Guide Cylinder

Series MGG

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Integration of a basic cylinder and guide rods

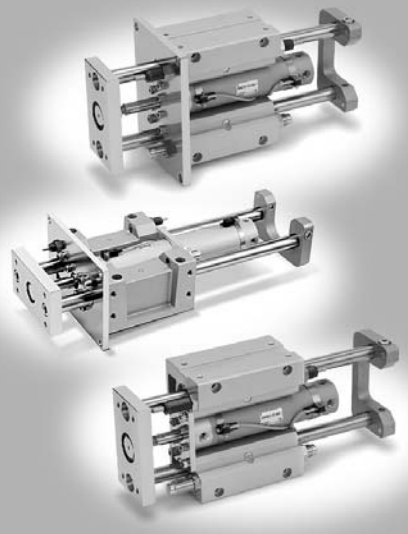
Linear Transfer Unit

Guide Cylinder

Series MGG

Integration of a basic cylinder and guide rods.

- Long stroke is available.
- Equipped with a shock absorber as standard.



Bore size (mm)	Standard stroke (mm)						
	75	100	125	150	200	250	300
20	●	●	●	●	●	●	●
25	●	●	●	●	●	●	●
32	●	●	●	●	●	●	●
40	●	●	●	●	●	●	●
50	●	●	●	●	●	●	●
63	●	●	●	●	●	●	●
80	●	●	●	●	●	●	●
100	●	●	●	●	●	●	●

Long stroke

Bore size (mm)	Long stroke (mm)												
	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1300
20	●	●	●	●	●	●	●	●	●	●	●	●	●	●
25	●	●	●	●	●	●	●							
32	●	●	●	●	●	●	●							
40	●	●	●	●	●	●	●	●	●					
50	●	●	●	●	●	●	●	●	●	●	●			
63	●	●	●	●	●	●	●	●	●	●	●	●		
80	●	●	●	●	●	●	●	●	●	●	●	●	●	
100	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P. 356

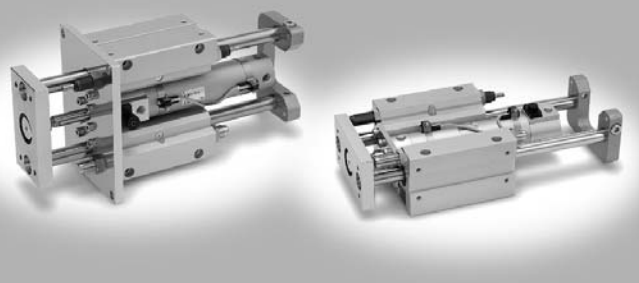
P. 376
(End lock type)

Guide Cylinder/With End Lock

Series MGG

Holds the cylinder's home position even if the air supply is cut off.

- When air is discharged at the stroke end position, the lock engages to maintain the rod in that position.

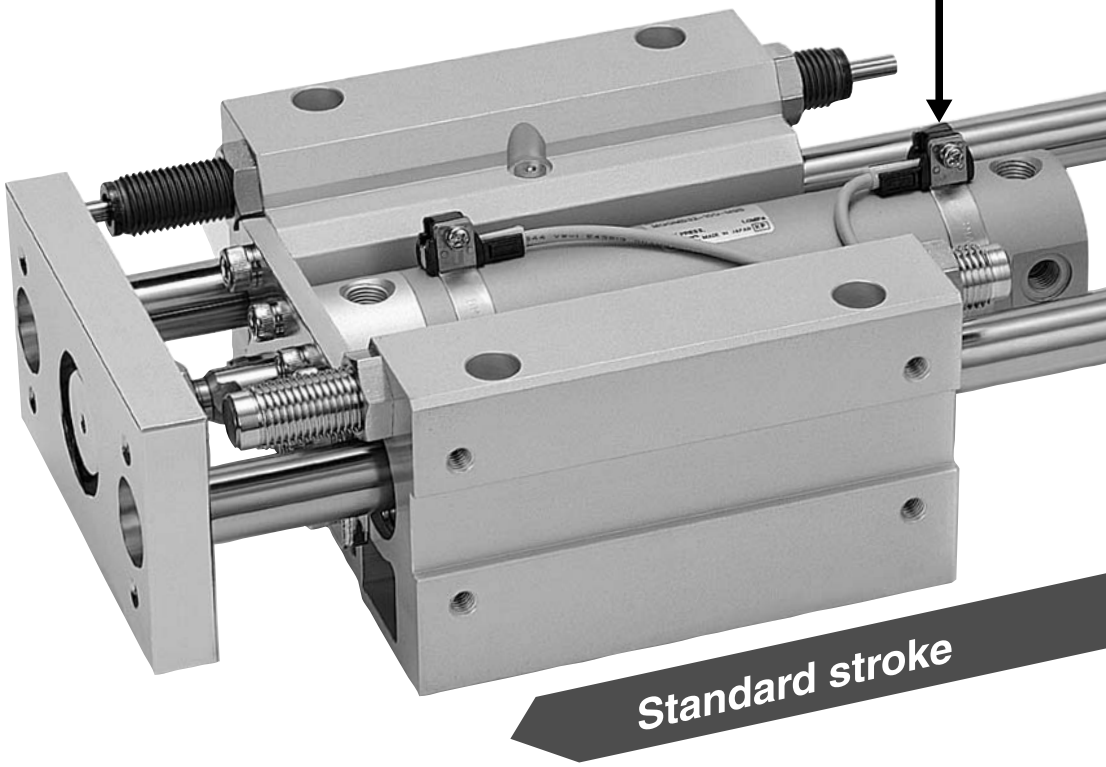


Basic cylinder with integrated guide rods
A linear transfer unit that achieves high lateral load

Guide cylinder
ø20, ø25, ø32, ø40,

Two types of guide rod bearings
Slide bearing·····Excellent wear resistance and heavy load capacity
Ball bushing bearing ····High precision and smooth operation

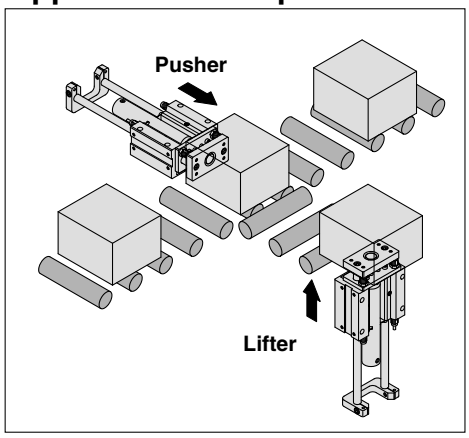
Can be mounted with compact auto switches.



Standard stroke

Cylinder position can be detected
All models have built-in magnets for auto switches.
Auto switch capable throughout entire stroke range.

Application Example



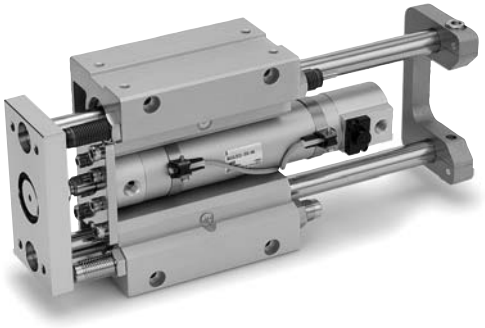
Non-rotating accuracy improved by using two guide rods

Bore size (mm)	20	25	32	40	50	63	80	100
Slide bearing	±0.07°	±0.06°	±0.06°	±0.05°	±0.04°	±0.04°	±0.04°	±0.03°
Ball bushing bearing	±0.06°	±0.05°	±0.04°	±0.04°	±0.04°	±0.03°	±0.03°	±0.02°

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 table.

A grease nipple is provided as standard
This allows lubrication of the bearings.

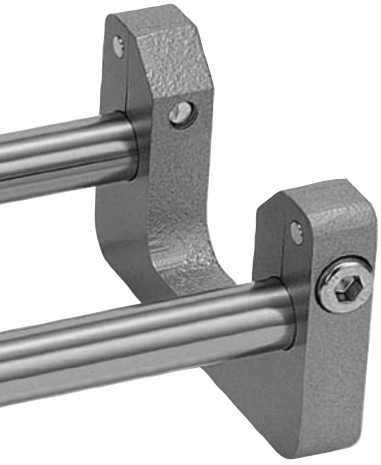
in a compact configuration
resistance and non-rotating precision



Series MGG
ø50, ø63, ø80, ø100

End lock option introduced to allow holding of cylinder position even when air supply is cut off

When air is discharged at the stroke end position, the lock engages to maintain the rod in that position.



Long strokes available

Maximum ø20- 400 st
Maximum ø25- 500 st
Maximum ø32- 600 st
Maximum ø40- 800 st
Maximum ø50- 1000 st
Maximum ø63- 1100 st
Maximum ø80- 1200 st
Maximum ø100- 1300 st

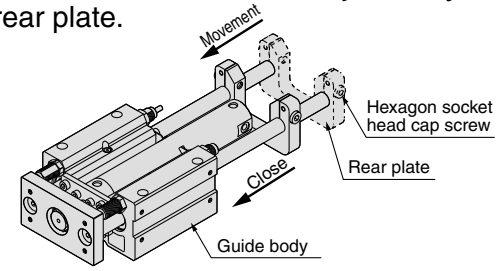
ø20: 75 to 200st
ø25 to ø100: 75 to 300st

Shock absorbers and adjusting bolts are standard.

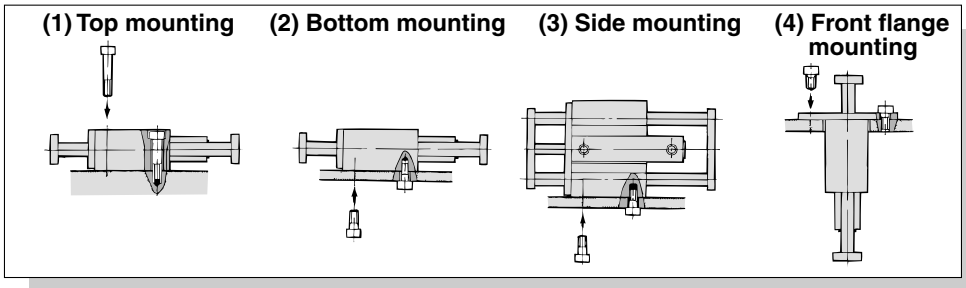
Stroke end shock absorption for high speed operation and fine stroke adjustment are possible.

Simple adjustment of extension stroke

The extension stroke can be adjusted bymoving the rear plate.



Four mounting styles



A full range of made-to-order specifications

Guide Cylinder

Series MGG

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

MGG L B 32 ☐ – 100 – M9BW ☐ – ☐

Guide Cylinder

Bearing type

M	Slide bearing
L	Ball bushing bearing

Mounting style

B	Basic style
F	Front mounting flange style

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 357.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Made to Order

Refer to page 358 for details.

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Applicable bore (mm) ø20, ø25	ø32	ø40 to ø63	ø80, ø100	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N			—	●	●	●	○	—	○	IC circuit	Relay, PLC
							—			G59	●	—	●	○	—	○		
				3-wire (PNP)			M9P			—	●	●	●	○	—	○		
							—			G5P	●	—	●	○	—	○		
				2-wire	12 V		M9B			—	●	●	●	○	—	○	—	
							—			K59	●	—	●	○	—	○		
		Connector					H7C			—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V	—	M9NW			—	●	●	●	○	—	○	IC circuit	
					5 V, 12 V		—			G59W	●	—	●	○	—	○		
				3-wire (PNP)			M9PW			—	●	●	●	○	—	○		
							—			G5PW	●	—	●	○	—	○		
				2-wire	12 V		M9BW			—	●	●	●	○	—	○	—	
							—			K59W	●	—	●	○	—	○		
	Water resistant (2-color indication)						H7BA			G5BA	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		H7NF			G59F	●	—	●	○	—	○	IC circuit	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96		—	●	—	●	—	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93		—	●	—	●	—	—	—	—	Relay, PLC
							100 V or less	A90		—	●	—	●	—	—	—	IC circuit	
			Yes				100 V, 200 V	(B54)	B54		●	—	●	●	—	—	—	
			No				200 V or less	(B64)	B64		●	—	●	—	—	—		
		Connector	Yes				—	C73C		—	●	—	●	●	●	—		
			No				24 V or less	C80C		—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes			—	—	(B59W)	B59W		●	—	●	—	—	—	—	

∗ Lead wire length symbols: 0.5 m ·····Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ
None····· N (Example) H7CN

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

∗ D-A9☐V/M9☐V/M9☐WV/M9☐A(V) types cannot be mounted.

∗ Since there are other applicable auto switches than listed, refer to page 388 for details.

∗ For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.

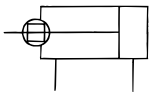
∗ D-A9☐/M9☐/M9☐W auto switches are shipped together (not assembled).
(Only switch mounting brackets are assembled at the time of shipment.)

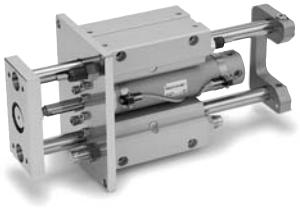
Caution

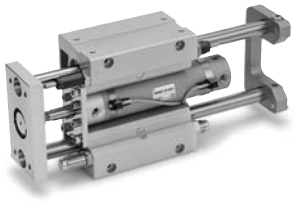
When using auto switches shown inside ( ), stroke end detection may not be possible depending on the One-touch fitting or speed controller model. Please contact SMC in this case.

Specifications

JIS Symbol







Standard Stroke

Model (Bearing type)	Bore size (mm)	Standard stroke (mm)	Long stroke (mm)
MGGM(Slide bearing) MGGL(Ball bushing bearing)	**20**	75, 100, 125, 150, 200	250, 300, 350, 400
	25	75, 100, 125, 150, 200, 250, 300	350, 400, 450, 500
	32		350, 400, 450, 500, 600
	40		350, 400, 450, 500, 600, 700, 800
	50		350, 400, 450, 500, 600, 700, 800, 900, 1000
	63		350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100
	80		350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200
	100		350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300

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

Specifications

Model		MGG□□20	MGG□□25	MGG□□32	MGG□□40	MGG□□50	MGG□□63	MGG□□80	MGG□□100
Basic cylinder		CDG1BN	Bore size		Port thread type	–	Stroke	–	Auto switch
Bore size (mm)		20	25	32	40	50	63	80	100
Action		Double acting							
Fluid		Air							
Proof pressure		1.5 MPa							
Maximum operating pressure		1.0 MPa							
Minimum operating pressure		0.15 MPa (Horizontal with no load)							
Ambient and fluid temperature		–10 to 60°C							
Piston speed		50 to 1000 mm/s						50 to 700 mm/s	
Cushion	**Basic cylinder**	Rubber bumper							
	Guide unit	Built-in shock absorbers (2 pcs.)							
Stroke adjusting range (One side) [Built-in adjusting bolts (2 pcs.)]		0 to –10 mm	0 to –15 mm						
Base cylinder lubrication		Non-lube							
Stroke length tolerance		$^{+1.9}_{+0.2}$ mm(1000 st or less), $^{+2.3}_{+0.2}$ mm(1001 st or more)							
Non-rotating accuracy ∗	**Slide bearing**	±0.07°	±0.06°	±0.06°	±0.05°	±0.04°	±0.04°	±0.04°	±0.03°
	Ball bushing bearing	±0.06°	±0.05°	±0.04°	±0.04°	±0.04°	±0.03°	±0.03°	±0.02°
Piping port size (Rc, NPT, G)		1/8				1/4		3/8	1/2

∗ 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 table above as a guideline.

Shock Absorber Specifications

Shock absorber model		RB1007	RB1412	RB2015	RB2725
Applicable guide cylinder		MGG□□20	MGG□□25, 32	MGG□□40, 50, 63	MGG□□80, 100
Maximum energy absorption (J)		5.88	19.6	58.8	147
Stroke absorption (mm)		7	12	15	25
Maximum collision speed (m/s)		5			
Max. operating frequency (cycle/min) ∗		70	45	25	10
Ambient temperature range (°C)		–10 to 80			
Spring force (N)	**Extended**	4.22	6.86	8.34	8.83
	Retracted	6.86	15.98	20.5	20.01

∗ It denotes the values at the maximum energy absorption per one cycle. Therefore, the operating frequency can be increased according to the energy absorption.

Theoretical Output

(N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm^2)	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
63	20	OUT	3120	624	936	1250	1560	1870	2180	2500	2810	3120
		IN	2800	560	840	1120	1400	1680	1960	2240	2520	2800
80	25	OUT	5030	1010	1510	2010	2520	3020	3520	4020	4530	5030
		IN	4540	908	1360	1820	2270	2720	3180	3630	4090	4540
100	30	OUT	7850	1570	2360	3140	3930	4710	5500	6280	7070	7850
		IN	7150	1430	2150	2860	3580	4290	5010	5720	6440	7150

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm^2)

Mass

(kg)

Bore size (mm)		20	25	32	40	50	63	80	100
Basic mass	LB Type (Ball bushing bearing, Basic style)	1.72	2.82	3.84	7.19	11.63	16.6	26.32	37.46
	LF Type (Ball bushing bearing, Front mounting flange style)	2.44	3.79	4.87	9.38	14.17	20.58	33	45.98
	MB Type (Slide bearing, Basic style)	1.71	2.79	3.36	7.17	11.36	16.22	25.61	36.36
	MF Type (Slide bearing, Front mounting flange style)	2.42	3.75	4.39	9.37	13.89	20.2	32.29	44.89
Additional mass per each 50 mm of stroke		0.14	0.17	0.25	0.4	0.61	0.82	1.11	1.48
Additional mass for long stroke		0.01	0.01	0.02	0.03	0.06	0.1	0.19	0.26
Additional mass with bracket		0.011	0.018	0.019	0.031	0.061	0.269	0.384	0.548

Calculation: (Example) **MGGLB32-500** (Ball bushing bearing) (Basic type, ø32, 500 st, With bracket)
- Standard mass ·····3.84 (LB type)
- Additional mass for stroke ·····0.25/50 st
- Stroke ·····500 st
- Additional mass for long stroke ····· 0.02
- Additional mass with bracket ····· 0.019

3.84 + 0.25 x 500/50 + 0.02 + 0.019 = 6.379 kg

Mass of Moving Parts

(kg)

Bore size (mm)	20	25	32	40	50	63	80	100
Moving parts basic mass	0.69	1.14	1.61	3.09	5.23	8.29	13.09	18.58
Additional mass by each 50 mm of stroke	0.109	0.135	0.203	0.326	0.509	0.679	0.948	1.265

Calculating mass of moving parts (Example): **MGGLB32-500**
- Moving parts basic mass ·····1.61
- Additional mass for stroke ·····0.203/50 st
- Stroke ·····500 st

1.61 + 0.203 x 500/50 = 3.64 kg

Made to Order Specifications

(For details, refer to pages 1829 to 2021.)

Symbol	Specifications
XB6	Heat resistant cylinder (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 type
XC13	Auto switch rail mounting
XC22	Fluororubber seals
XC35	With coil scraper
XC37	Larger throttle diameter of connecting port
XC56	With knock pin hole
XC71	Helical insert thread specifications
XC72	Not possible for built-in magnet for auto switch
XC73	Cylinder with lock (CDNG)
XC79	Machining tapped hole, drilled hole, and pin hole additionally
XC83	Cylinder with lock (MDNB)
X440	With piping ports for grease
X772	With piping ports for grease, auto switch rail mounting style

Air-hydro

Low pressure hydraulic cylinder of 1.0 MPa or less
When used together with a Series CC air-hydro unit, constant and low speed actuation, and intermediate stopping similar to hydraulic units are possible with the use of valves and other pneumatic equipment.

MGGH | Bearing type | Mounting style | Bore size | Port thread type | - | Stroke

H Air-hydro

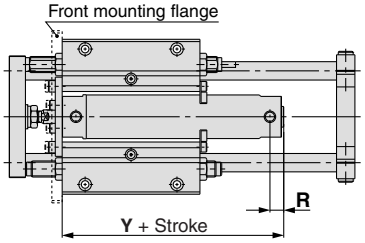
Specifications

Bore size (mm)		20, 25, 32, 40, 50, 63
Action		Double acting
Fluid		Turbine oil
Proof pressure		1.5 MPa
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.18 MPa (Horizontal with no load)
Piston speed		15 to 300 mm/s
Cushion	Basic cylinder	None
	Guide unit	Built-in shock absorbers (2 pcs.)
Ambient and fluid temperature		+5 to 60°C
Mounting		Basic style Front mounting flange style

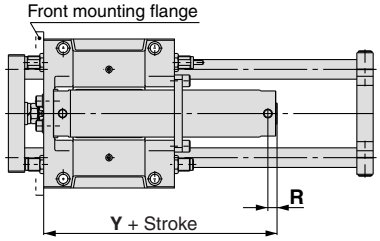
∗ For specifications other than the above, refer to page 357.
∗ Auto switch can be mounted.

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

ø20 to ø50



ø63



(mm)

Bore size (mm)	20	25	32	40	50	63
R	14	14	14	15	16	16
Y	79	79	81	89	104	119

Copper and Fluorine-free (For CRT production processes)

To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

20-MGG | Bearing type | Mounting style | Bore size | Port thread type | - | Stroke

20 Copper and Fluorine-free

Specifications

Bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Action		Double acting
Fluid		Air
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.15 MPa (Horizontal with no load)
Cushion	Basic cylinder	Rubber bumper
	Guide unit	Built-in shock absorbers (2 pcs.)
Mounting		Basic style Front mounting flange style

∗ For specifications other than the above, refer to page 357.
For dimensions, refer to pages 372 to 375.
∗ Auto switch can be mounted.

Water Resistant

The installation of a special scraper in front of the rod seal on the base cylinder protects against the entry of liquids from the environment into the cylinder. This type can be used in environments with machine tool coolants, and with water spray such as food processing and car washing equipment.

MGGM | Mounting style | Bore size | Port thread type | **R** | - | Stroke | - | H7BAL | -XC6□

M Slide bearing

R Water resistant cylinder

R	NBR seals (Nitrile rubber)
V	FKM seals (Fluororubber)

Water resistant 2-color indication solid state auto switch

H7BAL	ø32 to ø63
G5BAL	ø80, ø100

Made to Order Specifications

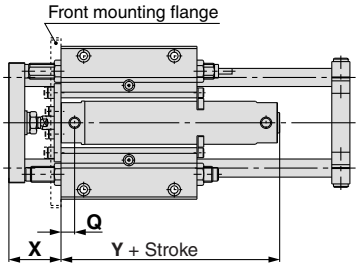
Specifications

Bore size (mm)		32, 40, 50, 63, 80, 100
Action		Double acting
Bearing type		Slide beaning
Cushion		Rubber bumper Built-in shock absorbers
Auto switch mounting		Band mounting
Made to Order	–XC6	Piston rod and rod end nut made of stainless steel
	–XC6A	Stainless steel used for all iron parts
	–XC6B	Stainless steel rod end moving parts
	–XC6C	Stainless steel rods

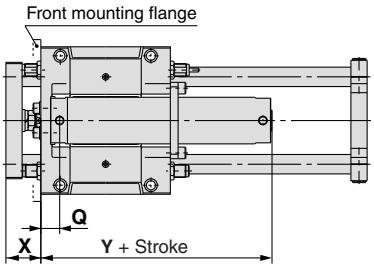
∗ Specifications other than the above is the same as the standard type.
Note) RBL (coolant resistant) type shock absorber is used.

