Compact Guide Cylinder /Wide type New

ø20, ø25, ø32, ø40, ø50, ø63

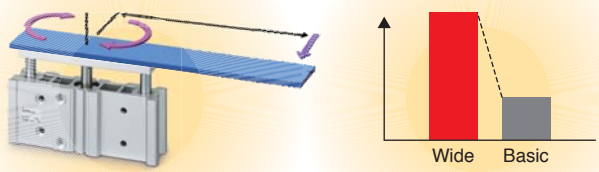
Doubling the guide pitch

trebles the allowable plate rotational torque.

2.5 N·m ← 0.75 N·m

For MGPWM20-50

◆ Allowable rotational torque



- The allowable rotational torque of the plate is improved by up to 3 times by making the guide pitch twice the basic type and placing the guide components at an optimal location.
- Suitable when used as a pusher or lifter.

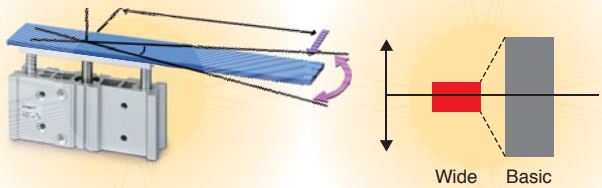
Non-rotating accuracy of the plate improved

±0.03° ← ±0.09°

Wide type — For MGPWL20

Basic type — For MGPL20

◆ Non-rotating accuracy

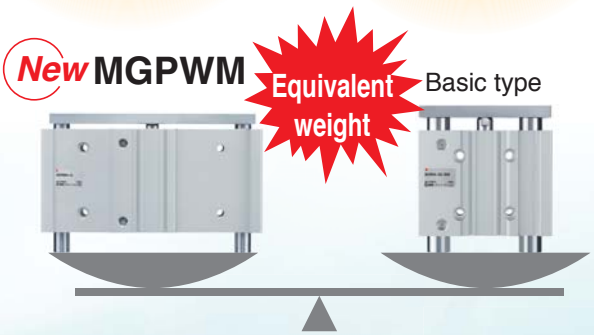


- The plate non-rotating accuracy is improved due to the increase in guide pitch.

Equivalent weight

to the basic type

- Although the volume is 170% more than the MGP basic type, the weight of the MGP wide type is equivalent to the basic type by changing the plate material and optimizing the component dimensions.



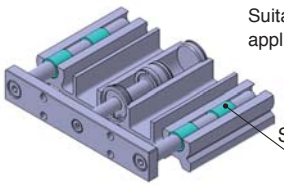
Series MGPW

SMC

CAT.ES20-228A

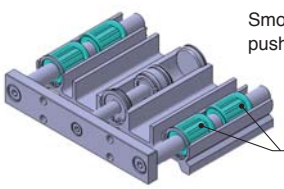
3 bearing types are available for various applications.

Slide bearing Series MGPWM



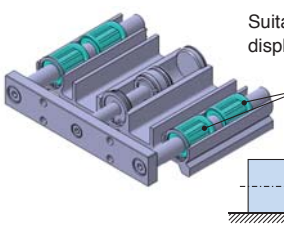
Suitable for lateral load applications

Ball bushing Series MGPWL



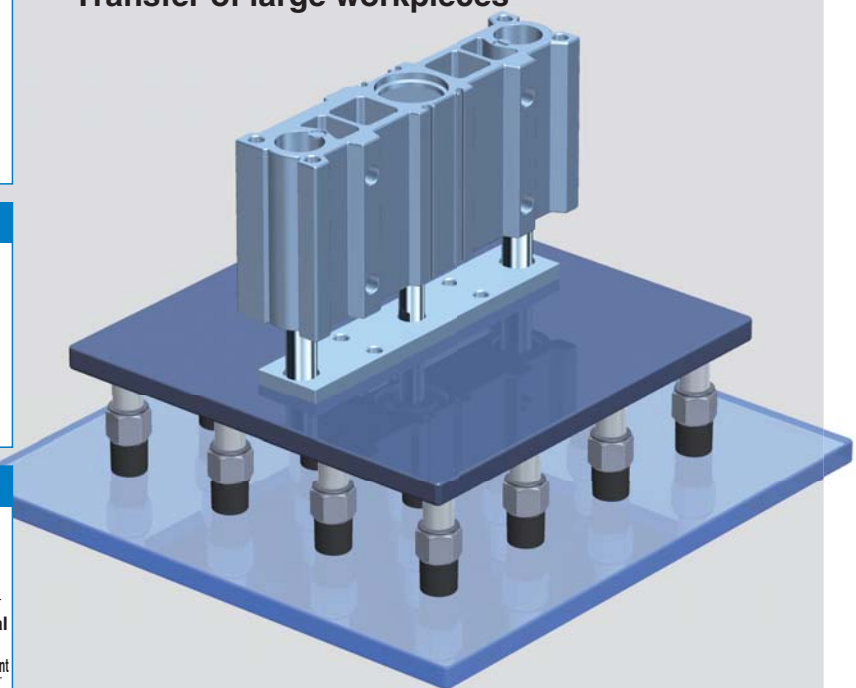
Smooth operation suitable for pusher and lifter

High precision ball bushing Series MGPWA



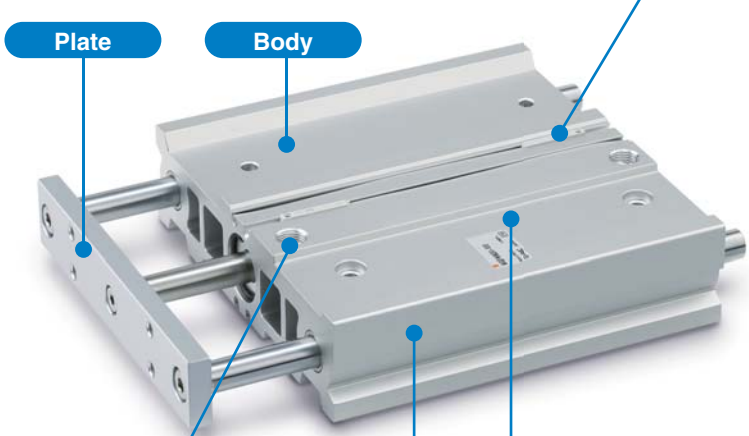
Suitable for minimizing plate displacement

