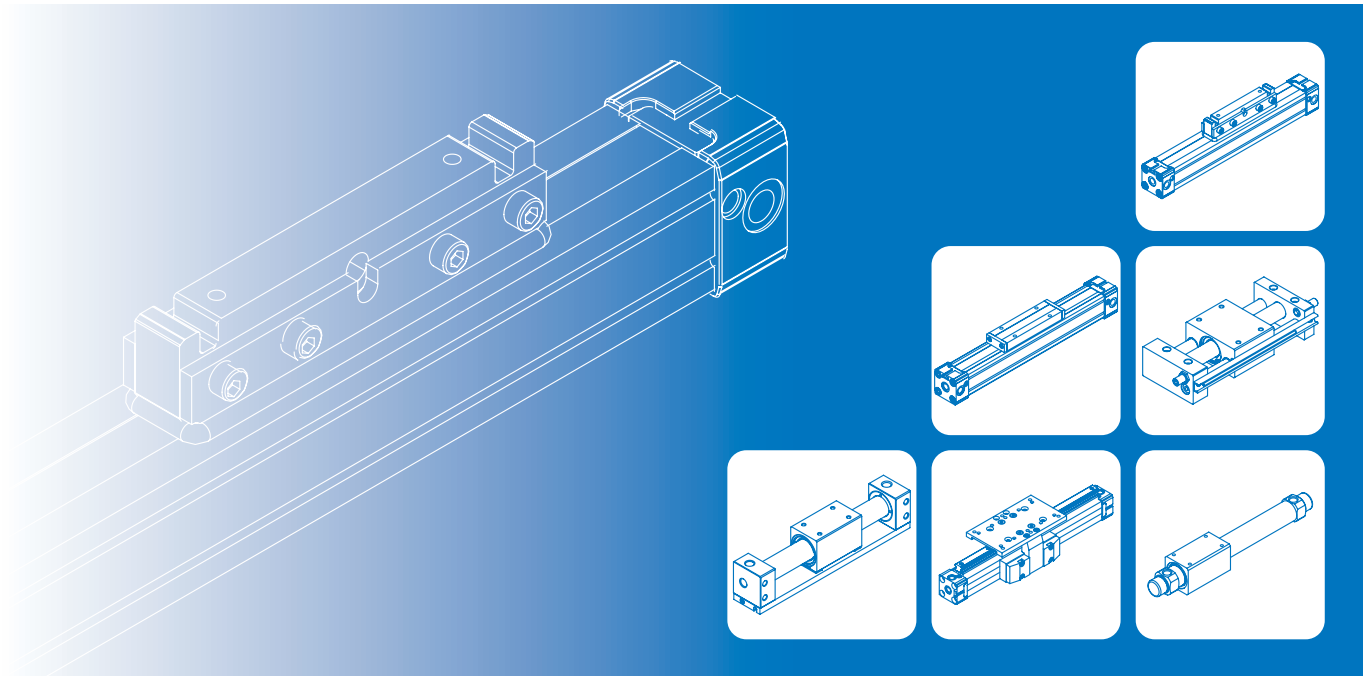
RODLESS CYLINDER



RODLESS CYLINDER

MCRPL(F)2 ø16~ø63 New 8-2

MCRPLK2 ø16~ø40 New 8-12

MAGNETICALLY COUPLED RODLESS CYLINDER

MCRPM ø10~ø40.....8-18

MCRPMD ø10~ø32.....8-21

MCRPMS ø10~ø32.....8-25

MCRPL(F)2 series

RODLESS CYLINDER

MCRPLF2
User manual

Technical data

Caution for safety
(Read beforeinstalling)



Features

- 50% space saving when compared to conventional cylinders.
- Multi ported endcaps as standard.
- Reed switches available.
- Magnetic as standard.

Specification

Model	MCRPL2			MCRPLF2			
Acting type	Double acting			Double acting			
Tube i.D.(Mm)	16	25	32,40	16	25	32,40,50	63
Port size	M5	G1/8	G1/4	M5	G1/8	G1/4	G3/8
No. Of port	3						
Medium	Air						
Operating pressure range	0.1~0.78 MPa						
Ambient temperature	-10°C~+80°C (No freezing)						
Lubrication	With or without lubrication						
Cushion	With adjustable cushion at both ends						
Sensor switch	RDT, RQT						
Sensor switch holder	HPL2	–		HPL2	–		

* The tube isn't airtight, so the cylinder is allowed little leakage.
Before the cylinder is sale, it has passed the standard of leakage test.

Table for standard stroke

Tube I.D.	Stroke (mm)	Max. stroke (mm)	
		Standard (90)	Long piston (98)
ø16	100 ~	2950	2900
ø25, 32		5600	5600
ø40		5600	5500
ø50, 63		5600	–

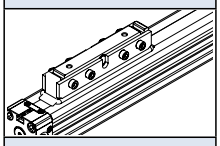
* Minimum stroke unit 1mm.

Order example

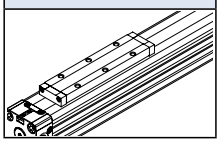
MCRPL2 – 90V – 25 – 0850 – S –

Model

MCRPL2



MCRPLF2



Type

90	Standard type
98	Long piston type * Only for MCRPL2

Piston seals

–	NBR
V	VITON

Tube I.D.

16
25
32
40
50
63

for **MCRPLF2**

Stroke

0100~5600 mm (4 digits)

Grease lubrication

–	Standard
S	Slow motion

Port thread

–	M5×0.8

(for ø16)

–	G thread
RC	Rc thread
NPT	NPT thread

Made to order

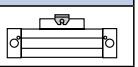
(for ø25~63)

Available speed range

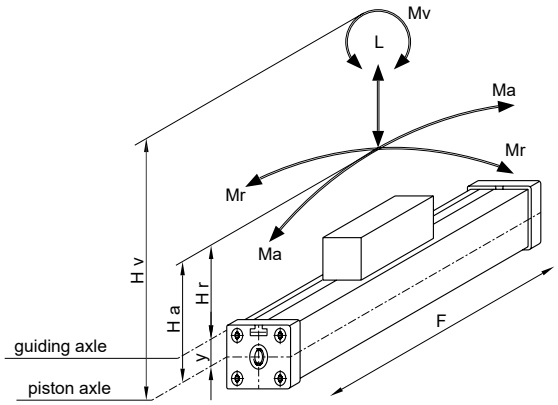
Piston seals	Grease lubrication	Available speed range (mm/s)
NBR	Slow motion	50~100
	Standard	Within 101~1000
VITON	Slow motion	50~200
	Standard	201~1000 above

* Maximum seal life will be achieved when piston speeds do not exceed 1000mm/s.
* The suitable grease type can be selected according to the actual use.

Order example of mounting accessories

Code	LB (LB×2)	LB1 (LB1×2)	MS (Mid section support)		AC (Articulated carrier)
Mounting / Tube I.D.					
ø16	**LB-P1-16x2**	–	**MS-P1-16**	–	**AC-P1-16**
ø25	**LB-P1-25x2**	–	**MS-P1-25**	–	**AC-P1-25**
ø32	**LB-P1-32x2**	**LB1-P1-32x2**	**MS-P1-32**	–	**AC-P1-32**
ø40	**LB-P1-40x2**	–	**MS-P1-40**	–	**AC-P1-32**
ø50	**LB-P1-50x2**	–	–	**MS-P1-50x2**	**AC-P1-50**
ø63	**LB-P1-63x2**	–	–	**MS-P1-63x2**	**AC-P1-63**

Forces & Moments



Formulas
Ma = F × Ha
Mr = F × Hr
Mv = F × Hv

MCRPL2

Cylinder		Effect force (N) at 6 bar	Cushion (mm)	Max. allowed load (N)	Max. allowed bending moment (Nm)		Max. allowed torque (Nm)
ø	y	F	S	L	Ma axial	Mr radial	Mv central
16	9	110	15	120	4	0.3	0.5
16L	9	110	15	120	5	0.4	0.6
25	14	250	21	300	15	1.0	3.0
25L	14	250	21	300	20	1.5	6.0
32	18	420	26	450	30	2.0	4.5
32L	18	420	26	450	60	3.5	10.0
40	23	640	32	750	60	4.0	8.0
40L	23	640	32	750	130	7.0	20.0

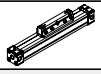
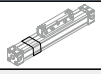
- 16L~40L: cylinder with long piston for heavy bending, torque moments and vertical movement.
- The figures above are max. values based on light shock free duty and speed of V ≤ .2m/s. Max. pressure 6 bar.
- An exceeding of the values in dynamic operations, even for short moments, has to be avoided.
- Attention: Resulting forces could lead to extreme exceeding of the values. In case of undefinable situations the above max. values have to be reduced by 10~-20%.

MCRPLF2

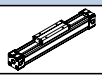
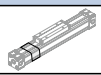
Cylinder		Effect force (N) at 6 bar	Cushion (mm)	Max. allowed load (N)	Max. allowed bending moment (Nm)		Max. allowed torque (Nm)
ø	y	F	S	L	Ma axial	Mr radial	Mv central
16	9	110	15	120	4	0.3	0.5
25	14	250	21	300	15	1	3.0
32	18	420	26	450	30	2	4.5
40	23	640	32	750	60	4	8.0
50	28	1000	32	1200	115	7	15.0
63	36	1550	40	1650	200	8	24.0

- The figures above are max. values based on light shock free duty and speed of V ≤ 0.45m/s. Max. pressure 6 bar.
- An exceeding of the values in dynamic operations, even for short moments, has to be avoided.
- Attention: Resulting forces could lead to extreme exceeding of the values. In case of undefined situations the above max. values have to be reduced by 10~20%.

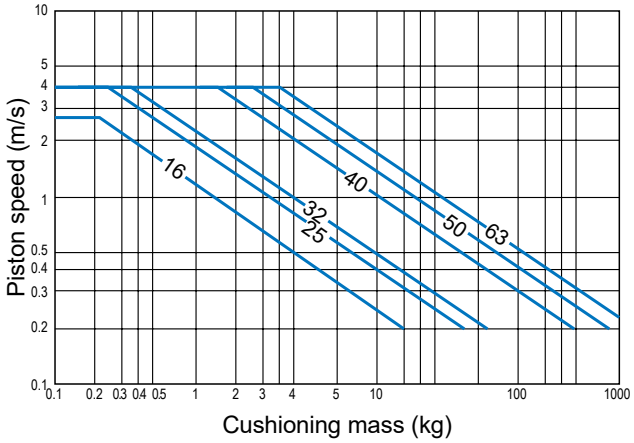
Weight

Model	Basic weight **MCRPL2**	Stroke 100 mm **MCRPL2**
Tube I.D.		
ø16	240	92
ø25	760	294
ø32	1,670	379
ø40	2,760	594

Unit: g

Model	Basic weight **MCRPLF2**	Stroke 100 mm **MCRPLF2**
Tube I.D.		
ø16	230	92
ø25	710	294
ø32	1,150	379
ø40	2,700	594
ø50	4,000	648
ø63	7,360	1,182

Cushioning diagram



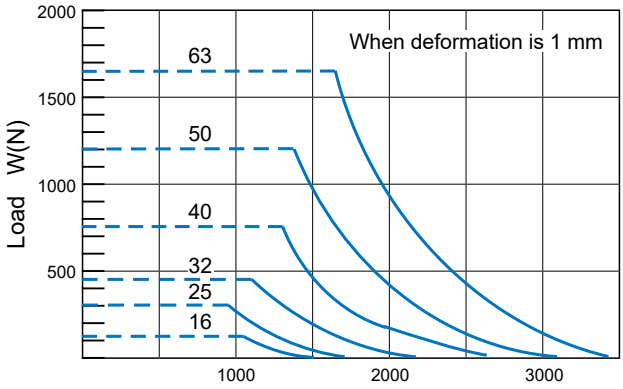
Pay attention to the following points

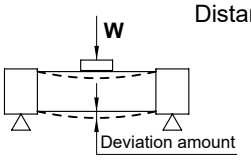
- If the limits above are exceeded additional shock absorbers are necessary.
- For piston speeds of more than ≥ 1m/s viton seals are recommended.
- For piston speeds ≤ 0.1m/s (NBR), ≤ 0.2m/s (VITON) slow speed lubrication is necessary see at sperpart kids.
- Maximum seal life will be achieved when piston speeds do not exceed 1m/s.

Positioning of cylinder mountings

The illustration below explains that installing with the load corresponding to the specified support interval will result in a cylinder deviation of 1 mm.

For example, when installed with a diameter of ø50, a support interval of 1500 mm, and a load of 1000 N, the cylinder deviation will reach 1 mm.





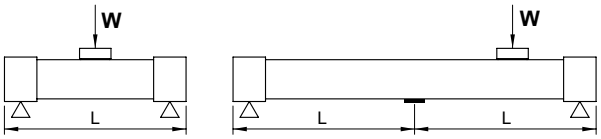


Diagram information

- Calculated deflections without support of 0.5-1 mm allow exceeding of the approved limits.
- Calculated deflections without support of > 1-max.1.5 mm require reduction of approved limits.