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

ø32 to ø50



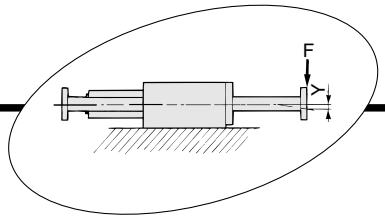
ø63 to ø100



(mm)

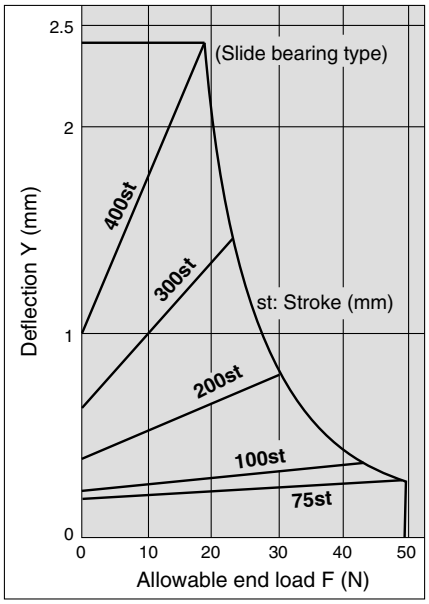
Bore size (mm)	Q	X	Y
32	16	48	77 (85)
40	17	58	84 (93)
50	19	69	97 (109)
63	34	56	112 (124)
80	46	68	137 (151)
100	47	68	138 (152)

∗ ( ): Denotes the dimensions for long stroke.

