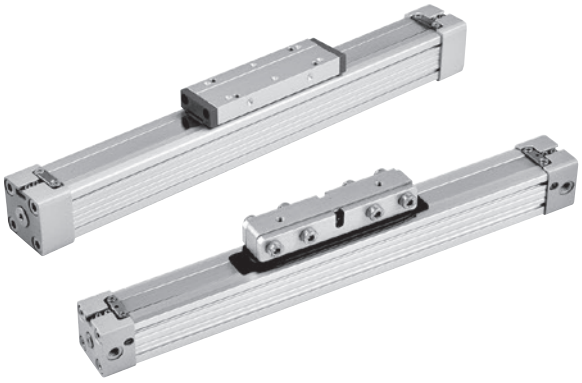
MCRPL* series

RODLESS CYLINDER



Features

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

Specification

Model		MCRPL			MCRPLF			
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						
Stroke range (*1)	ø16	100~3000 mm						
	ø25~63	100~5600 mm						
Ambient Temperature		-10°C~+80°C (No freezing)						
Lubrication		With or without lubrication						
Cushion		With adjustable cushion at both ends						
Sensor Switch		RCAL (Please refer to page 6-9)						
Sensor Switch Holder		HPL						

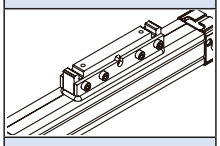
*1. Minimum stroke unit 1mm.
*2. The tube isn't airtight, so the cylinder is allowed little leakage.
Before the cylinder is sale, it has passed the standard of leakage test.

Order example

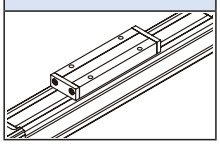
MCRPL — 90V — 25 — 0850 — S

Model

MCRPL



MCRPLF



Type

90	Standard type
98	Long piston type * Only for MCRPL

Piston seals

—	NBR
V	VITON

Tube I.D.

16, 25, 32, 40, 50, 63 (50, 63 for MCRPLF)

Stroke

0100~5600 mm (4 digits)

Grease lubrication

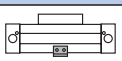
—	Standard
S	Slow motion

Available speed range

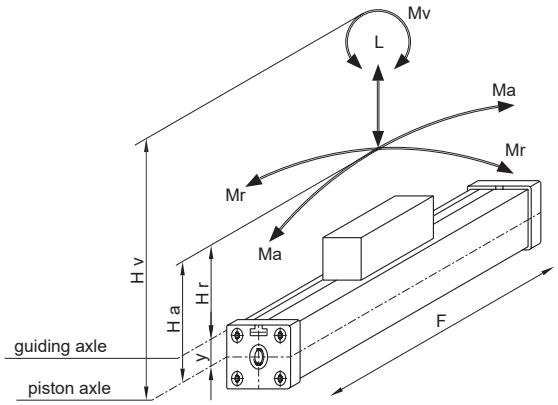
Piston seals	Grease lubrication	Available speed range (mm/s)
NBR	Slow motion	50~100
	Standard	Within 100~1000
VITON	Slow motion	50~200
	Standard	200~1000 above

* The suitable grease type can be selected according to the actual use.

Order example of mounting accessories

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

Forces & Moments



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

MCRPL

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%.

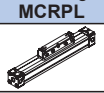
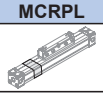
MCRPLF

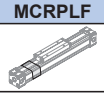
Cylinder		Effect force (N) at 6 bar	Cushion (mm)	Max. allowed load (N)	Max. allowed bending moment (Nm)		Max. allowed torque (Nm)
ø	y	F	S	L	Ma axial	Mr radial	Mv central
16	9	110	15	120	4	0.3	0.5
25	14	250	21	300	15	1	3.0
32	18	420	26	450	30	2	4.5
40	23	640	32	750	60	4	8.0
50	28	1000	32	1200	115	7	15.0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

