

Compact Guide Cylinder (Basic type) **New**

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Up to
17%
Weight
reduced!

Weight reduced by up to 17% with
a shorter guide rod and thinner plate



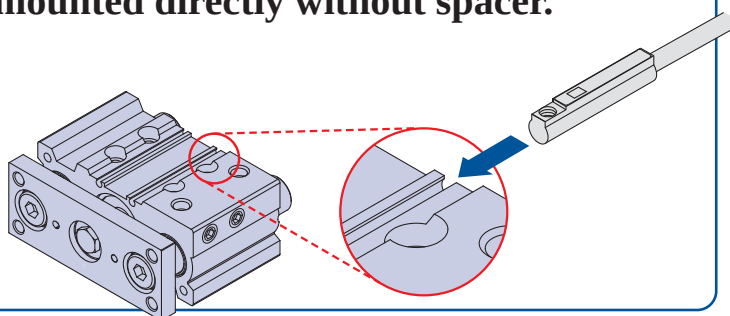
Guide rod shortened
for MGPM40-25 stroke

Max. **22mm**

Space required between the
bottom of the cylinder body and
your equipment is reduced.

Space saving

Round type auto switches can be
mounted directly without spacer.



3 types of bearing can be selected.

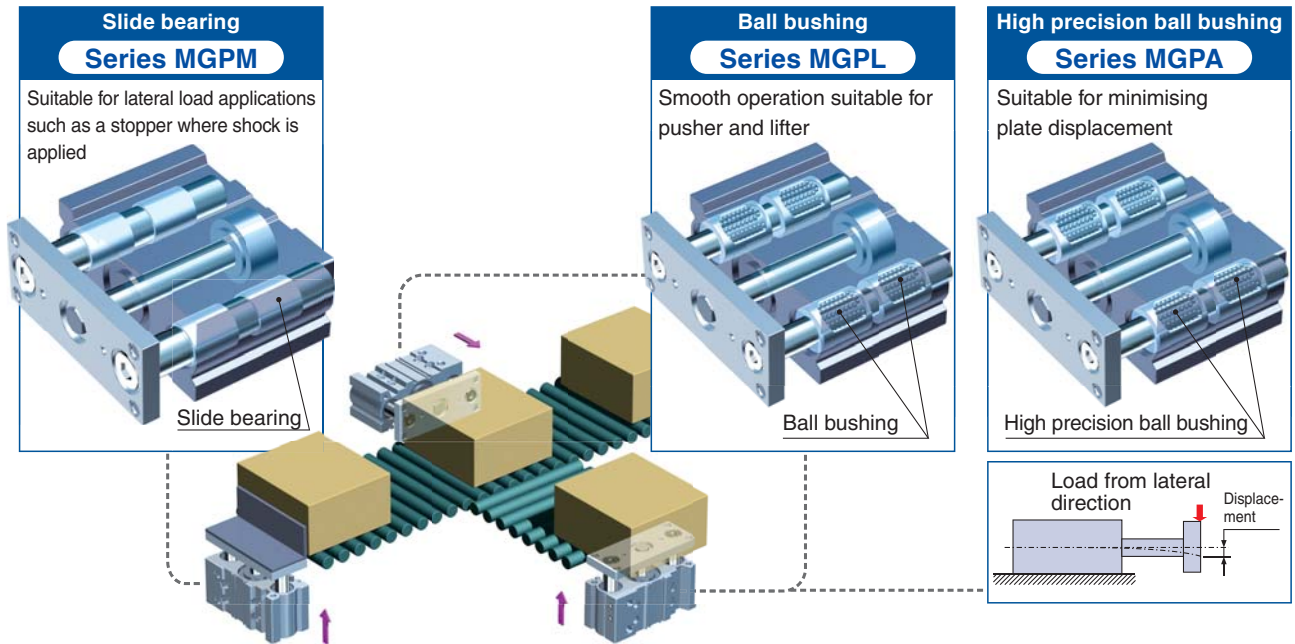
- Slide bearing
Series MGPM
- Ball bushing
Series MGPL
- High precision ball bushing
Series MGPA

Series MGP



CAT.EUS20-219AA-UK

3 types of bearing can be selected.



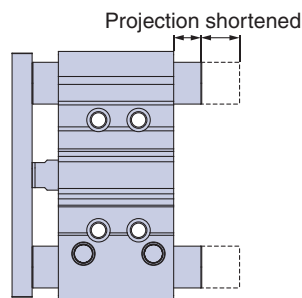
Weight reduced

Bore size	Reduction rate [%]	Weight [kg]
ø12	11	0.25
ø16	3	0.37
ø20	12	0.59
ø25	12	0.84
ø32	17	1.41
ø40	16	1.64
ø50	17	2.79
ø63	17	3.48
ø80	17	5.41
ø100	13	9.12

* Compared with slide bearing type, ø12 to ø25-20 stroke

* Compared with slide bearing type, ø32 to ø100-25 stroke

Guide rod shortened



Bore size	Guide rod [mm]	
	Shortened by	New dimension
ø32	22	15.5
ø40	22	9
ø50	18	16.5
ø63	18	11.5
ø80	10.5	8
ø100	10.5	10.5

* Compared with slide bearing type, 25 stroke (ø32 to ø100)
(No projection for ø12 to ø25-25 stroke)

Performance, strength (rigidity), and mounting dimensions are equivalent to the conventional MGP series.

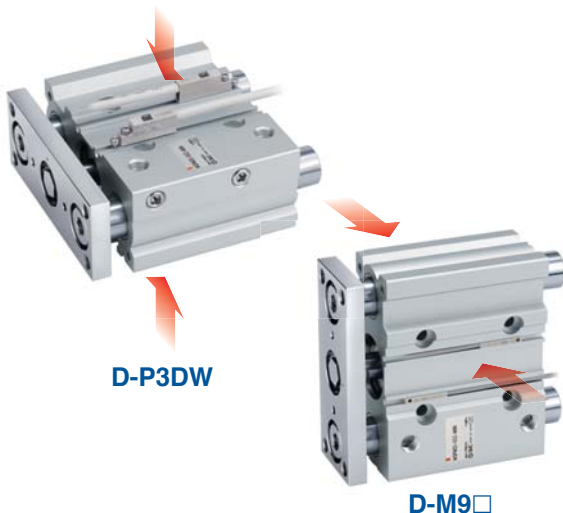
Small auto switches or magnetic field resistant auto switches can be mounted on 2 surfaces.

D-M9□

D-A9□

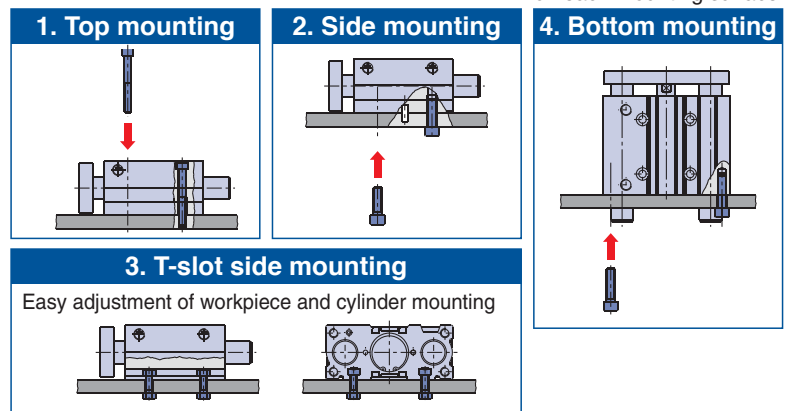
D-P3DW

* The D-Y7 and D-Z7 auto switches are not mountable.

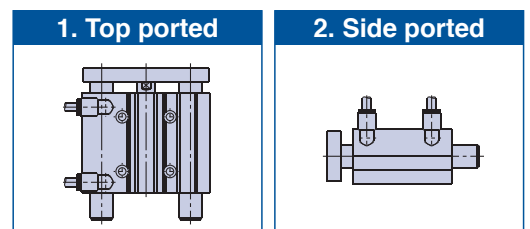


4 types of mounting are possible.

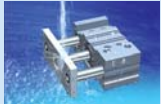
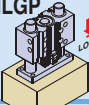
Easy positioning
Knock pin holes provided on each mounting surface



Piping is possible from 2 directions.



Compact Guide Cylinders, Series Variations

Series	Bearing	Bore size												Page
		6	10	12	16	20	25	32	40	50	63	80	100	
Basic type/MGP 	Slide bearing													Page 3 of this catalogue
With air cushion/MGP-A 														
With end lock/MGP-H/R 														
Clean series/12/13-MGP 	Ball bushing												 Digital Catalogue www.smc.eu	
Water-resistant/MGP R/V 													 Digital Catalogue www.smc.eu	
Heavy duty guide rod/MGPS 	Slide bearing												 Digital Catalogue www.smc.eu	
Miniature Guide Rod Cylinder/MGJ 													 Digital Catalogue www.smc.eu	
Compact Guide Cylinder with Lock/MLGP 	Slide bearing												 Digital Catalogue www.smc.eu	
	Ball bushing													
Hygienic Design Cylinder/HYG 	Slide bearing												 Digital Catalogue www.smc.eu	

Series MGP (Basic type), Stroke Variations

Bearing type	Bore size [mm]	Stroke [mm]															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
MGPM Slide bearing	12	●	●		●	●	●	●	●	●	●	●	●	●			
	16	●	●		●	●	●	●	●	●	●	●	●	●			
	20		●		●	●	●	●	●	●	●	●	●	●	●	●	●
MGPL Ball bushing	25		●		●	●	●	●	●	●	●	●	●	●	●	●	●
	32			●	●	●	●	●	●	●	●	●	●	●	●	●	●
	40			●	●	●	●	●	●	●	●	●	●	●	●	●	●
MGPA High precision ball bushing	50			●	●	●	●	●	●	●	●	●	●	●	●	●	●
	63			●	●	●	●	●	●	●	●	●	●	●	●	●	●
	80			●	●	●	●	●	●	●	●	●	●	●	●	●	●
	100			●	●	●	●	●	●	●	●	●	●	●	●	●	●

Combination of Standard Products and Made to Order Specifications

Series *MGP*

● : Standard
◎ : Made to Order specifications
○ : Special product (Contact SMC for details.)
— : Not available

Symbol	Specification	Applicable bore size	Series	Basic type		
			Bearing	Slide bearing	Ball bushing	High precision ball bushing
			Type	MGPM	MGPL	MGPA
				ø12 to ø100		
20-	Copper and Fluorine-free ^{Note 1)}	ø12 to ø100		●	● ^{Note 3)}	● ^{Note 3)}
-XA□	Change of guide rod end shape			◎	◎	◎
-XB6	Heat resistant cylinder (-10 to 150°C) ^{Note 2)}			◎	—	—
-XB10	Intermediate stroke (Using exclusive body)			◎	◎	◎
-XB13	Low speed cylinder (5 to 50 mm/s)			◎	◎	○
-XC22	Fluororubber seals ^{Note 2)}			◎	—	—
-XC79	Machining tapped hole, drilled hole and pin hole additionally.			◎	◎	◎
-XC82	Bottom mounting style			◎	—	—
-X144	Symmetrical port position			◎	◎	◎
-X867	Lateral piping type (Change of plug position)			◎	◎	◎

Note 1) Refer to SMC website for details.

Note 2) Without cushion.

Note 3) Copper and fluorine-free are available as standard products. MGPL-Z and MGPA-Z are already copper and fluorine-free, so it's not possible to order 20-MGPL-Z or 20-MGPA-Z.



Series MGP

Specific Product Precautions 1

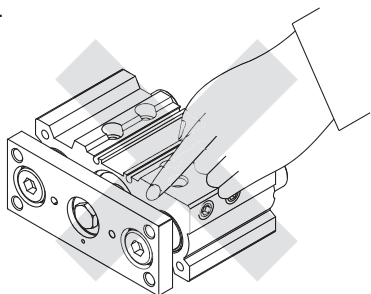
Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) and the Operation Manual for Actuator Precautions and Auto Switch Precautions. Please download it via our website.
<http://www.smcworld.com>

Mounting

⚠ Warning

1. Never place your hands or fingers between the plate and the body.

Be very careful to prevent your hands or fingers from getting caught in the gap between the cylinder body and the plate when air is applied.



⚠ Caution

1. Use cylinders within the piston speed range.

An orifice is set for this cylinder, but the piston speed may exceed the operating range if the speed controller is not used. If the cylinder is used outside the operating speed range, it may cause damage to the cylinder and shorten the service life. Adjust the speed by installing the speed controller and use the cylinder within the limited range.

2. Pay attention to the operating speed when the product is mounted vertically.

When using the product in the vertical direction, if the load factor is large, the operating speed can be faster than the control speed of the speed controller (i.e. quick extension). In such cases, it is recommended to use a dual speed controller.

3. Do not scratch or gouge the sliding portion of the piston rod and the guide rod.

Damaged seals, etc. will result in leakage or malfunction.

4. Do not dent or scratch the mounting surface of a body and a plate.

The flatness of the mounting surface may not be maintained, which would cause an increase in sliding resistance.

5. Make sure that the cylinder mounting surface has a flatness of 0.05 mm or less.

Insufficient flatness of a workpiece or bracket mounted on the mounting surface or plate of the cylinder and other parts can cause defective operation and an increase in the sliding resistance.

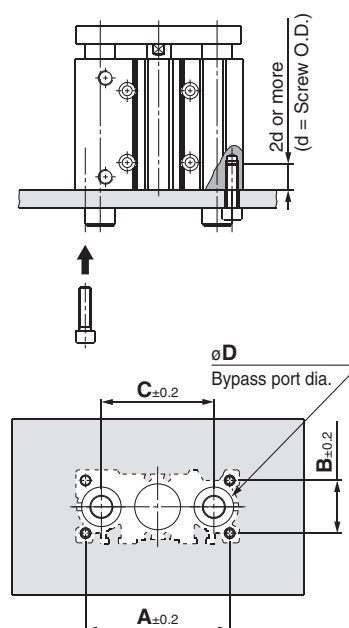
Mounting

⚠ Caution

6. Bottom of cylinder

The guide rods protrude from the bottom of the cylinder at the end of the retracting stroke, and therefore, in cases where the cylinder is to be bottom mounted, it is necessary to provide bypass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head cap screws which are used for mounting.

Moreover, in applications where impact occurs from a stopper, etc., the mounting screws should be inserted to a depth of 2d or more.



Bore size [mm]	A [mm]	B [mm]	C [mm]	D [mm]		Hexagon socket head cap screw
				MGPM	MGPL/A	
12	50	18	41	10	8	M4 x 0.7
16	56	22	46	12	10	M5 x 0.8
20	72	24	54	14	12	M5 x 0.8
25	82	30	64	18	15	M6 x 1.0
32	98	34	78	22	18	M8 x 1.25
40	106	40	86	22	18	M8 x 1.25
50	130	46	110	27	22	M10 x 1.5
63	142	58	124	27	22	M10 x 1.5
80	180	54	156	33	28	M12 x 1.75
100	210	62	188	39	33	M14 x 2.0



Series MGP

Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) and the Operation Manual for Actuator Precautions and Auto Switch Precautions. Please download it via our website.
<http://www.smcworld.com>

Piping

Caution

Depending on the operating conditions, piping port positions can be changed by using a plug.

1. M5

After tightening by hand, tighten additional 1/6 to 1/4 rotation with a tightening tool.

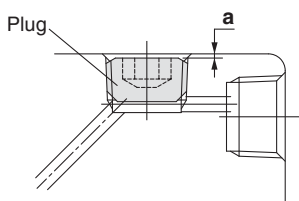
2. Tapered thread for Rc port (MGP□□TN)

Use the correct tightening torques listed below.

Before tightening the plug, wrap pipe tape around it. Also, with regard to the sunk dimension of a plug (dimension "a" in the drawing), use the stipulated figures as a guide and confirm the air leakage before operation.

* If tightening plugs on the top mounting port with more than the proper tightening torque, plugs will be screwed much deeply and air passage will be squeezed. Consequently, the cylinder speed will be restricted.

Connection thread (plug) size	Proper tightening torque [N·m]	a dimension
1/8	7 to 9	0.5 mm or less
1/4	12 to 14	1 mm or less
3/8	22 to 24	1 mm or less



3. Parallel pipe thread for G port (MGP□□TF)

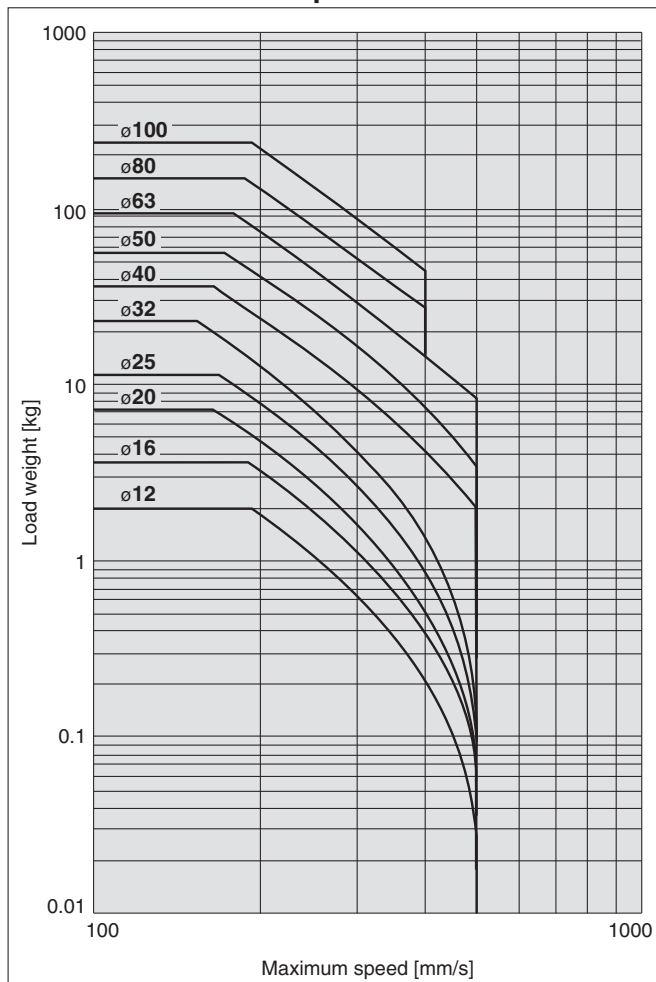
Screw in the plug to the surface of the body (dimension "a" in the drawing) by checking visually instead of using the tightening torque shown in the table.

Allowable Kinetic Energy

Caution

Load weight and a maximum speed must be within the ranges shown in the graphs below.

MGP with rubber bumper



Compact Guide Cylinder

Series *MGP*

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Compact Guide Cylinder **MGP** **M** **25** **—** **30** **Z** **—** **M9BW** **—** **—**

• **Compact Guide Cylinder**

• **Bearing type**

M	Slide bearing
L	Ball bushing
A	High precision ball bushing

• **Bore size**

12	12 mm	40	40 mm
16	16 mm	50	50 mm
20	20 mm	63	63 mm
25	25 mm	80	80 mm
32	32 mm	100	100 mm

• **Port thread type**

—	M5 x 0.8
	Rc
TN	NPT
TF	G

* For bore sizes with ø12 and ø16, only M5 x 0.8 is available.

• **Made to Order specification**
For details, refer to page 4.

• **Number of auto switches**

—	2 pcs.
S	1 pc.
n	n pcs.

• **Auto switch**

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

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

• **Cylinder stroke [mm]**
Refer to "Standard Strokes" on page 4.

