

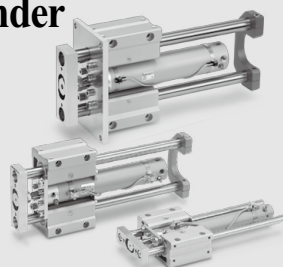
# Guide Cylinder/Compact Type

## Series *MGC*

ø20, ø25, ø32, ø40, ø50

### Integration of guide rods and a base cylinder

- **The modified small flange shape facilitates mounting of speed controllers.**
- **17% weight reduction**  
Achieved by making the front plate, small flange and guide body more compact.
- **The modified bracket shape allows the auto switch to be mounted in any position.**



#### Lightweight

Weight 17% reduction  
(In comparison with MGCLB20-100)

#### Space-saving

Length 20% shorter  
Height 18% shorter  
(In comparison with MGG□B32)

**Grease nipple offers easy lubrication for bearings.**

#### Air cushion is standard.

Enables the impact to be absorbed at the stroke end when the cylinder is operated at high speeds.



**The modified small flange shape facilitates the mounting of fittings.**

**Compact front plate and guide body**

**Models without rear plate are available.**

MGJ  
MGP  
-Z  
MGP  
MGPW  
MGQ  
MGG  
**MGC**  
MGF  
MGZ  
MGT

### Variations

Bore size (mm)	Standard stroke (mm)						
	75	100	125	150	200	250	300
20	●	●	●	●	●	●	●
25	●	●	●	●	●	●	●
32	●	●	●	●	●	●	●
40	●	●	●	●	●	●	●
50	●	●	●	●	●	●	●

#### Long stroke

Bore size (mm)	Long stroke (mm)										
	250	300	350	400	450	500	600	700	800	900	1000
20	●	●	●	●	●	●	●	●	●	●	●
25	●	●	●	●	●	●	●	●	●	●	●
32	●	●	●	●	●	●	●	●	●	●	●
40	●	●	●	●	●	●	●	●	●	●	●
50	●	●	●	●	●	●	●	●	●	●	●

D-□  
-X□

# Guide Cylinder/Compact Type

## Series MGC

ø20, ø25, ø32, ø40, ø50

### How to Order

**MGC L B 32 - 100 - R - M9BW - C -**

**Guide Cylinder**  
(Compact Type)

**Bearing type**

M	Slide bearing
L	Ball bushing bearing

**Mounting**

B	Basic
F	Front mounting flange

**Bore size**

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm

**Port thread type**

Nil	M5 x 0.8
TN	NPT
TF	G

**Cylinder stroke (mm)**  
Refer to "Model/Stroke" on page 495.

Nil	Without rear plate
R	With rear plate

**Rear plate**

**Auto switch**

Nil	Without auto switch (Built-in magnet)
-----	---------------------------------------

**Auto switch mounting bracket** (Note)  
Note) This symbol is indicated when the D-A9□ or M9□ type auto switch is specified. This mounting bracket does not apply to other auto switches (D-C7□ and H7□, etc.) (Nil)

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Made to Order**  
Refer to page 495 for details.

\* For bore size 20 and 25, M5 x 0.8 is only available.

\* For applicable auto switch models, refer to the below table.

### Applicable Auto Switches

Refer to pages 1893 to 2007 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)				Pre-wired connector	Applicable load								
					DC	AC	Applicable bore size				0.5 (Nil)	1 (M)	3 (L)	5 (Z)			None (N)							
							ø20 to ø50	ø20, ø25	ø32	ø40, ø50														
Solid state auto switch	—	Grommet	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC									
						3-wire (PNP)	M9PV	M9P	●	●	●	○	—			○								
		Connector	2-wire	12 V		M9BV	M9B	●	●	●	○	—	○			—								
				—		H7C	●	—	●	●	—	—	—											
	Diagnostic indication (2-color indication)	Grommet	3-wire (NPN)	5 V, 12 V		M9NVW	M9NW	●	●	●	○	—	○	IC circuit										
						3-wire (PNP)	M9PWV	M9PW	●	●	●	○	—			○								
		Connector	2-wire	12 V		M9BWV	M9BW	●	●	●	○	—	○	—										
				—		M9NAV*	M9NA**	○	○	●	○	—	○	IC circuit										
	Water resistant (2-color indication)	Grommet	3-wire (NPN)	5 V, 12 V		M9PAV*	M9PA**	○	○	●	○	—	○			IC circuit								
						3-wire (PNP)	M9PAV**	M9PA**	○	○	●	○	—	○										
		Connector	2-wire	12 V		M9BAV**	M9BA**	○	○	●	○	—	○	—										
				—		—	5 V, 12 V	—	A7NF	●	—	●	○	—		○	IC circuit							
	Reed auto switch	—	Grommet	Yes		3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●		—	—	—	IC circuit	—				
										None	—	—	—	—		—	—	—			—	IC circuit		
Yes					100 V					A93V	A93	●	—	●	●	—	—	—						
None					100 V or less					A90V	A90	●	—	●	—	—	—							
Yes					100 V, 200 V					—	(B54)	B54	●	—	●	●		—			—			
None					200 V or less					—	(B64)	B64	●	—	●	—	—							
Connector					Yes					2-wire	24 V	12 V	—	C73C	●	—		●			●	—	IC circuit	
													—	C80C	●	—	●	●			—			
Diagnostic indication (2-color indication)					Grommet					Yes	2-wire	24 V or less	—	—	(B59W)	B59W	●	—			●	—	—	—
													—	—	—	—	—	—			—	—	—	

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
1 m ..... M (Example) M9NWML  
3 m ..... L (Example) M9NWLL  
5 m ..... Z (Example) M9NWZ  
None ..... N (Example) H7CN

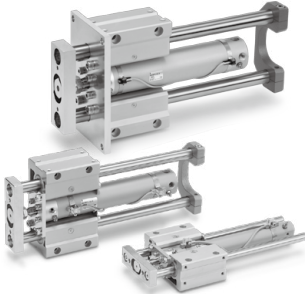
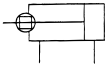
\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* Since there are other applicable auto switches than listed, refer to page 507 for details.  
\* For details about auto switches with pre-wired connector, refer to pages 1960 and 1961.  
\* The D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) are shipped together, (but not assembled). (Only switch mounting brackets are assembled at the time of shipment.)

#### Caution

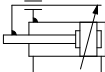
When using auto switches shown inside ( ), stroke end detection may not be possible depending on the One-touch fitting or speed controller model. Please contact SMC in this case.

Symbol



Symbol

Air cushion



**Made to Order: Individual Specifications**  
(For details, refer to page 509.)

Symbol	Specifications
-X440	With piping ports for grease

### Made to Order

(For details, refer to pages 2009 to 2152.)

Symbol	Specifications
-XB6	Heat resistant cylinder (-10 to 150°C)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC4	With heavy duty scraper
-XC6□	Made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC11	Dual stroke cylinder/Single rod
-XC13	Auto switch rail mounting style
-XC22	Fluororubber seal
-XC35	With coil scraper
-XC37	Larger throttle diameter of connecting port
-XC56	With knock pin holes
-XC73	Built-in cylinder with lock (CDNG)
-XC74	With front plate for MGG
-XC78	Auto switch mounting special dimensions at stroke end
-XC79	Tapped hole, drilled hole, pin hole machined additionally

## Model/Specifications

### Model/Stroke

Model (Bearing type)	Bore size (mm)	Standard stroke (mm)	Long stroke (mm)
<b>MGCM</b> (Slide bearing)  <b>MGCL</b> (Ball bushing bearing)	<b>20</b>	75, 100, 125, 150, 200	250, 300, 350, 400
	<b>25</b>		350, 400, 450, 500
	<b>32</b>	75, 100, 125, 150 200, 250, 300	350, 400, 450, 500, 600
	<b>40</b>		350, 400, 450, 500, 600 700, 800
	<b>50</b>		350, 400, 450, 500, 600 700, 800, 900, 1000

\* Intermediate strokes and short strokes other than the above are produced upon receipt of order.

