Pneumatic components (speed controller)

Safety Precautions

Be sure to read this section before use.
Refer to Intro Page 63 for general precautions regarding pneumatic components and refer to "⚠Safety precautions" for detailed precautions for individual series.

Design/selection

⚠WARNING

■ Do not constantly push down or apply a load onto the push ring for the push-in fitting.
- The tube may lose its holding capacity.
- When transporting an assembled product, avoid positions which constantly press down on the push ring.

⚠CAUTION

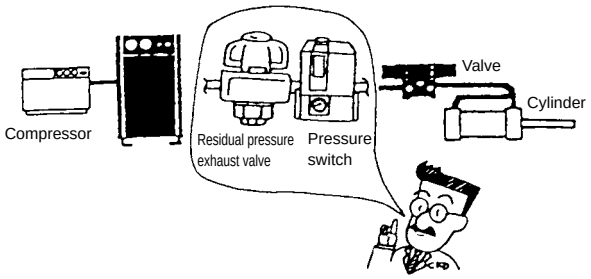
■ Use the product in the range of conditions specified for the product.
Consult with CKD when using the product for special applications.
- Use of the product exceeding the specifications range may result in insufficient performance and safety cannot be guaranteed.
- This product may not be usable in special applications and environments.
For example, use for applications requiring safety, including nuclear energy, railways, aircraft, vehicles, medical devices, devices in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.

■ Confirm before use that the product will withstand the working environment.
- Cannot be used in environments where its functions will be impeded.
Such environments include high temperatures, chemical atmospheres, or where chemical liquids, vibration, moisture, water dripping or gas is present. Environments where ozone is generated.
- Do not use the product in a place where it could come in direct contact with coolant or spatter, etc.

■ Understand the characteristics of compressed air before designing a pneumatic circuit.
- The same functions as the mechanical, hydraulic and electrical methods cannot be anticipated if instantaneous stopping and holding are required during an emergency stop.
- Pop-out, air discharge, or leakage due to air compression and expansion may occur.

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

■ Install a "pressure switch" and "residual pressure exhaust valve" on the device's compressed air supply side.
- The pressure switch will disable operation until the set pressure is reached. The residual pressure exhaust valve releases compressed air into the pneumatic pressure circuit to prevent accidents caused by operation of pneumatic components under residual pressure.



■ Confirm whether PTFE can be used.
The sealant contains PTFE (polytetrafluoroethylene resin) powder. Check that this poses no problem during use.

■ Indicate the maintenance conditions in the device's instruction manual.
- The product's performance may drop too low to maintain an appropriate safety level depending on usage conditions, working environment and maintenance status. With correct maintenance, the product functions can be used to the fullest.

■ Consult with CKD if ozone is generated in the supplied air.
(Ozone-proof products are available.)

■ Rubber parts deteriorate and service life is shortened if ultra dry air is used.

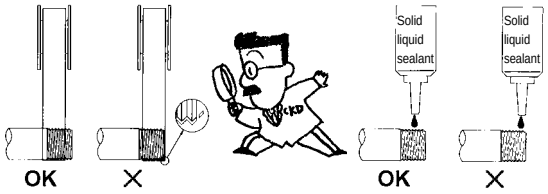
Mounting, installation and adjustment

Piping

⚠CAUTION

■ Do not remove the package or seal cap on the piping port until just before piping the product.
- Removing the piping port cap before piping work may cause foreign matter to enter the pneumatic components from the piping port, resulting in failure or malfunction.

■ When connecting pipes, wrap sealing tape in the opposite direction to the threading, from the inside position to within 2 mm from the pipe end.
- If sealing tape protrudes from the pipe threads, it could be cut when screwing the bolts in. This could cause the tape to enter the pneumatic components, causing failures.



■ M3 and M5 screws are sealed with gaskets.

■ Handling push-in fittings and tubes
- Refer to fitting and tube warnings and cautions (pages 910 to 913) for handling push-in fittings and tubes.

■ Always flush just before piping pneumatic components.
- Any foreign matter that has entered during piping must not enter the pneumatic components.

■ When supplying compressed air after connecting pipes, do not suddenly apply high pressure.
- The pipe connection could dislocate, causing the pipe tube to fly out, leading to accidents.

■ After connecting piping, always check all pipe connections for air leaks before supplying compressed air.
- Apply a leakage detection agent to pipe connections with a brush and check for air leaks.

■ Apply recommended tightening torque when connecting pipes.
- The purpose is to prevent air leakage and damage to bolts.
- First tighten the bolts by hand to ensure that the threads are not damaged, then use a tool.
- Do not tighten while pressure is applied.

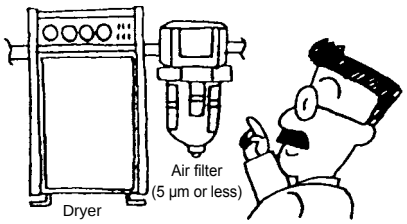
[Recommended tightening torque]

Port thread	Tightening torque N·m
M3	0.3 to 0.6
M5	1.0 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

■ Connect piping so that connections are not dislocated by equipment movement, vibration, tension, etc.
- Control of actuator speed will be disabled if piping on the exhaust side of the pneumatic circuit is disengaged.
- When using the chuck holding mechanism, the chuck may be released, creating a hazardous state.

■ Around the pneumatic components, keep space for installation, removal and piping work.

■ Install a pneumatic filter just before the pneumatic component in the circuit.



■ Check that lock nuts are not loose.
- Actuator speed cannot be controlled if the lock nut is loose.

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

■ Confirm the flow direction.
- If installed in reverse, speed adjustment will not function and the actuator could pop out, creating a hazard.

■ Fully close the needle and open to adjust speed.
- If the needle is opened, the actuator could suddenly and dangerously pop out. Ensure that it is closed and then open it.
- The needle closes when turned to the right and opens when turned to the left.

■ Avoid using the product for applications that involve continuous rotation or oscillations.
● Fittings could be damaged.

■ Avoid use in areas with large vibration or impact.

Use/maintenance

⚠WARNING

■ Stop air flow and confirm that there is no residual pressure before replacing the tube.