Applicable Auto Switches/Refer to Auto Switch Guide for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]				Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (—)	1 (M)	3 (L)	5 (Z)					
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
	Diagnostic indication (2-colour display)			3-wire (PNP)		12 V		M9PV	M9P	●	●	●	○	○	—		
				2-wire		5 V, 12 V		M9BV	M9B	●	●	●	○	○	—		
				3-wire (NPN)		12 V		M9NWV	M9NW	●	●	●	○	○	IC circuit		
	Water-resistant (2-colour display)			3-wire (PNP)	5 V, 12 V	M9PWV		M9PW	●	●	●	○	○	—			
				2-wire	12 V	M9BWV		M9BW	●	●	●	○	○	—			
				3-wire (NPN)	5 V, 12 V	M9NAV***		M9NA***	○	○	●	○	○	IC circuit			
	Magnetic field resistant (2-colour display)			3-wire (PNP)	12 V	M9PAV***		M9PA***	○	○	●	○	○	—			
				2-wire	—	M9BAV***		M9BA***	○	○	●	○	○	—			
				2-wire (Non-polar)	—	—		P3DW**	●	—	●	●	○	—			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—	
				2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	●	—	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	—	IC circuit	

***Water-resistant type auto switch can be mounted to the models with the above mentioned part numbers, but this does not guarantee the water resistance of the cylinder. A water-resistant type cylinder is recommended for use in an environment which requires water resistance. However, please contact SMC for water-resistant products of ø12 and ø16.

* Lead wire length symbols: 0.5 m..... — (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWX

* Solid state auto switches marked with "○" are produced upon receipt of order.
** Bore sizes ø32 to ø100 are available for the D-P3DW.

* Since there are other applicable auto switches than listed, refer to page 22 for details.
* For details about auto switches with pre-wired connector, refer to Auto Switch Guide.
For D-P3DW, refer to the D-P3DW catalogue.
* Auto switches are shipped together, (but not assembled).

Specifications

Bore size	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Action	Double acting									
Fluid	Air									
Proof pressure	1.5 MPa									
Maximum operating pressure	1.0 MPa									
Minimum operating pressure	0.12 MPa		0.1 MPa							
Ambient and fluid temperature	-10 to 60°C (No freezing)									
Piston speed ^{Note)}	50 to 500 mm/s								50 to 400 mm/s	
Cushion	Rubber bumper on both ends									
Lubrication	Not required (Non-lube)									
Stroke length tolerance	^{+1.5} mm									

Note) Maximum speed with no load.

Make a model selection, considering a load according to the graph on pages 8 to 14.

Standard Strokes

Bore size [mm]	Standard stroke [mm]
12, 16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250
20, 25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400
32 to 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Strokes

Description	Spacer installation type Spacers are installed in the standard stroke cylinder. • ø12 to 32: Available by the 1 mm stroke interval. • ø40 to 100: Available by the 5 mm stroke interval.		Exclusive body (-XB10) Dealing with the stroke by making an exclusive body. • All bore sizes are available by the 1 mm interval.	
Part no.	Refer to "How to Order" for the standard model numbers.		Suffix "-XB10" to the end of standard part number.	
Applicable stroke [mm]	ø12, ø16	1 to 249	ø12, ø16	11 to 249
	ø20, ø25, ø32	1 to 399	ø20, ø25	21 to 399
	ø40 to ø100	5 to 395	ø32 to ø100	26 to 399
Example	Part no.: MGPM20-39Z A spacer 1 mm in width is installed in a MGPM20-40. C dimension is 77 mm.		Part no.: MGPM20-39Z-XB10 Special body manufactured for 39 stroke. C dimension is 76 mm.	

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	
12	6	OUT	113	23	34	45	57	68	79	90	102	113	
		IN	85	17	25	34	42	51	59	68	76	85	
16	8	OUT	201	40	60	80	101	121	141	161	181	201	
		IN	151	30	45	60	75	90	106	121	136	151	
20	10	OUT	314	63	94	126	157	188	220	251	283	314	
		IN	236	47	71	94	118	141	165	188	212	236	
25	10	OUT	491	98	147	196	245	295	344	393	442	491	
		IN	412	82	124	165	206	247	289	330	371	412	
32	14	OUT	804	161	241	322	402	483	563	643	724	804	
		IN	650	130	195	260	325	390	455	520	585	650	
40	14	OUT	1257	251	377	503	628	754	880	1005	1131	1257	
		IN	1103	221	331	441	551	662	772	882	992	1103	
50	18	OUT	1963	393	589	785	982	1178	1374	1571	1767	1963	
		IN	1709	342	513	684	855	1025	1196	1367	1538	1709	
63	18	OUT	3117	623	935	1247	1559	1870	2182	2494	2806	3117	
		IN	2863	573	859	1145	1431	1718	2004	2290	2576	2863	
80	22	OUT	5027	1005	1508	2011	2513	3016	3519	4021	4524	5027	
		IN	4646	929	1394	1859	2323	2788	3252	3717	4182	4646	
100	26	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854	
		IN	7323	1465	2197	2929	3662	4394	5126	5858	6591	7323	

Note) Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

Series MGP

Weight

Slide Bearing: MGPM12 to 100

[kg]

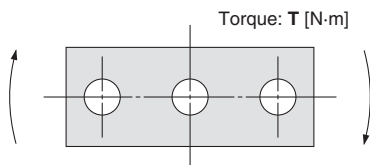
Bore size [mm]	Standard stroke [mm]															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	0.22	0.25	—	0.29	0.33	0.36	0.46	0.55	0.66	0.75	0.84	0.93	1.11	—	—	—
16	0.32	0.37	—	0.42	0.46	0.51	0.66	0.78	0.94	1.06	1.18	1.31	1.55	—	—	—
20	—	0.59	—	0.67	0.74	0.82	1.06	1.24	1.43	1.61	1.80	1.99	2.42	2.79	3.16	3.53
25	—	0.84	—	0.94	1.04	1.14	1.50	1.75	2.00	2.25	2.50	2.75	3.35	3.85	4.34	4.84
32	—	—	1.41	—	—	1.77	2.22	2.57	2.93	3.29	3.65	4.00	4.90	5.61	6.33	7.04
40	—	—	1.64	—	—	2.04	2.52	2.92	3.32	3.71	4.11	4.50	5.47	6.26	7.06	7.85
50	—	—	2.79	—	—	3.38	4.13	4.71	5.30	5.89	6.47	7.06	8.55	9.73	10.9	12.1
63	—	—	3.48	—	—	4.15	4.99	5.67	6.34	7.02	7.69	8.37	10.0	11.4	12.7	14.1
80	—	—	5.41	—	—	6.26	7.41	8.26	9.10	9.95	10.8	11.6	13.9	15.6	17.3	19.0
100	—	—	9.12	—	—	10.3	12.0	13.2	14.4	15.6	16.9	18.1	21.2	23.6	26.1	28.5

Ball Bushing: MGPL12 to 100, High Precision Ball Bushing: MGPA12 to 100

[kg]

Bore size [mm]	Standard stroke [mm]															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	0.21	0.24	—	0.27	0.32	0.35	0.43	0.50	0.59	0.67	0.75	0.83	0.99	—	—	—
16	0.31	0.35	—	0.40	0.47	0.51	0.62	0.72	0.85	0.96	1.06	1.17	1.38	—	—	—
20	—	0.60	—	0.66	0.79	0.85	1.01	1.17	1.36	1.52	1.68	1.84	2.17	2.49	2.81	3.13
25	—	0.87	—	0.96	1.12	1.20	1.41	1.62	1.86	2.06	2.27	2.48	2.92	3.33	3.75	4.16
32	—	—	1.37	—	—	1.66	2.08	2.37	2.74	3.03	3.31	3.60	4.25	4.82	5.39	5.97
40	—	—	1.59	—	—	1.92	2.38	2.70	3.11	3.44	3.77	4.09	4.81	5.46	6.11	6.76
50	—	—	2.65	—	—	3.14	3.85	4.34	4.97	5.47	5.96	6.45	7.57	8.56	9.54	10.5
63	—	—	3.33	—	—	3.91	4.71	5.29	6.01	6.59	7.17	7.75	9.05	10.2	11.4	12.5
80	—	—	5.27	—	—	6.29	7.49	8.21	8.92	9.64	10.4	11.1	12.9	14.3	15.7	17.2
100	—	—	8.62	—	—	10.1	11.8	12.9	13.9	15.0	16.0	17.1	19.6	21.7	23.8	25.9

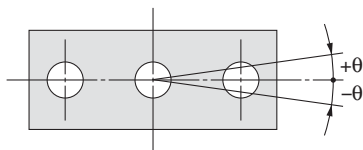
Allowable Rotational Torque of Plate



T [N·m]

Bore size [mm]	Bearing type	Stroke [mm]															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPM	0.39	0.32	—	0.27	0.24	0.21	0.43	0.36	0.31	0.27	0.24	0.22	0.19	—	—	—
	MGPL/A	0.61	0.45	—	0.35	0.58	0.50	0.37	0.29	0.24	0.20	0.18	0.16	0.12	—	—	—
16	MGPM	0.69	0.58	—	0.49	0.43	0.38	0.69	0.58	0.50	0.44	0.40	0.36	0.30	—	—	—
	MGPL/A	0.99	0.74	—	0.59	0.99	0.86	0.65	0.52	0.43	0.37	0.32	0.28	0.23	—	—	—
20	MGPM	—	1.05	—	0.93	0.83	0.75	1.88	1.63	1.44	1.28	1.16	1.06	0.90	0.78	0.69	0.62
	MGPL/A	—	1.26	—	1.03	2.17	1.94	1.52	1.25	1.34	1.17	1.03	0.93	0.76	0.65	0.56	0.49
25	MGPM	—	1.76	—	1.55	1.38	1.25	2.96	2.57	2.26	2.02	1.83	1.67	1.42	1.24	1.09	0.98
	MGPL/A	—	2.11	—	1.75	3.37	3.02	2.38	1.97	2.05	1.78	1.58	1.41	1.16	0.98	0.85	0.74
32	MGPM	—	—	6.35	—	—	5.13	5.69	4.97	4.42	3.98	3.61	3.31	2.84	2.48	2.20	1.98
	MGPL/A	—	—	5.95	—	—	4.89	5.11	4.51	6.34	5.79	5.33	4.93	4.29	3.78	3.38	3.04
40	MGPM	—	—	7.00	—	—	5.66	6.27	5.48	4.87	4.38	3.98	3.65	3.13	2.74	2.43	2.19
	MGPL/A	—	—	6.55	—	—	5.39	5.62	4.96	6.98	6.38	5.87	5.43	4.72	4.16	3.71	3.35
50	MGPM	—	—	13.0	—	—	10.8	12.0	10.6	9.50	8.60	7.86	7.24	6.24	5.49	4.90	4.43
	MGPL/A	—	—	9.17	—	—	7.62	9.83	8.74	11.6	10.7	9.83	9.12	7.95	7.02	6.26	5.63
63	MGPM	—	—	14.7	—	—	12.1	13.5	11.9	10.7	9.69	8.86	8.16	7.04	6.19	5.52	4.99
	MGPL/A	—	—	10.2	—	—	8.48	11.0	9.74	13.0	11.9	11.0	10.2	8.84	7.80	6.94	6.24
80	MGPM	—	—	21.9	—	—	18.6	22.9	20.5	18.6	17.0	15.6	14.5	12.6	11.2	10.0	9.11
	MGPL/A	—	—	15.1	—	—	23.3	22.7	20.6	18.9	17.3	16.0	14.8	12.9	11.3	10.0	8.94
100	MGPM	—	—	38.8	—	—	33.5	37.5	33.8	30.9	28.4	26.2	24.4	21.4	19.1	17.2	15.7
	MGPL/A	—	—	27.1	—	—	30.6	37.9	34.6	31.8	29.3	27.2	25.3	22.1	19.5	17.3	15.5

Non-rotating Accuracy of Plate



Non-rotating accuracy θ when retracted and when no load is applied should be not more than the values shown in the table.

Bore size [mm]	Non-rotating accuracy θ		
	MGPM	MGPL	MGPA
12	$\pm 0.07^{\circ}$	$\pm 0.05^{\circ}$	$\pm 0.01^{\circ}$
16			
20	$\pm 0.06^{\circ}$	$\pm 0.04^{\circ}$	
25			
32	$\pm 0.05^{\circ}$	$\pm 0.03^{\circ}$	
40			
50	$\pm 0.04^{\circ}$	$\pm 0.03^{\circ}$	
63			
80	$\pm 0.03^{\circ}$	$\pm 0.03^{\circ}$	
100			

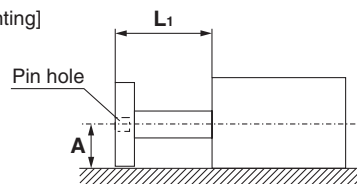
High Precision Ball Bushing/MGPA

⚠ Caution

Positioning accuracy for pin hole on the plate

Dispersion of dimensions when machining each component will be accumulated in the plate pin hole positioning accuracy when mounting this cylinder. Values below are referred as a guide.

[Side mounting]

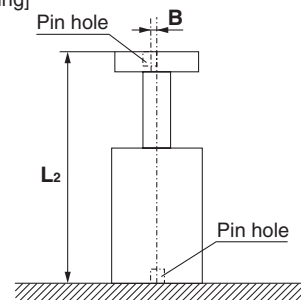


$$A = \text{Catalogue dimension} \pm (0.1 + L_1 \times 0.0008) \text{ [mm]}$$

* : To be 0.15 for $\phi 80$, $\phi 100$

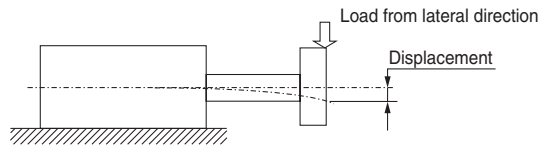
Note) Displacement by load and self-weight deflection by plate and guide rod are not included.

[Bottom mounting]

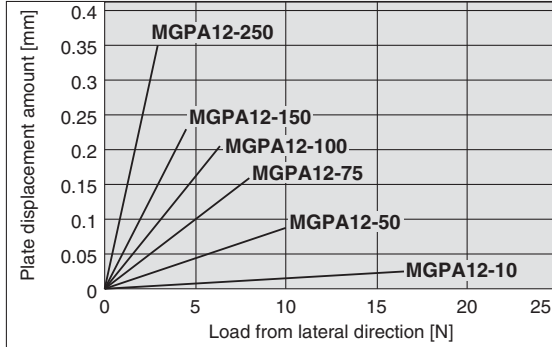


$$B = \pm (0.045 + L_2 \times 0.0016) \text{ [mm]}$$

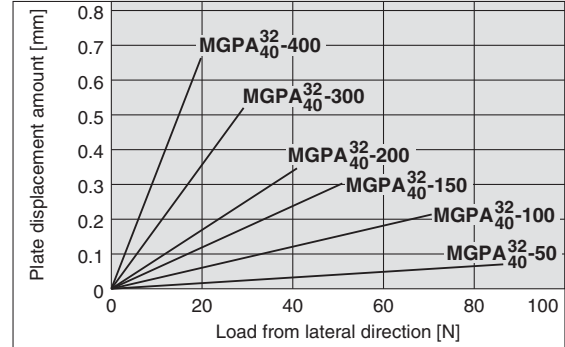
High Precision Ball Bushing/MGPA Plate Displacement Amount (Reference Values)



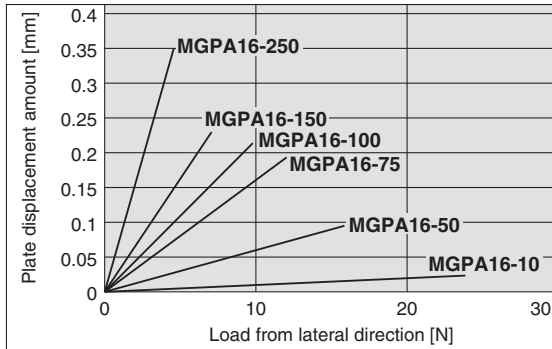
MGPA12



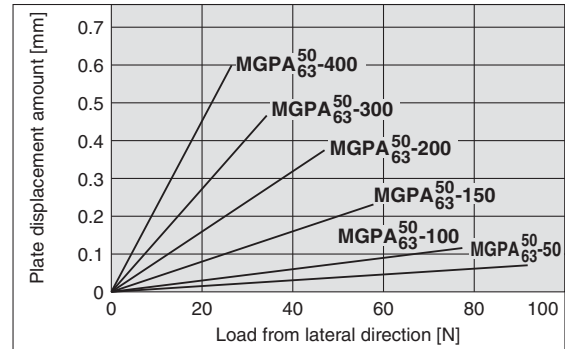
MGPA32/40



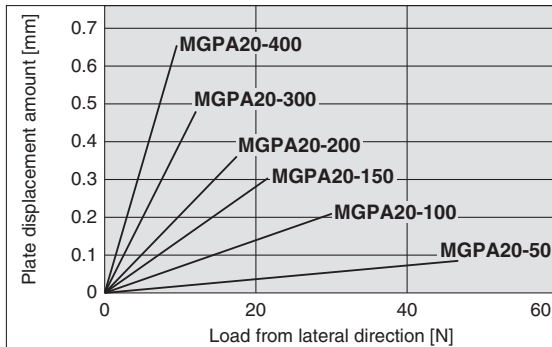
MGPA16



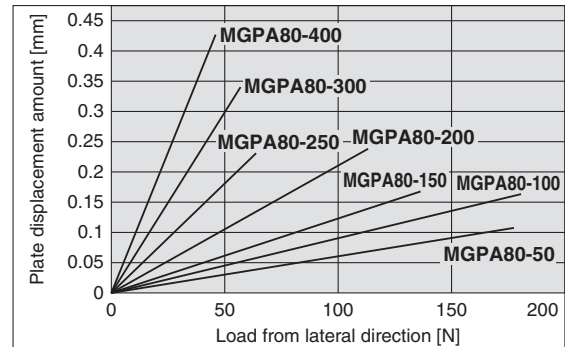
MGPA50/63



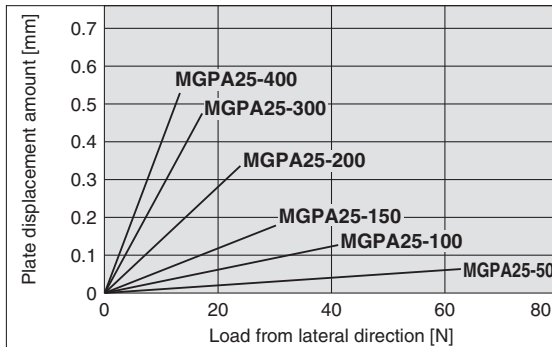
MGPA20



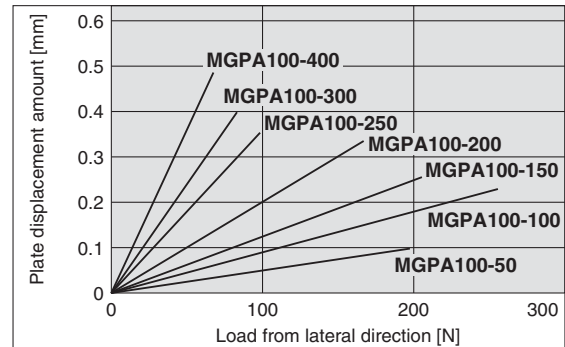
MGPA80



MGPA25



MGPA100



Note 1) The guide rod and self-weight for the plate are not included in the above displacement values.

Note 2) Allowable rotating torque, and operating range when used as a lifter, are the same as MGPL series.

