

# MRL2

## Magnet Type Rodless Cylinder

ø6, ø10, ø16, ø20, ø25, ø32

Rodless type



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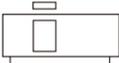
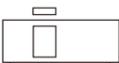
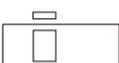
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## MRL2/MRL2-G/MRL2-W Series

### ● Model Selection Points

	Model Selection Points	Recommended Model		Features		Page
Rodless Type SRL3	<b>Basic Type</b> · When using a guide system separately from the cylinder. · When space is limited. *Use in conjunction with a guide.	<b>MRL2</b> ø6, ø10, ø16, ø20, ø25, ø32 		<ul style="list-style-type: none"> <li>Long lifespan due to the adoption of Lube-Keeper.</li> <li>By selecting the rubber air cushion, reduction of impact acceleration &amp; impact noise level at the stroke end is achieved.</li> <li>Cylinders can be mounted directly.</li> </ul>	Model No. Notation	212
					Specifications	214
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Rodless Type SRG3 SRM3 SRT3 MRL2 MRG2 SM-25	<b>Simple Guide Type</b> · When securing the slider's trajectory. · When used for general conveyance. · When the mounted load is large. · When stroke adjustment is necessary. · When absorbing shock at the stroke end with a shock absorber.	<b>MRL2-GAA</b> (Simple Guide Type 1-Piston Type) ø6, ø10, ø16, ø20, ø25, ø32 		<ul style="list-style-type: none"> <li>Twin-tube type of MRL2 series, no need for a separate guide system.</li> <li>Thin design with low slide table height, saving space.</li> <li>Absorbs shock at the stroke end with the shock absorber equipped type.</li> <li>Single-surface piping is possible with the switch-equipped centralized piping type.</li> </ul>	Model No. Notation	212
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					Internal structure and parts list	222
					Selection Guide	228
					Switch Mounting Position Dimension Drawing	226
	<b>Simple Guide Type</b> · When securing the slider's trajectory. · When used for general conveyance. · When the stacked load is large and a double thrust is required. · When stroke adjustment is necessary. · When absorbing shock at the stroke end with a shock absorber.	<b>MRL2-WAA</b> (Simple Guide Type 2-Piston Type) ø6, ø10, ø16, ø20, ø25, ø32 		<ul style="list-style-type: none"> <li>Twin-tube type of MRL2 series, no need for a separate guide system.</li> <li>With the twin piston type, the generated thrust is twice that of a single piston model.</li> <li>Thin design with low slide table height, saving space.</li> <li>Absorbs shock at the stroke end with the shock absorber equipped type.</li> <li>Single-surface piping is possible with the switch-equipped centralized piping type.</li> </ul>	Model No. Notation	212
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●: Standard, ○: Option, ■: Not available

Rodless Type	Variations	Model Number Circuit Diagram Code	Bore Size (mm)	Cushion		Standard Stroke (mm)											Min Stroke (mm)	Max Stroke *1 (mm)	Intermediate stroke (per mm)	Options			Page	Rodless Type		
				Rubber Cushion	Rubber Air Cushion	50		100		150	200	250	300	350	400	500				600	700	S			R	C
						●	○	●	○																	
SRL3 SRG3 SRM3	Basic Type With Switch Low speed type 	MRL2	ø6			●	●											1	300	1	○	■	○	212	SRL3 SRG3 SRM3	
		MRL2-L	ø10			●	●												500		○	■	○			
		MRL2-F	ø16	●	○		●							●	●				1000		○	■	○			
			ø20											●	●	●	●			1500		○	■			○
			ø25											●	●	●	●			1500		○	■			○
			ø32											●	●	●	●			1500		○	■			○
MRL2 MRG2 SM-25	Simple Guide Type 1-Piston Type With Switch Low speed type 	MRL2-G	ø6			●	●											1	300	1	○	■	○	212	MRL2 MRG2 SM-25	
		MRL2-GL	ø10			●	●												500		○	○	○			
		MRL2-GF	ø16	●	○		●							●	●				1000		○	○	○			
			ø20											●	●	●	●			1500		○	○			○
			ø25											●	●	●	●			1500		○	○			○
			ø32											●	●	●	●			1500		○	○			○
	Simple Guide Type 2-Piston Type With Switch Low speed type 	MRL2-W	ø6			●	●											1	300	1	○	■	○	212		
		MRL2-WL	ø10			●	●												500		○	○	○			
		MRL2-WF	ø16	●	○		●							●	●				1000		○	○	○			
			ø20											●	●	●	●			1500		○	○			○
			ø25											●	●	●	●			1500		○	○			○
			ø32											●	●	●	●			1500		○	○			○

\*1: • The Max Stroke with switch is: ø6:200 mm, ø10:300 mm, ø16:500 mm, ø20 to ø32:700 mm.  
 • Max Stroke of the fine speed series is: ø6:300 mm, ø10:500 mm, ø16 to ø25:800 mm, ø32:700 mm  
 • Max Stroke of the common piping with switch is: ø10:300 mm, ø16:500 mm, ø20 to ø32:700 mm

Variation and Option Item Combination Availability Table

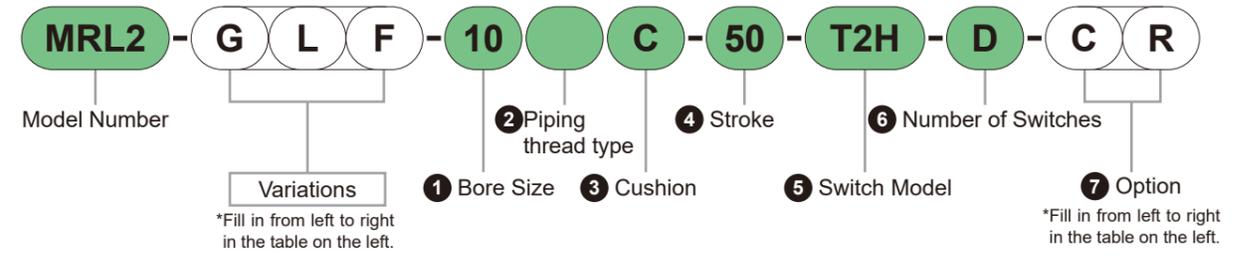
- Mark: Standard
- Mark: Options
- Mark: Custom-made
- △ Mark: Manufacturable depending on conditions (please consult)
- × Mark: Not available

Rodless Type	Category	Category	Variation				Piping thread		Cushion	Options			
		Code	None	G	W	L	F	N	G	C	C	S	R
SRL3	Variations	Double Acting Basic Type	No Code										
		Twin 1 Piston	G		x								
		Twin 2 Piston	W										
		With Cylinder Switch	L										*2
		Low speed type	F								*1	x	x
SRT3	Piping thread	NPT (ø25, ø32)	N						x				
		G (ø25, ø32)	G										
MRL2	Cushion	With Rubber Air Cushion	C										
		with Shock Absorber	C										
		With Scraper	S										
MRG2	Options	Switch Equipped Centralized Piping	R										
SM-25	Accessories	Cylinder Switch	Separately Shown	○	○	○	○	○	○	○	○	○	

\*1: Slow speed performance upon shock absorber impact cannot be guaranteed.  
 \*2: When selecting common piping with an "R" switch, be sure to combine the unit with "L" with switch.

Variation / Option Combination Availability Table

[Model No. Example]



- Model No.: Magnet Type Rodless Cylinder
- Variation: Simplified guide 1-piston, with switch, fine speed
  - 1 Bore Size : ø10 mm
  - 2 Port thread : Rc Thread
  - 3 Cushion : Rubber Air Cushion
  - 4 Stroke : 50 mm
  - 5 Switch model No. : Solid State T2H Switch, Lead Wire 1 m
  - 6 Switch quantity : 2 pcs
  - 7 Options : With shock absorber, common piping



### Magnet Type Rodless Cylinder

- **Basic MRL2-(F) Series**
- Simplified guide 1-piston MRL2-G(F) Series
- Simplified guide 2-piston MRL2-W(F) Series

● Bore Size: ø6, ø10, ø16, ø20, ø25, ø32



## MRL2 Series

Model No. Notation

\*Lead wire length, connector specifications

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 T1H  
3 m T1H<sup>3</sup>  
5 m T1H<sup>5</sup>

### 6 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	
			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□
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□
	2-color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□
			-	30 or less	-	50 or less	T3WH□	T3WV□
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□
2-color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	
		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
1-Color Flexible Lead Wire Type	-	-	-	-	-	-	-	

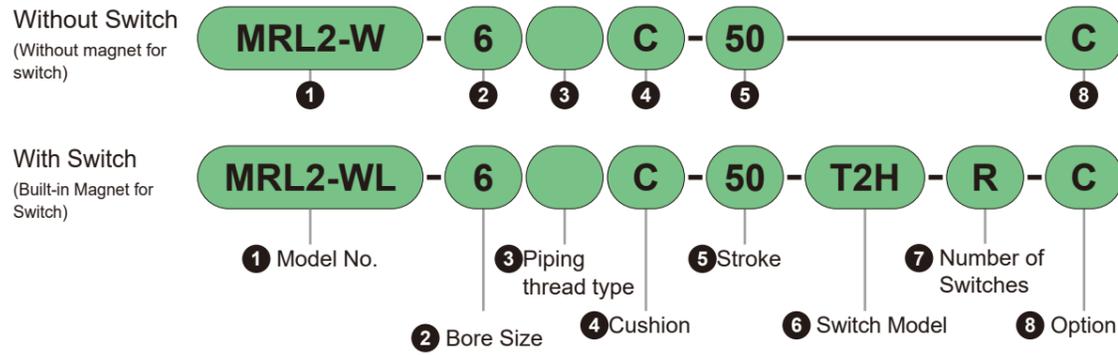
\*1: Enter the code selected in the "Lead wire length, connector specifications" table into "□" of the Switch Model.

\*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. (It will be 5 to 10 mA at 60°C.)

\*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, refer to P. 1457.

### Model No. Notation



### 1 Model Number

Code	Description
MRL2	Without Switch
MRL2-L	With Switch
MRL2-F	Low speed type
MRL2-LF	Slow speed type, with switch
MRL2-G	Without Switch
MRL2-GL	With Switch
MRL2-GF	Low speed type
MRL2-GLF	Slow speed type, with switch
MRL2-W	Without Switch
MRL2-WL	With Switch
MRL2-WF	Low speed type
MRL2-WLF	Slow speed type, with switch

### 2 Bore Size (mm)

Code	Description
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

### 3 Piping thread type

Code	Content
No Code	M5 (ø6 to ø20) Rc thread (ø25, ø32)
N	NPT thread (Custom Product)(ø25, ø32)
G	G thread (Custom Product)(ø25, ø32)

\*1: When the cushion is a rubber cushion (blank), the port thread code will be the following.  
NPT thread: NN G thread: GN

### 4 Cushion

Code	Content
No Code	Rubber Cushion
C	Rubber Air Cushion

Note: In the case of MRL2-G and W with the "C" rubber-air cushion, the stopper protrudes from the end plate by approximately 1 mm at the time of shipment. Also, please fully consider that moving the stopper to adjust the stroke may cause the rubber air cushion to become ineffective.

### 5 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø6	1 to 300	in 1mm increments
ø10	1 to 500	
ø16	1 to 1000	
ø20 to ø32	1 to 1500	

Note: For the maximum stroke of the switch-equipped slow speed type, please refer to P. 214.

