

### 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)

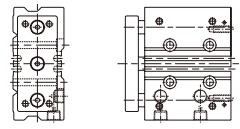
PORT THREAD

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

### Features

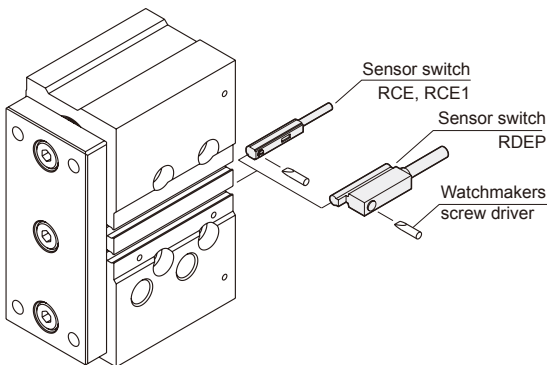
- Proven track record in manufacturing precision guided cylinders.
- Multi-Ports as standard enabling two direction mounting option.
- Flush fitting sensors.
- Inbuilt high density rubber pad absorbs energy at the end of stroke.
- Magnetic as standard.

### 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 (*)	RCE, RCE1, RDEP	

\* RCE, RCE1, RDEP specification, please refer to page 8-10,14.

### Installation of sensor switch



### Table for standard stroke

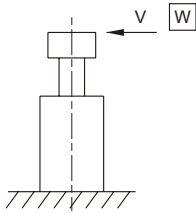
Series variety (Bearing type)	Tube I.D.	Stroke (mm)												
		10	20	25	30	40	50	75	100	125	150	175	200	
<b>MCGB-03</b> (Slide bush)	ø12													
	ø16													
	ø20													
	ø25													
	ø32*													
<b>MCGB-23</b> (Linear bearing)	ø12													
	ø16													
	ø20			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

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

\*2. Please consult us if stroke out of specification.

### Capacity graph

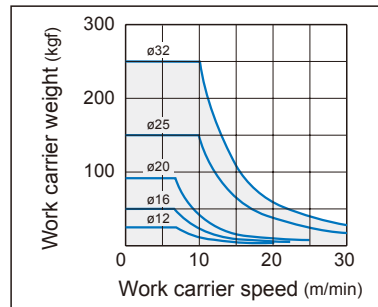
Capacity for the use as a stopper



Linear bearing type is not available as a stopper.

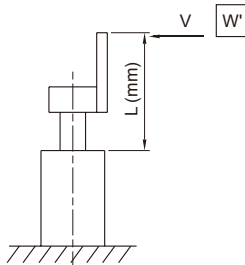
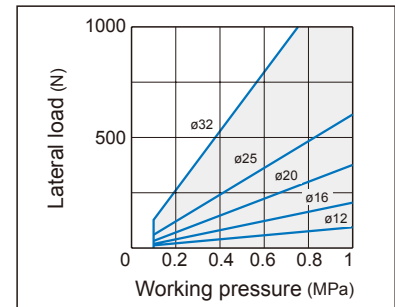
### Stop capacity

MCGB-03...30st



### Stop capacity

MCGB-03...30st



### Coefficients for conversion

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

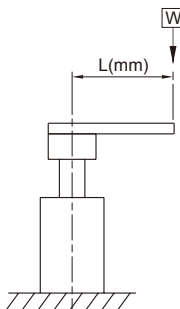
MCGB series	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$
$\ell$	40	42	42	42	44

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

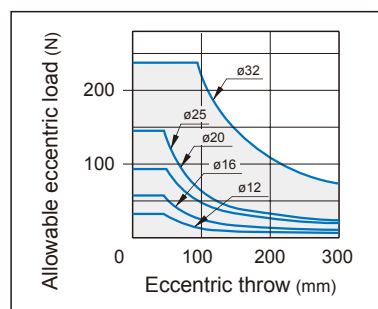
Allowable eccentricity load for the use as a lifter (at supply pressure 0.5 MPa)



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

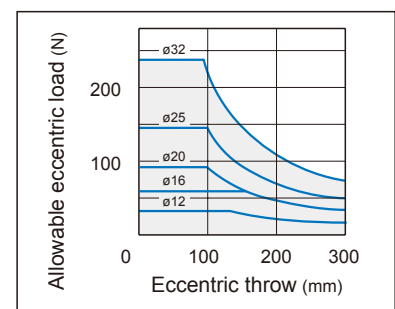
### Slide bush

MCGB-03...10-50st



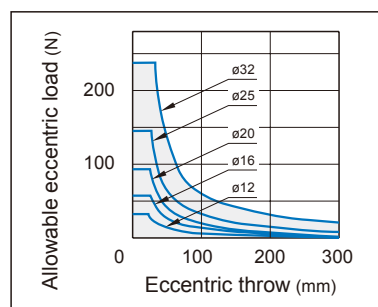
### Slide bush

MCGB-03...75-200st



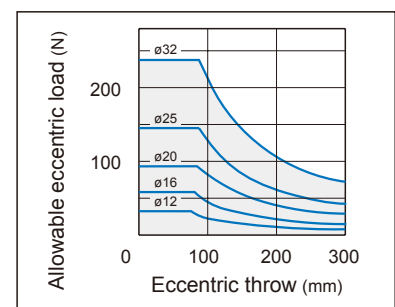
### Linear bearing

MCGB-23...10-50st



### Linear bearing

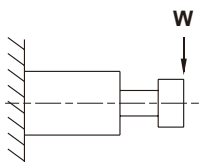
MCGB-23...75-200st



### Capacity table

#### Allowable lateral load

Unit: N

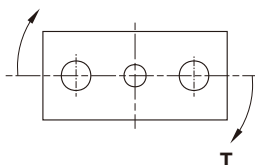


Shows the dynamic allowable value, when actuating the cylinder with lateral load  $W$  at the guide rods' top (vertical load against the guide rods).

