

# MRG2

Rodless type Magnet Type Rodless Cylinder High Precision Guide Type

ø10, ø16, ø25



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Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

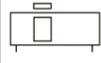
Ending

# System Chart

## Magnet Type Rodless Cylinder High-Precision Guide Type MRG2 Series

MEMO

●: Standard, ○: Option, ■: Not available

Variations	Model No. circuit diagram code	Bore Size (mm)	Standard Stroke (mm)							Min Stroke (mm)	Max Stroke (mm)	Options			Switch	Page			
			50	100	150	200	300	400	500			600	700	With full stroke adjustment bracket on both sides			With R-side full stroke adjustment bracket	With L-side full stroke adjustment bracket	
														A			A1	A2	
Double Acting 	MRG2	ø10	●	●	●	●	●	■	■	■	■	■	50	300					
		ø16	●	●	●	●	●	●	●	■	■	■	50	500	○	○	○	○	242
		ø25	●	●	●	●	●	●	●	●	●	●	50	700					

Rodless Type

Rodless Type

SRL3

SRL3

SRG3

SRG3

SRM3

SRM3

SRT3

SRT3

MRL2

MRL2

MRG2

MRG2

SM-25

SM-25

Cylinder Switch

Cylinder Switch

Ending

Ending



Magnet Type Rodless Cylinder High Precision Guide Type

# MRG2 Series

● Bore Size:  $\phi 10$ ,  $\phi 16$ ,  $\phi 25$

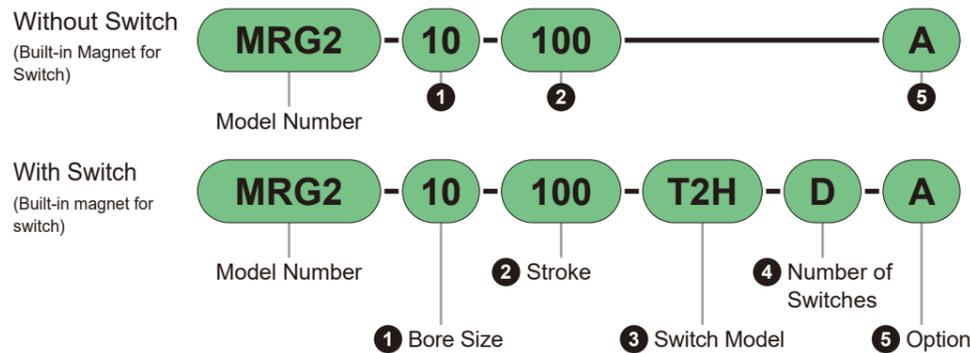
Circuit Diagram Code



## MRG2 Series

Model No. Notation

### Model No. Notation



### ① Bore Size (mm)

Code	Description
10	$\phi 10$
16	$\phi 16$
25	$\phi 25$

### ② Stroke (mm)

Code	Description
50	50
100	100
150	150
200	200
300	300
400	400 ( $\phi 16, \phi 25$ )
500	500 ( $\phi 16, \phi 25$ )
600	600 ( $\phi 25$ )
700	700 ( $\phi 25$ )

### ③ Switch Model

For switch details, refer to P. 1457. Switches are shipped with the product.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1		Image
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
			-	30 or less	-	100 or less	T3H□	T3V□	
	2-color	2-wire	-	24 $\pm$ 10%	-	5 to 20	T2WH□	T2WV□	
			-	30 or less	-	50 or less	T3WH□	T3WV□	
			-	24 $\pm$ 10%	-	5 to 20	T2WLH□	T2WLV□	
2-color Improved Water Resistance	2-wire	-	24 $\pm$ 10%	-	5 to 20	T2WLH□	T2WLV□		
		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3		
1-color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3		
		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3		
Contact	1-Color Without Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	

\*1: Enter the code selected in the "Lead wire length, connector specifications" table into "□" of the Switch Model.

\*2: The maximum load current of 20 mA mentioned above is at 25°C. If the switch operating Ambient Temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

\*3: It does not guarantee the water resistance of the cylinder.

\*4: Switches other than the above models are also available. (Custom Product) For details, see P. 1457.

\*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead wire 0.3 m

\*5: T2WLH and T2WLV only can be selected.

Example) Lead wire length  
1 m T0H  
3 m T0H<sup>3</sup>  
5 m T0H<sup>5</sup>

### ④ Number of Switches

Code	Description
R	With 1 on R side
L	With 1 on L side
D	With 2 pcs
T	With 3 pcs
4	With 4 (For 4 or more, enter the number of switches)

\*1: Refer to the switch mounting position dimensions (P. 249) for the R side and L side.

### ⑤ Option

Code	Description	Image
A	With full stroke adjustment bracket on both sides	
A1	With R-side full stroke adjustment bracket	
A2	With L-side full stroke adjustment bracket	

\*1: Full stroke adjustment bracket cannot be retrofitted.

\*2: Refer to P. 247 for the R side and L side stroke adjustment bracket positions.

### Rechargeable Battery Compatible Specification

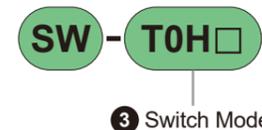
(Catalog No. CC-1226AA)

● Structure usable in rechargeable battery manufacturing process

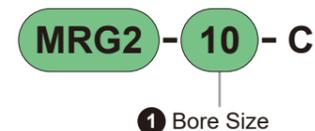
MRG2 - . . . . - P4\*

\*Please contact us for details.