### 7 Number of Switches

Code	Content
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.)

### 8 Option

Code	Description
C	with Shock Absorber (Basic type cannot be selected.)
S	With scraper (Slow speed type cannot be selected.)
R	Switch-equipped centralized piping type (Basic type and ø6 cannot be selected.)

Note: When selecting common piping with "R" switch, select the 1 model No. with a switch (MRL2-\*L).

### Clean Specification

(Catalog No. CB-033SAA)

- Dust prevention structure usable in clean rooms

MRL2 - □ - . . . . - P72

MRL2 - □ - . . . . - P52

### Rechargeable Battery Compatible Specification

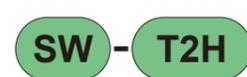
(Catalog No. CC-1226AA)

- Structure usable in rechargeable battery manufacturing process

MRL2 - . . . . - P4\*

\*Contact us for details.

### Switch Individual Model No. Notation



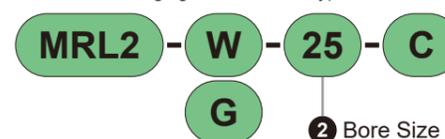
6 Switch Model

Note: Contact CKD when using an environment-friendly T-switch.

### Shock Absorber Unit Model No. Notation

- Shock Absorbers + mounting nut (Hexagon Nut) each 1

Used when changing from standard type to shock absorber equipped type



2 Bore Size

(Reference)

Applicable Shock Absorber Model No.

Model	Shock Absorber Model Number
MRL2-W-6, MRL2-G-6	NCK-00-0.1
MRL2-W-10, MRL2-G-10	NCK-00-0.1-C
MRL2-W-16, MRL2-G-16	NCK-00-0.3-C
MRL2-W-20, MRL2-G-20	NCK-00-0.7-C
MRL2-W-25, MRL2-G-25	NCK-00-1.2-C
MRL2-W-32, MRL2-G-32	NCK-00-1.2-C

Specifications

Item	MRL2(L,F) , MRL2-G(L,F) , MRL2-W(L,F)						
	mm	ø6	ø10	ø16	ø20	ø25	ø32
Bore Size	mm	ø6	ø10	ø16	ø20	ø25	ø32
Operating Method	Double Acting Type						
Operating Fluid	Compressed Air						
Max Operating Pressure	MPa	0.7					
Min Operating Pressure	MPa	0.3 *1		0.2			
Proof Pressure	MPa	1.05					
Ambient Temperature	°C	-10 to 60 (fine speed: 5 to 60) (no freezing)					
Port Size		M5			Rc1/8		
Stroke Tolerance	mm	-1.5 0 (to 1000)			+2.0 0 (to 1500)		
Operating Piston Speed	mm/s	50 to 500 (fine speed: 1 to 200)					
Cushion	Rubber Cushion						
Lubrication	Not required (When lubricating, use turbine oil ISO VG32) However, not possible for slow speed type						
Magnet Holding Force *2	N	19	63	166	294	350	574
Stroke Adjustment Range (one side) *3	mm	3	4	6	8.5	10	10

\*1: The value for MRL2-G-6-C (with shock absorber) is 0.4.  
 \*2: For simple guide type 2-piston type (W), the value is doubled.  
 \*3: Stroke adjustment is not possible for MRL2 (basic type).

Cylinder Weight

Unit (g)

Model Number	Without Switch		With Switch		Switch-equipped centralized piping type	
	Product weight when stroke = 0 mm	Added weight per S = 100 mm	Product weight when stroke = 0 mm	Added weight per S = 100 mm	Product weight when stroke = 0 mm	Added weight per S = 100 mm
MRL2-6	73	13	103	39	-	-
MRL2-10	143	28	169	48	-	-
MRL2-16	278	43	313	63	-	-
MRL2-20	542	85	587	105	-	-
MRL2-25	954	98	1017	128	-	-
MRL2-32	1230	195	1301	225	-	-
MRL2-G-6	193	28	223	54	-	-
MRL2-G-10	368	53	394	73	411	94
MRL2-G-16	635	85	670	105	691	126
MRL2-G-20	1197	155	1242	175	1269	196
MRL2-G-25	1852	196	1915	226	1997	289
MRL2-G-32	2297	390	2368	420	2455	483
MRL2-W-6	203	28	233	54	-	-
MRL2-W-10	398	53	424	73	441	94
MRL2-W-16	710	85	745	105	766	126
MRL2-W-20	1367	155	1412	175	1439	196
MRL2-W-25	2206	196	2269	226	2351	289
MRL2-W-32	2859	390	2930	420	3017	483

Note: The weight of the switch is not included in the product weight of types with switch and common piping types with switch.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)	Max Stroke with switch (mm)	Max Stroke with switch-equipped centralized piping (mm)	Max Stroke for slow speed type (mm)	Min Stroke (mm)
ø6	50, 100, 150, 200	300	200	-	300	1
ø10	50, 100, 150, 200, 250, 300	500	300	300	500	
ø16	100, 150, 200, 250, 300, 400, 500	1000	500	500	800	
ø20	200, 250, 300, 350, 400, 500, 600, 700	1500	700	700	800	
ø25	200, 250, 300, 350, 400, 500, 600, 700	1500	700	700	800	
ø32	200, 250, 300, 350, 400, 500, 600, 700	1500	700	700	700	

Note: About Intermediate Stroke: Manufacturable every 1 mm.

Number of T Type Switches Mounted and Min Stroke (mm)

Switch Model	T2V, T3V		T2H, T3H		T1V		T1H	
Number of Switches	1	2	1	2	1	2	1	2
Bore Size (mm)								
ø6 to ø32	5	20	5	50	5	40	5	70

Theoretical Thrust Table

● MRL2, MRL2-G (Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push/Pull	-	8.48	11.3	14.1	17.0	19.8
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>
ø20	Push/Pull	62.8	94.2	1.26×10 <sup>2</sup>	1.57×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.20×10 <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>
ø32	Push/Pull	1.61×10 <sup>2</sup>	2.41×10 <sup>2</sup>	3.22×10 <sup>2</sup>	4.02×10 <sup>2</sup>	4.83×10 <sup>2</sup>	5.63×10 <sup>2</sup>

● MRL2-W (Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push/Pull	-	17.0	22.6	28.3	33.9	39.6
ø10	Push/Pull	-	47.1	62.8	78.5	94.2	1.10×10 <sup>2</sup>
ø16	Push/Pull	80.4	1.21×10 <sup>2</sup>	1.61×10 <sup>2</sup>	2.01×10 <sup>2</sup>	2.41×10 <sup>2</sup>	2.81×10 <sup>2</sup>
ø20	Push/Pull	1.26×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.51×10 <sup>2</sup>	3.14×10 <sup>2</sup>	3.77×10 <sup>2</sup>	4.40×10 <sup>2</sup>
ø25	Push/Pull	1.96×10 <sup>2</sup>	2.95×10 <sup>2</sup>	3.93×10 <sup>2</sup>	4.91×10 <sup>2</sup>	5.89×10 <sup>2</sup>	6.87×10 <sup>2</sup>
ø32	Push/Pull	3.22×10 <sup>2</sup>	4.83×10 <sup>2</sup>	6.43×10 <sup>2</sup>	8.04×10 <sup>2</sup>	9.65×10 <sup>2</sup>	1.13×10 <sup>3</sup>

Rodless Type

Rodless Type

SRL3

SRL3

SRG3

SRG3

SRM3

SRM3

SRT3

SRT3

MRL2

MRL2

MRG2

MRG2

SM-25

SM-25

Cylinder Switch

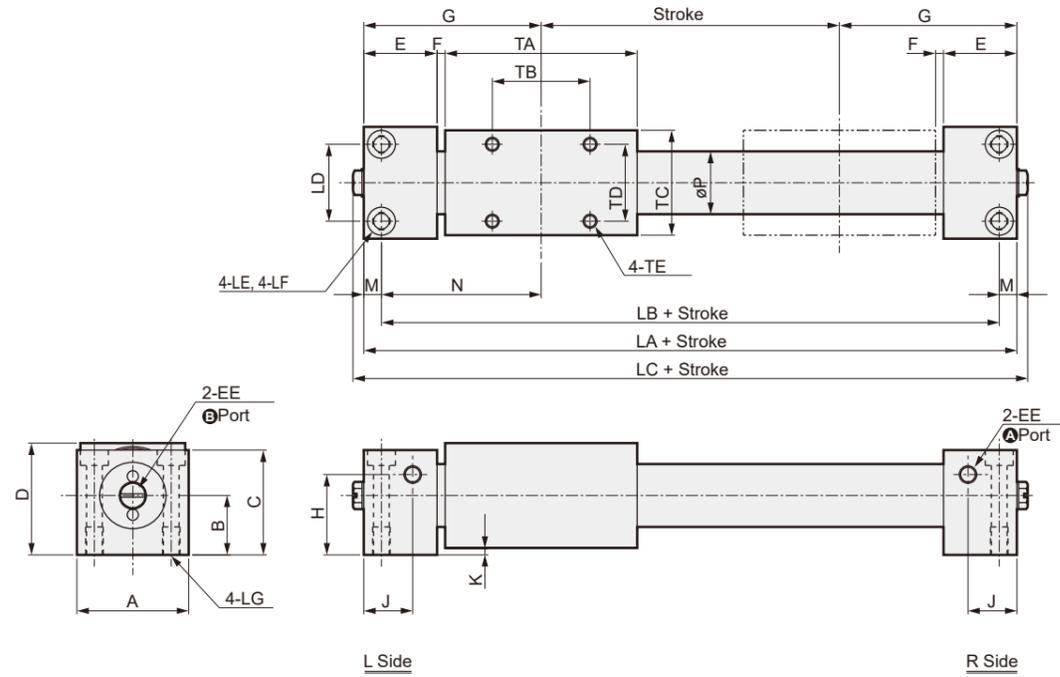
Cylinder Switch

Ending

Ending

Dimensional Drawings: MRL2 (basic)

- MRL2 (basic) without switch



Note: It is possible to select **A**, **B** for air piping port. At the time of shipment, **B** port C will be assembled with a plug.

