Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.

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

Individual Precautions: Medium Bore Size Cylinder SCA2 Series

During Design / Selection

1. Common

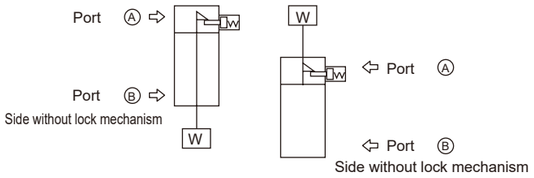
Caution

■Install a speed controller on the cylinder.
Install a speed controller on the cylinder. Please use within the operating piston speed range of each series.

2. Drop prevention type SCA2-Q2

Warning

■In a locked state, if pressure is supplied to port A from a state where both ports are unpressurized, the lock may not release, or the lock may suddenly release and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port B and release it from a state where 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 valves.
Do not use in combination with 3-position 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 once, air leaking from the 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.

■If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

■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-friction type SCA2-U

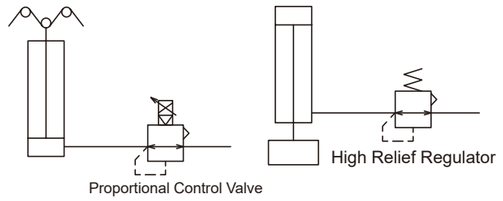
Warning

■Durability varies depending on usage conditions and model characteristics.
This cylinder is a cylinder with internal leakage.
For leakage volume, check the specifications (P. 714).

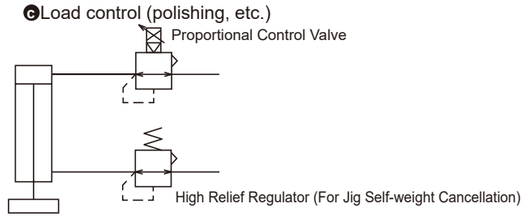
Caution

■When used with a balancer, etc., it may be better not to install a speed controller to improve supply/exhaust efficiency. The following circuits ⓐ to ⓒ are recommended depending on the application.

ⓐTension control (winding machine, etc.) ⓑ Balancer (processing machine Z-axis, etc.)



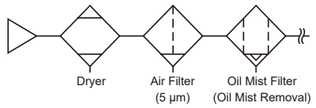
ⓒLoad control (polishing, etc.)



*To improve supply/exhaust characteristics, maximize piping volume as much as possible.

■Do not lubricate. It will cause characteristics to fluctuate.

■Poor quality air will adversely affect characteristics and durability, so please use clean air with the piping below.



■Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable.

■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.

4. Low hydraulic pressure type SCA2-H

Caution

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

■Select the low hydraulic pressure cylinder in combination with a converter unit.
Good operation can be obtained with the low hydraulic pressure cylinder in combination with a converter unit, so please select and use an appropriate converter unit.

■Keep the load on the low hydraulic pressure cylinder at 50% or less of the theoretical output.
In order for a low hydraulic pressure cylinder to obtain performance close to that of a hydraulic cylinder, such as constant speed operation and stopping accuracy, it is necessary to keep the load at 50% or less.

■For hydraulic oil, use petroleum-based hydraulic turbine oil. Using non-flammable hydraulic fluid may cause trouble.
The appropriate viscosity is up to about 40 to 100 mm²/S at the operating temperature. With ISO VG32, the temperature range is 15 to 35°C. If used in a range exceeding ISO VG32, please use ISO VG46 (25 to 45°C).

ISO VG32 turbine oil
(Example) [Additive-free]
Output: Turbine Oil P32
Nippon Oil Corporation: Turbine Oil 32
Maruzen: Turbine Oil 32
Mitsubishi: Mitsubishi Turbine Oil 32
[With additives]
Output: Daphne Turbine Oil 32
Nippon Oil Corporation: FBK Turbine 32
Maruzen: Turbine Super 32
Mitsubishi: Diamond Turbine Oil 32

5. Cutting oil resistant type SCA2-G2/G3

Caution

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

■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. In such cases, please use the G or G1 series.

