

**TWIN-GUIDE CYLINDER**

Handling

**⚠ Caution**

**① Please control the cylinder within the allowable speed range:**

If the cylinder is not using the speed control valve, it may occur beyond the speed range of the piston. If it is used outside the allowable speed range, it will cause cylinder damage or reduce product life. Therefore, please install the speed control valve and adjust the speed within the allowable range. The product allowable speed is shown in Table 1.

**② Please note the speed control during vertical installation:**

When the cylinder is used vertically, if the load rate is large, it will cause the speed control valve to exceed the upper limit and could cause sudden unintended acceleration which will affect the product life. Therefore, it is recommended to use a dual speed controller.

**③ The lateral load of the cylinder during the operation must be within the allowable range:**

Exceeding the allowable value will prevent the cylinder from operating properly and affect the life of the product.

**④ Do not scratch the mounting surface of the cylinder body and end plate to avoid affecting the flatness:**

If the flatness of the mounting surface is poor, the cylinder will malfunction. The mounting surface of the cylinder body and the end plate should have a flatness of less than 0.05 mm.

**⑤ Do not cause surface damage or impact marks on the operating parts of the piston rod and the guide rod:**

Damage to the appearance will result in damage to the seal ring which could cause leakage or malfunction of the cylinder.

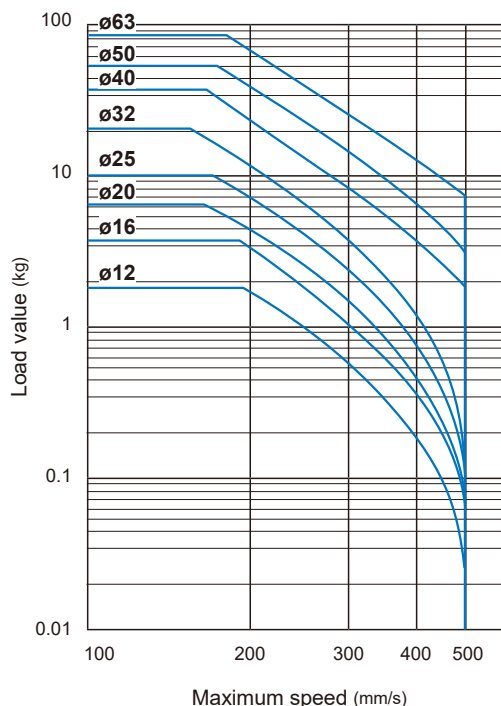


Table 1



### Order example

**MCGB – 03 – 12 – 50 – G**

MODEL

TUBE I.D. STROKE

PURPOSE / TYPE OF BEARING

Code	Purpose / Type of bearing
03	Stop / Slide bush
23	Push / Linear bearing (Could attach a table for the use as a lifter)

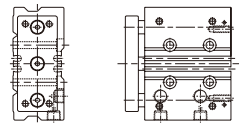
PORT THREAD

Blank: M5×0.8  
(for ø12, ø16)  
Blank: Rc thread  
G: G thread  
NPT: NPT thread  
(for ø20~ø32)

### Features

- Proven track record in manufacturing precision guided cylinders.
- Multi-Ports as standard enabling two direction mounting option.
- Flush fitting sensors.
- Inbuilt high density rubber pad absorbs energy at the end of stroke.
- Magnetic as standard.

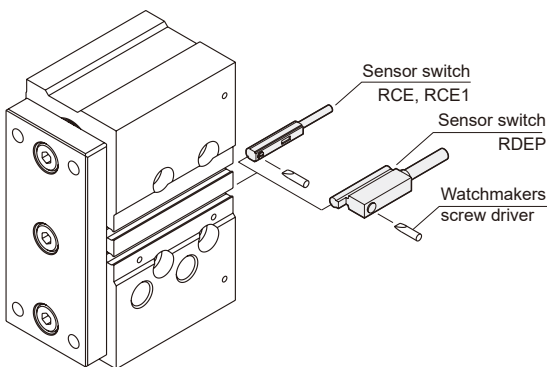
### Specification

Model	MCGB	
Model		
Acting type	Double acting	
Tube I.D. (mm)	12,16	20,25,32
Port size	M5×0.8	Rc1/8
Medium	Air	
Operating pressure range	0.1~1 MPa	
Proof pressure	1.5 MPa	
Ambient temperature	-5~+60°C (No freezing)	
Cushion	With rubber cushion pad	
Available speed range	50~500 mm/sec	
Lubrication	Not required	
Sensor switch (*1)	RCE, RCE1, RDEP	