### Specifications

Model	MGC□□20	MGC□□25	MGC□□32	MGC□□40	MGC□□50
Base cylinder	CDG1BA	□□□□□□□□	□□□□□□□□	□□□□□□□□	□□□□□□□□
Bore size (mm)	20	25	32	40	50
Action	Double acting				
Fluid	Air				
Proof pressure	1.5 MPa				
Maximum operating pressure	1.0 MPa				
Minimum operating pressure	0.15 MPa (Horizontal, No load)				
Ambient and fluid temperature	-10 to 60°C				
Piston speed	50 to 750 mm/s				
Cushion	Air cushion				
Base cylinder lubrication	Non-lube				
Stroke length tolerance	+1.9 +0.2 mm				
Non-rotating accuracy <sup>*1</sup>	Slide bearing	±0.07°	±0.06°	±0.06°	±0.05°
	Ball bushing bearing	±0.06°	±0.05°	±0.04°	±0.04°
Piping port size (Rc, NPT, G) <sup>*2</sup>	M5 x 0.8		1/8		1/4

\*1 When the cylinder is retracted (initial value), the non-rotating accuracy without loads or deflection of the guide rods will be below the values shown in the above table as a guideline.

\*2 For bore sizes 20 and 25, M5 x 0.8 is only available.

## Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)									
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
20	8	OUT	314	62.8	94.2	126	157	188	220	251	283	314	
		IN	264	52.8	79.2	106	132	158	185	211	238	264	
25	10	OUT	491	98.2	147	196	246	295	344	393	442	491	
		IN	412	82.4	124	165	206	247	288	330	371	412	
32	12	OUT	804	161	241	322	402	482	563	643	724	804	
		IN	691	138	207	276	346	415	484	553	622	691	
40	16	OUT	1260	252	378	504	630	756	882	1010	1130	1260	
		IN	1060	212	318	424	530	636	742	848	954	1060	
50	20	OUT	1960	392	588	784	980	1180	1370	1570	1760	1960	
		IN	1650	330	495	660	825	990	1160	1320	1490	1650	

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

MGJ

MGP  
-Z

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

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MGT

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MGT

MGT

MGT

MGT

MGT

MGT

MGT

**Weight**

		(kg)				
Bore size (mm)		20	25	32	40	50
Basic weight	LB type (Ball bushing bearing/Basic)	1.04	1.55	2.07	3.32	6.45
	LF type (Ball bushing bearing/Front mounting flange)	1.7	2.35	3.02	5.02	8.58
	MB type (Slide bearing/Basic)	1.02	1.51	2.03	3.26	6.35
	MF type (Slide bearing/Front mounting flange)	1.69	2.32	2.98	4.96	8.48
	Additional weight with rear plate	0.2	0.25	0.34	0.58	1.04
Additional weight per each 50 mm of stroke		0.14	0.17	0.25	0.4	0.61
Additional weight for long stroke		0.01	0.01	0.02	0.03	0.06
Additional weight with bracket		0.011	0.018	0.019	0.031	0.061

Calculation: (Example)  
**MGCLB32-500-R**  
(Ball bushing bearing/Basic, ø32/500 st., with rear plate, with bracket)  
• Basic weight ..... 2.07 (LB type)  
• Additional weight with rear plate ..... 0.34  
• Additional stroke weight ..... 0.25/50 st  
• Stroke ..... 500 st  
• Additional weight for long stroke ..... 0.02  
• Additional weight with bracket ..... 0.019  
2.07 + 0.34 + 0.25 x 500/50 + 0.02 + 0.019 = 4.95 kg

**Moving Parts Weight**


		(kg)				
Bore size (mm)		20	25	32	40	50
Moving parts basic weight		0.34	0.53	0.69	1.2	2.45
Additional weight with rear plate		0.2	0.25	0.34	0.58	1.04
Additional weight per each 50 mm of stroke		0.11	0.14	0.2	0.33	0.51

Calculation: (Example)  
**MGCLB32-500-R**  
• Moving parts basic weight ..... 0.69  
• Additional weight with rear plate ..... 0.34  
• Additional stroke weight ..... 0.2/50 st.  
• Stroke ..... 500 st  
0.69 + 0.34 + 0.2 x 500/50 = 3.03 kg

**Allowable Kinetic Energy by Air Cushion Mechanism**

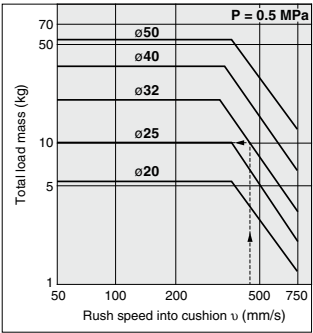
R: Rod end, H: Head end		
Bore size (mm)	Effective cushion length (mm)	Allowable kinetic energy (J)
20	R: 7, H: 7.5	R: 0.35, H: 0.42
25	R: 7, H: 7.5	R: 0.56, H: 0.65
32	7.5	0.91
40	8.7	1.8
50	11.8	3.4

High kinetic energy generated by large loads and high speed operations can be absorbed by compressing air at the stroke end thus preventing shock and vibration being transmitted to the machine. The air cushion has not been designed to control the piston speed in the end regions of the stroke. The load kinetic energy can be obtained by the following equation:



$$Ek = \frac{M + m}{2} \cdot U^2 \quad U = 1.4 \cdot Ua$$

- Ek: Kinetic energy (J)
  - M: Weight of the driven object (kg)
  - m: Weight of moving parts of cylinder (kg)
  - U: Maximum speed (m/s)
  - Ua: Average speed (m/s)
- Note) Set Ua so that rush speed into cushion U should not exceed 0.75 m/s.



Also, selection can be made by using the graph above.

Example)  
Find the maximum load mass when using a cylinder with ø32, stroke 500 mm, with rear plate as a lifter at an average speed of Ua 300 mm/s.  
Rush speed into cushion U is as follows:

$U = 1.4 \times 300 = 420 \text{ mm/s.}$

Extend upward from 420 mm/s on the abscissa in the graph until crossing at the line of bore size 32. Extend leftward from the intersection to find the total load weight 10 kg.  
Subtract the moving parts weight of 3.08 kg from this. (For moving parts, refer to "Moving Parts Weight".) 6.92 kg will be obtained, which is equal to the maximum load weight.

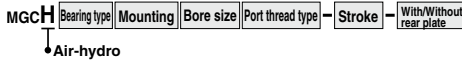
**⚠ Caution**

In a horizontal application, pay attention to that the load weight should not exceed the allowable end load given on pages 396 to 400.

## Air-hydro

Low pressure hydraulic cylinder of 1.0 MPa or less

Through the concurrent use of the CC series air-hydro unit, it becomes possible to operate at a constant or low speed or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.