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

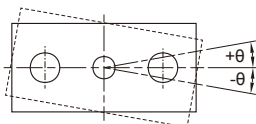
Unit: N.m



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

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

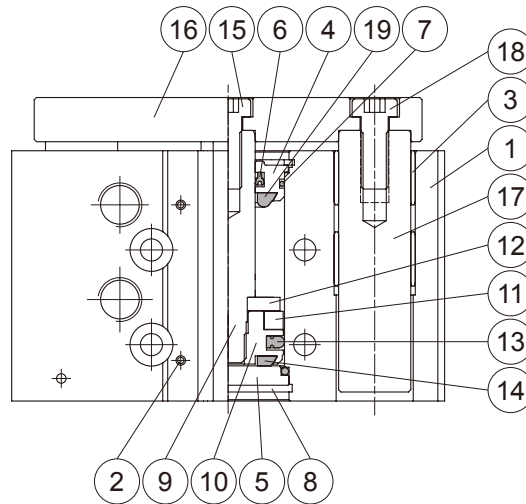


- The values are the deflection angle against the piston rod.
- Exclusive factor of the guide rods' deflection.

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



### 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

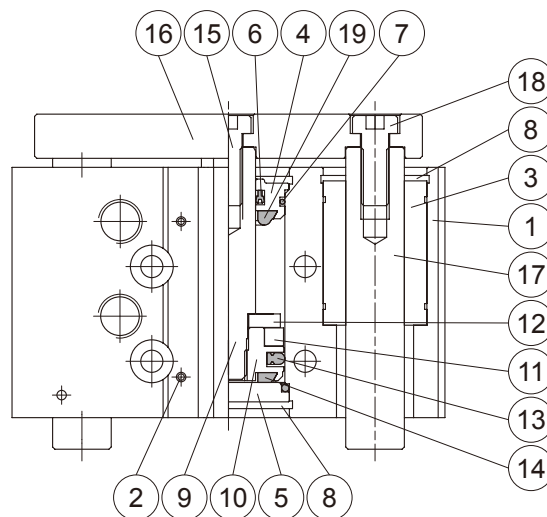
Model	Basic weight MCGB-03	Stroke 5mm MCGB-03
Tube I.D.		
ø12	191	21
ø16	283	28
ø20	450	45
ø25	670	63
ø32	1,210	90

# MCGB-23 Inside structure & Parts list

## TWIN-GUIDE CYLINDER



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	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	●

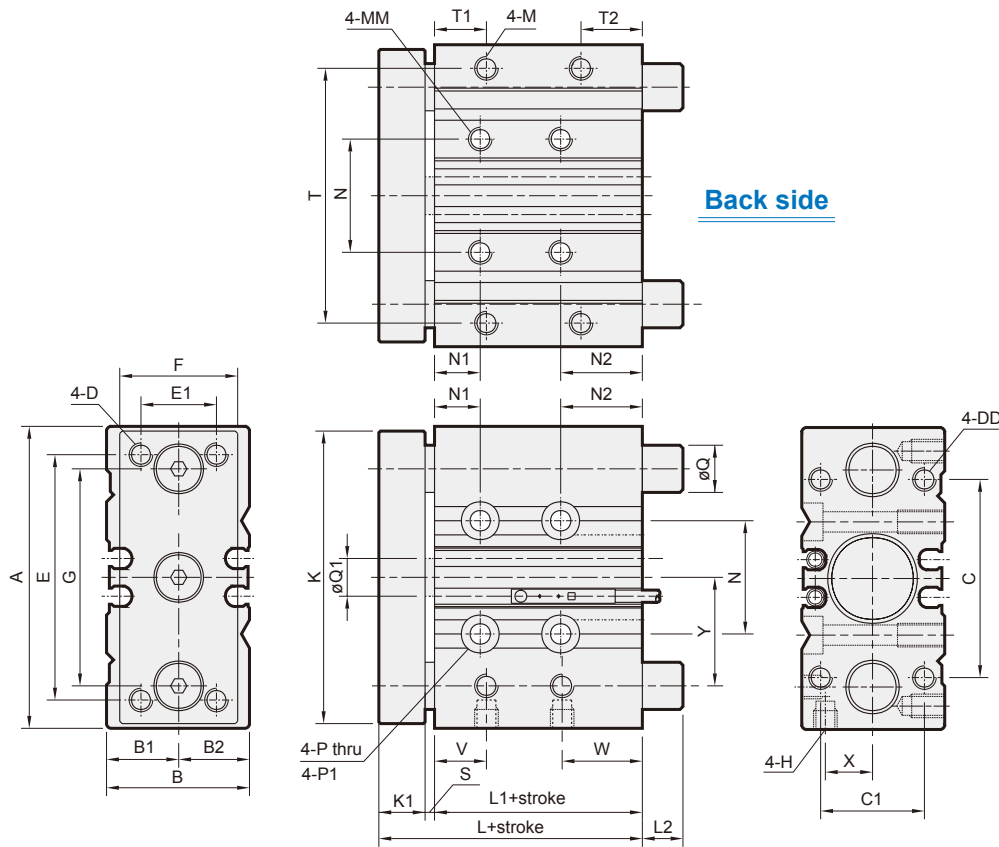
\*Aluminum alloy

### 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	10	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	72	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	86	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	48	80	Rc1/8	112	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	2	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