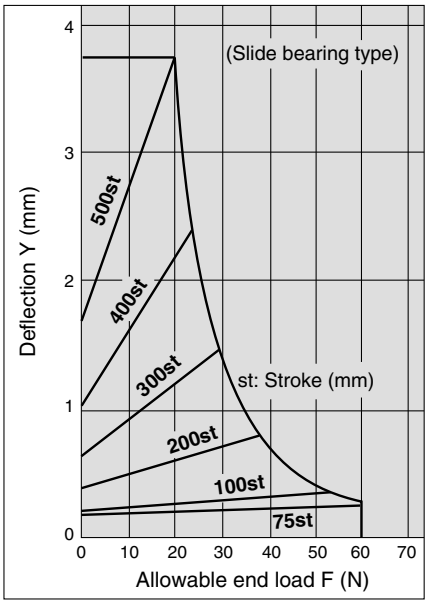


Slide Bearing
Allowable End Load and Deflection

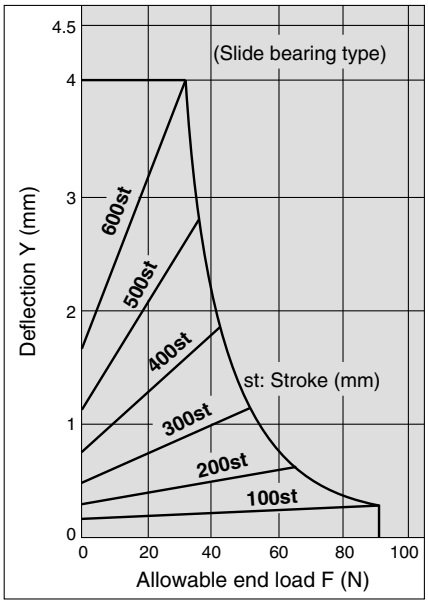
MGGM□20-Stroke



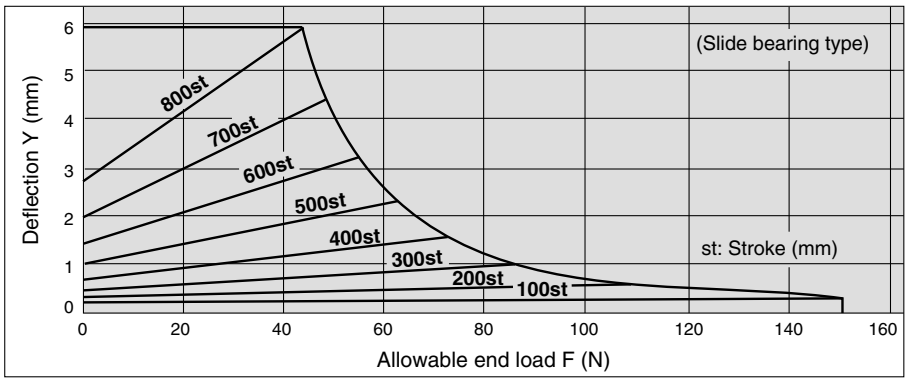
MGGM□25-Stroke



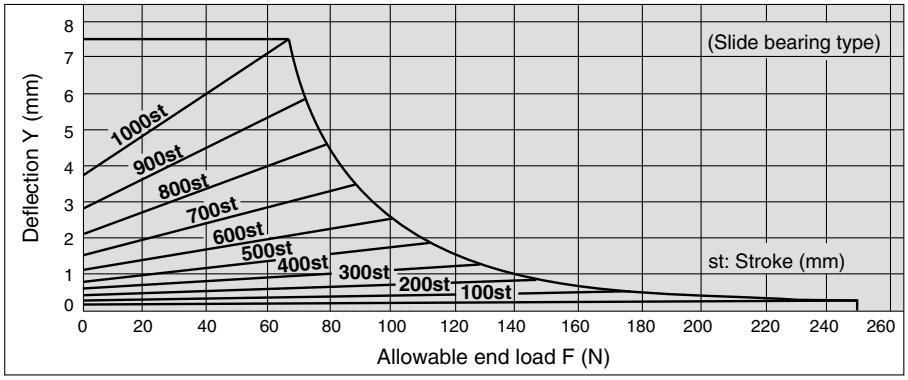
MGGM□32-Stroke



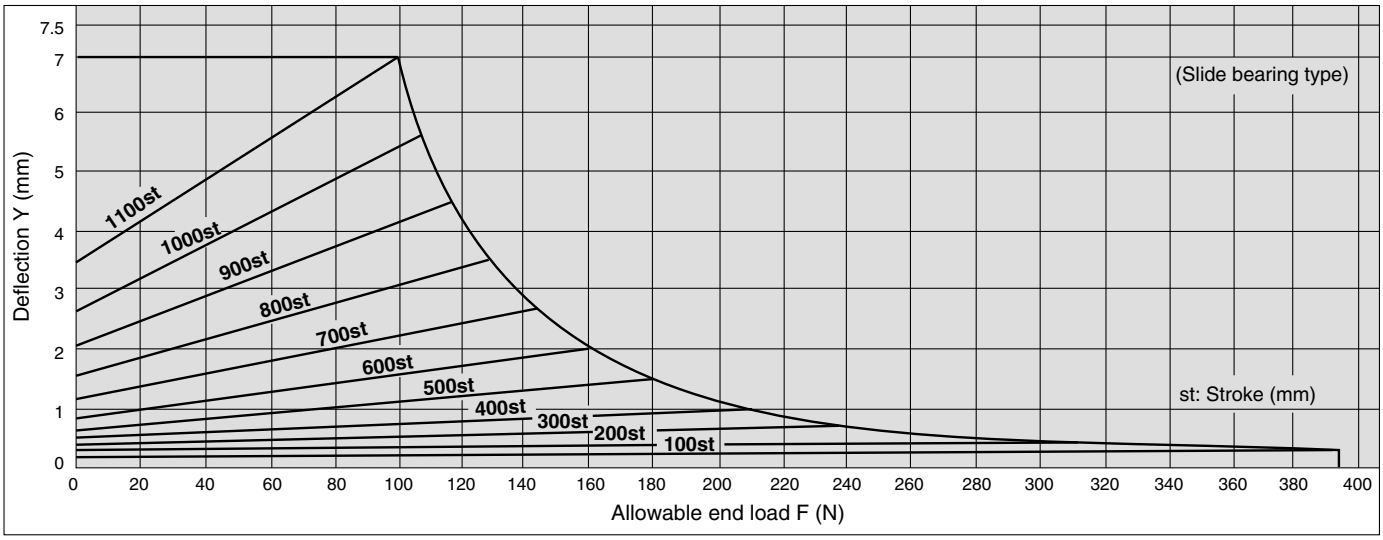
MGGM□40-Stroke



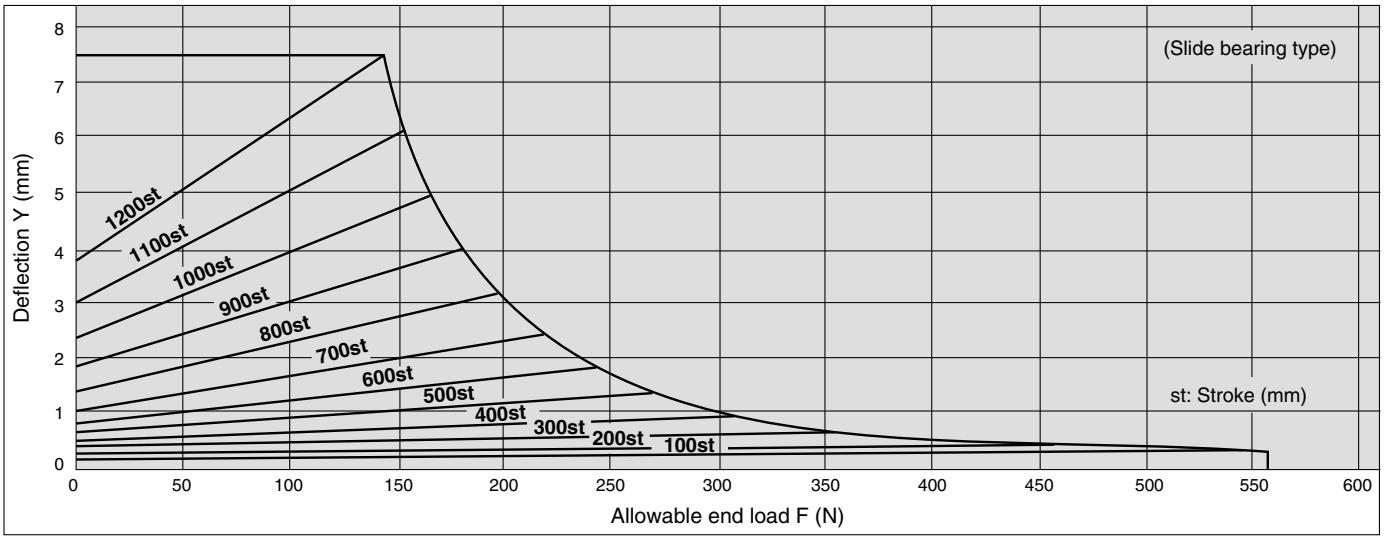
MGGM□50-Stroke



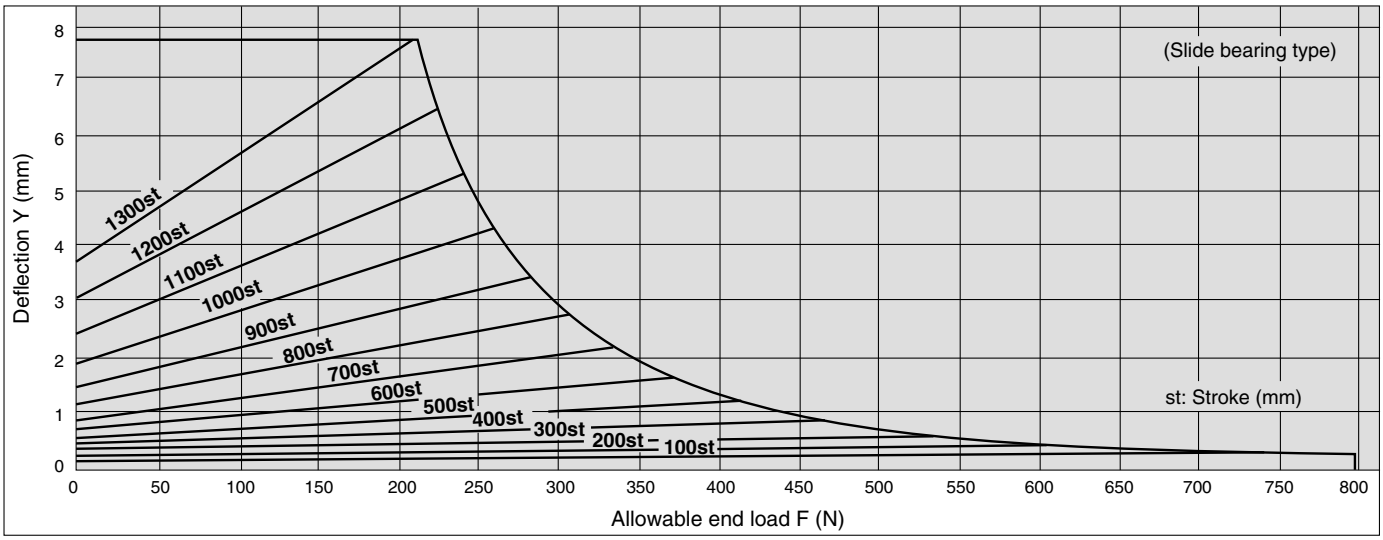
MGGM□63-Stroke

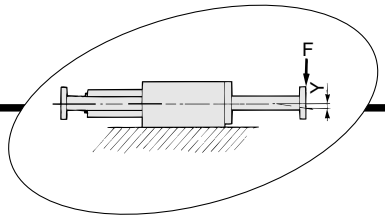


MGGM□80-Stroke



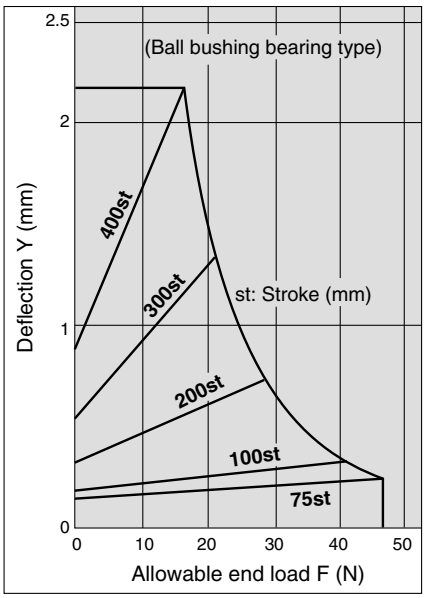
MGGM□100-Stroke



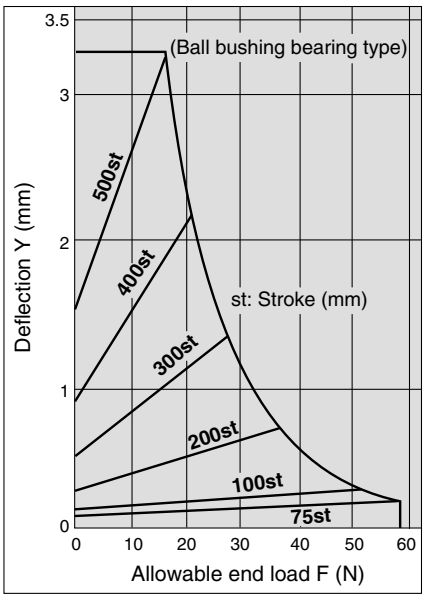


Ball Bushing Bearing
Allowable End Load and Deflection

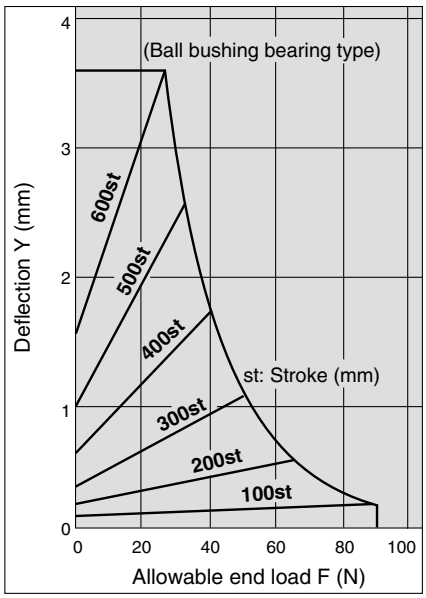
MGGL□20-Stroke



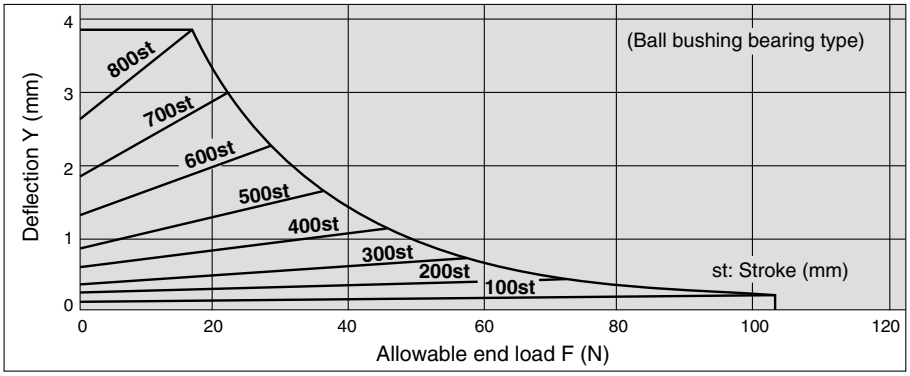
MGGL□25-Stroke



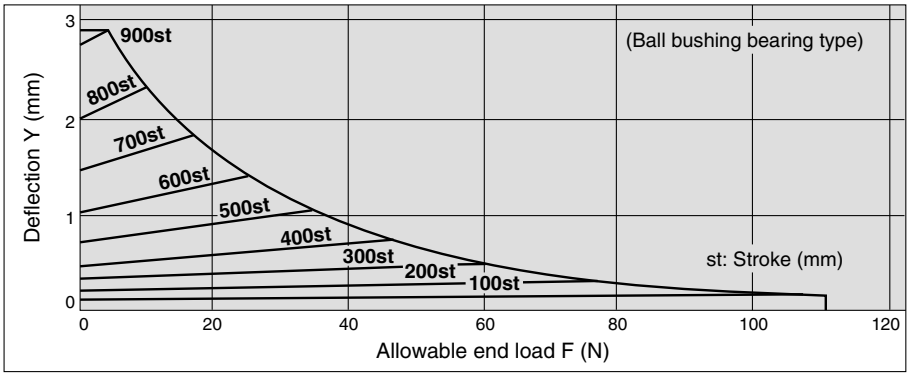
MGGL□32-Stroke



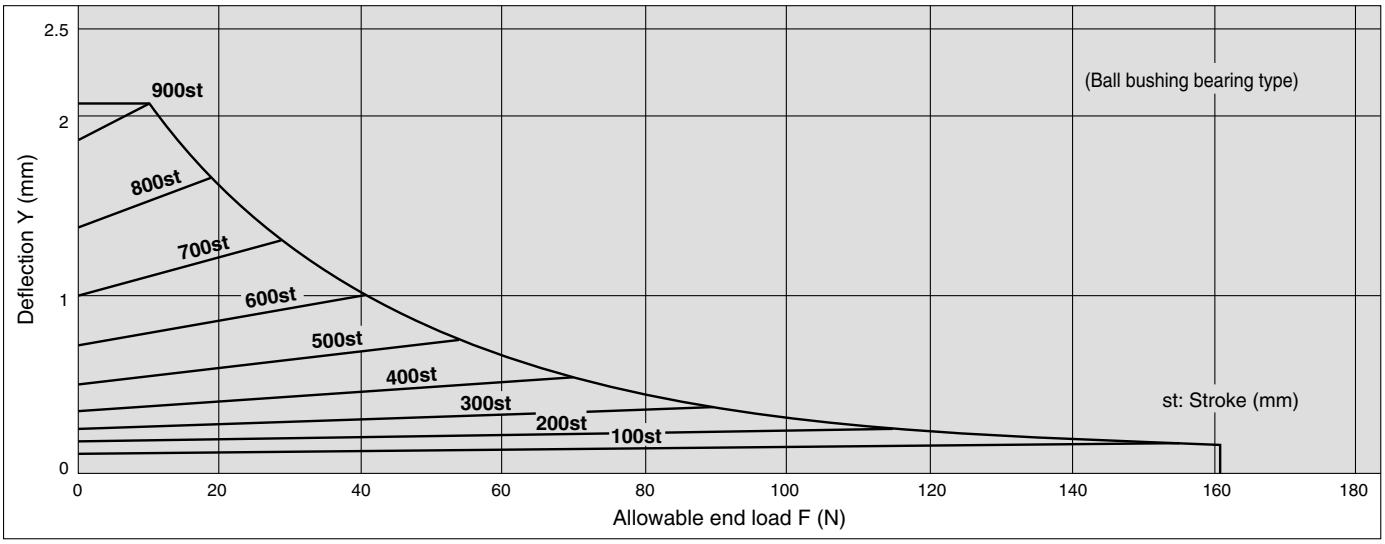
MGGL□40-Stroke



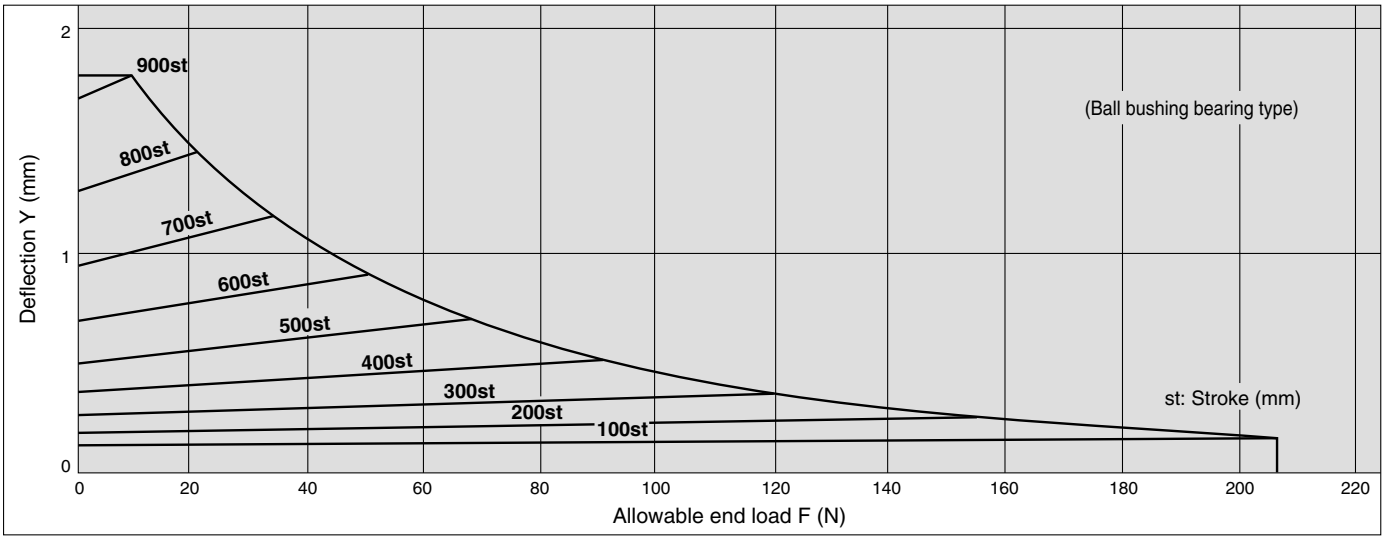
MGGL□50-Stroke



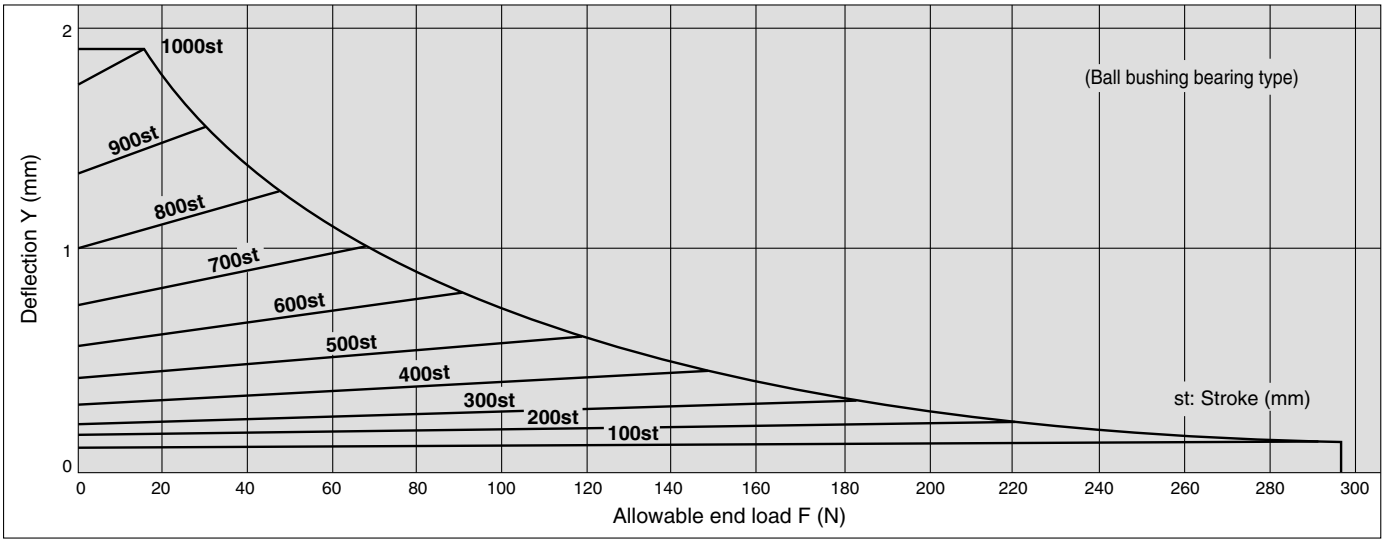
MGGL□63-Stroke

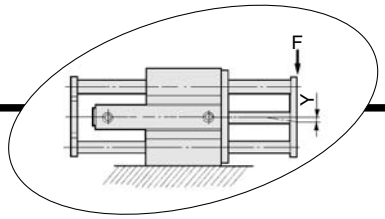


MGGL□80-Stroke



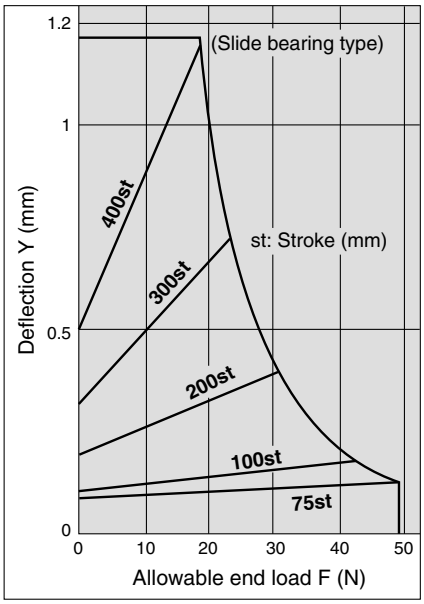
MGGL□100-Stroke



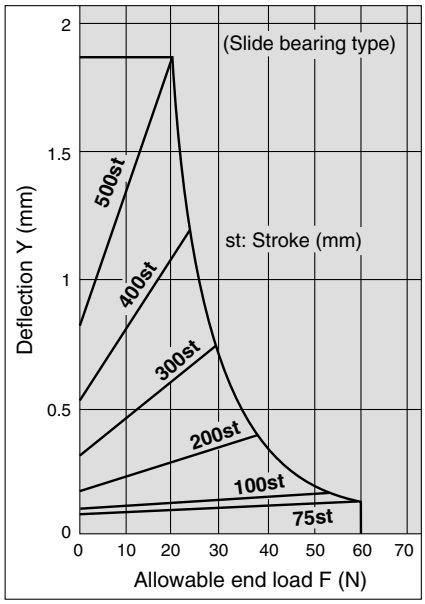


Slide Bearing
Allowable End Load and Deflection

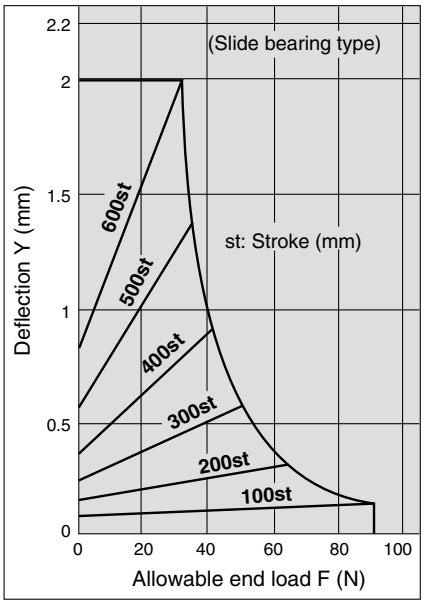
MGGM□20-Stroke



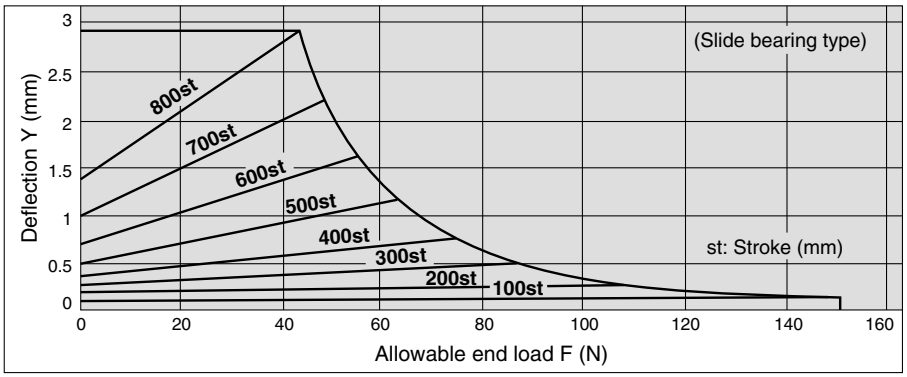
MGGM□25-Stroke



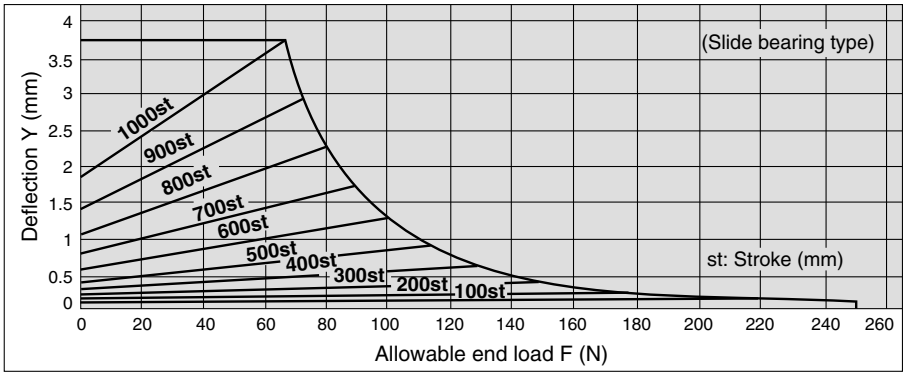
MGGM□32-Stroke



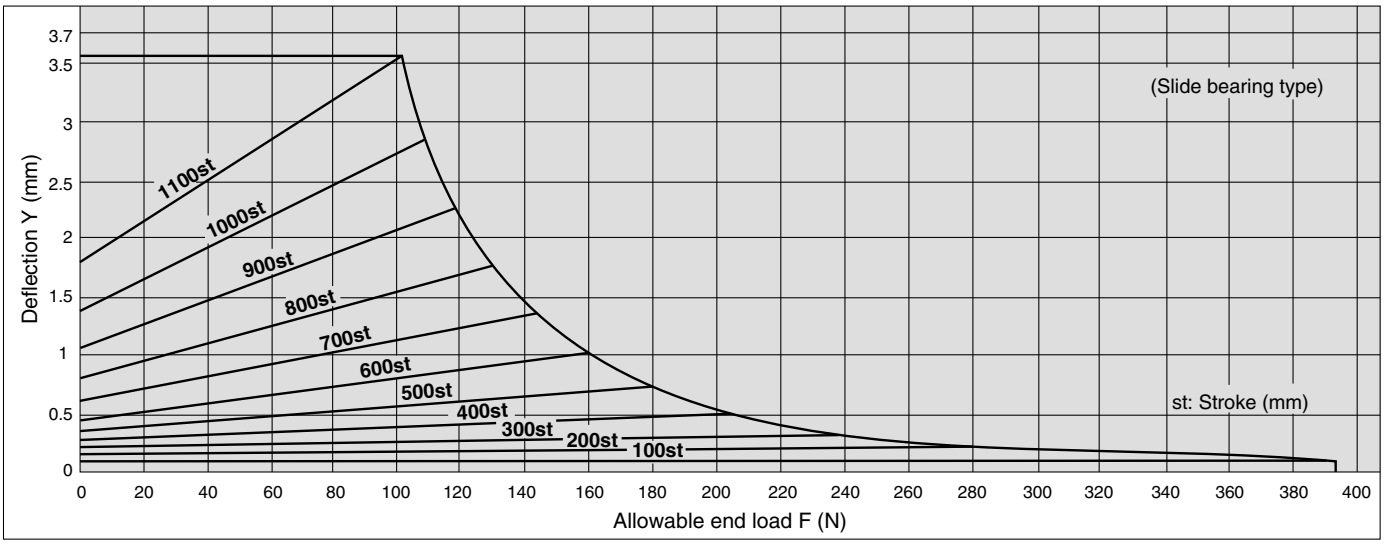
MGGM□40-Stroke



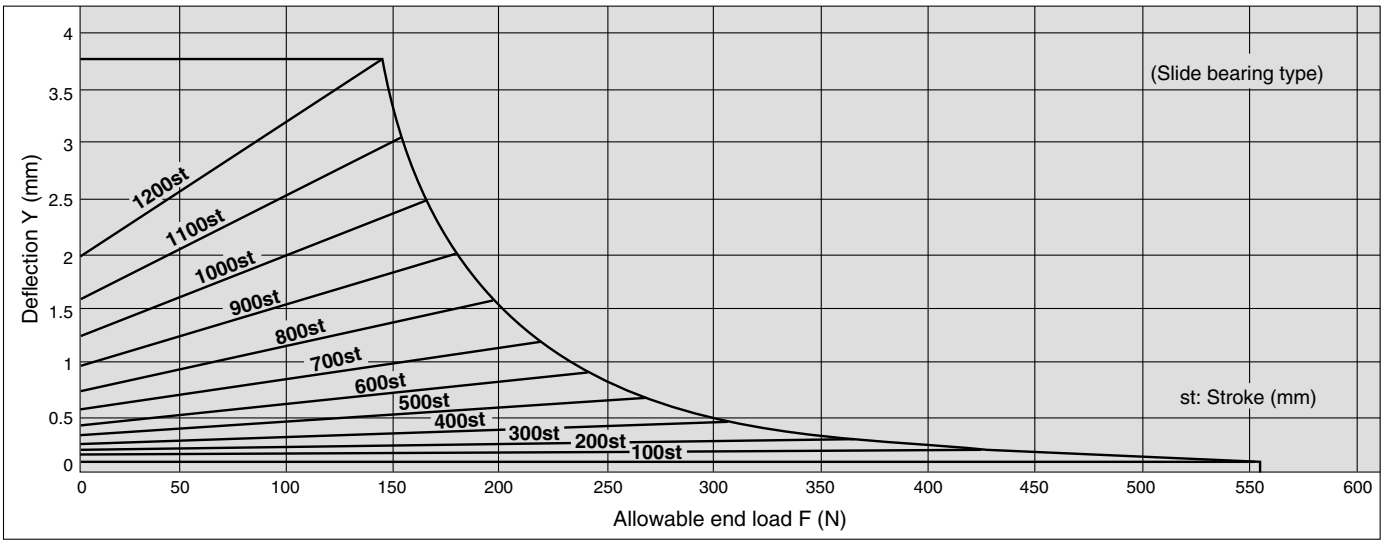
MGGM□50-Stroke



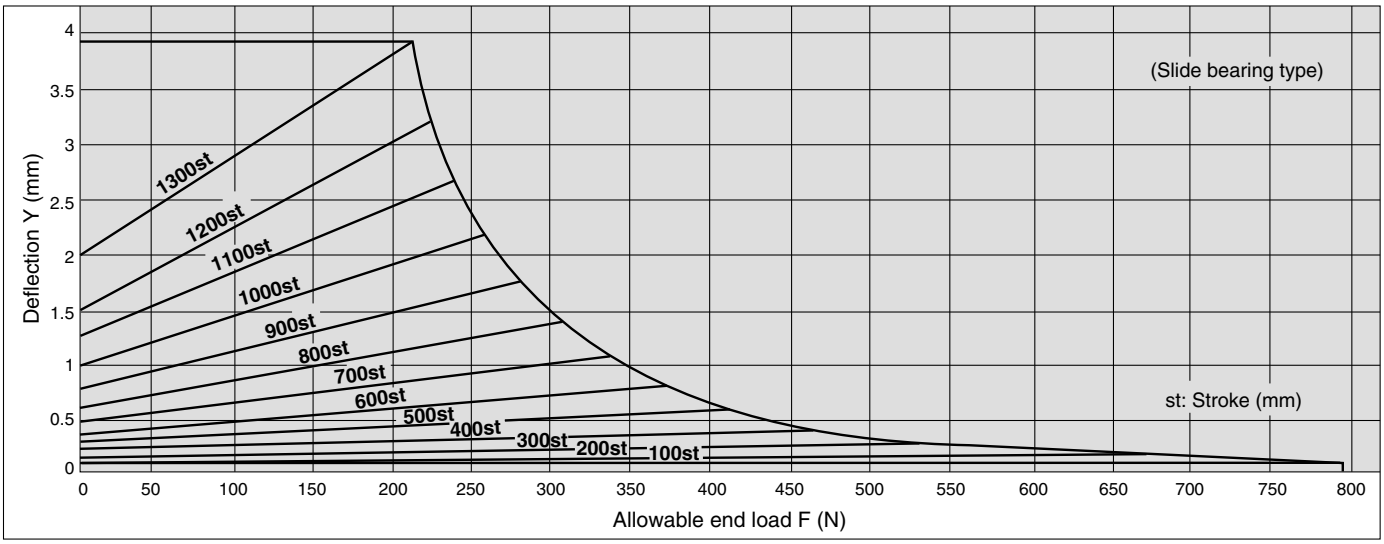
MGGM□63-Stroke

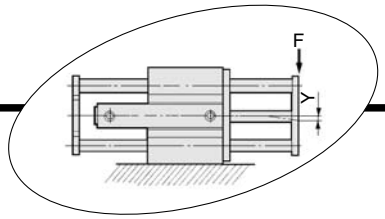


MGGM□80-Stroke



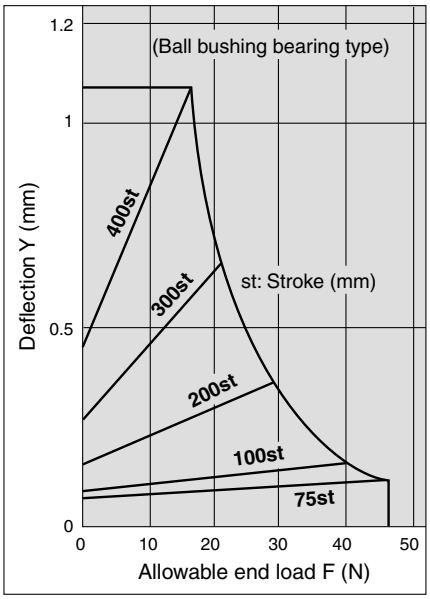
MGGM□100-Stroke



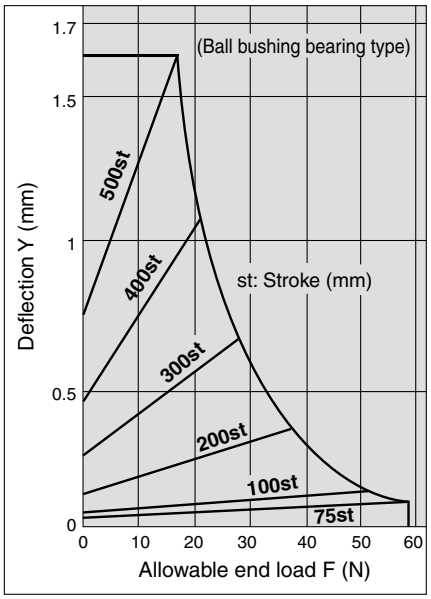


Ball Bushing Bearing
Allowable End Load and Deflection

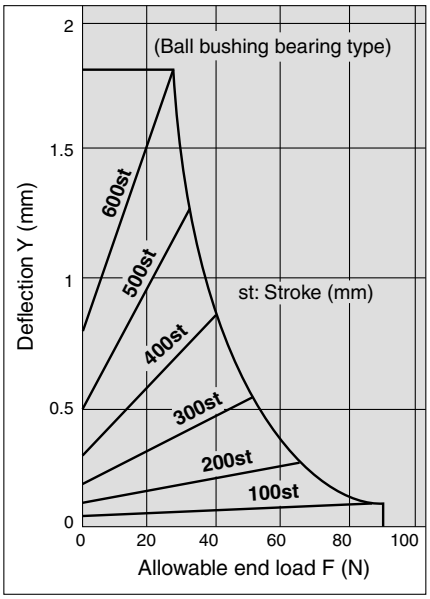
MGGL□20-Stroke



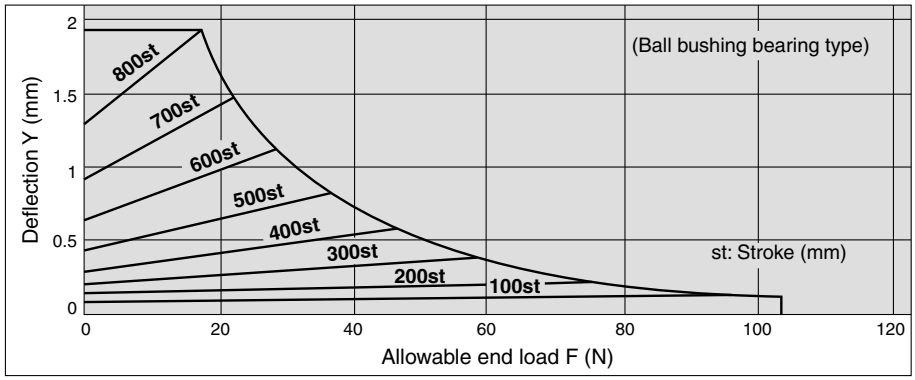
MGGL□25-Stroke



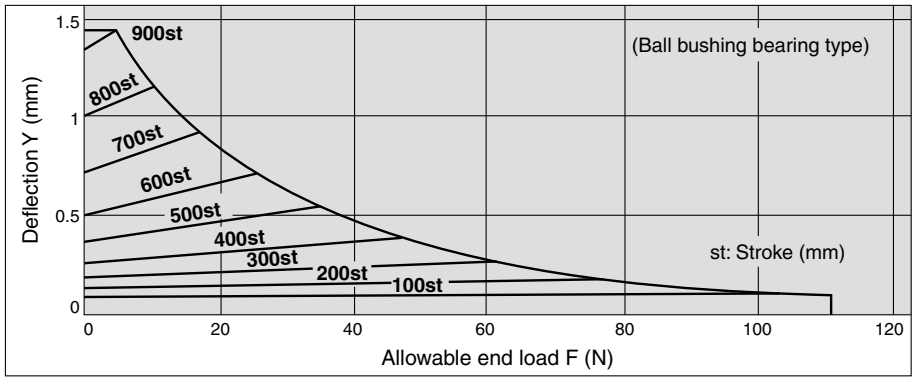
MGGL□32-Stroke



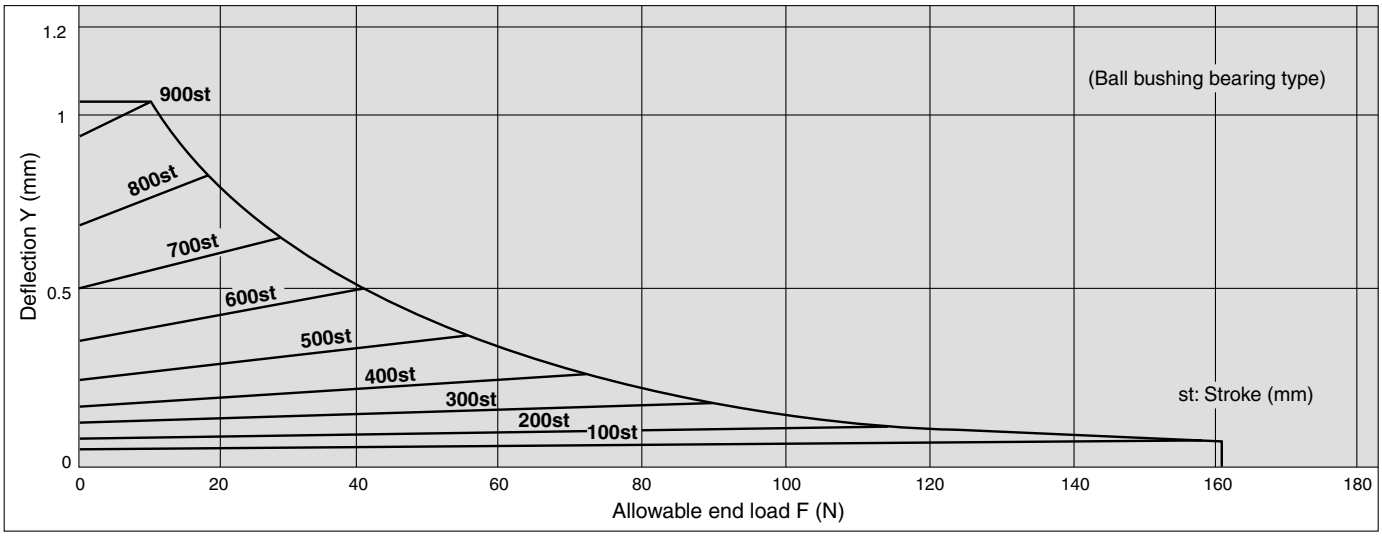
MGGL□40-Stroke



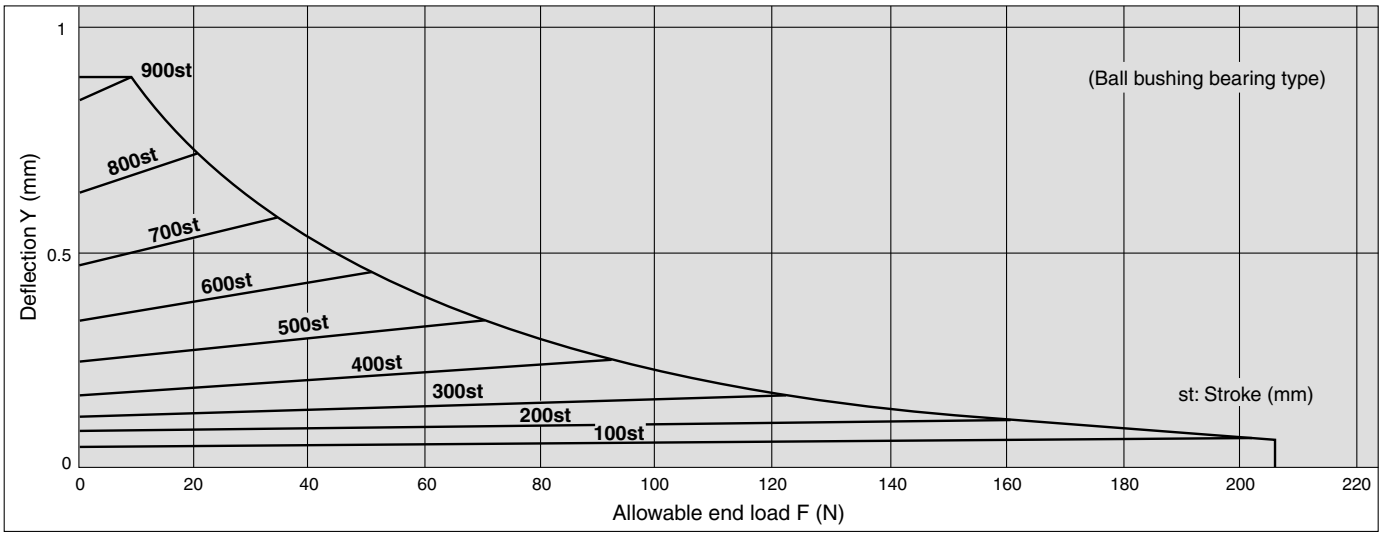
MGGL□50-Stroke



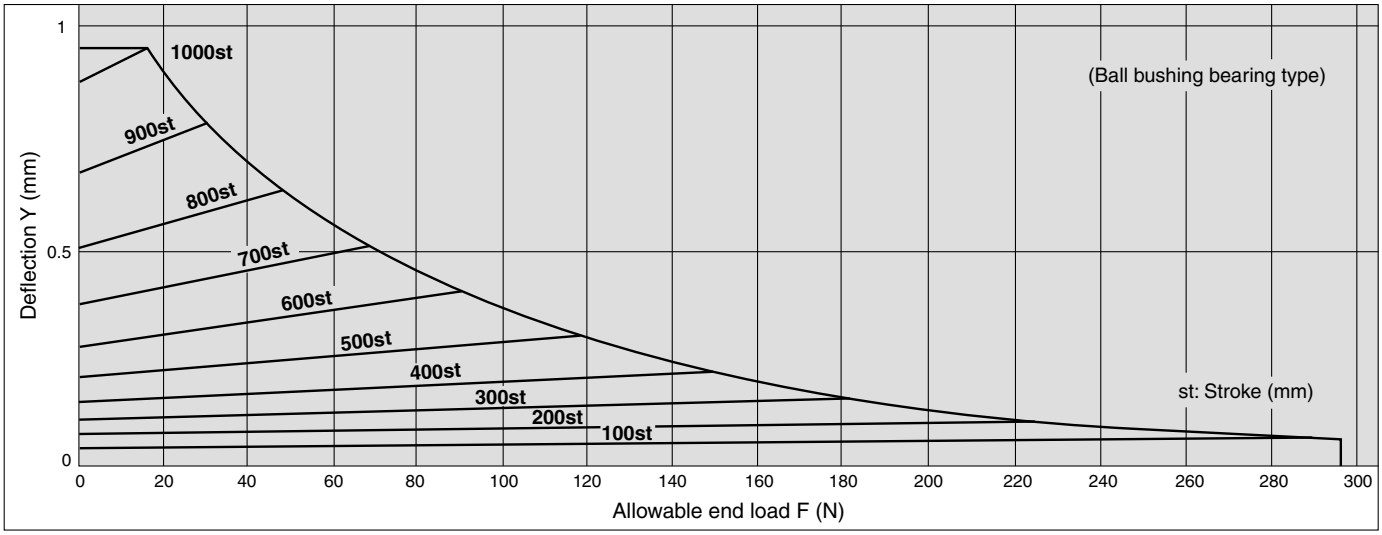
MGGL□63-Stroke



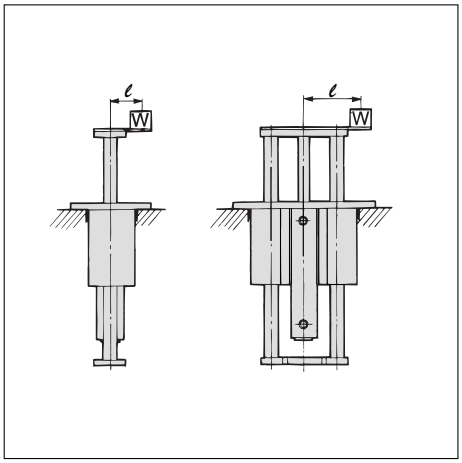
MGGL□80-Stroke



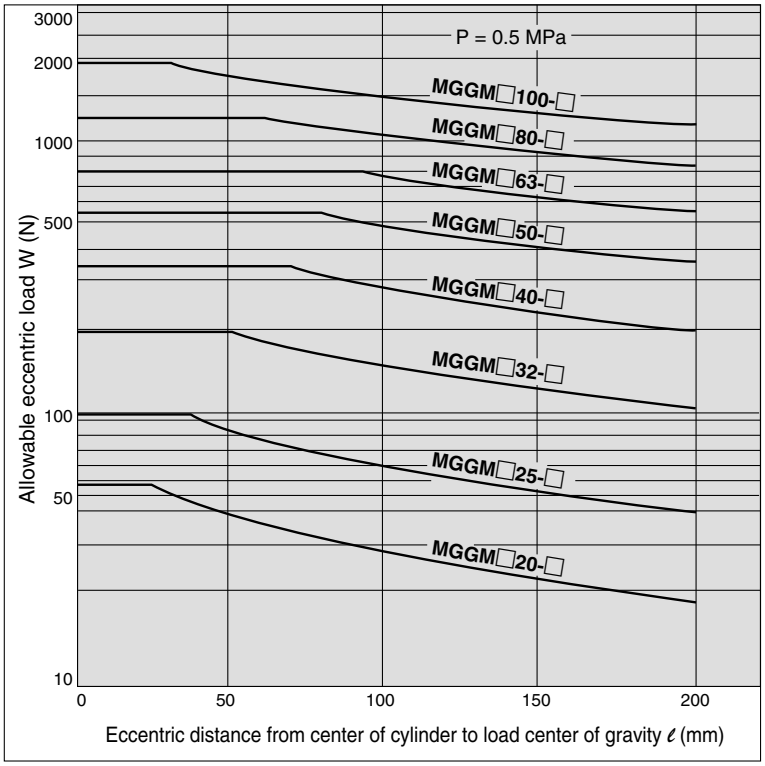
MGGL□100-Stroke



Allowable Eccentric Load

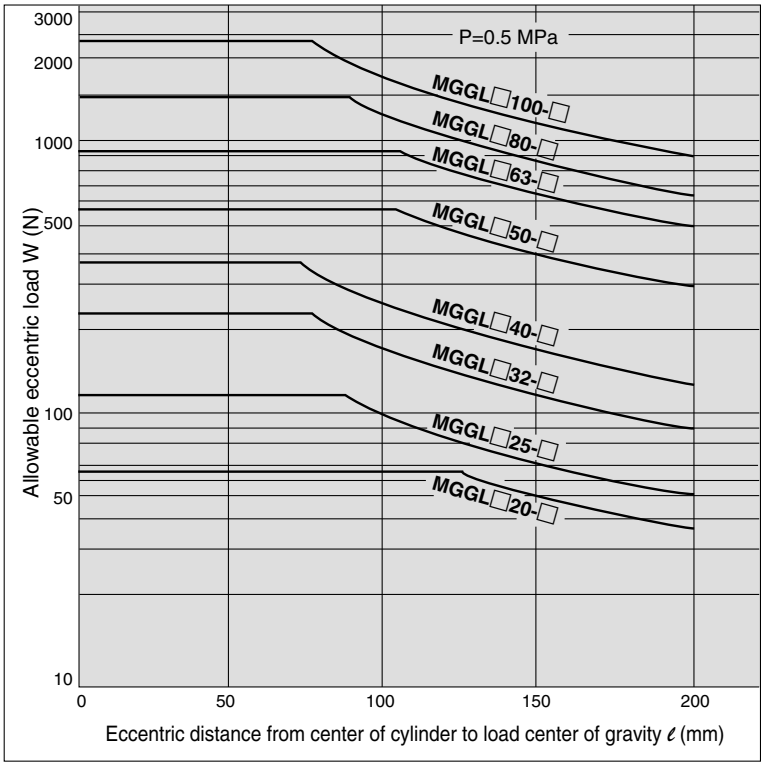


Slide Bearing: MGGM□□-Stroke



(Set the maximum allowable load so that it does not exceed the following percentages of the theoretical output: 35% for ø20, 40% for ø25, 50% for ø32, 55% for ø40 and ø50, and 50% for ø63, ø80 and ø100.)

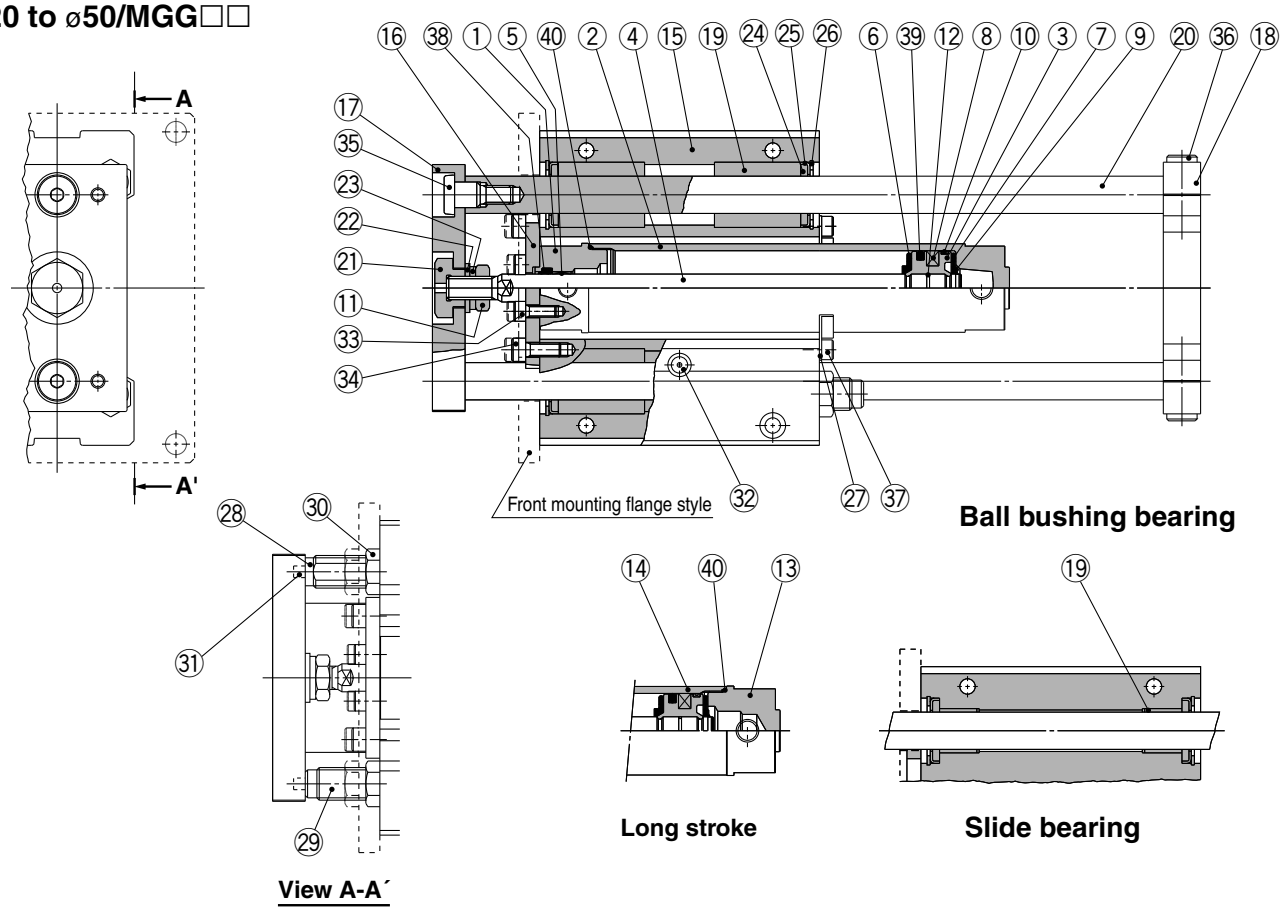
Ball Bushing Bearing: MGGL□□-Stroke



(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 60% for ø32, ø40, ø50, ø63, ø80 and ø100.)

Construction

ø20 to ø50/MGG□□



Component Parts

No.	Description	Material	Note	
1	Rod cover	Aluminum alloy	White hard anodized	
2	Tube cover	Aluminum alloy	White 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	Bumper A	Urethane		
7	Bumper B	Urethane	ø40 and larger are the same as bumper A	
8	Magnet	—		
9	Retaining ring	Stainless steal		
10	Wear ring	Resin		
11	Rod end nut	Rolled steel	Nickel plated	
12	Piston gasket	NBR		
13	Head cover	Aluminum alloy	White hard anodized	For long stroke
14	Cylinder tube	Aluminum alloy	Hard anodized	
15	Guide body	Aluminum alloy	White anodized	
16	Small flange	Rolled steel	Nickel plated	For basic style
	Large flange			For front mounting flange style
17	Front plate	Rolled steel	Nickel plated	
18	Rear plate	Cast iron	Platinum silver	
19	Slide bearing	Bearing alloy	For slide bearing	
	Ball bushing bearing	—	For ball bushing bearing	
20	Guide rod	Carbon steel	Hard chrome plated	For slide bearing
		High carbon chrome bearing steel	Quenched, hard chrome plated	For ball bushing bearing