Series MGP

Model Selection

Selection Conditions

Mounting orientation	Vertical		Horizontal	
Maximum speed [mm/s]	200 or less	400	200 or less	400
Graph (Slide bearing type)	(1), (2)	(3), (4)	(13), (14)	(15), (16)
Graph (Ball bushing type)	(5) to (8)	(9) to (12)	(17), (18)	(19), (20)

Selection Example 1 (Vertical Mounting)

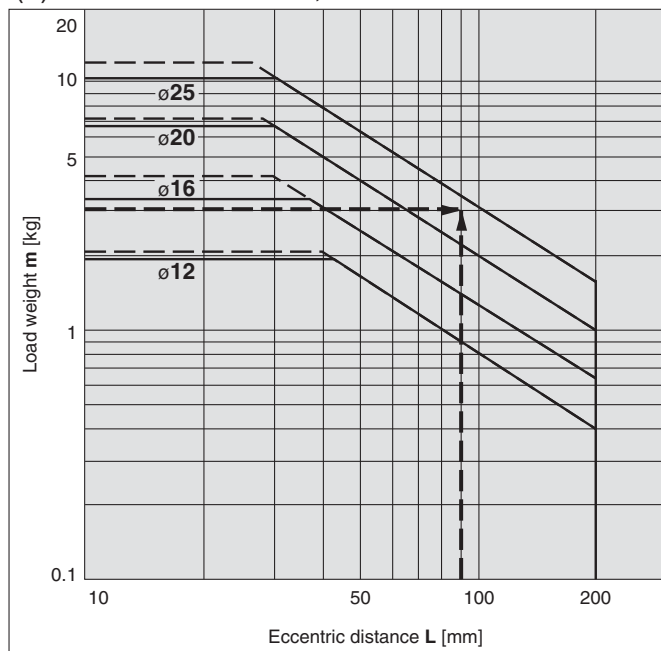
Selection conditions

Mounting: Vertical
 Bearing type: Ball bushing
 Stroke: 30 stroke
 Maximum speed: 200 mm/s
 Load weight: 3 kg
 Eccentric distance: 90 mm

Find the point of intersection for the load weight of 3 kg and the eccentric distance of 90 mm on graph (5), based on vertical mounting, ball bushing, 30 stroke, and the speed of 200 mm/s.

→ **MGPL25-30** is selected.

(5) Less than 40 stroke, V = 200 mm/s or less



· When the maximum speed exceeds 200 mm/s, the allowable load weight is determined by multiplying the value shown in the graph at 400 mm/s by the coefficient listed in the table below.

Max. speed	Up to 300 mm/s	Up to 400 mm/s	Up to 500 mm/s
Coefficient	1.7	1	0.6

· Use the "Guide Cylinder Selection Software", when the eccentric distance is 200 mm or more.

Selection Example 2 (Horizontal Mounting)

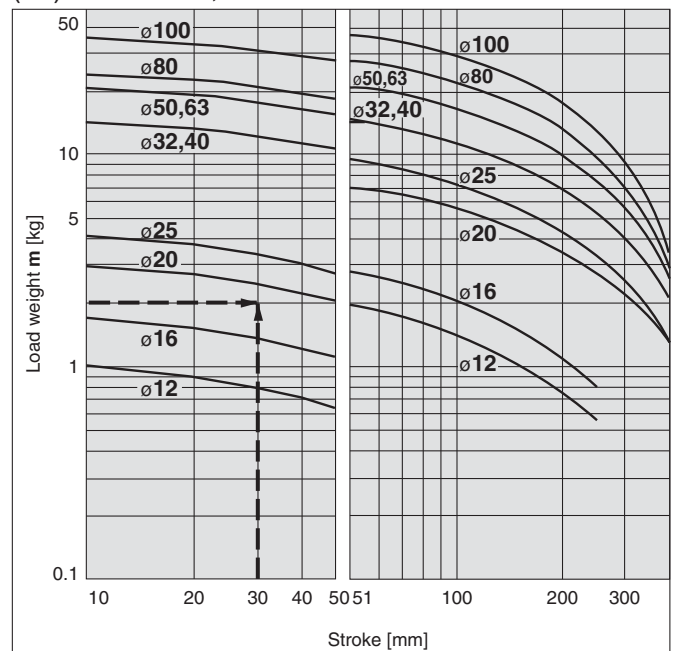
Selection conditions

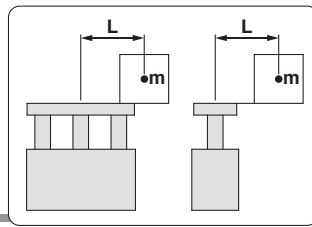
Mounting: Horizontal
 Bearing type: Slide bearing
 Distance between plate and load centre of gravity: 50 mm
 Maximum speed: 200 mm/s
 Load weight: 2 kg
 Stroke: 30 stroke

Find the point of intersection for the load weight of 2 kg and 30 stroke on graph (13), based on horizontal mounting, slide bearing, the distance of 50 mm between the plate and load centre of gravity, and the speed of 200 mm/s.

→ **MGPM20-30** is selected.

(13) L = 50 mm, V = 200 mm/s or less





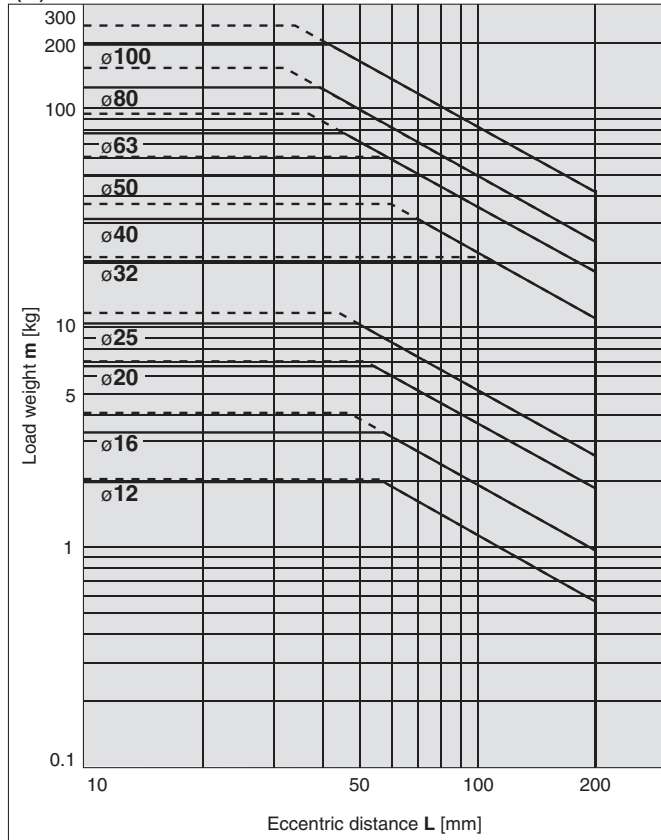
Vertical Mounting

Slide Bearing

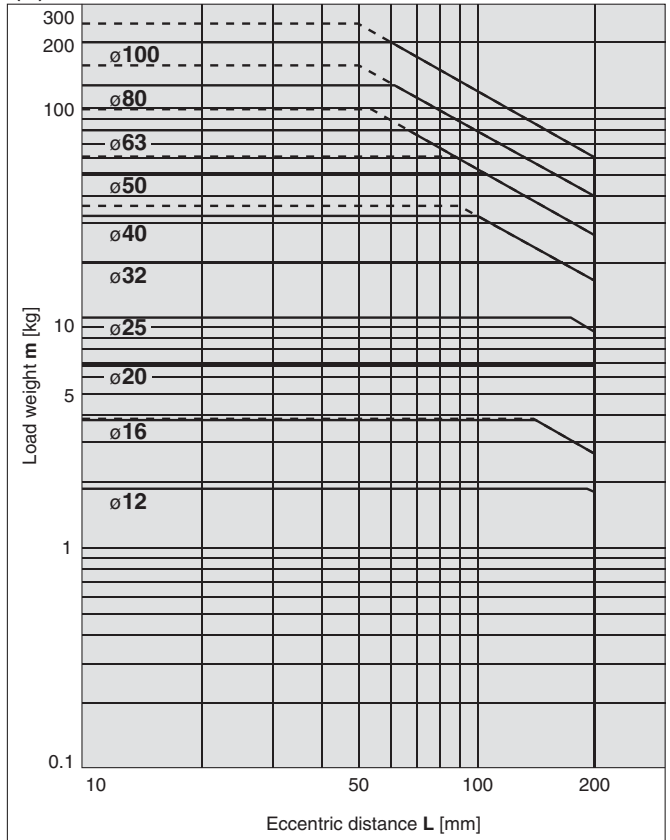
— Operating pressure 0.4 MPa
 - - - - - Operating pressure 0.5 MPa or more

MGPM12 to 100

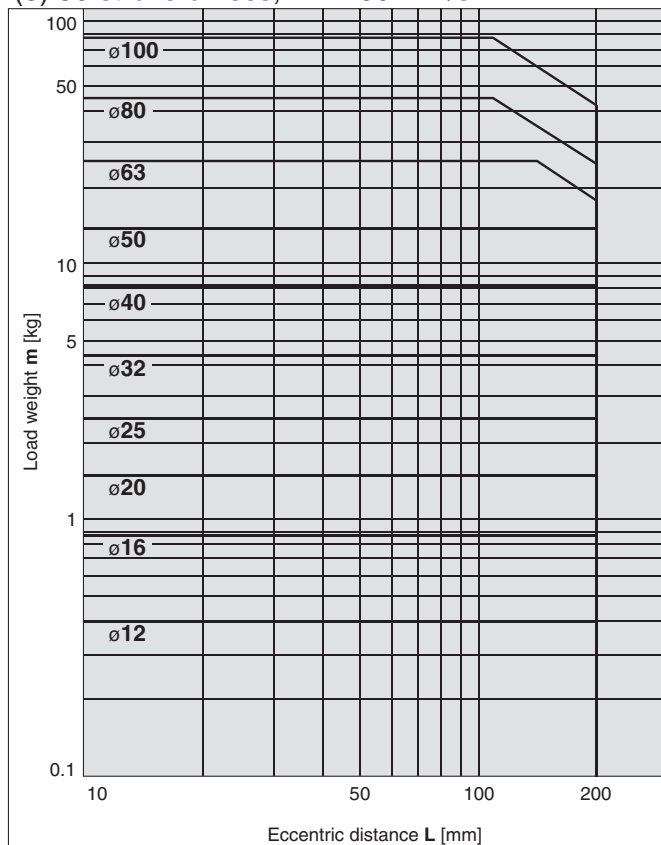
(1) 50 stroke or less, $V = 200 \text{ mm/s}$ or less



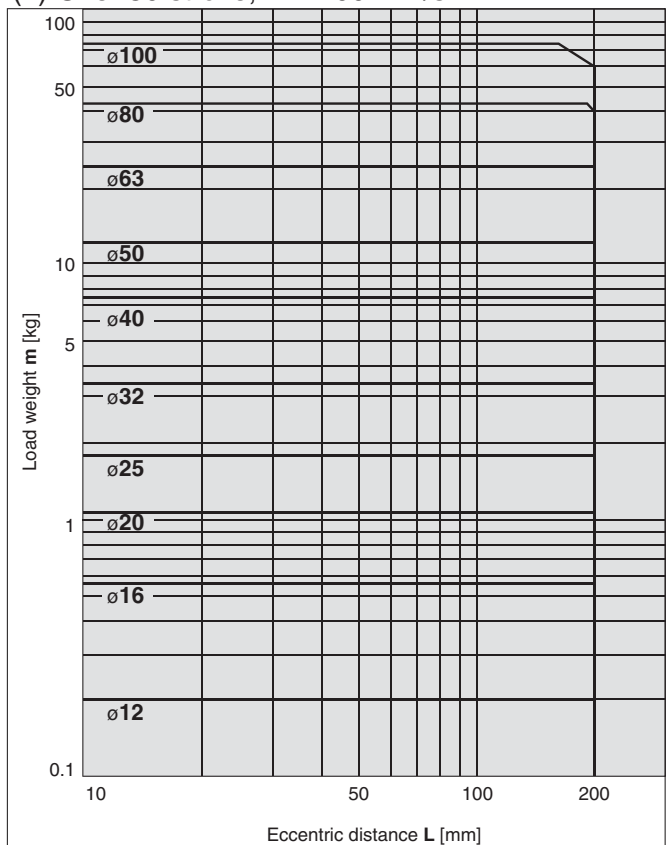
(2) Over 50 stroke, $V = 200 \text{ mm/s}$ or less



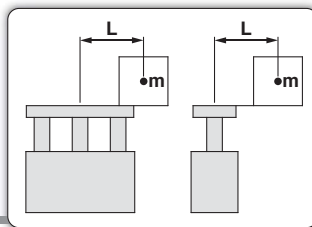
(3) 50 stroke or less, $V = 400 \text{ mm/s}$



(4) Over 50 stroke, $V = 400 \text{ mm/s}$



· Use the "Guide Cylinder Selection Software", when the eccentric distance is 200 mm or more.



Model Selection **Series MGP**

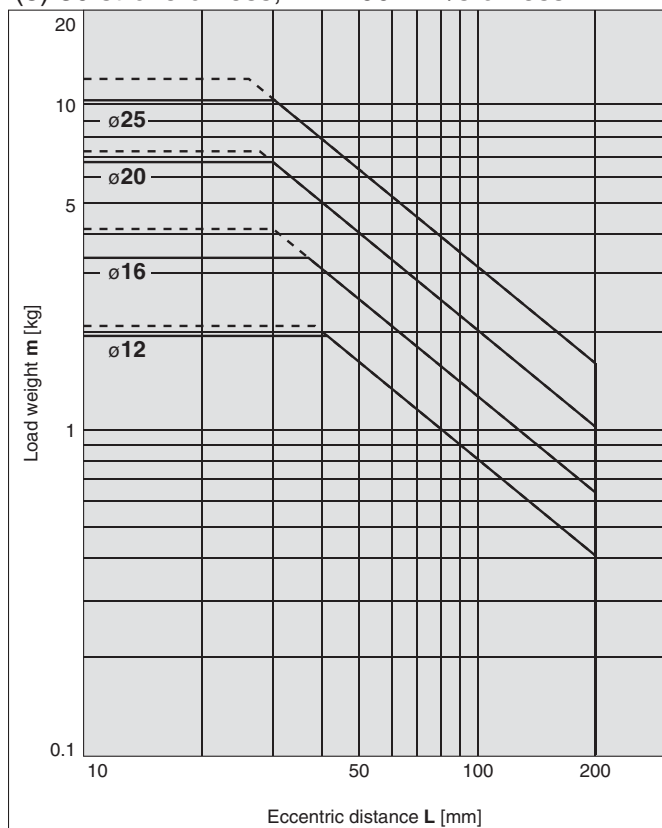
Vertical Mounting

Ball Bushing

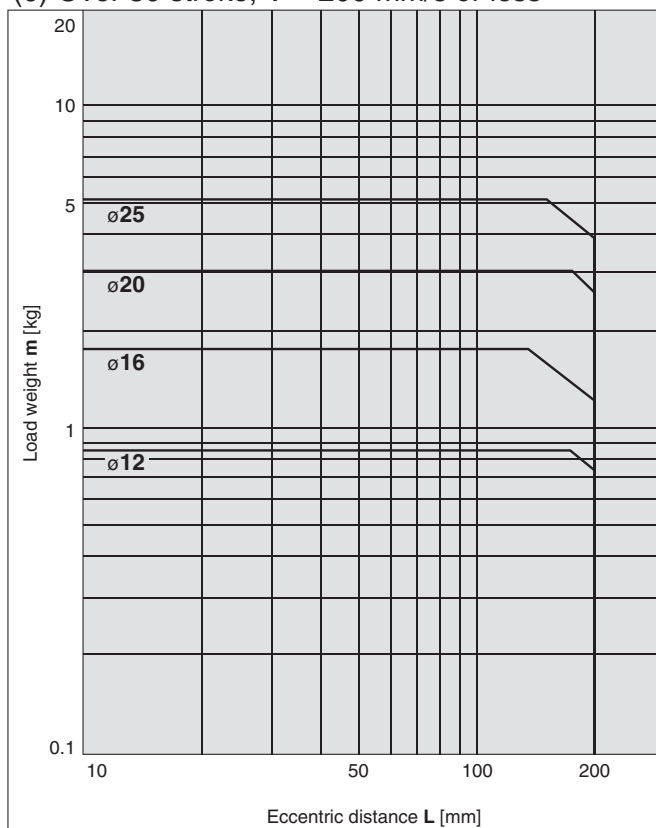
— Operating pressure 0.4 MPa
 - - - - - Operating pressure 0.5 MPa or more

MGPL12 to 25, MGPA12 to 25

(5) 30 stroke or less, $V = 200$ mm/s or less

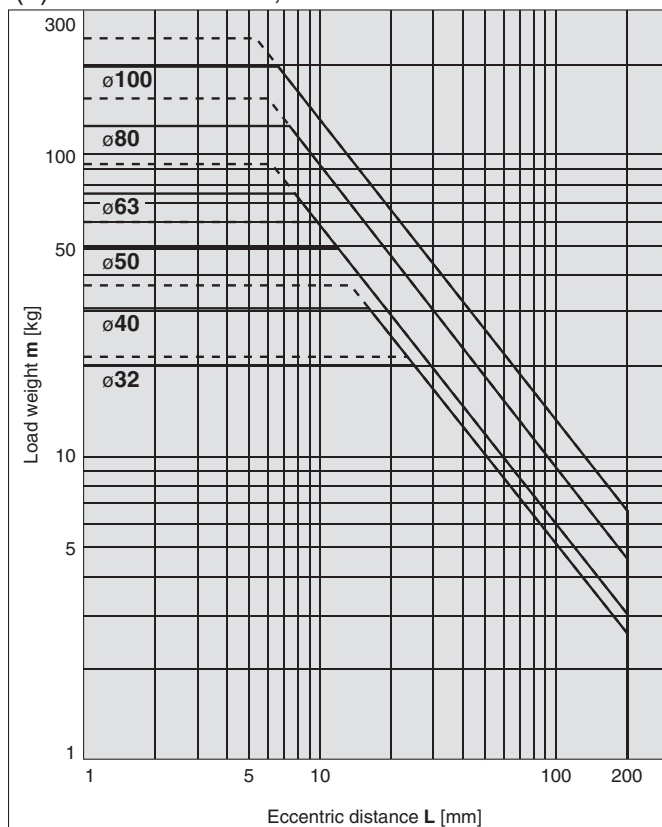


(6) Over 30 stroke, $V = 200$ mm/s or less

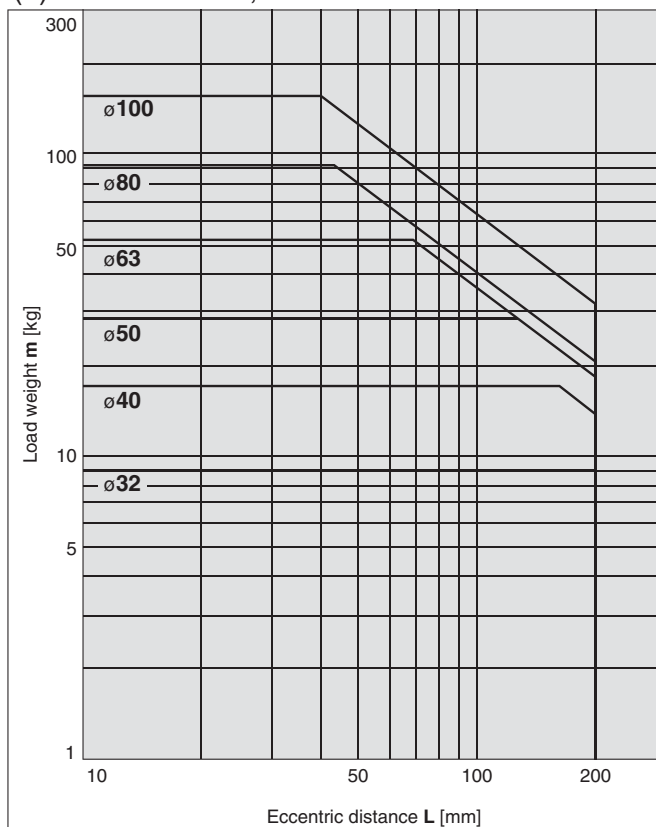


MGPL32 to 100, MGPA32 to 100

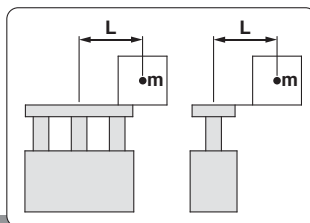
(7) 50 stroke or less, $V = 200$ mm/s or less



(8) Over 50 stroke, $V = 200$ mm/s or less



· Use the "Guide Cylinder Selection Software", when the eccentric distance is 200 mm or more.