Transfer of large workpieces



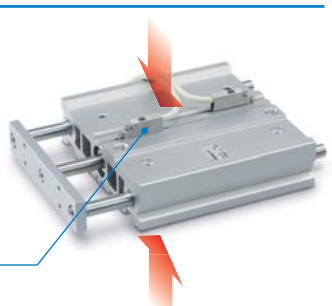
Knock pin hole is available as made to order.

If a knock pin is required on the plate or body, "–XC56: With knock pin holes" model is available as a made to order.



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

- 2-color display solid state auto switch **D-M9□**
- Reed auto switch **D-A9□**
- Magnetic field resistant 2-color display solid state auto switch **D-P3DW**



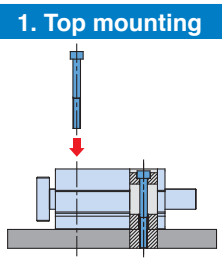
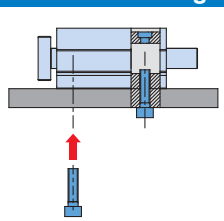
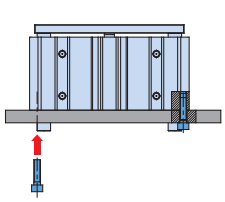
∗The D-Y7 and D-Z7 auto switches are not mountable.

Top ported

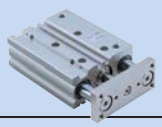
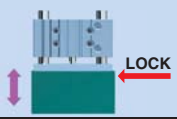
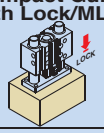
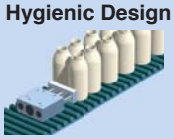
Side porting is available as made to order.

The port is located on the top of the body in the standard type, but if side porting is required, it is also available. (–X867: Side porting type)

3 mounting types are possible.

1. Top mounting	2. Side mounting	3. Bottom mounting
		

Compact Guide Cylinders, Series Variations

Series	Bearing type	Bore size (mm)												Page
		6	10	12	16	20	25	32	40	50	63	80	100	
Basic type/MGP 	Slide bearing Ball bushing High precision ball bushing			●	●	●	●	●	●	●	●	●	●	CAT.ES20-219 
With air cushion/MGP-A  					●	●	●	●	●	●	●	●	●	Best Pneumatics  P.289
With end lock/MGP-H/R  						●	●	●	●	●	●	●	●	Best Pneumatics  P.307
Wide type/MGPW New  	Slide bearing Ball bushing High precision ball bushing					●	●	●	●	●	●			Page 2 of this catalog
Clean series/12/13-MGP  	Ball bushing			●	●	●	●	●	●	●	●			Best Pneumatics  P.283
Water-resistant/MGP R/V  	Slide bearing					●	●	●	●	●	●	●	●	Best Pneumatics  P.283
Heavy duty guide rod type/MGPS  										●		●		Best Pneumatics  P.319
Miniature Guide Rod Cylinder/MGJ  		●	●											Best Pneumatics  P.255
Compact Guide Cylinder with Lock/MLGP  	Slide bearing Ball bushing					●	●	●	●	●	●	●	●	Best Pneumatics  P.881
Hygienic Design Cylinder/HYG  	Slide bearing					●	●	●	●	●	●			Best Pneumatics  P.873

New Series MGPW (Wide type), Stroke Variations

Bearing type	Bore size (mm)	Stroke (mm)							
		25	50	75	100	125	150	175	200
MGPWM Slide bearing MGPWL Ball bushing MGPWA High precision ball bushing	20	●	●	●	●	●	●	●	●
	25	●	●	●	●	●	●	●	●
	32	●	●	●	●	●	●	●	●
	40	●	●	●	●	●	●	●	●
	50	●	●	●	●	●	●	●	●
	63	●	●	●	●	●	●	●	●

Series MGPW
Specific Product Precautions

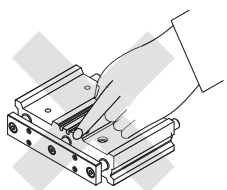
Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) and the Operation Manual for Actuator Precautions and Auto Switch Precautions. Please download it via our website, http://www.smcworld.com

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.

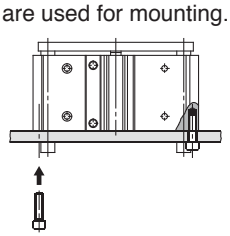
The flatness of the mounting surface may not be maintained, which would cause an increase in sliding resistance.

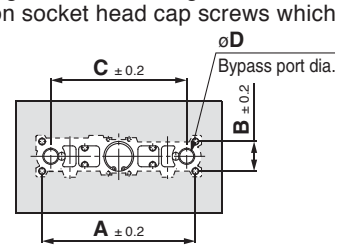
5. Make sure that the cylinder mounting surface has a flatness of 0.05 mm or less.

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.

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.



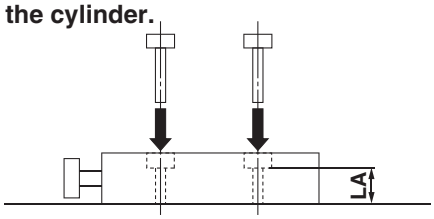


Bore size (mm)	A (mm)	B (mm)	C (mm)	D (mm) MGPWM	D (mm) MGPWL/A	Hexagon socket head cap screw
20	126	24	108	12	12	M5 x 0.8
25	146	30	128	14	15	M6 x 1.0
32	176	34	156	18	18	M8 x 1.25
40	192	40	172	18	18	M8 x 1.25
50	240	46	220	22	22	M10 x 1.5
63	266	58	248	22	22	M10 x 1.5

Mounting

⚠Caution

7. Tighten the screws to the correct tightening torques specified in the table below when mounting parts on top of the cylinder.