21	End bracket	Carbon steel	Nickel plated	
22	Flat washer	Rolled steel	Nickel plated	
23	Spring washer	Steel wire	Nickel plated	
24	Felt	Felt		
25	Holder	Stainless steel		
26	Type C retaining ring for hole	Carbon tool steel	Nickel plated	
27	Bracket	Stainless steel		
28	Shock absorber	—		

Component Parts

No.	Description	Material	Note	
29	Adjusting bolt	Rolled steel	Nickel plated	
30	Nut	Rolled steel	Nickel plated	
31	Parallel pin	High carbon chrome bearing steel	Nickel plated	
32	Grease nipple	—	Nickel plated	
33	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For cylinder mounting
34	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For large/small flange mounting
35	Guide bolt	Chromium molybdenum steel	Nickel plated	For front plate mounting
36	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For rear plate mounting
37	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For bracket mounting
38	Rod seal	NBR		
39	Piston seal	NBR		
40	Tube gasket	NBR		

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
20	CG1N20-PS	Set of nos. above ㊳, ㊴, ㊵.
25	CG1N25-PS	
32	CG1N32-PS	
40	CG1N40-PS	

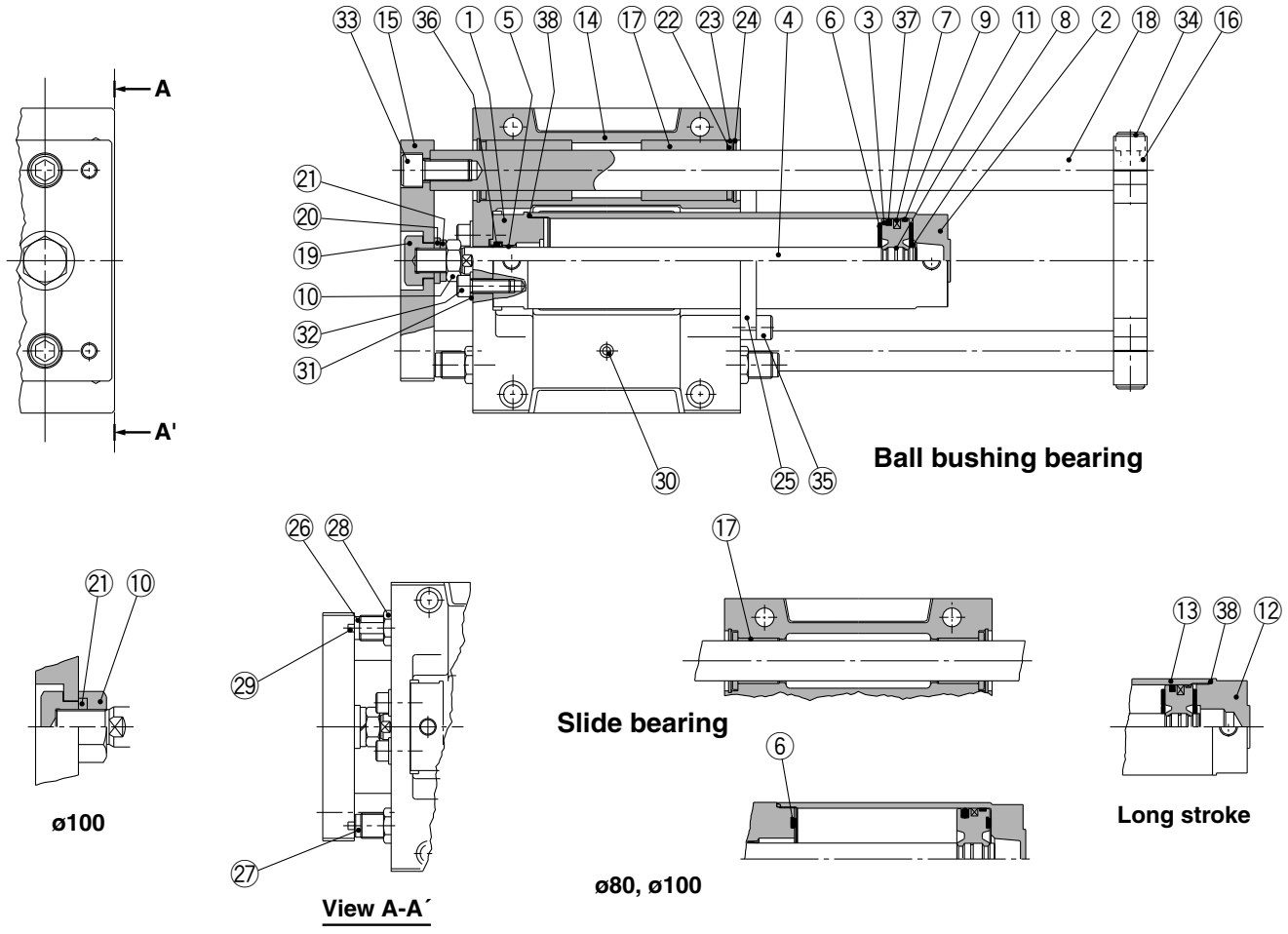
∗ Seal kit includes ㊳ to ㊵. Order the seal kit, based on each bore size.
∗ Seal kit includes a grease pack (10 g).
Order with the following part number when only the grease pack is needed.
Grease pack part no.: GR-S-010 (10 g)

⚠ Caution

When disassembling 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 disassemble is required.)

Construction

ø63 to ø100/MGG□B



Component Parts

No.	Description	Material	Note	
1	Rod cover	Aluminum alloy	White hard anodized	
2	Tube cover	Aluminum alloy	White hard anodized	
3	Piston	Aluminum alloy	Chromated	
4	Piston rod	Carbon steel	Hard chrome plated	
5	Bushing	Bearing alloy		
6	Bumper	Urethane		
7	Magnet	—		
8	Retaining ring	Stainless steel	Not required for ø80 and ø100	
9	Wear ring	Resin		
10	Rod end nut	Rolled steel	Nickel plated	ø100 is carbon steel
11	Piston gasket	NBR		
12	Head cover	Aluminum alloy	White hard anodized	For long stroke
13	Cylinder tube	Aluminum alloy	Hard anodized	For long stroke
14	Guide body	Aluminum alloy	Platinum silver	
15	Front plate	Rolled steel	Flat nickel plated	
16	Rear plate	Cast iron	Platinum silver	
17	Slide bearing	Bearing alloy	For slide bearing	
	Ball bushing bearing	—	For ball bushing	
18	Guide rod	Carbon steel	Hard chrome plated	For slide bearing
		High carbon chrome bearing steel	Quenched, hard chrome plated	For ball bushing bearing
19	End bracket	Carbon steel	Flat nickel plated	
20	Flat washer	Rolled steel	Nickel plated	Not required for ø100
21	Spring washer	Steel wire	Nickel plated	
22	Felt	Felt		
23	Holder	Rolled steel	Nickel plated	
24	Type C retaining ring for hole	Carbon tool steel	Nickel plated	

Component Parts

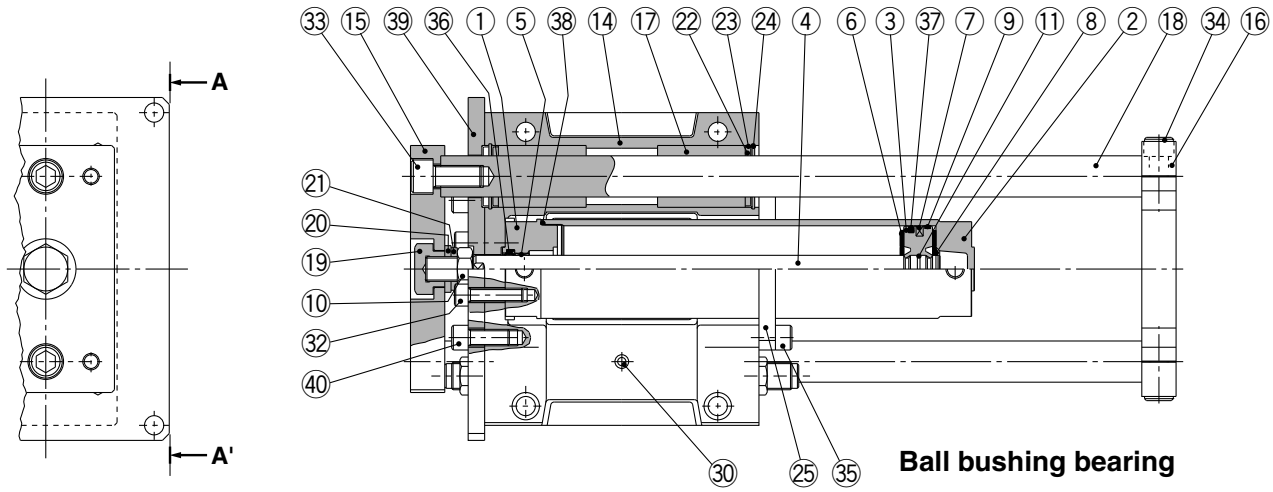
No.	Description	Material	Note	
25	Bracket	Aluminum alloy	White anodized	
26	Shock absorber	—		
27	Adjusting bolt	Rolled steel	Nickel plated	
28	Nut	Rolled steel	Nickel plated	
29	Parallel pin	High carbon chrome bearing steel	Nickel plated	
30	Grease nipple	—	Nickel plated	
31	Flat washer	Carbon steel	Nickel plated	
32	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For cylinder mounting
33	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For front plate mounting
34	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For rear plate mounting
35	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For bracket mounting
36	Rod seal	NBR		
37	Piston seal	NBR		
38	Tube gasket	NBR		

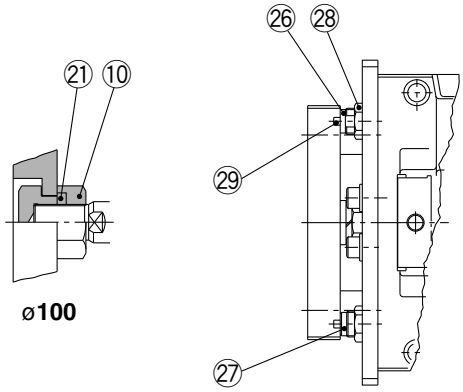
⚠ Caution

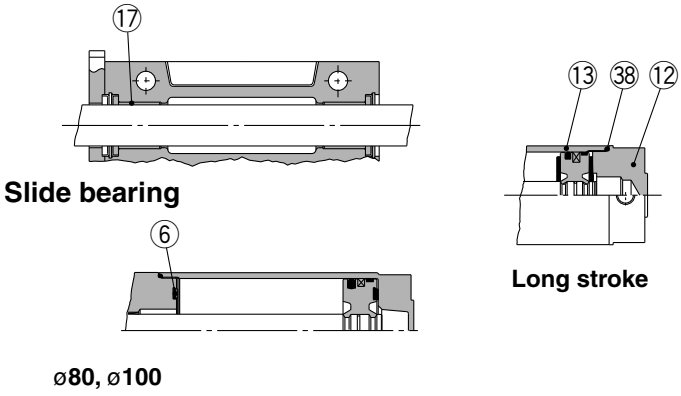
Basic cylinders with a bore size of ø50 cannot be disassembled. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassemble is required.)