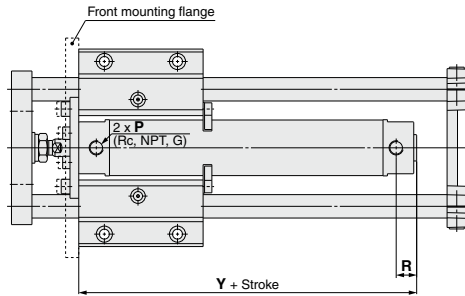
## Specifications

Bore size (mm)	<b>20, 25, 32, 40, 50</b>
<b>Action</b>	Double acting
<b>Fluid</b>	Turbine oil
<b>Proof pressure</b>	1.5 MPa
<b>Maximum operating pressure</b>	1.0 MPa
<b>Minimum operating pressure</b>	0.18 MPa (Horizontal, No load)
<b>Piston speed</b>	15 to 300 mm/s
<b>Cushion</b>	None
<b>Ambient and fluid temperature</b>	+5 to 60°C
<b>Mounting</b>	Basic Front mounting flange

\* For specifications other than the above, refer to page 495.

\* Auto switch can be mounted.

## Dimensions (Dimensions other than the below are the same as standard type.)



Bore size (mm)	P	R	Y
<b>20</b>	1/8	14	79
<b>25</b>	1/8	14	79
<b>32</b>	1/8	14	81
<b>40</b>	1/8	15	89
<b>50</b>	1/4	16	104

## Series Applicable to Operating Environments that Do Not Accept Copper

• Copper and Fluorine-free ... Series 20

\* For details, refer to the SMC website.