### Switch Individual Model No. Notation



### Shock Absorber Unit Model No. Notation



## Specifications

Item	MRG2			
	ø10	ø16	ø25	
Bore Size	mm	ø10	ø16	ø25
Operating Method	Double Acting Type			
Operating Fluid	Compressed Air			
Max Operating Pressure	MPa	0.7		
Min Operating Pressure	MPa	0.3	0.2	
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	5 to 60		
Port Size		M5		Rc1/8
Stroke Tolerance	mm	-1.5 0		
Operating Piston Speed	mm/s	50 to 1000 (1.97 to 39.4 in/sec)		
Cushion	Shock Absorber			
Lubrication	Not Required (When lubricating, use Turbine Oil ISO VG32)			
Magnet Holding Force	N	63	166	350
Allowable Absorbed Energy	J	2.1	5.3	8.7

\*1: It takes time to reach the stroke end due to shock absorber drag. Please consider carefully before use.

\*2: Strokes other than Standard Strokes are custom items.

## Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)	Min Stroke (mm)	Min stroke with switch (mm)
ø10	50, 100, 150, 200, 300	300	50	50 (In case of 2 pcs.) *2
ø16	50, 100, 150, 200, 300, 400, 500	500		
ø25	50, 100, 150, 200, 300, 400, 500, 600, 700	700		

\*1: Strokes other than Standard Strokes are custom items.

\*2: The minimum stroke for T1H, T2WLH/V with 2 switches is 70.

## Cylinder Weight

Unit (g)

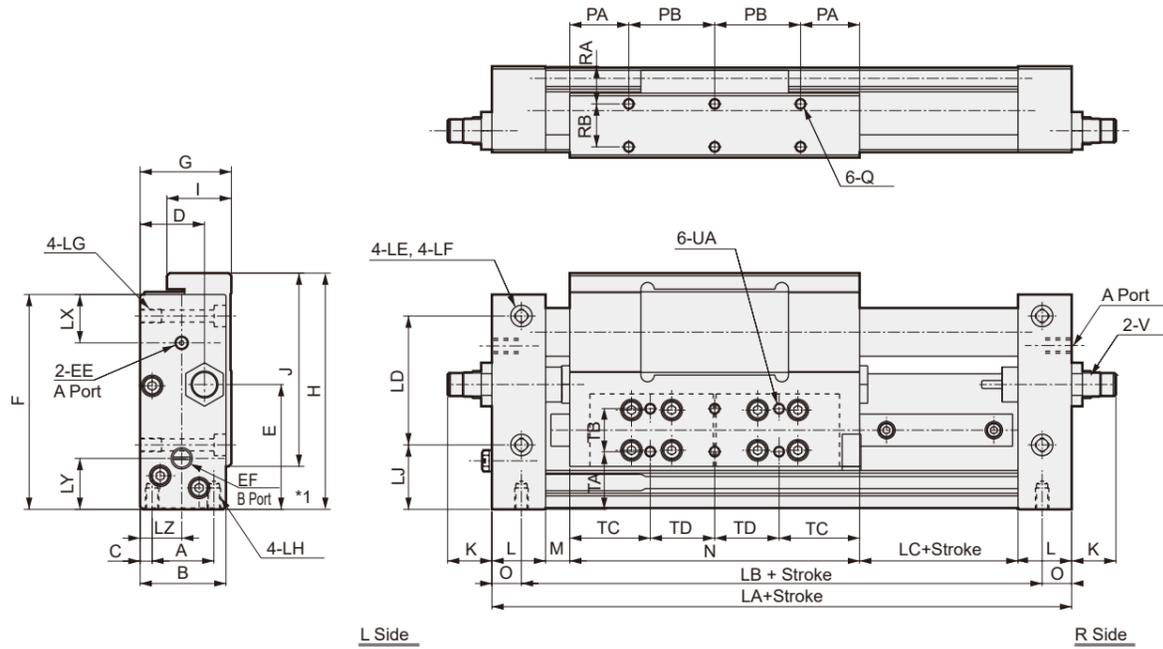
Model	Without Switch		Switch Weight	Full Stroke Adjustment Bracket Added Weight (Per piece)
	Product weight when stroke S = 0 mm	Added weight per S = 100 mm	Grommet per 1 pc	
MRG2-10	610	180	18	75
MRG2-16	1170	280		110
MRG2-25	3270	490		200

## Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø10	Push/Pull	-	23.6	31.4	39.3	47.1	55.0
ø16	Push/Pull	40.2	60.3	80.4	1.01×10 <sup>2</sup>	1.21×10 <sup>2</sup>	1.41×10 <sup>2</sup>
ø25	Push/Pull	98.2	1.47×10 <sup>2</sup>	1.96×10 <sup>2</sup>	2.45×10 <sup>2</sup>	2.95×10 <sup>2</sup>	3.44×10 <sup>2</sup>

- MRG2 (High precision guide)



Code	External Dimensions					Mounting Dimensions							
	LA	B	G	F	H	O	LB	LD	LJ	LE	LF	LG	LH
MRG2 Bore Size (mm)													
ø10	138	26	28	70	74	11	116	40	22	ø4.5	8 Counterbore Depth 4.4	M5 Depth 8	M4 Depth 8
ø16	166	32	34	80	88	11	144	48	24	ø4.5	8 Counterbore Depth 4.4	M5 Depth 8	M5 Depth 8
ø25	214	44	46	100	114	15	184	62	32	ø5.5	9.5 Counterbore Depth 5.4	M6 Depth 12	M6 Depth 10