Construction

ø63 to ø100/MGG□F







Component Parts

No.	Description	Material	Note	
1	**Rod cover**	Aluminum alloy	White hard anodized	
2	**Tube cover**	Aluminum alloy	White hard anodized	
3	**Piston**	Aluminum alloy	Chromated	
4	**Piston rod**	Carbon steel	Hard chrome plated	
5	**Bushing**	Bearing alloy		
6	**Bumper**	Urethane		
7	**Magnet**	—		
8	**Retaining ring**	Stainless steel	Not required for ø80 and ø100	
9	**Wear ring**	Resin		
10	**Rod end nut**	Rolled steel	Nickel plated	ø100 is carbon steel
11	**Piston gasket**	NBR		
12	**Head cover**	Aluminum alloy	White hard anodized	For long stroke
13	**Cylinder tube**	Aluminum alloy	Hard anodized	
14	**Guide body**	Aluminum alloy	Platinum silver	
15	**Front plate**	Rolled steel	Flat nickel plated	
16	**Rear plate**	Cast iron	Platinum silver	
17	**Slide bearing**	Bearing alloy	For slide bearing	
	Ball bushing bearing	—	For ball bushing	
18	**Guide rod**	Carbon steel	Hard chrome plated	For slide bearing
		High carbon chrome bearing steel	Quenched, hard chrome plated	For ball bushing bearing
19	**End bracket**	Carbon steel	Flat nickel plated	
20	**Flat washer**	Rolled steel	Nickel plated	Not required for ø100
21	**Spring washer**	Steel wire	Nickel plated	
22	**Felt**	Felt		
23	**Holder**	Rolled steel	Nickel plated	
24	Type C retaining ring for hole	Carbon tool steel	Nickel plated	
25	**Bracket**	Aluminum alloy	White anodized	

Component Parts

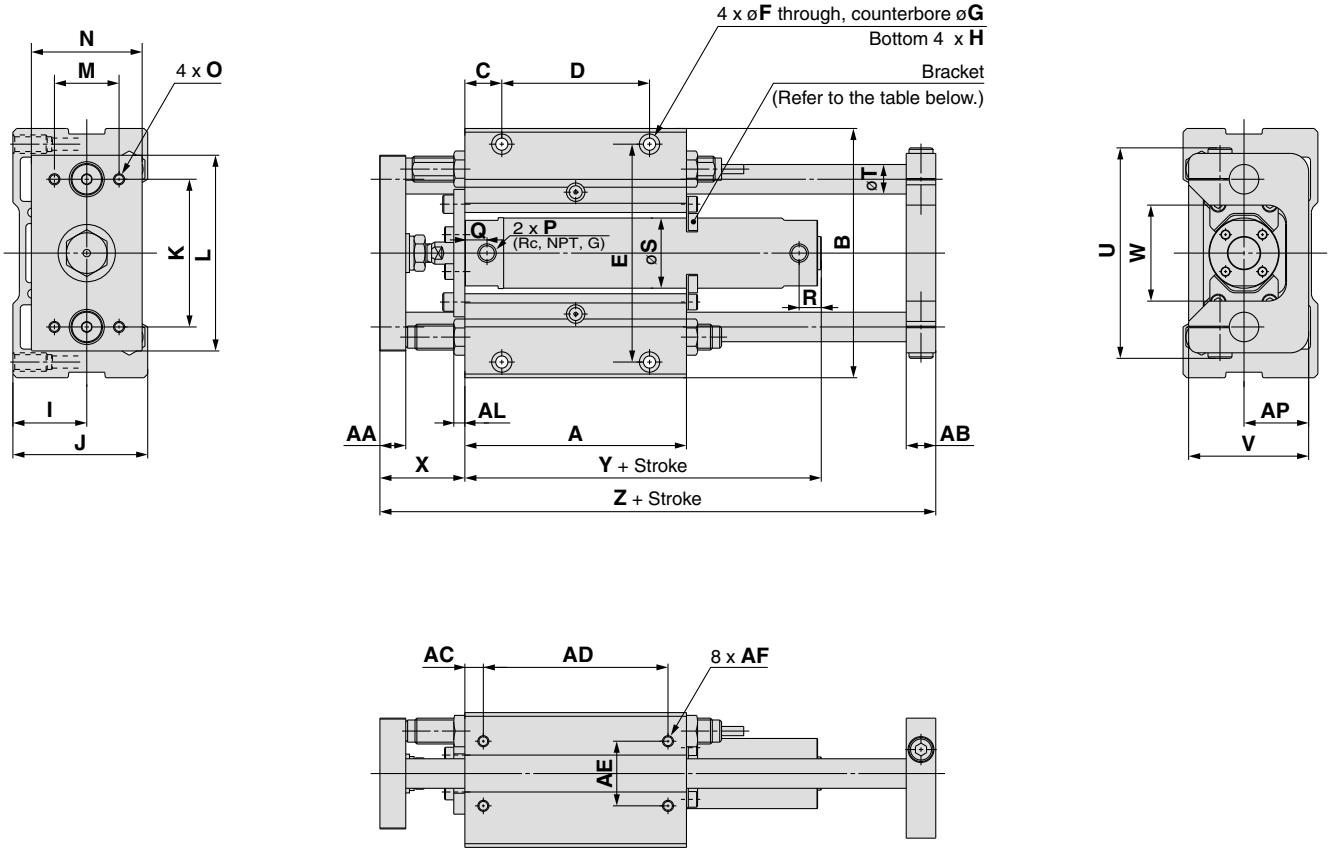
No.	Description	Material	Note	
26	**Shock absorber**	—		
27	**Adjusting bolt**	Rolled steel	Nickel plated	
28	**Nut**	Rolled steel	Nickel plated	
29	**Parallel pin**	High carbon chrome bearing steel	Nickel plated	
30	**Grease nipple**	—	Nickel plated	
31	—	—		
32	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For cylinder mounting
33	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For front plate mounting
34	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For rear plate mounting
35	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For bracket mounting
36	**Rod seal**	NBR		
37	**Piston seal**	NBR		
38	**Tube gasket**	NBR		
39	**Large flange**	Rolled steel	Flat Nickel plated	
40	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	For large flange mounting

⚠ Caution

Basic cylinders with a bore size of ø50 cannot be disassembled. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassemble is required.)

Dimensions

Basic style: MGG□B
ø20 to ø50



(mm)

Bore size (mm)	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AL	AP	B	C	D	E	F	G	H	I	J	K	L	M	N
20	75, 100, 125, 150, 200	90	11	11	7.5	75	30	M5 x 0.8 depth 10	6	25	108	15	60	92	5.5	9.5 depth 6	M8 x 1.25 depth 14	30	55	60	80	25	45
25	75, 100, 125, 150, 200, 250, 300	100	14	13	7.5	85	30	M6 x 1 depth 12	6	30	130	17.5	65	113	6.6	11 depth 8	M10 x 1.5 depth 18	35	65	70	100	35	54
32		120	14	16	10	100	35	M6 x 1 depth 12	6	35	135	20	80	118	6.6	11 depth 8	M10 x 1.5 depth 18	40	73	80	106	35	60
40		140	17	19	10	120	40	M8 x 1.25 depth 16	9	45	170	20	100	150	9	14 depth 10	M12 x 1.75 depth 21	50	93	95	134	50	75
50		170	23	21	10	150	45	M10 x 1.5 depth 20	9	50	194	25	120	170	11	17 depth 12	M14 x 2 depth 25	55	103	115	152	56	90

Bore size (mm)	O	P*	Q	R	S	T	U	V	W	X	Y	Z
20	M6 x 1 depth 9	1/8	12	12	26	12	82	48	40	39	71	157
25	M6 x 1 depth 13	1/8	12	12	31	13	100	57	46	46	71	175
32	M6 x 1 depth 13	1/8	12	12	38	16	114	65	52	46	73	201
40	M8 x 1.25 depth 16	1/8	13	12	47	20	138	84	62	56	80	238
50	M10 x 1.5 depth 21	1/4	14	14	58	25	164	94	75	67	92	285

Note) Rc, NPT and G ports can be selected.

Long Stroke

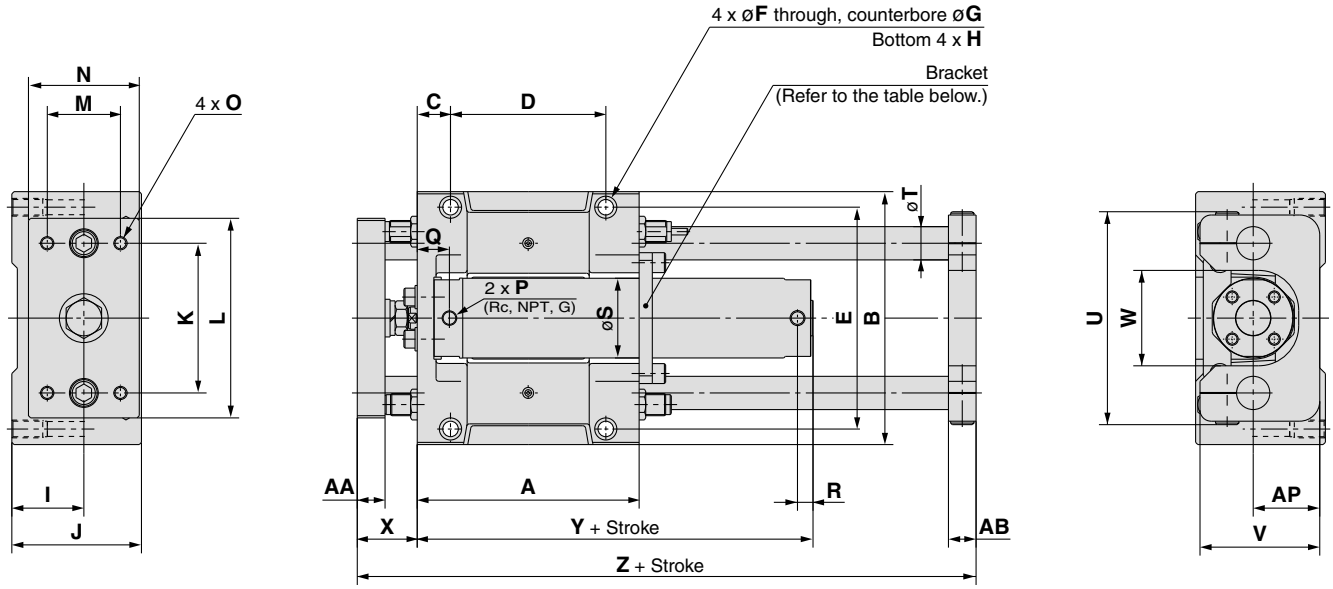
Bore size (mm)	Stroke range (mm)	R	Y
20	250 to 400	14	79
25	350 to 500	14	79
32	350 to 600	14	81
40	350 to 800	15	89
50	350 to 1000	16	104

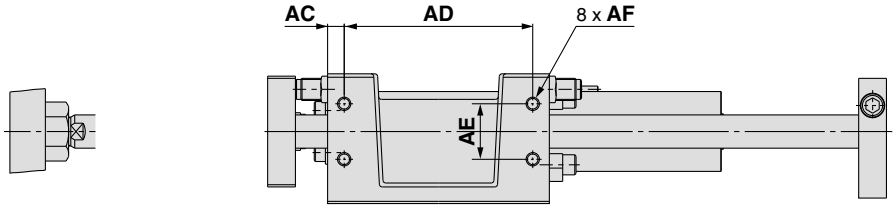
Bracket Mounting Stroke

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

Dimensions

Basic style: MGG□B
ø63 to ø100





ø100 piston rod end connection

(mm)

Bore size (mm)	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AP	B	C	D	E	F	G	H	I	J	K	L	M	N
63	75, 100 125, 150 200, 250 300	200	25	25	15	170	50	M12 x 1.75 depth 24	60	228	30	140	200	13.5	20 depth 14.5	M16 x 2 depth 28	65	117	135	180	66	100
80		230	30	27	15	200	55	M12 x 1.75 depth 24	70	262	30	170	234	13.5	20 depth 14.5	M16 x 2 depth 28	75	138	160	214	76	115
100		280	32	30	17.5	245	70	M14 x 2 depth 28	80	304	35	210	274	15	23 depth 17	M18 x 2.5 depth 32	85	153	190	245	80	125

Bore size (mm)	O	P*	Q	R	S	T	U	V	W	X	Y	Z
63	M12 x 1.75 depth 23	1/4	29	14	72	30	192	108	86	54	107	308
80	M12 x 1.75 depth 28	3/8	40	19	89	35	224	128	104	66	131	355
100	M14 x 2 depth 30	1/2	40	19	110	40	262	143	128	66	131	410

Note) Rc, NPT and G ports can be selected.

Long Stroke

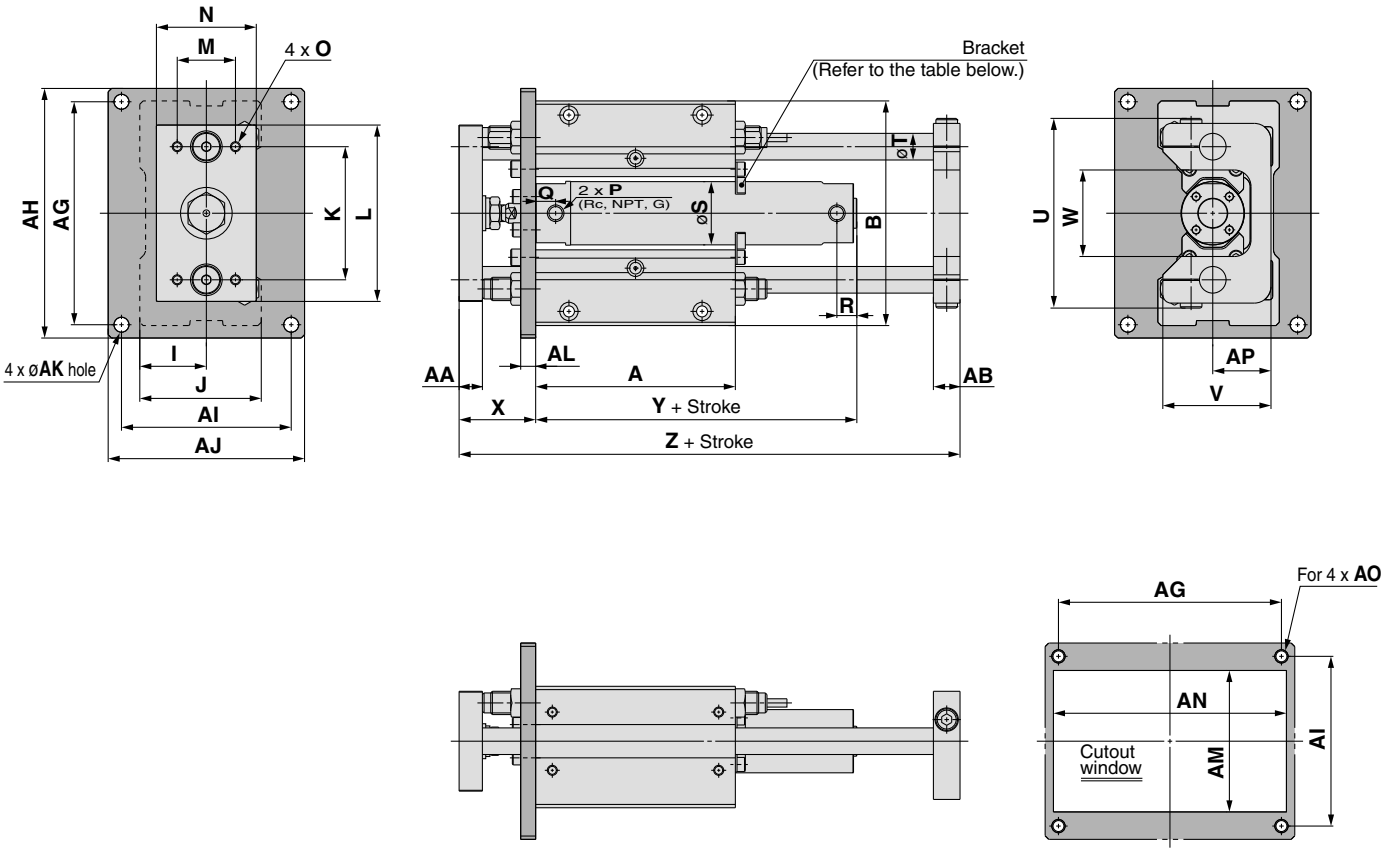
Bore size (mm)	Stroke range (mm)	R	Y
63	350 to 1100	16	119
80	350 to 1200	23	145
100	350 to 1300	23	145

Bracket Mounting Stroke

Bore size (mm)	Bracket mounting stroke
63	300 st or more
80	400 st or more
100	500 st or more

Dimensions

Front mounting flange style: MGG□F
ø20 to ø50



Mounting dimensions

(mm)

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	O
20	75, 100, 125, 150, 200	90	11	11	112	125	82	95	6.6	9	65	115	M6	25	108	30	55	60	80	25	45	M6 x 1 depth 9
25	75, 100, 125, 150, 200, 250, 300	100	14	13	134	150	92	108	9	9	75	135	M8	30	130	35	65	70	100	35	54	M6 x 1 depth 13
32		120	14	16	134	150	102	118	9	9	85	140	M8	35	135	40	73	80	106	35	60	M6 x 1 depth 13
40		140	17	19	170	186	134	150	9	12	105	175	M8	45	170	50	93	95	134	50	75	M8 x 1.25 depth 16
50		170	23	21	190	210	140	160	11	12	115	200	M10	50	194	55	103	115	152	56	90	M10 x 1.5 depth 21

Bore size (mm)	P*	Q	R	S	T	U	V	W	X	Y	Z
20	1/8	12	12	26	12	82	48	40	39	71	157
25	1/8	12	12	31	13	100	57	46	46	71	175
32	1/8	12	12	38	16	114	65	52	46	73	201
40	1/8	13	12	47	20	138	84	62	56	80	238
50	1/4	14	14	58	25	164	94	75	67	92	285

Note) Rc, NPT and G ports can be selected.

Long Stroke

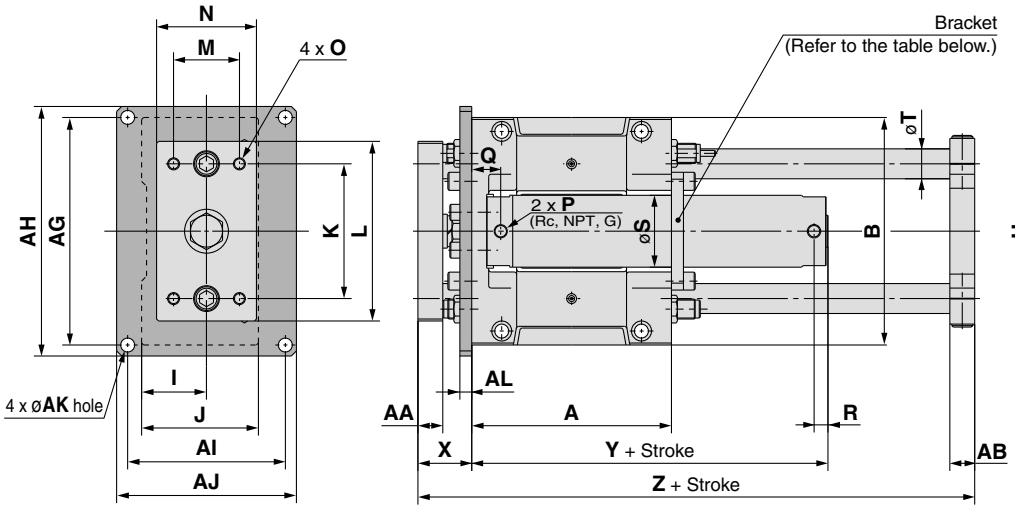
Bore size (mm)	Stroke range (mm)	R	Y
20	250 to 400	14	79
25	350 to 500	14	79
32	350 to 600	14	81
40	350 to 800	15	89
50	350 to 1000	16	104

Bracket Mounting Stroke

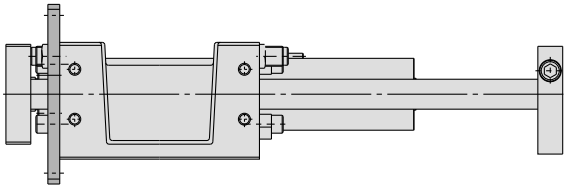
Bore size (mm)	Bracket mounting stroke
20	100 st or more
25	125 st or more
32	150 st or more
40	200 st or more
50	250 st or more

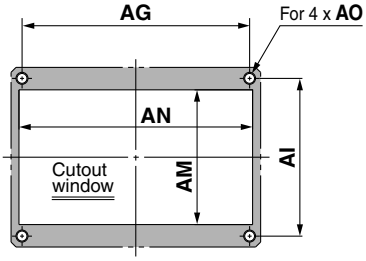
Dimensions

Front mounting flange style: MGG□F
ø63 to ø100



ø100 piston rod end connection





Mounting dimensions

(mm)

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	O	P*
63	75, 100 125, 150 200, 250 300	200	25	25	228	250	158	180	14	12	135	234	M12	60	228	65	117	135	180	66	100	M12 x 1.75 depth 23	1/4
80		230	30	27	262	284	178	200	14	16	155	268	M12	70	262	75	138	160	214	76	115	M12 x 1.75 depth 28	3/8
100		280	32	30	300	326	200	226	16	16	175	310	M14	80	304	85	153	190	245	80	125	M14 x 2 depth 30	1/2

Bore size (mm)	Q	R	S	T	U	V	W	X	Y	Z
63	29	14	72	30	192	108	86	54	107	308
80	40	19	89	35	224	128	104	66	131	355
100	40	19	110	40	262	143	128	66	131	410

Note) Rc, NPT and G ports can be selected.

