on the following pages.

■ The precautions shown here distinguish between the safety levels of "DANGER," "WARNING," and "CAUTION."

-  **DANGER** : A limited case where it is assumed that incorrect handling will result in a dangerous situation leading to death or serious injury, and the urgency (degree of imminence) at the time of danger occurrence is high.
-  **WARNING** : A case where it is assumed that incorrect handling will result in a dangerous situation leading to death or serious injury.
-  **CAUTION** : A case where it is assumed that incorrect handling will result in a dangerous situation leading to minor injury or only property damage.

Note that some items indicated with "CAUTION" may lead to serious results depending on the conditions. All of them describe important content, so be sure to observe them.

About Warranty

1 Warranty Period

The warranty period for this product is one year after delivery to your designated location.

2 Scope of Warranty

If a failure clearly attributable to our responsibility occurs during the above warranty period, we will provide a replacement product or necessary replacement parts free of charge, or perform repairs at our factory free of charge. However, the following items are excluded from this warranty coverage :

- ① Handling or use under conditions or in environments other than those described in the catalog, specifications, or instruction manual.
- ② Exceeding the product's durability (in terms of cycles, distance, time, etc.) or issues related to consumable parts.
- ③ Failures caused by reasons other than the product itself.
- ④ Use for purposes other than the product's original intended use.
- ⑤ Failures caused by modification or repair not performed by our company.
- ⑥ Issues arising from causes that could not be foreseen with the technology available at the time of delivery.
- ⑦ Failures caused by natural disasters or other events for which our company is not responsible. Furthermore, the warranty mentioned here applies to the delivered product alone, and excludes any consequential damages induced by a failure of the delivered product.

(Note) For information on durability and consumable parts, please contact your nearest CKD sales office.

3 Confirmation of Conformity

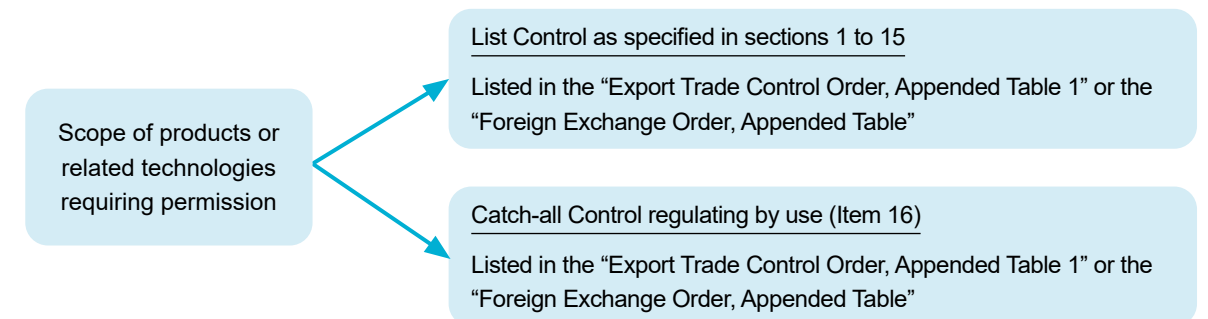
Please confirm the compatibility of our products with the system, machine, and equipment you use at your own responsibility.

Precautions for Export

1 Regarding Security Trade Control

Prior authorization may be required for the export or provision of the products or related technologies described in this catalog. For the purpose of maintaining international peace and safety, depending on the destination of the export or provision, it may be necessary to obtain prior authorization under the Foreign Exchange and Foreign Trade Act. The scope of products or related technologies requiring authorization is listed in the "Export Trade Control Order, Appended Table 1" or the "Foreign Exchange Order, Appended Table." This "Export Trade Control Order, Appended Table 1" or "Foreign Exchange Order, Appended Table" consists of the following two types of regulations :

- "List Control," which is specified for each item from sections 1 to 15.
- "Catch-all Control," which regulates based on the end-use without specifying item-by-item specifications (Section 16).



The application procedure for authorization is handled by the Ministry of Economy, Trade and Industry (METI), Security Trade Control Division, or by the regional Bureaus of Economy, Trade and Industry, depending on the combination of the product/technology and its export/provision destination.

2 About products or related technologies listed in this catalog

Products or related technologies described in this catalog are subject to the Catch-all Control of the Foreign Exchange and Foreign Trade Act. Therefore, when exporting or providing products or related technologies described in this catalog, please be fully careful not to use them for weapons/arms-related purposes.

3 Contact Information

For inquiries regarding security export control of products or related technologies described in this catalog, please contact your nearest sales office.

When Setting / Selecting

1. Confirmation of Specifications

⚠ WARNING

- Use the product within its specific specification range.
The products described in this catalog are designed to be used only in compressed air systems. Do not use outside the specification range, as pressures or temperatures outside this range can cause damage or malfunction. (See specifications)
If using fluids other than those specified for each device, please consult CKD.

2. Design for Safety

⚠ WARNING

- Take measures to prevent physical harm or property damage in the event of breakdown.

⚠ CAUTION

- Design the pneumatic circuit after understanding the characteristics of compressed air.
 - If instantaneous stop and holding are required during emergency stops, functions equivalent to mechanical, hydraulic, or electrical systems cannot be expected.
 - Due to the compressibility and expansibility of air, phenomena such as ejection, jetting, and leakage may occur.
 - Design the circuit so that compressed air in the system can be exhausted.
- Determine the lubrication method for pneumatic equipment and ensure proper maintenance can be performed.
 - Lubricated type? Non-lubricated type? Specify and implement lubricant management.
- Check for leakage current to avoid malfunctions due to leakage current.
 - Leakage current may cause malfunctions when used in programmable control or similar applications.