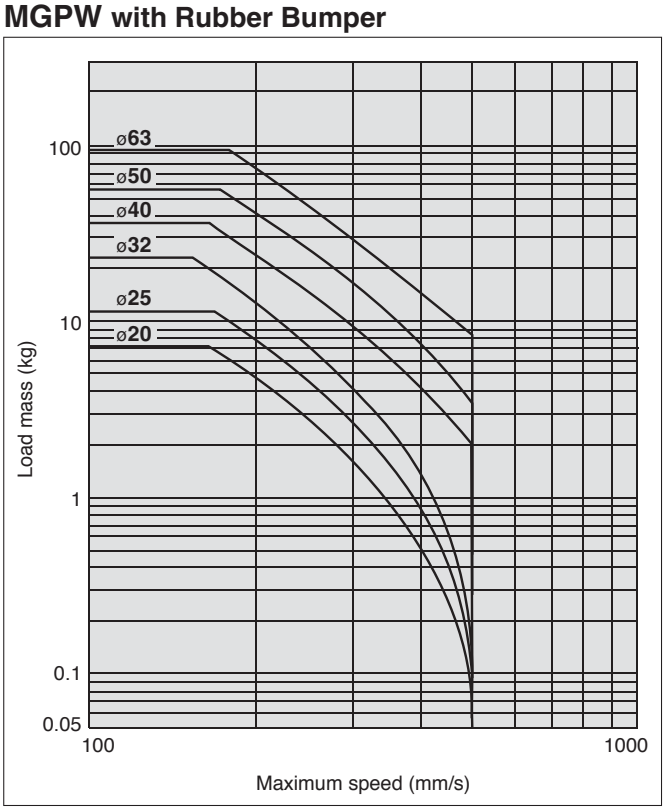
Bore size (mm)	Hexagon socket head cap screw	Tightening torque (N·m)	**LA** dimension (mm)
20	M5	3.0 to 4.0	30.5
25			36.5
32	M6	5.2 to 6.4	40.5
40			46.5
50	M8	12.5 to 15.5	54.5
63			68.5

Allowable Kinetic Energy

⚠Caution

Load mass and a maximum speed must be within the ranges shown in the graph below.

MGPW with Rubber Bumper



Other

⚠Caution

Do not use this cylinder as a stopper.

SMC

Compact Guide Cylinder/Wide Type

Series MGPW

ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Compact Guide Cylinder **MGP W M 25 □ – 50 – M9BW □**

Compact Guide Cylinder

Wide type

Bearing type

M	Slide bearing
L	Ball bushing
A	High precision ball bushing

Bore size

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

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Strokes" on page 3.

Auto switch

Nil	Without auto switch (Built-in magnet)

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

Number of auto switches

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

Applicable Auto Switches/Refer to pages 1719 to 1827 in Best Pneumatics No. 3 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	–	Grommet	Yes	3-wire (NPN)	24 V	5 V,12 V	–	**M9NV**	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				**M9PV**	**M9P**	●	●	●	○	○		
				2-wire		12 V		**M9BV**	**M9B**	●	●	●	○	○	–	
	Diagnostic indication (2-color display)			3-wire (NPN)		5 V,12 V		**M9NWV**	**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)				**M9PWV**	**M9PW**	●	●	●	○	○		
				2-wire		12 V		**M9BWV**	**M9BW**	●	●	●	○	○	–	
	Water-resistant (2-color display)			3-wire (NPN)		5 V,12 V		**M9NAV**∗∗∗	**M9NA**∗∗∗	○	○	●	○	○	IC circuit	
				3-wire (PNP)				**M9PAV**∗∗∗	**M9PA**∗∗∗	○	○	●	○	○		
				2-wire		12 V		**M9BAV**∗∗∗	**M9BA**∗∗∗	○	○	●	○	○	–	
	Magnetic field resistant (2-color display)			2-wire (Non-polar)		–		–	**P3DW**∗∗	●	–	●	●	○		
Reed auto switch	–	Grommet	Yes	3-wire (NPN equivalent)	–	5 V	–	**A96V**	**A96**	●	–	●	–	–	IC circuit	–
			No	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.

∗ 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

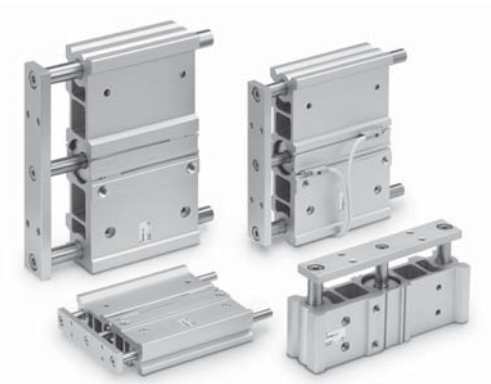
∗ Solid state auto switches marked with "○" are produced upon receipt of order.

∗∗ Bore sizes ø32 to ø63 are available for the D-P3DW.

∗ Since there are other applicable auto switches than listed, refer to page 19 for details.

∗ For details about auto switches with pre-wired connector, refer to pages 1784 and 1785 in Best Pneumatics No. 3. For the D-P3DW□, refer to the catalog CAT. ES20-201.

∗ Auto switches are shipped together, (but not assembled).