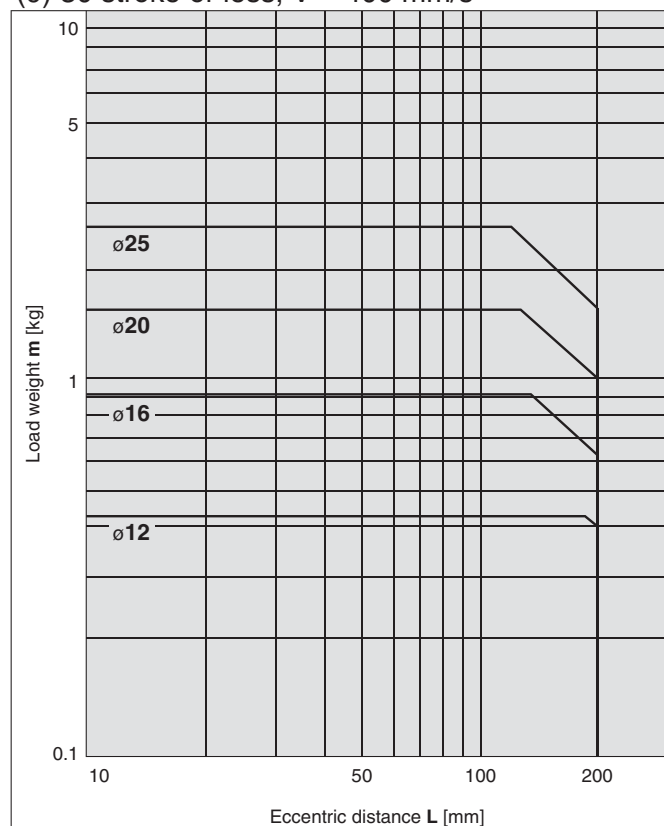
Vertical Mounting

Ball Bushing

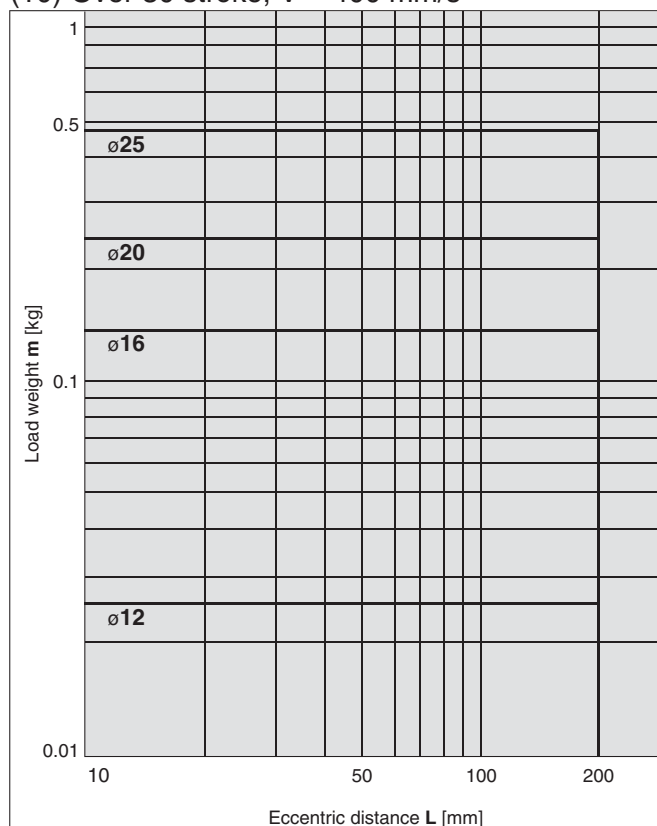
Operating pressure 0.4 MPa

MGPL12 to 25, MGPA12 to 25

(9) 30 stroke or less, $V = 400$ mm/s

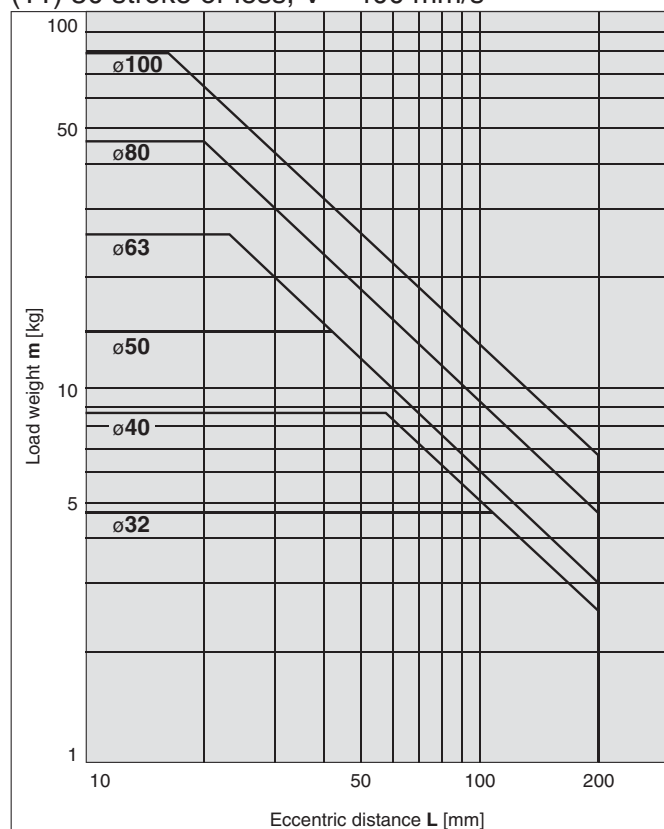


(10) Over 30 stroke, $V = 400$ mm/s

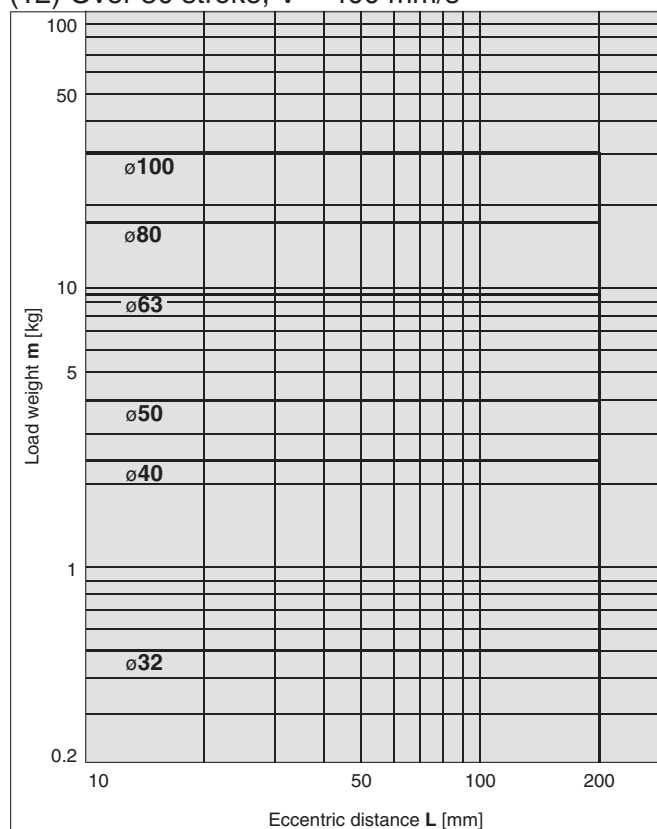


MGPL32 to 100, MGPA32 to 100

(11) 50 stroke or less, $V = 400$ mm/s



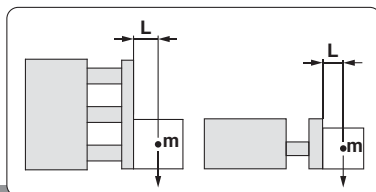
(12) Over 50 stroke, $V = 400$ mm/s



· Use the "Guide Cylinder Selection Software", when the eccentric distance is 200 mm or more.