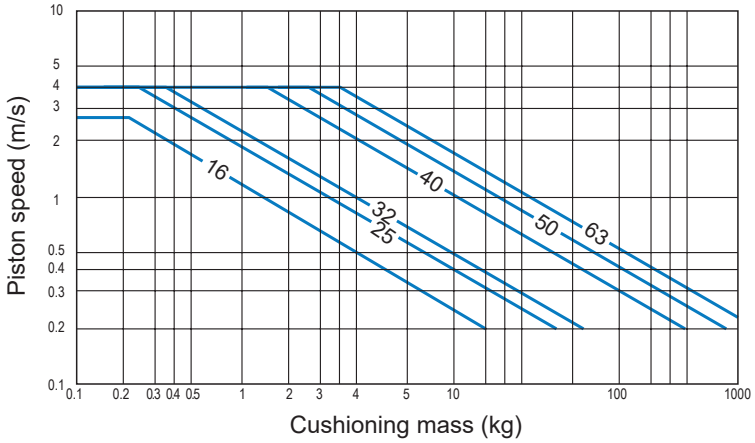
Cylinder weight

Unit: g

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

Model	Basic weight **MCRPLF**	Stroke 100 mm **MCRPLF**
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

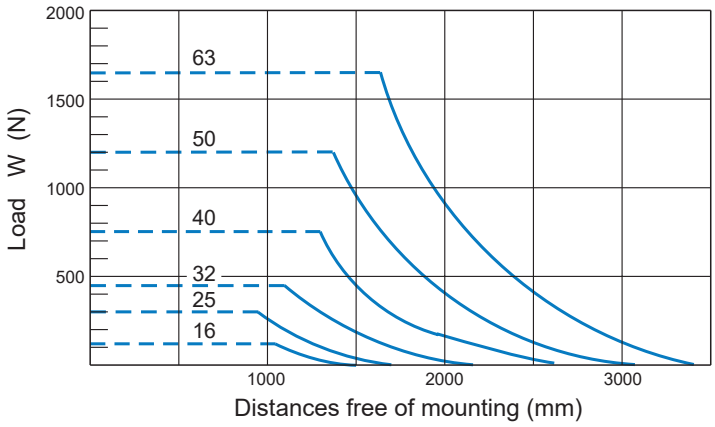
Cushioning diagram



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



Deflection 1 mm

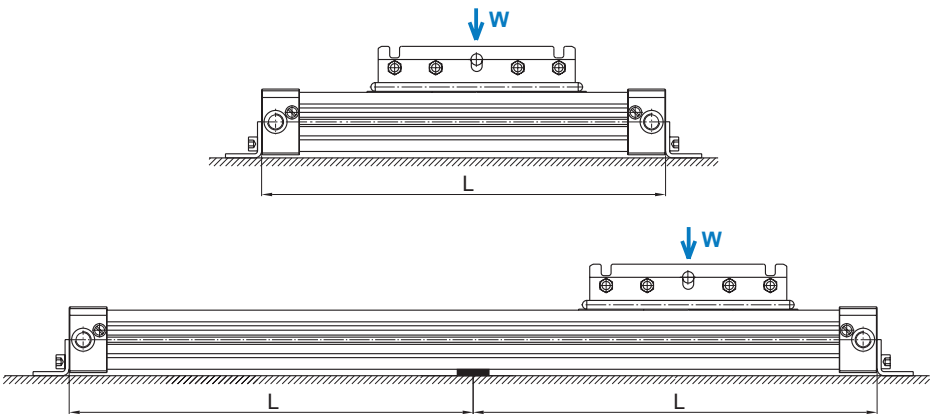
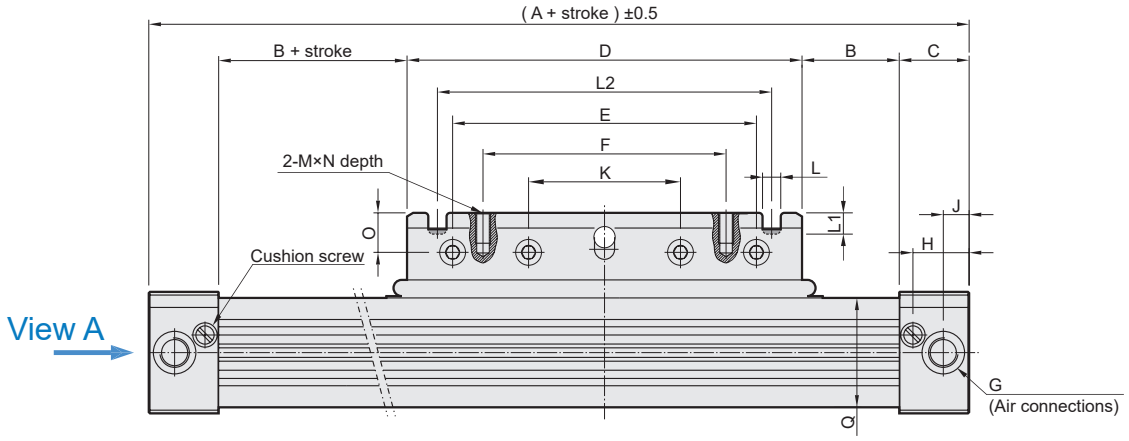
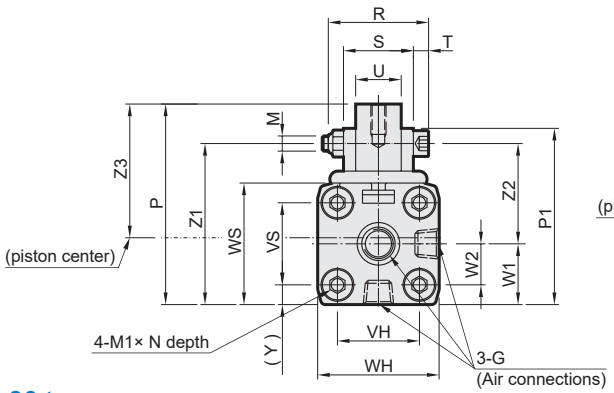


