Pneumatic Component

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. 1512.

Specific Precautions: Magnet rodless cylinder MRL2 Series

Design / Selection

1. Common

CAUTION

■Be careful of the gap between the end plate and the slider.
During cylinder operation, fingers or hands may be caught, causing injury, so be very careful.

■Do not apply a load to the cylinder that is greater than or equal to the allowable load listed in the selection guide.

■Do not use the product with the slider fixed.
Use the cylinder with the end plate fixed. Avoid using with the slider fixed.

■When fixing the basic type with switch with the guide, configure the rotational angle of the slider to be less than or equal to ±1°.

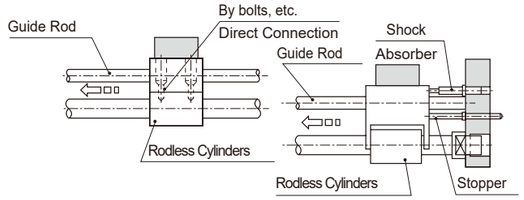
■Mount so that the slider functions with the Min Operating Pressure value of all processes.
If the flatness of the cylinder mounting surface is poor, twisting of the guide part will increase the minimum Operating Pressure and cause premature wear of the bearing part. Therefore, mount so that the slider operates at the minimum Operating Pressure for the entire stroke. A mounting mating surface with high flatness is desired, but if it cannot be sufficiently confirmed, perform shim adjustment, etc.

■Be careful to avoid scratching or denting the outer peripheral surface of the cylinder tube.
This can lead to damage to the Lube-Keeper, scraper, and slider wear ring, causing malfunction.

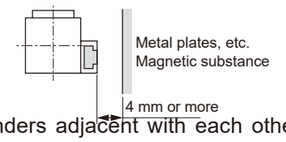
■With the basic MRL2, be careful of slider rotation.
Connect to an external bearing, or consider using MRL2-G or MRL2-W.

■Do not use the product in a state where the slider is displaced.
If the slider is displaced by an external force exceeding the magnet holding force, push it by hand to the stroke end to return it to its original position.

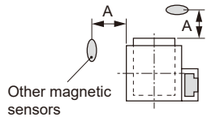
■Do not apply an eccentric load to the slider.
If the load and cylinder are directly mounted, misalignment of their respective shaft centers cannot be absorbed, resulting in a lateral load and causing malfunction (figure below left). Consider the connection method to absorb misalignment and deflection of the cylinder due to its own weight when using. The recommended mounting diagram is shown in the figure below right.



■The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Check that a distance of 4 mm is provided from the switch surface.



■When using cylinders adjacent with each other or when using other magnetic sensors nearby, in order to prevent malfunctioning due to the leaked magnetic field of the cylinder embedded magnet, make sure that the distance from the surface of the slider to the other magnetic sensors is separated by at least the values listed below.



Bore Size	A (mm)
ø6	10
ø10	20
ø16	20
ø20	37
ø25	50
ø32	80

If the A dimension is less than or equal to the value, malfunction can be prevented by inserting a magnetic material (iron plate thickness 2 mm or more) between it and the slider.

■When using in a dusty environment, selection of the type with scraper (option S) is recommended.

2. With Rubber Air Cushion MRL2-□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 out of the detection range, so set the switch position in an air-pressurized state.

3. Slow Speed Type MRL2-F

CAUTION

■Use without lubrication.
Lubrication may change characteristics.

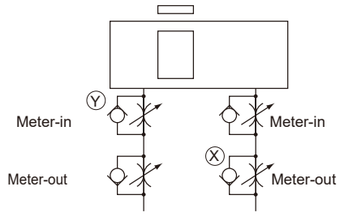
■Install the speed controller near the cylinder.
If installed far from the cylinder, speed will be unstable. Use SC-M3/M5-F, SC3W, SCD-M3/M5, or SC3U series speed controllers.

■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.

■Do not apply a lateral load to the slider.
Also, install the sliding guide without twisting. Fluctuations in load or resistance will cause unstable operation. Guides with a large difference between static and dynamic friction will result in unstable operation.