MGJ

MGP  
-Z

MGP

MGPW

MGQ

MGG

**MGC**

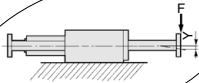
MGF

MGZ

MGT

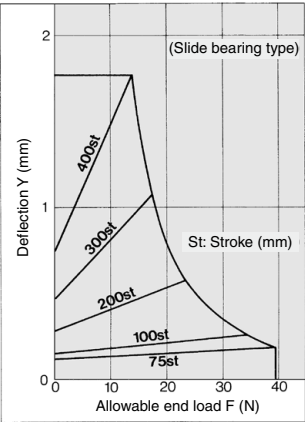
D-□

-X□

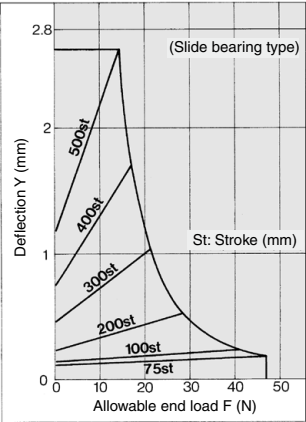


**Slide Bearing**  
**Allowable End Load and Deflection**

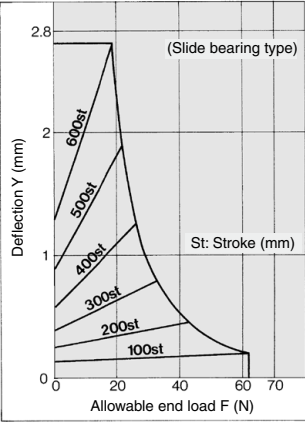
**MGCM**  **Stroke** **-R**



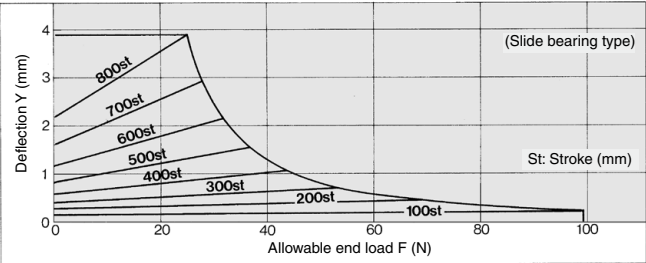
**MGCM**  **Stroke** **-R**



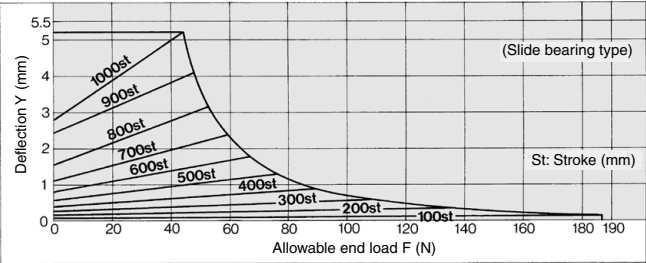
**MGCM**  **Stroke** **-R**

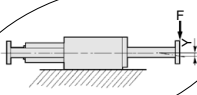


**MGCM**  **Stroke** **-R**



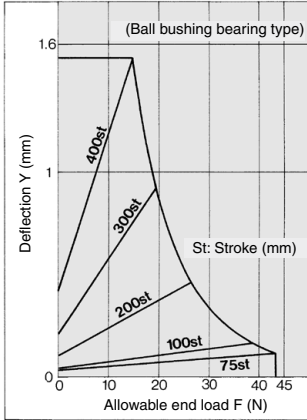
**MGCM**  **Stroke** **-R**



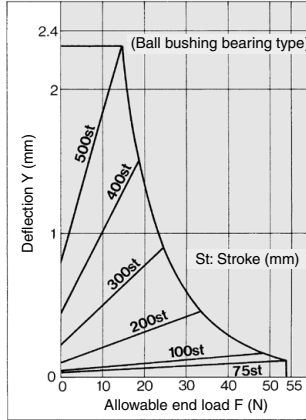


## Ball Bushing Bearing Allowable End Load and Deflection

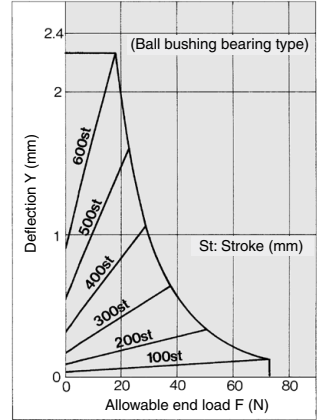
**MGCL 20-Stroke-R**



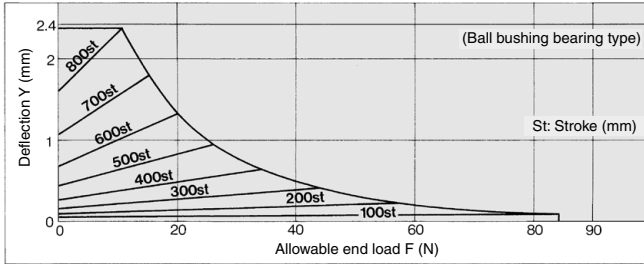
**MGCL 25-Stroke-R**



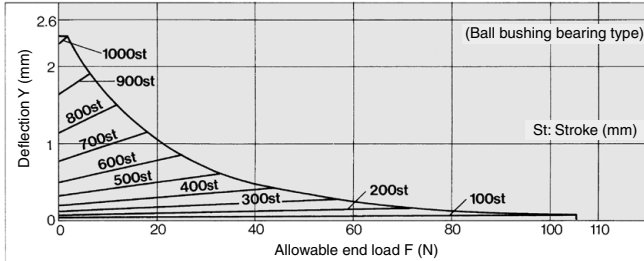
**MGCL 32-Stroke-R**



**MGCL 40-Stroke-R**



**MGCL 50-Stroke-R**



**MGJ**

**MGP  
-Z**

**MGP**

**MGPW**

**MGQ**

**MGG**

**MGC**

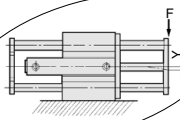
**MGF**

**MGZ**

**MGT**

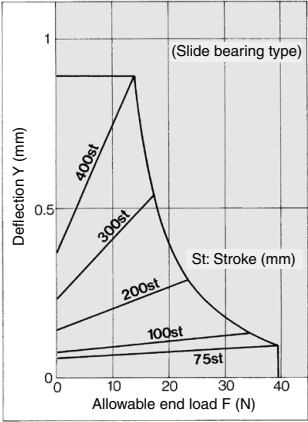
**D-□**

**-X□**

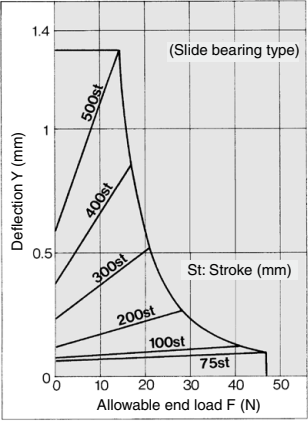


**Slide Bearing**  
**Allowable End Load and Deflection**

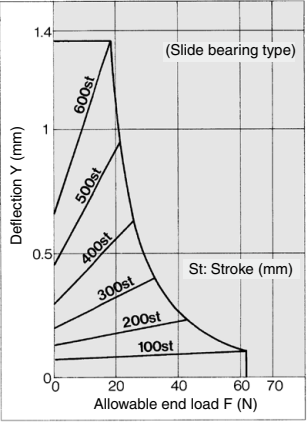
**MGCM 20-Stroke-R**



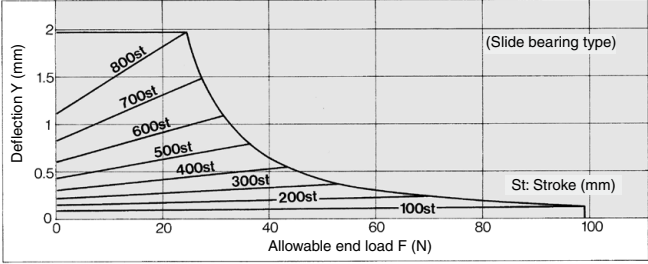
**MGCM 25-Stroke-R**



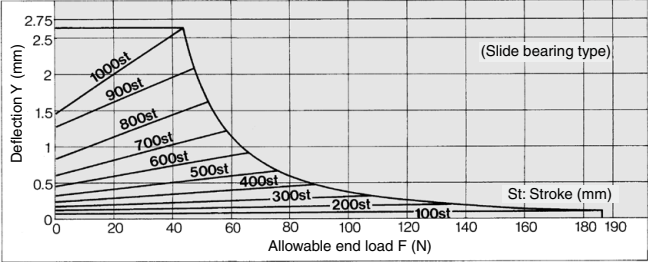
**MGCM 32-Stroke-R**



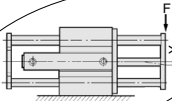
**MGCM 40-Stroke-R**



**MGCM 50-Stroke-R**

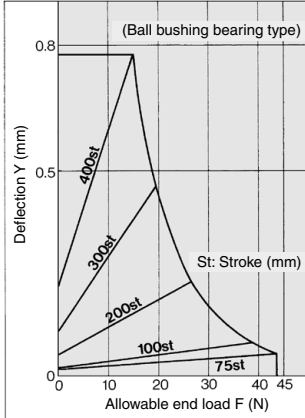




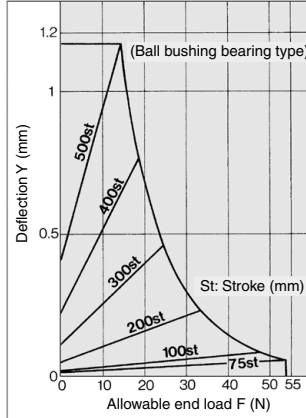


## Ball Bushing Bearing Allowable End Load and Deflection

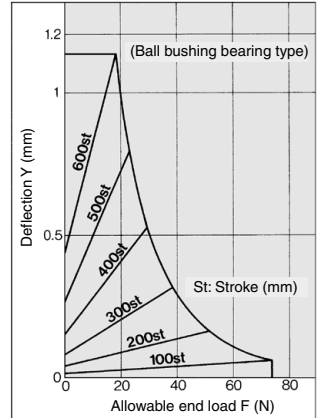
**MGCL 20-Stroke-R**



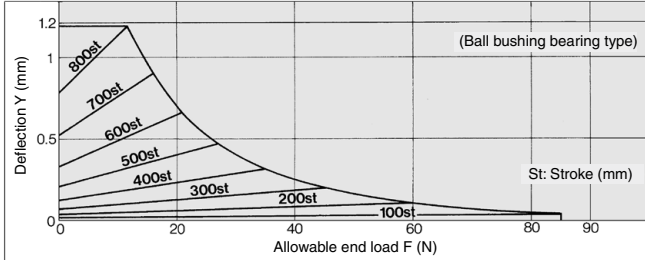
**MGCL 25-Stroke-R**



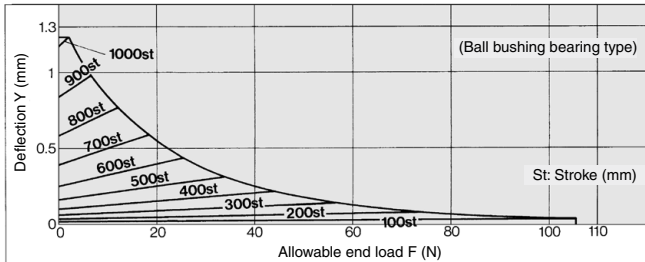
**MGCL 32-Stroke-R**



**MGCL 40-Stroke-R**



**MGCL 50-Stroke-R**



**MGJ**

**MGP-Z**

**MGP**

**MGPW**

**MGQ**

**MGG**

**MGC**

**MGF**

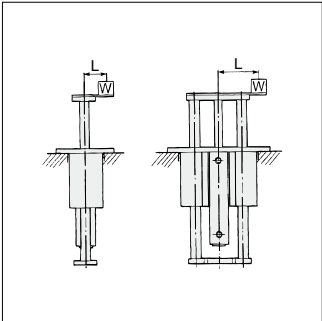
**MGZ**

**MGT**

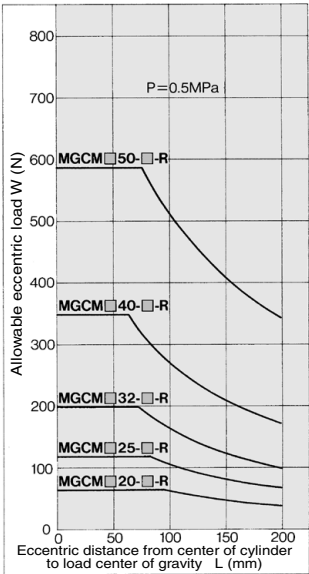
**D-□**

**-X□**

**Allowable Eccentric Load**

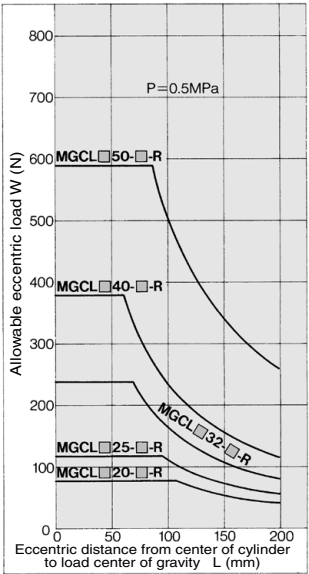


**Slide Bearing/  
MGCM□□-Stroke□-R**



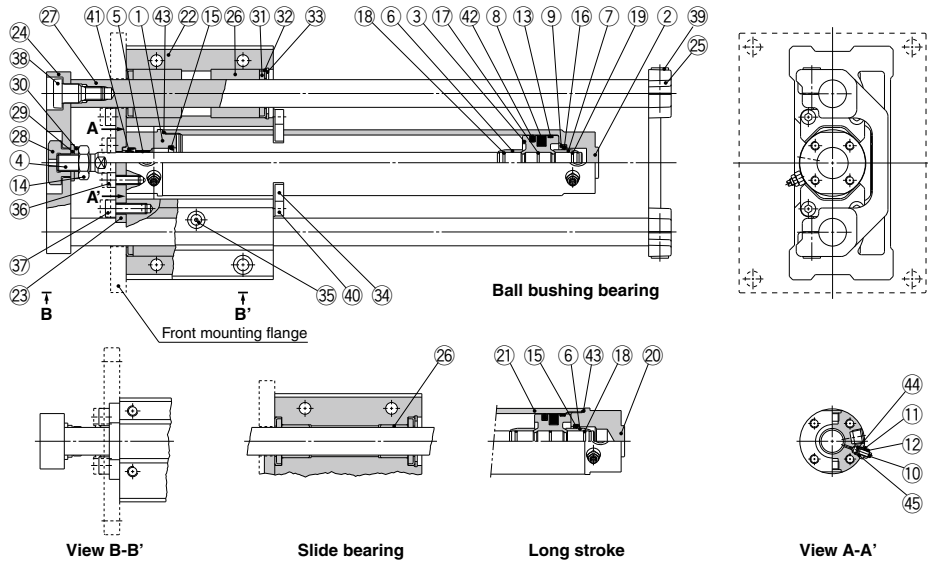
(Set the maximum allowable load so that it does not exceed the following percentages of the theoretical output: 40% for ø20, 50% for ø25 and ø32, 55% for ø40 and 60% or less for ø50, respectively.)

**Ball Bushing Bearing/  
MGCL□□-Stroke□-R**



(Set the maximum allowable load so that it does not exceed the following percentages of the theoretical output: 40% for ø20, 50% for ø25 and ø32, 55% for ø40 and 60% or less for ø50, respectively.)

# Construction: With Rear Plate



## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Tube cover	Aluminum alloy	Clear hard anodized
3	Piston	Aluminum alloy	Chromated
4	Piston rod	Carbon steel	Hard chrome plated   ø20, ø25 are stainless steel.
5	Bushing	Bearing alloy	
6	Cushion ring A	Aluminum alloy	Anodized
7	Cushion ring B	Aluminum alloy	Anodized
8	Magnet	—	
9	Seal retainer	Roller steel	Nickel plated   Nothing for long stroke
10	Cushion valve	Roller steel	Electroless nickel plated
11	Valve retainer	Roller steel	Electroless nickel plated
12	Lock nut	Roller steel	Nickel plated