Order example of Component kits & Repair kits

Component kits	CP	— MCRPL2	— 90V	— 25	—	
Repair kits	PS	— MCRPL2	— 98V	— 25		
		①	②	③	④	

① **Model**

MCRPL2
MCRPLF2

② **Type**

90	Standard type
98	Long piston type (only for MCRPL2)

Piston seals

—	NBR
V	VITON

③ **Tube I.D.**

16
25
32
40
50
63

Only for MCRPLF2

④ **Port thread**

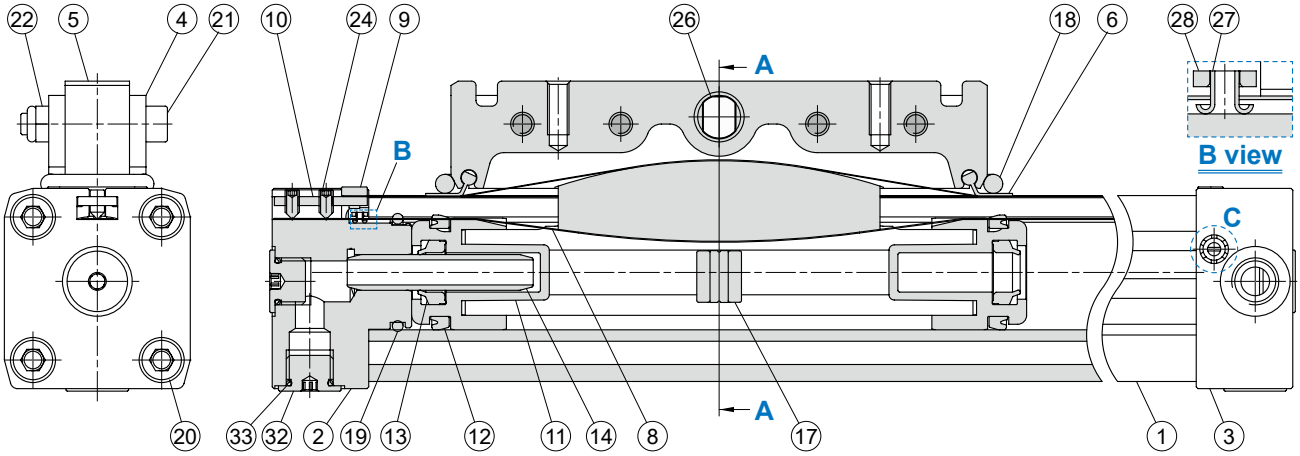
—	M5×0.8

(for ø16)

—	G thread
RC	Rc thread
NPT	NPT thread

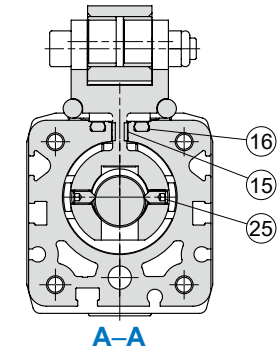
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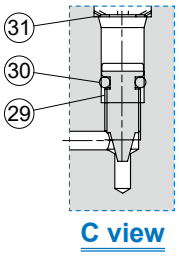
(for ø25~63)



Material

No.	Part name	Material	Q'y	Component parts (inclusion)	Repair kits (inclusion)	Note
1	Cylinder tube	Aluminum alloy	1			
2	End cap A	Aluminum alloy	1	●		
3	End cap B	Aluminum alloy	1	●		
4	Piston axle	Aluminum alloy	1	●		
5	Floating bracket platform	Aluminum alloy	1	●		
6	Scraper	Resin	2	●		
7	Outer seal strip	Stainless steel	1			
8	Inner seal strip	Stainless steel	1			
9	Outer seal strip fixing piece	Stainless steel	2	●		
10	Inner seal strip fixing piece	Stainless steel	2	●		
11	Piston	Resin	2	●		
12	Piston seal	NBR	2	●	●	
13	Cushion seal	NBR	2	●	●	
14	Cushion axle	Aluminum alloy	2	●		
15	Wear sheet	Resin	Table 1	●		
16	Magnet stripe	Magnet material	2			
17	Magnet set	Magnet material	1	●		
18	Platform seal	NBR	1	●	●	
19	End cap seal	NBR	2	●	●	
20	End cap screw	ø16~ø32 Carbon steel	8	●		
		ø40 Stainless steel	8	●		
21	Platform screw	Stainless steel	4	●		
22	Platform nut	Stainless steel	4	●		
23	Outer seal strip screw	Stainless steel	4	●		
24	Inner seal strip screw	Stainless steel	4	●		
25	Magnet fixing screw	Carbon steel	2	●		ø25~ø40 only
26	Bush	Bearing alloy	2	●		
27	Rivet	Copper alloy	2	●		
28	Rivet clip	Copper alloy	2	●		
29	Needle valve	Copper alloy	2	●		
30	Needle valve seal	NBR	2	●	●	
31	Needle valve washer	Carbon steel	2	●		ø25~ø40 only
32	Hold plug	Copper alloy	4	●		
33	Plug seal	NBR	4	●	●	





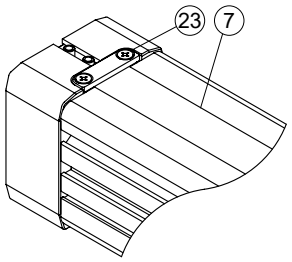
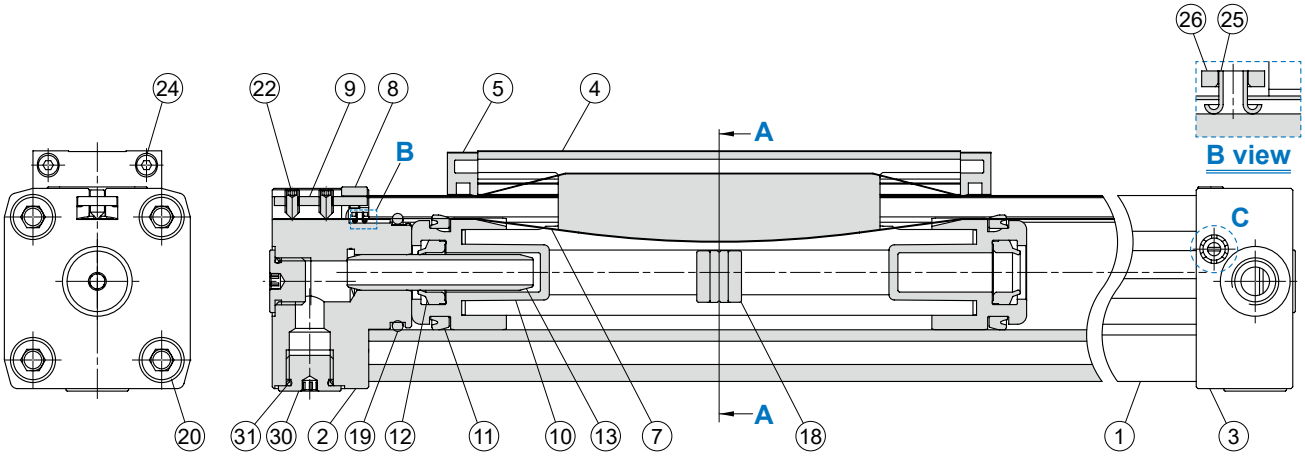


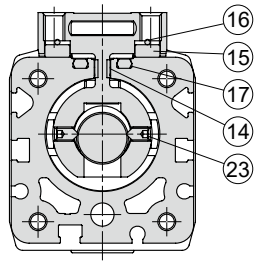
Table 1. The amount of wear sheet

Tube I.D. / Type	16	25	32	40
MCRPL2-90	2	2	4	4
MCRPL2-98	4	4	6	6

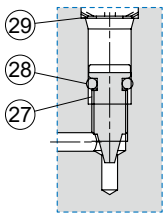


Material

No.	Part name	Material	Q'y	Component parts (inclusion)	Repair kits (inclusion)	Note
1	Cylinder tube	Aluminum alloy	1			
2	End cap A	Aluminum alloy	1	●		
3	End cap B	Aluminum alloy	1	●		
4	Piston axle	Aluminum alloy	1	●		
5	Scraper	Resin	2	●		
6	Outer seal strip	Stainless steel	1			
7	Inner seal strip	Stainless steel	1			
8	Outer seal strip fixing piece	Stainless steel	2	●		
9	Inner seal strip fixing piece	Stainless steel	2	●		
10	Piston	Resin	2	●		
11	Piston seal	NBR	2	●	●	
12	Cushion seal	NBR	2	●	●	
13	Cushion axle	Aluminum alloy	2	●		
14	Wear sheet	Resin	Table 1	●		
15	Side support plate	Resin	2	●		
16	Side sealing strip	NBR	2	●	●	
17	Magnet stripe	Magnet material	2			
18	Magnet set	Magnet material	1	●		
19	End cap seal	NBR	2	●	●	
20	End cap screw	ø16~ø32 Carbon steel	8	●		
		ø40~ø63 Stainless steel	8	●		
21	Outer seal strip screw	Stainless steel	4	●		
22	Inner seal strip screw	ø16~ø40 Stainless steel	4	●		
		ø50,ø63 Carbon steel	4	●		
23	Magnet fixing screw	Carbon steel	2	●		ø25~ø40 only
24	Scraper fixing screw	Carbon steel	4	●		
25	Rivet	Copper alloy	2	●		
26	Rivet clip	Copper alloy	2	●		
27	Needle valve	Copper alloy	2	●		
28	Needle valve seal	NBR	2	●	●	
29	Needle valve washer	Carbon steel	2	●		ø25~ø63 only
30	Hold plug	Copper alloy	4	●		
31	Plug seal	NBR	4	●	●	



A–A



C view

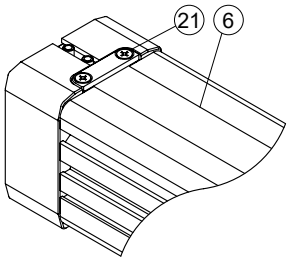
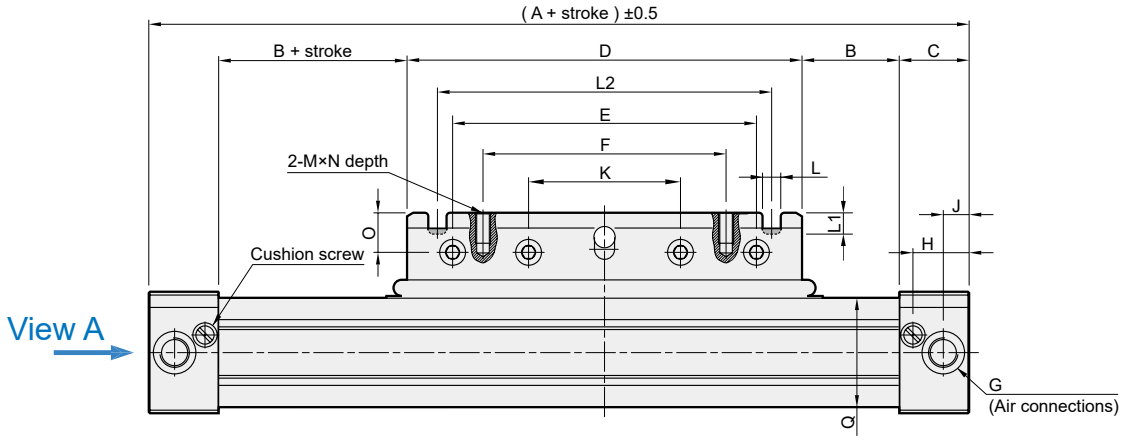
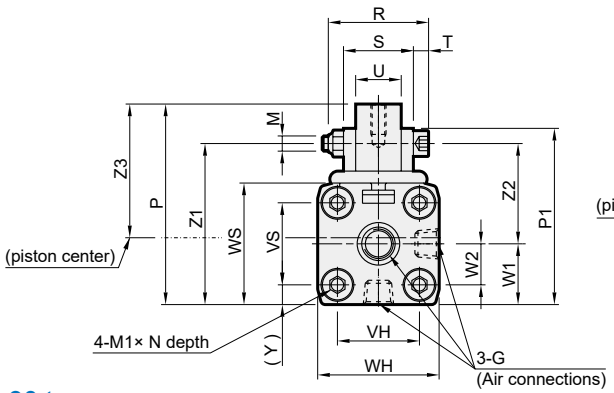


Table 1. The amount of wear sheet

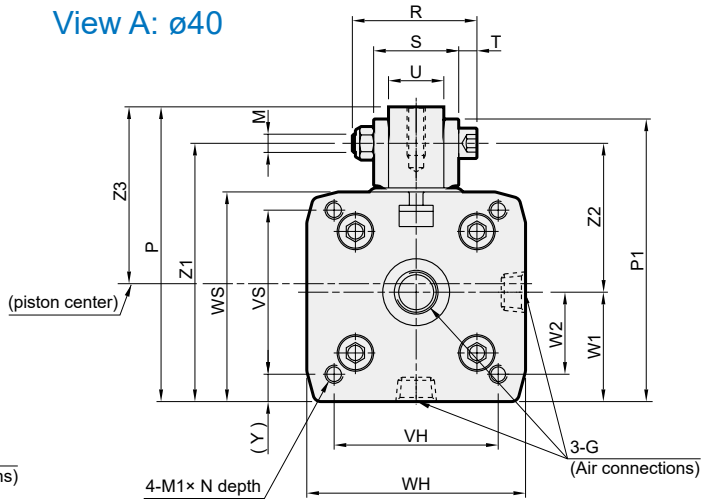
Tube I.D.	16	25	32	40	50	63
Q'y	2	2	4	4	2	2



View A: ø16~32



View A: ø40



90 type

Code / Tube I.D.	A	B	C	D	E	F	G	H	J	K	L	L1	L2	M	M1	N	O	P	P1
16	130	12	15	76	64	48	M5	12	5.5	32	–	–	–	M4	M3	7	6	43.5	42.3
25	200	17	23	120	100	80	G1/8	18.5	8.5	50	6	7	100	M5	M5	11	13	66	58
32	250	23	27	150	110	90	G1/4	22	10.5	55	6	7	130	M6	M6	14	12	86	82
40	300	45	30	150	110	90	G1/4	24	15	55	6	7	130	M6	M6	15	12	97	93

Code / Tube I.D.	Q	R	S	T	U	VH	VS	WH	WS	W1	W2	Y	Z1	Z2	Z3
16	25×24.5	27	18	4	10	18	18	27	27	13.5	9	4.5	37.5	24	28.8
25	36×36	35	23	5	15	27	27	40	40	20	13.5	6.5	53	33	38.8
32	51×52	41	27	6	18	36	40	52	56	30	22	8	74	44	53.5
40	59×58.5	41	28	6	18	54	54	72	69	36	27	9	85	49	58.2

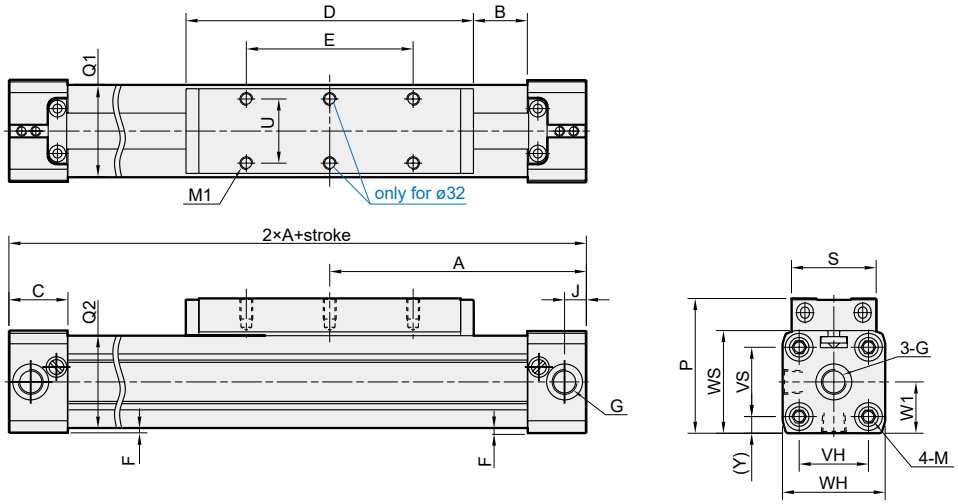
98 type

Code / Tube I.D.	A	B	C	D	E	F	G	H	J	K	L	L1	L2	M	M1	N	O	P	P1
16L	180	37	15	76	64	48	M5	12	5.5	32	–	–	–	M4	M3	7	6	43.5	42.3
25L	300	67	23	120	100	80	G1/8	18.5	8.5	50	6	7	100	M5	M5	11	13	66	58
32L	400	23	27	300	240	180	G1/4	22	10.5	120	–	–	–	M6	M6	14	12	86	82
40L	500	70	30	300	240	180	G1/4	24	15	120	–	–	–	M6	M6	15	12	97	93