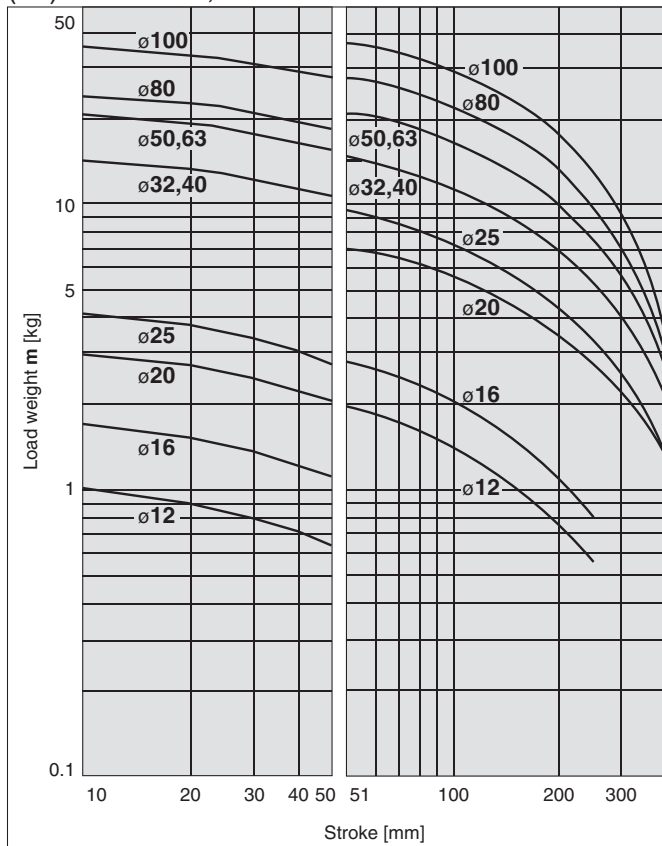
Horizontal Mounting

Slide Bearing

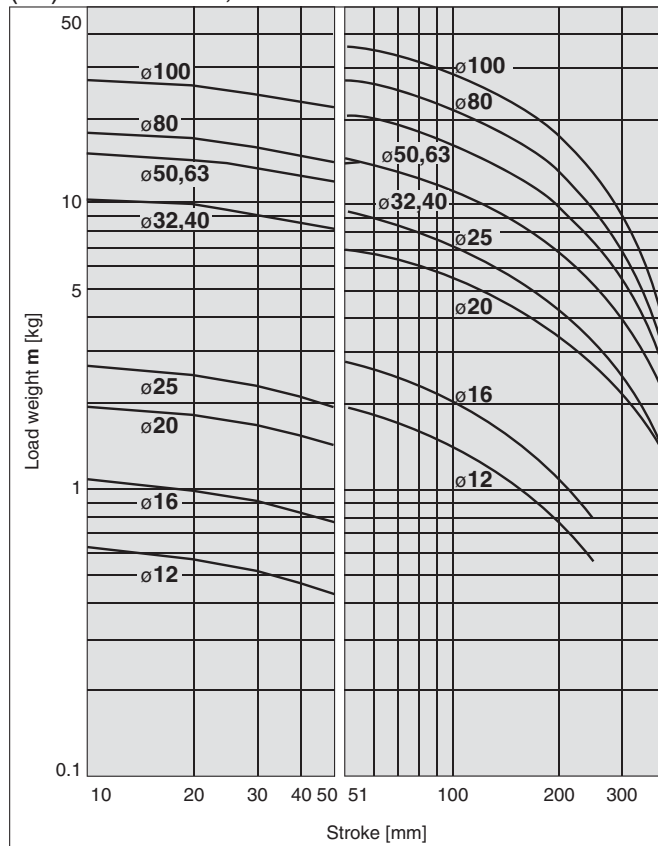


MGPM12 to 100

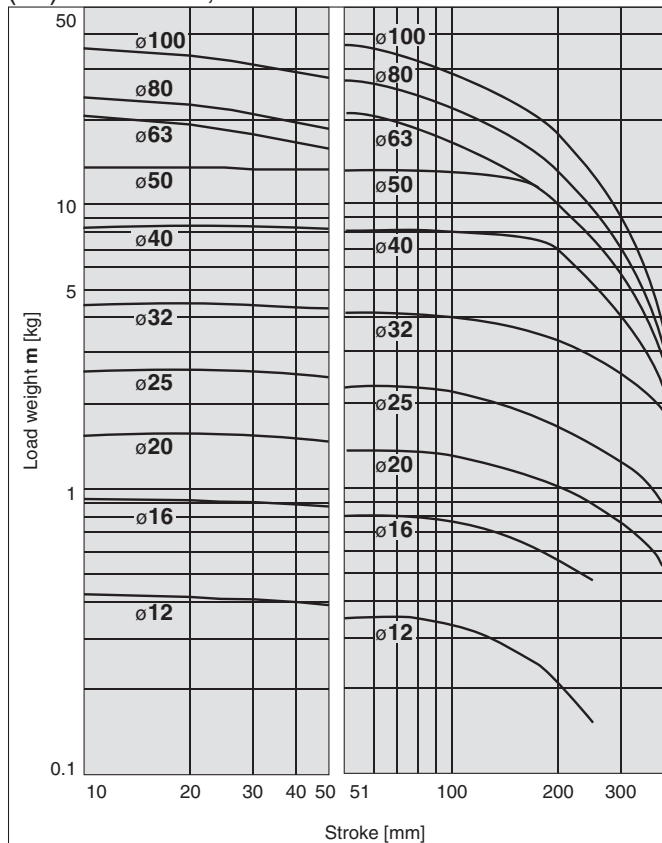
(13) L = 50 mm, V = 200 mm/s or less



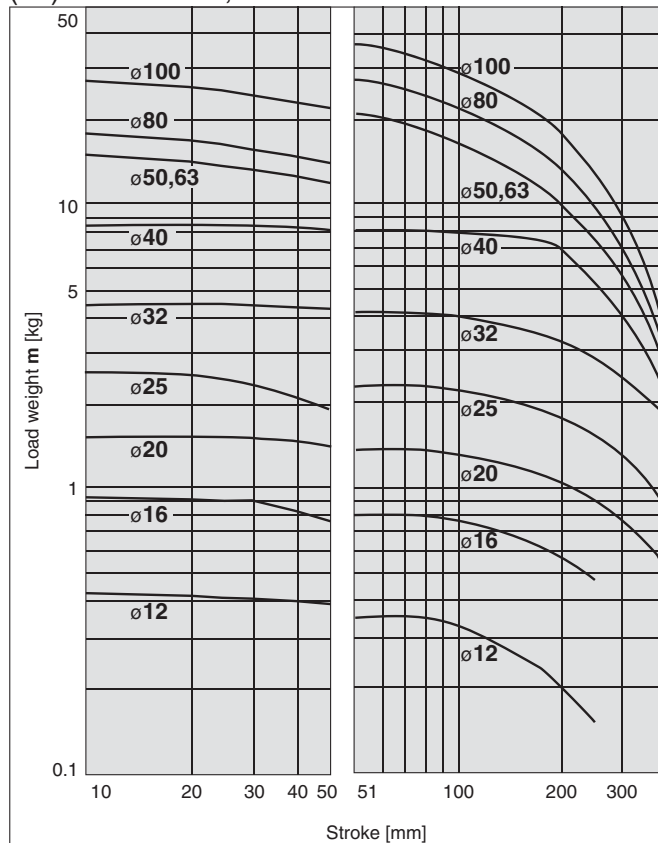
(14) L = 100 mm, V = 200 mm/s or less



(15) L = 50 mm, V = 400 mm/s

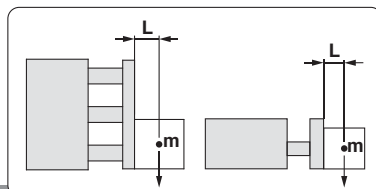


(16) L = 100 mm, V = 400 mm/s



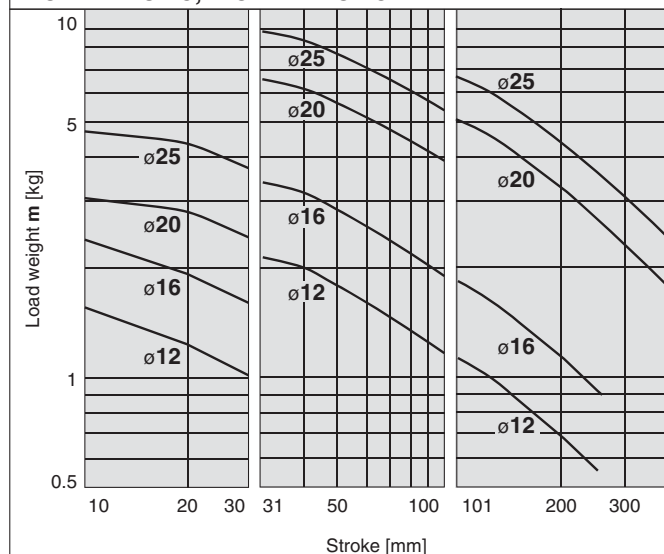
Horizontal Mounting

Ball Bushing

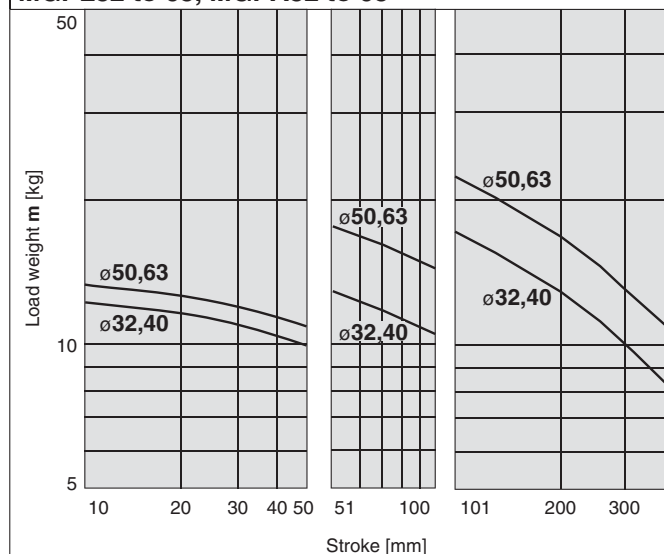


(17) $L = 50 \text{ mm}$, $V = 200 \text{ mm/s}$ or less

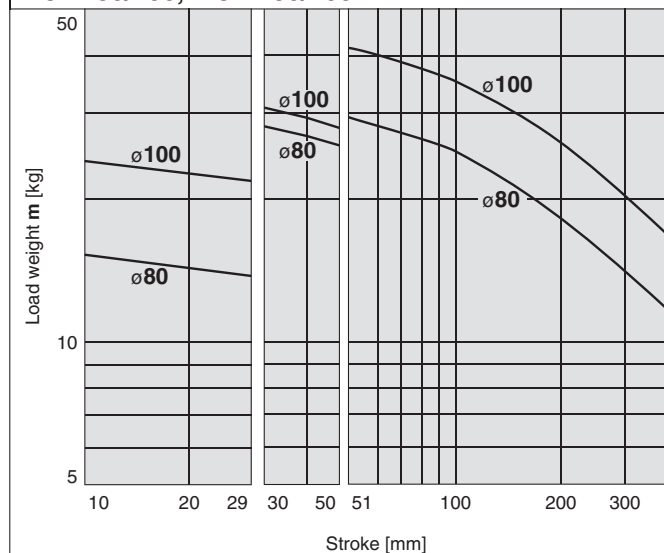
MGPL12 to 25, MGPA12 to 25



MGPL32 to 63, MGPA32 to 63

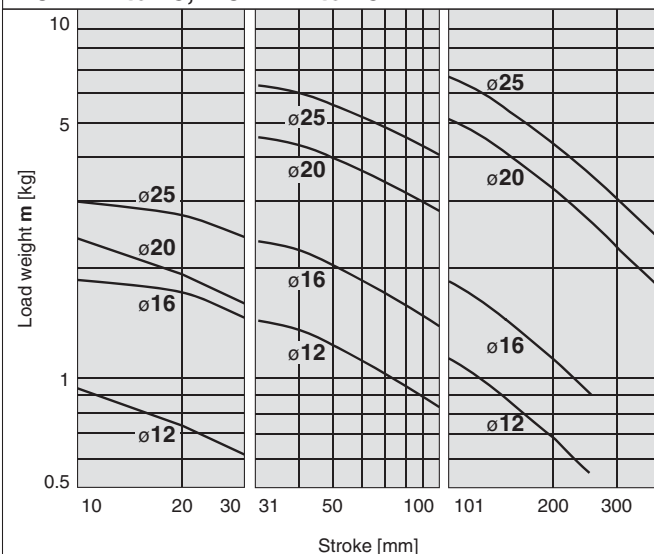


MGPL80/100, MGPA80/100

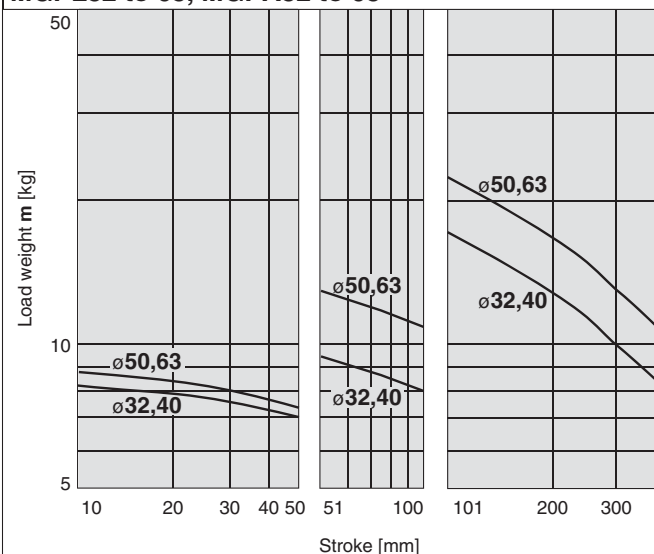


(18) $L = 100 \text{ mm}$, $V = 200 \text{ mm/s}$ or less

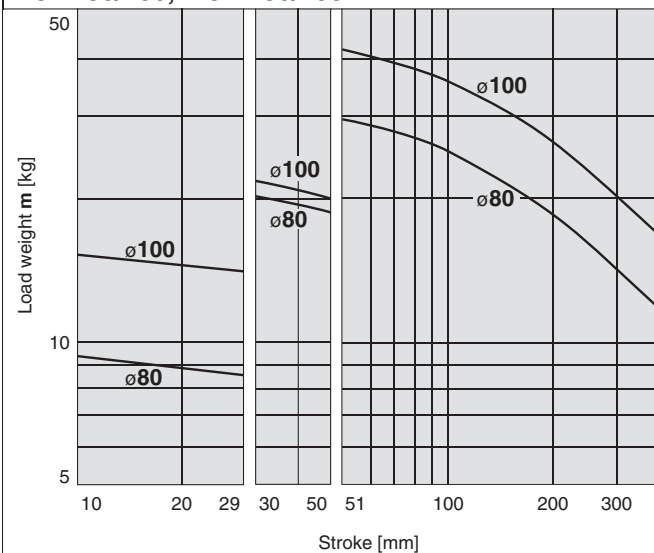
MGPL12 to 25, MGPA12 to 25



MGPL32 to 63, MGPA32 to 63

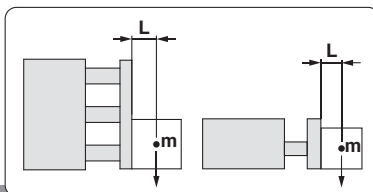


MGPL80/100, MGPA80/100

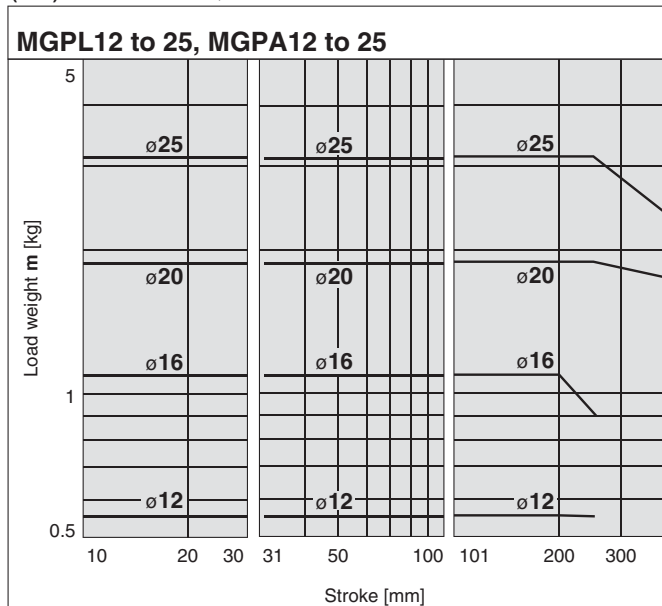


Horizontal Mounting

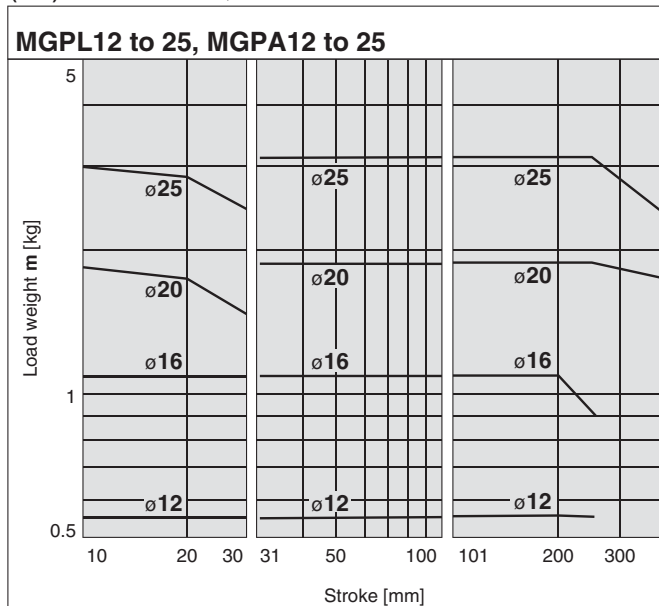
Ball Bushing



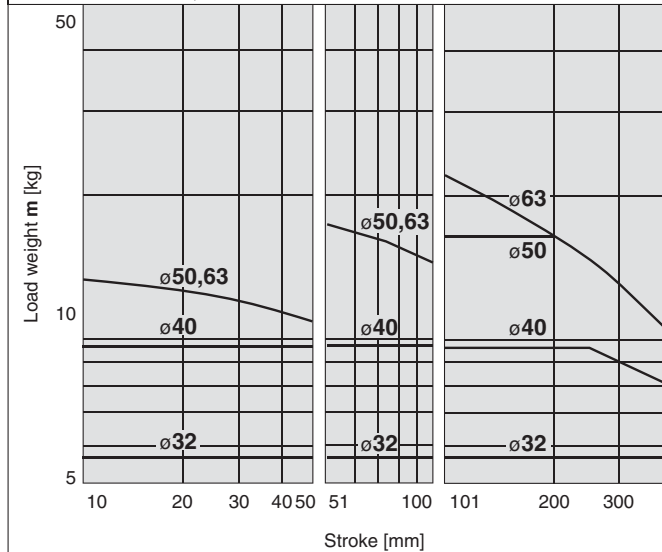
(19) L = 50 mm, V = 400 mm/s



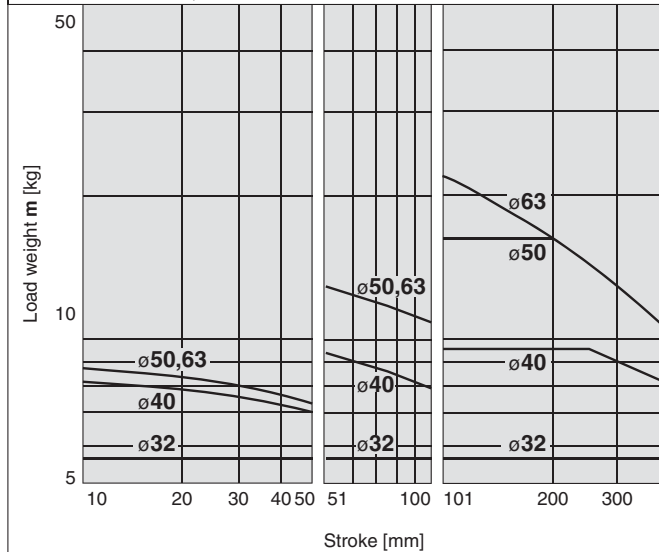
(20) L = 100 mm, V = 400 mm/s



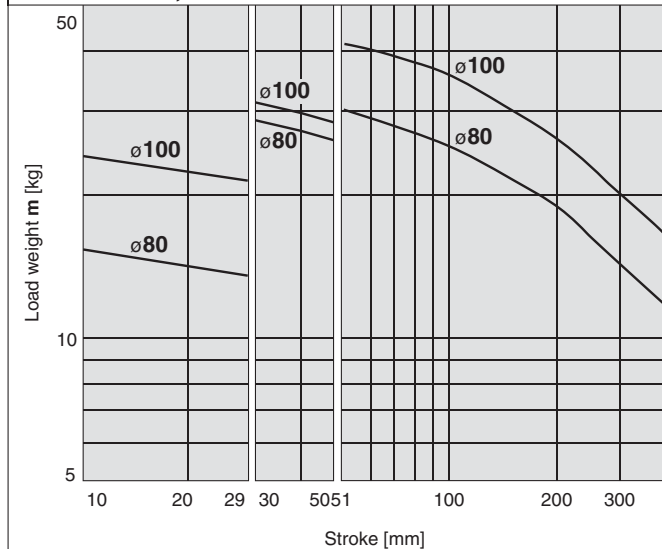
MGPL32 to 63, MGPA32 to 63



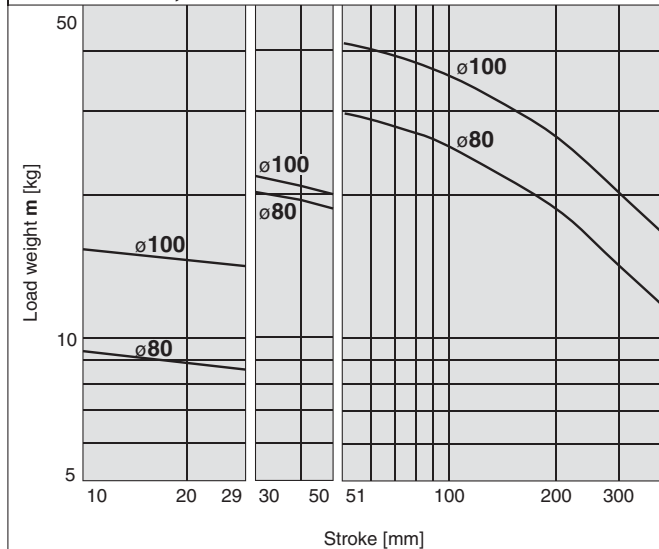
MGPL32 to 63, MGPA32 to 63



MGPL80/100, MGPA80/100

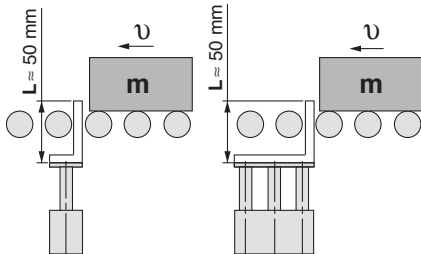


MGPL80/100, MGPA80/100



Operating Range when Used as Stopper

Bore Size: $\phi 12$ to $\phi 25$ /MGPM12 to 25 (Slide bearing)



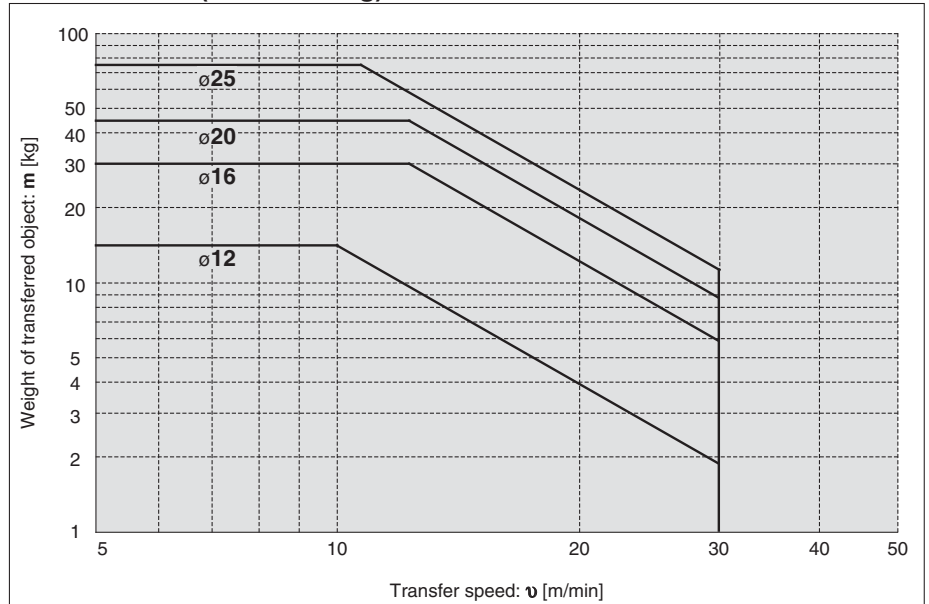
* When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

⚠ Caution

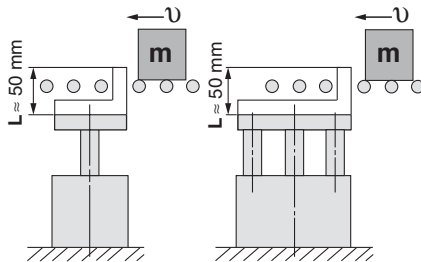
Caution on handling

- Note 1) When using as a stopper, select a model with 30 stroke or less.
 Note 2) The MGPL (Ball bushing) and the MGPA (High precision ball bushing) cannot be used as a stopper.

MGPM12 to 25 (Slide bearing)



Bore Size: $\phi 32$ to $\phi 100$ /MGPM32 to 100 (Slide bearing)



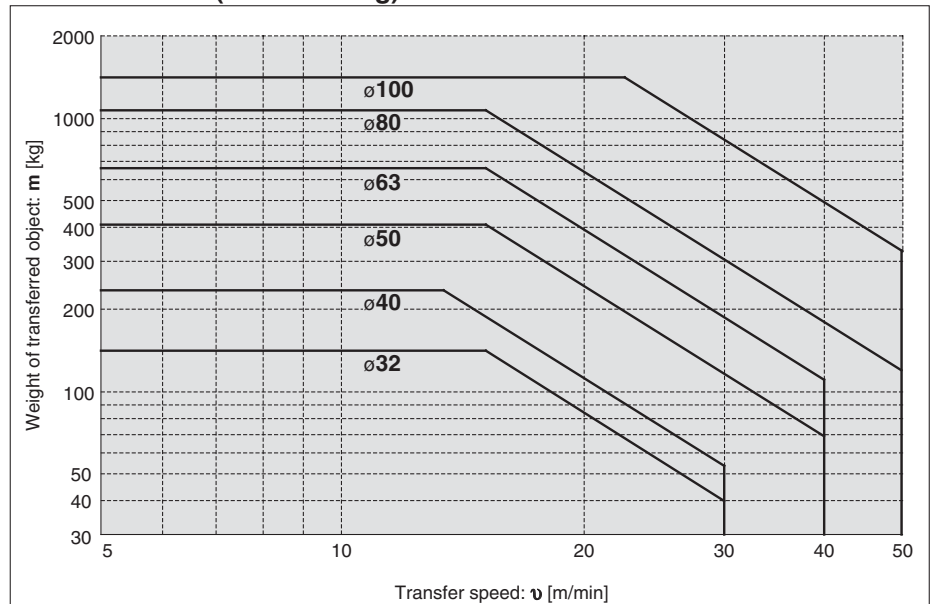
* When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

⚠ Caution

Caution on handling

- Note 1) When using as a stopper, select a model with 50 stroke or less.
 Note 2) The MGPL (Ball bushing) and the MGPA (High precision ball bushing) cannot be used as a stopper.

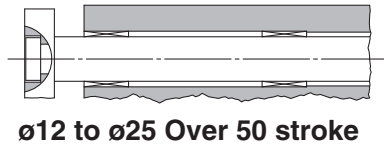
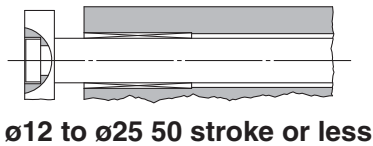
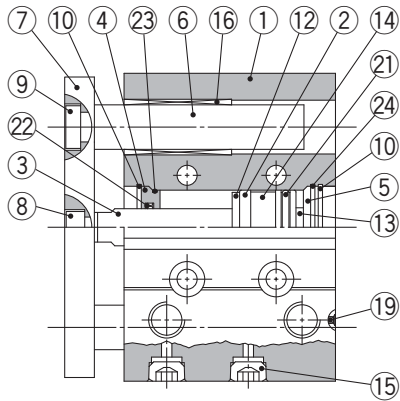
MGPM32 to 100 (Slide bearing)



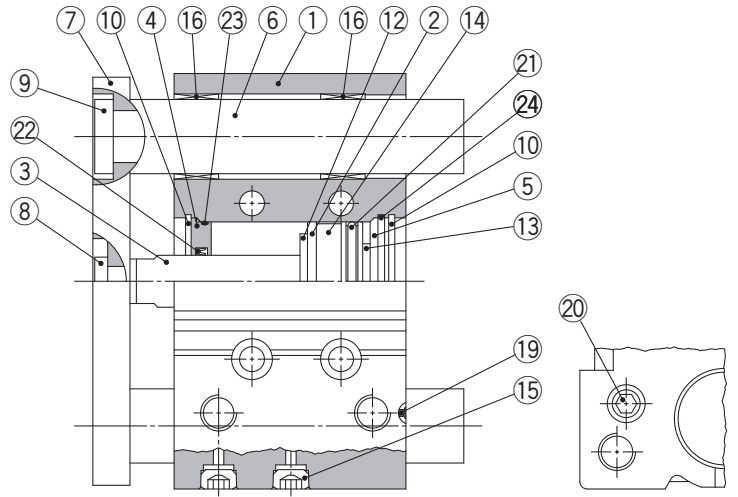
* Refer to graphs (13) and (15) if line pressure is applied by a roller conveyor after the workpiece is stopped.