13	Wear ring	Resin	
14	Rod end nut	Roller steel	Nickel plated
15	Cushion seal A	Urethane	
16	Cushion seal B	Urethane	
17	Piston gasket	NBR	
18	Cushion ring gasket A	NBR	
19	Cushion ring gasket B	NBR	
20	Head cover	Aluminum alloy	Clear hard anodized   For long stroke
21	Cylinder tube	Aluminum alloy	Hard anodized
22	Guide body	Aluminum alloy	Clear anodized
23	Small flange	Roller steel	Nickel plated   For basic
24	Large flange	Roller steel	Nickel plated   For front mounting flange
25	Front plate	Roller steel	Nickel plated
26	Rear plate	Cast iron	Platinum silver
27	Slide bearing	Bearing alloy	For slide bearing
28	Ball bushing bearing	—	For ball bushing bearing
29	Guide rod	Carbon steel	Hard chrome plated   For slide bearing
30	End bracket	High carbon chrome bearing steel	Quenched, hard chrome plated   For ball bushing bearing
31	Washer	Carbon steel	Nickel plated
32	Spring washer	Roller steel	Nickel plated
33	Spring washer	Steel wire	Nickel plated

Note) 25, 39 are not required for without rear plate

## Component Parts

No.	Description	Material	Note
31	Felt	Felt	
32	Holder	Stainless steel	
33	Type C retaining ring for hole	Carbon tool steel	Phosphate coated
34	Bracket	Stainless steel	
35	Nipple	—	Nickel plated
36	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated   For cylinder mounting
37	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated   For large/small flange mounting
38	Guide bolt	Chromium molybdenum steel	Nickel plated   For front plate mounting
39	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated   For rear plate mounting
40	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated   For bracket mounting
41	Rod seal	NBR	
42	Piston seal	NBR	
43	Tube gasket	NBR	
44	Valve seal	NBR	
45	Valve retainer gasket	NBR	

## Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
20	CG1A20-PS	Set of nos. above 41, 42, 43, 44, 45
25	CG1A25-PS	
32	CG1A32-PS	
40	CG1A40-PS	

\* Seal kit includes 41 to 45. Order the seal kit, based on each bore size.

\* Seal kit includes a grease pack (10 g). Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g)

## Caution

When disassembling base cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the tube cover or the rod cover with a vise and loosen the other side with a wrench or an adjustable angle wrench, and then remove the cover. When re-tightening, tighten approximately 2 degrees more than the original position. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassembly is required.)

MGJ

MGP-Z

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

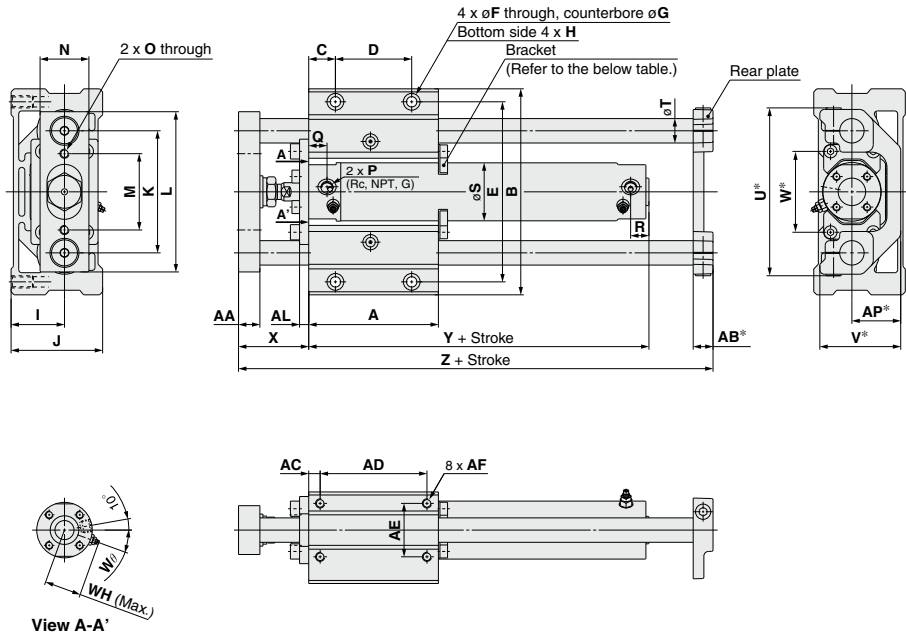
MGT

D-□

-X□

Dimensions

Basic: With rear plate  
MGC□B□□-□-R



		(mm)																	
Bore size (mm)	Stroke range (mm)	A	AA	AB*	AC	AD	AE	AF	AL	AP*	B	C	D	E	F	G	H		
20	75, 100, 125, 150, 200	75	11	11	6.5	62	25	M5 x 0.8 depth 10	6	22	106	15	45	90	5.4	9.5 depth 6	M6 x 1 depth 10		
25	75, 100, 125, 150, 200, 250, 300	80	14	13	7.5	65	30	M6 x 1 depth 12	6	27	120	17.5	45	103	6.8	11 depth 8	M8 x 1.25 depth 14		
32		85	14	13	7.5	70	35	M6 x 1 depth 12	6	32	135	17.5	50	118	6.8	11 depth 8	M8 x 1.25 depth 14		
40		95	17	16	10	75	40	M8 x 1.25 depth 16	9	37	160	22.5	50	140	8.6	14 depth 10	M10 x 1.5 depth 18		
50		130	23	19	10	110	45	M10 x 1.5 depth 20	9	42	194	25	80	170	10.5	17 depth 12	M12 x 1.75 depth 21		