\*1. RCE, RCE1, RDEP specification, please refer to page 8-12,13,18.

\*2. For precautions, please refer to page 4-12.

### Installation of sensor switch



### Table for standard stroke

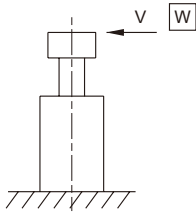
Series variety (Bearing type)	Tube I.D.	Stroke (mm)												
		10	20	25	30	40	50	75	100	125	150	175	200	
MCGB-03 (Slide bush)	ø12													
	ø16													
	ø20													
	ø25													
	ø32*													
MCGB-23 (Linear bearing)	ø12													
	ø16													
	ø20													
	ø25													
	ø32													

\* 1. MCGB-03 Tube I.D.ø32: 25mm for the shortest standard stroke.

\*2. Please contact us if the stroke is out of specification.

### Capacity graph

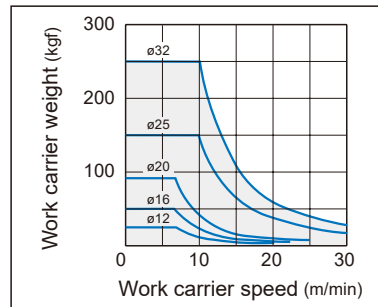
Capacity for the use as a stopper



Linear bearing type is not available as a stopper.

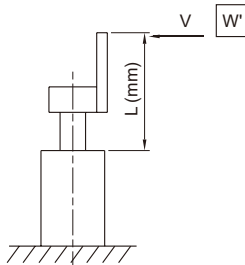
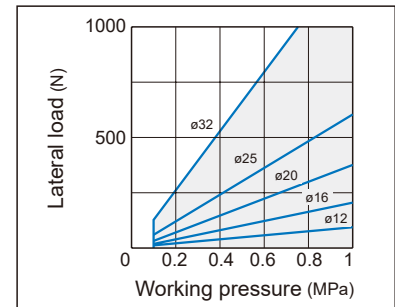
### Stop capacity

MCOB-03...30st



### Stop capacity

MCOB-03...30st



### Coefficients for conversion

$$W = W' \times \frac{L}{\ell}$$

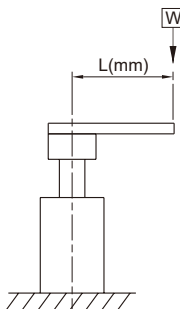
MCOB series	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$
$\ell$	40	42	42	42	44

W: The maximum weight of the work carrier in the above graph for the stopper's capacity.

For the use of attaching a plate to the link bar, choose a bore size referring to the formula below.

### Capacity for the use as a lifter

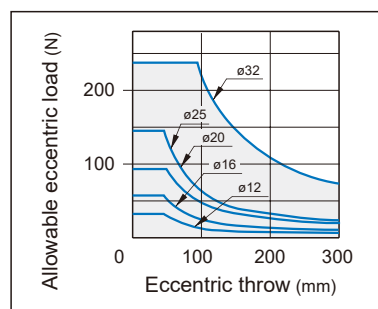
Allowable eccentricity load for the use as a lifter (at supply pressure 0.5 MPa)



Show the dynamic allowable value at L(mm) eccentricity from the center of the guide rod.

