



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. 924.

Individual Precautions: Compact cylinder SMG Series

During Design/Selection

1. Common

Caution

The min. working pressure in the specifications column indicates the initial value. Depending on the conditions of use or duration of use, the specifications may be exceeded. When using around the min. working pressure, consult with CKD.

1. Fine speed SMG-F

Caution

Use without lubrication.

Lubrication may change characteristics.

Install the speed controller near the cylinder.

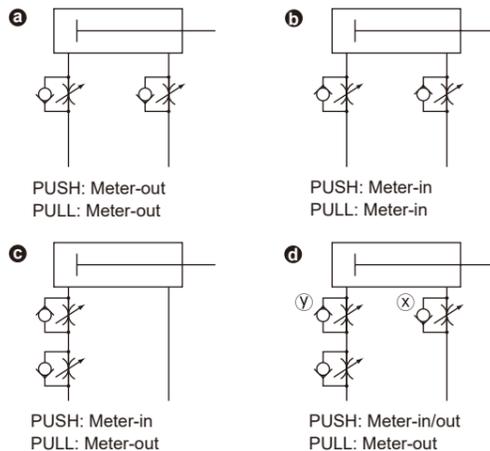
If installed far from the cylinder, the speed will become unstable. For the speed controller, SC-M3/M5-F, SCD-M3/M5-F Series are recommended.

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 is stable with a meter-out circuit.

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 **b**, **c** or **d**. In addition, the **d** circuit is the most stable.

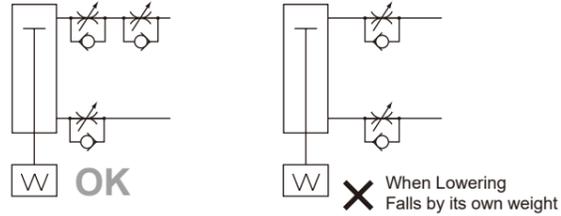


d Speed adjustment method for PUSH operation of the circuit:

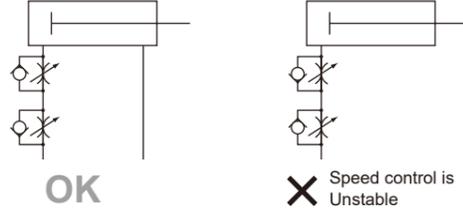
1. Speed setting with x speed controller
2. Throttle with y speed controller until projection stops.
3. Reconfirmation of speed

(*1)When comparing **b**, **c**, **d**, operation is the most stable with the **d** circuit.

(*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: 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.

Operation becomes unstable when lateral load is applied.

Avoid use in locations with vibration.

Operation becomes unstable due to the influence of vibration.

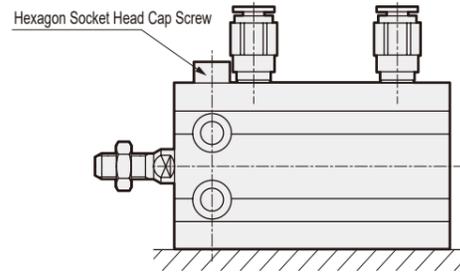
During Use

1. Common

Caution

Depending on the stroke length or mounting method, applicable piping fittings are limited. Therefore, use the recommended fittings as below.

Figure 1



Item Bore	Port Size	Recommended fitting	Item Bore	Port Size	Recommended fitting
6	M5	SC3W-M5-4,6 SC3U-M5-4,6 GWS4-M5 GWS6-M5 (*1) GWS4, 6-M5-S GWL4-M5 GWL6-M5 (*1)	20	M5	SC3W-M5-4,6 SC3U-M5-4,6 GWS4-M5 GWS6-M5 (*1) GWS4, 6-M5-S GWL4-M5 GWL6-M5 (*1)
10	M5	SC3W-M5-4,6 SC3U-M5-4,6 GWS4, 6-M5 GWS4, 6-M5-S GWL4, 6-M5	25	M5	SC3W-M5-4,6 SC3U-M5-4,6 GWS4, 6-M5 GWS4, 6-M5-S GWL4, 6-M5
16	M5	SC3W-M5-4,6 SC3U-M5-4,6 GWS4-M5 (*1) GWS6-M5 (*2) GWS4-M5-S GWS6-M5-S (*1) GWL4-M5 (*1) GWL6-M5 (*2)	32	Rc1/8	SC3W-6-4, 6, 8 SC3U-6-4, 6, 8 GWS4, 6, 8-6 GWS4, 6, 8-6-S GWL4, 6, 8-6

*1) Excluding 5 stroke length or mounting method in "Fig. 1".

*2) Excluding 5, 10 mm stroke length or mounting method in "Fig. 1".

When mounting the body with the through bolt, tighten with tightening torque as shown in the table below.

Bore	Bolt used	Tightening torque
ø6/10	M3	0.6 to 1.1 N·m
ø16	M4	1.5 to 2.7 N·m
ø20/25	M5	3.0 to 5.4 N·m
ø32	M6	5.2 to 9.2 N·m

2. Single acting SMG-X/Y

Caution

Do not leave single-acting cylinders pressurized.

If left pressurized, the piston rod may not return by spring force when the pressure is released.

3. Fine speed SMG-F

Caution

Adjust alignment etc. so that no lateral load is applied to the cylinder. In addition, install and adjust the sliding guide to avoid twisting.

- Fluctuations in load or resistance will make operation unstable.
- Guides with a large difference between static and dynamic friction will have unstable operation.

4. Rotation-stop SMG-M

Caution

When attaching load to the piston rod, do not apply more torque than the allowable torque.

Do not put your fingers into the gap between the rotation-stop plate and the rotation-stop cylinder tube.

Never put your fingers through the gap because fingers may be pinched between the rotation-stop plate and the cylinder tube while the piston rod is pulled.

Do not apply rotation torque to the piston rod. If by any chance torque is applied due to the shape of the jig, use without exceeding the allowable torque.

After maintenance, when connecting the piston rod and rotation-stop plate, fasten with hexagon socket set screws, applying the tightening torque given in the table below.

Bore	Applicable hexagon socket set screw	Tightening torque
ø6/10/16	M3	0.6 N·m
ø20/25	M4	1.4 N·m
ø32	M5	4.2 N·m

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".