Long Stroke

Bore size (mm)	Stroke range (mm)	R	Y
63	350 to 1100	16	119
80	350 to 1200	23	145
100	350 to 1300	23	145

Bracket Mounting Stroke

Bore size (mm)	Bracket mounting stroke
63	300 st or more
80	400 st or more
100	500 st or more

Guide Cylinder/With End Lock

Series MGG

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

MGG L B 32 □ – 100 – H N – M9BW □ – □

Guide Cylinder

Bearing type

M	Slide bearing
L	Ball bushing bearing

Mounting style

B	Basic style
F	Front mounting flange style

Bore size

20	20 mm	**50**	50 mm
25	25 mm	**63**	63 mm
32	32 mm	**80**	80 mm
40	40 mm	**100**	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 377.

Lock position

H	Head end lock
R	Rod end lock

Manual release type

N	Non-lock type
L	Lock type

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Made to Order
Refer to page 378 for details.

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Applicable bore (mm) ø20, ø25	ø32	ø40 to ø63	ø80, ø100	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N			—	●	●	●	○	—	○	IC circuit	Relay, PLC
							—			G59	●	—	●	○	—	○		
				3-wire (PNP)			M9P			—	●	●	●	○	—	○		
							—			G5P	●	—	●	○	—	○		
				2-wire	12 V		M9B			—	●	●	●	○	—	○	—	
							—			K59	●	—	●	○	—	○		
		Connector					H7C			—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V	—	M9NW			—	●	●	●	○	—	○	IC circuit	
					5 V, 12 V		—			G59W	●	—	●	○	—	○		
				3-wire (PNP)			M9PW			—	●	●	●	○	—	○		
							—			G5PW	●	—	●	○	—	○		
				2-wire	12 V		M9BW			—	●	●	●	○	—	○	—	
							—			K59W	●	—	●	○	—	○		
	Water resistant (2-color indication)						H7BA			G5BA	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		H7NF			G59F	●	—	●	○	—	○	IC circuit	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96			—	●	—	●	—	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93		—	●	—	●	—	—	—	—	Relay, PLC
			Yes				100 V or less	A90		—	●	—	●	—	—	—	IC circuit	
			No				100 V, 200 V	(B54)	B54		●	—	●	●	—	—	—	
			Yes				200 V or less	(B64)	B64		●	—	●	—	—	—		
		Connector	No				—	C73C		—	●	—	●	●	●	—		
			Yes				24 V or less	C80C		—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes		—	—	(B59W)	B59W			●	—	●	—	—	—	—	

∗ Lead wire length symbols: 0.5 m ·····Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ
None····· N (Example) H7CN

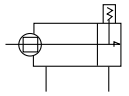
∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ D-A9□V/M9□V/M9□WV/M9□A(V) types cannot be mounted.

∗ Since there are other applicable auto switches than listed, refer to page 388 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
∗ D-A9□/M9□/M9□W auto switches are shipped together (not assembled).
(Only switch mounting brackets are assembled at the time of shipment.)

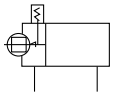
Caution
When using auto switches shown inside ( ), stroke end detection may not be possible depending on the One-touch fitting or speed controller model. Please contact SMC in this case.

Specifications

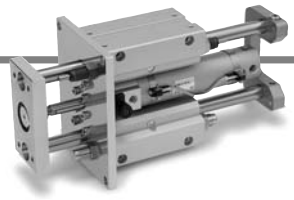
JIS Symbol



Head end lock



Rod end lock



Standard Stroke

Model (Bearing type)	Bore size (mm)	Standard stroke (mm)	Long stroke (mm)
MGGM(Slide bearing) MGGL(Ball bushing bearing)	**20**	75, 100, 125, 150, 200	250, 300, 350, 400
	25	75, 100, 125, 150, 200, 250, 300	350, 400, 450, 500
	32		350, 400, 450, 500, 600
	40		350, 400, 450, 500, 600, 700, 800
	50		350, 400, 450, 500, 600, 700, 800, 900, 1000
	63		350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100
	80		350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200
	100		350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300

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

Specifications

Model		MGG□□20	MGG□□25	MGG□□32	MGG□□40	MGG□□50	MGG□□63	MGG□□80	MGG□□100
Basic cylinder		CDBG1BN	Bore size	Port thread type	- Stroke	- Lock position	Manual release	- Auto switch	-XC70
Bore size (mm)		**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
Action		Double acting							
Fluid		Air							
Proof pressure		1.5 MPa							
Maximum operating pressure		1.0 MPa							
Minimum operating pressure		0.15 MPa (Horizontal with no load)							
Ambient and fluid temperature		–10 to 60°C							
Piston speed		50 to 1000 mm/s						50 to 700 mm/s	
Cushion	**Basic cylinder**	Rubber bumper							
	Guide unit	Built-in shock absorbers (2 pcs.)							
Stroke adjusting range (One side) [Built-in adjusting bolts (2 pcs.)]		0 to –10 mm	0 to –15 mm						
Base cylinder lubrication		Non-lube							
Stroke length tolerance		$^{+1.9}_{+0.2}$ mm(1000 st or less), $^{+2.3}_{+0.2}$ mm(1001 st or more)							
Non-rotating accuracy	**Slide bearing**	±0.07°	±0.06°	±0.06°	±0.05°	±0.04°	±0.04°	±0.04°	±0.03°
	Ball bushing bearing	±0.06°	±0.05°	±0.04°	±0.04°	±0.04°	±0.03°	±0.03°	±0.02°
Piping port size (Rc, NPT, G)		1/8				1/4		3/8	1/2

∗ 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 table above as a guideline.

Lock Specifications

Bore size (mm)	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
Holding force (Max.) (N)	215	330	550	860	1340	2140	3450	5390
Lock position	Head end, Rod end							
Backlash	2 mm or less							
Manual release	Non-lock type, Lock type							

∗ Adjust switch positions for operation at both the stroke end and backlash (2 mm) movement positions.

Shock Absorber Specifications

Shock absorber model		RB1007	RB1412	RB2015	RB2725
Applicable guide cylinder		MGG□□20	MGG□□25, 32	MGG□□40, 50, 63	MGG□□80, 100
Maximum energy absorption (J)		5.88	19.6	58.8	147
Stroke absorption (mm)		7	12	15	25
Maximum collision speed (m/s)		5			
Max. operating frequency (cycle/min) ∗		70	45	25	10
Ambient temperature range (°C)		–10 to 80			
Spring force (N)	**Extended**	4.22	6.86	8.34	8.83
	Retracted	6.86	15.98	20.5	20.01

∗ It denotes the values at the maximum energy absorption per one cycle. Therefore, the operating frequency can be increased according to the energy absorption.

Theoretical Output

(N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm^2)	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
63	20	OUT	3120	624	936	1250	1560	1870	2180	2500	2810	3120
		IN	2800	560	840	1120	1400	1680	1960	2240	2520	2800
80	25	OUT	5030	1010	1510	2010	2520	3020	3520	4020	4530	5030
		IN	4540	908	1360	1820	2270	2720	3180	3630	4090	4540
100	30	OUT	7850	1570	2360	3140	3930	4710	5500	6280	7070	7850
		IN	7150	1430	2150	2860	3580	4290	5010	5720	6440	7150

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm^2)

Mass

(kg)

Bore size (mm)			20	25	32	40	50	63	80	100
Basic mass	LB Type (Ball bushing bearing, Basic style)		1.72	2.82	3.84	7.19	11.63	16.6	26.32	37.46
	LF Type (Ball bushing bearing, Front mounting flange style)		2.44	3.79	4.87	9.38	14.17	20.58	33	45.98
	MB Type (Slide bearing, Basic style)		1.71	2.79	3.36	7.17	11.36	16.22	25.61	36.36
	MF Type (Slide bearing, Front mounting flange style)		2.42	3.75	4.39	9.37	13.89	20.2	32.29	44.89
Additional mass per each 50 mm of stroke			0.14	0.17	0.25	0.4	0.61	0.82	1.11	1.48
Additional mass for long stroke			0.01	0.01	0.02	0.03	0.06	0.1	0.19	0.26
Additional mass with bracket			0.011	0.018	0.019	0.031	0.061	0.269	0.384	0.548
Additional mass of lock unit	Head end lock (H)	Non-lock type (N)	0.05	0.07	0.08	0.17	0.26	0.44	0.8	1.15
		Lock type (L)	0.07	0.08	0.1	0.21	0.3	0.48	0.88	1.23
	Rod end lock (R)	Non-lock type (N)	0.07	0.08	0.12	0.19	0.31	0.51	0.9	1.31
		Lock type (L)	0.09	0.1	0.14	0.23	0.34	0.54	0.97	1.39

Calculation: (Example) **MGGLB32-500-HN** (Ball bushing type) (Basic style, ø32, 500 st, With bracket)
- Standard mass ·····3.84 (LB type)
- Additional mass for stroke ·····0.25/50 st
- Stroke ·····500 st
- Additional mass for long stroke ····· 0.02
- Additional mass with bracket ····· 0.019
- Additional mass of lock unit ····· 0.08

3.84 + 0.25 x 500/50 + 0.02 + 0.019+ 0.08 = 6.459 kg (Head side, Non-lock type)

Mass of Moving Parts

(kg)

Bore size (mm)	20	25	32	40	50	63	80	100
Moving parts basic mass	0.69	1.14	1.61	3.09	5.23	8.29	13.09	18.58
Additional mass by each 50 mm of stroke	0.109	0.135	0.203	0.326	0.509	0.679	0.948	1.265

Calculating mass of moving parts (Example) **MGGLB32-500-HN**
- Moving parts basic mass ····· 1.61
- Additional mass for stroke ····· 0.203/50 st
- Stroke ····· 500 st

1.61 + 0.203 x 500/50 = 3.64 kg

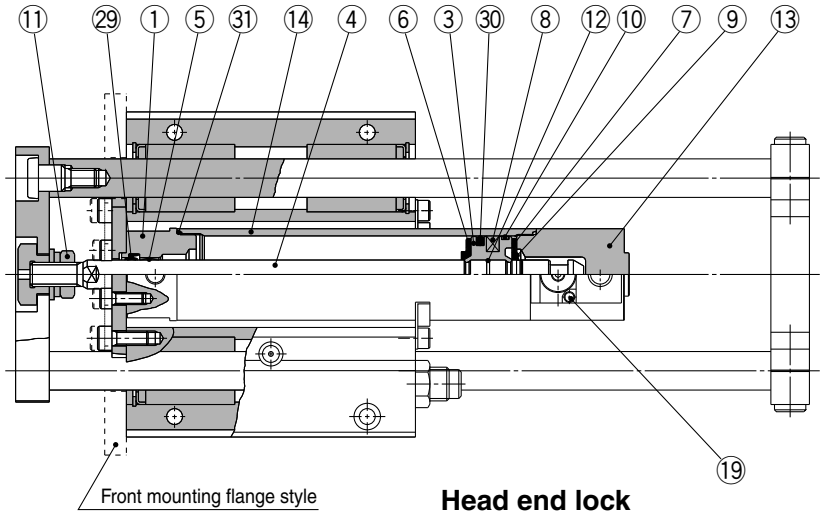
Made to Order Specifications
(For details, refer to page 1847.)

Symbol	Specifications
-XC79	Machining tapped hole, drilled hole and pin hole additionally

Refer to pages 360 to 368 for the allowable end load and deflection, as well as the allowable eccentric load.

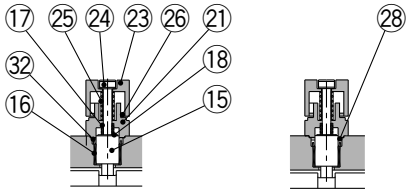
Construction

ø20 to ø100/MGG□□



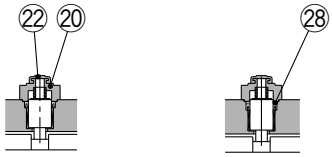
Head end lock

Manual release (Lock type)

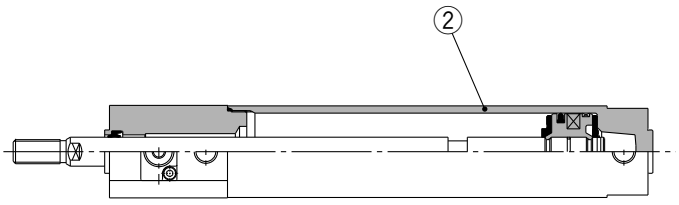


ø20 to ø63 **ø80, ø100**

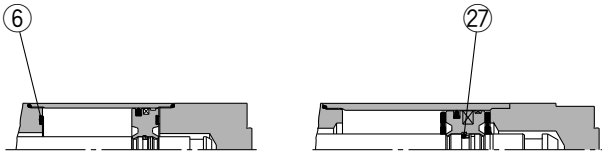
Manual release (Non-lock type)



ø20 to ø63 **ø80, ø100**



Rod end lock (Base cylinder only)



ø80, ø100 **ø40, ø100**

∗ Since the guide unit figure is the same as the standard type, refer to pages 369 to 371.

Component Parts

No.	Description	Material	Note	
1	**Rod cover**	Aluminum alloy	White hard anodized	
2	**Tube cover**	Aluminum alloy	White 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	**Bumper A**	Urethane	Description is “Bumper” for ø63 and larger	
7	**Bumper B**	Urethane	ø40 or larger: Same as Bumber A	
8	**Magnet**	—		
9	**Retaining ring**	Stainless steel	Not required for ø80, ø100	
10	**Wear ring**	Resin		
11	**Rod end nut**	Rolled steel	Nickel plated	ø100 is carbon steel
12	**Piston gasket**	NBR		
13	**Head cover**	Aluminum alloy	White hard anodized	For head side locking type and long stroke
14	**Cylinder tube**	Aluminum alloy	Hard anodized	
15	**Lock piston**	Carbon steel	Hard chrome plated, Heat treated	
16	**Lock bushing**	Bearing alloy		
17	**Lock spring**	Stainless steel		
18	**Bumper**	Urethane		
19	**Hexagon socke thead cap screw**	Chromium molybdenum steel	Black zinc chromated	
20	**Cap A**	Aluminum die-casted	Black painted	For non-lock type
21	**Cap B**	Carbon steel	Oxide film treated	For lock type
22	**Rubber cap**	Synthetic rubber	For non-lock type	
23	**M/O knob**	Zinc die-casted	Black painted	For lock type
24	**M/O bolt**	Chromium molybdenum steel	Black zinc chromated, Red painted	For lock type
25	**M/O spring**	Steel wire	Zinc chromated	For lock type ø20, ø25, ø32: Stainless steel

Component Parts

No.	Description	Material	Note	
26	**Stopper ring**	Carbon steel	Zinc chromated	For lock type
27	**Piston holder**	Urethane	Used for ø40 and larger	
28	**Seal retainer**	Rolled steel	Used for ø80 and ø100	
29	**Rod seal**	NBR		
30	**Piston seal**	NBR		
31	**Tube gasket**	NBR		
32	**Lock piston seal**	NBR		

∗ Since the guide unit parts are the same as the standard type, refer to pages 369 to 371.

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
20	CBG1N20-PS	Set of nos. above ㉙, ㉚, ㉛, ㉜.
25	CBG1N25-PS	
32	CBG1N32-PS	
40	CBG1N40-PS	

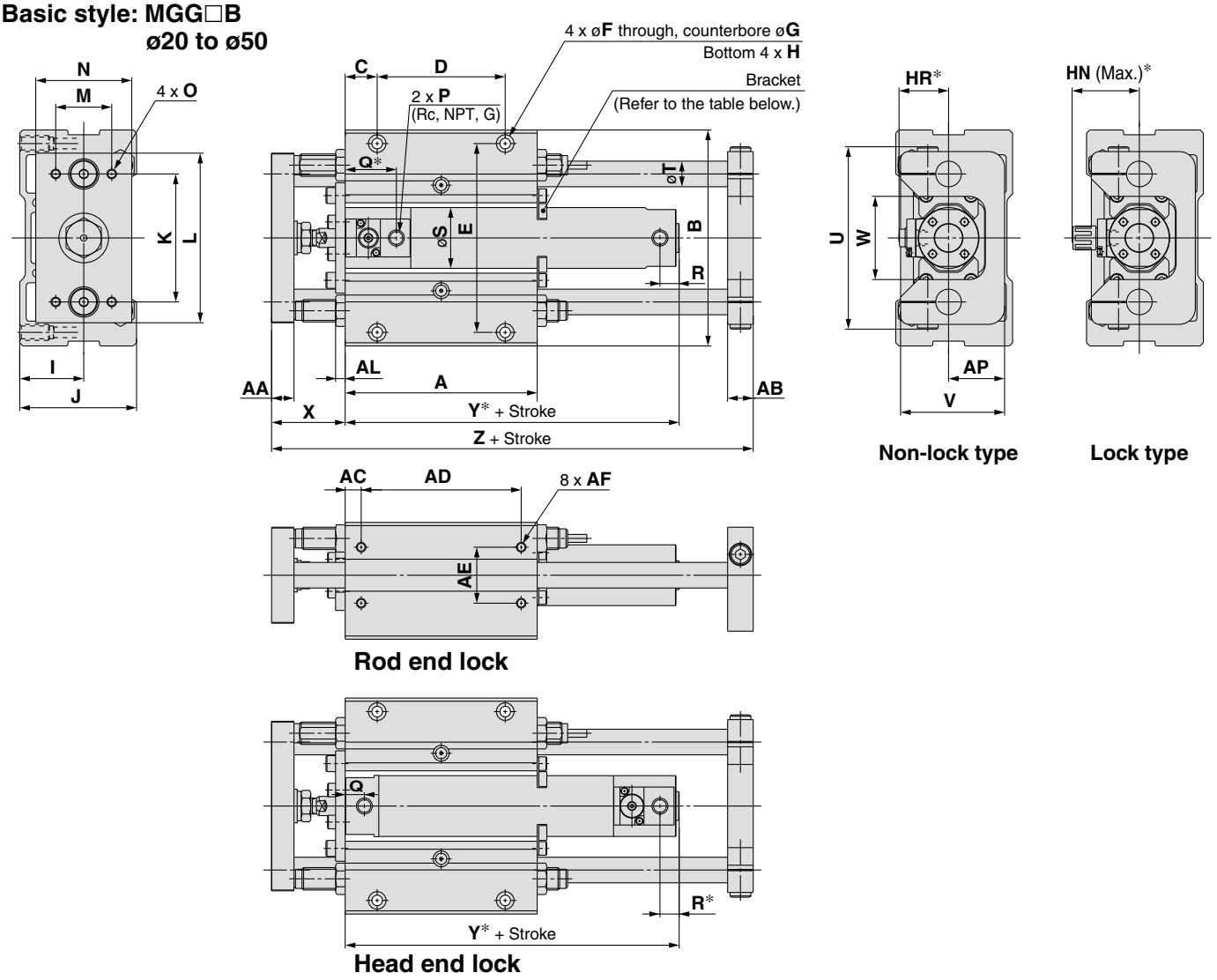
∗ Seal kit includes ㉙ to ㉜. Order the seal kit, based on each bore size.
∗ Seal kit includes a grease pack (10 g).
Order with the following part number when only the grease pack is needed.
Grease pack part no.: GR-S-010 (10 g)

⚠ Caution

Basic cylinders with a bore size of ø50 cannot be disassembled. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassemble is required.)

Dimensions

Basic style: MGG□B
ø20 to ø50



Dimensions not marked with an "∗" are the same as standard. (mm)

Bore size (mm)	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AL	AP	B	C	D	E	F	G	H	I	J	K	L	M	N
20	75, 100, 125, 150, 200	90	11	11	7.5	75	30	M5 x 0.8 depth 10	6	25	108	15	60	92	5.5	9.5 depth 6	M8 x 1.25 depth 14	30	55	60	80	25	45
25	75, 100 125, 150 200, 250 300	100	14	13	7.5	85	30	M6 x 1 depth 12	6	30	130	17.5	65	113	6.6	11 depth 8	M10 x 1.5 depth 18	35	65	70	100	35	54
32		120	14	16	10	100	35	M6 x 1 depth 12	6	35	135	20	80	118	6.6	11 depth 8	M10 x 1.5 depth 18	40	73	80	106	35	60
40		140	17	19	10	120	40	M8 x 1.25 depth 16	9	45	170	20	100	150	9	14 depth 10	M12 x 1.75 depth 21	50	93	95	134	50	75
50		170	23	21	10	150	45	M10 x 1.5 depth 20	9	50	194	25	120	170	11	17 depth 12	M14 x 2 depth 25	55	103	115	152	56	90

Bore size (mm)	O	P*	S	T	U	V	W	X	Z
20	M6 x 1 depth 9	1/8	26	12	82	48	40	39	157
25	M6 x 1 depth 13	1/8	31	13	100	57	46	46	175
32	M6 x 1 depth 13	1/8	38	16	114	65	52	46	201
40	M8 x 1.25 depth 16	1/8	47	20	138	84	62	56	238
50	M10 x 1.5 depth 21	1/4	58	25	164	94	75	67	285

Note) Rc, NPT and G ports can be selected.

Bore size (mm)	For lock type	For non-lock type
	HN*	**HR***
20	37	25.3
25	40	28.3
32	43	31.3
40	52.5	38.3
50	58.5	44.5

Bore size (mm)	Rod end lock			Head end lock		
	Q*	**R**	**Y***	**Q**	**R***	**Y***
20	38.5	12(14)	98(106)	12	11	95
25	39	12(14)	98(106)	12	11	95
32	40	12(14)	101(109)	12	11	97
40	41	12(15)	109(118)	13	11	111
50	47	14(16)	125(137)	14	16	128

Note) ( ): Denotes the dimensions for long stroke.