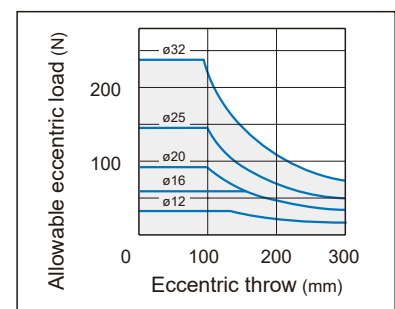
### Slide bush

MCOB-03...10-50st



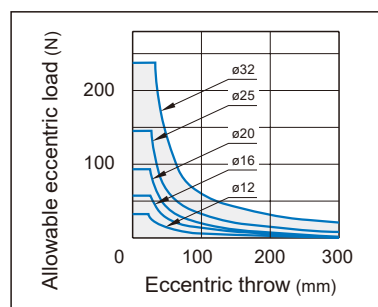
### Slide bush

MCOB-03...75-200st



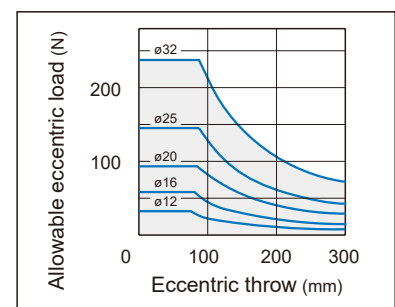
### Linear bearing

MCOB-23...10-50st



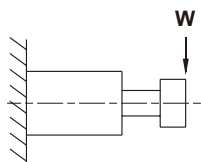
### Linear bearing

MCOB-23...75-200st



### Capacity table

#### Allowable lateral load

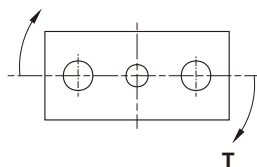


Shows the dynamic allowable value, when actuating the cylinder with lateral load  $W$  at the guide rods' top (vertical load against the guide rods).

Unit: N

Tube I.D.	Bearing type	Stroke (mm)											
		10	20	25	30	40	50	75	100	125	150	175	200
$\phi 12$	Slide bush	31	24	—	19	16	13	37	31	—	—	—	—
	Linear bearing	23	17	—	14	34	30	23	19	—	—	—	—
$\phi 16$	Slide bush	50	39	—	32	27	24	54	45	—	—	—	—
	Linear bearing	36	29	—	24	59	52	40	33	—	—	—	—
$\phi 20$	Slide bush	—	51	—	44	39	35	54	46	74	66	59	54
	Linear bearing	—	43	—	36	98	87	69	57	46	40	36	32
$\phi 25$	Slide bush	—	68	—	59	52	46	72	61	98	88	79	72
	Linear bearing	—	67	—	56	148	132	105	87	70	62	55	50
$\phi 32$	Slide bush	—	—	165	—	—	129	106	90	138	123	111	101
	Linear bearing	—	—	104	—	—	74	165	138	114	100	90	81

#### Allowable rotating torque

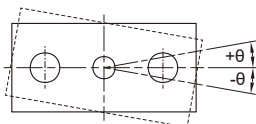


Shows the dynamic allowable value, when actuating the cylinder with a rotating torque  $T$  at the guide rods' top.

Unit: N.m

Tube I.D.	Bearing type	Stroke (mm)											
		10	20	25	30	40	50	75	100	125	150	175	200
$\phi 12$	Slide bush	0.64	0.48	—	0.39	0.32	0.28	0.75	0.63	—	—	—	—
	Linear bearing	0.47	0.35	—	0.29	0.71	0.62	0.40	0.38	—	—	—	—
$\phi 16$	Slide bush	1.14	0.90	—	0.74	0.63	0.55	1.23	1.04	—	—	—	—
	Linear bearing	0.84	0.66	—	0.54	1.35	1.19	0.93	1.76	—	—	—	—
$\phi 20$	Slide bush	—	1.14	—	1.21	1.07	0.95	1.49	1.25	2.03	1.81	1.63	1.48
	Linear bearing	—	1.19	—	0.99	2.69	2.40	1.89	1.56	1.26	1.10	0.98	0.88
$\phi 25$	Slide bush	—	2.19	—	1.88	1.65	1.47	2.31	1.94	3.15	2.80	2.52	2.30
	Linear bearing	—	2.14	—	1.79	4.74	4.22	3.36	2.78	2.25	1.98	1.76	1.59
$\phi 32$	Slide bush	—	—	6.61	—	—	5.16	4.23	3.59	5.52	4.93	4.45	4.06
	Linear bearing	—	—	4.17	—	—	2.95	6.60	5.52	4.56	4.02	3.59	3.24

#### Anti-roll accuracy



- The values are the deflection angle against the piston rod.
- Exclusive factor of the guide rods' deflection.

