To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Intro P. 41, and for cylinder switches, see P. 1026.

Individual Precautions: Small bore size cylinder CMK2 Series

During Design / Selection

1. Ultra Low Speed Type CMK2-F

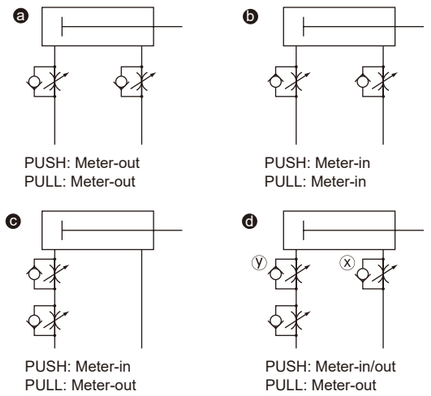
Caution

■Use without lubrication.
- Lubrication may change characteristics.

■Install the speed controller near the cylinder.
- If installed far from the cylinder, adjustment will be unstable.
- Use SC-M3/M5, SC3W, SCD-M3/M5, SC3U series speed controllers.

■Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
- Use with a load factor of 50% or less.

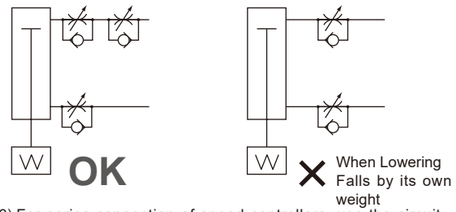
■Speed control with a meter-out circuit provides stability.
- When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits ⓑ, ⓒ or ⓓ. In addition, the ⓓ circuit is the most stable.



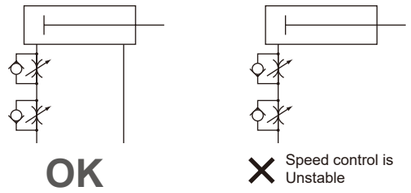
ⓓ Speed adjustment method for PUSH operation of the circuit:
1. Speed setting with x speed controller
2. Throttle with y speed controller until projection stops.
3. Reconfirmation of speed

(*1) Comparing ⓑⓒⓓ, the ⓓ circuit offers the most stable operation.

(*2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



(*3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)

Lurching occurs in the following cases:

• Thrust > Resistance

*Resistance: *Resistance: Thrust due to residual pressure on exhaust side (For creep speed type, intake pressure = residual pressure) + [For horizontal use: Frictional force due to load / For vertical use: Dead weight of the load

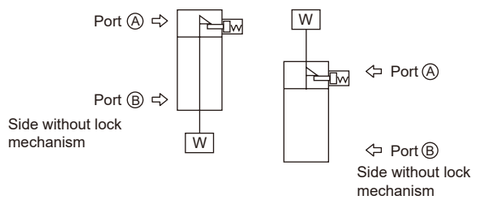
■Do not apply lateral load to the cylinder. Also, install the sliding guide without twisting.
- Operation becomes unstable when lateral load is applied.

■Avoid use in places with vibration.
- Operation becomes unstable due to the influence of vibration.

2. Fall Prevention Type CMK2-Q

Warning

■In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, be sure to supply pressure to port Ⓑ and release it after ensuring that no load is applied to the lock mechanism.



■When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

■Do not use 3-position solenoid valves.
Do not use in combination with 3-position solenoid valves (especially closed center metal seal type). If pressure is sealed in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked, air leaked from the solenoid valve may enter the cylinder, and the lock may be released over time.

Caution

■Keep the cylinder load factor at 50% or less.
- If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

■Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

3. Low Hydraulic Pressure Type CMK2-H

Caution

■This product is a pneumatic cylinder that can use hydraulic operating fluid as the operating fluid. It does not comply with JIS standards for hydraulic cylinders regarding operation and leakage tests.

4. Cutting Oil Resistant Type CMK2-G2/G3

Caution

■Do not apply an eccentric load to the piston rod. This may reduce the life of scrapers and bearings.

■If there is no splashing of cutting oil or water on the piston rod, use the G or G1 series. Please note that if there is no scattering of cutting oil or water with G2 and G3 series, the lubrication of the piston rod will be cut off and the service life will be reduced.