Code / Tube I.D.	Q	R	S	T	U	VH	VS	WH	WS	W1	W2	Y	Z1	Z2	Z3
16L	25×24.5	27	18	4	10	18	18	27	27	13.5	9	4.5	37.5	24	28.8
25L	36×36	35	23	5	15	27	27	40	40	20	13.5	6.5	53	33	38.8
32L	51×52	41	27	6	18	36	40	52	56	30	22	8	74	44	53.5
40L	59×58.5	41	28	6	18	54	54	72	69	36	27	9	85	49	58.2

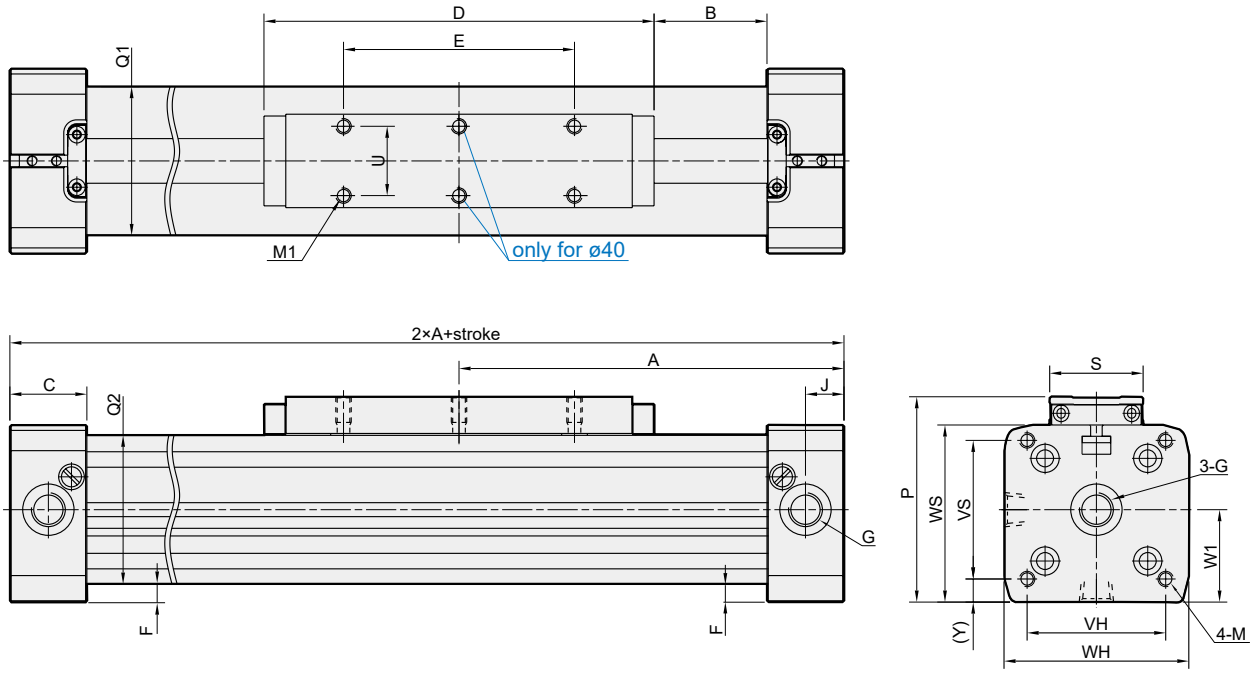
- 16L~40L: Cylinder with long piston for heavy bending and torque moments.

ø16~ø32



Code / Tube I.D.	A	B	C	D	E	F	G	J	M	M1	P	Q1×Q2	S	U	VH	VS	WH	WS	W1	Y
16	65	15.5	15	69	36	1	M5	5.5	M3×7depth	4-M4×7depth	36.5	25×24.5	22	16.5	18	18	27	27	13.5	4.5
25	100	21.5	23	112	65	2	G1/8	8.5	M5×12depth	4-M5×8depth	52.5	36×36	33	25	27	27	40	40	20	6.5
32	125	22.0	27	152	90	2	G1/4	10.5	M6×15depth	6-M6×8depth	66.5	51×52	36	27	36	40	52	56	30	8

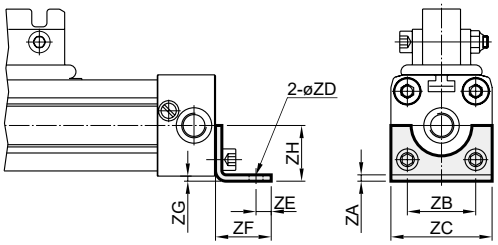
ø40~ø63



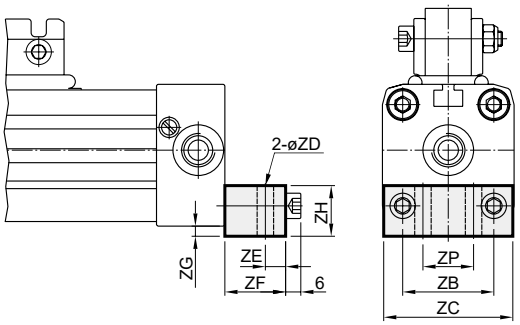
Code / Tube I.D.	A	B	C	D	E	F	G	J	M	M1	P	Q1×Q2	S	U	VH	VS	WH	WS	W1	Y
40	150	44	30	152	90	6.5	G1/4	15	M6×15depth	6-M6×10depth	80	59×58.5	36.4	27	54	54	72	69	36	9
50	175	42	33	200	110	0.5	G1/4	11.7	M6×15depth	4-M6×10depth	89	76×77	56	27	70	70	80	80	43.6	4
63	215	47.5	50	235	155	1.5	G3/8	25	M8×17depth	4-M8×14depth	123	102×102	50	36	78	78	106	106	62.5	14.5

LB End cover bracket (foot)

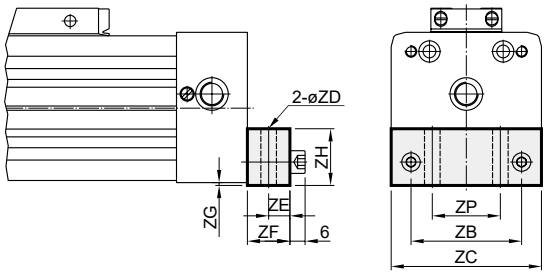
ø16, ø25
Material: Carbon steel



ø32, ø40
Material: Aluminum alloy

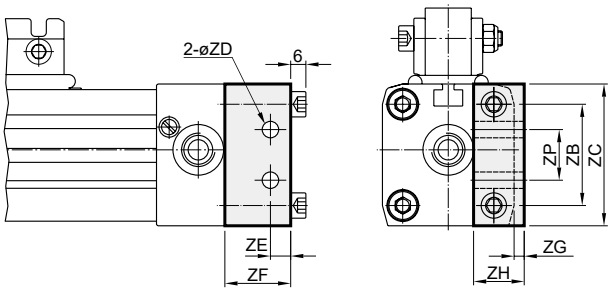


ø50, ø63
Material: Aluminum alloy



LB1 End cover bracket (foot)

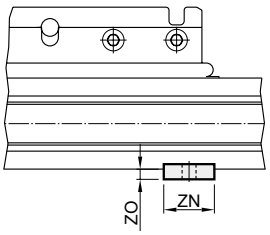
ø32*
Material: Aluminum alloy

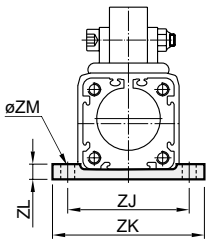


Code / Tube I.D.	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZP	Weight (g)
16	1.6	18	26	3.6	4	14	1.5	12.5	–	16
25	2.5	27	40	5.5	6	22	2.5	18	–	61
32	–	36	51	6.5	8	24	4	20	20	165
32*	–	40	56	6.5	8	26	4	20	20	189
40	–	54	71	9	11.5	24	2	20	30	210
50	–	70	80	9	12.5	25	2	25	45	293
63	–	78	106	11	15	30	2	40	48	730

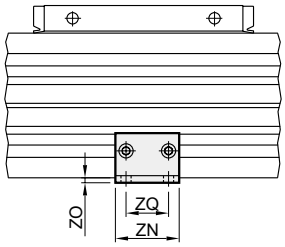
MS Mid section support

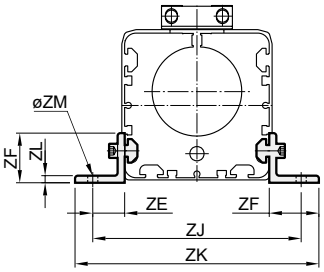
ø16, ø25
Material: Aluminum alloy



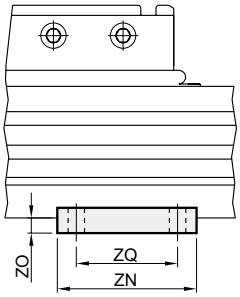


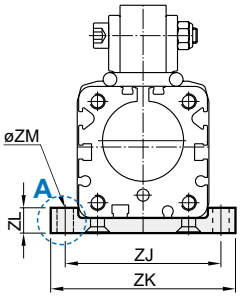
ø50, ø63
Material: Aluminum alloy

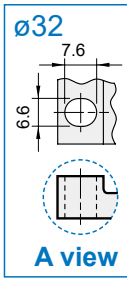




ø32, ø40
Material: Aluminum alloy







Code / Tube I.D.	ZE	ZF	ZJ	ZK	ZL	ZM	ZN	ZO	ZQ	Weight (g)
16	–	–	38	50	6	5.5	20	3	–	11
25	–	–	48	60	6	5.5	20	4	–	15
32	–	–	62	73	10	–	55	6	40	74
40	–	–	70	85	10	6.5	60	(7.2)	45	103
50	22.0	35	120	146	4.8	6.6	45	0.5	30	56
63	22.5	35	147	172	4.8	6.6	45	3.5	30	61

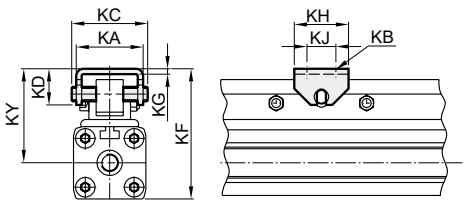
( ) Reference

* If mounting hole for ø32, ø40 mid section support bracket is required, please contact our sales representative for more information.

AC Articulated carrier

The material of articulated carrier and pin: Carbon steel

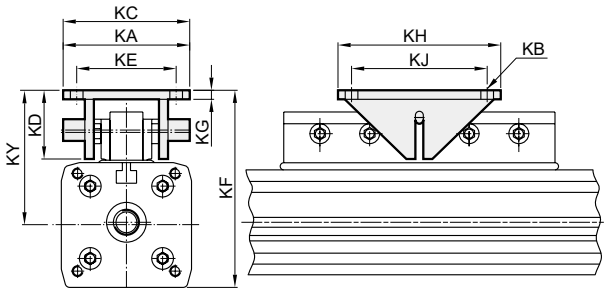
MCRPL2 ø16, ø25



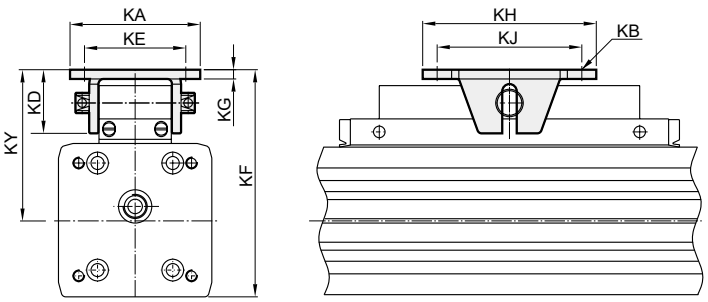
Code / Tube I.D.	KA	KB	KC	KD	KE	KF**	KG	KH	KJ	KY**	Weight (g)
MCRPL2-16	25	4.5	28	13	–	46.5-47.5	2	20	10	33-34	36
MCRPL2-25	37	5.5	42	20	–	71.5-73.5	3	30	16	51.5-53.5	117
MCRPL2-32	70	6.5	70	38	55	94.5-96.5	5	90	75	66.5-68.5	446
MCRPL2-40	70	6.5	70	38	55	108-110	5	90	75	73.5-75.5	446
MCRPLF2-50	90	9	–	43.7	70	135-150	6.4	120	100	95-110	1576
MCRPLF2-63	90	9	–	43.7	70	155-170	6.4	120	100	102-117	1223

** KF / KY dimension are variable within the length of the slot of the load friction.

MCRPL2 ø32, ø40

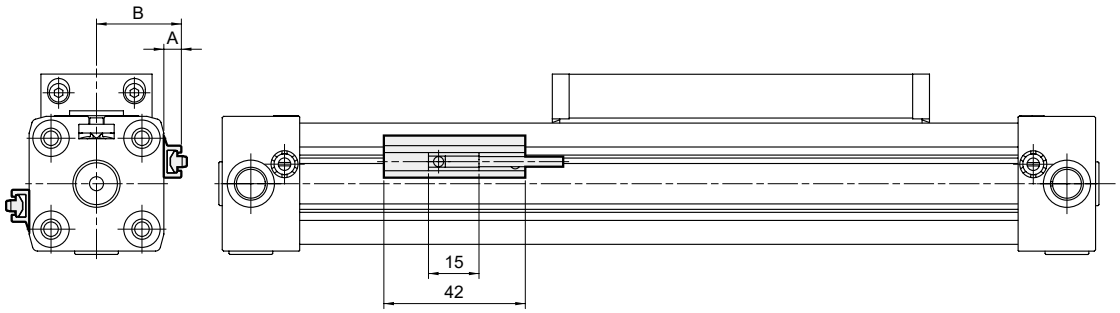


MCRPLF2 ø50, ø63



Sensor switch holder

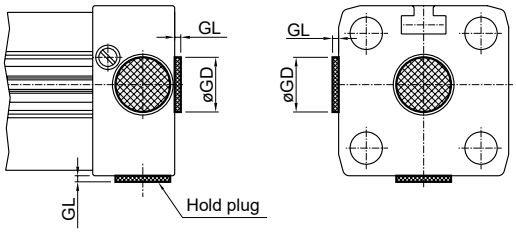
ø16, ø25



Code / Tube I.D	A	B	Switch holder
16	6.3	19.8	HPL2
25	5.3	25.3	

Hold plug

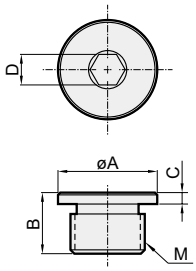
Piping port **M** thread and **G** thread.



Code / Tube I.D.	GL	GD
16	0.7	7.5
25	1.0	13
32	0.7	18
40	0.7	18
50	0.7	18
63	1.0	22

Note. The dimension of end cap which lock hold plug.

Hold plug



Code / Tube I.D.	A	B	C	D	E
16	7.5	5.3	1.3	2	M5×0.8
25	13	8	1.5	4	G1/8
32~50	18	10	1.5	4	G1/4
63	22	14	1.5	6	G3/8

MCRPLK2 series

RODLESS CYLINDER WITH LINEAR GUIDE

Technical data

Caution for safety
(Read beforeinstalling)



Features

- 50% space saving when compared to conventional cylinders.
- End caps with 3 air connections and adjustable cushioning.
- Load strength is higher than MCRPLF2 series (about 4 Multiple).
- Magnetic as standard.