Bore size (mm)	I	J	K	L	M	N	O	P <sup>Note 2)</sup>	Q	R	S	T	U*	V*	W*	WH	W <sub>fl</sub>	X	Y	Z
20	25	44	60	80	38	25	M6 x 1	M5 x 0.8	12	12	26	12	82	39	40	23	30°	39	71	140
25	30	52	70	95	46	32	M6 x 1	M5 x 0.8	12	12	31	13	98	46	46	25	30°	46	71	153
32	35	60	80	105	50	32	M6 x 1	1/8	12	12	38	16	110	53	52	28.5	25°	46	73	161
40	40	70	95	125	60	38	M8 x 1.25	1/8	13	12	47	20	132	63	62	33	20°	56	80	188
50	45	82.5	115	150	75	50	M8 x 1.25	1/4	14	14	58	25	158	73	75	40.5	20°	67	92	241

Without Rear Plate

Long Stroke

Bracket Mounting Stroke

Bore size (mm)	Z
20	119
25	131
32	136
40	156
50	202

Bore size (mm)	Stroke range (mm)	R	Y
20	250 to 400	14	79
25	350 to 500	14	79
32	350 to 600	14	81
40	350 to 800	15	89
50	350 to 1000	16	104

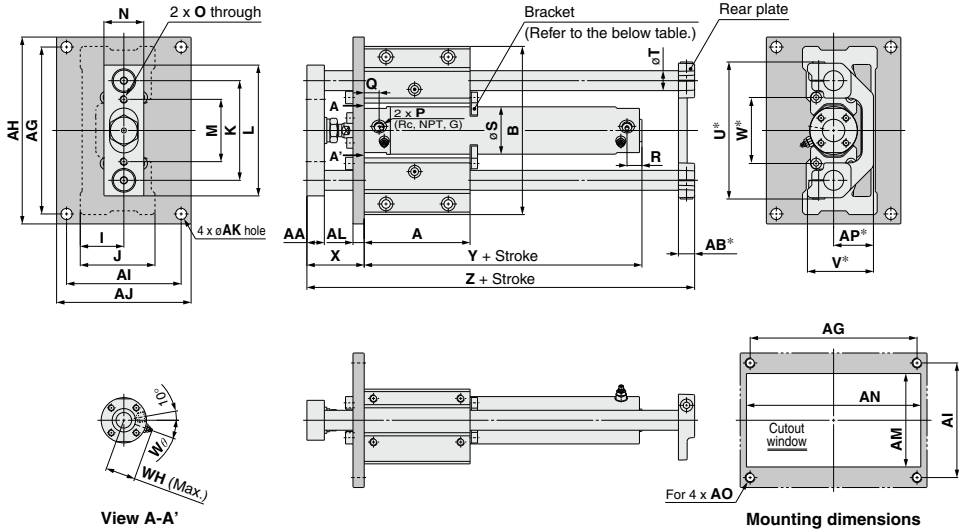
Bore size (mm)	Bracket mounting stroke
20	100 st or more
25	125 st or more
32	150 st or more
40	200 st or more
50	250 st or more

Note 1) Dimensions marked with "\*" are not required for without rear plate.  
Note 2) For bore size 20 and 25, M5 x 0.8 is only available. Rc, NPT and G ports are available for bore size 32 or greater.

## Dimensions

Front mounting flange: With rear plate

MGC□F□□-□-R



View A-A'

Mounting dimensions

Bore size (mm)	Stroke range (mm)	A	AA	AB*	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP*	B	I	J	K	L	M	N
20	75, 100, 125, 150, 200	75	11	11	105	120	75	90	6.6	9	55	110	M6	22	106	25	44	60	80	38	25
25	75, 100, 125, 150 200, 250, 300	80	14	13	120	136	84	100	9	9	65	125	M8	27	120	30	52	70	95	46	32
32		85	14	13	134	150	92	108	9	9	75	140	M8	32	135	35	60	80	105	50	32
40		95	17	16	160	176	110	125	9	12	85	165	M8	37	160	40	70	95	125	60	38
50		130	23	19	190	210	115	135	11	12	95	200	M10	42	194	45	82.5	115	150	75	50

Bore size (mm)	O	P <sup>Note 2)</sup>	Q	R	S	T	U*	V*	W*	WH	W/θ	X	Y	Z
20	M6 x 1	M5 x 0.8	12	12	26	12	82	39	40	23	30°	39	71	140
25	M6 x 1	M5 x 0.8	12	12	31	13	98	46	46	25	30°	46	71	153
32	M6 x 1	1/8	12	12	38	16	110	53	52	28.5	25°	46	73	161
40	M8 x 1.25	1/8	13	12	47	20	132	63	62	33	20°	56	80	188
50	M8 x 1.25	1/4	14	14	58	25	158	73	75	40.5	20°	67	92	241

### Without Rear Plate

Bore size (mm)	Z
20	119
25	131
32	136
40	156
50	202

### Long Stroke

Bore size (mm)	Stroke range (mm)	R	Y
20	250 to 400	14	79
25	350 to 500	14	79
32	350 to 600	14	81
40	350 to 800	15	89
50	350 to 1000	16	104

### Bracket Mounting Stroke

Bore size (mm)	Bracket mounting stroke
20	100 st or more
25	125 st or more
32	150 st or more
40	200 st or more
50	250 st or more

Note 1) Dimensions marked with "\*" are not required for without rear plate.

Note 2) For bore size 20 and 25, M5 x 0.8 is only available. Rc, NPT and G ports are available for bore size 32 or greater.