- $\phi 6$  to  $\phi 20$ : Plug (FPL-M5)
- $\phi 25$ ,  $\phi 32$ : Hexagon Socket tapered screw plug

Code	Basic Type (Basic Dimensions)												
	LA	LC	A	C	D	LB	LD	LE	LF	LG	TB	TD	TE
$\phi 6$	74	80.2	20	16.5	20	68	14	$\phi 3.5$	-	M4 Depth 6	20	12	M3 Depth 4.5
$\phi 10$	80	86.2	26	24	26	72	18	$\phi 3.5$	$\phi 6.5$ Counterbore Depth 3.3	M4 Depth 8	20	18	M3 Depth 4.5
$\phi 16$	102	108.2	32	30	32	92	22	$\phi 4.5$	$\phi 8$ Counterbore Depth 4.4	M5 Depth 8	28	22	M4 Depth 6
$\phi 20$	128	134.2	38	36	38	116	26	$\phi 5.5$	$\phi 9.5$ Counterbore Depth 5.4	M6 Depth 12	44	26	M4 Depth 6
$\phi 25$	130	132.2	52	45	48	118	40	$\phi 5.5$	$\phi 9.5$ Counterbore Depth 5.4	M6 Depth 12	40	30	M6 Depth 6
$\phi 32$	138	140.2	60	53	56	124	46	$\phi 6.9$	$\phi 11$ Counterbore Depth 6.5	M8 Depth 12	40	40	M6 Depth 9

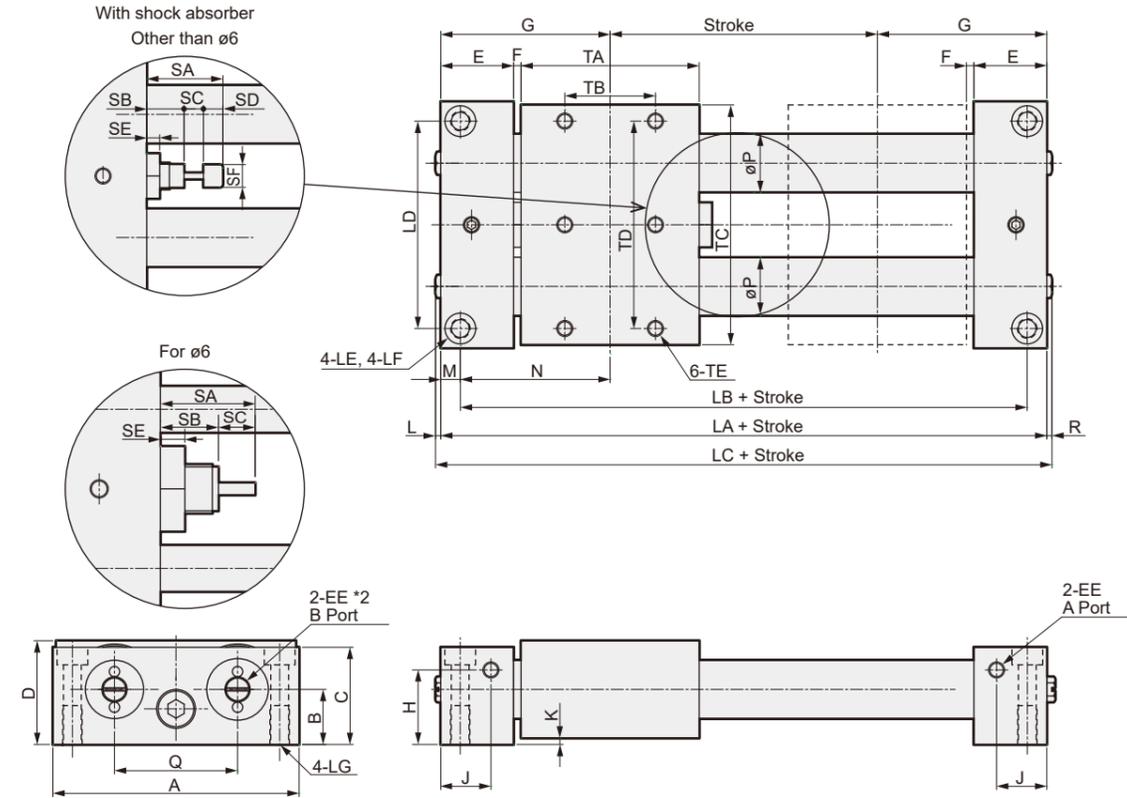
  

Code	Basic Type (Basic Dimensions)												
	B	E	EE	F	G	H	J	K	M	N	P	TA	TC
$\phi 6$	11	15	M5 Depth 4	2	37	9	9.5	2	3	34	7.6	40	18
$\phi 10$	14	18	M5 Depth 4	2	40	5.5	10	2	4	36	12	40	24
$\phi 16$	17	21	M5 Depth 4	2.5	51	23	14	2	5	46	18	55	30
$\phi 20$	20	24	M5 Depth 4	3	64	28	15.5	2	6	58	23	74	36
$\phi 25$	25.5	27	Rc1/8	3	65	29	17	3	6	59	28	70	45
$\phi 32$	29.5	27	Rc1/8	3	69	37	17	3	7	62	35	78	53

Note: For dimensions with each switch, please refer to P. 226, 227.

Dimensional Drawings MRL2-G (simplified guide 1-piston)/MRL2-W (simplified guide 2-piston)

- MRL2-G (simplified guide 1-piston) without switch
- MRL2-W (simplified guide 2-piston) without switch



\*1: Air piping port is **A**, **B** can be selected. At shipment, **B** Shipped with the plug assembled onto port.

- $\phi 6$  to  $\phi 20$ : Plug (FPL-M5)
- $\phi 25$ ,  $\phi 32$ : Hexagon Socket tapered screw plug

\*2: For MRL2-W, it will be "4-EE".

Code	Simple Guide Type (G, W) Mounting Dimensions															
	LA	LC	L	R	A	C	D	LB	LD	LE	LF	LG	TB	TD	TE	
$\phi 6$	74	80.2	3.1	3.1	46	20	24	68	40	$\phi 3.5$	-	M4 Depth 6	20	38	M3 Depth 4.5	
$\phi 10$	83	87.2	1.6	2.6	64	24	26	74	54	$\phi 4.5$	$\phi 8$ Counterbore Depth 4.4	M5 Depth 10	20	55	M4 Depth 6	
$\phi 16$	105	109.2	1.6	2.6	76	30	32	93	64	$\phi 5.5$	$\phi 9.5$ Counterbore Depth 5.4	M6 Depth 12	28	64	M5 Depth 8	
$\phi 20$	131	135.2	1.6	2.6	90	36	38	119	77	$\phi 6.9$	$\phi 11$ Counterbore Depth 6.5	M8 Depth 12	44	78	M5 Depth 8	
$\phi 25$	136	138	0	2	108	45	48	122	90	$\phi 6.9$	$\phi 11$ Counterbore Depth 6.5	M8 Depth 12	40	90	M6 Depth 9	
$\phi 32$	144	146	0	2	126	53	56	130	108	$\phi 6.9$	$\phi 11$ Counterbore Depth 6.5	M8 Depth 12	40	104	M6 Depth 9	

Code	Simple Guide Type (G, W) Mounting Dimensions																			
	B	E	EE	F	G	H	J	K	M	N	P	Q	SA	SB	SC	SD	SE	SF	TA	TC
$\phi 6$	13	15	M5 Depth 4	2	37	9	9.5	2	3	34	7.6	26	15.5	9.5	6	-	4	-	40	44
$\phi 10$	14	19.5	M5 Depth 4	2	41.5	5.5	11.5	2	4.5	37	12	34	20.5	9.5	5	6	4	6	40	62
$\phi 16$	17	22.5	M5 Depth 4	2.5	52.5	23	15.5	2	6	46.5	18	38	23.5	11.5	6	6	4	7	55	74
$\phi 20$	20	25.5	M5 Depth 4	3	65.5	28	17	2	6	59.5	23	46	25.5	10.5	8	7	4	8	74	88
$\phi 25$	25.5	30	Rc1/8	3	68	29	20	3	7	61	28	50	30	12.5	10	7.5	5	10	70	101
$\phi 32$	29.5	30	Rc1/8	3	72	37	20	3	7	65	35	60	30	12.5	10	7.5	5	10	78	119

Note: For dimensions with each switch, please refer to P. 226, 227.

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

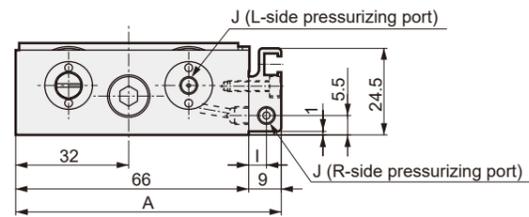
Cylinder Switch

Ending

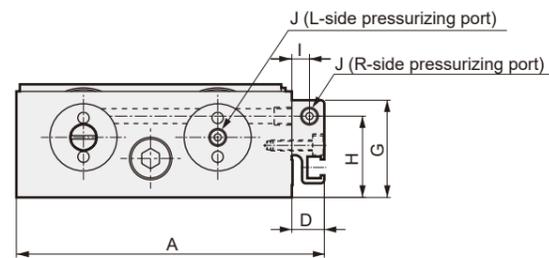
## Dimensional Drawings with Option

- MRL2-GL-□-R (simplified guide 1-piston) common piping with switch
- MRL2-WL-□-R (simplified guide 2-piston) with switch common piping

· In case of  $\phi 10$



· In case of  $\phi 16$  to  $\phi 32$



Code	A	D	G	H	I	J
Bore Size (mm)						
$\phi 10$	75	-	-	-	5	M5 Depth 4
$\phi 16$	87	9	27.5	23	5	M5 Depth 4
$\phi 20$	101	9	32.5	28	5	M5 Depth 4
$\phi 25$	122	14	45	29	7.5	Rc1/8
$\phi 32$	140	14	53	37	7.5	Rc1/8

MEMO

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

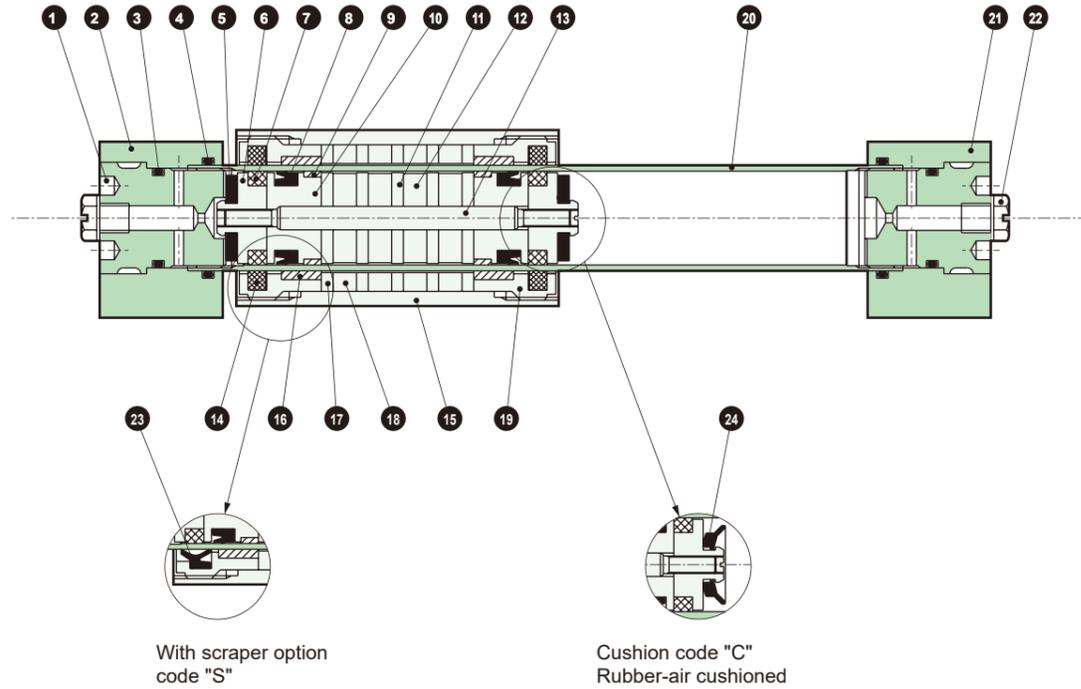
SM-25

Cylinder Switch

Ending

Internal Structure and Materials

● MRL2 (basic)



