

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

Made to Order
Refer to page 358 for details.

Number of auto switches

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

Auto switch

Nil	Without auto switch (Built-in magnet)
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* For the applicable auto switch model, refer to the table below.

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 357.

Applicable Auto Switch

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 (mm)				0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							ø20, ø25	ø32	ø40 to ø63	ø80, ø100										
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N		—		●	●	●	○	—	○	IC circuit	Relay, PLC		
				—			G59		●	—	●	○	—	○						
		3-wire (PNP)		M9P			—		●	●	●	○	—	○						
		—		G5P			●	—	●	○	—	○								
	Connector	2-wire		12 V	M9B		—		●	●	●	○	—	○	—					
		—			K59		●	—	●	○	—	○								
	Diagnostic indication (2-color indication)	Grommet	3-wire (NPN)	24 V	H7C		—		●	—	●	●	●	—	—	IC circuit				
			5 V, 12 V	M9NW			—		●	—	●	●	○	—	○					
				—			G59W		●	—	●	○	—	○						
				M9PW			—		●	●	●	○	—	○						
				—			G5PW		●	—	●	○	—	○						
			12 V	M9BW			—		●	●	●	○	—	○	—					
—				K59W			●	—	●	○	—	○								
Water resistant (2-color indication)			H7BA		G5BA		—	—	●	○	—	○								
With diagnostic output (2-color indication)	H7NF		G59F		●		—	●	○	—	○	IC circuit								
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—		5 V	A96		—		●	—	●	—	—	—	IC circuit	Relay, PLC	
				2-wire	24 V		12 V	100 V		A93		—		●	—	●	—	—		—
								100 V or less		A90		—		●	—	●	—	—		—
								100 V, 200 V		(B54)		B54		●	—	●	●	—		—
								200 V or less		(B64)		B64		●	—	●	—	—		—
								—		C73C		—		●	—	●	●	●		—
	Connector	No	24 V or less	C80C			—		●	—	●	●	●	—	—	IC circuit				
			—	—		(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.

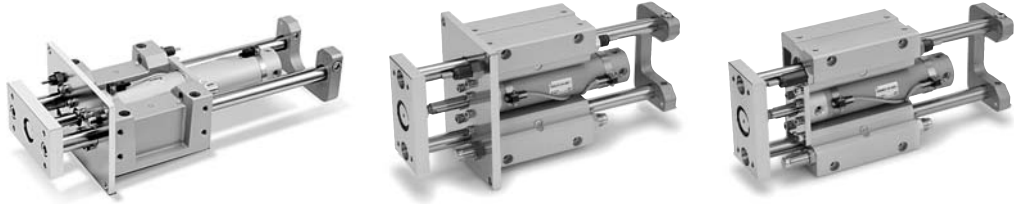
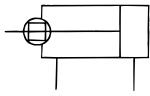
* Since there are other applicable auto switches than listed, refer to page 388 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
* D-A9□/M9□/M9□W auto switches are shipped together (not assembled).
(Only switch mounting brackets are assembled at the 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
	Retracted	6.86	15.98	20.5

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

MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

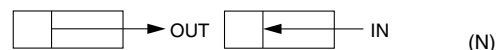
MGT

D-□

-X□

Individual
-X□

Theoretical Output



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 (mm²)

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 long stroke | 0.02 |
| • Additional mass for stroke | 0.25/50 st | • Additional mass with bracket | 0.019 |
| • Stroke | 500 st | | |

$$3.84 + 0.25 \times 500/50 + 0.02 + 0.019 = 6.379 \text{ kg}$$

Mass of Moving Parts

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 mass1.61
- Additional mass for stroke0.203/50 st
- Stroke500 st

$$1.61 + 0.203 \times 500/50 = 3.64 \text{ kg}$$



Made to Order Specifications

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