Long Stroke

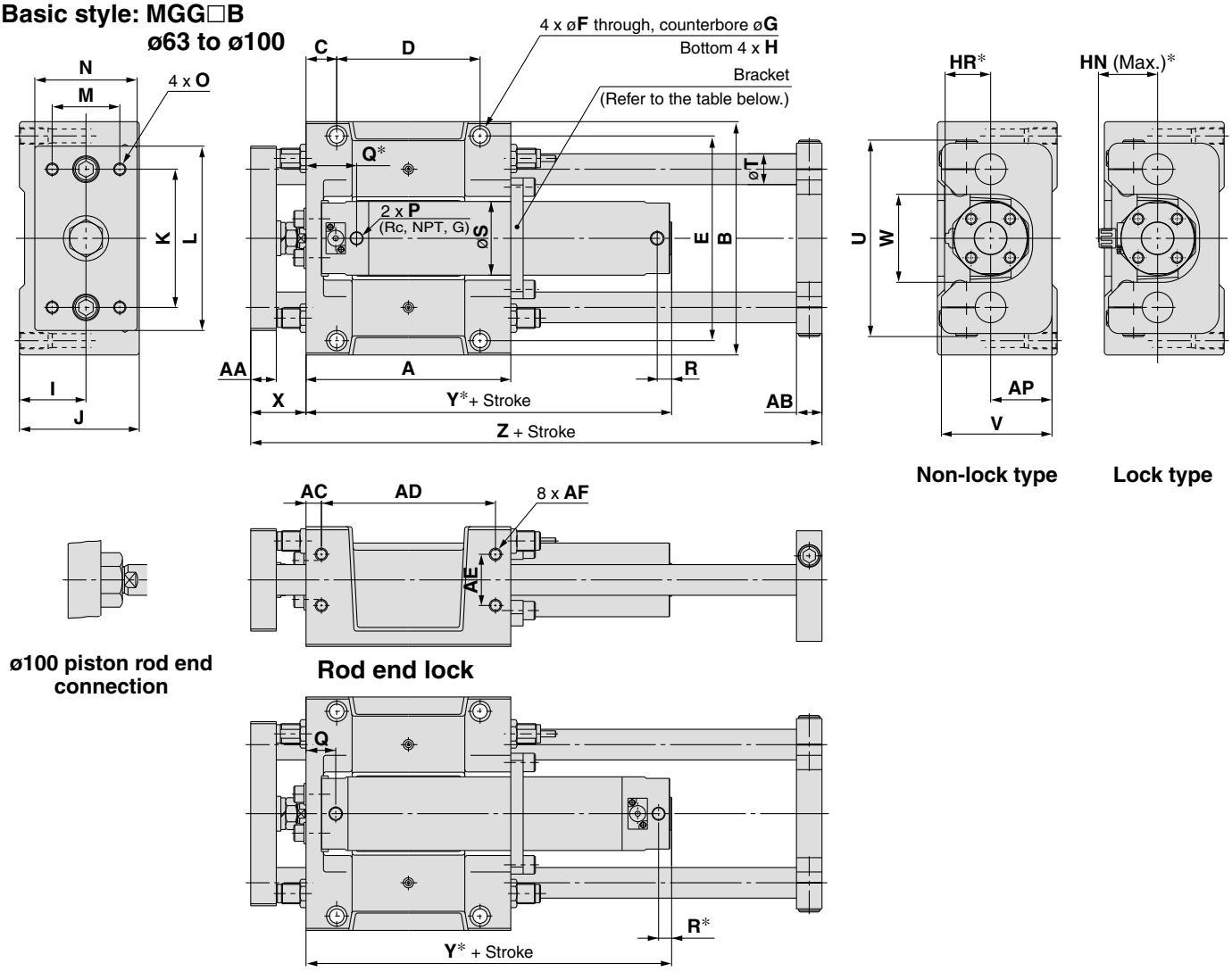
Bore size (mm)	Stroke range (mm)
20	250 to 400
25	350 to 500
32	350 to 600
40	350 to 800
50	350 to 1000

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

Dimensions

Basic style: MGG□B
ø63 to ø100



Dimensions not marked with an "∗" are the same as standard.

(mm)

Bore size (mm)	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AP	B	C	D	E	F	G	H	I	J	K	L	M	N
63	75, 100, 125 150, 200 250, 300	200	25	25	15	170	50	M12 x 1.75 depth 24	60	228	30	140	200	13.5	20 depth 14.5	M16 x 2 depth 28	65	117	135	180	66	100
80		230	30	27	15	200	55	M12 x 1.75 depth 24	70	262	30	170	234	13.5	20 depth 14.5	M16 x 2 depth 28	75	138	160	214	76	115
100		280	32	30	17.5	245	70	M14 x 2 depth 28	80	304	35	210	274	15	23 depth 17	M18 x 2.5 depth 32	85	153	190	245	80	125

Bore size (mm)	O	P*	S	T	U	V	W	X	Z
63	M12 x 1.75 depth 23	1/4	72	30	192	108	86	54	308
80	M12 x 1.75 depth 28	3/8	89	35	224	128	104	66	355
100	M14 x 2 depth 30	1/2	110	40	262	143	128	66	410

Note) Rc, NPT and G ports can be selected.

Bore size (mm)	For lock type	For non-lock type
	HN*	**HR***
63	59	45
80	68	53.5
100	79	64.5

Bore size (mm)	Rod end lock			Head end lock		
	Q*	**R**	**Y***	**Q**	**R***	**Y***
63	63	14(16)	142(154)	29	15	147
80	82	19(23)	175(189)	40	17	182
100	85	19(23)	180(194)	40	23	188

Note) ( ): Denotes the dimensions for long stroke.

Long Stroke

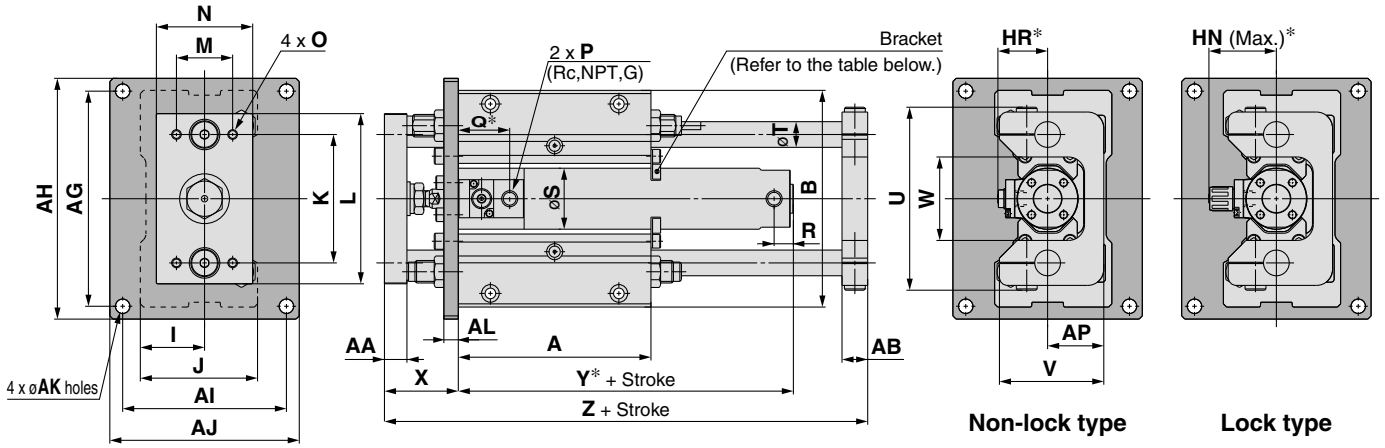
Bore size (mm)	Stroke range (mm)
63	350 to 1100
80	350 to 1200
100	350 to 1300

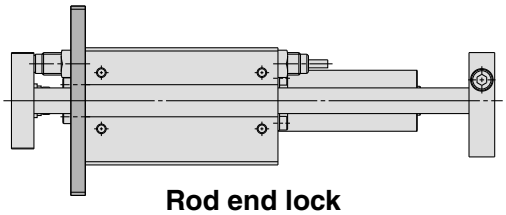
Bracket Mounting Stroke

Bore size (mm)	Bracket mounting stroke
63	300 st or more
80	400 st or more
100	500 st or more

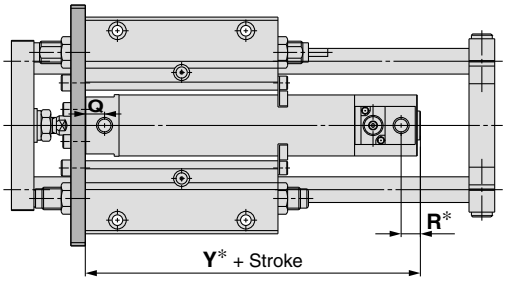
Dimensions

Front mounting flange style: MGG□F
ø20 to ø50





Rod end lock



Head end lock

Dimensions not marked with an "∗" are the same as standard. (mm)

Bore size (mm)	Stroke range (mm)	A	AA	AB	AG	AH	AI	AJ	AK	AL	AP	B	I	J	K	L	M	N	O	P*	S	T	U	V
20	75, 100, 125, 150, 200	90	11	11	112	125	82	95	6.6	9	25	108	30	55	60	80	25	45	M6 x 1 depth 9	1/8	26	12	82	48
25	75, 100, 125, 150, 200, 250, 300	100	14	13	134	150	92	108	9	9	30	130	35	65	70	100	35	54	M6 x 1 depth 13	1/8	31	13	100	57
32		120	14	16	134	150	102	118	9	9	35	135	40	73	80	106	35	60	M6 x 1 depth 13	1/8	38	16	114	65
40		140	17	19	170	186	134	150	9	12	45	170	50	93	95	134	50	75	M8 x 1.25 depth 16	1/8	47	20	138	84
50		170	23	21	190	210	140	160	11	12	50	194	55	103	115	152	56	90	M10 x 1.5 depth 21	1/4	58	25	164	94

Bore size (mm)	W	X	Z
20	40	39	157
25	46	46	175
32	52	46	201
40	62	56	238
50	75	67	285

Bore size (mm)	For lock type	For non-lock type
	HN*	**HR***
20	37	25.3
25	40	28.3
32	43	31.3
40	52.5	38.3
50	58.5	44.5

Bore size (mm)	Rod end lock			Head end lock		
	Q*	**R**	**Y***	**Q**	**R***	**Y***
20	38.5	12(14)	98(106)	12	11	95
25	39	12(14)	98(106)	12	11	95
32	40	12(14)	101(109)	12	11	97
40	41	12(15)	109(118)	13	11	111
50	47	14(16)	125(137)	14	16	128

Note) ( ): Denotes the dimensions for long stroke.

Note) Rc, NPT and G ports can be selected.

Long Stroke

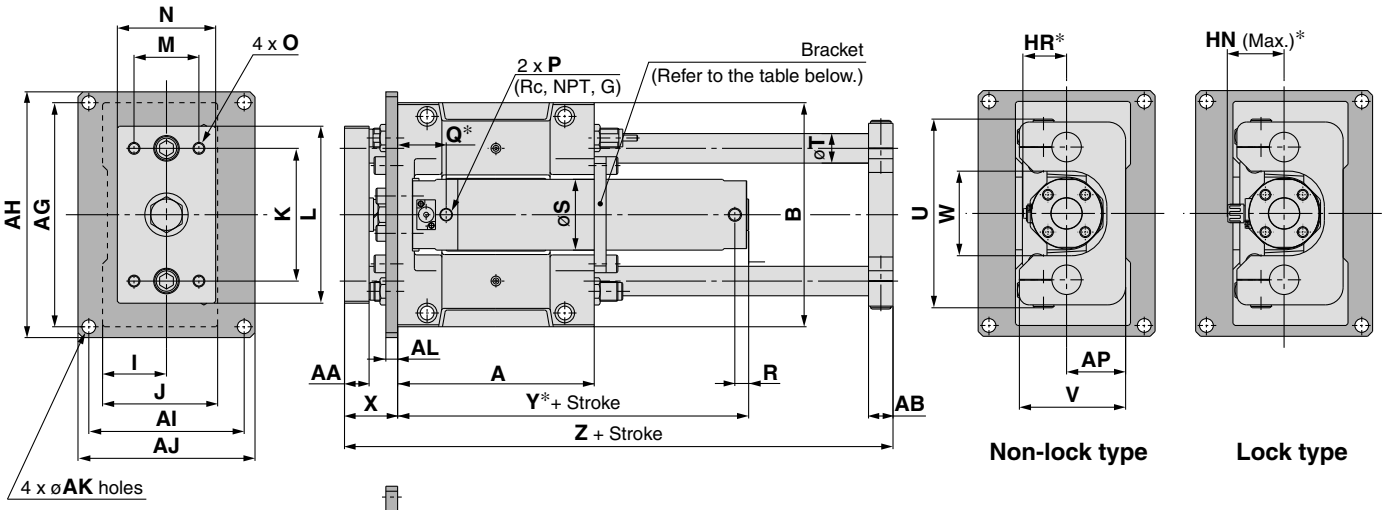
Bore size (mm)	Stroke range (mm)
20	250 to 400
25	350 to 500
32	350 to 600
40	350 to 800
50	350 to 1000

Bracket Mounting Stroke

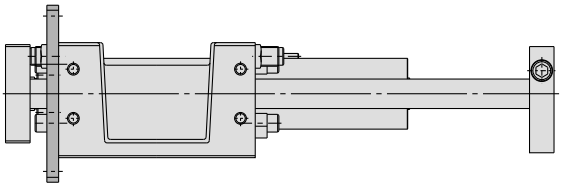
Bore size (mm)	Bracket mounting stroke
20	100 st or more
25	125 st or more
32	150 st or more
40	200 st or more
50	250 st or more

Dimensions

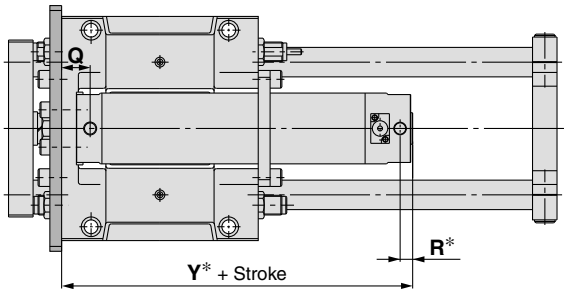
Front mounting flange style: MGG□F
ø63 to ø100



ø100 piston rod end connection



Rod end lock



Head end lock

Dimensions not marked with an "*" are the same as standard.

(mm)

Bore size (mm)	Stroke range (mm)	A	AA	AB	AG	AH	AI	AJ	AK	AL	AP	B	I	J	K	L	M	N	O	P*	S	T	U	V
63	75, 100, 125 150, 200 250, 300	200	25	25	228	250	158	180	14	12	60	228	65	117	135	180	66	100	M12 x 1.75 depth 23	1/4	72	30	192	108
80		230	30	27	262	284	178	200	14	16	70	262	75	138	160	214	76	115	M12 x 1.75 depth 28	3/8	89	35	224	128
100		280	32	30	300	326	200	226	16	16	80	304	85	153	190	245	80	125	M14 x 2 depth 30	1/2	110	40	262	143

Note) Rc, NPT and G ports can be selected.

Bore size (mm)	W	X	Z
63	86	54	308
80	104	66	355
100	128	66	410

Bore size (mm)	For lock type	For non-lock type
	HN*	**HR***
63	59	45
80	68	53.5
100	79	64.5

Bore size (mm)	Rod end lock			Head end lock		
	Q*	**R**	**Y***	**Q**	**R***	**Y***
63	63	14(16)	142(154)	29	15	147
80	82	19(23)	175(189)	40	17	182
100	85	19(23)	180(194)	40	23	188

Note) ( ): Denotes the dimensions for long stroke.

Long Stroke

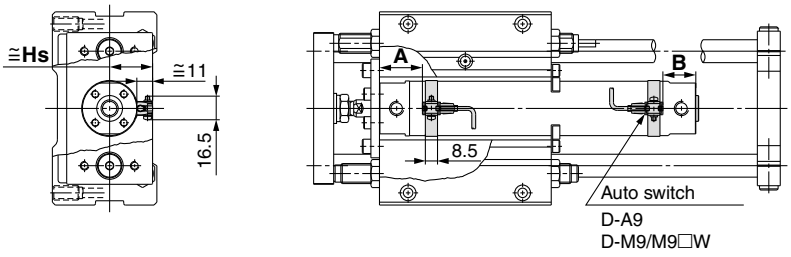
Bore size (mm)	Stroke range (mm)
63	350 to 1100
80	350 to 1200
100	350 to 1300

Bracket Mounting Stroke

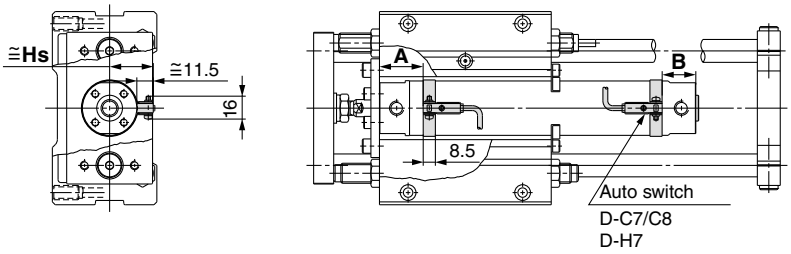
Bore size (mm)	Bracket mounting stroke
63	300 st or more
80	400 st or more
100	500 st or more

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

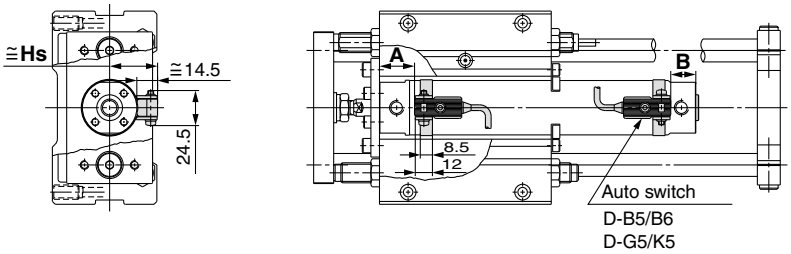
D-A9
D-M9/M9□W



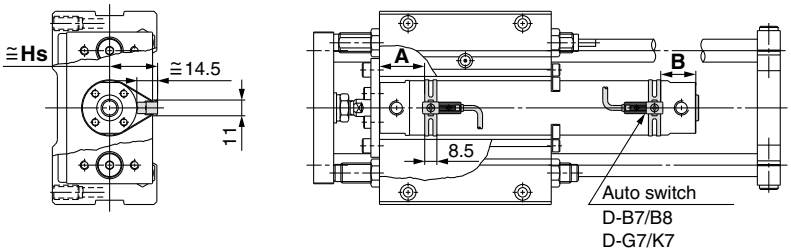
D-C7/C8
D-H7



D-B5/B6
D-G5/K5



D-B7/B8
D-G7/K7



Auto Switch Proper Mounting Position

(mm)

Auto switch model / Bore size (mm)	D-A9□		D-M9□ D-M9□W		D-B7/B8 D-B73C D-B80C D-G7/K7 D-K79C		D-C7□ D-C80 D-C73C D-C80C		D-B5□ D-B64		D-B59W		D-H7□ D-H7C D-H7NF D-H7□W D-H7BAL		D-G59F D-G5□ D-K59 D-G5□W D-K59W D-G5NTL D-G5BAL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	29	20 (28)	33	24 (32)	30.5	21.5 (29.5)	29.5	20.5 (28.5)	23.5	15.5 (22.5)	26.5	17.5 (25.5)	28.5	19.5 (27.5)	25	16 (24)
25	29	20 (28)	33	24 (32)	30.5	21.5 (29.5)	29.5	20.5 (28.5)	23.5	15.5 (22.5)	26.5	17.5 (25.5)	28.5	19.5 (27.5)	25	16 (24)
32	30	21 (29)	34	25 (33)	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	35	23 (32)	39	27 (36)	36.5	24.5 (33.5)	35.5	23.5 (32.5)	29.5	19 (26.5)	32	20.5 (29.5)	34.5	22.5 (31.5)	31	19 (28)
50	42	28 (40)	46	32 (36)	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)
63	42	28 (40)	46	32 (36)	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)
80	—	—	—	—	—	—	—	—	46.5	30.5 (44.5)	49.5	33.5 (47.5)	—	—	48	32 (46)
100	—	—	—	—	—	—	—	—	46.5	30.5 (44.5)	49.5	33.5 (47.5)	—	—	48	32 (46)

Auto Switch Mounting Height

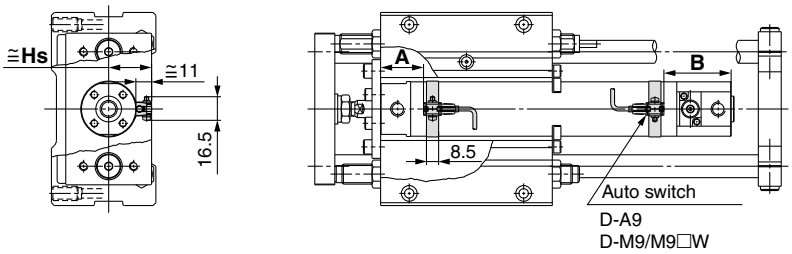
(mm)

Auto switch model / Bore size (mm)	D-A9□ D-M9□ D-M9□W	D-C7□ D-C80 D-H7□ D-H7□W D-H7NF D-H7BAL	D-C73C D-C80C	D-B7/B8 D-B73C D-B80C D-G7/K7 D-K79C D-H7C	D-G5/K5 D-G5□W D-K59W D-G5NTL D-B5/B6 D-B59W D-G5BAL D-G59F
	Hs	Hs	Hs	Hs	Hs
20	24	24.5	27	27.5	27.5
25	26.5	27	29.5	30	30
32	30	30.5	33	33.5	33.5
40	34.5	35	37.5	38	38
50	40	40.5	43	43.5	43.5
63	47	47.5	50	50.5	50.5
80	—	—	—	—	59
100	—	—	—	—	69.5

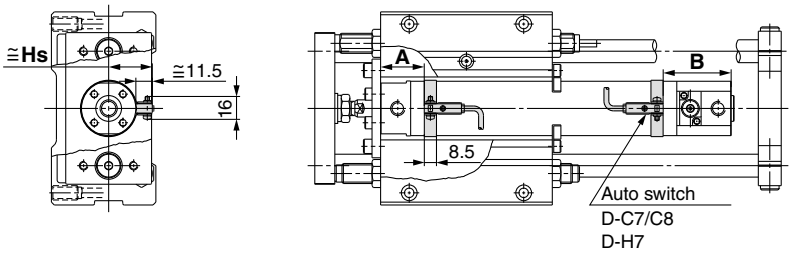
*( ): Set values for long stroke, double rod
Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height/End Lock Type: With Head End Lock