Diagram information

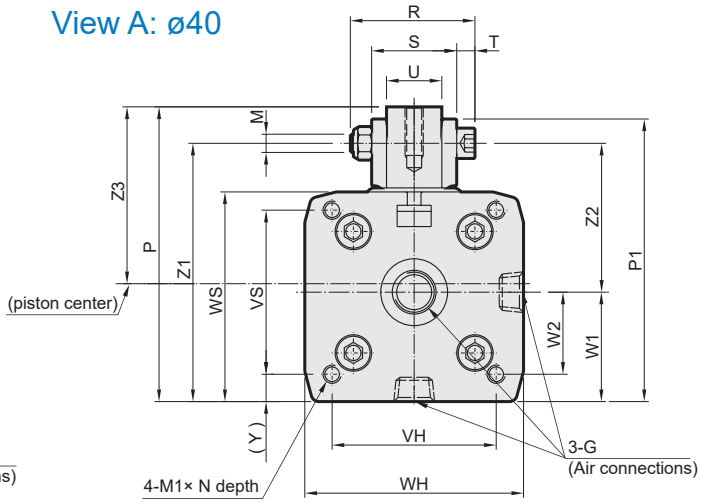
- Calculated deflections without support of 0.5-1 mm allow exceeding of the approved limits.
- Calculated deflections without support of > 1-max.1.5 mm require reduction of approved limits.



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	48×52	41	27	6	18	36	40	52	56	30	22	8	74	44	53.5
40	58×58	41	28	6	18	54	54	72	69	36	27	9	85	49	58.2

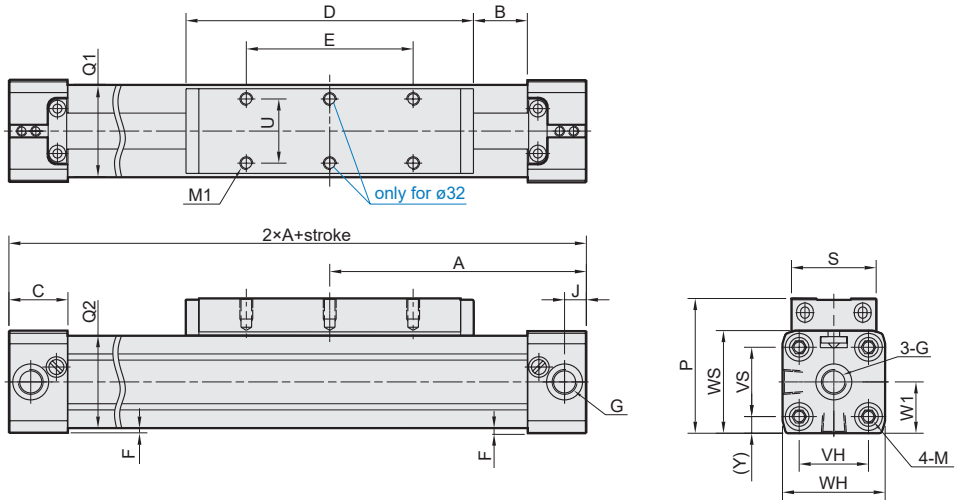
98 type

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	48×52	41	27	6	18	36	40	52	56	30	22	8	74	44	53.5
40L	58×58	41	28	6	18	54	54	72	69	36	27	9	85	49	58.2