Code	Mounting Dimensions											
	A	C	PA	PB	RA	RB	Q	TA	TB	TC	TD	UA
MRG2 Bore Size (mm)												
ø10	18	4	16	24	12	12	M4 Depth 6	19.5	13	24	16	M4 Depth 6
ø16	23	4.5	22	32	14	16	M4 Depth 6	21.5	16	30	24	M4 Depth 6
ø25	23	5.5	34	40	20	20	M6 Depth 8	23	22	38	36	M6 Depth 8

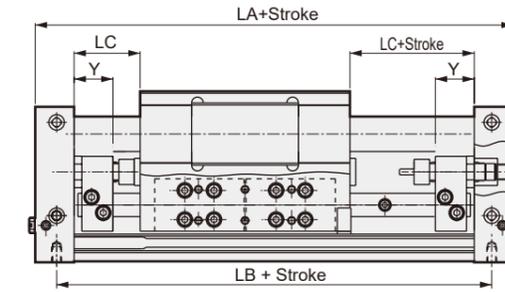
Code	General Dimensions														
	D	LX	EE	LY	EF	LZ	E	I	J	K	L	M	N	LC	V
MRG2 Bore Size (mm)															
ø10	19	18	M5 Depth 4	17	M5 Depth 4	11.5	38.5	20	58	14	20	9	80	9	MRG2-10-C
ø16	24	18	M5 Depth 4	19	M5 Depth 4	15	46.5	24	72	16.5	20	9	108	9	MRG2-16-C
ø25	32.5	23	Rc1/8	21.5	Rc1/8	23	55	32	98	19	25	8	148	8	MRG2-25-C

\*1: When using with single-surface centralized piping, remove the plug from port B and assemble that plug into the R-side A port for use.

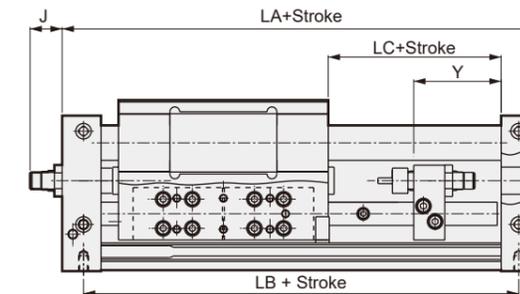
\*2: For dimensions with each switch, refer to P. 249.

## Dimensional Drawings

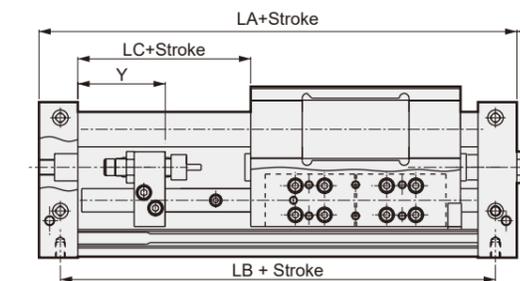
- MRG2-□-A (high precision guide, with both sided full stroke adjustable brackets)



- MRG2-□-A1 (high precision guide, with R side full stroke adjustable brackets)



- MRG2-□-A2 (high precision guide, with L side full stroke adjustable brackets)



Code	LA		LB		LC		Y		J	
	A	A1	A	A1	A	A1	A	A1	A	A1
MRG2 Bore Size (mm)										
ø10	188		166		34	59	20	45	-	14
ø16	216		194		34	59	20	45	-	16.5
ø25	314		284		58	108	41	91	-	19

Note: For dimensions with each switch, refer to P. 249.