**Do not disassemble**

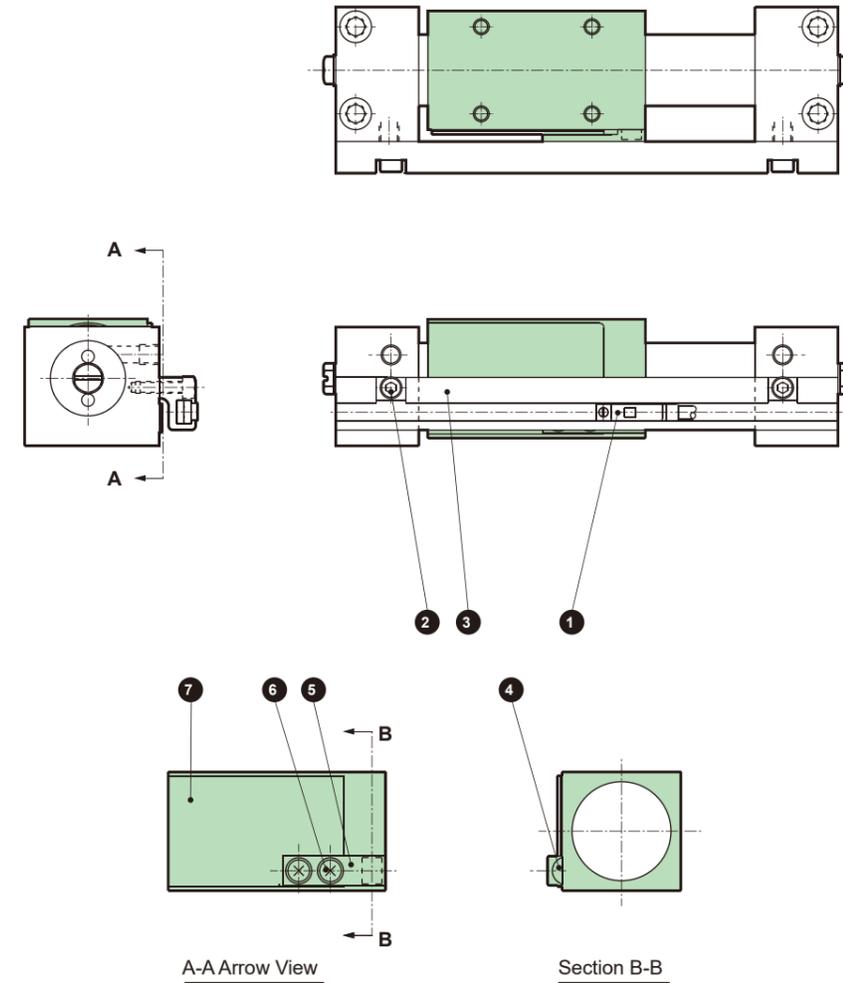
No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	End Cap	Aluminum Alloy	Chromate	14	Lube-Keeper (For slider)	Special rubber	
2	End plate (L)	Aluminum Alloy	Alumite	15	Slider	Aluminum Alloy	Alumite
3	O-ring	Nitrile Rubber		16	Slider wear ring	Polyacetal	
4	O-ring	Nitrile Rubber		17	Slider yoke	Steel	Zinc Chromate
5	Cushion Rubber	Urethane Rubber		18	Magnet	Special alloy	
6	Piston (2)	Aluminum Alloy	Chromate	19	Slider Cover	Aluminum Alloy	Chromate
7	Lube-Keeper (For piston)	Special rubber		20	Cylinder Tube	Stainless Steel	
8	Piston Packing	Nitrile Rubber		21	End plate (R)	Aluminum Alloy	Alumite
9	Piston wear ring	Polyacetal		22	Plug	ø6 to ø20: FPL (CKD) ø25, ø32: Steel	ø25, ø32: Zinc Chromate
10	Piston (1)	Aluminum Alloy	Chromate	23	Scraper	Urethane Rubber	
11	Piston yoke	Steel	Zinc Chromate	24	Rubber Air Cushion	Special rubber	
12	Magnet	Special alloy					
13	Piston Shaft	Stainless Steel					

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

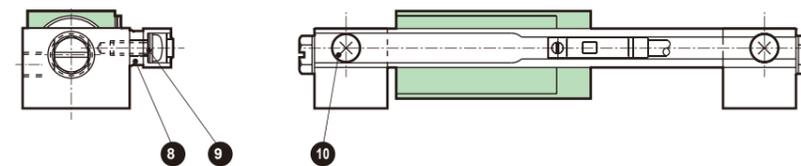
Internal Structure and Materials

Internal Structure and Materials

● MRL2-L (with switch)



● MRL2-L-6



**Do not disassemble**

No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	Switch			6	Cross-Recessed Pan Head Screw	Stainless Steel	
2	Hexagon Socket Head Cap Screw	Stainless Steel		7	Shield Plate	Steel	Nickel Plating
3	Switch Rail	Aluminum Alloy	Alumite	8	Spacer	Copper Alloy	Nickel Plating
4	Magnet	Special alloy		9	Plain Washer	Stainless Steel	
5	Magnet Holder	Polyacetal		10	Cross-Recessed Pan Head Screw	Stainless Steel	

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

Cylinder Switch

Ending

Rodless Type

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

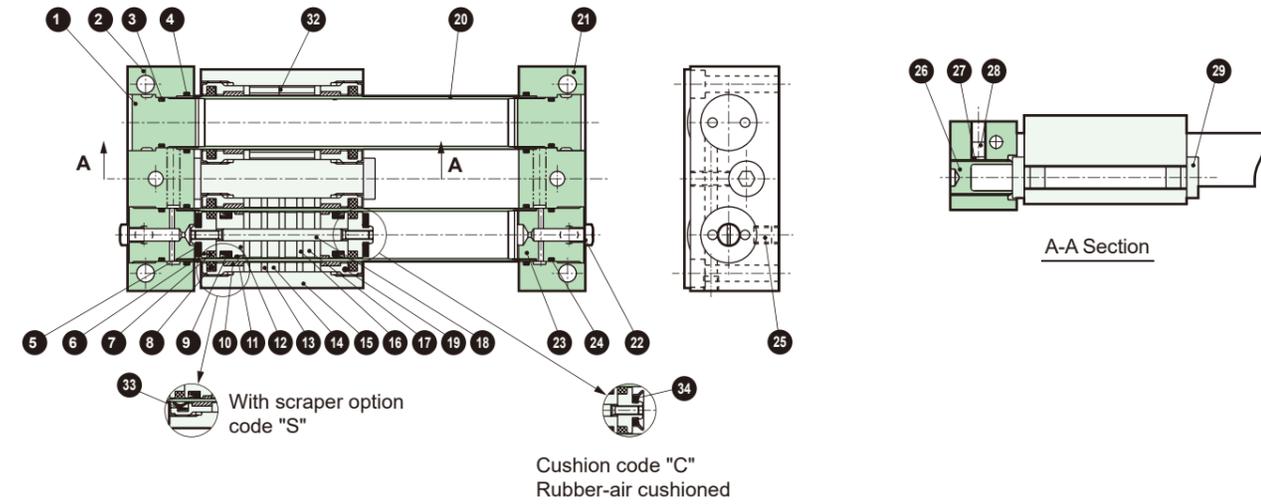
SM-25

Cylinder Switch

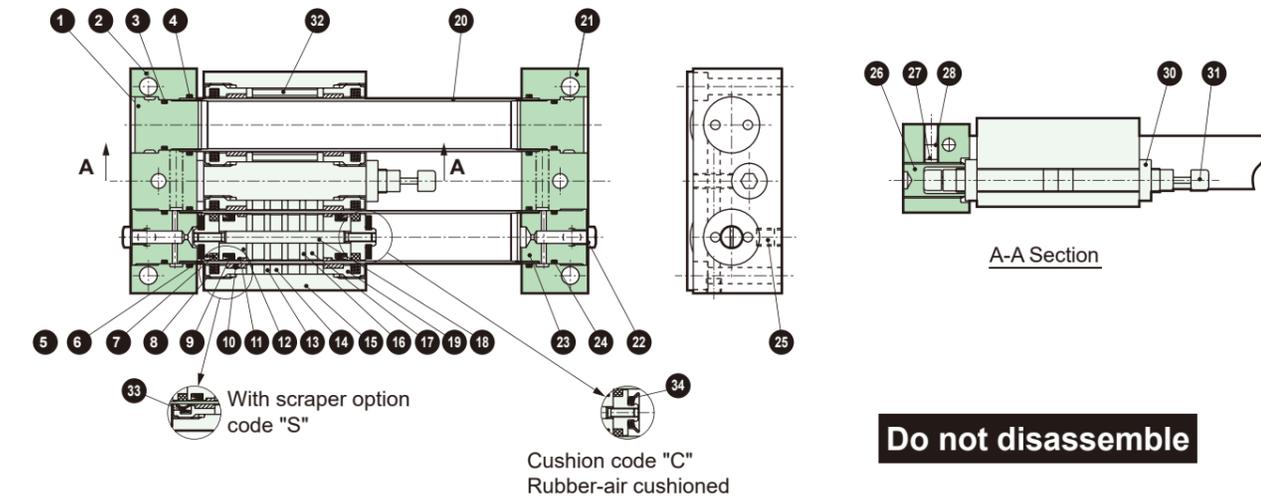
Ending

## Internal Structure and Materials

● MRL2-G (simplified guide 1-piston)



● MRL2-G-□-C (with shock absorber)