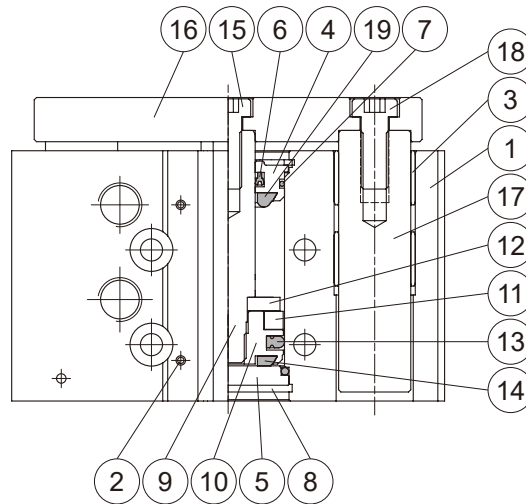
Tube I.D.	Bearing type	Anti-roll accuracy
		$\theta$
$\phi 12$	Slide bush	$\pm 0.09^\circ$
	Linear bearing	$\pm 0.06^\circ$
$\phi 16$	Slide bush	$\pm 0.08^\circ$
	Linear bearing	$\pm 0.06^\circ$
$\phi 20$	Slide bush	$\pm 0.08^\circ$
	Linear bearing	$\pm 0.03^\circ$
$\phi 25$	Slide bush	$\pm 0.07^\circ$
	Linear bearing	$\pm 0.05^\circ$
$\phi 32$	Slide bush	$\pm 0.07^\circ$
	Linear bearing	$\pm 0.03^\circ$

# MCGB-03 Inside structure & Parts list

## TWIN-GUIDE CYLINDER



Mindman



### Material

No.	Tube I.D. Part name	12	16	20	25	32	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy					1	
2	Ball	Stainless steel					3	
3	Slide bush	Bronze alloy					4	
4	Rod cover	Aluminum alloy					1	
5	Head cover	(*)	Carbon steel				1	
6	Rod packing	NBR					1	●
7	Cover ring	NBR					2	●
8	Snap ring	Spring steel					2	
9	Piston rod	Stainless steel		Carbon steel			1	
10	Piston	Aluminum alloy					1	
11	Magnet ring	Magnet material					1	
12	Magnet holder	Stainless steel					1	
13	Piston packing	NBR					1	●
14	Head cushion	NBR					1	●
15	Bolt	SCM					1	
16	Plate	Carbon steel					1	
17	Guide rod	Carbon steel					2	
18	Screw	SCM					2	
19	Rod cushion	NBR					1	●

\*Aluminum alloy

### Order example of repair kits

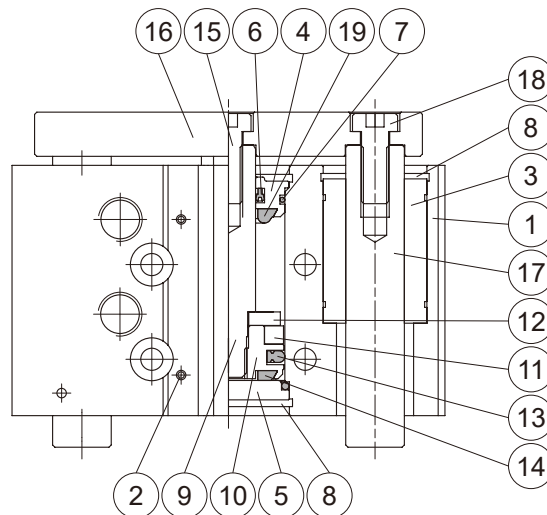
Tube I.D.	Repair kits
ø12	<b>PS-MCGB-12</b>
ø16	<b>PS-MCGB-16</b>
ø20	<b>PS-MCGB-20</b>
ø25	<b>PS-MCGB-25</b>
ø32	<b>PS-MCGB-32</b>