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

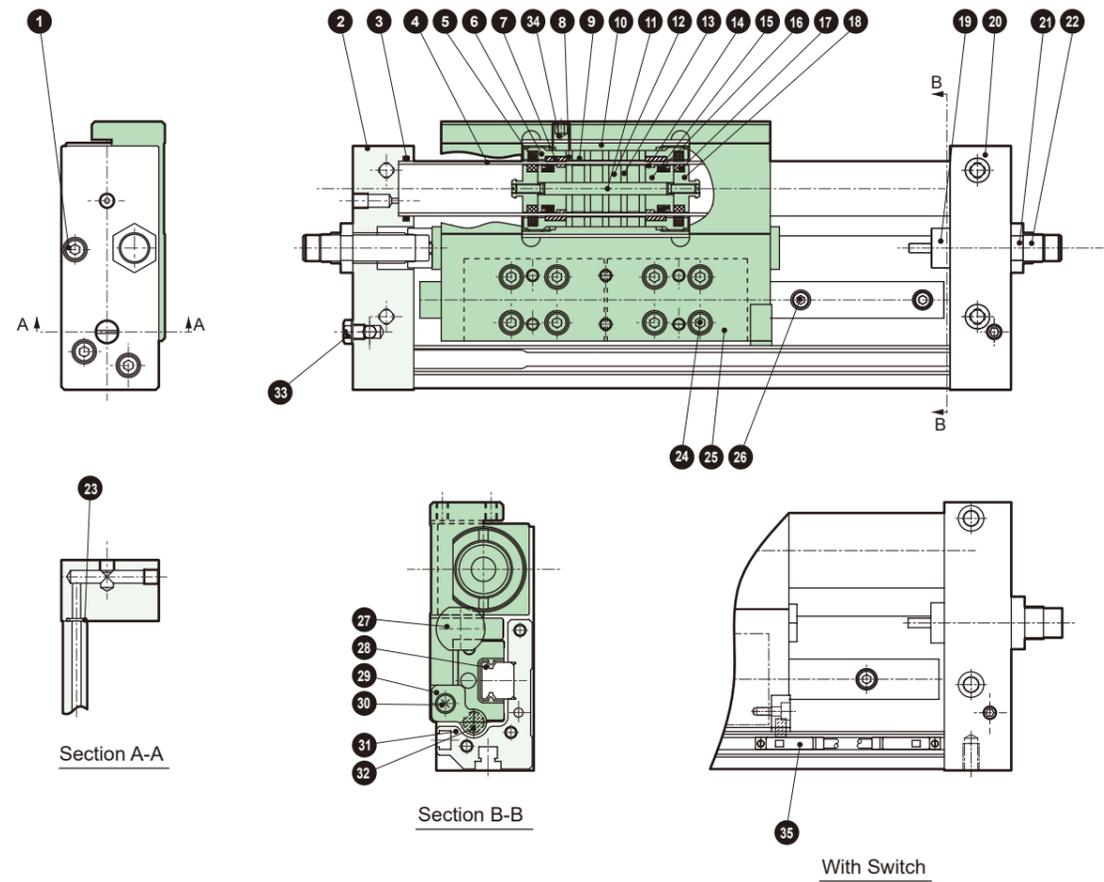
SM-25

Cylinder Switch

Ending

Internal Structure and Materials

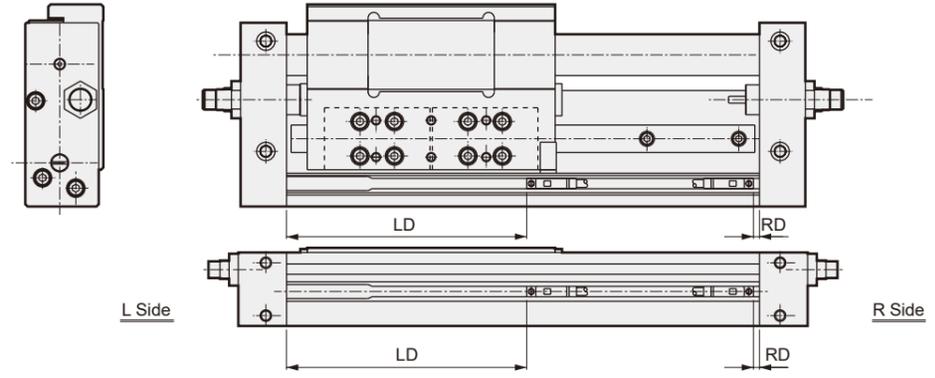
● MRG2 (High precision guide)



No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Stainless Steel		19	Stopper cap	Stainless Steel	
2	End plate (L)	Aluminum Alloy	Alumite	20	End plate (R)	Aluminum Alloy	Alumite
3	O-Ring	Nitrile Rubber		21	Hexagon Nut	Steel	Zinc Plated
4	Cylinder Tube	Stainless Steel		22	Shock Absorber		
5	Lube-Keeper (For slider)	Special rubber		23	O-Ring	Nitrile Rubber	
6	Slider Cover	Aluminum Alloy	Chromate	24	Hexagon Socket Head Cap Screw	Stainless Steel	
7	Slider wear ring	Polyacetal		25	Table	Aluminum Alloy	Alumite
8	Slider yoke	Steel	Zinc Plated	26	Hexagon Socket Head Cap Screw	Stainless Steel	
9	Magnet	Special alloy		27	Rod Support	Stainless Steel	
10	Slider	Aluminum Alloy	Chromate	28	Linear Guide		
11	Piston Shaft	Stainless Steel		29	Magnet Holder	Polyacetal	
12	Magnet	Special alloy		30	Cross-Recessed Pan Head Screw	Stainless Steel	
13	Piston yoke	Steel	Zinc Plated	31	Base	Aluminum Alloy	Alumite
14	Piston wear ring	Polyacetal		32	Magnet	Special alloy	
15	Piston (1)	Aluminum Alloy	Chromate	33	Plug	ø10, ø16: FPL (CKD) ø25: Stainless Steel	
16	Piston Packing	Nitrile Rubber		34	Hexagon Socket Set Screw	Stainless Steel	ø25 only
17	Lube-Keeper (For piston)	Special rubber		35	Switch		
18	Piston (2)	Aluminum Alloy	Chromate				

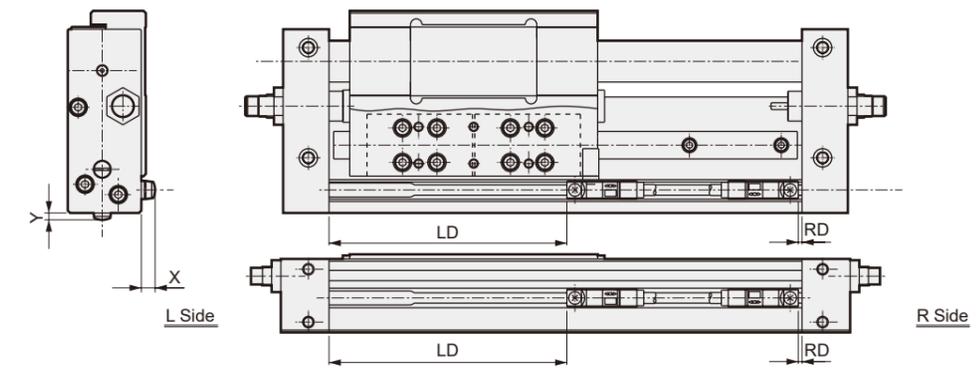
MRG2 Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V, T2WLH/V



