Safety precautions

Pneumatic components Warnings/cautions

Be sure to read this section before use.

Refer to Intro Page 63 for precautions for general pneumatic components.

Design/selection

1. Common

⚠ WARNING

■ Use the product in the range of conditions specified for the product.

■ This product is designed for industrial use. Do not use for medical purposes, or in any equipment or circuit that concerns human life.

■ Take measures to prevent physical harm or property damage in the event of failure of this product.

■ Understand the characteristics of compressed air before designing a pneumatic circuit.

■ For detailed cautions, refer to the catalog for each piece of equipment.

2. Regulator

⚠ WARNING

■ Output pressure exceeding the regulator's set pressure could result in damage or faulty operation of the secondary side devices. Be sure to install a safety device.

■ As the regulator may not always be usable with the secondary side sealed circuit or balance circuit, consult with CKD.
Depending on use, such as when back pressure rises, the set pressure may increase 0.2 MPa.

⚠ CAUTION

■ When the primary pressure is released, the secondary pressure flows to the primary side.
If a problem occurs in another device due to the inflow of secondary-side fluid to the primary side, provide a circuit to retain the pressure.

■ The setting range for the regulator's secondary side pressure should be within 85% of that of the primary side. Otherwise, the pressure drop may increase.

■ When used in applications where primary pressure is 0.7 MPa or more, keep the difference in primary and set pressure within 0.4 MPa.
Pulsation could occur if the difference in pressures is large or if secondary piping is large. If so, lower primary side pressure or restrict the secondary line. Contact CKD if the pulsation still continues.

■ Turning the knob in the L direction from the set pressure 0, activates the stopper and the knob does not turn.
Note that if torque is forcibly applied in the L direction, the knob may lock and become inoperable.

3. Needle

⚠ CAUTION

■ This valve cannot be used as a stop valve that requires no leakage.
Slight leakage is allowed for in this product's specifications.

4. Air operated valve

⚠ WARNING

■ This product cannot be used as an emergency shut-off valve.
The valves listed in this catalog are not designed as valves to ensure safety such as emergency shutoff valves. When using in such a system, always take separate measures that will ensure safety.

⚠ CAUTION

■ External pilot air
(1) Draining: Compressed air contains a large amount of drainage (water, oil oxides, tar, foreign matter). This is a factor that significantly reduces the reliability of the pneumatic components. For drainage measures, improve air quality by dehumidifying with an after cooler or dryer, removing foreign matter with a filter, and removing tar with a tar removal filter, etc.
(2) Filter: Install a filter with a 5 µm or less filter element.

5. Inline clean filter

⚠ WARNING

■ Do not use this product in an atmosphere containing organic solvents or chemicals, etc., or where the product could come in contact with them.
Not observing this could damage the polyamide housing.

⚠ CAUTION

■ Do not create flow exceeding the max. processing flow rate.
Doing so may degrade the filtration accuracy and damage the element membrane.

■ This device cannot be used as an absolute filter.
Filtration accuracy is 99.99% within specified conditions. Do not use for applications where foreign matter is absolutely prohibited (e.g., direct blowing on wafers).

■ Alcohol is used in the manufacturing line of some parts of this product.

* For precautions on the digital pressure sensor (PPX-R10N-6M-P12), refer to CKD "Pneumatic, Vacuum, and Auxiliary Components" (CB-024SA).

Mounting, installation and adjustment

1. Common

⚠ CAUTION

■ Install the product where it is not exposed to direct sunlight.

■ Do not install this product in a location where it may be subject to vibrations or shocks.

■ Securing maintenance space
- Secure sufficient space for maintenance and inspection.

■ Always thoroughly read the instruction manual before installing this product.

■ Match the flow direction and the direction of the arrow on the product for correct connection.

■ Perform piping so no excessive force is applied to the product.
- Protect the product from external force that may be applied during installation, pulling, compression, bending and tubing.

■ Select the appropriate piping tube.
- Use the CKD soft nylon tube and the urethane tube.
- Contact CKD regarding other fluorine resin tubes, etc.

■ Securely insert a tube into the push-in fitting before use.

■ When supplying compressed air after connecting pipes, do not suddenly apply high pressure.
- Connected piping could be dislocated and tubing could fly off.

■ Flush and clean the pipes before use.
- Dirt or foreign matter remaining in the piping will deteriorate product performance.