Specification

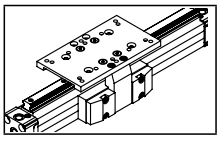
Model	MCRPLK2			
Acting type	Double acting			
Tube I.D.(mm)	16	25	32	40
Port size	M5	G1/8	G1/4	G1/4
No. of port	3			
Medium	Air			
Operating pressure range	0.1~0.78 MPa			
Ambient temperature	-10°C ~ +80°C (No freezing)			
Lubrication	With or without lubrication			
Cushion	With adjustable cushion at both ends			
Stroke range (mm) (*1)	100~2950	100~3600		
Sensor switch	RDT, RQT			
Sensor switch Holder	HPL2	–		

* 1. Minimum stroke unit 1mm.
* 2. The tube isn't airtight, so the cylinder is allowed little leakage.
Before the cylinder is sale, it has passed the standard of leakage test.

Order example

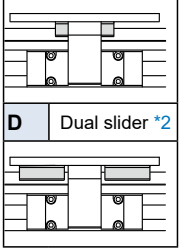
MCRPLK2 — D — 25 — 0850 — L V S —

Model



Slider

—	Single slider
D	Dual slider *2



Tube I.D.

16
25
32
40

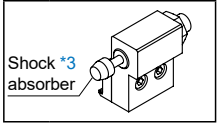
*2. D-type not for ø16.

Stroke

0100~3600 mm (4 digits)

Shock absorber set (*1)

—	Without
L	Light
M	Medium
H	Powerful



*3. It needs to be assembled by the original factory, and we don't suggest that you assemble by yourself.

Piston seals

—	NBR
V	VITON

Grease lubrication

—	Standard
S	Slow motion

Port thread

—	M5×0.8

(for ø16) (*4)

—	G thread
RC	Rc thread
NPT	NPT thread

(for ø25~40)

*4. RC and NPT threads are made to order.

*1. Shock absorber

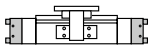
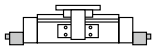
Model	Shock absorber			
	Model	L	M	H
MCRPLK2-16	MAC-1005-	1	2	3
MCRPLK2-25	MAC-1210-	1	2	3
MCRPLK2-32	MAC-1412-	1	2	3
MCRPLK2-40				

Available speed range

Piston seals	Grease lubrication	Available speed range (mm/s)
NBR	Slow motion	50~100
	Standard	within 101~1000
VITON	Slow motion	50~200
	Standard	201~1000 above

* Maximum seal life will be achieved when piston speeds do not exceed 1000mm/s.
* The suitable grease type can be selected according to the actual use.

Order example of mounting accessories

Code	LB (LB×2)	LB1 (LB1×2)
Mounting / Tube I.D.		
ø16	LB-P1-16x2	–
ø25	LB-P1-25x2	–
ø32	LB-P1-32x2	LB1-P1-32x2
ø40	LB-P1-40x2	–

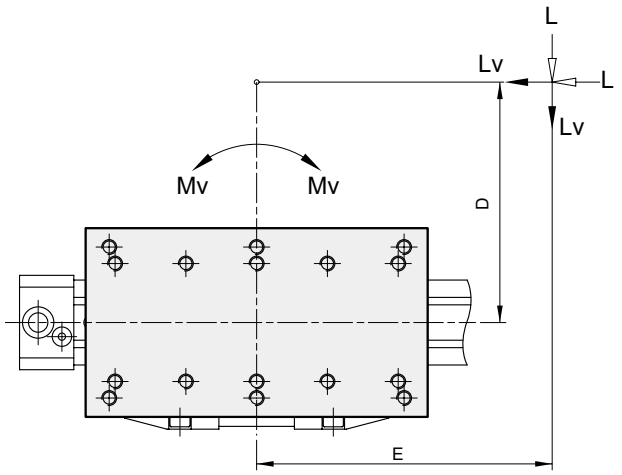
1. The below mentioned moments (Ma max, Mr max, Mv max.) are related to the guide rail center. The load force (L) is the summary of all single forces related to the common center of the mass. The center of the mass can be placed inside or outside the surface area of the carriage.
2. Normally the carriage would experience a dynamic load, which has to be considered with the calculation of needed piston force (F) and capacity of the ball guided system.

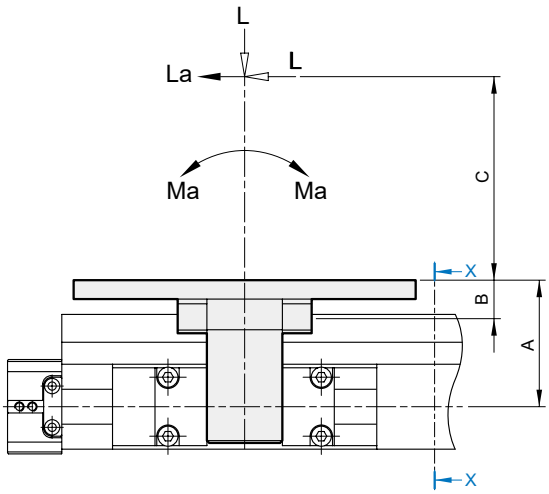
Use the following calculation formula:

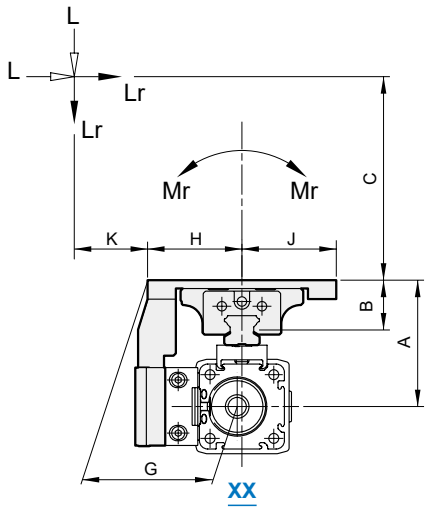
$$\frac{Ma}{Ma\ max.} + \frac{Mr}{Mr\ max.} + \frac{Mv}{Mv\ max.} + \frac{L}{L\ max.} \leq 1$$

Forces and moments

Tube I.D. / Code			16	25	32	40
Effect forces F (0.6 MPa)		(N)	110	250	420	640
Cushioning		(mm)	15	21	26	32
A		(mm)	48	53.5	64.5	68.5
B		(mm)	21	21	24	24
C / D / E / K		(mm)	Dimensions according			
G		(mm)	38.8	38	55	54.5
H		(mm)	40	40	57.5	57.5
J		(mm)	40	40	57.5	57.5
Single slider	Load forces	L(N)	500	1500	2950	3960
	Moment forces	La, Lr, Lv (N)	500	1500	2950	3960
	Axial moments	Ma (Nm)	4	40	61	115
	Radial mom ents	Mr (Nm)	6	14	30	52
	Torsion moments	Mv (Nm)	11	40	62	70
Dual slider	Load forces	L (N)	–	1550	3020	4030
	Moment forces	La, Lr, Lv (N)	–	1550	3020	4030
	Axial moments	Ma (Nm)	–	85	85	130
	Radial moments	Mr (Nm)	–	20	45	65
	Torsion moments	Mv (Nm)	–	80	90	100



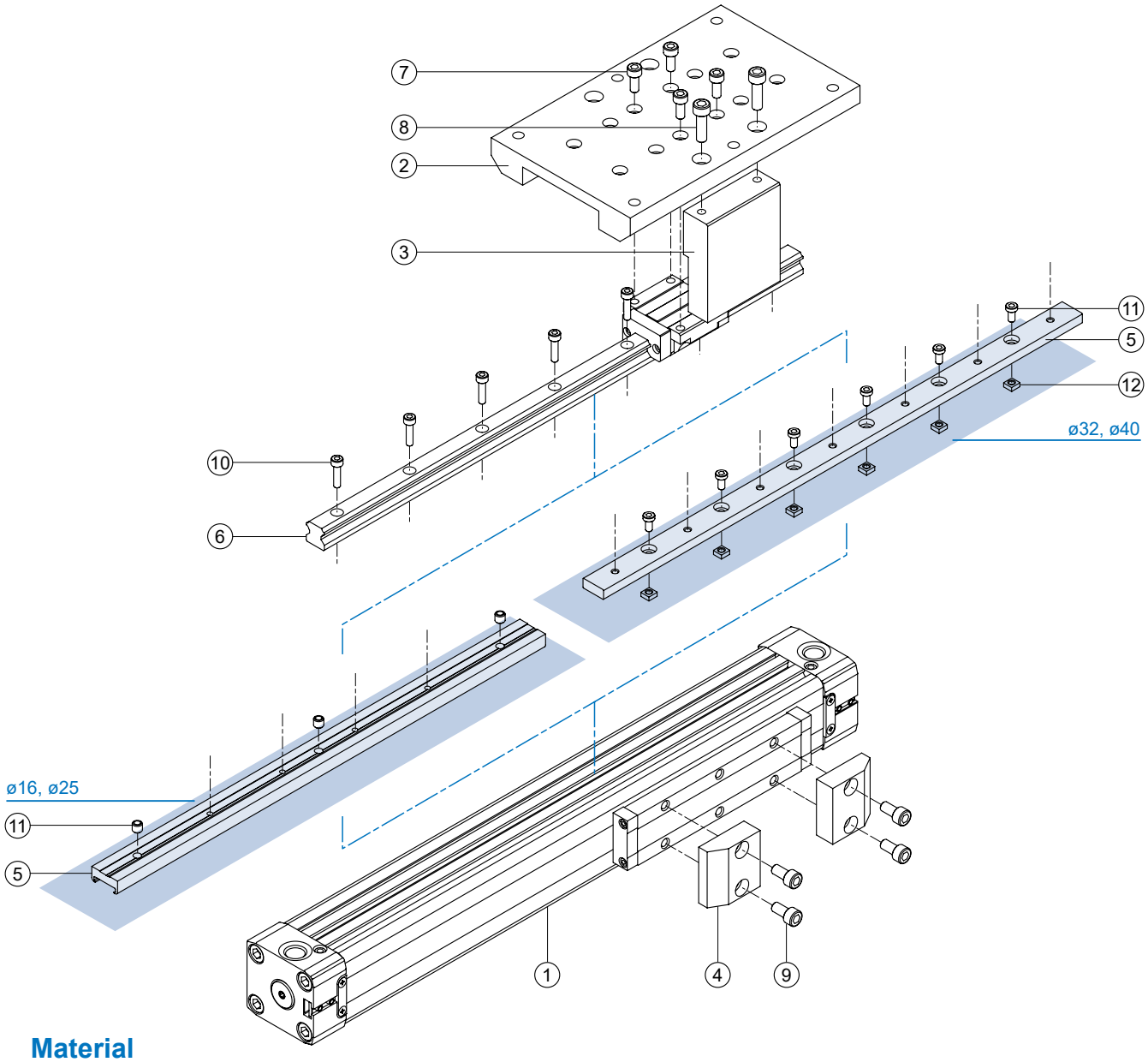




Weight

Unit: g

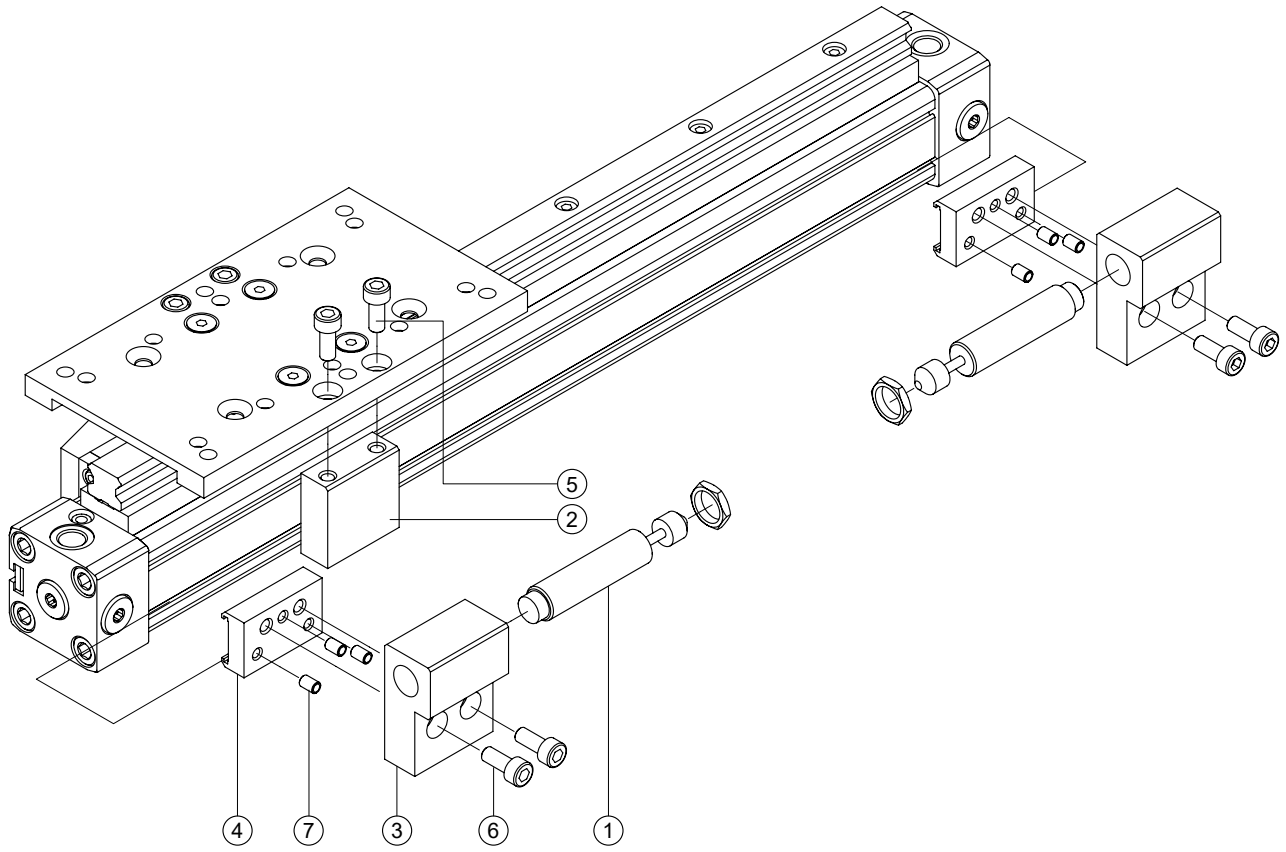
Tube I.D.	Without absorber		With absorber		Stroke 100 mm
	Single slider basic weight	Dual slider basic weight	Single slider basic weight	Dual slider basic weight	
16	932	–	1082	–	255
25	1698	1908	2032	2242	457
32	4082	4278	4635	4831	569
40	5709	5905	6260	6456	787



Material

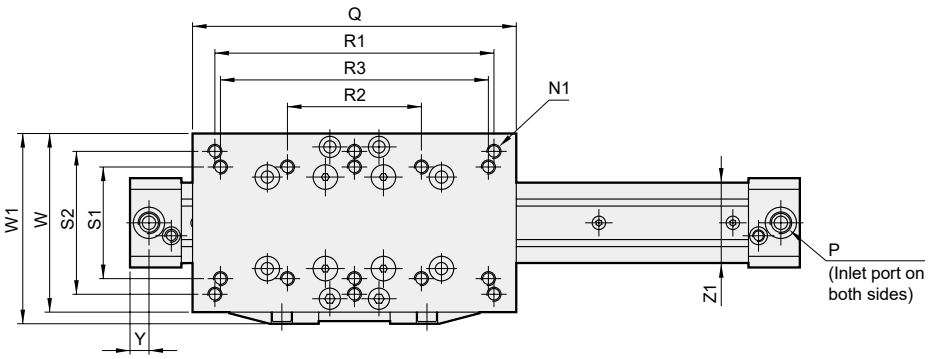
No.	Part name	Material	Q'y			
			16	25	32	40
1	Cylinder	Refer to the **MCRPLF2** series	1			
2	Platform	Carbon steel	1			
3	Platform connecting block	Aluminum alloy	1			
4	Cylinder connecting block	Aluminum alloy	2			
5	Guideway connector	Aluminum alloy	1			
6	Linear guideway	Carbon steel	1			
7	Platform screw	Carbon steel	4			
8	Connecting block screw #1	Carbon steel	2			
9	Connecting block screw #2	Carbon steel	4			
10	Linear guideway screw	Stainless steel	A/60+1, (A=L1+stroke-10)(*1)			
11	Guideway connector screw	Carbon steel	A/150+1		A/60	
12	Square nut	Carbon steel	–		A/60	

* For L1 value, refer to the dimensions. Truncate the calculated value to integer.