Model Number	Code Bore Size (mm)	T0, T5		T2, T3		T2W, T3W, T2WL	
		LD	RD	LD	RD	LD	RD
MRG2	ø10	75.5	1.5	76.5	2.5	78.5	4.5
	ø16	103.5	1.5	104.5	2.5	106.5	4.5
	ø25	142.5	0.5	143.5	1.5	145.5	3.5
MRG2-□-A	ø10	100.5	26.5	101.5	27.5	103.5	29.5
	ø16	128.5	26.5	129.5	27.5	131.5	29.5
	ø25	192.5	50.5	193.5	51.5	195.5	53.5
MRG2-□-A1	ø10	75.5	51.5	76.5	52.5	78.5	54.5
	ø16	103.5	51.5	104.5	52.5	106.5	54.5
	ø25	142.5	100.5	143.5	101.5	145.5	103.5
MRG2-□-A2	ø10	125.5	1.5	126.5	2.5	128.5	4.5
	ø16	153.5	1.5	154.5	2.5	156.5	4.5
	ø25	242.5	0.5	243.5	1.5	245.5	3.5

● T1H/V



Model Number	Code Bore Size (mm)	X	Y	T1	
				LD	RD
MRG2	ø10	11.5	8.5	75.5	1.5
	ø16			103.5	1.5
	ø25			142.5	0.5
MRG2-□-A	ø10			100.5	26.5
	ø16			128.5	26.5
	ø25			192.5	50.5
MRG2-□-A1	ø10	75.5	51.5		
	ø16	103.5	51.5		
	ø25	142.5	100.5		
MRG2-□-A2	ø10	125.5	1.5		
	ø16	153.5	1.5		
	ø25	242.5	0.5		

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

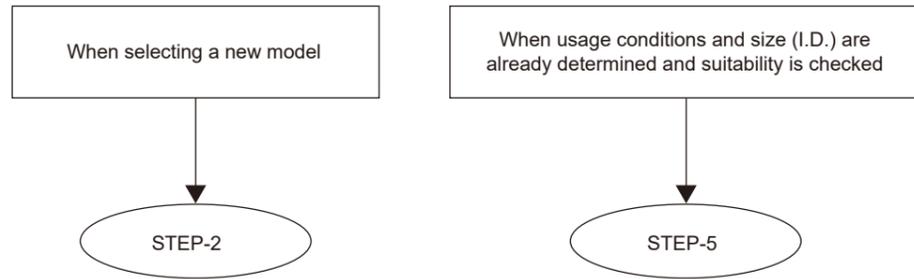
Cylinder Switch

Ending

MRG2 Series selection guide

The selection conditions differ from general air cylinders, so please check the suitability using the selection guide.

STEP-1



STEP-2

Confirmation of operating conditions

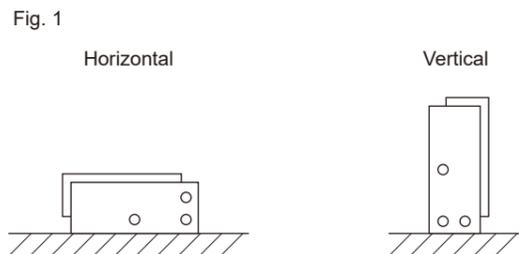
- Operating Pressure (P)  (MPa)
- Applied load (W)  (N) (applied load = workpiece load + jig load)
- Mounting direction: Horizontal, Vertical (See "Fig. 1" below)
- stroke (L)  (m)
- Travel time: (t)  (s)
- Average speed (Va)  (m/s)

Calculation formula for cylinder average speed Va

$$Va = \frac{L}{t} \text{ (m/s)}$$

[Mounting Direction]

Operating direction: Horizontal, Vertical - Ascending, Vertical - Descending  
Mounting direction: Horizontal, Vertical (See Fig. 1)



STEP-3

Calculation of required thrust

Calculate the required thrust (FN) of the cylinder.

- During horizontal operation  
 $FN = W \times 0.2 = \text{  (N)}$
- During vertical operation  
 $FN = W = \text{  (N)}$

Note: Frictional resistance value of the guide, etc., when a load is mounted on the slider. If there is further external resistance, please consider it separately.

STEP-4

Selection of approximate size of cylinder

$$\text{Required thrust of cylinder } FN \leq \text{theoretical thrust} \times \frac{\mu}{100} \times \frac{\alpha}{100}$$

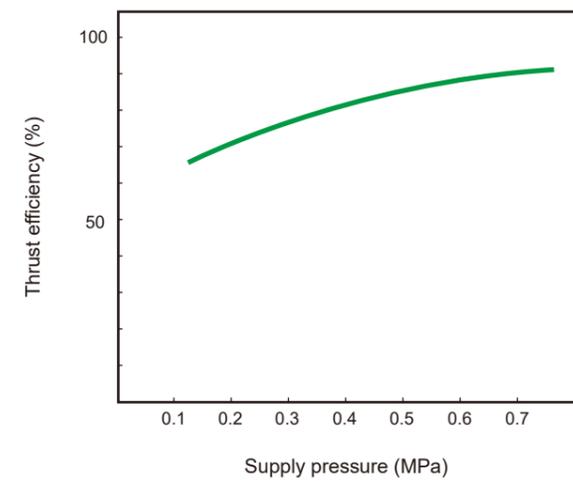
$\mu$ : Thrust efficiency (%) (refer to Fig. 2.)  
 $\alpha$ : Load factor (%) (refer to Table 2)

Select a cylinder size that satisfies this condition.

