



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. 808.

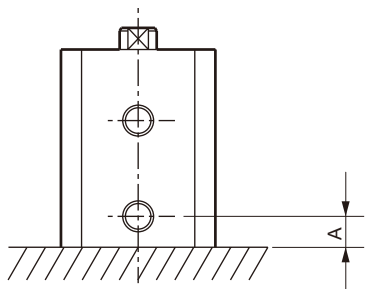
Individual Precautions: Compact cylinder with small linear guide MSDG Series

During Design / Selection

1. Common

Caution

- When selecting a cylinder, follow the "Model Selection Guide" on P. 334 to 336.
- Please consult us if using the cylinder as a stopper.
- When selecting a cylinder switch, refer to the "Switch Usability Selection Table" on P. 322.
- During piping
Precautions for piping speed controllers and fittings. There are restrictions on usable piping fittings, so please refer to the table below when using.



Fitting Usability Table

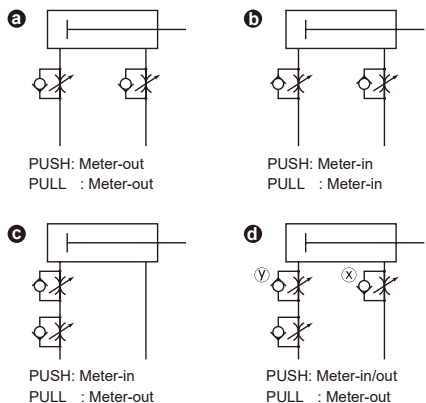
Code Bore Size (mm)	Port Size	Port position Dimension A	Usable speed controllers / fittings	Fitting outer diameter
ø6 ø8	M3	4	SC3W-M3-3 SC3W-M3-4 SC3U-M3-3 SC3U-M3-4 GWS3-M3-S GWS4-M4-S FTS4-M3	ø8 or less
ø12 ø16	M5	5	SC3W-M5-3 SC3W-M5-4 SC3W-M5-6 SC3U-M5-3 SC3U-M5-4 SC3U-M5-6 GWS4-M5-S GWS6-M5-S FTS4-M5 FTS6-M5	ø10 or less

Ultra low speed type MSDG-LF

Caution

- Use without lubrication.
Lubrication may change characteristics.

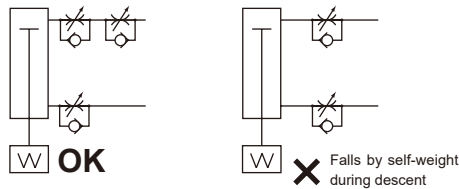
- Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
Use with a load factor of 50% or less.
- Speed control with a meter-out circuit provides stability.
When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits **b**, **c**, **d**. In addition, circuit **d** is the most stable.



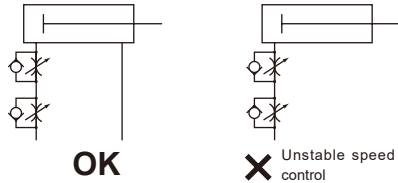
d Speed adjustment method for PUSH operation of the circuit:
1. Speed setting with x-speed controller
2. Throttle with y-speed controller until lunging stops.
3. Reconfirmation of speed

(*1) Comparing **b**, **c**, **d**, the **d** circuit is the most stable in 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: 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 places with vibration.
Operation becomes unstable due to the influence of vibration.

During Use

1. Common

Caution

- Install the switch while adhering to the tightening torque.
If tightened beyond the tightening torque range, mounting screws, mounting brackets, switches, etc. may be damaged. Also, if tightened below the tightening torque range, the switch mounting position may shift.
Tightening torque: 2.0 (N·m)
- During installation
Please do not make dents, scratches, etc. on the main body (tube) mounting surface and table surface that would impair flatness. The flatness of the mating side to be included to the table should be 0.05 mm or less.

Ultra low speed type MSDG-LF

Caution

- Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable. Use SC-M3/M5-F, SC3W, or SCD-M3/M5-F series speed controllers.
- Adjust alignment etc. so that no lateral load is applied to the cylinder. Also, adjust and install so that there is no twisting with respect to the sliding guide.
Operation will become unstable if there are fluctuations in load or resistance. Guides with a large difference between static friction and dynamic friction will result in unstable 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