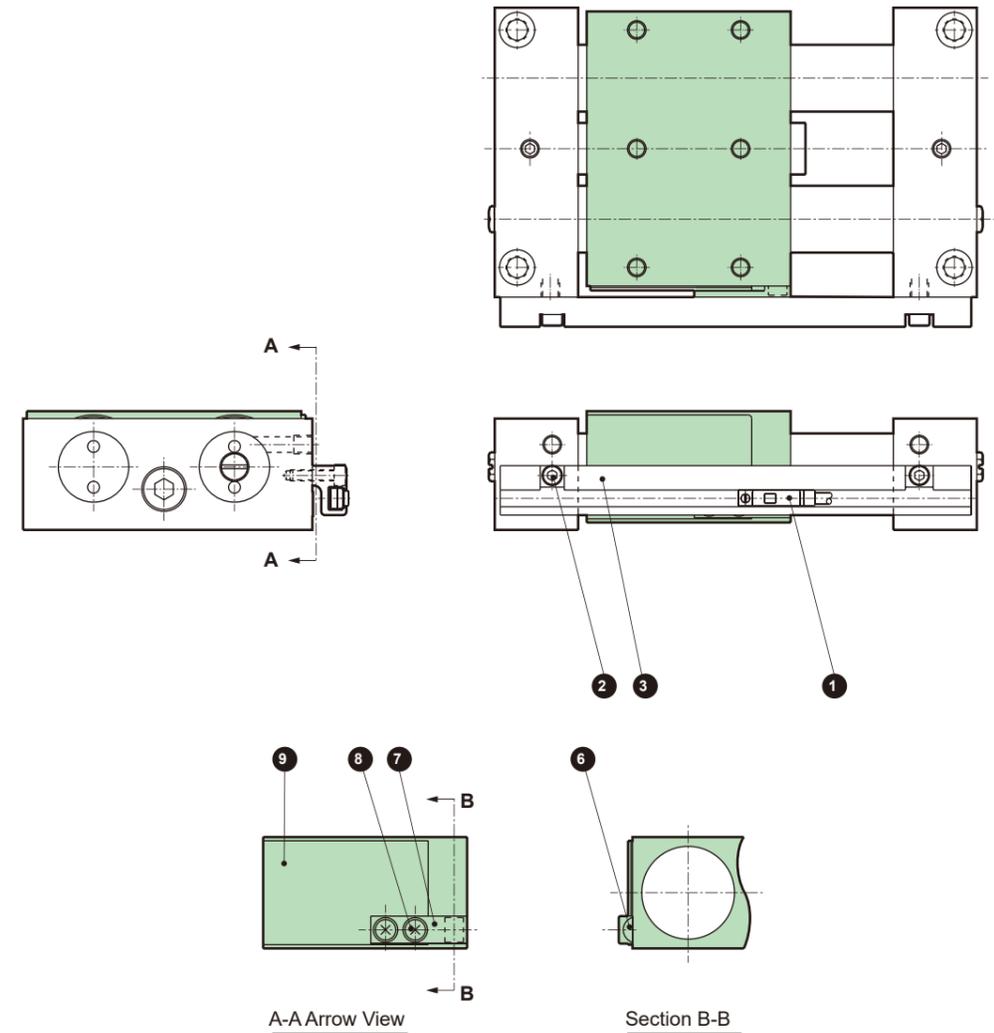
No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	End Cap	Aluminum Alloy	Chromate	19	Slider Cover	Aluminum Alloy	Chromate
2	End plate (L)	Aluminum Alloy	Alumite	20	Cylinder Tube	Stainless Steel	
3	O-ring	Nitrile Rubber		21	End plate (R)	Aluminum Alloy	Alumite
4	O-ring	Nitrile Rubber		22	Plug	ø6 to ø20: FPL (CKD) ø25, ø32: Steel	ø25, ø32: Zinc Chromate
5	Cushion Rubber	Urethane Rubber		23	End Cap	Aluminum Alloy	Chromate
6	Piston (2)	Aluminum Alloy	Chromate	24	O-ring	Nitrile Rubber	
7	Lube-Keeper (For piston)	Special rubber		25	Hexagon Socket Set Screw	Alloy Steel	
8	Lube-Keeper (For slider)	Special rubber		26	Stopper	Alloy Steel	Nickel Plating
9	Piston Packing	Nitrile Rubber		27	Set shoe	Aluminum Alloy	
10	Slider wear ring	Polyacetal		28	Hexagon Socket Set Screw	Stainless Steel	
11	Piston wear ring	Polyacetal		29	Stopper bolt	Steel	Nickel Plating
12	Piston (1)	Aluminum Alloy	Chromate	30	Hexagon Nut	Steel	
13	Slider yoke	Steel	Zinc Chromate	31	Shock Absorber		
14	Magnet	Special alloy		32	Spacer	Stainless Steel	
15	Slider	Aluminum Alloy	Alumite	33	Scraper	Urethane Rubber	
16	Piston yoke	Steel	Zinc Chromate	34	Rubber Air Cushion	Special rubber	
17	Magnet	Special alloy					
18	Piston Shaft	Stainless Steel					

Note: The magnetic strength of the magnet is powerful. Do not disassemble.

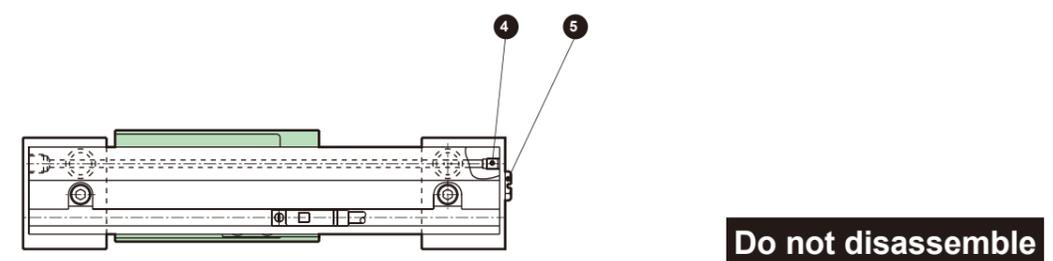
## Internal Structure and Materials

## Internal Structure and Materials

● MRL2-GL (with switch)



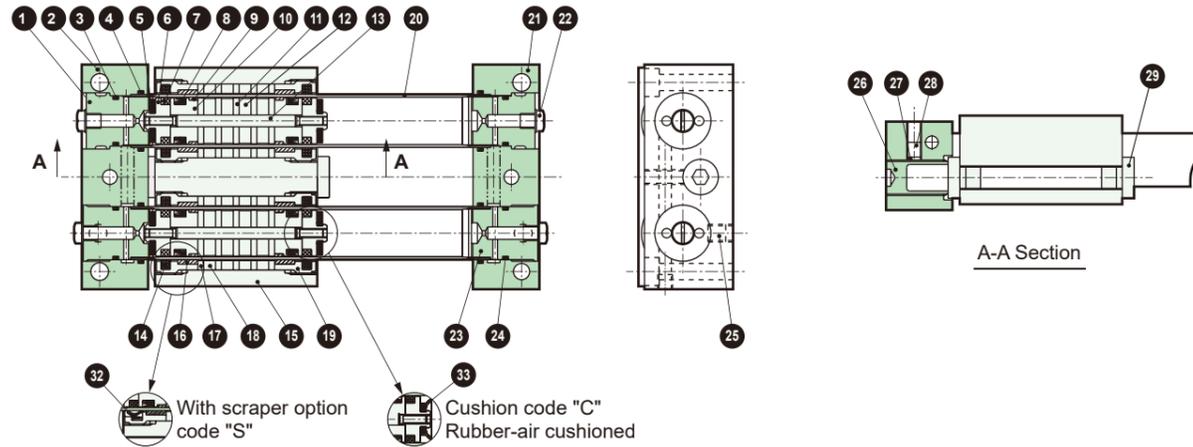
● MRL2-GL-□R (switch common piping)



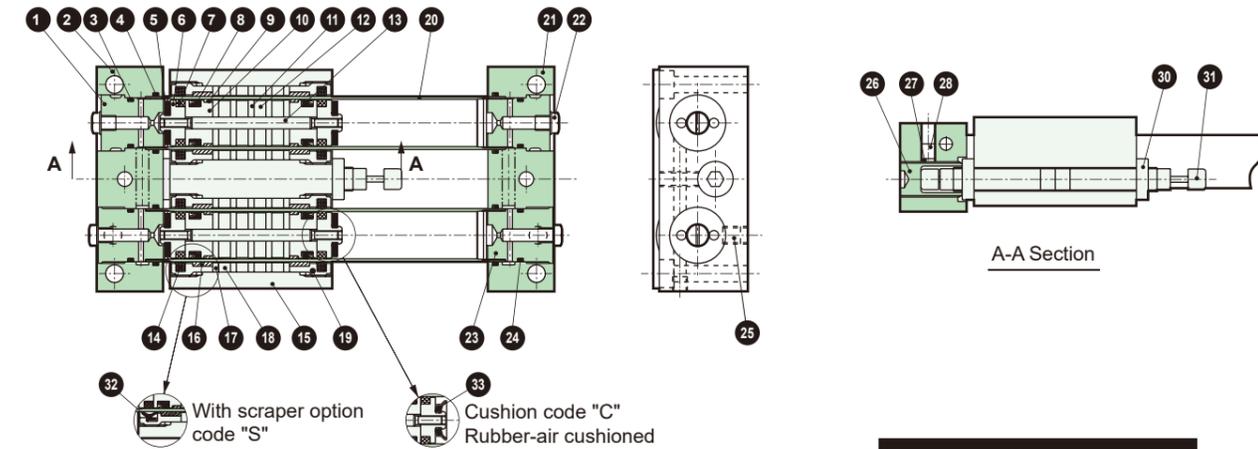
No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	Switch			6	Magnet	Special alloy	
2	Hexagon Socket Head Cap Screw	Stainless Steel		7	Magnet Holder	Polyacetal	
3	Switch Rail	Aluminum Alloy	Alumite	8	Cross-Recessed Pan Head Screw	Stainless Steel	
4	Hexagon Socket Set Screw	Stainless Steel		9	Shield Plate	Steel	Nickel Plating
5	Plug	ø6 to ø20: FPL (CKD) ø25, ø32: Steel	ø25, ø32: Zinc Chromate				

## Internal Structure and Materials

● MRL2-W (simplified guide 2-piston)



● MRL2-W-□-C (with Shock Absorbers)



**Do not disassemble**

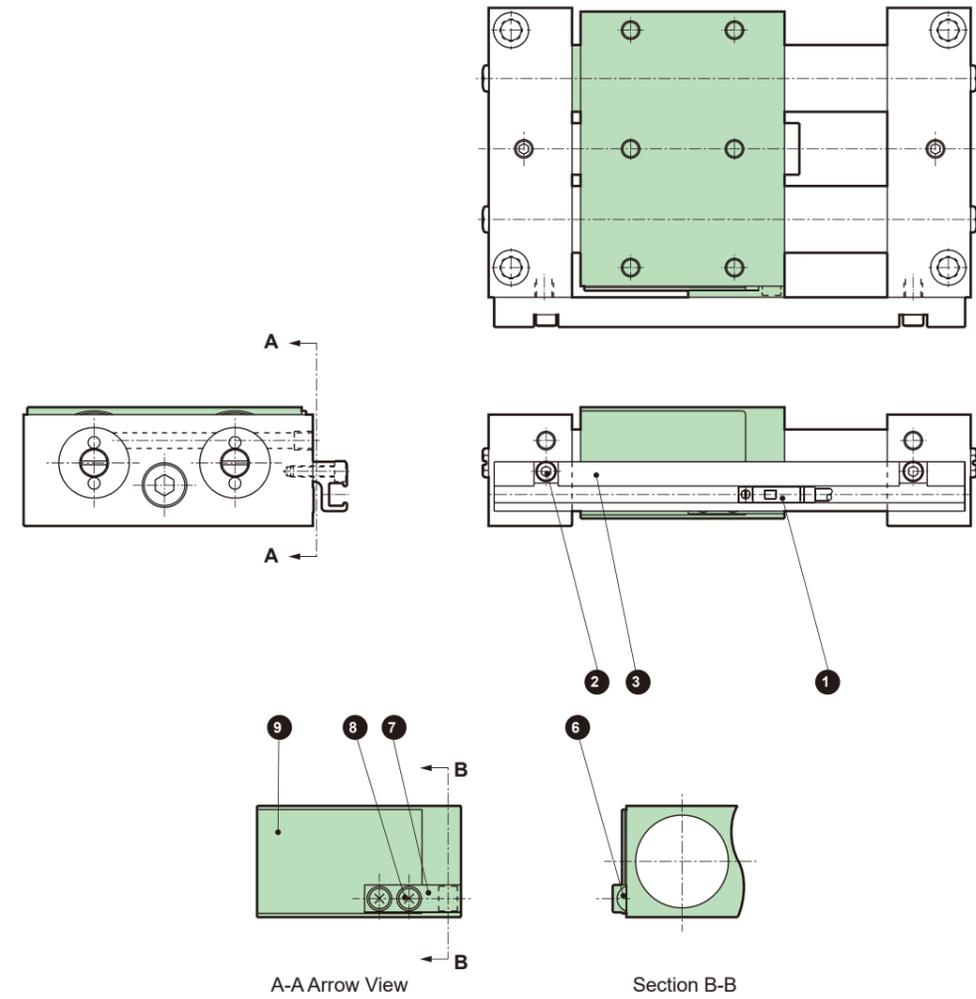
No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	End Cap	Aluminum Alloy	Chromate	18	Magnet	Special alloy	
2	End plate (L)	Aluminum Alloy	Alumite	19	Slider Cover	Aluminum Alloy	Chromate
3	O-ring	Nitrile Rubber		20	Cylinder Tube	Stainless Steel	
4	O-ring	Nitrile Rubber		21	End plate (R)	Aluminum Alloy	Alumite
5	Cushion Rubber	Urethane Rubber		22	Plug	ø6 to ø20: FPL (CKD) ø25, ø32: Steel	ø25, ø32: Zinc Chromate
6	Piston (2)	Aluminum Alloy	Chromate	23	End Cap	Aluminum Alloy	Chromate
7	Lube-Keeper (For piston)	Special rubber		24	O-ring	Nitrile Rubber	
8	Piston Packing	Nitrile Rubber		25	Hexagon Socket Set Screw	Alloy Steel	
9	Piston wear ring	Polyacetal		26	Stopper	Alloy Steel	Nickel Plating
10	Piston (1)	Aluminum Alloy	Chromate	27	Set shoe	Aluminum Alloy	
11	Piston yoke	Steel	Zinc Chromate	28	Hexagon Socket Set Screw	Stainless Steel	
12	Magnet	Special alloy		29	Stopper bolt	Steel	Nickel Plating
13	Piston Shaft	Stainless Steel		30	Hexagon Nut	Steel	
14	Lube-Keeper (For slider)	Special rubber		31	Shock Absorber		
15	Slider	Aluminum Alloy	Alumite	32	Scraper	Urethane Rubber	
16	Slider wear ring	Polyacetal		33	Rubber Air Cushion	Special rubber	
17	Slider yoke	Steel	Zinc Chromate				

Note: The magnetic strength of the magnet is powerful. Do not disassemble.