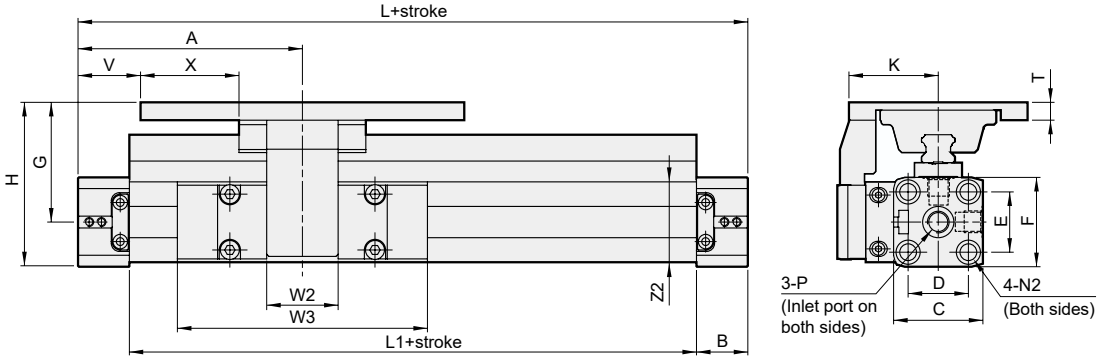


Material

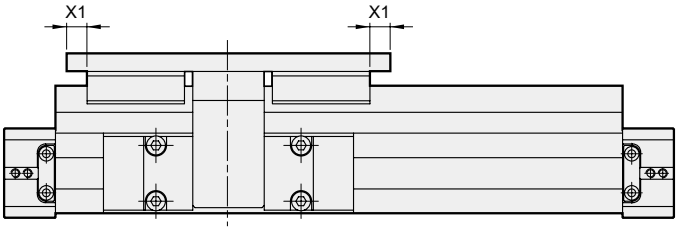
No.	Part name	Material	Q'y
1	Shock absorber	Composite material	2
2	Shock absorber stopper block	Aluminum alloy	1
3	Shock absorber mounting plate	Aluminum alloy	2
4	Mounting plate base ø16, ø25	Carbon steel	2
	Mounting plate base ø32, ø40	Aluminum alloy	2
5	Stopper block screw	Carbon steel	2
6	mounting plate screw	Carbon steel	4
7	Base Plate screw	Carbon steel	6



Single slider



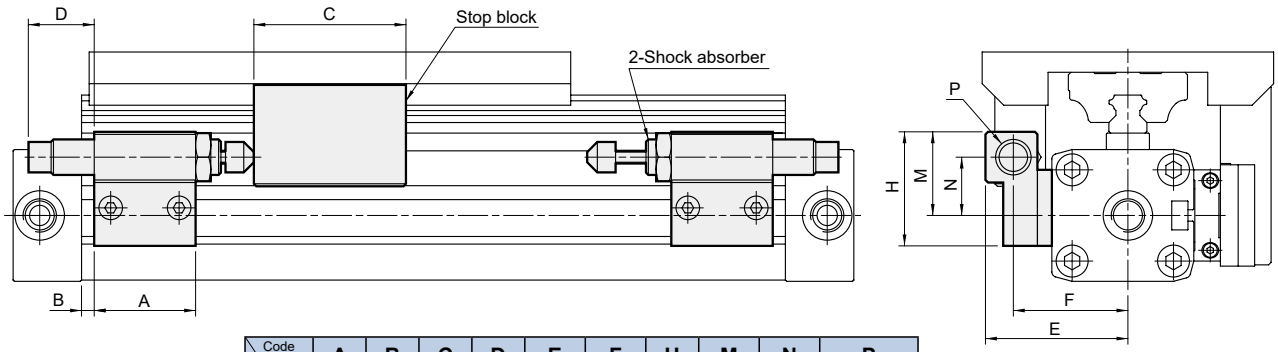
Dual slider



Code / Tube I.D.	A	B	C	D	E	F	G	H	K	L	L1	N1	N2	P	Q
16	65	15	27	18	18	27	48	61.5	40	130	100	4-M4×0.7 thru	M3×0.5×7 dp	M5	90
25	100	23	40	27	27	40	53.5	73.5	40	200	154	16-M6×1.0 thru	M5×0.8×12 dp	G1/8	145
32	125	27	56	40	36	52	64.5	90.5	57.5	250	196	6-M8×1.25×12.5 dp	M6×1.0×15 dp	G1/4	190
40	150	30	69	54	54	72	68.5	104.5	57.5	300	240	6-M8×1.25×12.5 dp	M6×1.0×15 dp	G1/4	190

Code / Tube I.D.	R1	R2	R3	S1	S2	T	V	W	W1	W2	W3	X	X1	Y	Z1×Z2
16	–	–	70	36	–	8	20	80	–	22	69	16.5	–	5.5	24.5×25
25	125	60	120	50	64	8	27.5	80	85.2	32	112	44.0	13.5	8.5	36×36
32	164	–	–	–	96	21	30	115	–	60	152	66.8	16.8	10.5	52×51
40	164	–	–	–	96	21	55	115	–	60	152	66.8	16.8	15.0	58.5×59

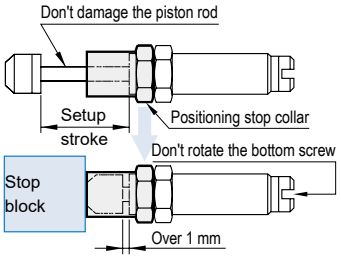
Shock absorber set



Code / Tube I.D.	A	B	C	D	E	F	H	M	N	P
16	20	4	22	–	43.3	35.3	40	32	22	M10×1.0
25	35	–	32	–	46	35	45	34.4	24.4	M12×1.0
32	40	–	60	21	56.2	45.2	45	33	23	M14×1.5
40	40	1	60	–	57.5	46.5	45	24	14	M14×1.5

With shock absorber

1. Do not rotate the screw set on bottom of shock absorber.
   This is not the screw for adjusting. If this screw is rotated, it may cause oil leakage.
2. Do not scratch the exposed portion of the piston rod.
   Decrease in life or malfunction may result.
3. The shock absorber stroke must stop at least 1 mm before the end. For precise stroke adjustment and positioning, use with SC series – stop collars.
4. Shock absorber is considered a consumable component. When energy absorption is decreased, replace it.

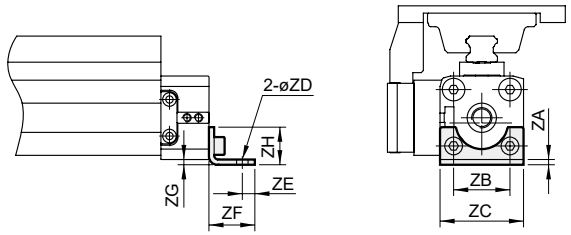


Model	Shock absorber				Stop collar
	Model	L	M	H	
MCRPLK2-16	MAC-1005-	1	2	3	SC-10
MCRPLK2-25	MAC-1210-	1	2	3	SC-12
MCRPLK2-32	MAC-1412-	1	2	3	SC-14
MCRPLK2-40					

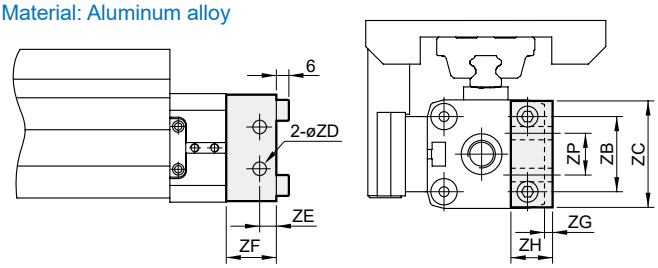
Mounting accessories

LB End cover bracket (foot)

ø16, ø25
Material: Carbon steel

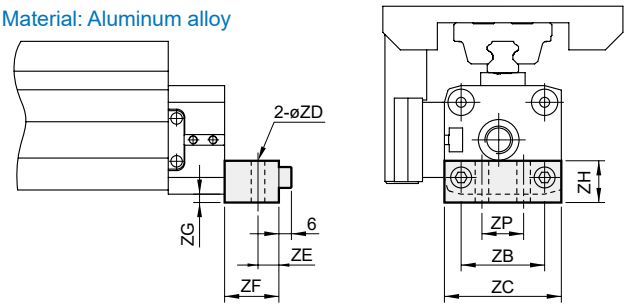


ø32, ø40
Material: Aluminum alloy



LB1 End cover bracket (foot)

ø32*
Material: Aluminum alloy



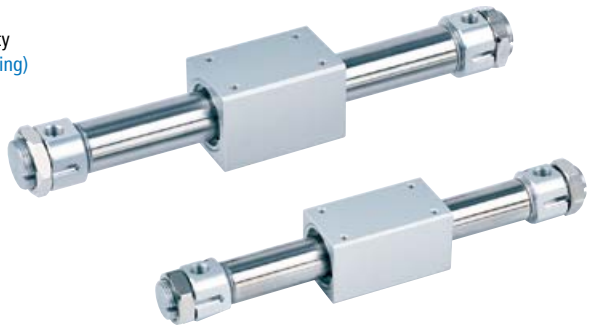
Code / Tube I.D.	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZP
16	1.6	18	26	3.6	4	14	1.5	12.5	–
25	2.5	27	40	5.5	6	22	2.5	18	–
32	–	36	51	6.5	8	24	4	20	20
32*	–	40	56	6.5	8	26	4	20	20
40	–	54	71	9	11.5	24	2	20	30

MCRPM series

MAGNETICALLY COUPLED **RODLESS CYLINDER**

Technical data

Caution for safety
(Read beforeinstalling)



Features

- 50% space saving.
- Magnetic transit design. Magnetic force transits the movement with piston side magnet and slider magnet.
- Stainless tube, light weighted and durable.

Specification

Model		MCRPM					
Acting type		Double acting					
Tube I.D. (mm)		10	15	20	25	32	40
Port size		M5×0.8		Rc1/8			Rc1/4
Medium		Air					
Max. operating pressure		0.7 MPa					
Min. operating pressure		0.18 MPa					
Proof pressure		1 MPa					
Ambient temperature		+5°C ~+60°C					
Lubricator		Without lubrication					
Available speed range		Standard grease: 100~500 mm/sec (*1)					
		Slow motion grease: 50~100 mm/sec (*1,2)					
Holding force (N)		53.9	137	231	363	588	922
Sensor switch	ø20,25,40	–		RDC(V), RQC(V), RDFE(V)			
	ø32	–		RDC, RQC, RDFE			

*1. The cylinder must be connected to a speed controller and gradually adjusted from fully closed to achieve the desired operating speed within the designed range.
*2. Between the speed range limit the actuator stroke must not exceed to 2m/minute.

Table for standard stroke

Tube I.D.	Stroke (mm)	Max. stroke	
		Cushion pad	Cushion air
ø10	100 ~ 500	500	–
ø15		900	900
ø20	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1500	1000
ø25		2000	1000
ø32, 40		2000	900

* Minimum stroke unit 1mm.

Order example

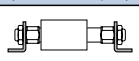
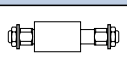
MCRPM — 20 — 100 M — A S — □

- MODEL
- TUBE I.D.
- STROKE
- CUSHION TYPE

Code	Description	Magnet	Tube I.D.
Blank	Cushion pad (Unadjustable)	×	ø10~ø40
A	Cushion air (Adjustable)	×	ø15
M-A		○	ø20~ø40

- GREASE LUBRICATION
  Blank: Standard
  S: Slow motion grease
- PORT THREAD
  Blank: M5×0.8 (for ø10, ø15)
  Blank: Rc thread
  G: G thread
  NPT: NPT thread (for ø20~ø40)

Order example of mounting accessories

Code	LB (Purchase 2 pcs)	FA (Purchase 2 pcs)
Mounting / Tube I.D.		
ø10	**LB-M4-16**	**FA-M4-16**
ø15	**LB-P2-15**	
ø20	**LB-M2-20**	**FA-M2-20**
ø25	**LB-M2-25**	**FA-M2-25**
ø32	**LB-P2-32**	
ø40	**LB-P2-40**	**FA-M2-40**

Weight

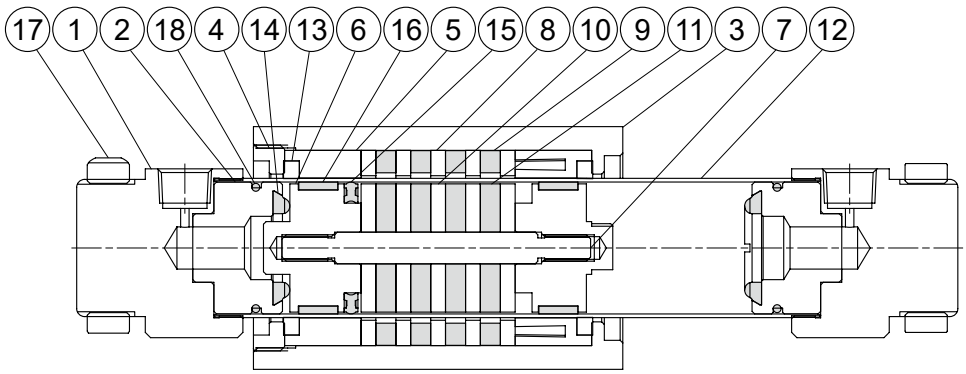
Cylinder

Model	Basic weight **MCRPM**	Stroke 100 mm **MCRPM**
Tube I.D.		
ø10	92	27
ø15	232	32
ø20	413	43
ø25	657	46
ø32	1,177	66
ø40	1,996	83