Table 1. Theoretical Thrust Value (N)

Bore Size (mm)	Operating Pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
ø10	-	24	31	39	47	55
ø16	40	60	80	101	121	141
ø25	98	147	196	245	295	344

Fig. 2. Thrust Efficiency  $\mu$



Load factor  $\alpha$ : For general use, the value within the range in Table 2 is desirable.

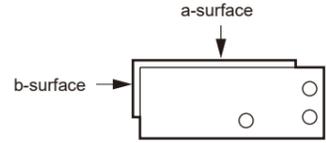
[Table 2] Guideline for Load Factor

Operating Pressure MPa	$\alpha$ (%)
0.2 to 0.3	$\alpha \leq 40$
0.3 to 0.6	$\alpha \leq 50$
0.6 to 0.7	$\alpha \leq 60$

STEP-5

● Calculate the vertical load and value for each moment

Calculate the vertical load (W1, W2) and moments (M1, M2, M3) according to the cylinder mounting state of the load.



	Mounted on a-surface	Mounted on b-surface	Calculation Result
Vertical load W1 W2			W1 = <input type="text"/> W2 = <input type="text"/>
Bending Moment M1 = F1 x l1			M1 = <input type="text"/>
Lateral Bending Moment M2 = F2 x l2			M2 = <input type="text"/>
Torsional Moment M3 = F3 x l3			M3 = <input type="text"/>

Table 3. Values of Each Parameter

	Bore Size (mm)	C	D
Cylinder Switch	ø10	0.016	0.012
Ending	ø16	0.020	0.014
	ø25	0.026	0.020

(m)

STEP-6

● Confirmation of the vertical load and the composite value for each moment

Divide each load by the maximum allowable value in Table 4 and confirm that the total value is 1.0 or less.

$$\frac{W1 \text{ (or } W2)}{W1 \text{ (or } W2) \text{ max}} + \frac{M1}{M1\text{max}} + \frac{M2}{M2\text{max}} + \frac{M3}{M3\text{max}} \leq 1.0$$

If the total value is greater than 1.0

1. Re-examine load → STEP-2
2. Implement reviews such as increasing the cylinder's inner diameter. → Increase cylinder Bore Size → STEP-5

Table 4. Maximum Allowable Values for Vertical Load and Each Moment

Bore Size (mm)	W1 max (N)	W2 max (N)	M1max (N·m)	M2max (N·m)	M3max (N·m)
ø10	44	35	2.2	1.2	2.2
ø16	103	91	7.4	3.2	7.4
ø25	176	176	18.3	7.3	18.3

STEP-7

● Confirmation of kinetic energy

Calculate the kinetic energy from the load weight m (kg) and speed V (m/s), and confirm that it is within the specification range of the shock absorber. If the specifications are exceeded, increase the cylinder size or arrange an external shock absorbing device.

(1) Kinetic energy calculation formula

$$E1 = \frac{1}{2} \times m \times V^2 = \text{ ( ) (J)}$$

$$m = \frac{W}{9.8} = \text{ ( ) (kg)}$$

$$V = \frac{L}{t} \times \left[ 1 + 1.5 \times \frac{\alpha}{100} \right] = \text{ ( ) (m/s)}$$

$$\alpha = \frac{F_N}{\text{Cylinder theoretical thrust} \times \frac{\mu}{100}} \times 100 = \text{ ( ) (\%)}$$

- E1 : Kinetic energy (J)
- m : Load weight (kg)
- V : Speed (m/s)
- W : Applied load (N)
- L : Cylinder Stroke (m)
- t : Operating Time (s)
- α : Cylinder Load Factor (%)
- F<sub>N</sub> : Necessary Thrust (N)
- μ : Thrust efficiency (%)

(2) About Shock Absorber

Table 5 shows the shock absorbers used with MRG2.

Table 5. Shock Absorber Specifications

Model	MRG2-10	MRG2-16	MRG2-25
Shock Absorber Model Number	MRG2-10-C (Using NCK-00-0.3)	MRG2-16-C (Using NCK-00-0.7)	MRG2-25-C (Using NCK-00-1.2)
Max Absorbed Energy (J) *1	2.1	5.3	8.7
Stroke (mm) *1	5	7	8.5
Absorbed Energy per Hour (kJ/hour)	6.3	12.6	21.6
Max Repetition Frequencycycles/min	35	30	30

\*1: Since a stopper cap is used to stop before the stroke end, both energy and stroke are smaller than standard products.

● Confirmation of Allowable Collision Energy of Shock Absorber

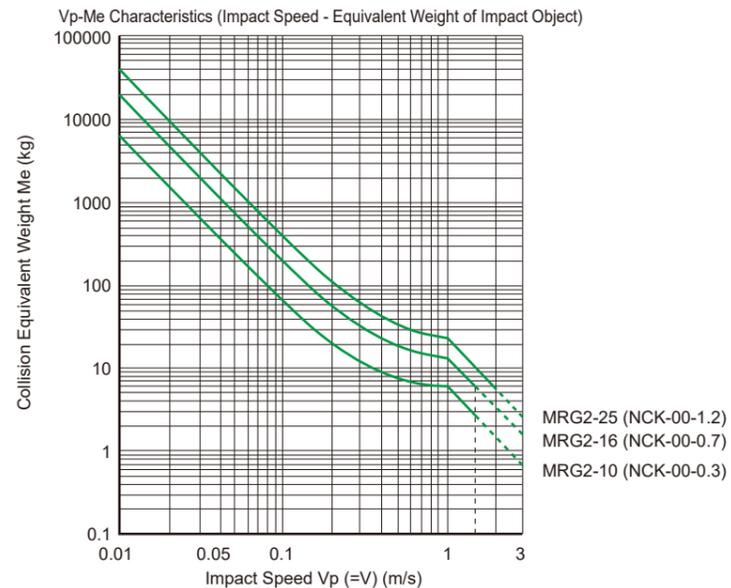
Using the calculation formulas in the table below, calculate the equivalent weight of impact object  $M_e$  and impact energy  $E$ , and confirm that  $M_e$  and  $E$  are below the allowable values in Fig. 4 and Table 5. Also, confirm that the cycle frequency is below the allowable value according to Table 5.