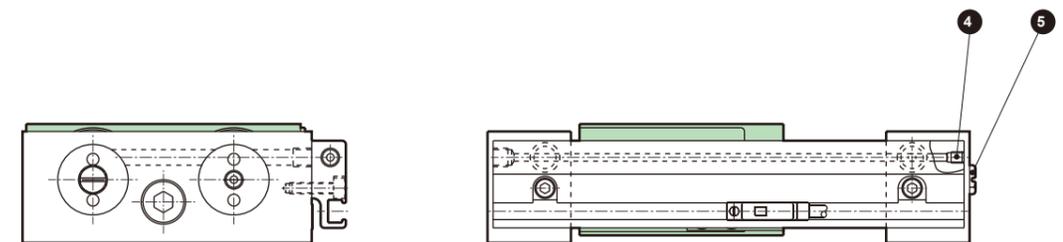
## Internal Structure and Materials

## Internal Structure and Materials

● MRL2-WL (with switch)



● MRL2-WL-□-R (with switch/common piping)

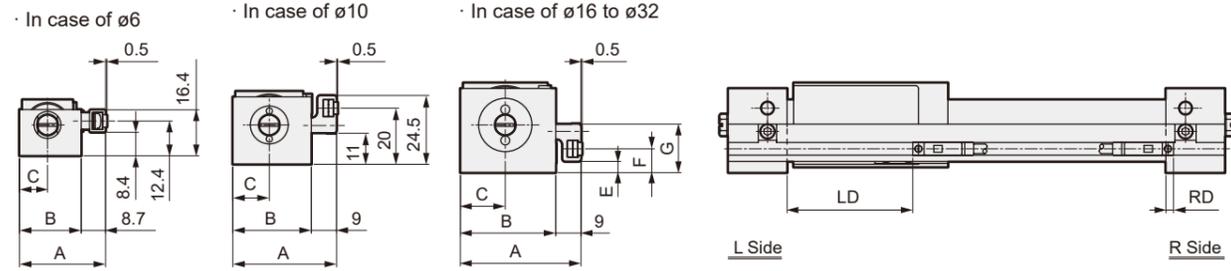


**Do not disassemble**

No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	Switch			6	Magnet	Special alloy	
2	Hexagon Socket Head Cap Screw	Stainless Steel		7	Magnet Holder	Polyacetal	
3	Switch Rail	Aluminum Alloy	Alumite	8	Cross-Recessed Pan Head Screw	Stainless Steel	
4	Hexagon Socket Set Screw	Stainless Steel		9	Shield Plate	Steel	Nickel Plating
5	Plug	ø6 to ø20: FPL (CKD) ø25, ø32: Steel	ø25, ø32: Zinc Chromate				

MRL2 Series Switch External Dimensions Diagram

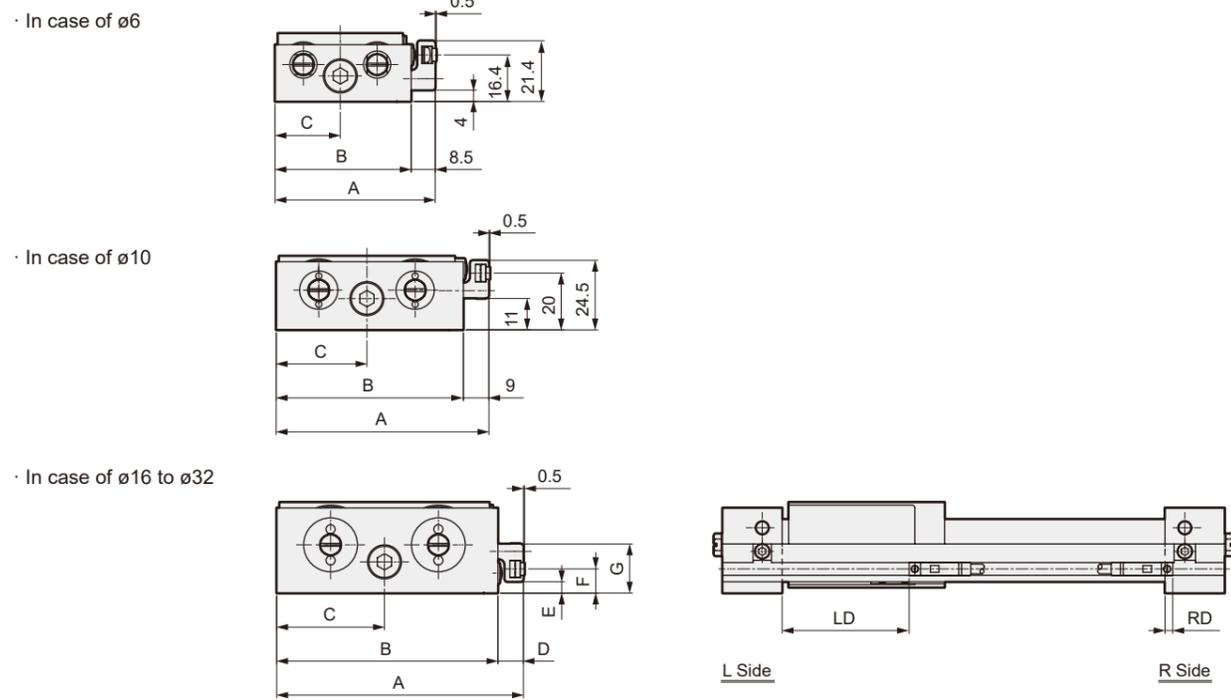
- T2H/V, T2H/VR3, T3(P)H/V, T2WH/V, T3WH/V, T2WLH/V
- MRL2-L



Code	MRL2-L, LF										
	A	B	C	D	E	F	G	T2, T3P, T2_R3		T2WL, T2W, T3W	
Bore Size (mm)								LD	RD	LD	RD
ø6	30.7	22	10	-	-	-	-	27	3.5	29	1.5
ø10	37	28	13	-	-	-	-	27	2.5	29	0.5
ø16	43	34	16	9	4	8.5	17.3	44	2.5	46	0.5
ø20	49	40	19	9	9	13.5	22.3	63.5	1	65.5	-1
ø25	60.7	52	26	8.7	2	7.5	21	58	2	60	0
ø32	68.7	60	30	8.7	10	15.5	29	67.5	1.5	69	-0.5

Note: For switch mountability, refer to the model number display method for each variation.

- T2H/V, T2H/VR3, T3(P)H/V, T2WH/V, T3WH/V, T2WLH/V
- MRL2-MRL2-GL, GLF, WL, WLF

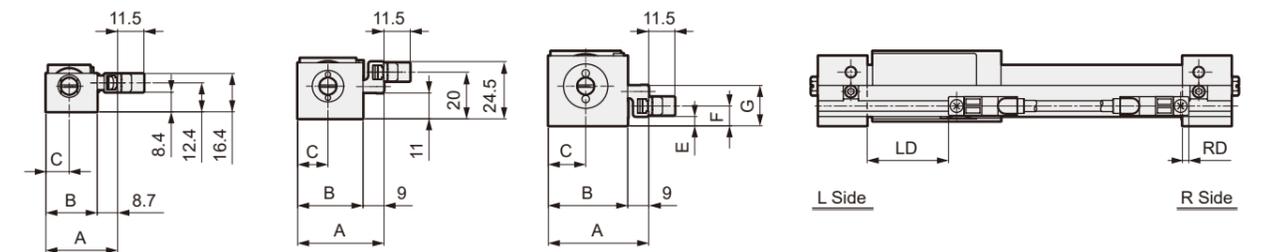


Code	MRL2-GL, GLF, WL, WLF										
	A	B	C	D	E	F	G	T2, T3P, T2_R3		T2WL, T2W, T3W	
Bore Size (mm)								LD	RD	LD	RD
ø6	56.5	48	23	-	-	-	-	27	3.5	29	1.5
ø10	75	66	32	-	-	-	-	27	2.5	29	0.5
ø16	87	78	38	9	4	8.5	17.3	44	2.5	46	0.5
ø20	101	92	45	9	9	13.5	22.3	63.5	1	65.5	-1
ø25	116.7	108	54	8.7	2	7.5	21	58	2	60	0
ø32	134.7	126	63	8.7	10	15.5	29	67.5	1.5	69	-0.5

Note: For switch mountability, refer to the model number display method for each variation.