MGCJ

MGP

-Z

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

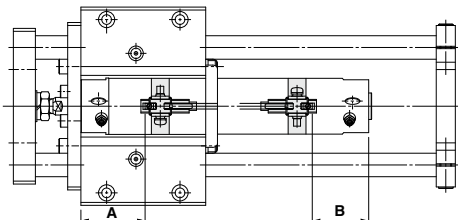
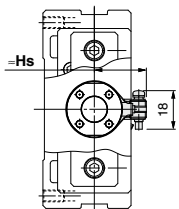
# Auto Switch Mounting

## Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

D-M9(V)/M9□W(V)

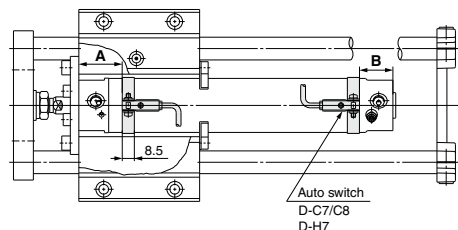
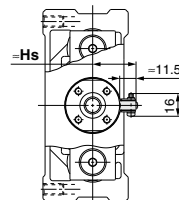
D-M9□A(V)

D-A9(V)



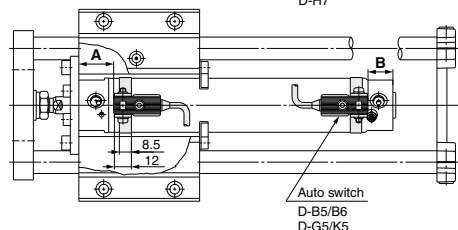
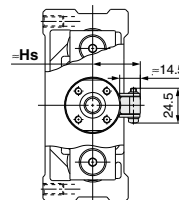
D-H7

D-C7/C8



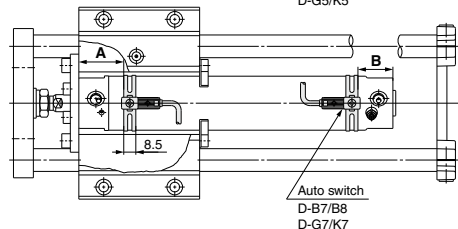
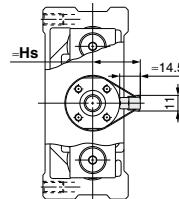
D-G5/K5

D-B5/B6



D-G7/K7

D-B7/B8



### Auto Switch Proper Mounting Position

(mm)

Auto switch model	D-M9□(V) D-M9□W(V) D-M9□A(V)		D-A9□(V)		D-B7□/B80 D-B73C D-B80C D-G79/K79 D-K79C		D-C7□ D-C80 D-C73C D-C80C		D-B5□ D-B64		D-B59W		D-H7□W D-H7BA D-H7C D-H7NF		D-G59F D-G5W D-K59W D-G5BA D-G5C D-K59 D-G5NT	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	33	24 (32)	29	20 (28)	30.5	21.5 (29.5)	29.5	20.5 (28.5)	23.5	14.5 (22.5)	26.5	17.5 (25.5)	28.5	19.5 (27.5)	25	16 (24)
25	33	24 (32)	29	20 (28)	30.5	21.5 (29.5)	29.5	20.5 (28.5)	23.5	14.5 (22.5)	26.5	17.5 (25.5)	28.5	19.5 (27.5)	25	16 (24)
32	34	25 (33)	30	21 (29)	31.5	22.5 (30.5)	30.5	21.5 (29.5)	24.5	15.5 (23.5)	27.5	18.5 (26.5)	29.5	20.5 (28.5)	26	17 (25)
40	39	27 (36)	35	23 (32)	36.5	24.5 (33.5)	35.5	23.5 (32.5)	29.5	17.5 (26.5)	32	20.5 (29.5)	34.5	22.5 (31.5)	31	19 (28)
50	46	32 (44)	42	28 (40)	43.5	29.5 (41.5)	42.5	28.5 (40.5)	36.5	22.5 (34.5)	39.5	25.5 (37.5)	41.5	27.5 (39.5)	38	24 (36)

### Auto Switch Mounting Height

(mm)

Auto switch model	D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□(V)		D-C73C D-C80C		D-B7□/B80 D-B73C D-B80C D-G79/K79 D-K79C D-H7C D-G5NT D-G59F	
	Hs	Hs	Hs	Hs	Hs	Hs
20	25	24.5	27		27.5	
25	27.5	27	29.5		30	
32	31	30.5	33		33.5	
40	35.5	35	37.5		38	
50	41	40.5	43		43.5	

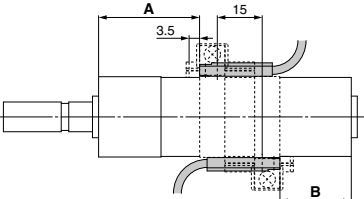
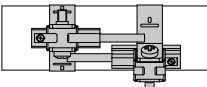
\* ( ): Values for long stroke, double rod

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

# Minimum Auto Switch Mounting Stroke

Auto switch model	n: No. of auto switches (mm)				
	No. of auto switches mounted				
	1 pc.	2 pcs.		"n" pcs.	
		Different surfaces	Same surface	Different surfaces	Same surface
<b>D-M9□</b>	5	15 <small>Note 1)</small>	40 <small>Note 1)</small>	$20 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$55 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-M9□W</b>	10	15 <small>Note 1)</small>	40 <small>Note 1)</small>	$20 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$55 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-M9□A</b>	10	25	40 <small>Note 1)</small>	$25 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$60 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-A9□</b>	5	15	30 <small>Note 1)</small>	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$50 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-M9□V</b>	5	20	35	$20 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$35 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-A9□V</b>	5	15	25	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$25 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-M9□WV</b> <b>D-M9□AV</b>	10	20	35	$20 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$35 + 35 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-C7□</b> <b>D-C80</b>	5	20	60	$20 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$60 + 45 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-H7□</b> <b>D-H7□W</b> <b>D-H7BA</b> <b>D-H7NF</b>	10	25	70	$25 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$70 + 45 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-C73C</b> <b>D-C80C</b> <b>D-H7C</b>	5	30	80	$30 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$80 + 50 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-B5□</b> <b>D-B64</b> <b>D-G5□</b> <b>D-K59□</b>	5	25	70	$25 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$70 + 50 (n-2)$ (n = 2, 3, 4, 5...)
<b>D-B59W</b>	10	30	75	$30 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$75 + 50 (n-2)$ (n = 2, 3, 4, 5...)

Note 1) Auto switch mounting

Auto switch model	With 2 auto switches	
	Different surfaces	Same surface
	 <p>The auto switch proper mounting position is 3.5 mm inward from the switch holder edge.</p>	 <p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p>
<b>D-M9□</b> <b>D-M9□W</b>	Less than 20 stroke <small>Note 2)</small>	Less than 55 stroke <small>Note 2)</small>
<b>D-M9□A</b>	Less than 20 stroke <small>Note 2)</small>	Less than 60 stroke <small>Note 2)</small>
<b>D-A9□</b>	—	Less than 50 stroke <small>Note 2)</small>

Note 2) Minimum stroke for mounting auto switches in the other mounting styles mentioned in note 1.

MGJ

MGP  
-Z

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Operating Range

Auto Switch model	Bore size (mm)				
	20	25	32	40	50
D-M9□(V)/M9□W(V) D-M9□A(V)	5	5.5	5	5.5	6.5
D-A9□(V)	7	6	8	8	8
D-B7□/B80 D-B73C/B80C	8	10	9	10	10
D-C7□/C80 D-C73C/C80C	8	10	9	10	10
D-B5□/B64 D-B59W	8	10	9	10	10
D-G79/K79/K79C	13	13	14	14	14
D-H7□/H7□W D-H7BA/H7NF	8	10	9	10	10
D-H7C	4	4	4.5	5	6
D-G5□/K59 D-G5□W/K59W D-G5NT/G5BA	7	8.5	9	10	9.5
D-G59F	4	4	4.5	5	6
D-G5NB	5	5	5.5	6	7
	35	40	40	45	45

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ± 30% dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment.  
(Since the auto switch mounting bracket is not included, order it separately.)

- BBA3: For D-B5,B6,G5,K5 types
- BBA4: For D-C7,C80,H7 types

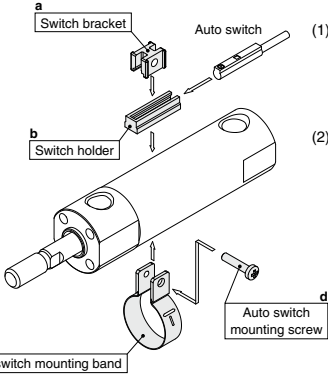
Note 4) Refer to page 1989 for details on the BBA3.