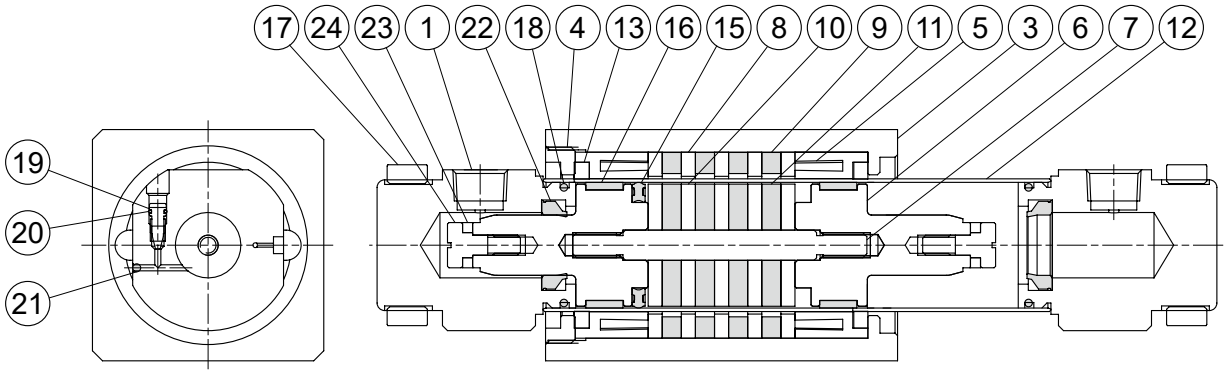
Accessoires Unit: g

LB	FA
	
21	13
27	13
64	68
66	75
108	75
179	129

Cushion pad Unadjustable



Cushion air Adjustable



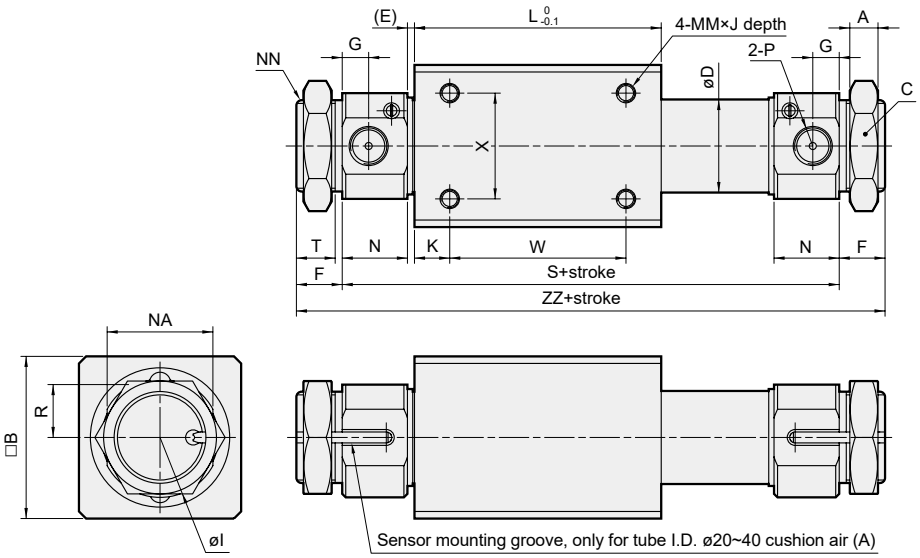
Material

No.	Cushion Air	Cushion Pad	Part name	Material	Note
1	●	●	Cover	Aluminum alloy	Anodized
2		●	End collar *1	Aluminum alloy	
3	●	●	Slider body	Aluminum alloy	Anodized
4	●	●	Body cover	Aluminum alloy	Anodized
5	●	●	Body wear ring	Resin	
6	●	●	Piston	Aluminum alloy	
7	●	●	Shaft	Stainless steel	
8	●	●	Slider side yoke	Carbon steel	Ni plated
9	●	●	Slider side magnet	Magnet material	Ni plated
10	●	●	Piston side yoke	Carbon steel	Ni plated
11	●	●	Piston side magnet	Magnet material	Ni plated

*1. ø10, ø15 without end collar.

No.	Cushion Air	Cushion Pad	Part name	Material	Note
12	●	●	Tube	Stainless steel	
13	●	●	Lub-retainer	Special resin	
14		●	Cushion	NBR	
15	●	●	Piston seal	NBR	
16	●	●	Wear ring	Resin	
17	●	●	Cover nut	Carbon steel	Ni plated
18	●	●	O ring	NBR	
19	●		Needle valve	Stainless steel *2	
20	●		O ring	NBR	
21	●		Steel ball	Stainless steel	
22	●		Cushion	NBR	
23	●		Magnet ring	Magnet material	For magnet
24	●		Fixing bolt	Stainless steel	For magnet

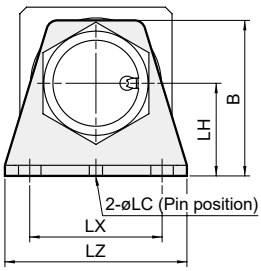
*2. Material: ø32,ø40 Carbon steel.

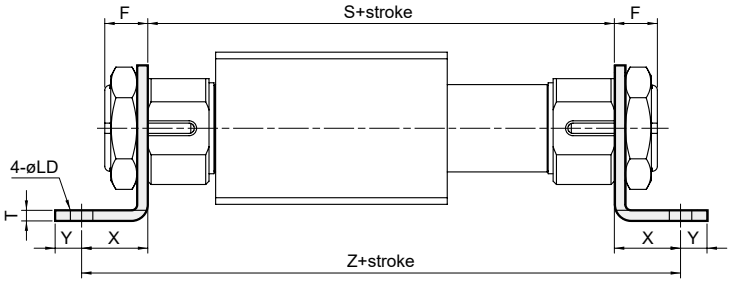


Code / Tube I.D.	A	B	C	D	E	F	G	I	J	K	L	MM	N	NA	NN	R	S	T	W	X	ZZ	P
10	4	25	14	12	1.5	9	5	16	4.5	4	38	M3×0.5	11	14	M10×1.0	7	63	7.5	30	16	81	M5×0.8
15	4	35	14	16.6	2	10	5.5	22	5	11	57	M4×0.7	11	20	M10×1.0	10	83	8.5	35	19	103	M5×0.8
20	8	36	26	21.6	2	13	7.5	28	6	8	66	M4×0.7	18	24	M20×1.5	12	106	10.5	50	25	132	Rc1/8
25	8	46	32	26.4	2	13	7.5	34	8	10	70	M5×0.8	18.5	30	M26×1.5	15	111	10.5	50	30	137	Rc1/8
32	8	60	32	33.6	2	16	8	40	8	15	80	M6×1.0	20	36	M26×1.5	18	124	14	50	40	156	Rc1/8
40	10	70	41	41.6	3	16	11	50	10	16	92	M6×1.0	26	46	M32×2.0	23	150	13	60	40	182	Rc1/4

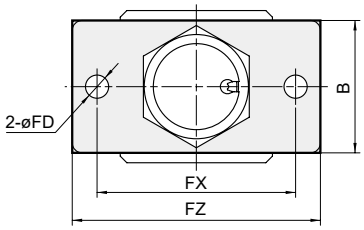
Accessories

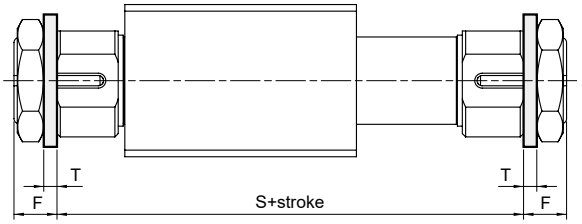
LB



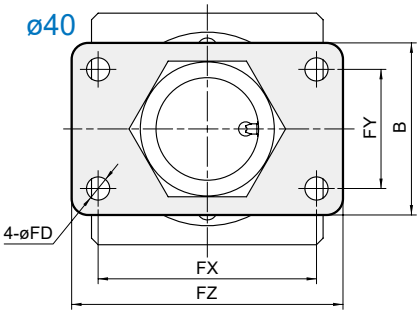


FA ø10~ø32





ø40



Code / Tube I.D.	B		F	FD	FX	FY	FZ	LC	LD	LH	LX	LZ	S	T		X	Y	Z
	LB	FA												LB	FA			
10	25	20	9	5.5	33	–	42	–	5.5	14	33	42	63	2.3	2.3	9	6	81
15	31	20	10	5.5	33	–	42	4	5.5	20	33	42	83	2.5	2.3	9	6	101
20	40	34	13	7	60	–	75	4	6.8	25	40	55	106	3.2	4	20	8	146
25	47	40	13	7	60	–	75	4	6.8	28	40	55	111	3.2	4	20	8	151
32	52	40	16	7	60	–	75	4	7	33	46	62	124	4	4	23	7	170
40	62	52	16	7	66	36	82	4	9	38	55	75	150	5	5	23	10	196

MCRPMD series

MAGNETICALLY COUPLED **RODLESS CYLINDER**

Technical data

Caution for safety
(Read beforeinstalling)



Features

- 50% space saving.
- Magnetic transit design. Magnetic force transits the movement with piston side magnet and slider magnet.
- Stainless tube, light weighted and durable.

Specification

Model	MCRPMD				
Acting type	Double acting				
Tube I.D. (mm)	10	15	20	25	32
Port size	M5×0.8		Rc1/8		
Medium	Air				
Max. operating pressure	0.7 MPa				
Min. operating pressure	0.18 MPa				
Proof pressure	1 MPa				
Ambient temperature	+5°C ~ +60°C				
Lubricator	Without lubrication				
Available speed range	Standard grease: 100~500 mm/sec (*1)				
	Slow motion grease: 60~100 mm/sec (*1,2)				
Holding force	53.9 N	137 N	231 N	363 N	588 N
Sensor switch ø10	RDC(V), RQC(V), RDFE(V)				
Sensor switch ø15~32	RCE, RCE1				

*1. The cylinder must be connected to a speed controller and gradually adjusted from fully closed to achieve the desired operating speed within the designed range.
*2. Between the speed range limit the actuator stroke must not exceed to 2m/minute.

Table for standard stroke

Type	Tube I.D.	Stroke (mm)	Max. stroke
Standard **G** type	ø10	100, 150, 200, 250, 300, 400, 500	500
	ø15		700
	ø20 ø25 ø32	100, 150, 200, 250, 300, 350, 400 450, 500, 600, 700, 800	1000
N type	ø10	100, 150, 200, 250, 300, 400, 500	500
	ø15		1000
	ø20	100, 150, 200, 250, 300, 350, 400	1500
	ø32	450, 500, 600, 700, 800	2000

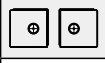
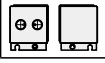
* Minimum stroke unit 1mm.

Order example

MCRPMD — G — 20 — 100 — A S — G

MODEL

TYPE

Code		Port location	Magnets & switch rail
Blank		Standard	○
N		Standard	×
G		Centralized piping	○

TUBE I.D.

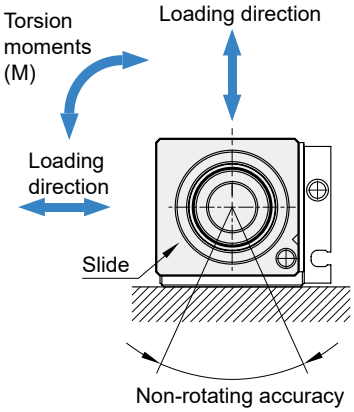
STROKE

GREASE LUBRICATION
Blank: Standard
S: Slow motion grease

Blank: Cushion pad (Unadjustable)
A: Cushion air (Adjustable)
(Only for ø15~ø32 and standard piping)

PORT THREAD
Blank: M5×0.8
(for ø10, 15)
Blank: Rc thread
G: G thread
NPT: NPT thread
(for ø20~ø32)

Maximum allowable directly load



Weight

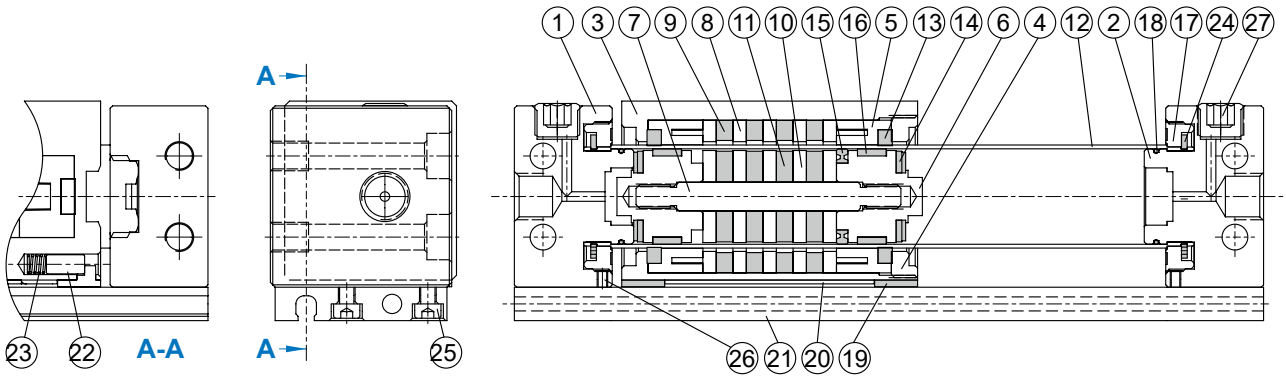
Unit: g

Model	Basic weight **MCRPMD**	Stroke 100 mm **MCRPMD**
Tube I.D.		
ø10	163	67
ø15	302	80
ø20	520	102
ø25	712	115
ø32	1235	150

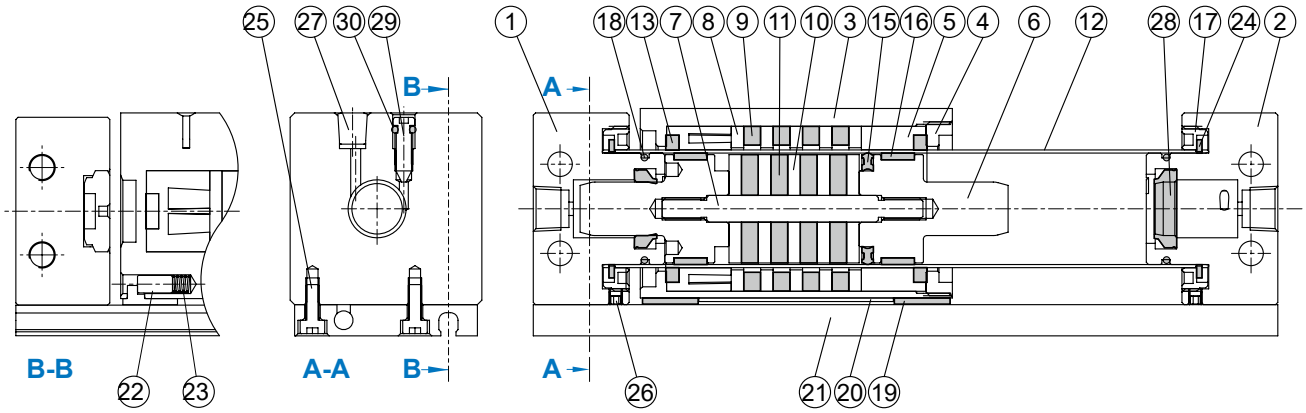
Tube I.D.	Max. allowable load (kg)	Non-rotating accuracy	Max. torsion moments	Non-rotating accuracy Allowable stroke
ø10	0.4	5°	0.05 N.m	100 mm
ø15	0.9	5°	0.18 N.m	200 mm
ø20	1.1	4°	0.23 N.m	300 mm
ø25	1.1	4°	0.40 N.m	300 mm
ø32	1.5	4°	0.12 N.m	400 mm

* Non-rotating angle accuracy will be reduced by distortion due to longer stroke and switch rail.