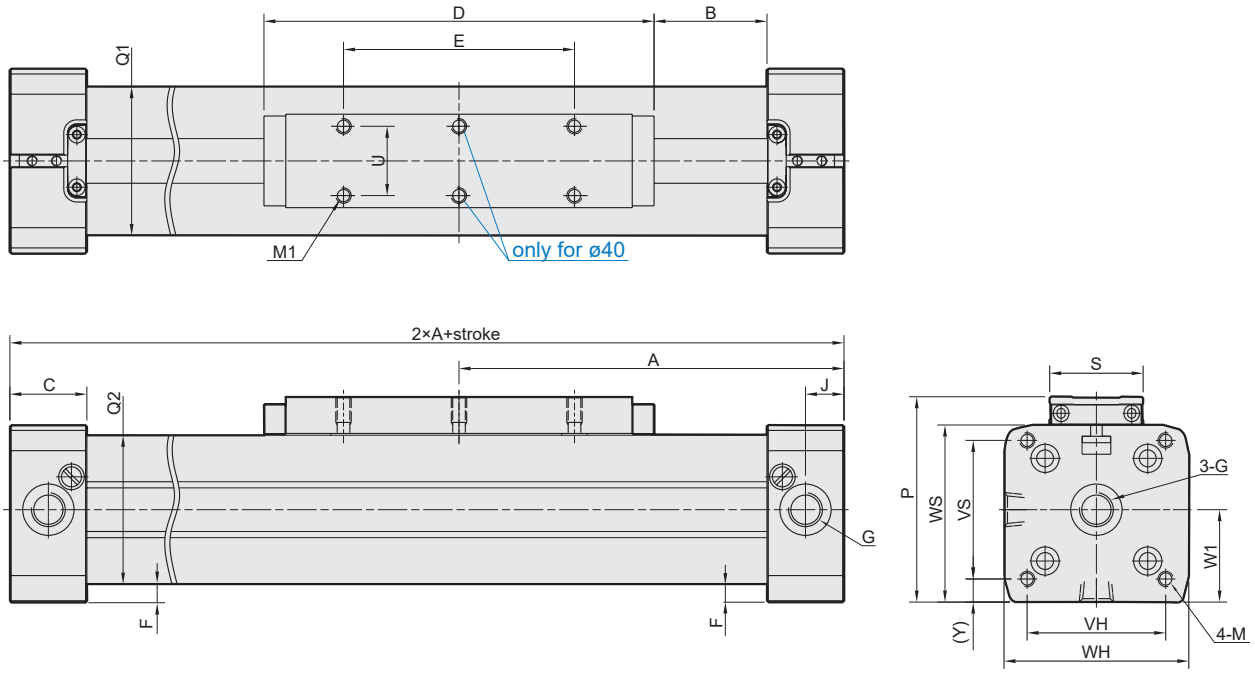
- 16L~40L: Cylinder with long piston for heavy bending and torque moments.

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	48×52	36	27	36	40	52	56	30	8

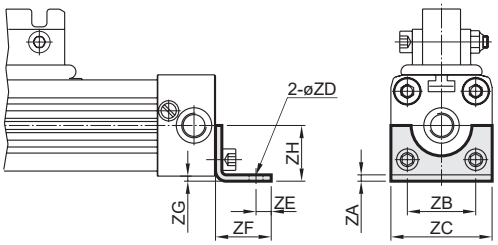
ø40~ø63



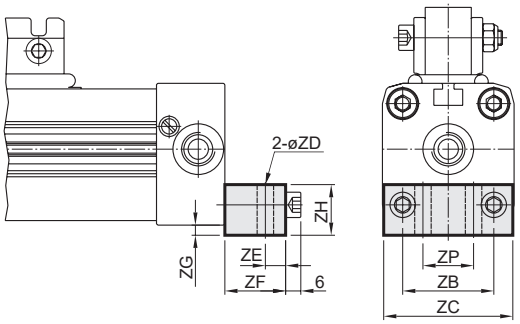
Code / Tube I.D.	A	B	C	D	E	F	G	J	M	M1	P	Q1×Q2	S	U	VH	VS	WH	WS	W1	Y
40	150	44	30	152	90	7	G1/4	15	M6×15depth	6-M6×10depth	80	58×58	36.4	27	54	54	72	69	36	9
50	175	42	33	200	110	0.5	G1/4	11.7	M6×15depth	4-M6×10depth	89	76×77	56	27	70	70	80	80	43.6	4
63	215	47.5	50	235	155	1.5	G3/8	25	M8×17depth	4-M8×14depth	123	102×102	50	36	78	78	106	106	62.5	14.5