6. Spatter adhesion prevention type SCA2-G4

Warning

■This cylinder series has improved durability in a spatter scattering atmosphere compared to general-purpose cylinders. However, please note that durability may be inferior to general type cylinders when used in other atmospheres.

During Use

1. Common

⚠ Caution

■ Assemble the included mounting brackets with the following torque.

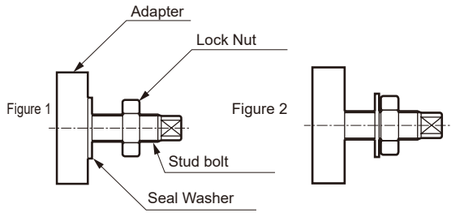
Bore Size	Tightening torque
ø40, ø50, ø63	9.8 N·m
ø80, ø100	34.8 N·m

2. Stroke adjustment type SCA2-R

⚠ Caution

■ Securely lock the stud bolt with a lock nut.

■ When adjusting the stroke, please do so after releasing the air. Do not tighten the stud bolt in the state shown in Figure 1. When tightening the stud bolt, please do so in the state shown in Figure 2. Do not tighten the lock nut in the state shown in Figure 2. When tightening the lock nut, please do so in the state shown in Figure 1. If the above adjustment method is not followed, the seal washer will break after 1 or 2 uses.



■ The stud bolt seal uses a seal washer, so it cannot withstand frequent adjustments.

■ If stroke adjustment is performed, the cushion will no longer be effective.

3. Heat resistant type SCA2-T

⚠ Caution

■ Magnets are not incorporated.

4. Drop prevention type SCA2-Q2

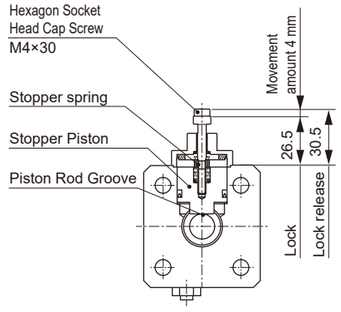
⚠ Caution

■ 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.

■ 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.

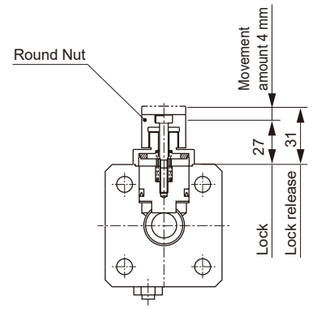
■ Manual operation non-locking type release method

Screw the hexagon socket head cap bolt into the stopper piston, and if you pull the bolt with a force of 20N or more for 4 mm, the stopper piston will move and the lock will be released. (When mounted horizontally with no load or when the opposite port is pressurized) Also, when you release your hand, the built-in spring returns the stopper piston to its original position, and if it enters the piston rod groove, the piston will be locked.



■ Manual operation locking type release method

Turning the round nut to the left (counterclockwise) moves the stopper piston and releases the lock. Also, if you turn it to the right (clockwise) to the lock position, the stopper piston will return, and if it enters the piston rod groove, the piston will be locked.



5. Low-friction type SCA2-U

⚠ Caution

■ Do not apply lateral load to the cylinder. Also, install the sliding guide so that it does not get twisted.

- Operation will become unstable if there are fluctuations in load or resistance.
- In the case of a long stroke, the speed becomes unstable due to the self-weight of the piston rod. Please install and use a guide.
- Guides with a large difference between static friction and dynamic friction will result in unstable operation.

■ Avoid use in places with vibration.

- Operation becomes unstable due to the influence of vibration.

■ Avoid use in steam, humid environments, or alkaline atmospheres.

6. Low hydraulic pressure type SCA2-H

⚠ Caution

■ Do not use one-touch fittings for piping of low hydraulic pressure cylinders.

Using one-touch fittings for piping of low hydraulic pressure cylinders will cause oil leakage, so do not use them.

■ For piping of low hydraulic pressure cylinders, please use steel pipes or copper pipes, etc.

For piping of low hydraulic pressure cylinders, as with hydraulic circuits, surge pressure higher than the operating pressure may occur, so please use safer piping materials.

■ Avoid use with air on one side and hydraulic pressure on the other.

Air may mix with oil and cause malfunction.

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 .