MRL2 Series Switch External Dimensions Diagram

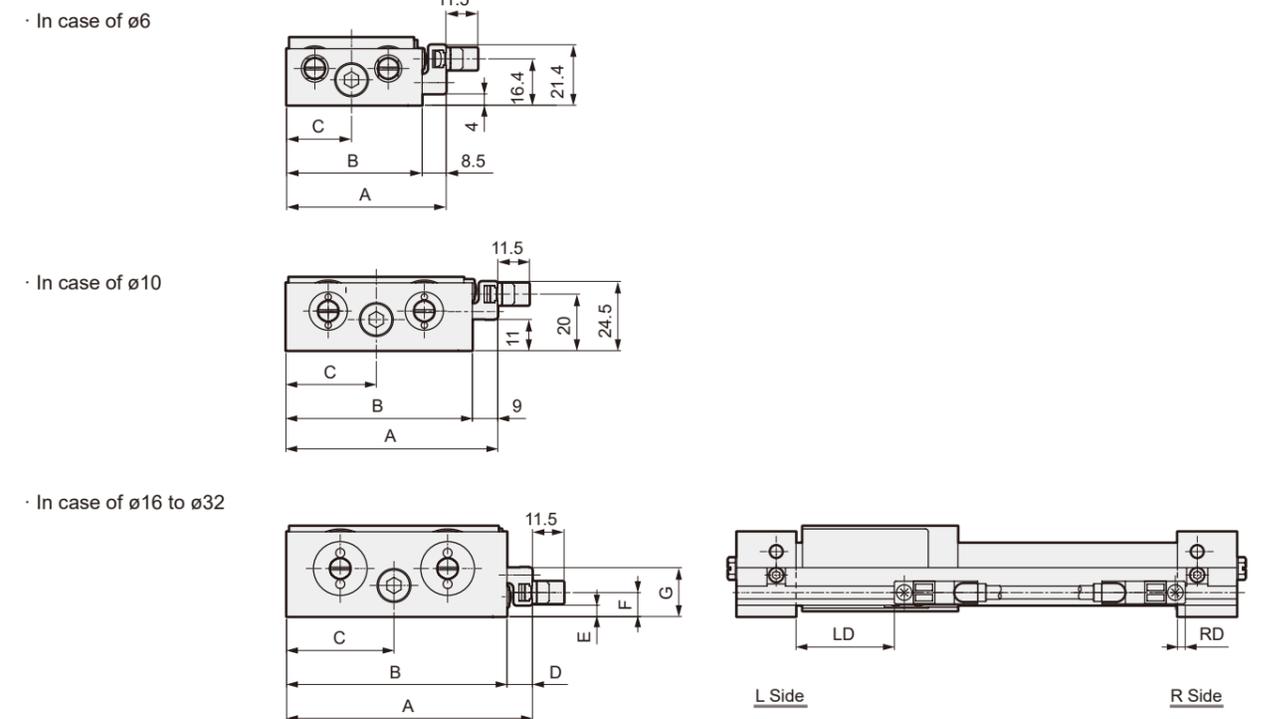
- T1H/V
- MRL2-L



Code	MRL2-L, LF									
	A	B	C	D	E	F	G	LD	RD	
Bore Size (mm)										
ø6	30.7	22	10	-	-	-	-	26	4.5	
ø10	37	28	13	-	-	-	-	26	3.5	
ø16	43	34	16	9	4	8.5	17.3	43	3.5	
ø20	49	40	19	9	9	13.5	22.3	62.5	2	
ø25	60.7	52	26	8.7	2	7.5	21	57	3	
ø32	68.7	60	30	8.7	10	15.5	29	66	2.5	

Note: For switch mountability, refer to the model number display method for each variation.

- T1H/V
- MRL2-GL, GLF, WL, WLF



Code	MRL2-GL, GLF, WL, WLF									
	A	B	C	D	E	F	G	LD	RD	
Bore Size (mm)										
ø6	56.5	48	23	-	-	-	-	26	4.5	
ø10	75	66	32	-	-	-	-	26	3.5	
ø16	87	78	38	9	4	8.5	17.3	43	3.5	
ø20	101	92	45	9	9	13.5	22.3	62.5	2	
ø25	116.7	108	54	8.7	2	7.5	21	57	3	
ø32	134.7	126	63	8.7	10	15.5	29	66	2.5	

Note: For switch mountability, refer to the model number display method for each variation.

MRL2 Series Selection Guide

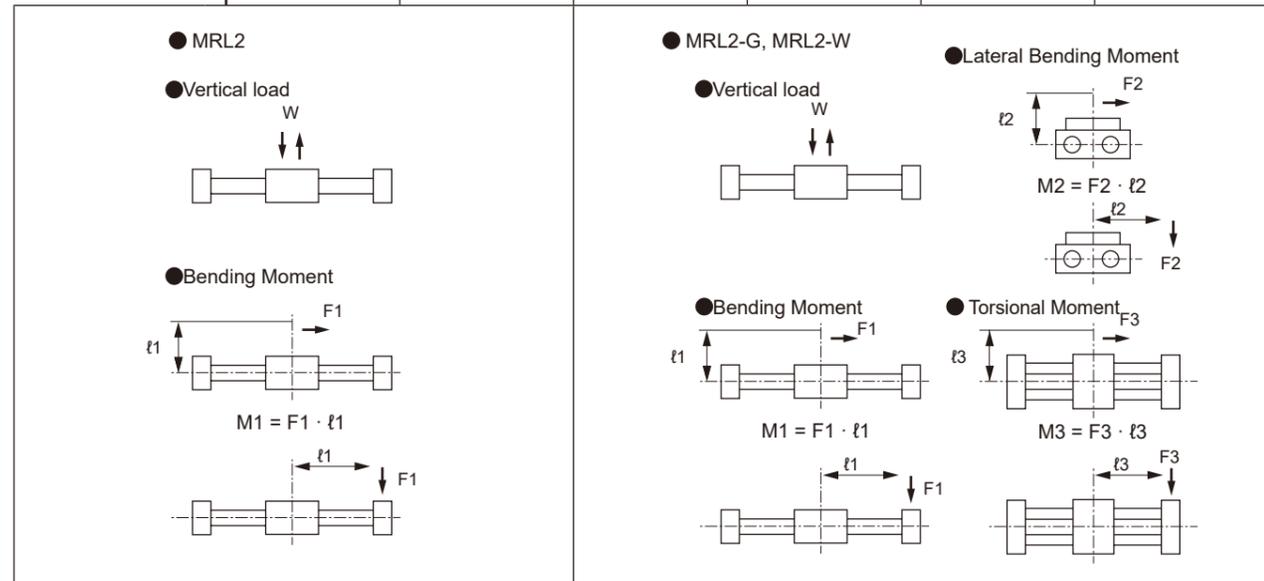
STEP-1 Allowable load judgment

- Calculate all loads (W) and moments (M1, M2, M3) for each load.
- Divide each load by the maximum value shown in the table below, determine the load/moment ratio, and confirm that the total is 1.0 or less.

$$\frac{W}{W_{max}} + \frac{M1}{M1_{max}} + \frac{M2}{M2_{max}} + \frac{M3}{M3_{max}} \leq 1.0$$

Max allowable load weight

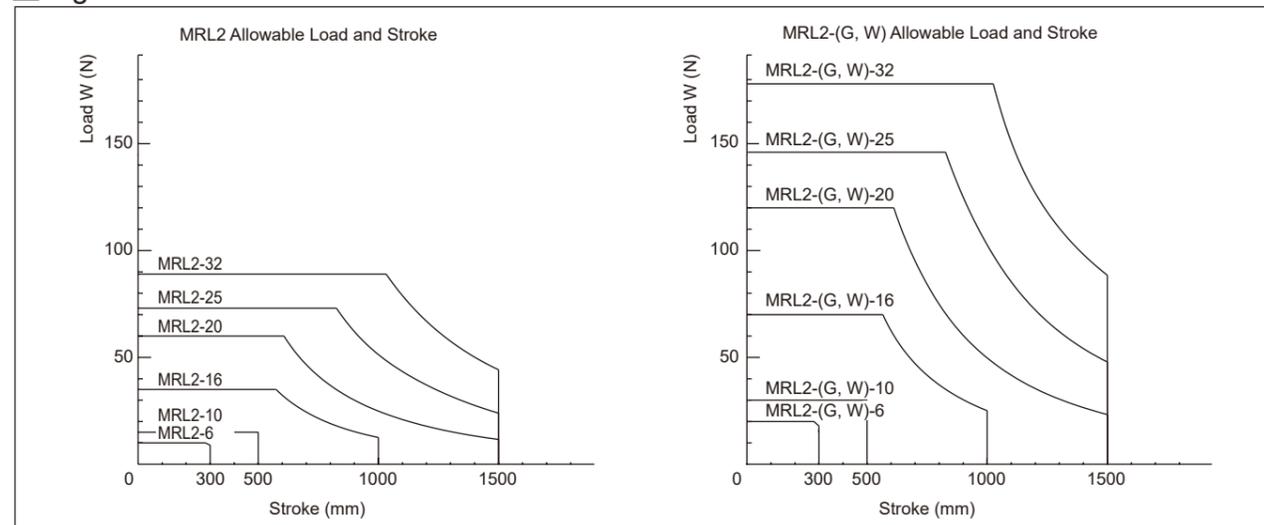
Item	MRL2		MRL2-G · MRL2-W			
	Vertical Load W (N)	Bending moment M1 (N·m)	Vertical Load W (N)	Bending moment M1 (N·m)	Lateral bending moment M2 (N·m)	Torsion moment M3 (N·m)
ø6	10	0.1	20	0.2	0.1	0.2
ø10	15	0.3	30	0.6	0.2	0.6
ø16	35	1.2	70	2.4	0.5	2.4
ø20	60	2.5	120	5.0	1.0	5.0
ø25	73	3.3	146	6.6	3.7	6.6
ø32	89	4.5	178	9.0	5.3	9.0



Note: Give sufficient consideration to inertia when the load moves or stops.

The value of allowable vertical load W varies depending on the Stroke. Select so that it is within the graph in Fig. 1.

Fig. 1 Relation between stroke and allowable vertical load



STEP-2 Calculation of load factor

- Calculate the required thrust based on Tables 2 and 3 below, according to the load size, direction, and mounting orientation.

Table 2

	Vertical load	Bending Moment	Lateral Bending Moment	Torsional Moment
Load size, direction				
Mounting Orientation	Horizontal	Vertical	Horizontal	Vertical
Required thrust	$F_N = 0.2(W+W_0)$	$F_N = \frac{0.2Wl_1}{L_1} + W+W_0$	$F_N = 0.2 \left( \frac{Wl_2}{L_2} + W+W_0 \right)$	$F_N = \frac{0.2Wl_3}{L_1} + W+W_0$

As the slider rotates with the single type, radial moment and torsion moment cannot be applied.

- $F_N$  : Necessary Thrust (N)
- $W$  : Load (N)
- $W_0$  : Slider self-weight (N)
- $l_n$  (n = 1, 2, 3): Overhang (mm)
- $L_1$  : Slider bearing pitch (mm)
- $L_2$  : Pitch of guide (mm)

Table 3

Model Number	$W_0$	$L_1$	$L_2$
MRL2-6	0.4	27	-
10	0.6	27	-
16	1.2	39	-
20	2.4	58	-
25	3.8	70	-
32	5.2	78	-
MRL2-G-W-6	0.9	27	26
10	1.7	27	34
16	3.0	39	38
20	5.9	58	46
25	8.5	70	50
32	11.9	78	60

- Calculate the load factor from the required thrust calculated in 1 and Table 4, Fig. 2. (Ensure the load factor is approximately 50% or less.)

$$\text{Load factor } \alpha = \frac{F_N}{\frac{a}{100} \cdot A} \times 100$$

- $F_N$ : Necessary Thrust (N)
- $A$ : Theoretical thrust (N)
- $a$ : Thrust Efficiency (%)
- $B$ : Effective thrust (N)

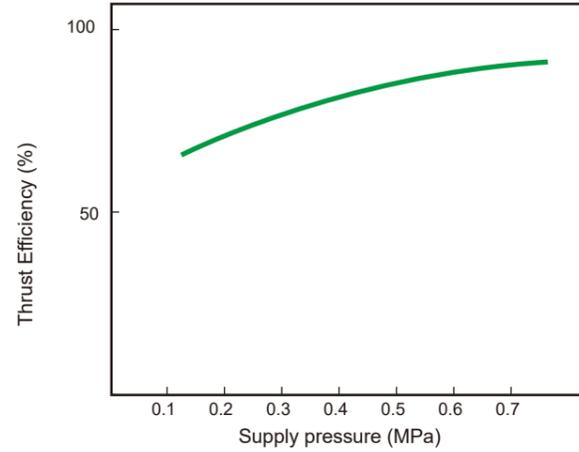
$$B = \frac{a}{100} \cdot A$$

Table 4 Theoretical thrust table

Display Code 						
Model Number	Operating Pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
MRL2, MRL2-G-6	-	8	11	14	17	20
10	-	24	31	39	47	55
16	40	60	80	101	121	141
20	63	94	126	157	188	220
25	98	147	196	245	295	344
32	161	241	322	402	483	563
MRL2-W-6	-	17	23	28	34	40
10	-	47	63	79	94	110
16	80	121	161	201	241	281
20	126	188	251	314	377	440
25	196	295	393	491	590	687
32	322	483	643	804	966	1130

\*At low pressures, thrust efficiency is low, so the difference between effective thrust and theoretical thrust becomes large. Please be careful.