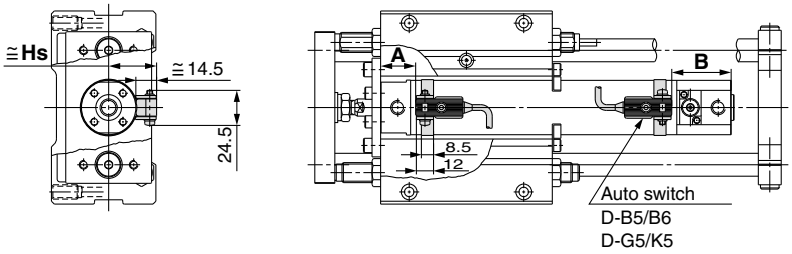
D-A9
D-M9/M9□W



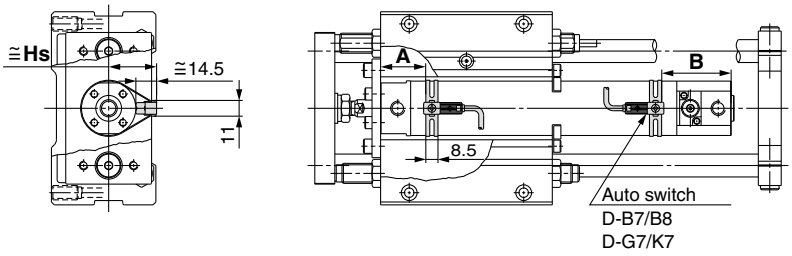
D-C7/C8
D-H7



D-B5/B6
D-G5/K5



D-B7/B8
D-G7/K7



Auto Switch Proper Mounting Position

(mm)

Auto switch model / Bore size (mm)	D-A9□		D-M9□ D-M9□W		D-B7/B8 D-B73C D-B80C D-G7/K7 D-K79C		D-C7□ D-C80 D-C73C D-C80C		D-B5□ D-B64		D-B59W		D-H7□ D-H7C D-H7NF D-H7□W D-H7BAL		D-G59F D-G5□ D-K59 D-G5□W D-K59W D-G5NTL D-G5BAL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	29	44	33	48	30.5	45.5	29.5	44.5	23.5	38.5	26.5	41.5	28.5	43.5	25	40
25	29	44	33	48	30.5	45.5	29.5	44.5	23.5	38.5	26.5	41.5	28.5	43.5	25	40
32	30	45	34	49	31.5	46.5	30.5	45.5	24.5	39.5	27.5	42.5	29.5	44.5	26	41
40	35	54	39	58	36.5	55.5	35.5	54.5	29.5	48.5	32	51.5	34.5	53.5	31	50
50	42	64	46	68	43.5	65.5	42.5	64.5	36.5	58.5	39.5	61.5	41.5	63.5	38	60
63	42	68	46	72	43.5	69.5	42.5	68.5	36.5	62.5	39.5	65.5	41.5	67.5	38	64
80	—	—	—	—	—	—	—	—	46.5	81.5	49.5	84.5	—	—	48	83
100	—	—	—	—	—	—	—	—	46.5	87.5	49.5	90.5	—	—	48	89

Auto Switch Mounting Height

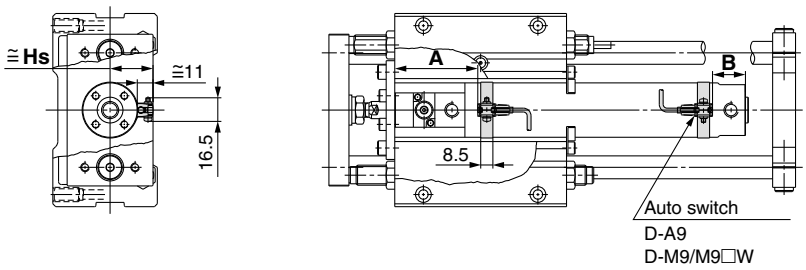
(mm)

Auto switch model / Bore size (mm)	D-A9□ D-M9□ D-M9□W	D-C7□ D-C80 D-H7□ D-H7□W D-H7HF D-H7BAL	D-C73C D-C80C	D-B7/B8 D-B73C D-B80C D-G7/K7 D-K79C D-H7C	D-G5/K5 D-G5□W D-K59W D-G5NTL D-B5/B6 D-B59W D-G5BAL D-G59F
	Hs	Hs	Hs	Hs	Hs
20	24	24.5	27	27.5	27.5
25	26.5	27	29.5	30	30
32	30	30.5	33	33.5	33.5
40	34.5	35	37.5	38	38
50	40	40.5	43	43.5	43.5
63	47	47.5	50	50.5	50.5
80	—	—	—	—	59
100	—	—	—	—	69.5

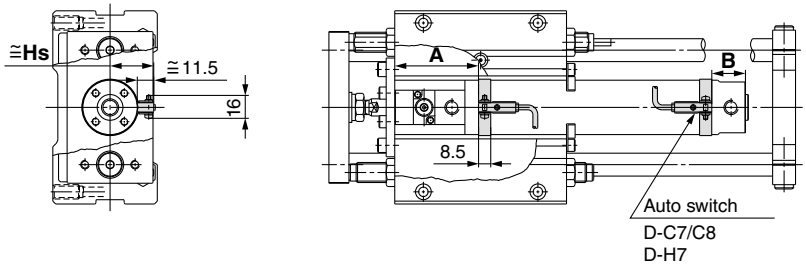
Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height/End Lock Type: With Rod End Lock

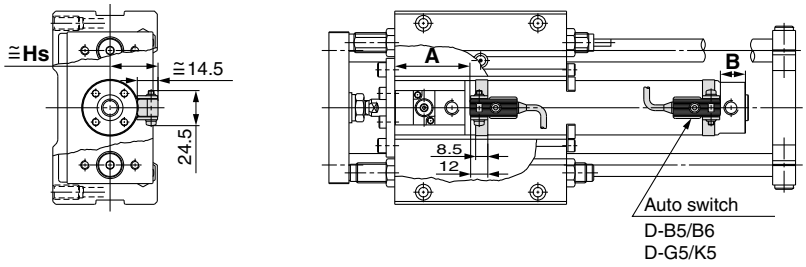
D-A9
D-M9/M9□W



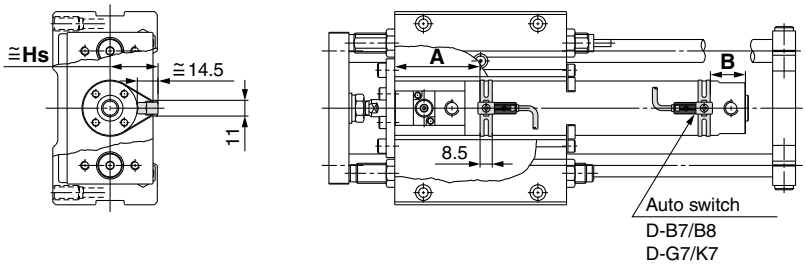
D-C7/C8
D-H7



D-B5/B6
D-G5/K5



D-B7/B8
D-G7/K7



Auto Switch Proper Mounting Position

(mm)

Auto switch model / Bore size (mm)	D-A9□		D-M9□ D-M9□W		D-B7/B8 D-B73C D-B80C D-G7/K7 D-K79C		D-C7□ D-C80 D-C73C D-C80C		D-B5□ D-B64		D-B59W		D-H7□ D-H7C D-H7NF D-H7□W D-H7BAL		D-G59F D-G5□ D-K59 D-G5□W D-K59W D-G5NTL D-G5BAL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	56	20 (28)	60	24 (32)	57.5	21.5 (29.5)	56.5	20.5 (28.5)	50.5	14.5 (22.5)	53.5	17.5 (25.5)	55.5	19.5 (27.5)	52	16 (24)
25	56	20 (28)	60	24 (32)	57.5	21.5 (29.5)	56.5	20.5 (28.5)	50.5	14.5 (22.5)	53.5	17.5 (25.5)	55.5	19.5 (27.5)	52	16 (24)
32	58	21 (29)	62	25 (33)	59.5	22.5 (30.5)	58.5	21.5 (29.5)	52.5	15.5 (23.5)	55.5	18.5 (26.5)	57.5	20.5 (28.5)	54	17 (25)
40	64	23 (32)	68	27 (36)	65.5	24.5 (33.5)	64.5	23.5 (32.5)	58.5	17.5 (26.5)	61	20.5 (29.5)	63.5	22.5 (31.5)	60	19 (28)
50	75	28 (40)	79	32 (36)	76.5	29.5 (41.5)	75.5	28.5 (40.5)	69.5	22.5 (34.5)	72.5	25.5 (37.5)	74.5	27.5 (39.5)	71	24 (36)
63	77	28 (40)	81	32 (36)	78.5	29.5 (41.5)	77.5	28.5 (40.5)	71.5	22.5 (34.5)	74.5	25.5 (37.5)	76.5	27.5 (39.5)	73	24 (36)
80	—	—	—	—	—	—	—	—	90.5	30.5 (44.5)	93.5	33.5 (47.5)	—	—	92	32 (46)
100	—	—	—	—	—	—	—	—	95.5	30.5 (44.5)	98.5	33.5 (47.5)	—	—	97	32 (46)

Auto Switch Mounting Height

(mm)

Auto switch model / Bore size (mm)	D-A9□ D-M9□ D-M9□W	D-C7□ D-C80 D-H7□ D-H7□W D-H7NF D-H7BAL	D-C73C D-C80C	D-B7/B8 D-B73C D-B80C D-G7/K7 D-K79C D-H7C	D-G5/K5 D-G5□W D-K59W D-G5NTL D-B5/B6 D-B59W D-G5BAL D-G59F
	Hs	Hs	Hs	Hs	Hs
20	24	24.5	27	27.5	27.5
25	26.5	27	29.5	30	30
32	30	30.5	33	33.5	33.5
40	34.5	35	37.5	38	38
50	40	40.5	43	43.5	43.5
63	47	47.5	50	50.5	50.5
80	—	—	—	—	59
100	—	—	—	—	69.5

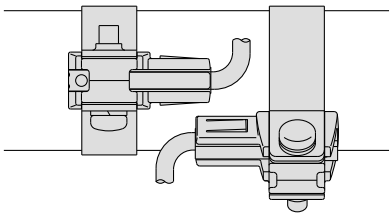
*( ): Set values for long stroke, double rod
Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Minimum Auto Switch Mounting Stroke

n: No. of auto switches (mm)

Auto switch model	No. of auto switches mounted		
	1 pc.	2 pcs.	"n" pcs.
		Same surface	Same surface
D-A9□ **D-M9□** **D-M9□W**	10	45 note)	45 + 45 (n-2)
D-C7□ **D-C80**	10	50	50 + 45 (n-2)
D-H7□ **D-H7□W** **D-H7BAL/H7NF**	10	60	60 + 45 (n-2)
D-C73C **D-C80C** **D-H7C**	10	65	65 + 50 (n-2)
D-B5□/B64 **D-G5□/K59□** **D-B59W**	10	75	75 + 55 (n-2)
D-B7□/B80 **D-G79/K79**	10	45	50 + 45 (n-2)

Note) For cylinders with 2 auto switches D-A93/M9□/M9□W.

Auto switch model	With 2 auto switches Same surface
	 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.
D-A93	Less than 50 strokes
D-M9□ **D-M9□W**	Less than 55 strokes

Operating Range

(mm)

Auto switch model	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-A9□	7	6	8	8	8	9	—	—
D-M9□/M9□W	5	5.5	5	5.5	6.5	7	—	—
D-B7□/B80 **D-B73C/B80C**	8	10	9	10	10	11	—	—
D-C7□/C80 **D-C73C/C80C**	8	10	9	10	10	11	—	—
D-B5□/B64	8	10	9	10	10	11	11	11
D-B59W	13	13	14	14	14	17	16	18
D-G79/K79/K79C	8	10	9	10	10	11	—	—

Auto switch model	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-H7□/H7□W **D-H7BAL/H7NF**	4	4	4.5	5	6	6.5	—	—
D-H7C	7	8.5	9	10	9.5	10.5	—	—
D-G5□/K59 **D-G5□W/K59W** **D-G5NTL/G5BAL**	4	4	4.5	5	6	6.5	6.5	7
D-G59F	5	5	5.5	6	7	7.5	7.5	8
D-G5NBL	35	40	40	45	45	45	45	50

∗ Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion) There may be the case to change substantially depending on an ambient environment.

Auto Switch Mounting Bracket: Part No.

Auto Switch model	Bore size (mm)							
	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
D-A9□ D-M9□ D-M9□W	①BMA2-020 ②BJ3-1 Note)	①BMA2-025 ②BJ3-1 Note)	①BMA2-032 ②BJ3-1 Note)	①BMA2-040 ②BJ3-1 Note)	①BMA2-050 ②BJ3-1 Note)	①BMA2-063 ②BJ3-1 Note)	—	—
D-C7□/C80 D-C73C D-C80C D-H7□/H7C D-H7□W D-H7BAL D-H7NF	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063	—	—
D-B5□/B64 D-B59W D-G5□/K59 D-G5□W/K59W D-G5BAL/G59F D-G5NTL D-G5NBL	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10
D-B7□/B80 D-B73C/B80C D-G79/K79 D-K79C	BM1-01	BM1-02	BM1-32	BM1-04	BM1-05	BM1-06	—	—

Note) Two kinds of auto switch mounting brackets are used as a set.

[Mounting screw set made of stainless steel]

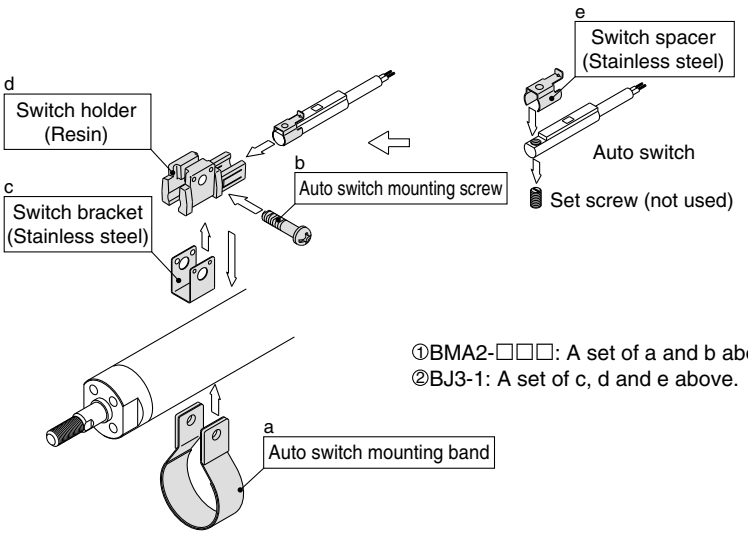
The following set of mounting screws made of stainless steel is available. Use it in accordance with the operating environment. (Please order the auto switch mounting bracket separately, since it is not included.)

BBA3: For D-B5/B6/G5/K5 types

BBA4: For D-C7/C8/H7 types

Note) Refer to pages 1813 and 1814 for the details of BBA3 and BBA4.

D-H7BAL/G5BAL auto switches are set on the cylinder with the stainless steel screws above when shipped. When an auto switch is shipped independently, BBA3 and BBA4 are included.



①BMA2-□□□: A set of a and b above.
②BJ3-1: A set of c, d and e above.

Besides the models listed in How to Order, the following auto switches are applicable.
Refer to pages 1719 to 1827 for detailed specifications.

Auto switch type	Part no.	Electrical entry (Fetching direction)	Features	Applicable bore size
Reed	D-C73, C76, B73, B73C, B76	Grommet (In-line)	—	ø20 to ø63
	D-C80, B80C		Without indicator light	
	D-B53		—	ø20 to ø100
Solid state	D-H7A1, H7A2, H7B, G79, K79, K79C		—	ø20 to ø63
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color)	
	D-G5NTL		With timer	ø20 to ø100

∗ For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.
∗ Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) are also available. Refer to page 1746 for details.
∗ Wide range detection type, solid state auto switches (D-G5NBL type) are also available. Refer to page 1776 for details.

Series MGG
Specific Product Precautions 1

Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Mounting and Adjustment

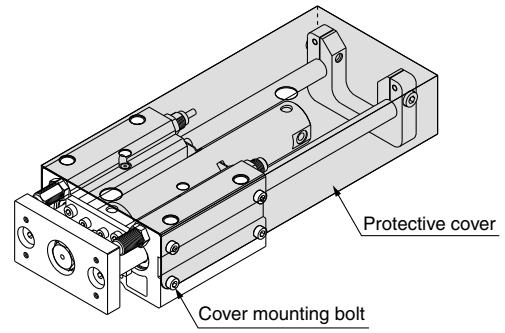
⚠ Warning

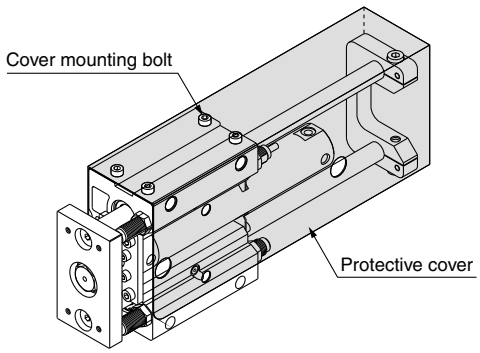
1. Install a protective cover.

Since the rear plate moves back and forth during mounting, handling and operation, be careful that hands, etc., do not get caught 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.

Protective cover installation example





Handling on Shock Absorber

⚠ Caution

Be sure to confirm by referring to the shock absorber (Series RB, pages 1673 to 1695) for details.

⚠ 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 mounting the guide body, use a mounting surface having a high degree of flatness.

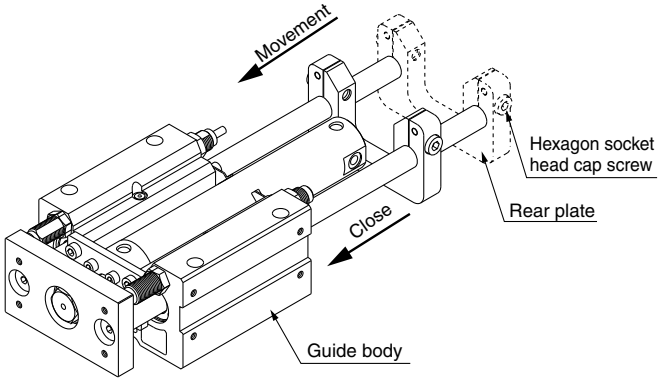
If twisting or bending occurs in the guide rods, this can cause problems such as a large increase in operating resistance and reduced performance due to premature wear of the bearings.

3. Mount in locations where maintenance will be easy.

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

4. Extension stroke adjustment

To adjust the extension stroke by moving the rear plate, loosen the hexagon socket head screws on the left and right sides of the plate, move the rear plate to the desired stroke position in proximity to the guide body, and retighten the hexagon socket head screws on the left and right.



5. Lubrication of bearings

Lubricate from the grease nipple so that there is no contamination from foreign matter.

In addition, use good quality no. 2 lithium soap base grease.

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.

Series MGG
Specific Product Precautions 2

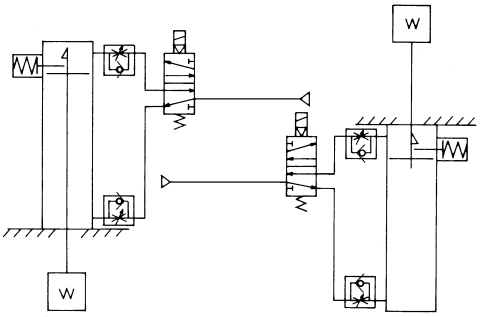
Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

With End Lock

Use the Recommended Pneumatic Circuit

⚠ Caution

● **This is necessary for proper operation and release of the lock.**



Head end lock　　Rod end lock

Operating Precautions

⚠ Caution

1. **Do not use 3 position solenoid valves.**
Avoid use in combination with 3 position solenoid valves (especially closed center metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked. Furthermore, even after being locked, the lock may be released after some time, due to air leaking from the solenoid valve and entering the cylinder.
2. **Back pressure is required when releasing the lock.**
Before starting operation, be sure to control the system so that air is supplied to the side without the lock mechanism as shown in the figure above. There is a possibility that the lock may not be released. (→ Refer to the section (right side) on releasing the lock.)
3. **Release the lock when mounting or adjusting the cylinder.**
If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.
4. **Operate with a load ratio of 50% or less.**
If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit.
5. **Do not operate multiple cylinders in synchronization.**
Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.
6. **Use a speed controller with meter-out control.**
Lock cannot be released occasionally by meter-in control.
7. **Be sure to operate completely to the cylinder stroke end on the side with the lock.**
If the cylinder piston does not reach the end of the stroke, locking and unlocking may not be possible. Therefore, do not adjust the stroke with the adjustment bolts or shock absorbers.
8. **Do not use an air cylinder as an air-hydro cylinder. This will cause leakage of hydraulic fluid.**
9. **Adjust an auto switch's position so that it operates for movement to both the stroke end and backlash (2 mm) positions.**
When a 2-color indication switch is adjusted for green indication at the stroke end, it may change to red for the backlash return, but this is not abnormal.

⚠ Warning

1. **Operate within the specified cylinder speed.**
Otherwise, cylinder and seal damage may occur.

Operating Pressure

⚠ Caution

1. Use air pressure of at least 0.15 MPa for the port on the lock mechanism side. This is necessary to release the lock.

Exhaust Speed

⚠ Caution

1. Locking will occur automatically if the pressure applied to the port on the lock mechanism side falls to 0.05 MPa or less. In cases where the piping on the lock mechanism side is long and thin, or the speed controller is separated at some distance from the cylinder port, the exhaust speed will be reduced. Take note that some time may be required for the lock to engage. In addition, clogging of a silencer mounted on the solenoid valve exhaust port can produce the same effect.

Releasing the Lock

⚠ Warning

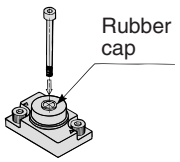
1. Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. (Refer to the recommended pneumatic circuits.) If the lock is released when the port on the other side is in an exhaust state, and with a load applied to the lock unit, the lock unit may be subjected to an excessive force and be damaged. Furthermore, sudden movement of the piston rod is very dangerous.

Manual Release

⚠ Caution

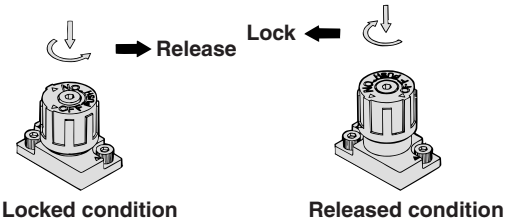
1. **Manual release (Non-lock type)**
Insert the accessory bolt from the top of the rubber cap (it is not necessary to remove the rubber cap), and after screwing it into the lock piston, pull it to release the lock. If you stop pulling the bolt, the lock will return to an operational state.
Thread sizes, pulling forces and strokes are as shown below.

Bore size (mm)	Thread size	Pulling force (N)	Stroke (mm)
20, 25, 32	M2.5 x 0.45 x 25 ℓ or more	4.9	2
40, 50, 63	M3 x 0.5 x 30 ℓ or more	10	3
80, 100	M5 x 0.8 x 40 ℓ or more	24.5	3



Remove the bolt for normal operation.
It can cause lock malfunction or faulty release.

2. **Manual release, Lock type**
While pushing the M/O knob, turn it 90° counterclockwise. The lock is released (and remains in a released state) by aligning the ▲ mark on the cap with the ▼ OFF mark on the M/O knob.
When locking is desired, turn M/O button clockwise 90° while pushing fully, correspond ▲ on cap and ▼ ON mark on M/O button. The correct position is confirmed by a click sound "click". If not confirmed, locking is not done.



Locked condition　　Released condition