Cushion pad Unadjustable



Cushion air Adjustable

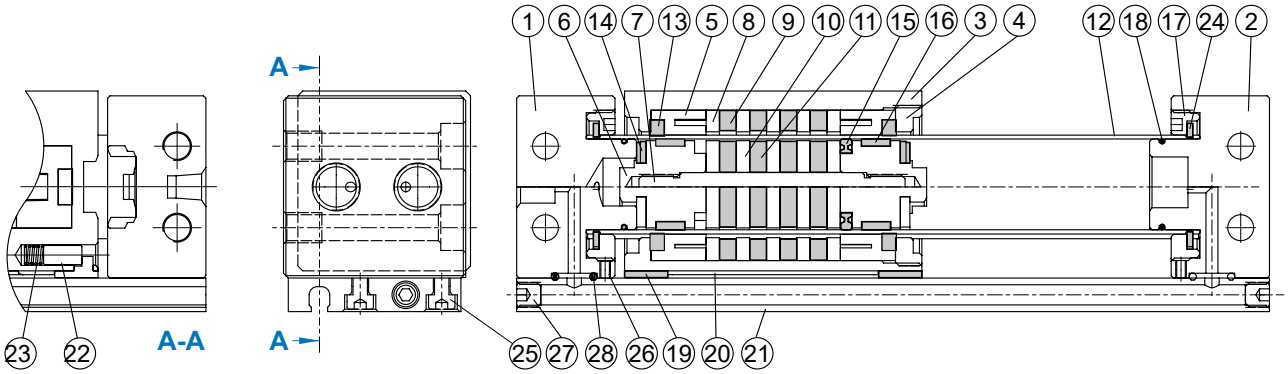


Material

No.	Part name	Material
1	Cover A	Aluminum alloy
2	Cover B	Aluminum alloy
3	Slider body	Aluminum alloy
4	Body cover	Aluminum alloy
5	Body wear ring	Resin
6	Piston	Aluminum alloy
7	Shaft	Stainless steel
8	Slider side yoke	Carbon steel
9	Slider side magnet	Magnet material
10	Piston side yoke	Carbon steel
11	Piston side magnet	Magnet material
12	Tube	Stainless steel
13	Lub-retainer	Special resin
14	Cushion	NBR
15	Piston seal	NBR

No.	Part name	Material
16	Wear ring	Resin
17	Tube fixed nut	Aluminum alloy
18	O-ring	NBR
19	Wear ring	Resin
20	Magnetic shielding plate	Carbon steel
21	Switch rail	Aluminum alloy
22	Magnet	Magnet material
23	Spring	Stainless steel
24	Snap ring	Spring steel
25	Bolt	Alloy steel
26	Screw	Alloy steel
27	Seal screw	Carbon steel
28	Cushion packing	NBR
29	Needle valve	Stainless steel
30	Needle valve packing	NBR

Centralized piping

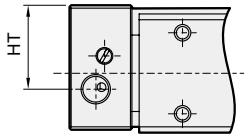


Material

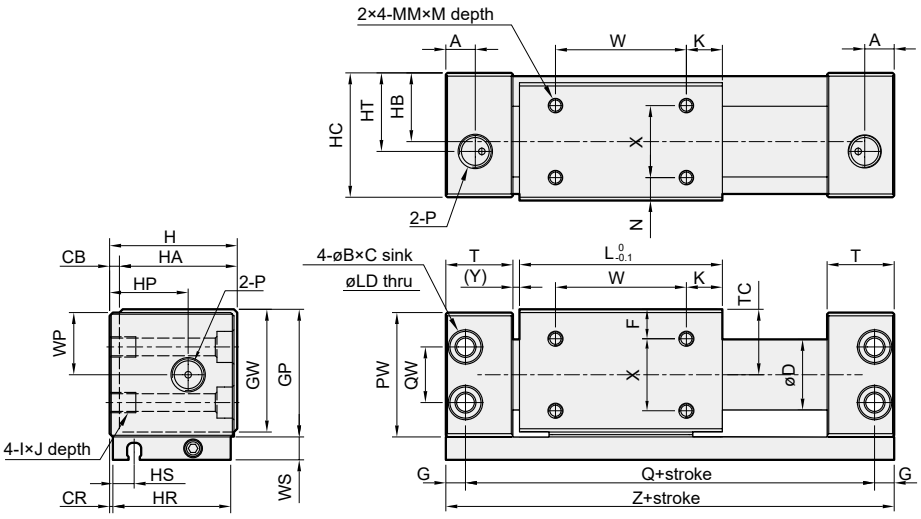
No.	Part name	Material
1	Cover A	Aluminum alloy
2	Cover B	Aluminum alloy
3	Slider body	Aluminum alloy
4	Body cover	Aluminum alloy
5	Body wear ring	Resin
6	Piston	Aluminum alloy
7	Shaft	Stainless steel
8	Slider side yoke	Carbon steel
9	Slider side magnet	Magnet material
10	Piston side yoke	Carbon steel
11	Piston side magnet	Magnet material
12	Tube	Stainless steel
13	Lub-retainer	Special resin
14	Cushion	NBR
15	Piston seal	NBR
16	Wear ring	Resin
17	Tube fixed nut	Aluminum alloy
18	O-ring	NBR
19	Wear ring	Resin
20	Magnetic shielding plate	Carbon steel
21	Switch rail	Aluminum alloy
22	Magnet	Magnet material
23	Spring	Stainless steel
24	Snap ring	Spring steel
25	Bolt	Alloy steel
26	Screw	Alloy steel
27	Screw	Alloy steel
28	O-ring	NBR

Both sides piping

Adjustable cushion



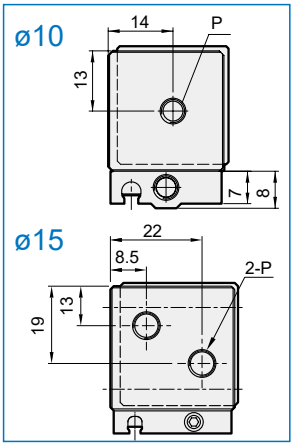
Code / Tube I.D	HT
15	10
20	24
25	29
32	35

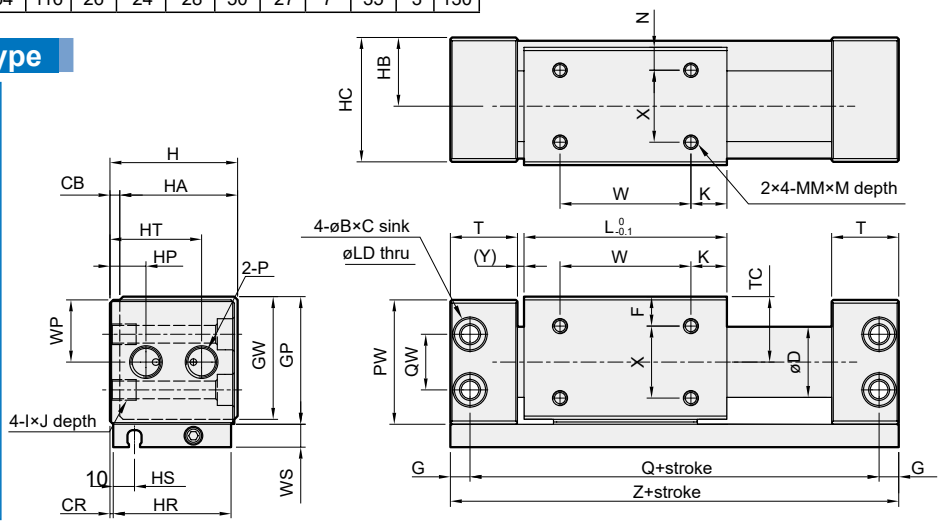


Code / Tube I.D	A	B	C	CB	CR	D	F	G	GP	GW	H	HA	HB	HC	HP	HR	HS	HT	I	J	K	L	LD	M
10	8.5	6.5	3.2	2	0.5	12	6.5	4	27	25.5	26	24	14	25	14	24	4.5	14	M4×0.7	6	9	38	3.3	4.5
15	9.5	8	4.2	2	0.5	16.6	8	5	33	31.5	32	30	17	31	17	30	4.9	17	M5×0.8	7	14	53	4.3	5
20	9	9.5	5.2	3	1	21.6	9	6	39	37.5	39	36	21	38	24	36	6.5	24	M6×1.0	8	11	62	5.4	5
25	9	9.5	5.2	3	1	26.4	8.5	6	44	42.5	44	41	23.5	43	23.5	41	6.5	23.5	M6×1.0	8	15	70	5.4	6
32	10.5	11	6.5	3	1.5	33.6	10.5	7	55	53.5	55	52	29	54	29	51	6	29	M8×1.25	10	13	76	6.8	7

Code / Tube I.D	MM	N	P	PW	Q	QW	T	TC	W	WP	WS	X	Y	Z
10	M3×0.5	4.5	M5×0.8	26	68	14	17.5	14	20	13	7	15	1.5	76
15	M4×0.7	6	M5×0.8	32	84	18	19	17	25	16	7	18	1.5	94
20	M4×0.7	7	Rc1/8	38	95	17	20.5	20	40	19	7	22	2	107
25	M5×0.8	6.5	Rc1/8	43	105	20	21.5	22.5	40	21.5	7	28	2	117
32	M6×1.0	8.5	Rc1/8	54	116	26	24	28	50	27	7	35	3	130

Centralized piping type





Code / Tube I.D	B	C	CB	CR	D	F	G	GP	GW	H	HA	HB	HC	HP	HR	HS	HT	I	J	K	L	LD	M
10	6.5	3.2	2	0.5	12	6.5	4	27	25.5	26	24	14	25	—	24	4.5	—	M4×0.7	6	9	38	3.3	4.5
15	8	4.2	2	0.5	16.6	8	5	33	31.5	32	30	17	31	—	30	4.9	—	M5×0.8	7	14	53	4.3	5
20	9.5	5.2	3	1	21.6	9	6	39	37.5	39	36	21	38	11	36	6.5	28	M6×1.0	8	11	62	5.4	5
25	9.5	5.2	3	1	26.4	8.5	6	44	42.5	44	41	23.5	43	14.5	41	6.5	33.5	M6×1.0	8	15	70	5.4	6
32	11	6.5	3	1.5	33.6	10.5	7	55	53.5	55	52	29	54	20	51	6	40	M8×1.25	10	13	76	6.8	7

Code / Tube I.D	MM	N	P	PW	Q	QW	T	TC	W	WP	WS	X	Y	Z
10	M3×0.5	4.5	M5×0.8	26	68	14	17.5	14	20	—	7	15	1.5	76
15	M4×0.7	6	M5×0.8	32	84	18	19	17	25	—	7	18	1.5	94
20	M4×0.7	7	Rc1/8	38	95	17	20.5	20	40	19	7	22	2	107
25	M5×0.8	6.5	Rc1/8	43	105	20	21.5	22.5	40	21.5	7	28	2	117
32	M6×1.0	8.5	Rc1/8	54	116	26	24	28	50	27	7	35	3	130

MCRPMS series

MAGNETICALLY COUPLED **RODLESS CYLINDER**

mindman

Technical data

Caution for safety
(Read beforeinstalling)



Features

- 50% space saving, centralized piping ease of mounting.
- Magnetic transit design. Magnetic force transits the movement with piston side magnet and slider magnet.
- Stainless tube, light weighted and durable.
- The overall design of the cylinder and guide rods, can direct bear loads.

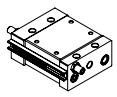
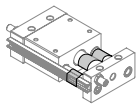
Table for standard stroke

Tube I.D.	Stroke (mm)	Max. stroke
ø10	50, 100, 150, 200, 250, 300	500
ø15	50, 100, 150, 200, 250, 300, 350, 400, 450, 500	750
ø20	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1000
ø25		1500
ø32		

* Minimum stroke unit 1mm.

Weight

Unit: g

Tube I.D.	Basic weight **MCRPMS**		Stroke 100 mm **MCRPMS**	
ø10		407		169
ø15		770		222
ø20		1360		342
ø25		1730		346
ø32		2980		520

Specification

Model	MCRPMS				
Acting type	Double acting				
Tube I.D. (mm)	10	15	20	25	32
Port size	M5×0.8		Rc1/8		
Medium	Air				
Operating pressure range — Standard	0.2~0.7 MPa				
Operating pressure range — Cushion (*1)	0.2~0.55	0.2~0.65 MPa			
Proof pressure	1 MPa				
Ambient temperature	+5° ~ +60°C				
Lubricator	Without lubrication				
Available speed range	Standard grease: 150~400 mm/sec (*2)				
	Slow motion grease: 80~150 mm/sec (*2, 3)				
Holding force	53.9 N	137 N	231 N	363 N	588N
Shock absorbers (*4)	MDSC-0806-3-N		MAC-1007-SN	MAC-1412-SN	MAC-2015-SN
Sensor switch	RDC(V), RQC(V), RCD, RDFE				

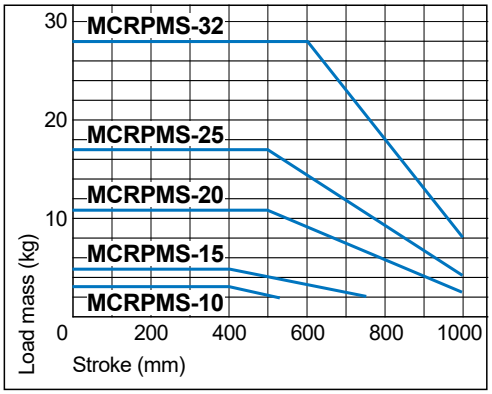
*1. Exceeding the allowable pressure will lead to the breaking of the magnetic coupling and cause the piston slider and external slider becoming separated.
*2. The cylinder must be connected to a speed controller and gradually adjusted from fully closed to achieve the desired operating speed within the designed range.
*3. Between the speed range limit the actuator stroke must not exceed to 2m/minute.
*4. Option: shock absorber MDSC, MAC.