Specifications

Bore size (mm)	20	25	32	40	50	63
Action	Double acting					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.1 MPa					
Ambient and fluid temperature	–10 to 60°C (No freezing)					
Piston speed Note)	50 to 500 mm/s					
Cushion	Rubber bumper on both ends					
Lubrication	Not required (Non-lube)					
Stroke length tolerance	$^{+1.5}_{0}$ mm					

Note) Speed with no load

Standard Strokes

Bore size (mm)	Standard stroke (mm)
20 to 63	25, 50, 75, 100, 125, 150, 175, 200

Manufacture of Intermediate Strokes

Description	Spacer installation Spacers are installed in the standard stroke cylinder. • ø20 to ø32: Available by the 1 mm stroke interval. • ø40 to ø63: Available by the 5 mm stroke interval.	
Part no.	Refer to “How to Order” for the standard model numbers.	
Applicable stroke (mm)	ø20 to ø32	1 to 199
	ø40 to ø63	5 to 195
Example	Part no.:MGPWM20-49 A spacer 1 mm in width is installed in a MGPWM20-50. C dimension (Body length): 84 mm	

Refer to pages 18 to 20 for cylinders with auto switches.

· Auto switch proper mounting position (detection at stroke end) and its mounting height
· Minimum stroke for auto switch mounting
· Auto switch mounting brackets/Part no.

Theoretical Output

OUT IN

(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	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

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

Made to Order

Made to Order
(For details, refer to pages 22 and 23.)

Symbol	Description
-XC56	With knock pin holes
-X867	Side porting type

Weight

Slide Bearing: MGPWM

(kg)

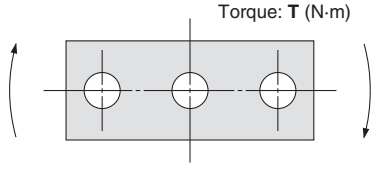
Bore size (mm)	Standard stroke (mm)							
	25	50	75	100	125	150	175	200
20	0.63	0.86	1.11	1.33	1.54	1.76	1.98	2.20
25	0.84	1.11	1.47	1.74	2.01	2.28	2.55	2.82
32	1.31	1.71	2.22	2.61	3.00	3.38	3.77	4.15
40	1.53	1.98	2.54	2.97	3.40	3.83	4.26	4.69
50	2.45	3.12	4.01	4.66	5.31	5.96	6.61	7.26
63	3.25	4.07	5.12	5.91	6.71	7.51	8.31	9.11

Ball Bushing: MGPWL/High Precision Ball Bushing: MGPWA

(kg)

Bore size (mm)	Standard stroke (mm)							
	25	50	75	100	125	150	175	200
20	0.65	0.92	1.15	1.37	1.61	1.83	2.05	2.28
25	0.89	1.23	1.52	1.81	2.11	2.40	2.68	2.97
32	1.36	1.76	2.22	2.61	3.03	3.41	3.80	4.18
40	1.58	2.02	2.53	2.96	3.43	3.86	4.29	4.72
50	2.51	3.19	3.94	4.59	5.26	5.91	6.55	7.20
63	3.32	4.14	5.04	5.84	6.66	7.46	8.26	9.06

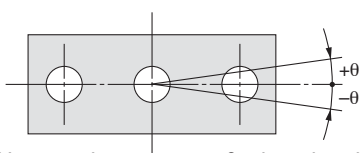
Allowable Rotational Torque of Plate



T (N·m)

Bore size (mm)	Bearing type	Stroke (mm)							
		25	50	75	100	125	150	175	200
20	**MGPWM**	2.10	1.63	1.74	1.51	1.34	1.20	1.08	0.99
	MGPWL/A	3.97	4.36	3.46	2.87	3.93	3.45	3.07	2.76
25	**MGPWM**	3.53	2.74	3.28	2.90	2.59	2.34	2.14	1.97
	MGPWL/A	6.88	6.78	5.43	4.51	6.27	5.51	4.90	4.40
32	**MGPWM**	7.98	6.39	7.00	6.19	5.54	5.02	4.59	4.22
	MGPWL/A	11.13	8.48	11.14	9.36	12.46	11.00	9.83	8.87
40	**MGPWM**	8.80	7.04	7.72	6.82	6.11	5.54	5.06	4.66
	MGPWL/A	12.26	9.34	12.27	10.31	13.73	12.12	10.83	9.77
50	**MGPWM**	17.57	14.28	16.17	14.44	13.04	11.89	10.93	10.11
	MGPWL/A	17.08	13.20	19.64	16.62	20.45	18.10	16.19	14.61
63	**MGPWM**	19.80	16.09	18.23	16.28	14.70	13.41	12.32	11.40
	MGPWL/A	19.18	14.81	22.07	18.66	22.98	20.33	18.18	16.39

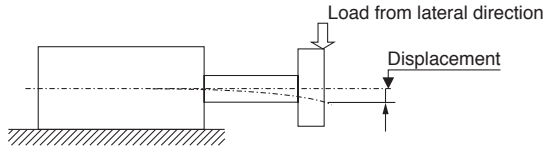
Non-rotating Accuracy of Plate



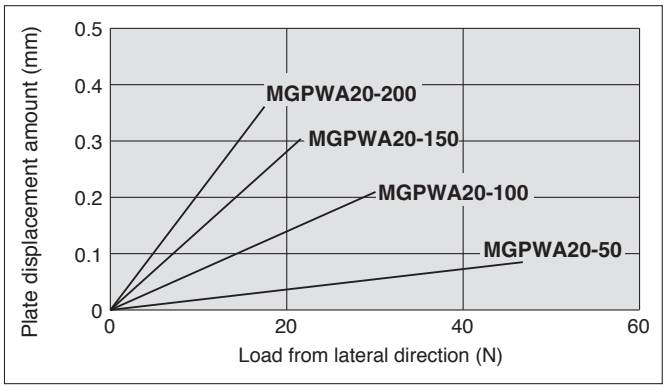
Non-rotating accuracy θ when the plate is retracted and when no load is applied is not more than the values shown in the table as a guide line.