LB End cover bracket (foot)

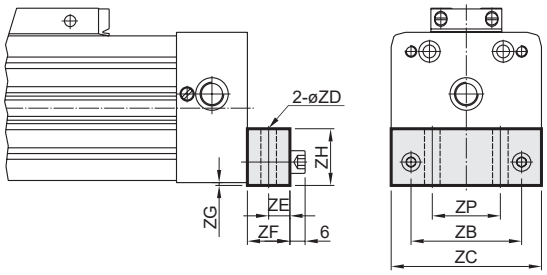
ø16, ø25
Material: Carbon steel



ø32, ø40
Material: Aluminum alloy

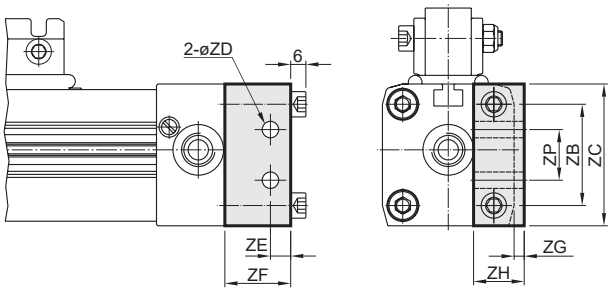


ø50, ø63
Material: Aluminum alloy



LB1 End cover bracket (foot)

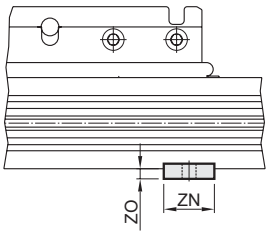
ø32*
Material: Aluminum alloy

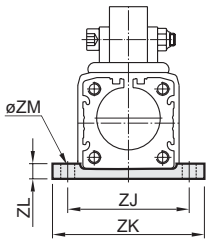


Code / Tube I.D.	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZP	Weight (g)
16	1.6	18	26	3.6	4	14	1.5	12.5	–	16
25	2.5	27	40	5.5	6	22	2.5	18	–	61
32	–	36	51	6.5	8	24	4	20	20	165
32*	–	40	56	6.5	8	26	4	20	20	189
40	–	54	71	9	11.5	24	2	20	30	210
50	–	70	80	9	12.5	25	2	25	45	293
63	–	78	106	11	15	30	2	40	48	730

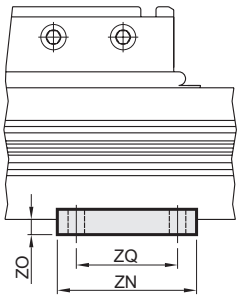
MS Mid section support

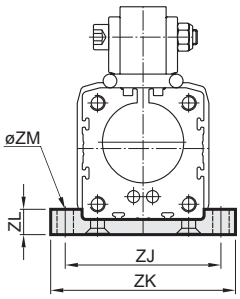
ø16, ø25 (1 pc)
Material: Aluminum alloy



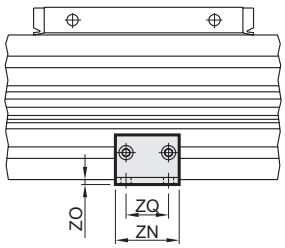


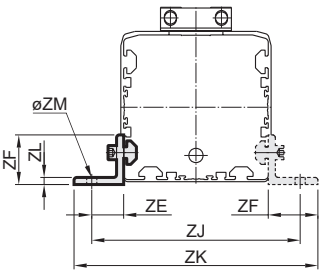
ø32, ø40 (1 pc)
Material: Aluminum alloy





ø50, ø63 (1 pc)
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	–	–	61	73	10	6.5	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

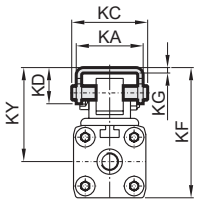
( ) Reference

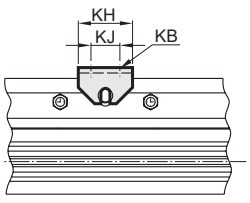
* If mounting hole for ø32, ø40 mid section support bracket is required, please contact our sales representative for more information.