3. Design by Application

⚠ CAUTION

- Minor leakage that does not affect performance is permissible as it is for compressed air. If the application does not allow leakage, please contact us.

4. Operating Environment

⚠ WARNING

- Install the product away from rain, water, and direct sunlight.
- Do not use this product in a corrosive environment.
Use in such environments causes damage and malfunction.
- Avoid use in ozone-generating environments. Ozone-resistant series are available ; please consult us if ozone is present in the supply air.
- If the ambient temperature is 5 °C or lower, moisture in the circuit may freeze, potentially causing malfunctions. Remove moisture and implement anti-freezing measures.

⚠ CAUTION

- Confirm that the product can withstand the operating environment before use.
 - Cannot be used in environments that cause functional impairment.
For example, special environments where high temperature, chemical atmosphere, chemicals, vibration, moisture, water drops, cutting fluid, gas atmosphere, etc. exist. Ozone-generating environments.

5. Securing Space

⚠ CAUTION

- Ensure sufficient space around pneumatic equipment for mounting, removal, wiring, and piping work.

6. Specification in Instruction Manual

⚠ CAUTION

- Clearly specify maintenance conditions in the equipment's instruction manual.
 - Depending on the usage conditions, operating environment, and maintenance, the product's functionality may significantly deteriorate, and safety may not be ensured. Proper maintenance allows the product to fully demonstrate its functions.

At Mounting / Installation / Adjustment

⚠ CAUTION

1. Installation

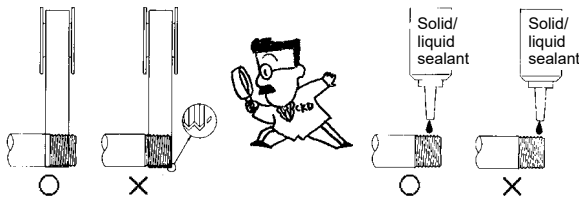
- Do not remove the pneumatic equipment packaging bag or the piping port's sealing cap until immediately before piping work.
 - Removing the port cap before the piping connection work allows foreign matter to enter the pneumatic equipment through the port, causing failures, malfunctions, etc.
- For mounting pneumatic equipment, do not use a mounting method that supports it by piping.
- Do not remove the piping port's dust-proof seal until immediately before piping work.
 - Removing it before piping may allow foreign matter to enter from the piping port, causing malfunction or erroneous operation.

2. Pre-operation Check

- After connecting the pipes, check pipe connections for air leaks before supplying compressed air.
 - Check for air leaks by applying leak detection fluid with a brush to the pipe connection parts. Make sure that the leak detection agent does not adhere to the plastic bowl. The plastic bowl may be damaged, which can be dangerous.

3. Piping

- When connecting piping, wrap the sealant tape from a position 2 mm or more inward from the tip of the pipe's threaded portion, in the opposite direction of the thread.
 - If the sealing tape extends beyond the tip of the threaded part of the pipe, tightening the screw may cut the tape, allowing fragments to enter the solenoid valve and cause malfunctions.



When using a liquid sealant, make sure it does not adhere to the plastic bowl. When using liquid sealant, be careful not to let it adhere to the plastic bowl.

- Ensure that piping connected to pneumatic equipment does not detach due to vibration, loosening, or tensile phenomena.
 - Piping detachment can create a dangerous situation.
- If using nylon tubing or urethane tubing as piping material, please note the following.
 - In environments where spatter may scatter, use flame-resistant tubing or metal steel pipe.
 - For oil-pneumatic combined piping, use hydraulic hoses.

- When using standard Push-in fittings with spiral tubing, secure the base of the tube with a hose band. Rotation may occur, reducing holding capacity.
- For high-temperature liquids, use spigot-type screw fastening fittings. Push-in fittings cannot be used.

- Connect the piping so that connections are not dislocated by equipment movement, vibration, tension, etc.

- When piping, always perform flushing immediately before connecting to pneumatic equipment.
 - It is important that foreign matter that enters during piping does not enter the pneumatic equipment.

- Tighten with appropriate torque when connecting pipes.
 - The purpose is to prevent air leakage and screw damage.
 - To avoid damaging the screw threads, first tighten by hand before using a tool.

[Recommended Value]

Connection Screw	Tightening torque N·m
M3	0.3 to 0.6
M5	1 to 1.5
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	19 to 40
Rc1	41 to 70

Note) If a tightening torque is specified for each model, follow that value.



4. Pneumatic Air Source

- Install a pneumatic filter immediately before the circuit using pneumatic equipment.
- When supplying compressed air after completing pipe connections, supply it so that high pressure is not applied suddenly.
 - The pipe connection could dislocate causing the pipe to fly off and result in accidents.
 - Caution : If compressed air is supplied too slowly, sealing pressure may not be generated by the sealing mechanism in the solenoid valve. This can lead to air leaks.
- Air Quality
 - Use our clean air system equipment according to the 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.



1. Disassembly and Assembly

- When disassembling and assembling pneumatic equipment, ensure that the work is performed by personnel who have acquired specialized knowledge.
 - This refers to a level equivalent to Pneumatic Technician Grade 2 or higher.
- When performing disassembly and assembly of pneumatic equipment, thoroughly read and fully understand the instruction manual for the relevant product before performing the disassembly and assembly work.
 - Knowledge of the structure and operating principles of pneumatic equipment is required to ensure safety.

2. Maintenance and Inspection

- Be sure to turn power OFF, stop supplied compressed air, and check that there is no residual pressure before starting maintenance.
 - These are necessary conditions for ensuring safety.