Bore size (mm)	Non-rotating accuracy θ		
	MGPWM	**MGPWL**	**MGPWA**
20	±0.05°	±0.03°	±0.01°
25	±0.04°		
32			
40			
50	±0.03°		
63			

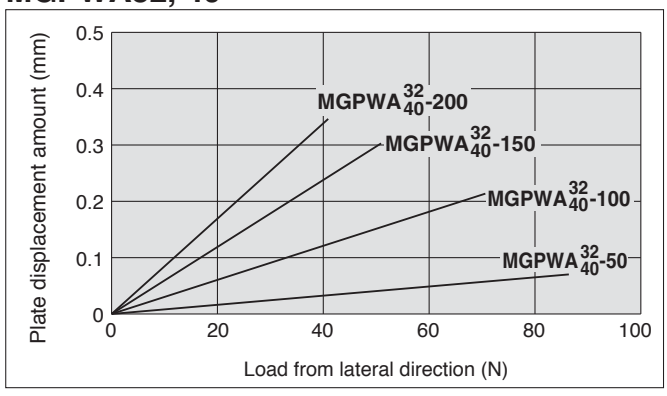
High Precision Ball Bushing/MGPWA Plate Displacement Amount (Reference Values)



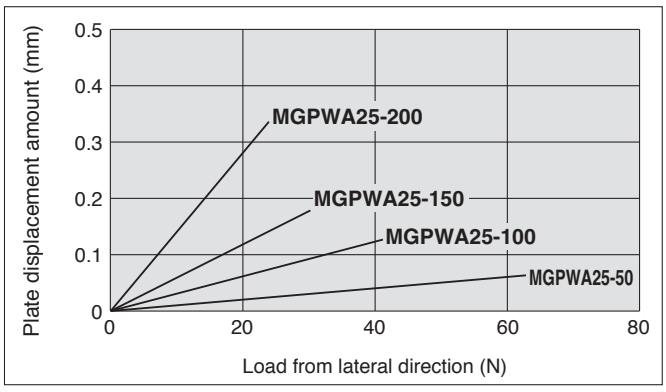
MGPWA20



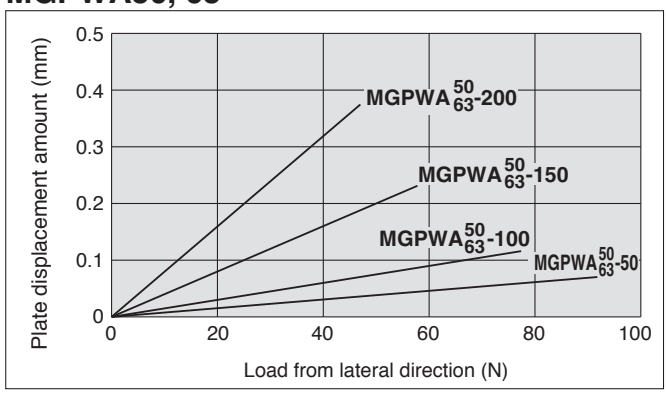
MGPWA32, 40



MGPWA25



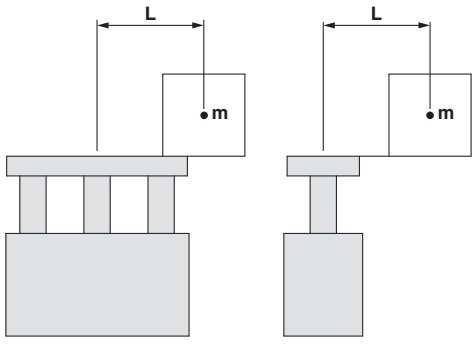
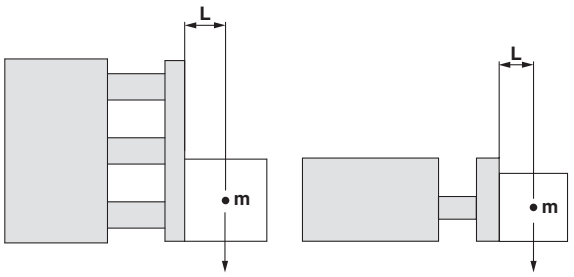
MGPWA50, 63



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 MGPWL series.

Series MGPW
Model Selection

Selection Conditions

	Vertical		Horizontal	
Mounting orientation				
Maximum speed (mm/s)	200 or less	400	200 or less	400
Graph (Slide bearing type)	(1), (2)	(3), (4)	(17), (18)	(19), (20)
Graph (Ball bushing type)	(5) to (10)	(11) to (16)	(21) to (24)	(25) to (28)

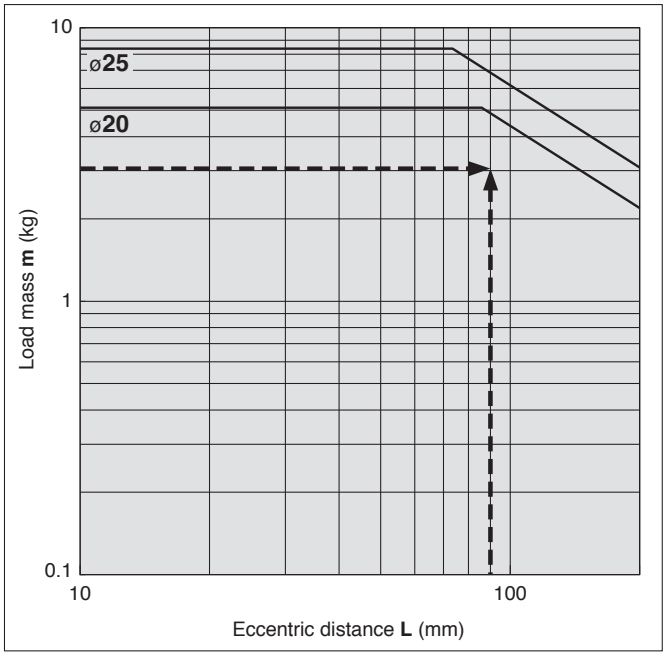
Selection Example 1 (Vertical Mounting)

Selection conditions

Mounting: Vertical
Bearing type: Ball bushing
Stroke: 50 stroke
Maximum speed: 200 mm/s
Load mass: 5 kg
Eccentric distance: 90 mm

Find the point of intersection for the load mass of 3 kg and the eccentric distance of 90 mm on graph (6), based on vertical mounting, ball bushing, 50 stroke, and the speed of 200 mm/s.
→ **MGPWL20-50** is selected.