The above stainless steel screws are used when a cylinder is shipped with the D-H7BA/G5BA auto switch.  
When an auto switch is shipped independently, BBA3 and BBA4 are included.

Auto Switch Mounting Bracket: Part No.

Auto Switch model	Bore size (mm)				
	ø20	ø25	ø32	ø40	ø50
D-M9□(V) D-M9□W(V) D-A9□(V)	Note 1) BMA3-020	Note 1) BMA3-025	Note 1) BMA3-032	Note 1) BMA3-040	Note 1) BMA3-050
D-M9□A(V)	Note 2) BMA3-020S	Note 2) BMA3-025S	Note 2) BMA3-032S	Note 2) BMA3-040S	Note 2) BMA3-050S
D-C7□/C80 D-C73C/C80C D-H7 D-H7□W D-H7NF D-H7BA	BMA2-020A	BMA2-025A	BMA2-032A	BMA2-040A	BMA2-050A
D-B5□/B64/B59W D-G5□/K59 D-G5□W/K59W D-G5BA/G59F D-G5NT/G5NB	BA-01	BA-02	BA-32	BA-04	BA-05
D-B7□/B80 D-B73C/B80C D-G79/K79/K79C	BM1-01	BM1-02	BM1-32	BM1-04	BM1-05

- Note 1) Set part number which includes the auto switch mounting band (BM2-□□□A) and the holder kit (BJ5-1/Switch bracket: Transparent).  
Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used. Please consult SMC regarding other chemicals.
- Note 2) Set part number which includes the auto switch mounting band (BMA2-□□□AS/Stainless steel screw) and the holder kit (BJ4-1/Switch bracket: White).
- Note 3) For the D-M9□A (V) type auto switch, do not install the switch bracket on the indicator light.



- (1) BJ□-1 is a set of "a" and "b".  
BJ4-1 (Switch bracket: White)  
BJ5-1 (Switch bracket: Transparent)
- (2) BM2-□□□A(S) is a set of "c" and "d".  
Band (c) is mounted so that the projected part is on the internal side (contact side with the tube).

Besides the models listed in How to Order, the following auto switches are applicable.  
Refer to pages 1893 to 2007 for detailed specifications.

(Please contact SMC for D-B7□/B80, D-B73C/B80C, D-G79/K79, D-K79C.)

Type	Model	Electrical entry	Features
Solid state auto switch	D-C73, C76, B53, B73, B76	Grommet (In-line)	Without indicator light
	D-C80, B80		
	D-B73C	Connector (In-line)	Without indicator light
	D-B80C		
Reed auto switch	D-H7A1, H7A2, H7B, G59, G5P, K59, G79, K79	Grommet (In-line)	Diagnostic indication (2-color indication)
	D-K79C	Connector (In-line)	
	D-H7BW, H7NW, H7PW, G59W, G5PW, K59W	Grommet (In-line)	Water resistant (2-color indication)
	D-H7BA		With timer
	D-G5NT		

- \* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1960 and 1961 for details.  
\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) are also available. Refer to page 1911 for details.  
\* Wide range detection type, solid state auto switches (D-G5NB type) are also available. Refer to page 1953 for details.



## 1 With Piping Ports for Grease

Symbol

**-X440**

This type is equipped with Rc 1/8 piping ports for grease on both sides of the guide body.

### How to Order

**MGC** **Standard How to Order for each series** **-X440**

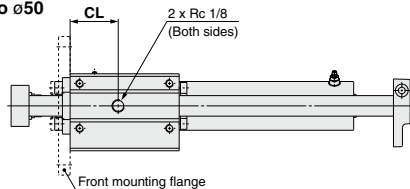
With piping port for grease ●

Applicable series	MGG	MGC
Bore size (mm)	20, 25, 32, 40, 50 63, 80, 100	20, 25, 32, 40, 50
Fluid	Air	
Minimum operating pressure	0.15 MPa (Horizontal, No load)	
Piston speed	50 to 1000 mm/s	50 to 750 mm/s
Auto switch	Mountable	
Specifications other than above	Same as the standard type	

### Dimensions (Dimensions other than those below are the same as the standard type.)

#### Series MGC

ø20 to ø50



(mm)	
Series	MGC
Bore size (mm)	CL
20	33
25	35
32	37.5
40	42.5
50	58.5

\* The standard grease supply port has a hexagon socket head set screw.

**MGJ**

**MGP  
-Z**

**MGP**

**MGPW**

**MGQ**

**MGG**

**MGC**

**MGF**

**MGZ**

**MGT**

**D-□**

**-X□**



# Series MGC

## Specific Product Precautions

Be sure to read before handling.

Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

### Installations/Adjustment

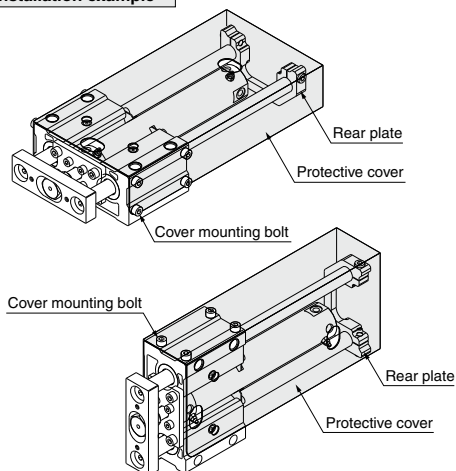
#### ⚠ Warning

##### 1. Installing a protective cover (In the case of rear plate)

During mounting, handling and operation, the rear plate makes reciprocating movements. Therefore, pay careful attention not to insert your hand, etc., between the cylinder and the rear plate.

When you are going to fit this product to the outside of your equipment, take preventative measures such as installing a protective cover.

MGC Protective cover installation example



#### ⚠ Caution

##### 1. Use caution that no scratch or dent will be given to the slide part of the guide rod.

Because the outer circumference of the guide rod is manufactured with precise tolerances, even a slight deformation, scratch, or gouge can lead to faulty operation or reduced durability.

##### 2. When fitting the guide body, use the guide body which has high flatness of the fitting surface.

If the guide rod has twisted, operation resistance will become abnormally higher and the bearing will wear at an early stage, thereby resulting in poor performance.

##### 3. Mount in locations where maintenance will be easy.

Ensure enough clearance around the cylinder to allow for unobstructed maintenance and inspection work.

##### 4. Do not adjust the rod stroke by moving the rear plates,

as doing so will cause the rear plates to come into direct contact with the guide body or the bracket mounting bolt. The resulting impact cannot be absorbed easily, the stroke position cannot be maintained, and faulty operation may result.

##### 5. Lubrication

When you are going to oil the bearings, do so by using a nipple so that no foreign matter will be mixed.

For the grease, we recommended using high-quality lithium soap-based grease no. 2.

##### 6. Mounting orientation

For ceiling mounting (the opening of the rear plate is downward.), the rear plate may interfere with the basic cylinder head end due to the deflection of guide rods. Please consult with SMC.

##### 7. Fixing of base cylinder

When the product is mounted and operated in a location with low rigidity, bending moment may be applied to the base cylinder by vibrations generated at the stroke end, causing damage to the cylinder. In such cases, install a support bracket to suppress the vibration of the body of the base cylinder or reduce the piston speed until the body does not vibrate at the stroke end.