Construction/Series MGPM

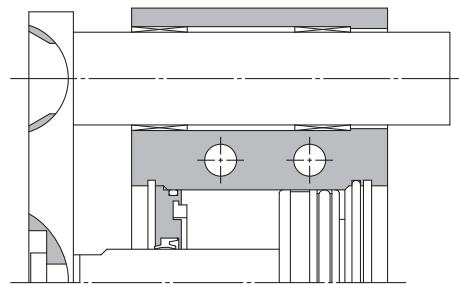
MGPM12 to 25



MGPM32 to 100



ø63 or more



ø50 or more

Component Parts

No.	Description	Material	Note
1	Body	Aluminium alloy	Hard anodised
2	Piston	Aluminium alloy	Chromated
3	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100 Hard chrome plated
4	Collar	Aluminium alloy	Chromated
5	Head cover	Aluminium alloy	ø12 to ø63 Chromated
			ø80, ø100 Painted
6	Guide rod	Carbon steel	Hard chrome plated
7	Plate	Carbon steel	Nickel plated
8	Plate mounting bolt	Carbon steel	Nickel plated
9	Guide bolt	Carbon steel	Nickel plated
10	Retaining ring	Carbon tool steel	Phosphate coated
11	Retaining ring	Carbon tool steel	Phosphate coated
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	—	
15	Plug	Carbon steel	ø12, ø16 Nickel plated
	Hexagon socket head plug		ø20 to ø100
16	Slide bearing	Babbitt	

Component Parts

No.	Description	Material	Note
17	Ball bushing		
18	Spacer	Aluminium alloy	
19	Steel ball	Carbon steel	ø12 to ø50
20	Plug	Carbon steel	ø63 to ø100 Nickel plated
21 *	Piston seal	NBR	
22 *	Rod seal	NBR	
23 *	Gasket A	NBR	
24 *	Gasket B	NBR	

Replacement Parts/Seal Kit

Bore size [mm]	Kit no.	Contents	Bore size [mm]	Kit no.	Contents
12	MGP12-Z-PS	Set of nos. above 21, 22, 23, 24	40	MGP40-Z-PS	Set of nos. above 21, 22, 23, 24
16	MGP16-Z-PS		50	MGP50-Z-PS	
20	MGP20-Z-PS		63	MGP63-Z-PS	
25	MGP25-Z-PS		80	MGP80-Z-PS	
32	MGP32-Z-PS		100	MGP100-Z-PS	

* Seal kit includes 21 to 24. Order the seal kit, based on each bore size.

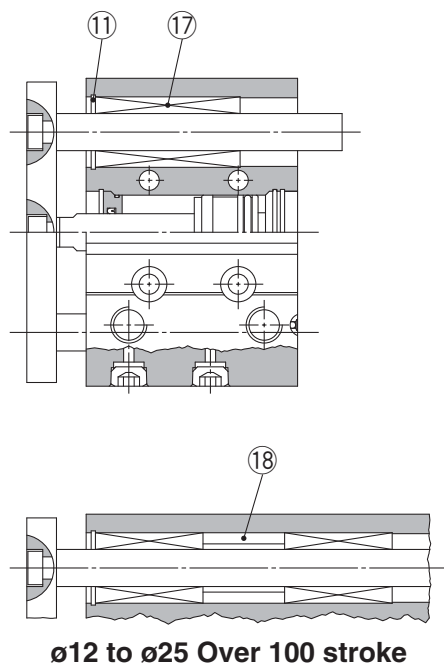
* Since the seal kit does not include a grease pack, order it separately.

Grease pack part no.: GR-S-010 (10 g)

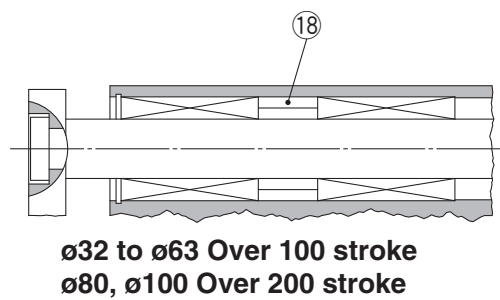
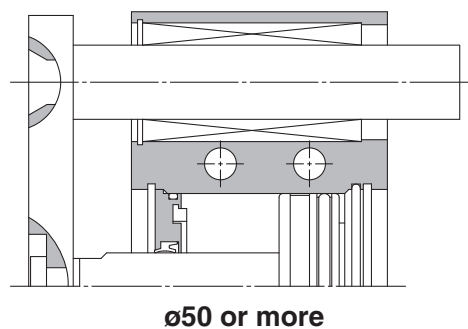
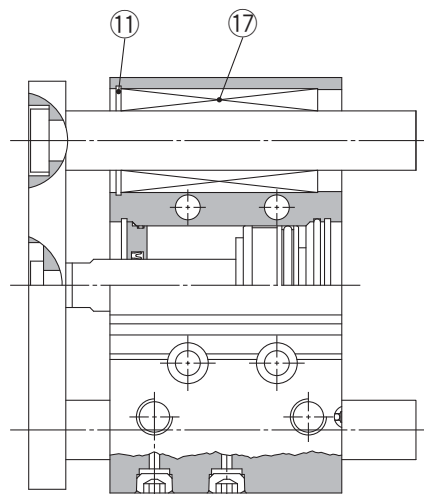
Series MGP

Construction/Series MGPL, Series MGPA

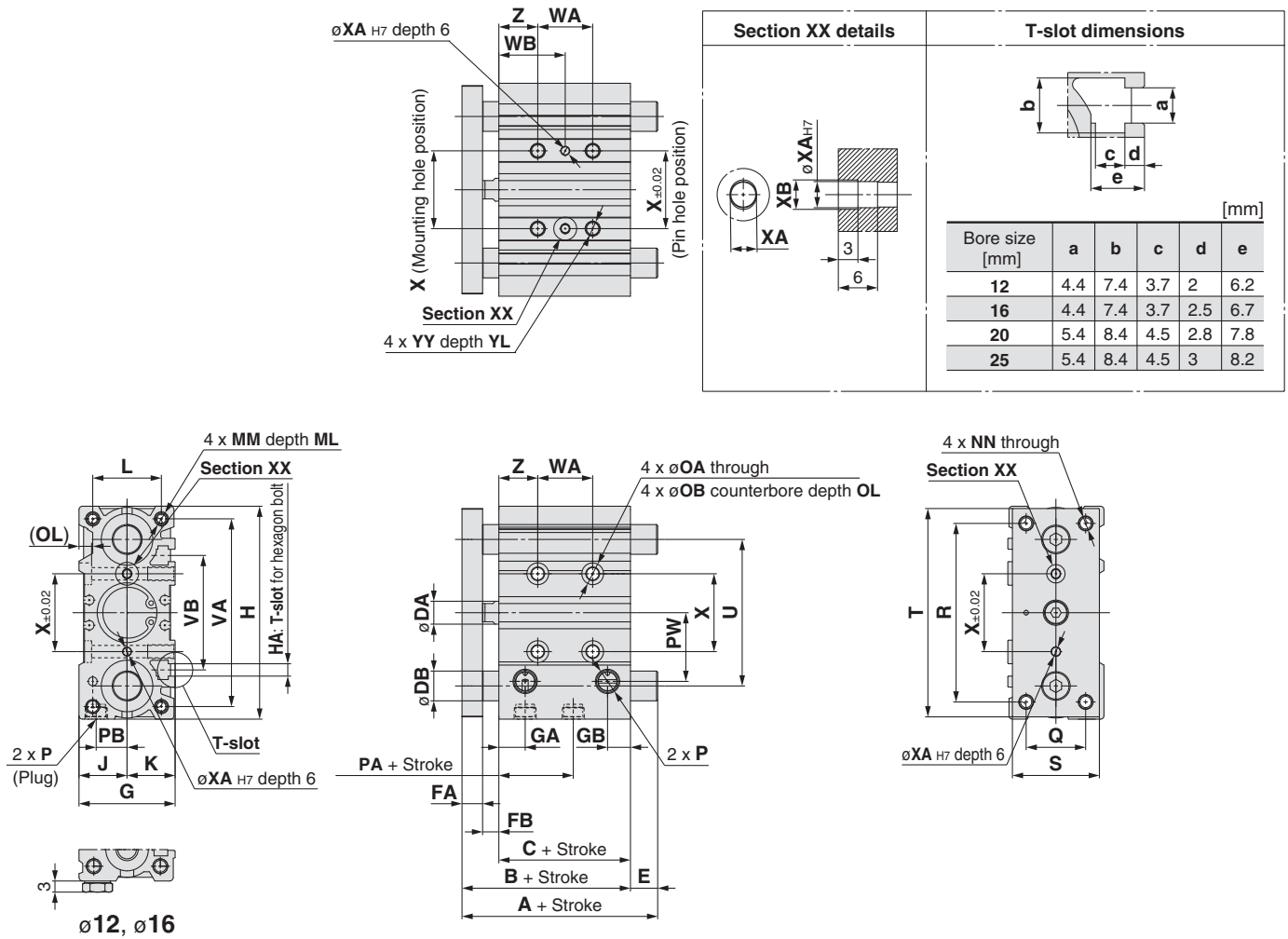
MGPL12 to 25
MGPA12 to 25



MGPL32 to 100
MGPA32 to 100



ø12 to ø25/MGPM, MGPL, MGPA



- * The use of a slot (width XA, length XB, depth 3) allows for a relaxed pin pitch tolerance, with the pin hole (øXA H7, depth 6) as the reference, without affecting mounting accuracy.
- * For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Strokes" on page 4.
- * Bore size ø12 and ø16: M5 x 0.8 port, Bore size ø20 or more: RC port.

MGPM, MGPL, MGPA Common Dimensions

Bore size [mm]	Standard stroke [mm]	B	C	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P		
																					—	TN	TF
12	10,20,30,40,50,75,100	42	29	6	7	6	26	10	7	58	M4	13	13	18	M4 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	—	—
16	125,150,175,200,250	46	33	8	7	6	30	10.5	7.5	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	—	—
20	20,30,40,50,75,100,125,150	53	37	10	8	8	36	11.5	9	83	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.4	9.5	5.5	Rc1/8	NPT1/8	G1/8
25	175,200,250,300,350,400	53.5	37.5	10	9	7	42	11.5	10	93	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.4	9.5	5.5	Rc1/8	NPT1/8	G1/8

Bore size [mm]	PA	PB	PW	Q	R	S	T	U	VA	VB	WA					WB					X	XA	XB	YY	YL	Z
											30 st or less	Over 30 st or less	Over 100 st or less	Over 200 st or less	Over 300 st	30 st or less	Over 30 st or less	Over 100 st or less	Over 200 st or less	Over 300 st						
12	13	8	18	14	48	22	56	41	50	37	20	40	110	200	—	15	25	60	105	—	23	3	3.5	M5 x 0.8	10	5
16	14.5	10	19	16	54	25	62	46	56	38	24	44	110	200	—	17	27	60	105	—	24	3	3.5	M5 x 0.8	10	5
20	13.5	10.5	25	18	70	30	81	54	72	44	24	44	120	200	300	29	39	77	117	167	28	3	3.5	M6 x 1.0	12	17
25	12.5	13.5	30	26	78	38	91	64	82	50	24	44	120	200	300	29	39	77	117	167	34	4	4.5	M6 x 1.0	12	17

MGPM (Slide bearing) A, DB, E Dimensions

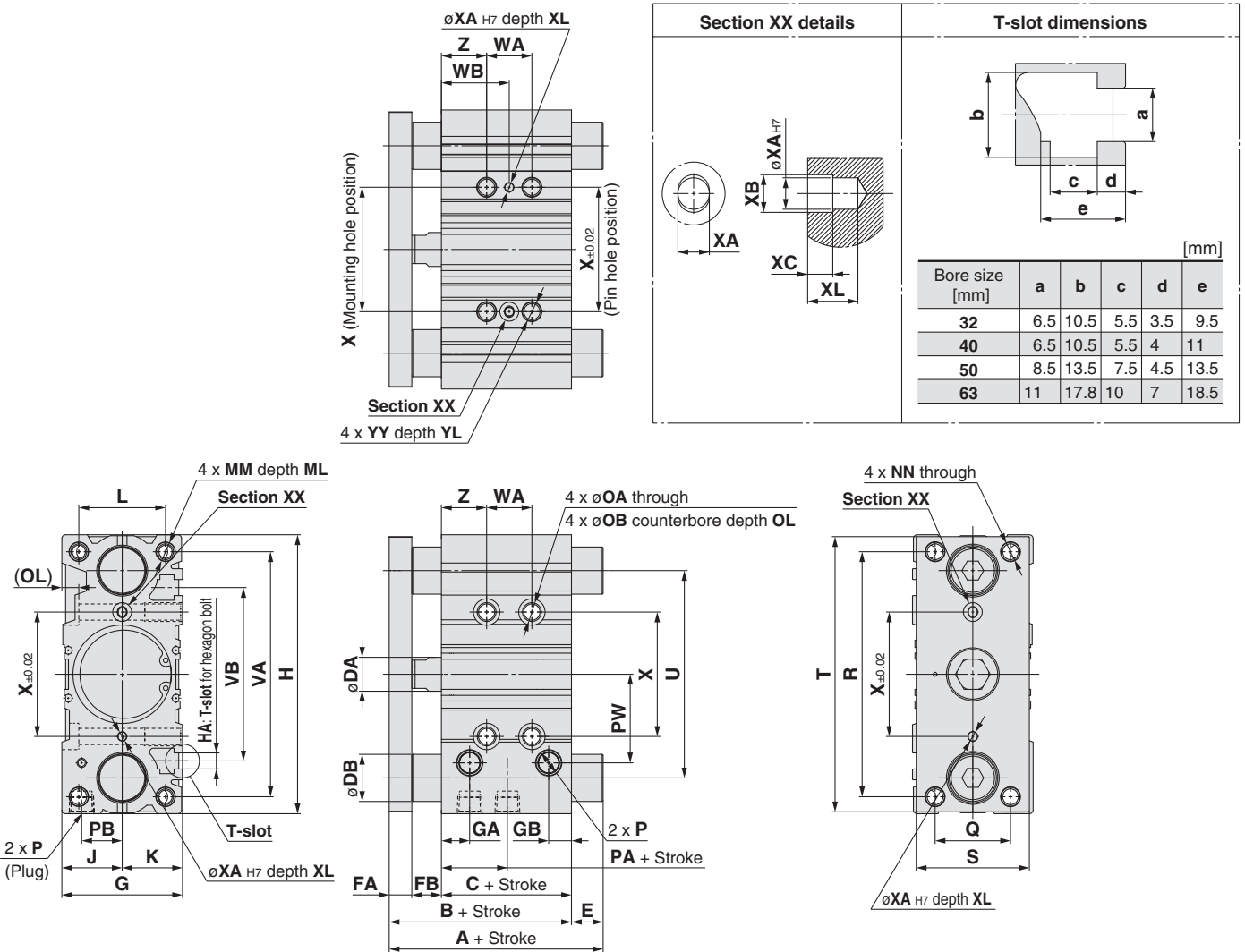
Bore size [mm]	A				DB	E			
	50 st or less	Over 50 st or less	Over 100 st or less	Over 200 st		50 st or less	Over 50 st or less	Over 100 st or less	Over 200 st
12	42	60.5	82.5	82.5	8	0	18.5	40.5	40.5
16	46	64.5	92.5	92.5	10	0	18.5	46.5	46.5
20	53	77.5	77.5	110	12	0	24.5	24.5	57
25	53.5	77.5	77.5	109.5	16	0	24	24	56

MGPL (Ball bushing)

MGPA (High precision ball bushing) A, DB, E Dimensions

Bore size [mm]	A				DB	E			
	30 st or less	Over 30 st or less	Over 100 st or less	Over 200 st		30 st or less	Over 30 st or less	Over 100 st or less	Over 200 st
12	43	55	84.5	84.5	6	1	13	42.5	42.5
16	49	65	94.5	94.5	8	3	19	48.5	48.5
20	59	76	100	117.5	10	6	23	47	64.5
25	65.5	81.5	100.5	117.5	13	12	28	47	64

ø32 to ø63/MGPM, MGPL, MGPA



- * The use of a slot (width XA, length XB, depth XC) allows for a relaxed pin pitch tolerance, with the pin hole (øXA_{H7}, depth XL) as the reference, without affecting mounting accuracy.
- * For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Strokes" on page 4.
- * Rc port only.

MGPM, MGPL, MGPA Common Dimensions

Bore size [mm]	Standard stroke [mm]	B	C	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P		
																					—	TN	TF
32	25,50,75	59.5	37.5	14	10	12	48	12	9	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.7	11	7.5	Rc1/8	NPT1/8	G1/8
40	100,125,150	66	44	14	10	12	54	15	12	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.7	11	7.5	Rc1/8	NPT1/8	G1/8
50	175,200,250	72	44	18	12	16	64	15	12	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	Rc1/4	NPT1/4	G1/4
63	300,350,400	77	49	18	12	16	78	15.5	13.5	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	—	9	Rc1/4	NPT1/4	G1/4

Bore size [mm]	PA	PB	PW	Q	R	S	T	U	VA	VB	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
											25 st or less	Over 25 st or less	Over 100 st or less	Over 200 st or less	Over 300 st or less	25 st or less	Over 25 st or less	Over 100 st or less	Over 200 st or less	Over 300 st or less								
32	6.5	16	35.5	30	96	44	110	78	98	63	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40	13	18	39.5	30	104	44	118	86	106	72	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50	9	21.5	47	40	130	60	146	110	130	92	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	13	28	58	50	130	70	158	124	142	110	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

MGPM (Slide bearing) A, DB, E Dimensions

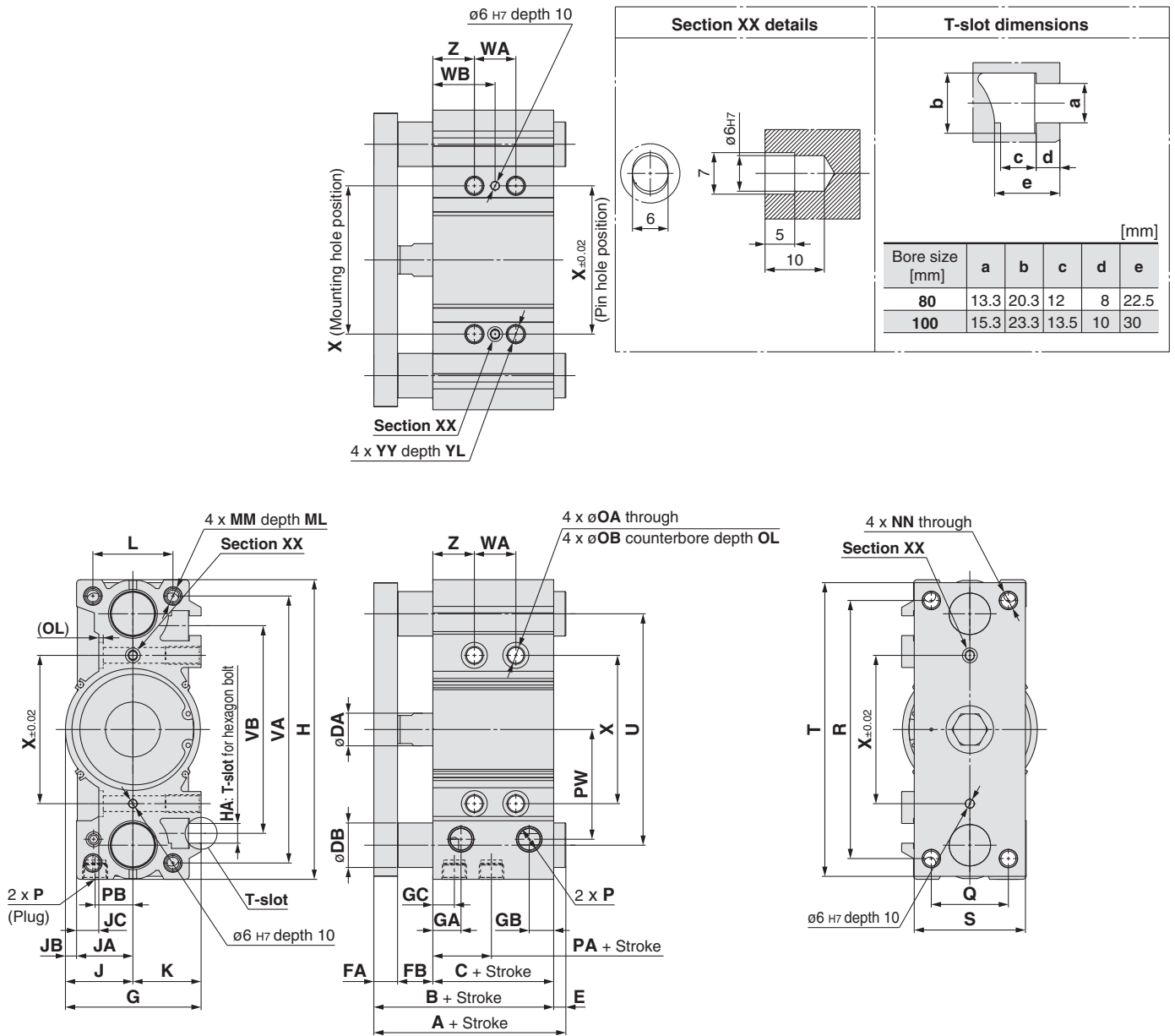
Bore size [mm]	A			DB	E		
	50 st or less	Over 50 st or less	Over 200 st		50 st or less	Over 50 st or less	Over 200 st
32	75	93.5	129.5	20	15.5	34	70
40	75	93.5	129.5	20	9	27.5	63.5
50	88.5	109.5	150.5	25	16.5	37.5	78.5
63	88.5	109.5	150.5	25	11.5	32.5	73.5

MGPL (Ball bushing)

MGPA (High precision ball bushing) A, DB, E Dimensions

Bore size [mm]	A				DB	E			
	50 st or less	Over 50 st or less	Over 100 st or less	Over 200 st		50 st or less	Over 50 st or less	Over 100 st or less	Over 200 st
32	79.5	96.5	116.5	138.5	16	20	37	57	79
40	79.5	96.5	116.5	138.5	16	13.5	30.5	50.5	72.5
50	91.5	112.5	132.5	159.5	20	19.5	40.5	60.5	87.5
63	91.5	112.5	132.5	159.5	20	14.5	35.5	55.5	82.5

ø80, ø100/MGPM, MGPL, MGPA



- * The use of a slot (width X6, length 7, depth 5) allows for a relaxed pin pitch tolerance, with the pin hole (ø6H7, depth 10) as the reference, without affecting mounting accuracy.
- * For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Strokes" on page 4.
- * Rc port only.