(6) 26 to 100 stroke, V = 200 mm/s or less



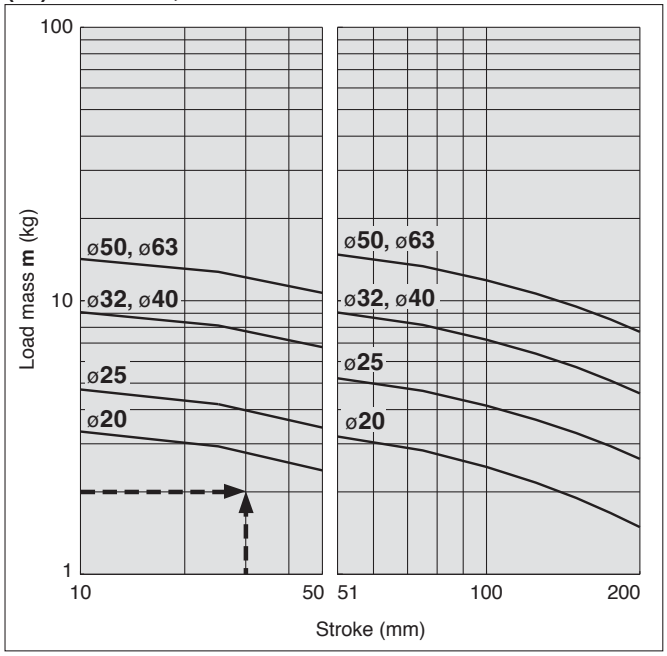
Selection Example 2 (Horizontal Mounting)

Selection conditions

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

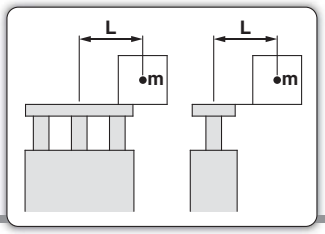
Find the point of intersection for the load mass of 2 kg and 30 stroke on graph (17), based on horizontal mounting, slide bearing, the distance of 50 mm between the plate and load center of gravity, and the speed of 200 mm/s.
→ **MGPWM20-30** is selected.

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



· When the maximum speed exceeds 200 mm/s, the allowable load mass 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