■Install a speed controller on the cylinder.
- Install a speed controller on the cylinder.
  Use within the operating piston speed range of each cylinder.

5. All Stainless Steel Exterior/Water Resistant CMK2-JG2/JG3

Caution

■After sufficiently confirming the compatibility of the constituent materials of each component (only exterior parts are stainless steel) with the valve structure, operating fluid, and operating atmosphere, use at your own discretion.

■Bearings used in cylinders contain a small amount of mineral oil. Within the product specification range, it is processed to prevent discharge, but please consider the installation location.

■Do not apply an eccentric load to the piston rod. This may reduce the life of scrapers and bearings.

■Install a speed controller on the cylinder.
- Install a speed controller on the cylinder. Use within the operating piston speed range of each cylinder.

■If there is no scattering of water, piston rod lubrication will be lost, reducing life. Please be careful.

During Use

1. Common

Caution

■Do not turn the cover.
- When mounting the cylinder and screwing pipe fittings into the ports, if the cover rotates, there is a risk of damage from the cover joint.

■When moving the switch position in the stroke direction.
- Loosen the switch mounting screw, move the switch along the rail, and tighten at the specified position. For T2, T3, T0, T5, use a flat-head screwdriver (watchmaker's screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, tip shape width of 2.4 mm or less, and thickness of 0.3 mm or less to tighten the switch fixing screw with a tightening torque of 0.1 to 0.2 N·m. For T1, T□C, T2J, T2Y, T3Y, T8, tighten with a tightening torque of 0.5 to 0.7 N·m.

2. Single Acting Type CMK2-S/SR

Caution

■Do not leave pressurized.
If left pressurized, the piston rod may not return due to spring load when pressure is released.

3. Heat Resistant Type CMK2-T

Caution

■Magnet is not built-in.

4. With Rubber Air Cushion CMK2-□C

⚠Caution

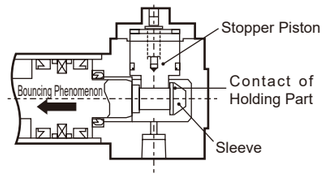
■Due to the structure, if the air supply is cut off, the stroke end position cannot be maintained. Please be careful. When detecting the stroke end with a switch, it may be outside the detection range, so set the switch position in an air-pressurized state.

■Do not rapidly exhaust the air in the cylinder after operating at low speed outside the catalog specification range. Example Removing piping or coupler, etc.) The rubber-air cushion may become detached. Please be especially careful as this is more likely to occur when the air pressure is high.

5. Fall Prevention Type CMK2-Q

⚠Warning

■When stopping with external shock absorbing equipment (shock absorber, etc.), adjust so that there is no bouncing. If the piston bounces at the stroke end, the sleeve and stopper piston will impact, leading to damage of the lock mechanism. Also, please perform periodic inspections once or twice a year to check for damage to the holding part due to this phenomenon.



⚠Caution

■Since the lock mechanism works at the stroke end, if an external stopper is applied mid-stroke, the lock mechanism will not work, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■Supply pressure equal to or higher than the minimum operating pressure for each model to the port on the side with the lock mechanism.

■If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included with the EXH. port of the solenoid valve will lead to similar results.

■Release the lock when installing or adjusting the cylinder.
If installation work, etc. is performed while the lock is engaged, the lock part may be damaged.

■Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

■On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

6. Non-Rotating Type CMK2-M

⚠Caution

■When fixing a workpiece to the end of the piston rod, retract the piston rod to the stroke end, put a wrench on the part of the rod parallel section that is outside, and tighten carefully so that the tightening torque is not applied to the cylinder body.

7. All Stainless Steel Exterior/Water Resistant Type CMK2-JG2/JG3

⚠Caution

■To prevent seizure, apply grease when using pins.

■Minimize cleaning of sliding parts, and grease up after cleaning is recommended. If water scattering is temporary, please perform regular greasing. For maintenance grease, please contact our sales department.

■After installation, check for piping leaks and electrical connections to ensure correct installation.

■Do not use the product as a scaffold or place heavy objects on it.

■If unused for 1 month or more, perform a trial run before starting operation.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) -> "Model No." -> Instruction Manual

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