Fig. 2 Thrust efficiency



STEP-3 Calculation of kinetic energy

Calculate kinetic energy from load weight (m) and speed (V), and ensure it is below the allowable value in Table 5. When exceeding the allowable absorbed energy value, increase the cylinder size so that the value falls under the allowable absorbed energy or consider the use of an external shock absorber. Note that the speed at this time is not the average speed but the speed at cushion impact, so calculate the cushion impact speed from equation (1).

$$E = \frac{1}{2}mV^2$$

$$Va = \frac{L}{t}$$

$$V = Va \times \left(1 + 1.5 \frac{\alpha}{100}\right) - (1)$$

E: Kinetic Energy (J)  
m: Weight (kg)  
V: Cushion entry velocity (m/s)  
Va: Average speed (m/s)  
L: Stroke(m)  
t: Travel time (s)  
α: Load Factor (%)

Table 5 Allowable absorbed energy value

Bore Size	Allowable Absorbed Energy (J)	
	MRL2	MRL2-G <sub>W</sub>
ø6	0.006	0.12
ø10	0.028	0.12
ø16	0.100	0.25
ø20	0.265	0.58
ø25	0.283	0.74
ø32	0.523	0.74

Shock absorber specifications

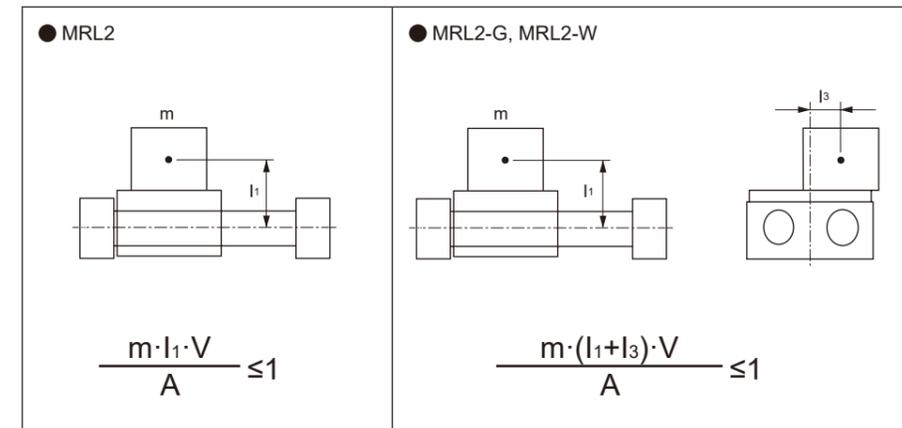
Bore Size	Maximum Absorption Energy J	Stroke (mm)
ø6	0.24	4
ø10	0.24	4
ø16	0.80	5.5
ø20	2.11	7.5
ø25	3.88	9.5
ø32	3.88	9.5

STEP-4 Confirmation of Inertial Load

Confirm that the weight (m), overhang (l<sub>n</sub> (n = 1, 3)), and cushion entry velocity (V) multiplied together and then divided by the value of A shown in the table below is less than or equal to 1. If it exceeds 1, always increase the cylinder size or review the operating conditions so that it becomes 1 or less.

Bore Size	A	
	MRL2	MRL2-G <sub>W</sub>
ø6	5.6	11.2
ø10	17	34
ø16	68	136
ø20	142	284
ø25	187	374
ø32	255	510

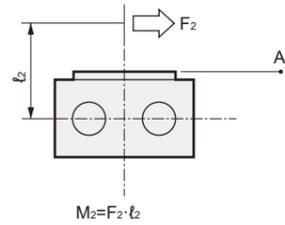
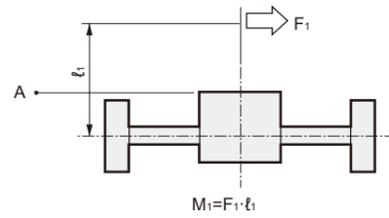
m : Weight (kg)  
l<sub>n</sub> (n=1,3) : Overhang (mm)  
V : Cushion entry velocity (m/s)



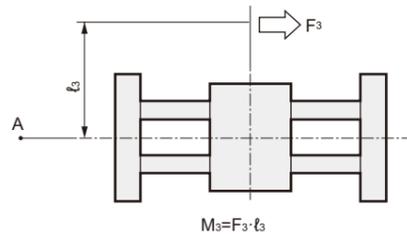
MRL2-G · MRL2-W Slider Deflection Amount

● Bending Moment

● Lateral Bending Moment



● Torsional Moment



Bore Size	Moment Load		Table deflection amount at point A (±mm)		
	MRL2	MRL2-G,W	M1 Direction	M2 Direction	M3 Direction
ø6	M1, M3: 0.2 N·m M2: 0.1 N·m		1.5	1.46	1.05
ø10	M1, M3: 0.6 N·m M2: 0.2 N·m		1.61	1.12	0.92
ø16	M1, M3: 2.5 N·m M2: 0.5 N·m		1.3	1.16	0.87
ø20	M1, M2, M3: 2.5 N·m		0.89	0.96	0.65
ø25	M1, M2, M3: 5 N·m		1.1	0.92	0.7
ø32	M1, M2, M3: 5 N·m		1.0	0.77	0.6

Note: Point A is a point that is 200 mm away from the center of the slider.

MEMO

Comparative Data of Rubber Cushion and Rubber Air Cushion (Reference Value)

Measure the noise level (dB) generated when the piston collides with the stroke end.

Measurement Conditions

1. Sample cylinder: MRL2 basic, stroke 200 mm
2. Piston speed upon collision at end of Stroke: V=300 mm/S
3. Distance between noise level meter and cylinder: 0.25 m
4. Load: No Load

Typical Example Unit: dB

Bore Size	Rubber Cushion	Rubber Air Cushion
ø6	51.2	44.7
ø10	51.2	45.6
ø16	63.4	48.2
ø20	75.9	59.3



# 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  $\pm 1^\circ$ .

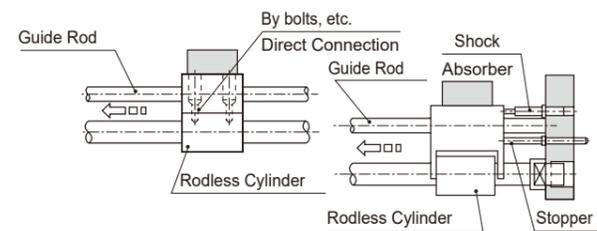
Mount so that the slider functions with the Min Operating Pressure value of all processes. If the flatness of the cylinder mounting surface is poor, twisting of the guide part will increase the minimum Operating Pressure and cause premature wear of the bearing part. Therefore, mount so that the slider 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.

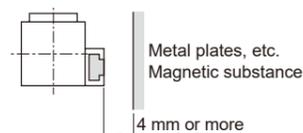
With the basic MRL2, be careful of slider rotation. Connect to an external bearing, or consider using MRL2-G or MRL2-W.

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.

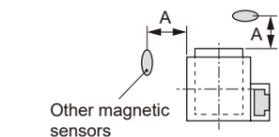


The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Check that a distance of 4 mm is provided from the switch surface.



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.

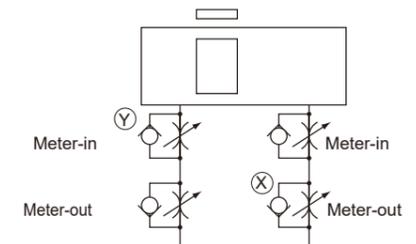
Install the speed controller near the cylinder. If installed far from the cylinder, speed will be unstable. Use SC-M3/M5-F, SC3W, SCD-M3/M5, or SC3U series speed controllers.

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.

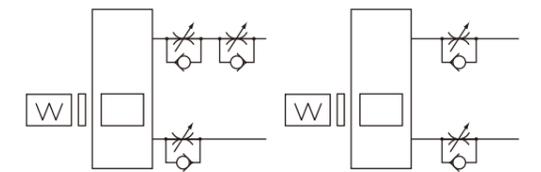
Speed control is stable with a meter-out circuit. To make the operation even smoother at the start, add a meter-in circuit.



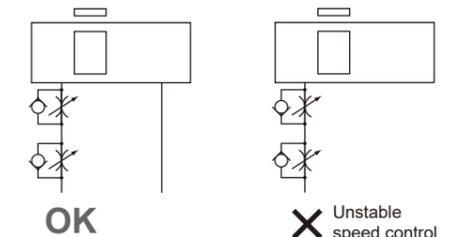
Speed adjustment method when moving to the right

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.

Rodless Type

Rodless Type

SRL3

SRL3

SRG3

SRG3

SRM3

SRM3

SRT3

SRT3

MRL2

MRL2

MRG2

MRG2

SM-25

SM-25

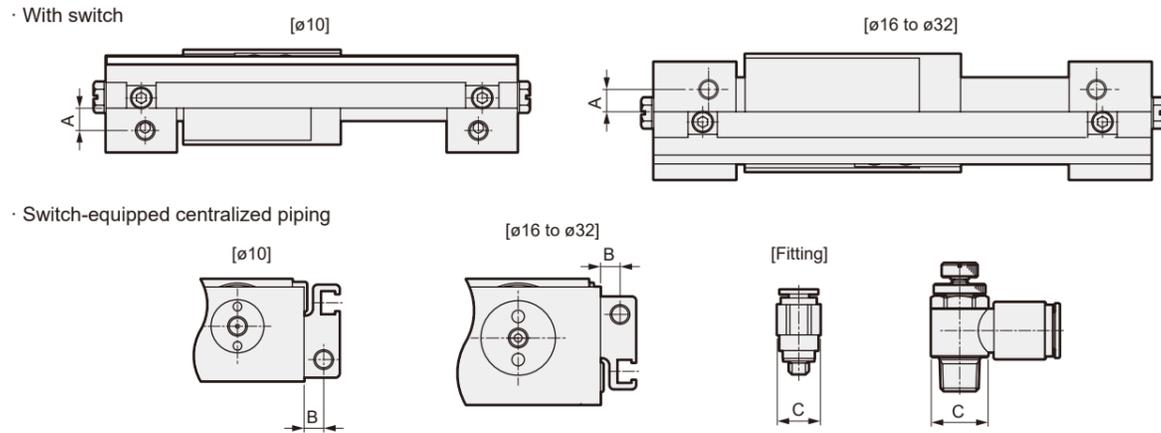
Cylinder Switch

Cylinder Switch

Ending

Ending

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



Item	Bore Size (mm)	Port Size	Port position dimension		Usable Fittings	Fitting outer diameter øC
			A	B		
SRL3	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		
SRG3	ø20	Rc1/8	5.5	5	SC3W-6-4 / 6 / 8 GWS4-6, GWS6-6, GWS8-6, etc.	ø15 or less
	ø25		7.5	7.5		
	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).

MEMO

## 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".