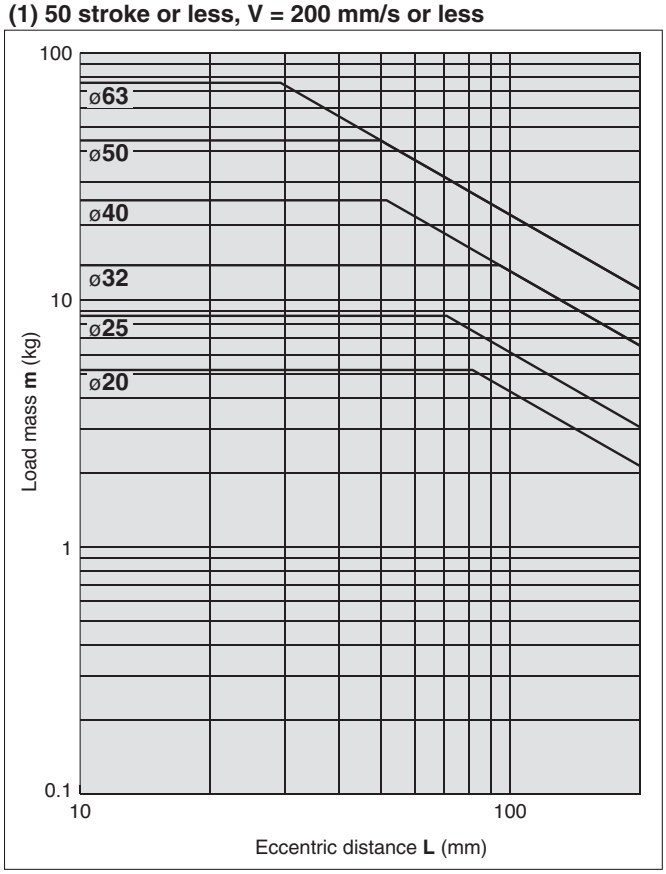


Vertical Mounting Slide bearing

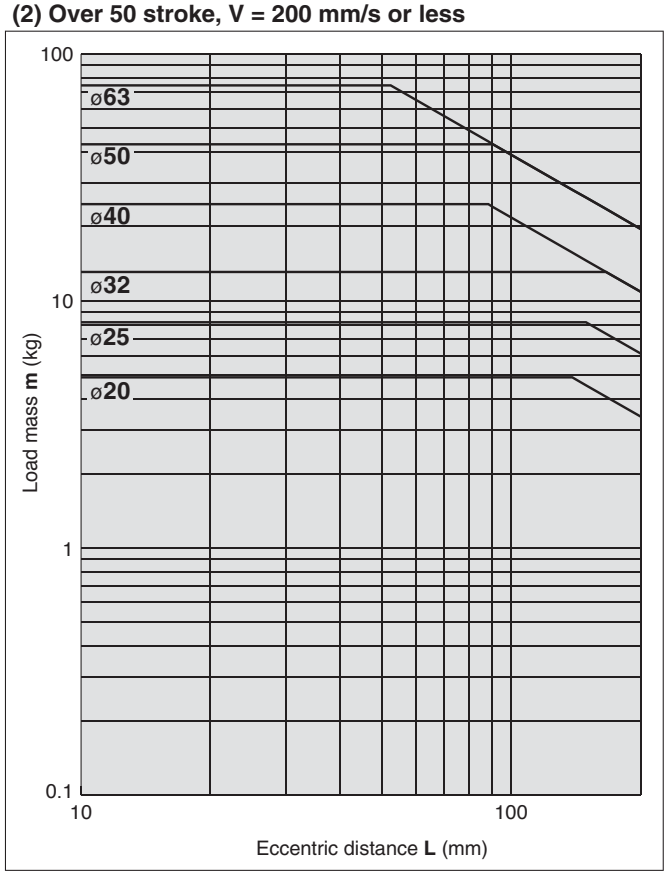
Operating pressure 0.5 MPa

MGPWM20 to 63

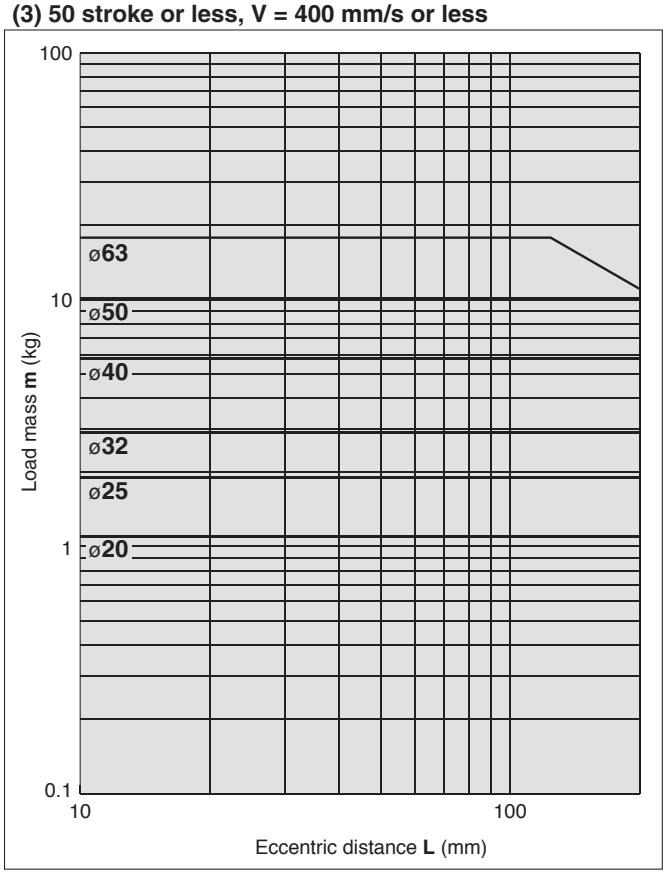
(1) 50 stroke or less, V = 200 mm/s or less



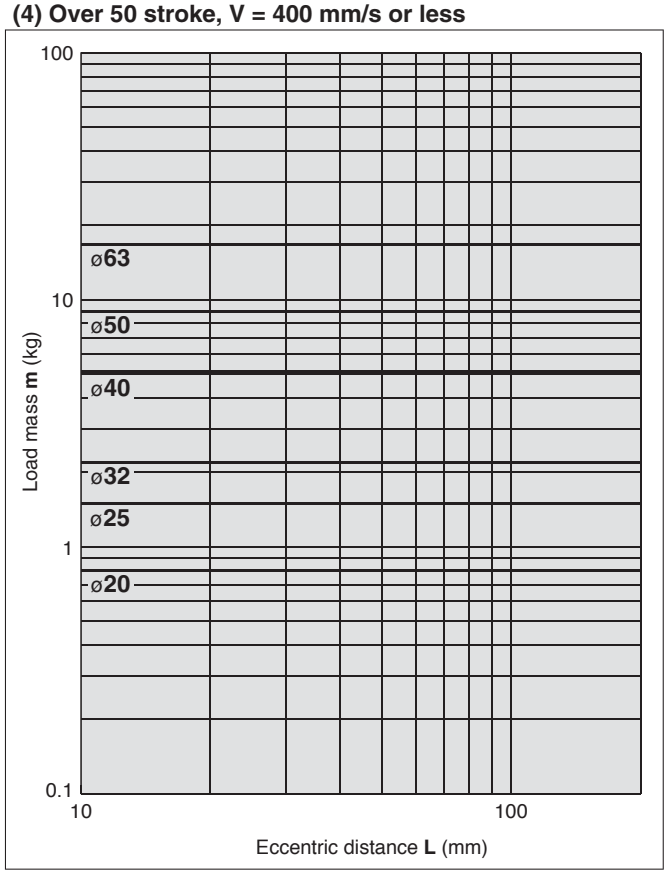
(2) Over 50 stroke, V = 200 mm/s or less