● Code

- E : Collision Energy  (J)
- $M_e$  : Colliding object equivalent weight  (kg)
- m : Load weight  (kg)
- F : Cylinder Thrust  (N)
- V : Collision Speed  (m/s)
- St : Shock Absorber Stroke  (m)
- g : Gravity acceleration 9.8 (m/s<sup>2</sup>)

	Horizontal Movement	Vertical Descent	Vertical Ascent
Usage Example			
Equivalent Weight of Impact Object $M_e$ (kg)	$M_e = m + \frac{2F \cdot St}{V^2}$	$M_e = m + \frac{2 \cdot St \cdot (F + mg)}{V^2}$	$M_e = m + \frac{2 \cdot St \cdot (F - mg)}{V^2}$
Energy E (J)	$E = \frac{mV^2}{2} + F \cdot St$	$E = \frac{mV^2}{2} + (F + mg) \cdot St$	$E = \frac{mV^2}{2} + (F - mg) \cdot St$

Fig. 4



STEP-8

● Confirmation of Inertial Load

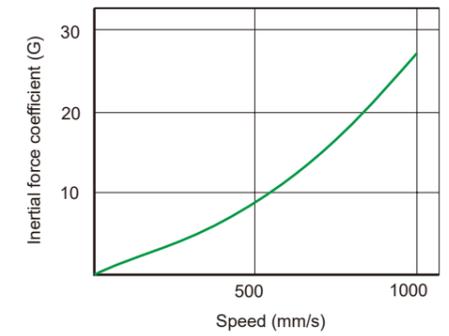
At the stroke end, inertial force from the load acts. Confirm whether that force is within the allowable range.

(1) Calculate the inertial force  $F_i$  from the speed  $V$  and the inertial force coefficient in Fig. 5.

$$F_i = 9.8 \times m \times G \text{ (N)}$$

m: Load weight (kg)  
G: Inertial force coefficient

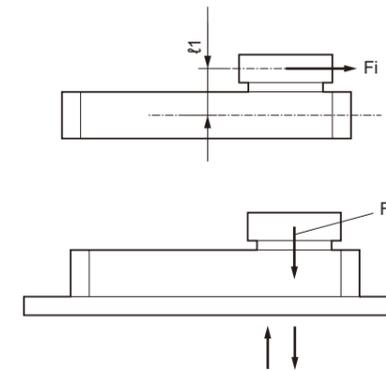
Fig. 5. Inertial Force Coefficient



(2) Calculate the load and moment generated by inertial force.  
(Example)

$$M1_i = F_i \times l_1$$

$$W1_i = F_i$$



When moving the entire cylinder up and down

(3) Sum the loads and moments generated by static load and inertial force, divide by the allowable values in Table 4, and confirm that the total value is 1.0 or less.

$$W1_g = W1 + W1_i \quad M1_g = M1 + M1_i$$

$$W2_g = W2 + W2_i \quad M2_g = M2 + M2_i$$

$$M2_g = M3 + M3_i$$

$$\frac{W1_g \text{ (or } W2_g)}{W1 \text{ (or } W2) \text{ max}} + \frac{M1_g}{M1 \text{ max}} + \frac{M2_g}{M2 \text{ max}} + \frac{M2_g}{M3 \text{ max}} \leq 1.0$$

Rodless Type

Rodless Type

SRL3

SRL3

SRG3

SRG3

SRM3

SRM3

SRT3

SRT3

MRL2

MRL2

MRG2

MRG2

SM-25

SM-25

Cylinder Switch

Cylinder Switch

Ending

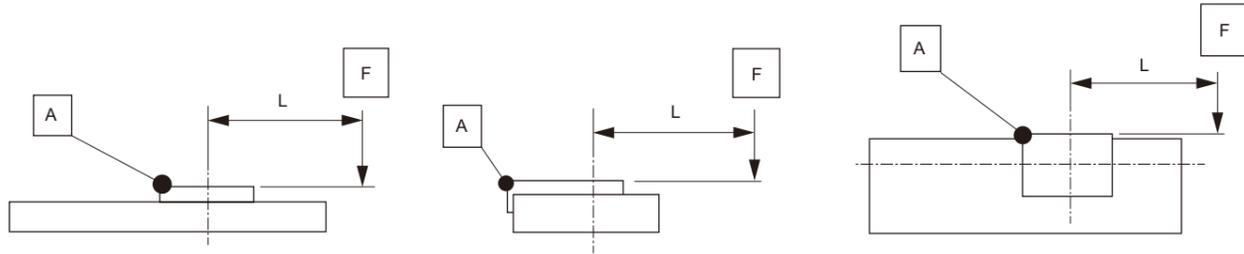
Ending

MRG2 Table Displacement Amount (Reference Value)