■ Air quality: Compressed air of JIS B 8392-1:2012 Class 1.3.1 is recommended.
- Use compressed air that does not contain oil oxides, tar, or carbon from the air compressor.
- Use CKD clean air system components appropriate for your application.

JIS B 8392-1:2012 Compressed air purity grade

Grade	Solid particle				Humidity and moisture		Oil
	Max No. of particles/m³ for particle ød (µm)			Mass conc Cp	Press dew point	Water conc Cw	Total oil conc
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	mg/m³	°C	g/m³	mg/m³
0	Conditions stricter than Grade 1 to be specified by user or supplier.						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

JIS B 8392-1:2003 has been revised to JIS B 8392-1:2012.

For example,
What is Grade 1:2:1?
- Solid particles 0.1 to 0.5 µm are 20,000 particles or less, 0.5 to 1.0 µm are 400 particles or less, and 1.0 to 5.0 µm are 10 particles or less
- Pressure dew point -40°C or less
- Oil concentration 0.01 mg/m³ or less.

■ Do not move or swing the product by the adjustment knob, clean filter or pressure gauge on the regulator.
- Hold the body when carrying the product.

■ For detailed cautions, refer to the catalog for each piece of equipment.

2. Needle

⚠ CAUTION

■ Do not turn the knob forcibly when fully closing or opening it. Do not use the lock nut to adjust the needle. Otherwise this could cause needle galling or damage.

■ Check that lock nuts are not loose.

■ Check the rotation speed of the needle valve.
- The needle valve has dislocation prevention that could break or seize if the needle is turned too far. Check the number of turns for the product used.

■ Fully close the needle, and open to adjust speed.
- The needle closes when turned to the right and opens when turned to the left.

3. Air operated valve

⚠ CAUTION

■ Check the supply port on the pilot operation side when piping.

Model No.	Pilot operation side supply port
CAU30-*V1*	X
CAU30-*V3*	X and Y

■ Refer to the table below for tightening torque of the pilot air piping.

Piping nominal diameter	Recommended piping tightening torque (Nm)
Rc1/8	7 to 9

■ Grease is applied to the pilot valve.
Make sure there is an exhaust port for pilot air when using the single acting in a clean room.

4. Pressure gauge

⚠ CAUTION

■ Repeated and sudden increases or decreases in pressure and pressure pulsations must be avoided as they could adversely affect the life of the pressure gauge.

* For precautions on the digital pressure sensor (PPX-R10N-6M-P12), refer to CKD “Pneumatic, Vacuum, and Auxiliary Components” (CB-024SA).

Use/maintenance

1. Common

⚠ WARNING

■ Use this product under the max. working pressure and max. operating pressure differential.

⚠ CAUTION

■ Carefully read the instruction manual before starting use and maintenance.

■ Before conducting maintenance, stop the supply of the fluid and make sure that there is no residual pressure.

■ Do not disassemble or modify the product.

■ Do not use the product as footing or place any heavy objects on top of the product.

■ Storage

- Do not store this product in a hot, humid atmosphere or atmospheric conditions outside of the specified range for a prolonged period of time. Storing the product in such an environment can result in deterioration of the resin and rubber.
- Consult with CKD for storage outside the specified range.

■ For detailed cautions, refer to the catalog for each piece of equipment.

2. Air operated valve

⚠ WARNING

■ To ensure ideal use, inspect the product every six months. This frequency varies with the frequency of use.

⚠ CAUTION

■ If the product has been out of use for one month or more, perform a test run before starting the actual operation.

■ Pilot air pressure

Use the product with a pilot air pressure in the specified range.

3. Inline clean filter

⚠ WARNING

■ Prevent the generated ozone from passing through the filter. Otherwise the filter element may be degraded. Take care especially when using an ozone generator (e.g., ionizer) together.

(1) Do not install it upstream of the filter.
(2) When installing downstream of the filter, stop air while static electricity is neutralized since generated ozone may flow back.

■ Check the filter periodically and replace if necessary.

⚠ CAUTION

■ As a clogged filter element may cause degradation of performance, perform periodical inspection and replacement of the element.

■ Perform periodical inspection to check for cracks, scratches and other degradation of the transparent resin parts.

- Replace with a new product if you find any damage.

* For precautions on the digital pressure sensor (PPX-R10N-6M-P12), refer to CKD “Pneumatic, Vacuum, and Auxiliary Components” (CB-024SA).