MGPM, MGPL, MGPA Common Dimensions

Bore size [mm]	Standard stroke [mm]	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	JC	K	L	MM	ML	NN	OA	OB	OL	P		
																									—	TN	TF
80	25,50,75,100 125,150,175,200	96.5	56.5	22	16	24	91.5	19	16.5	14.5	202	M12	45.5	38	7.5	15	46	54	M12 x 1.75	25	M12 x 1.75	10.6	17.5	3	Rc3/8	NPT3/8	G3/8
100	250,300,350,400	116	66	26	19	31	111.5	22.5	20.5	18	240	M14	55.5	45	10.5	10	56	62	M14 x 2.0	31	M14 x 2.0	12.5	20	8	Rc3/8	NPT3/8	G3/8

Bore size [mm]	PA	PB	PW	Q	R	S	T	U	VA	VB	WA					WB					X	YY	YL	Z
											25 st or less	Over 25 st or less	Over 100 st or less	Over 200 st or less	Over 300 st	25 st or less	Over 25 st or less	Over 100 st or less	Over 200 st or less	Over 300 st				
80	14.5	25.5	74	52	174	75	198	156	180	140	28	52	128	200	300	42	54	92	128	178	100	M12 x 1.75	24	28
100	17.5	32.5	89	64	210	90	236	188	210	166	48	72	148	220	320	35	47	85	121	171	124	M14 x 2.0	28	11

MGPM (Slide bearing) A, DB, E Dimensions

Bore size [mm]	A			DB	E		
	50 st or less	Over 50 st or less	Over 200 st		50 st or less	Over 50 st or less	Over 200 st
80	104.5	131.5	180.5	30	8	35	84
100	126.5	151.5	190.5	36	10.5	35.5	74.5

MGPL (Ball bushing)

MGPA (High precision ball bushing) A, DB, E Dimensions

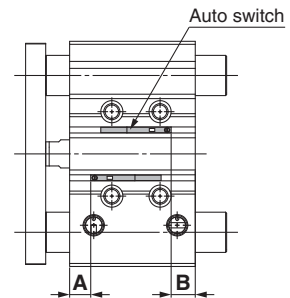
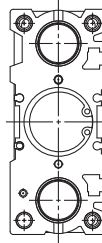
Bore size [mm]	A				DB	E			
	25 st or less	Over 25 st or less	Over 50 st or less	Over 200 st		25 st or less	Over 25 st or less	Over 50 st or less	Over 200 st
80	104.5	128.5	158.5	191.5	25	8	32	62	95
100	119.5	145.5	178.5	201.5	30	3.5	29.5	62.5	85.5

Auto Switch Mounting 1

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

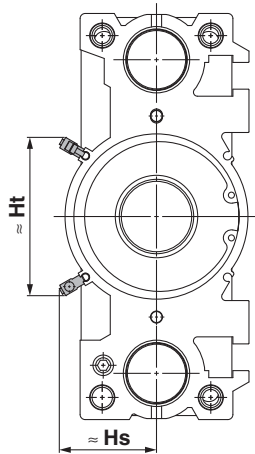
D-A9□
D-A9□V
D-M9□
D-M9□V
D-M9□W
D-M9□WV
D-M9□A
D-M9□AV

ø12 to ø100

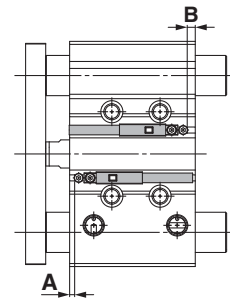
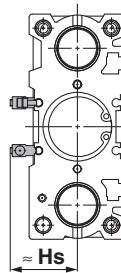


D-P3DW

ø80, ø100



ø32 to ø63



Auto Switch Proper Mounting Position Applicable Cylinder Series: MGP

[mm]

Auto switch model Bore size [mm]	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-P3DW	
	A	B	A	B	A	B
12	7.5	9.5	3.5	5.5	—	—
16	10.5	10.5	6.5	6.5	—	—
20	12.5	12.5	8.5	8.5	—	—
25	11.5	14	7.5	10	—	—
32	12.5	13	8.5	9	3	3.5
40	15.5	16.5	11.5	12.5	6	7
50	14.5	17	10.5	13	5.5	8
63	16.5	20	12.5	16	7	11
80	18	26	14	22	8.5	17
100	21.5	32.5	17.5	28.5	12	23

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

Auto Switch Mounting Height

[mm]

Auto switch model Bore size [mm]	D-A9□V		D-M9□V D-M9□WV D-M9□AV		D-P3DW	
	Hs	Ht	Hs	Ht	Hs	Ht
12	17	—	19.5	—	—	—
16	19.5	—	22	—	—	—
20	22	—	24.5	—	—	—
25	24	—	26	—	—	—
32	26.5	—	29	—	33	—
40	30.5	—	33	—	37	—
50	36	—	38.5	—	42.5	—
63	43	—	45.5	—	49.5	—
80	43	71.5	45	74	48	78.5
100	53	83	55	85.5	58	90

Minimum Stroke for Auto Switch Mounting

[mm]

Auto switch model	No. of auto switches mounted	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
D-A9□	1 pc.	5 Note 1)			5						
	2 pcs.	10 Note 1)			10						
D-A9□V	1 pc.	5									
	2 pcs.	10									
D-M9□V	1 pc.	5									
	2 pcs.	5									
D-M9□	1 pc.	5 Note 1)				5					
	2 pcs.	10 Note 1)	10								
D-M9□W	1 pc.	5 Note 2)									
	2 pcs.	10 Note 2)	10								
D-M9□WV D-M9□AV	1 pc.	5 Note 2)									
	2 pcs.	10									
D-M9□A	1 pc.	5 Note 2)									
	2 pcs.	10 Note 2)									
D-P3DW	1 pc.	—				15					
	2 pcs.	—				15					

Note 1) Confirm that it is possible to secure the minimum bending radius of 10 mm of the auto switch lead wire before use.

Note 2) Confirm that it is possible to securely set the auto switch(es) within the range of indicator green light ON range before use.

For in-line entry type, please also consider Note 1) shown above.

Note 3) The D-P3DW can be mounted on bore sizes ø32 to ø100.

Note 4) Bore sizes available with end-lock are ø20 to ø100.

Operating Range

[mm]										
Auto switch model	Bore size									
	12	16	20	25	32	40	50	63	80	100
D-A9□/A9□V	7	9	9	9	9.5	9.5	9.5	11	10.5	10.5
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	3.5	5	5	5	6	6	6	6.5	6	7

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion).

It may vary substantially depending on an ambient environment.

* Please consult SMC for magnetic field resistant auto switch D-P3DW.

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.

Consult with SMC for detailed specifications.

Type	Model	Electrical entry	Features
Solid state switch	D-P4DW□	Grommet (In-line)	Diagnostic indication (2-colour display) Bore size: ø32 to ø100

* With pre-wired connector is also available for solid state auto switches. For details, consult with SMC.

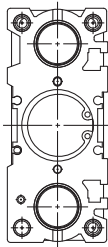
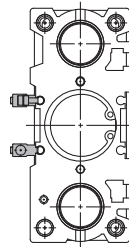
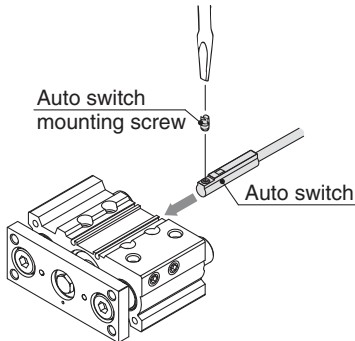
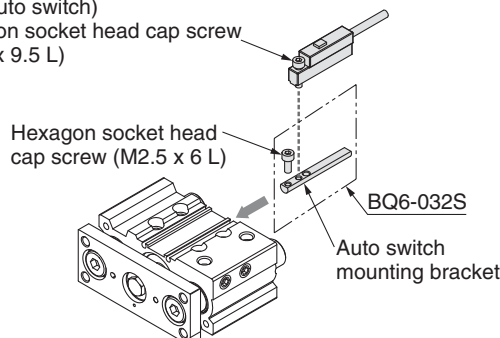
* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, consult with SMC.

* When installing the D-P4DW□, use the BMG7-032 auto switch mounting bracket.

Auto Switch Mounting 2

Auto Switch Mounting Brackets/Part No.

Applicable Cylinder Series: MGPM, MGPL

Applicable auto switches	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V	D-P3DW						
Bore size [mm]	ø12 to ø100	ø32 to ø100						
Auto switch mounting bracket part no.	—	BQ6-032S						
Auto switch mounting bracket fitting parts lineup/Weight	—	• Hexagon socket head cap screw (M2.5 x 6 L) • Auto switch mounting bracket (nut) Weight: 5 g						
Auto switch mounting surfaces	Surfaces with auto switch mounting slot	Surfaces with auto switch mounting slot						
								
Mounting of auto switch	 Auto switch mounting screw Auto switch When tightening the auto switch mounting screw, use a watchmakers' screwdriver with a handle 5 to 6 mm in diameter. Tightening Torque for Auto Switch Mounting Screw [N·m] <table><tr><th>Auto switch model</th><th>Tightening torque</th></tr><tr><td>D-M9□(V) D-M9□W(V) D-M9□A(V)</td><td>0.05 to 0.15</td></tr><tr><td>D-A9□(V)</td><td>0.10 to 0.20</td></tr></table>	Auto switch model	Tightening torque	D-M9□(V) D-M9□W(V) D-M9□A(V)	0.05 to 0.15	D-A9□(V)	0.10 to 0.20	① Fix the auto switch and the auto switch mounting bracket temporarily by tightening the attached hexagon socket head cap screw (M2.5 x 9.5 L) 1 to 2 turns. ② Insert the temporarily tightened mounting bracket into the mating groove of the cylinder tube, and slide the auto switch onto the cylinder tube through the groove. ③ Insert the auto switch onto the cylinder/actuator through the groove with the back part of the auto switch (lead wire side) and the back part of the auto switch mounting bracket. ④ Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L).* ⑤ If the detecting position is changed, go back to step ②. * The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder tube. This enables the replacement of the auto switch without adjusting the auto switch position. Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch. Note 2) The tightening torque for the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L) is 0.2 to 0.3 N·m. Note 3) Tighten the hexagon socket head cap screws evenly. (with auto switch) Hexagon socket head cap screw (M2.5 x 9.5 L)  Hexagon socket head cap screw (M2.5 x 6 L) BQ6-032S Auto switch mounting bracket
Auto switch model	Tightening torque							
D-M9□(V) D-M9□W(V) D-M9□A(V)	0.05 to 0.15							
D-A9□(V)	0.10 to 0.20							

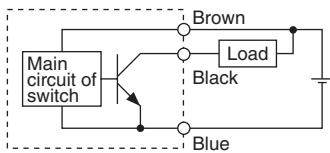
Note) Auto switch mounting brackets and auto switches are enclosed with the cylinder for shipment.
For an environment that needs the water-resistant auto switch, select the D-M9□A(V) type.

Prior to Use

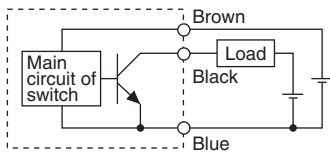
Auto Switch Connection and Example

Basic Wiring

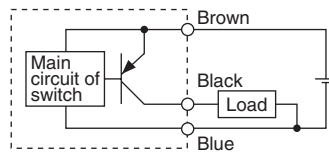
Solid state 3-wire, NPN



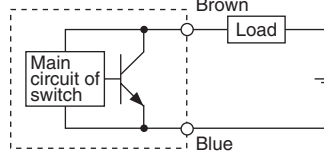
(Power supply for switch and load are separate.)



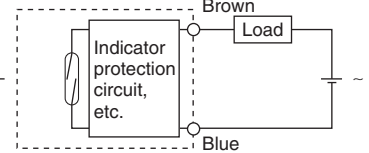
Solid state 3-wire, PNP



2-wire (Solid state)

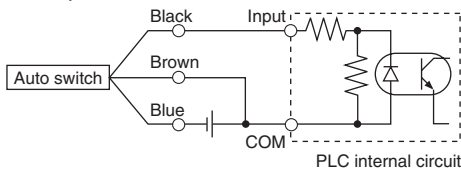


2-wire (Reed)

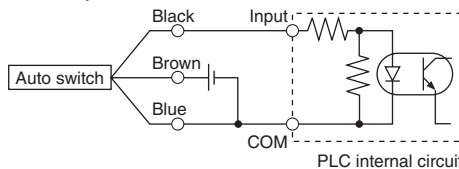


Example of Connection with PLC (Programmable Logic Controller)

• Sink input specifications 3-wire, NPN

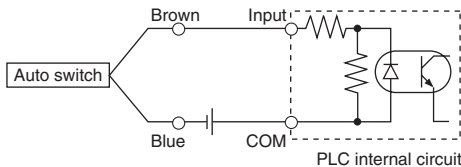


• Source input specifications 3-wire, PNP

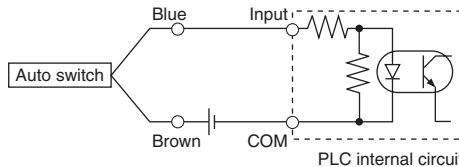


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

2-wire



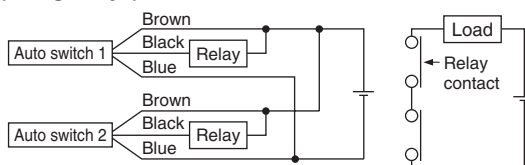
2-wire



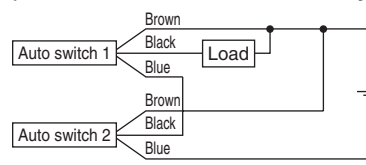
Example of AND (Series) and OR (Parallel) Connection

• 3-wire

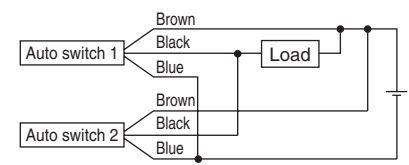
AND connection for NPN output (Using relays)



AND connection for NPN output (Performed with auto switches only)



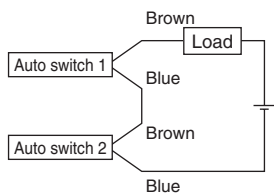
OR connection for NPN output



The indicator lights will light up when both of the auto switches are in the ON state.

• 2-wire

2-wire with 2-switch AND connection

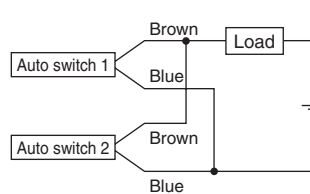


When two auto switches are connected in series, malfunction may occur because the load voltage will decrease in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

Load voltage at ON = Power supply voltage - Residual voltage x 2 pcs.
= 24 V - 4 V x 2 pcs.
= 16 V

Example: Power supply voltage 24 VDC
Auto switch internal voltage drop 4 V

2-wire with 2-switch OR connection



(Solid state)

When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase in the OFF state.

(Reed)

Because there is no leakage current, the load voltage will not increase in the OFF state. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

Example: Load impedance 3 kΩ
Auto switch leakage current 1 mA

Series MGP Simple Specials

These changes are dealt with Simple Specials System. Consult with SMC.



1 Change of Guide Rod End Shape

Symbol

-XA1/6/17/21

Applicable Series

Series	Model	Action	Symbol for change of rod end shape
MGP	Standard type	MGPM Slide bearing	XA1,6,17,21
		MGPL Ball bushing bearing	XA1,6
		MGPA High precision ball bushing bearing	

⚠ Precautions

- Ensure that the cylinder's overall length should not exceed the allowable overall length. In the case of exceeding the allowable overall length, it will be available as specials.
- In fig. (1), (2) below, E' dimension cannot make it into E dimension or less of the standard products. Confirm by referring to catalogue.
- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- * dimension should be the guide rod diameter (D) – 2 mm. In the case that the preferred dimension is different, fill in that dimension.

[mm]	
Bore size [mm]	Allowable overall length of cylinder
12,16	345
20 to 32	540
40 to 63	561
80,100	603

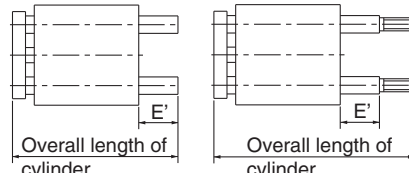
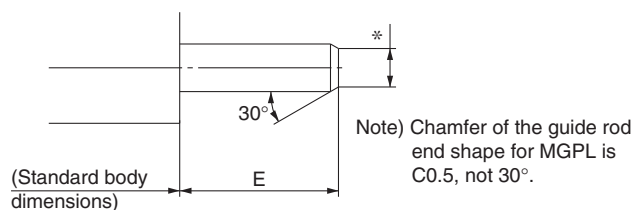


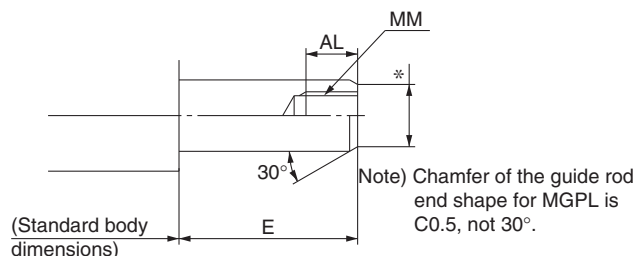
Fig. (1) For XA1, XA6 Fig. (2) For XA17, XA21

Guide Rod End Shape Pattern

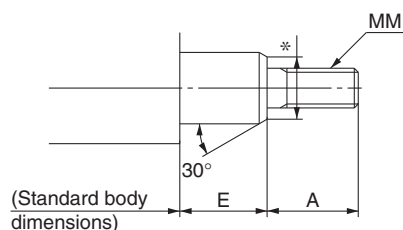
-XA1



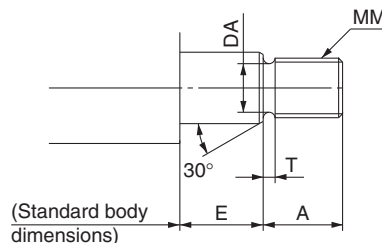
-XA6



-XA17



-XA21



Series MGP Simple Specials

These changes are dealt with Simple Specials System. Consult with SMC for details.