AC Articulated carrier

The material of articulated carrier and pin: Carbon steel

MCRPL ø16, ø25

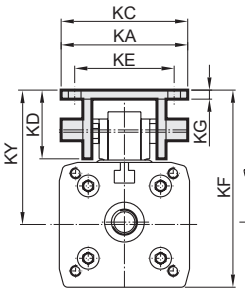


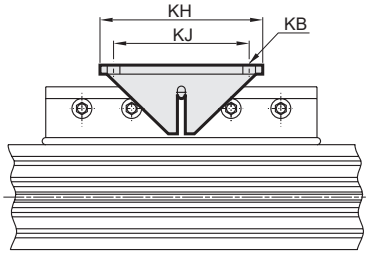


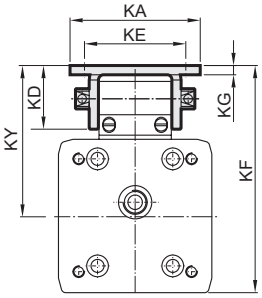
Code / Tube I.D.	KA	KB	KC	KD	KE	KF**	KG	KH	KJ	KY**	Weight (g)
MCRPL-16	25	4.5	28	13	–	46.5-47.5	2	20	10	33-34	36
MCRPL-25	37	5.5	42	20	–	71.5-73.5	3	30	16	51.5-53.5	117
MCRPL-32	70	6.5	70	38	55	94.5-96.5	5	90	75	66.5-68.5	446
MCRPL-40	70	6.5	70	38	55	108-110	5	90	75	73.5-75.5	446
MCRPLF-50	90	9	–	43.7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

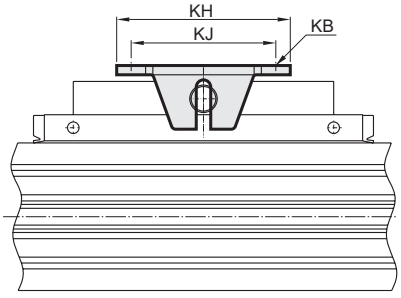
** KF / KY dimension are variable within the length of the slot of the load friction.

MCRPL ø32, ø40





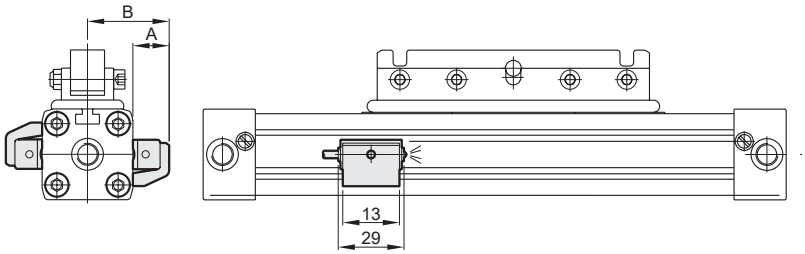




Sensor switch

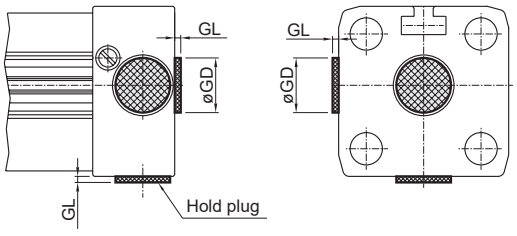
Specification

Model	RCAL
Switch type	Reed switch
Contracts	Normal open
Voltage range	DC/AC 5~240V
Current range	100 mA max.
Switch range	10W max.
Shock resistance	30 G
Voltage drop	2.5V max.
Response time	Max. 1ms
Temperature	-10~70°C
Lead wire	ø4, 2C, PVC
Lead wire length	3 m
Indicator lamp	LED lights up when ON
Enclosure classification	IP 67 (NEMA 6)
Indicator	Green LED



Code / Tube I.D.	A	B	Switch holder
16	16	29.5	HPL
25	15.5	35.5	
32	15.5	41.5	
40	10.5	46.5	
50	16.5	56	
63	15.5	68.5	

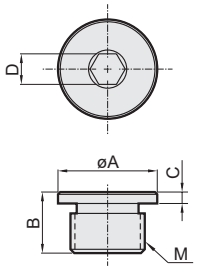
Hold plug



Code / Tube I.D.	GL	GD
16	0.7	7.5
25	1.0	13
32	0.7	18
40	0.7	18
50	0.8	18

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	G 1/8
32~50	18	10	1.5	4	G 1/4