### Cylinder weight Unit: g

Model	Basic weight MCGB-03	Stroke 5mm MCGB-03
Tube I.D.		
ø12	191	21
ø16	283	28
ø20	450	45
ø25	670	63
ø32	1,210	90

# MCGB-23 Inside structure & Parts list

## TWIN-GUIDE CYLINDER



### Material

No.	Tube I.D. Part name	12	16	20	25	32	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy					1	
2	Ball	Stainless steel					3	
3	Linear bearing	—					4	
4	Rod cover	Aluminum alloy					1	
5	Head cover	(*)	Carbon steel				1	
6	Rod packing	NBR					1	●
7	Cover ring	NBR					2	●
8	Snap ring	Spring steel					2	
9	Piston rod	Stainless steel		Carbon steel			1	
10	Piston	Aluminum alloy					1	
11	Magnet ring	Magnet material					1	
12	Magnet holder	Stainless steel					1	
13	Piston packing	NBR					1	●
14	Head cushion	NBR					1	●
15	Bolt	SCM					1	
16	Plate	Carbon steel					1	
17	Guide rod	Carbon steel					2	
18	Screw	SCM					2	
19	Rod cushion	NBR					1	●

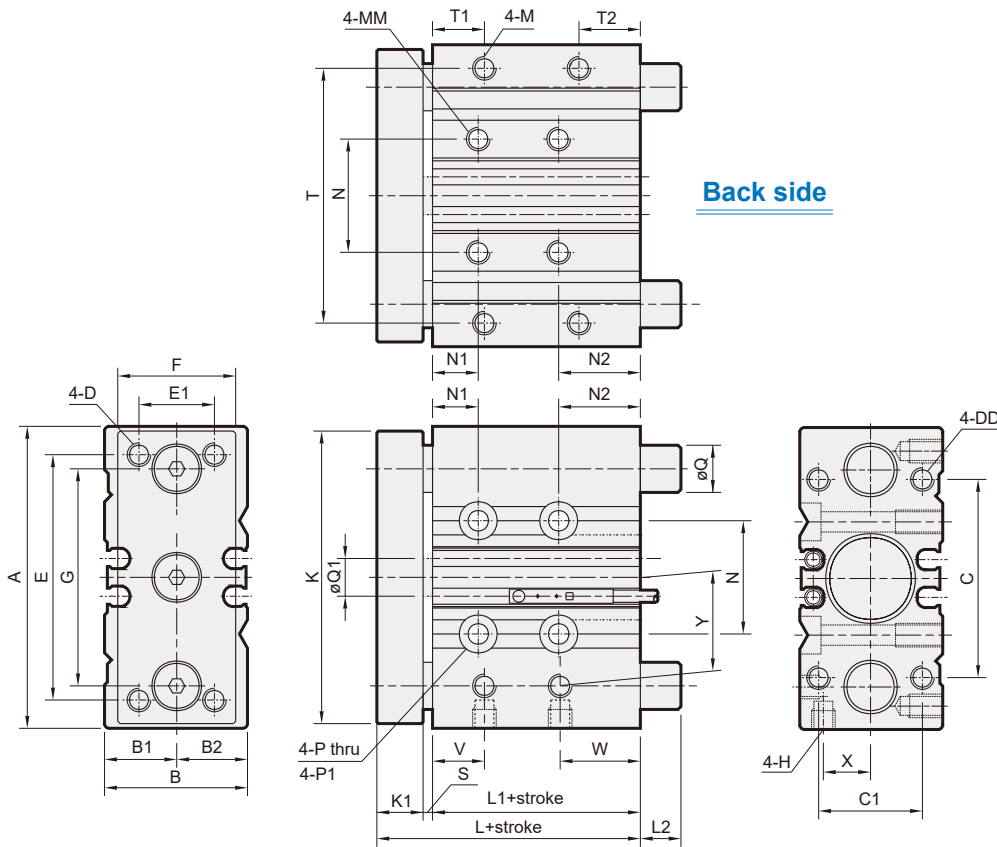
\*Aluminum alloy

### Order example of repair kits

Tube I.D.	Repair kits
ø12	<b>PS-MCGB-12</b>
ø16	<b>PS-MCGB-16</b>
ø20	<b>PS-MCGB-20</b>
ø25	<b>PS-MCGB-25</b>
ø32	<b>PS-MCGB-32</b>

### Cylinder weight Unit: g

Model	Basic weight MCGB-23	Stroke 5mm MCGB-23
Tube I.D.		
ø12	211	18
ø16	260	30
ø20	470	45
ø25	740	60
ø32	1,170	85



### MCGB-03 / MCGB-23

Code Tube I.D.	A	B	B1	B2	C	C1	D	DD	E	E1	F	G	H	K	K1	L	L1	L2	M	MM
12	58	26	13	13	40	18	M4×0.7	M4×0.7×9 dp	48	14	22	41.5	M5×0.8	56	8	39	29		M4×0.7×7 dp	M5×0.8×10 dp