2 Tapped Hole, Drilled Hole, Pinned Hole Machined Additionally

Symbol

-XC79

This simple special is meant for machining additionally tapped hole, drilled hole, and pinned hole, as requested from customer, on parts designed largely for mounting a workpiece, etc. in the combined air cylinders.

But, for each model, since they have the portions which are impossible to machine additionally, refer to the additional machining limitation.

Applicable Series

Series		Model	Action	Component parts applicable for additional machining
MGP	Standard type	MGPM	Slide bearing	Plate
		MGPL	Ball bushing bearing	
		MGPA	High precision ball bushing bearing	

⚠ Precautions

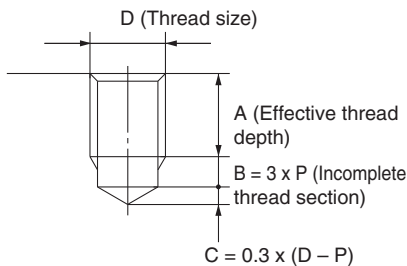
- We cannot take any responsibility as for the intensity of holes machined additionally and the effects of decreased intensity for the product itself.
- It will not be plated again for the machined part additionally.
- Be sure to fill in "through" for through-hole, and "effective depth" for blind hole.
- When using by machining through-hole additionally, ensure that the tip of the bolt, etc. for mounting workpiece should not stick into the cylinder side. It may result in an unexpected problem.
- Use caution not to interfere the existing mounting hole on the standard products with the hole to be machined additionally. But it is possible to drill additionally the larger size of hole at the same position as the existing hole.

Common Complementary Explanation/Holes which can be additionally machined are the following 3 types.

Tapped hole

Designated nominal diameter and tapped hole of a pitch are machined additionally. (Maximum nominal thread diameter M20)

Blind hole is deep into the bottom of prepared hole which sums up A to C in Fig. 1 in contrast to the effective depth of tapped hole. When there is a condition which does not allow through-hole, etc., leave sufficient thickness in the inner part of hole.



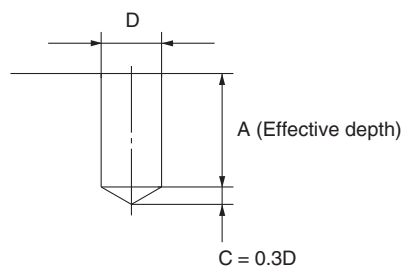
Note) P stands for thread pitch.

Drilled hole

Drilled hole of a designated internal diameter is machined.

(Maximum hole diameter 20 mm)

If you wish for blind hole, instruct us with effective depth. (Refer to Fig. 2.) Besides, dimensional accuracy for internal diameter will be 0.2 mm.

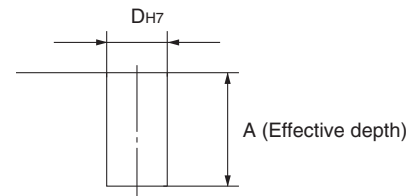


Pinned hole

Pinned hole of a designated diameter (reamer hole) is machined. (Maximum hole diameter 20 mm)

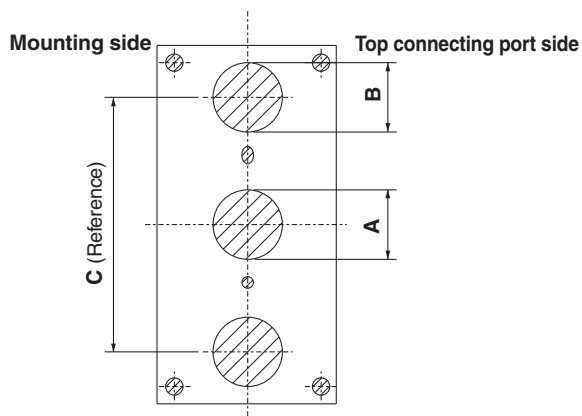
Internal dimension tolerates H7 tolerance to the designated hole diameter. (Refer to the table below.)

Hole dia.	3 or less	Over 3 to 6	Over 6 to 10	Over 10 to 18	Over 18 to 20
Tolerance	+0.01 0	+0.012 0	+0.015 0	+0.018 0	+0.021 0



Limitation for Machining Additionally/Since the slanted lines denote the restricted range for machining additionally, design the dimensions, referring to below.

Plate material: Steel



Dimensional Range Not Possible to Machine Additionally [mm]

Bore size [mm]	A	B	C
12	8	11	41
16	10	13	46
20	12	15	54
25	14	21	64
32	25	25	78
40	25	25	86
50	30	30	110
63	30	30	124
80	34	34	156
100	42	42	188

3 Heat Resistant Cylinder (−10 to 150°C)

Symbol

-XB6

Air cylinder which changed the seal material and grease, so that it could be used even at higher temperature up to 150 from −10°C.

How to Order

MGPM Standard model no. **-XB6**

Specifications

Heat resistant cylinder

Ambient temperature range	−10 to 150°C
Seals materials	Fluororubber
Grease	Heat resistant grease
Specifications other than above and external dimensions	Same as standard type

Warning

Precautions

Be aware that smoking cigarettes, etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

Applicable Series

Series	Model	Action
MGP	Standard type	MGPM Slide bearing

Note 1) Operate without lubrication from a pneumatic system lubricator.

Note 2) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.

Note 3) In principle, it is impossible to make built-in magnet type and the one with auto switch. But, as for the one with auto switch, and the heat resistant cylinder with heat resistant auto switch, since it will be differed depending on the series, please contact SMC.

Note 4) Piston speed is ranged from 50 to 500 mm/s.
But, MGP□80, 100, it will be 50 to 400 mm/s.

4 Intermediate Stroke (Using exclusive body)

Symbol

-XB10

Cylinder which can reduce the mounting space by using an exclusive body which does not use a spacer to achieve that the full length dimension could be shortened when an intermediate stroke other than the standard stroke is required.

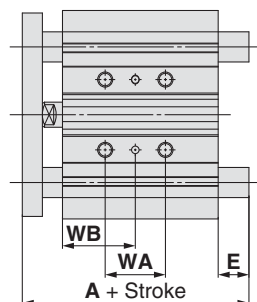
How to Order

MGP ^M_L_A Standard model no. **-XB10**

Intermediate stroke

Specifications: Same as standard type.

Dimensions: Series MGP



Stroke Range

Bore size [mm]	Stroke range [mm]
12, 16	11 to 249
20, 25	21 to 399
32, 40, 50 63, 80, 100	26 to 399

* Specifications except the stroke range are the same as standard.
Note) Applicable stroke available by the 1 mm interval.

MGPM, MGPL, MGPA/WA, WB Dimensions

Bore size [mm]	Stroke range [mm]	WA				WB			
		11 to 39st	41 to 99st	101 to 199st	201 to 249st	11 to 39st	41 to 99st	101 to 199st	201 to 249st
12	11 to 249	20	40	110	200	15	25	60	105
16		24	44	110	200	17	27	60	105
Bore size [mm]	Stroke range [mm]	WA				WB			
		21 to 39st	41 to 124st	126 to 199st	201 to 299st	21 to 39st	41 to 124st	126 to 199st	201 to 299st
20	21 to 399	24	44	120	200	29	39	77	117
25		24	44	120	200	29	39	77	117
Bore size [mm]	Stroke range [mm]	WA				WB			
		26 to 49st	51 to 124st	126 to 199st	201 to 299st	26 to 49st	51 to 124st	126 to 199st	201 to 299st
32	26 to 399	24	48	124	200	33	45	83	121
40		24	48	124	200	34	46	84	122
50		24	48	124	200	36	48	86	124
63		28	52	128	200	38	50	88	124
80		28	52	128	200	42	54	92	128
100		48	72	148	220	35	47	85	121

MGPM/A,E Dimensions

Bore size [mm]	A			E		
	11 to 74st	76 to 99st	101 to 249st	11 to 74st	76 to 99st	101 to 249st
12	42	60.5	82.5	0	18.5	40.5
16	46	64.5	92.5	0	18.5	46.5
Bore size [mm]	A			E		
	21 to 74st	76 to 99st	101 to 399st	21 to 74st	76 to 99st	101 to 399st
20	53	77.5	110	0	24.5	57
25	53.5	77.5	109.5	0	24	56
Bore size [mm]	A			E		
	26 to 74st	76 to 99st	101 to 399st	26 to 74st	76 to 99st	101 to 399st
32	75	93.5	129.5	15.5	34	70
40	75	93.5	129.5	9	27.5	63.5
50	88.5	109.5	150.5	16.5	37.5	78.5
63	88.5	109.5	150.5	11.5	32.5	73.5
80	104.5	131.5	180.5	8	35	84
100	126.5	151.5	190.5	10.5	35.5	74.5

* Dimensions except mentioned above are the same as standard type.

MGPL, MGPA/A,E Dimensions

Bore size [mm]	A			E		
	11 to 39st	41 to 99st	101 to 249st	10 to 39st	41 to 99st	101 to 249st
12	43	55	84.5	1	13	42.5
16	49	65	94.5	3	19	48.5
Bore size [mm]	A			E		
	21 to 39st	41 to 124st	126 to 199st	21 to 39st	41 to 124st	126 to 199st
20	59	76	100	6	23	47
25	65.5	81.5	100.5	117.5	12	28
Bore size [mm]	A			E		
	26 to 74st	76 to 124st	126 to 199st	26 to 74st	76 to 124st	126 to 199st
32	79.5	96.5	116.5	138.5	20	37
40	79.5	96.5	116.5	138.5	13.5	30.5
50	91.5	112.5	132.5	159.5	19.5	40.5
63	91.5	112.5	132.5	159.5	14.5	35.5
Bore size [mm]	A			E		
	26 to 49st	51 to 74st	76 to 199st	26 to 49st	51 to 74st	76 to 199st
80	104.5	128.5	158.5	191.5	8	32
100	119.5	145.5	178.5	201.5	3.5	29.5

5 Low Speed Cylinder (5 to 50 mm/s)

Symbol

-XB13

Even if driving at lower speeds 5 to 50 mm/s , there would be no stick-slip phenomenon and it can run smoothly.

Applicable Series

Series	Model	Action
MGP	Standard type	MGPM
		MGPL
		Slide bearing
		Ball bushing bearing

How to Order

MGP ^M_L Standard model no. **-XB13**
 Low speed cylinder ●

Note 1) Operate without lubrication from a pneumatic system lubricator.

Note 2) For the speed adjustment, use speed controllers for controlling at lower speeds. (Series AS-FM/AS-M)

Specifications

Piston speed	5 to 50 mm/s
Dimensions	Same as standard type
Additional specifications	Same as standard type

Warning

Operating Precautions

Be aware that smoking cigarettes, etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

6 Fluororubber Seals

Symbol

-XC22

Applicable Series

Series	Model	Action
MGP	Standard type	MGPM
		Slide bearing

How to Order

MGPM Standard model no. **-XC22**
 Fluororubber seals ●

Specifications

Seal material	Fluororubber
Ambient temperature range	With auto switch : -10 to 60°C (No freezing) Without auto switch : -10 to 70°C
Specifications other than above and external dimensions	Same as standard type for each series

Note 1) Please confirm with SMC, as the type of chemical and the operating temperature may not allow the use of this product.

Note 2) Cylinders with auto switches can also be produced; however, auto switch related parts (auto switch units, mounting brackets, built-in magnets) are the same as standard products. Before using these, please contact SMC regarding their suitability for the operating environment.

Note 3) The MGP series are without a cushion.
Confirm the kinetic energy.

7 Bottom Mounting Style

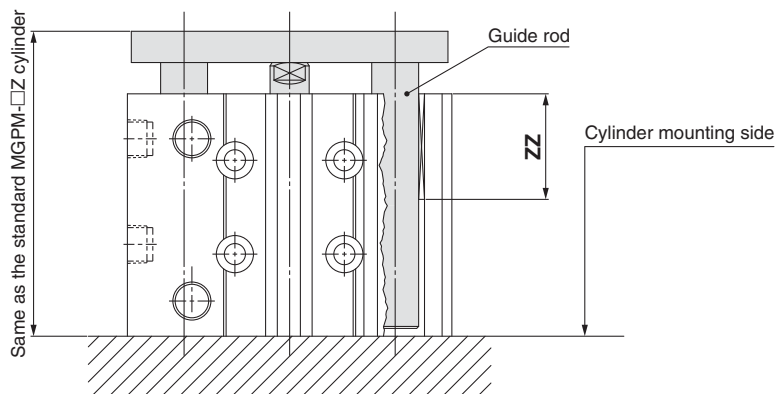
Symbol
-XC82

Since the guide rod does not protrude from the bottom at the retraction of the rod, relief holes for guide rods are not required.

How to Order

MGP M 32 - 50 Z - [] [] - XC82

- Compact guide cylinder
- Bearing Type [mm]
M Slide bearing
- Bore size [mm]
12 12 mm
16 16 mm
20 20 mm
25 25 mm
32 32 mm
40 40 mm
50 50 mm
63 63 mm
80 80 mm
100 100 mm
- Cylinder stroke [mm]
Bore size [mm] Applicable stroke [mm]
12 to 25 75, 100
32 to 100 25, 50, 75, 100
- Auto switch
- Suffix for auto switch
- Bottom mounting type



Note) The total length (ZZ) of the guide rod bushing is shorter than the standard type.

8 Symmetrical Port Position

Symbol

-X144

Ports are mounted symmetrically.

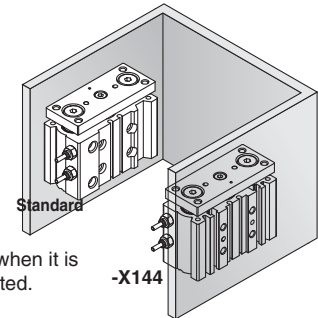
Applicable Series

Series	Model	Action
MGP	Standard type	MGPM
		MGPL
		MGPA

How to Order

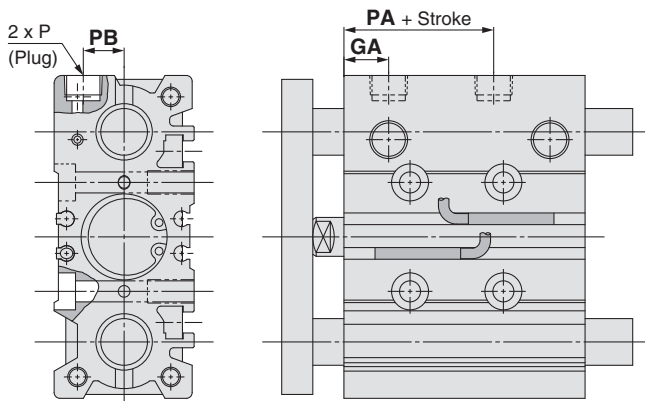
MGP^M_L^A Standard model no. -X144

Symmetrical port position ●



This makes it easy to remove and rotate piping when it is mounted on a wall where mounting space is limited.

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



MGPM, MGPL Common Dimensions

Bore size [mm]	GA	PA	PB
12	11	13	8
16	11	15	10
20	10.5	12.5	10.5
25	11.5	12.5	13.5
32	12.5	7	15
40	14	13	18
50	14	9	21.5
63	16.5	14	28
80	14.5	14.5	25.5
100	18	17.5	32.5

9 Lateral Piping Type (Plug location changed)

Symbol

-X867

This is the type with the port on the top plugged in order to use the piping port on the side.

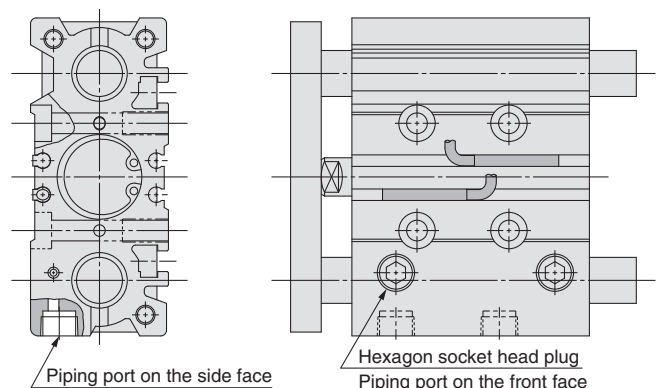
Applicable Series

Series	Model	Action
MGP	Standard type	MGPM
		MGPL
		MGPA

How to Order

MGP^M_L^A Standard model no. -X867

Lateral piping type (Plug location changed) ●



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- *1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

Warning

- The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- Only personnel with appropriate training should operate machinery and equipment.**
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
 - The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
 - When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
 - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
 - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 - Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
 - An application which could have negative effects on people, property, or animals requiring special safety analysis.
 - Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

- The product is provided for use in manufacturing industries.**
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

SMC Corporation (Europe)

Austria	☎ +43 (0)2262622800	www.smc.at	office@smc.at
Belgium	☎ +32 (0)33551464	www.smc-pneumatics.be	info@smc-pneumatics.be
Bulgaria	☎ +359 (0)2807670	www.smc.bg	office@smc.bg
Croatia	☎ +385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	☎ +420 541424611	www.smc.cz	office@smc.cz
Denmark	☎ +45 70252900	www.smc.dk.com	smc@smcdk.com
Estonia	☎ +372 6510370	www.smc-pneumatics.ee	smc@smc-pneumatics.ee
Finland	☎ +358 207513513	www.smc.fi	smc@smc.fi
France	☎ +33 (0)164761000	www.smc-france.fr	promotion@smc-france.fr
Germany	☎ +49 (0)61034020	www.smc.de	info@smc.de
Greece	☎ +30 210 2717265	www.smc-hellas.gr	sales@smc-hellas.gr
Hungary	☎ +36 23511390	www.smc.hu	office@smc.hu
Ireland	☎ +353 (0)14039000	www.smc-pneumatics.ie	sales@smc-pneumatics.ie
Italy	☎ +39 0292711	www.smc-italia.it	mailbox@smc-italia.it
Latvia	☎ +371 67817700	www.smc.lv	info@smc.lv

Lithuania	☎ +370 5 2308118	www.smc.lt	info@smc.lt
Netherlands	☎ +31 (0)205318888	www.smc-pneumatics.nl	info@smc-pneumatics.nl
Norway	☎ +47 67129020	www.smc-norge.no	post@smc-norge.no
Poland	☎ +48 (0)222119616	www.smc.pl	office@smc.pl
Portugal	☎ +351 226166570	www.smc.eu	post@smc-smc.es
Romania	☎ +40 213205111	www.smc-romania.ro	smcromania@smc-romania.ro
Russia	☎ +7 8127185445	www.smc-pneumatik.ru	info@smc-pneumatik.ru
Slovakia	☎ +421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	☎ +386 (0)73885412	www.smc.si	office@smc.si
Spain	☎ +34 902184100	www.smc.eu	post@smc-smc.es
Sweden	☎ +46 (0)86031200	www.smc.nu	post@smc.nu
Switzerland	☎ +41 (0)523963131	www.smc.ch	info@smc.ch
Turkey	☎ +90 212 489 0 440	www.smc-pneumatik.com.tr	info@smc-pneumatik.com.tr
UK	☎ +44 (0)845 121 5122	www.smc-pneumatics.co.uk	sales@smc-pneumatics.co.uk