● Bending moment direction  
M1 = F×L

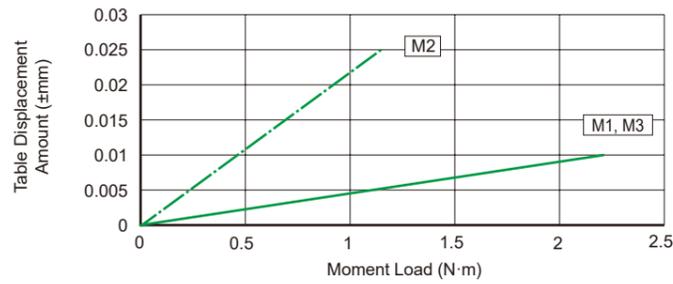
● Radial moment direction  
M2 = F×L

● Torsion moment direction  
M3 = F×L

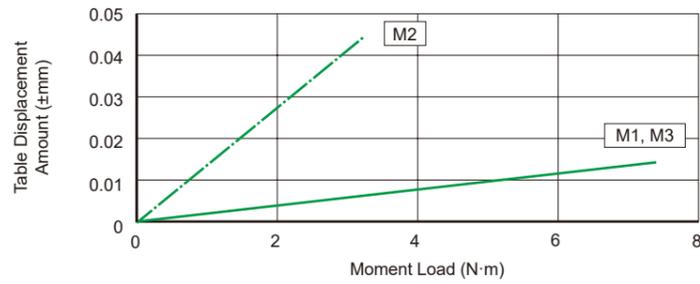


Displacement of A=Table displacement amount

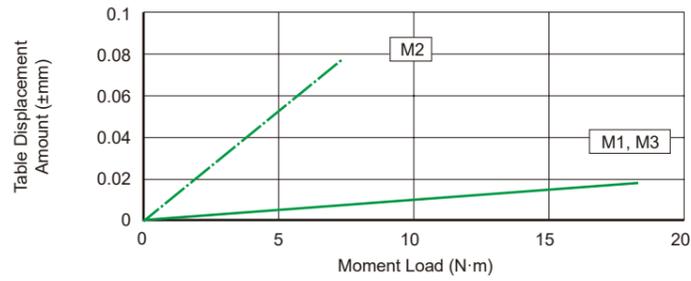
● MRG2-10



● MRG2-16



● MRG2-25



Note: The table deflection indicates a value for reference at the stroke end.

MEMO

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending



# 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: Rodless Cylinder MRG2 Series

### Design / Selection

#### Warning

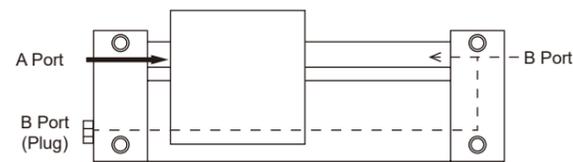
■ With the cylinder, there is the risk of the table popping out in cases when a change of force occurs due to disruption of the sliding portions of the machine.

In such cases, bodily injury such as trapped hands or feet may occur, and machine damage may result. Therefore, adjust the machine to ensure smooth movement and design it to prevent injury to the human body.

■ When a deceleration circuit or shock absorber is necessary. If the speed of the driven object is fast or the Weight is large, the standard equipped shock absorber alone may find it difficult to absorb the impact. Therefore, install a circuit that decelerates before entering the shock absorber, or use an external shock absorber to mitigate the impact. In this case, sufficiently consider the rigidity of the machinery.

■ The piston may become derailed if the unit is used in an environment of pressure greater than the Max Operating Pressure or in cases when a load greater than the allowable value is applied.

#### About Piping Port Position and Operation Direction



When A port is pressurized, the slide table moves to the right in the figure. When B port is pressurized, the slide table moves to the left in the figure. B port (plug) is sealed with a plug at the time of shipment. Centralized piping becomes possible by removing the plug and sealing the B port on the right side.

- Treat our shock absorbers as consumable parts. Replace if a decrease in energy absorption capacity is observed or if operation is no longer smooth.
- The magnetic strength of the embedded magnet is powerful. Do not disassemble.

### During Use

#### 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 materials for selection.

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

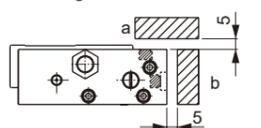
■ Mount so that the table functions with the Min Operating Pressure value of all processes.

If the flatness of the cylinder mounting surface is poor, the minimum Operating Pressure will rise due to twisting of the guide section, causing early wear of the bearing section. Therefore, install so that the table operates at or below 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 may lead to damage of the lube keeper and slider wear ring, causing malfunction.

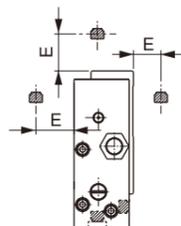
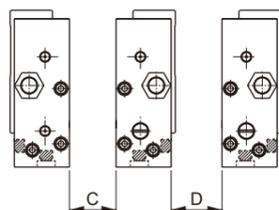
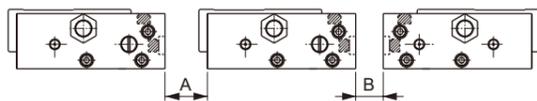
■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Be sure that more clearance than the dimensions listed below is provided.

Magnetic substance such as steel plate



Avoid simultaneous a and b.

■ 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, separate the cylinder or magnetic sensors by at least the values listed below.



Unit: mm

Bore Size	A	B	C	D	E
ø10	20	10	10	10	20
ø16	20	10	10	10	20
ø25	50	20	20	20	50

If the distance is less than dimension E, malfunction can be prevented by inserting a magnetic substance (steel plate thickness 2 mm or more) between the tables.

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".

Rodless Type

Rodless Type

SRL3

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SRG3

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MRG2

SM-25

SM-25

Cylinder Switch

Cylinder Switch

Ending

Ending