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

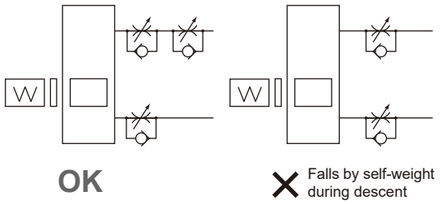
■Speed control is stable with a meter-out circuit.
● To make the operation even smoother at the start, add a meter-in circuit.



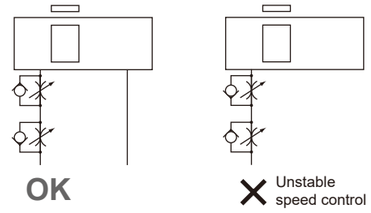
Speed adjustment method when moving to the right
1. Adjust speed with Ⓧ speed controller
2. Throttle with Ⓨ speed controller until starting is smooth
3. Reconfirmation of speed

*1: As this circuit narrows the intake side, a small amount of time is required until it starts to operate. (Changes depending on throttle adjustment) Please consider carefully before use.

*2: For vertical mounting, combine the cylinder with a meter-out circuit, as it will fall under its own weight when a meter-in circuit is used.



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



During Use

1. Common

WARNING

■The magnetic strength of the embedded magnet is powerful. Do not disassemble.

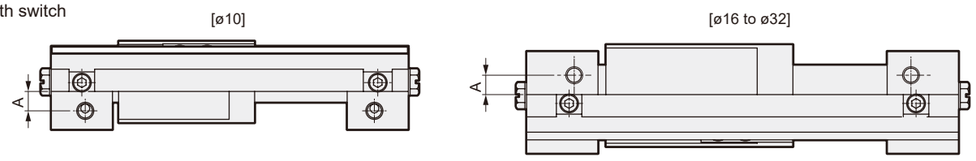
■For Bore Sizes of ø16 or less, because of changes in the cushion stiffness when left for long periods, the stroke may become slightly shorter than the standard value at the low pressure setting. Perform a run-in operation by operating it several times or reciprocating it at a high supply pressure.

CAUTION

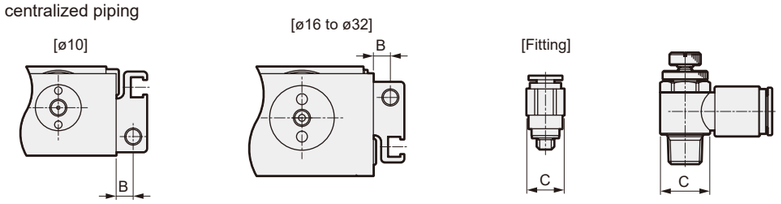
■Please treat our shock absorber as a consumable part. Replace if a decrease in energy absorption capacity is observed or if operation is no longer smooth.

■As compatible piping lengths are limited when with switch, refer to the table below to select the fitting.

· With switch



· Switch-equipped centralized piping



Item	Port Size	Port position dimension		Usable Fittings	Fitting outer diameter
Bore Size (mm)		A	B		øC
ø6	M5	-		SC3W-M5-4, SC3W-M5-6 SC3U-M5-4, SC3U-M5-6 GWS6-M5-S, GWS4-M5 etc.	ø11 or less
ø10		5.5	5		
ø16		5.5	5		
ø20		5.5	5		
ø25	Rc1/8	7.5	7.5	SC3W-6-4 / 6 / 8 GWS4-6, GWS6-6, GWS8-6, etc.	ø15 or less
ø32		7.5	7.5		

Note: A and B are the distances to the nearest interfering part of each port. "-" indicates no interference. For ø6, the side port is on the opposite side of the switch rail, so there is no A dimension. (There is no interference with the switch rail.) Also, since switch-equipped centralized piping is not possible, there is no B dimension (port).

2. Slow Speed Type MRL2-F

⚠CAUTION

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

3. With Rubber Air Cushion MRL2-□C

⚠CAUTION

■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.

For precautions during installation, adjustment, use, and maintenance, please refer to "During Use" in this catalog and the Instruction Manual on the CKD Component Product Site (https://www.ckd.co.jp/kiki/en/) -> "Model Number".

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