Order example

MCRPMS — G — 10 — 100M — B S — G

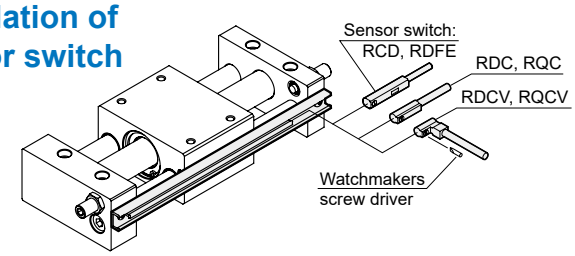
- MODEL
- TUBE I.D.
- STROKE
- PORT LOCATION
  - Blank: Bilateral piping
  - **G**: Centralized piping
- MAGNET
  - Blank: Without magnet
  - **M**: With magnet
  - **MD**: With magnet
  - for RDFE
  - for RCD
- CUSHION
  - Blank: Bumper bolt
  - **B**: Shock absorber
  - **C**: Shock absorber + Bumper bolt
- GREASE LUBRICATION
  - Blank: Standard
  - **S**: Slow motion grease
- PORT THREAD
  - Blank: M5×0.8 (Only for ø10,15)
  - Blank: Rc thread
  - **G**: G thread
  - **NPT**: NPT thread (Only for ø20~32)

Maximum load mass

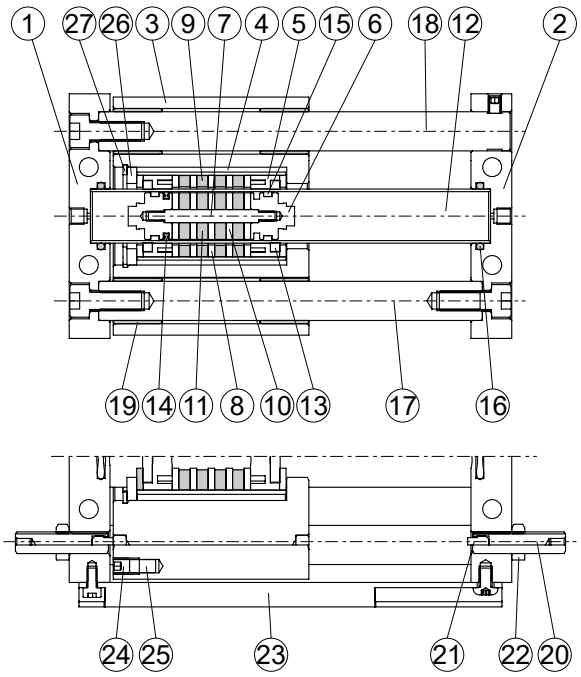


* Maximum load mass when horizontal mounting.

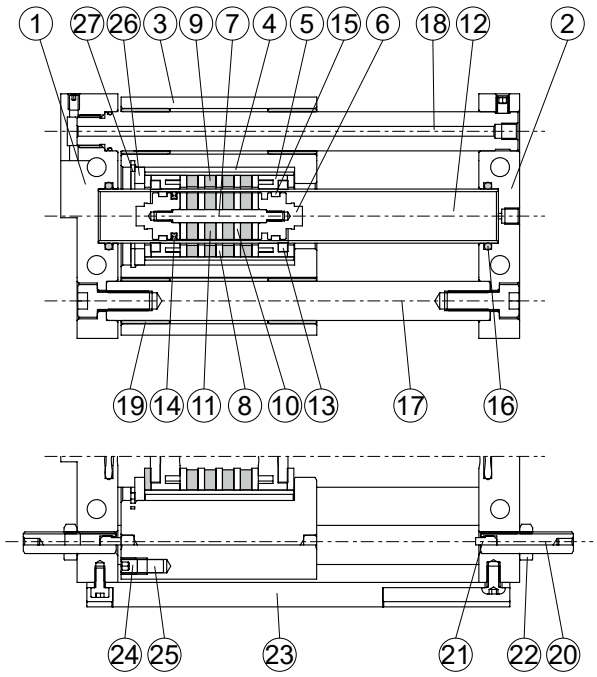
Installation of sensor switch



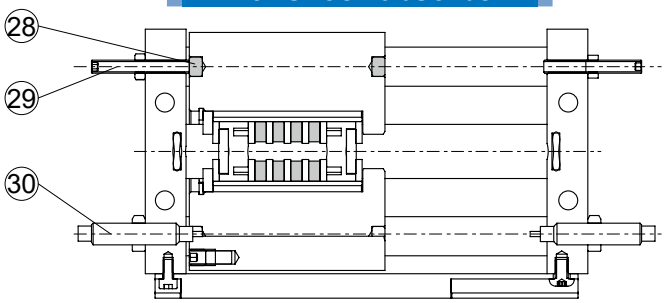
Bilateral piping



Centralized piping



With shock absorber



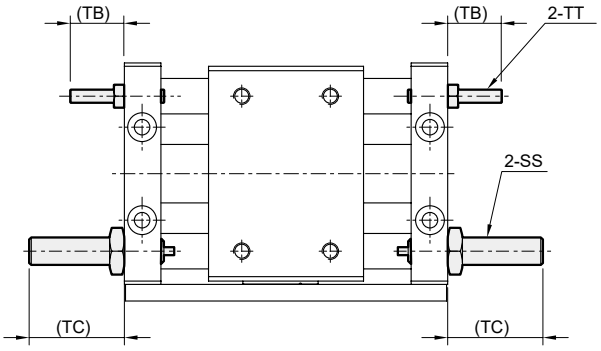
Material

No.	Part name	Material	Note
1	Plate A	Aluminum alloy	Anodized
2	Plate B	Aluminum alloy	Anodized
3	Slider body	Aluminum alloy	Anodized
4	External slider tube	Aluminum alloy	
5	Body wear ring	Resin	
6	Piston	Aluminum alloy	
7	Shaft	Stainless steel	
8	Slider side yoke	Carbon steel	
9	Slider side magnet	Magnet material	
10	Piston side yoke	Carbon steel	
11	Piston side magnet	Magnet material	
12	Tube	Stainless steel	
13	Lub-retainer	Special resin	
14	Piston seal	NBR	
15	Wear ring	Resin	

No.	Part name	Material	Note
16	O-ring	NBR	
17	Guide shaft A	Carbon steel	
18	Guide shaft B	Carbon steel	
19	Bush	Copper	
20	Adjusting bolt	Carbon steel	
21	Cushion	PU	
22	Bolt	Carbon steel	
23	Switch rail	Aluminum alloy	for with magnet
24	Hex socket screws	Stainless steel	for with magnet
25	Magnet	Magnet material	for with magnet
26	Washer	Aluminum alloy	Anodized
27	Snap ring	Spring steel	
28	Cushion block	PU	for with shock absorber
29	Adjustment bolt	Carbon steel	for with shock absorber
30	Shock absorber	Composite material	for with shock absorber

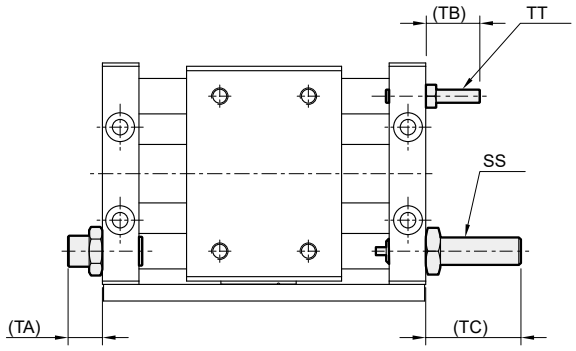
MCRPMS-*-B

With shock absorber



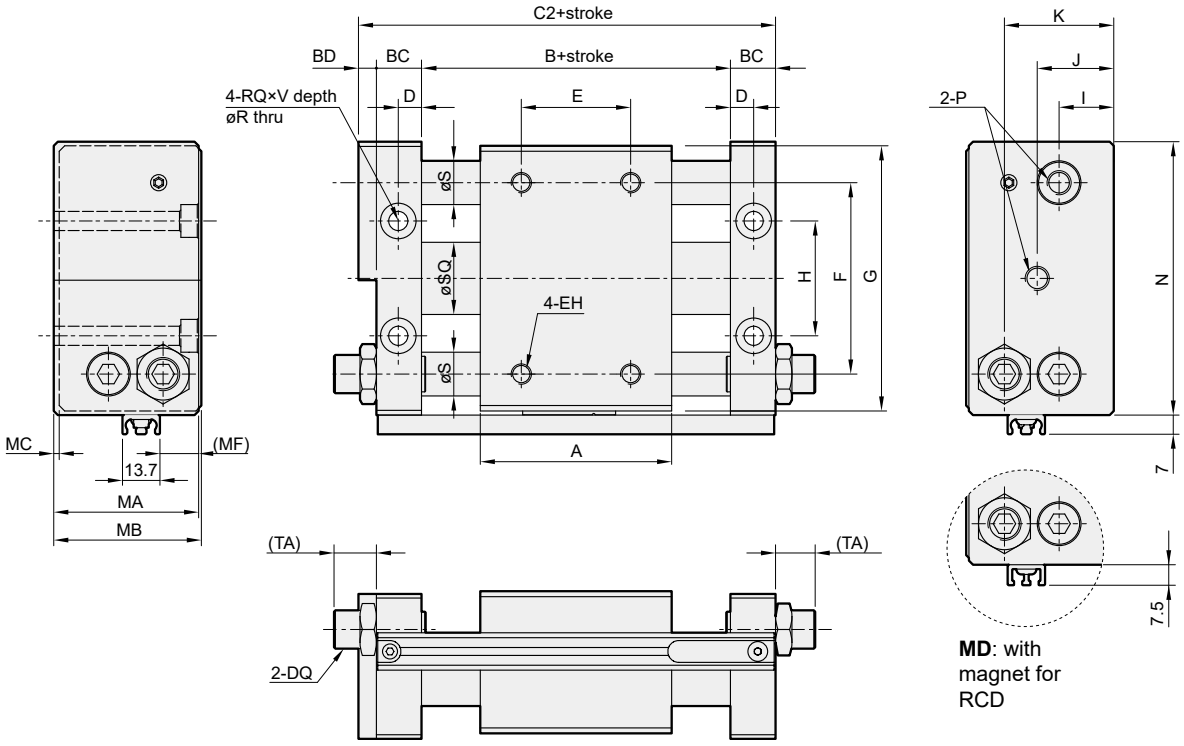
MCRPMS-*-C

With shock absorber + Adjustment bolt



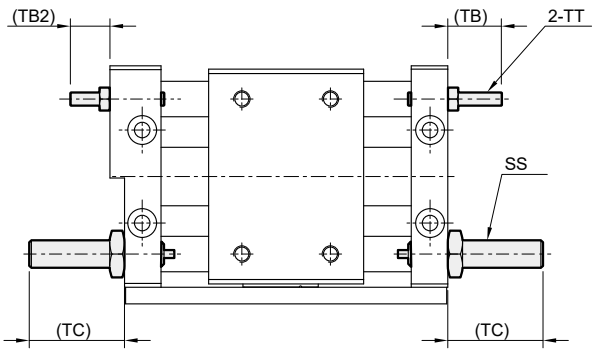
Code / Tube I.D.	A	B	BC	C1	D	DQ	E	EH	F	G	H	I	J	K	MA	MB	MC
10	45	47	12.5	72	6.5	M8×1.0	25	M4×0.7×6 depth	38	58	24	13.5	17	26	33	34	2.5
15	60	62	12.5	87	6.5	M8×1.0	30	M5×0.8×8 depth	50	73	30	15	20.5	29	39	40	2
20	70	73	16.5	106	8.5	M10×1.0	40	M6×1.0×10 depth	70	87	38	19	24	36	45	46	2
25	70	73	16.5	106	8.5	M14×1.5	40	M6×1.0×10 depth	70	96	42	21.5	27.5	40.5	53	54	2
32	85	91	18.5	128	9.5	M20×1.5	40	M8×1.25×12 depth	75	116	50	26	33	50	64	66	2

Code / Tube I.D.	MF	N	P	R	RQ	S	SQ	SS	TA	TB	TC	TT	V
10	4.2	60	M5×0.8	4.5	8	10	12	MDSC-0806-3-N	16.5	16.5	25	M4×0.7	4.4
15	6.1	75	M5×0.8	5.8	9.5	12	16.6	MDSC-0806-3-N	16.5	16.5	25	M4×0.7	5.5
20	8	89	Rc1/8	5.5	9.5	16	21.6	MAC-1007-SN	16.5	22	29	M6×1.0	5.5
25	13	98	Rc1/8	7	12	16	26.4	MAC-1412-SN	14.5	22	49	M6×1.0	6.5
32	18	118	Rc1/8	9	14	20	33.6	MAC-2015-SN	12	23.5	51.5	M8×1.25	8.6



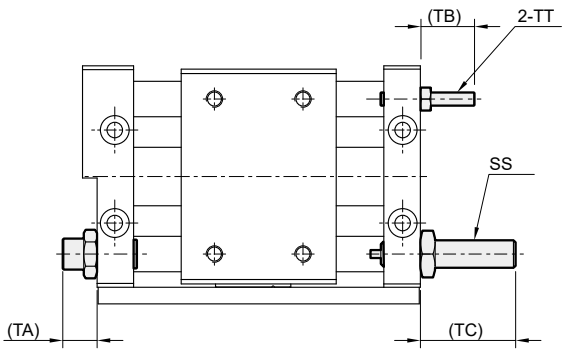
MCRPMS-G-*-B

With shock absorber



MCRPMS-G-*-C

With shock absorber + Adjustment bolt



Code / Tube I.D.	A	B	BC	BD	C2	D	DQ	E	EH	F	G	H	I	J	K	MA	MB	MC
10	45	47	12.5	4	76	6.5	M8×1.0	25	M4×0.7×6 depth	38	58	24	13.5	17	26	33	34	2.5
15	60	62	12.5	5	92	6.5	M8×1.0	30	M5×0.8×8 depth	50	73	30	15	20.5	29	39	40	2
20	70	73	16.5	5	111	8.5	M10×1.0	40	M6×1.0×10 depth	70	87	38	19	24	36	45	46	2
25	70	73	16.5	5	111	8.5	M14×1.5	40	M6×1.0×10 depth	70	96	42	21.5	27.5	40.5	53	54	2
32	85	91	18.5	6	134	9.5	M20×1.5	40	M8×1.25×12 depth	75	116	50	26	33	50	64	66	2

Code / Tube I.D.	MF	N	P	R	RQ	S	SQ	SS	TA	TB	TB2	TC	TT	V
10	4.2	60	M5×0.8	4.5	8	10	12	MDSC-0806-3-N	16.5	16.5	12.5	25	M4×0.7	4.4
15	6.1	75	M5×0.8	5.8	9.5	12	16.6	MDSC-0806-3-N	16.5	16.5	11.5	25	M4×0.7	5.5
20	8	89	Rc1/8	5.5	9.5	16	21.6	MAC-1007-SN	16.5	22	22	29	M6×1.0	5.5
25	13	98	Rc1/8	7	12	16	26.4	MAC-1412-SN	14.5	22	22	49	M6×1.0	6.5
32	18	118	Rc1/8	9	14	20	33.6	MAC-2015-SN	12	23.5	17.5	51.5	M8×1.25	8.6

MEMO

NOTE