16	64	30	15	15	42	22	M5×0.8	M5×0.8×11 dp	52	16	25	46	M5×0.8	62	8	43	31		M5×0.8×8 dp	M5×0.8×10 dp
20	85	36	17	19	52	26	M5×0.8	M5×0.8×13 dp	60	18	30	55	Rc1/8	81	10	47	35	(*)	M5×0.8×7 dp	M6×1.0×12 dp
25	96	42	21	21	62	32	M6×1.0	M6×1.0×15 dp	70	26	38	65	Rc1/8	91	10	47.5	35.5		M6×1.0×9 dp	M6×1.0×12 dp
32	116	51	26	25	80	38	M8×1.25	M8×1.25×18 dp	96	30	44	80	Rc1/8	110	12	47.5	33.5		M8×1.25×11 dp	M8×1.25×16 dp

Code Tube I.D.	N	N1	N2	P	P1	Q		Q1	S	T	T1	T2	V	W	X	Y
						MCGB-03	MCGB-23									
12	23	5	20	$\varnothing 4.3$	$\varnothing 8 \times 4.5$ dp	8	6	6	2	50	12	12	11	15	8.5	19.5
16	24	5	22	$\varnothing 4.3$	$\varnothing 8 \times 4.5$ dp	10	8	8	4	54	11	13	11	17	10	23
20	28	19	16	$\varnothing 5.3$	$\varnothing 9.5 \times 5.5$ dp	12	10	10	2	64	11	14	12	23	11.5	24.5
25	34	22	12.5	$\varnothing 5.3$	$\varnothing 9.5 \times 5.5$ dp	16	13	12	2	76	12	13.5	11	23.5	13.5	24
32	42	22	14.5	$\varnothing 6.6$	$\varnothing 11 \times 6.5$ dp	20	16	16	2	100	12	16.5	11.5	25	16	31

### \* L2 dimensions list

#### MCGB-03

Code Tube I.D.	Stroke (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	0	0	—	0	0	0	18	18	—	—	—	—
16	0	0	—	0	0	0	21	21	—	—	—	—
20	—	0	—	0	0	0	14	14	31	31	31	31
25	—	0	—	0	0	0	14	14	31	31	31	31
32	—	—	20	20	20	20	20	42	42	42	42	42

#### MCGB-23

Code Tube I.D.	Stroke (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	0	0	—	0	14	14	14	14	—	—	—	—
16	0	0	—	0	21	21	21	21	—	—	—	—
20	—	0	—	0	27	27	27	27	50	50	50	50
25	—	2	—	2	35	35	35	35	50	50	50	50
32	—	—	8	8	8	8	42	42	55	55	55	55