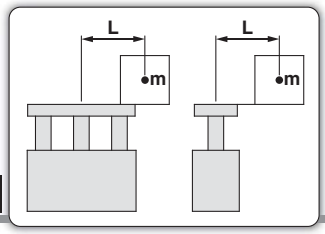


(3) 50 stroke or less, V = 400 mm/s or less



(4) Over 50 stroke, V = 400 mm/s or less



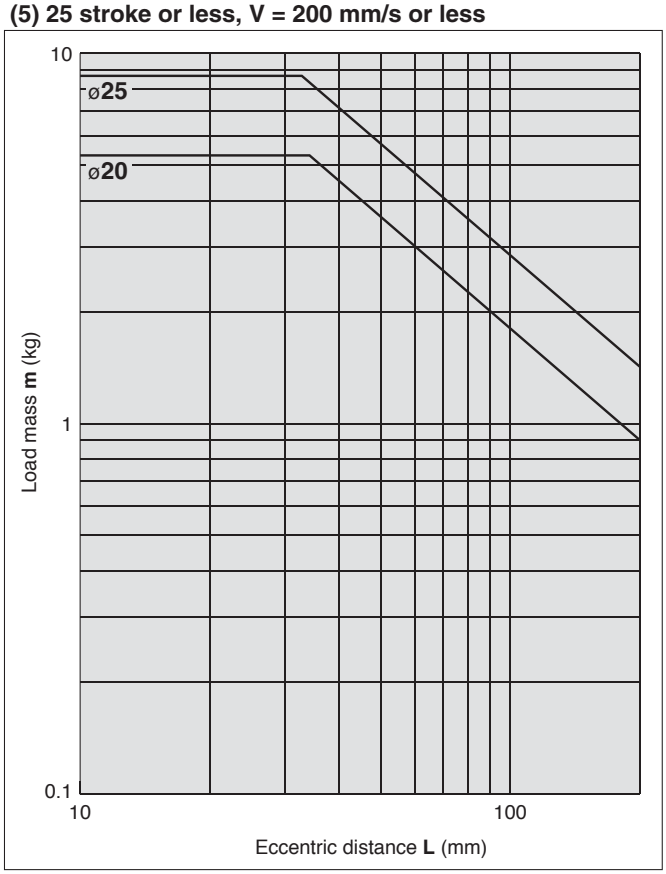


Vertical Mounting Ball bushing

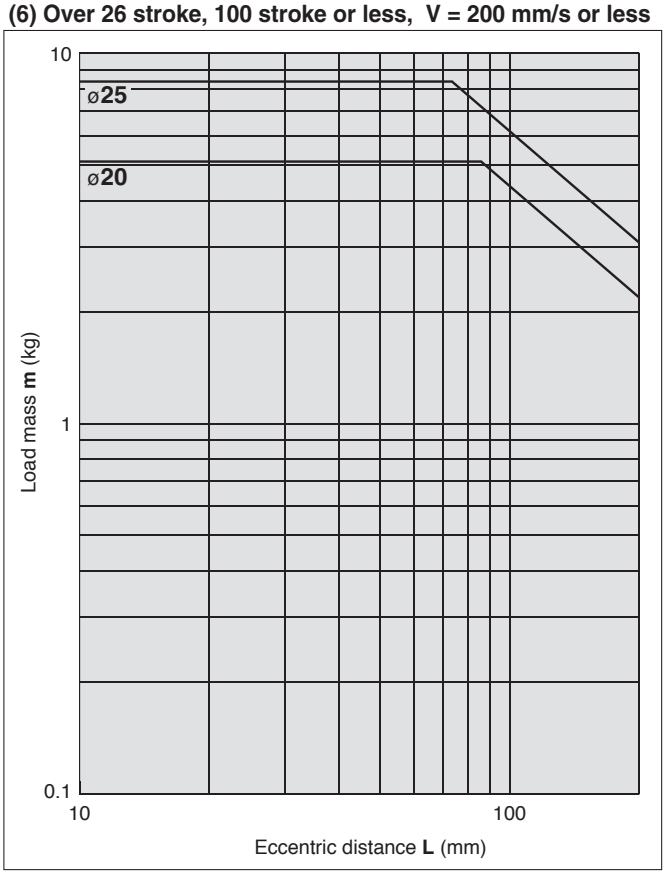
Operating pressure 0.5 MPa

MGPWL20 to 25, MGPWA20 to 25

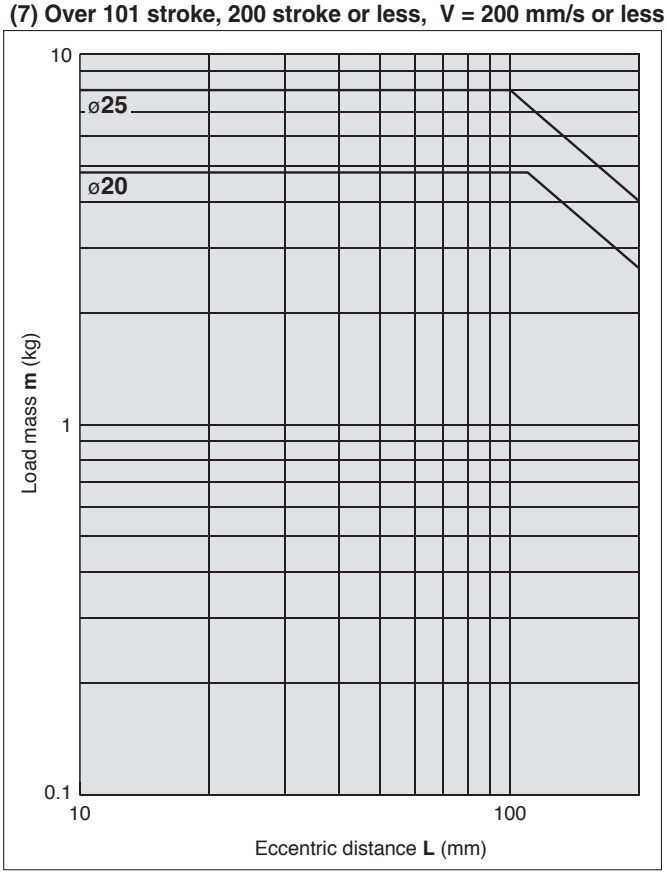
(5) 25 stroke or less, V = 200 mm/s or less

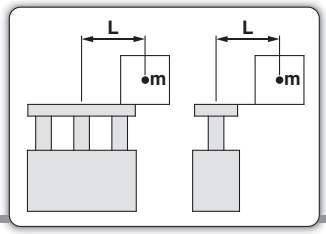


(6) Over 26 stroke, 100 stroke or less, V = 200 mm/s or less



(7) Over 101 stroke, 200 stroke or less, V = 200 mm/s or less



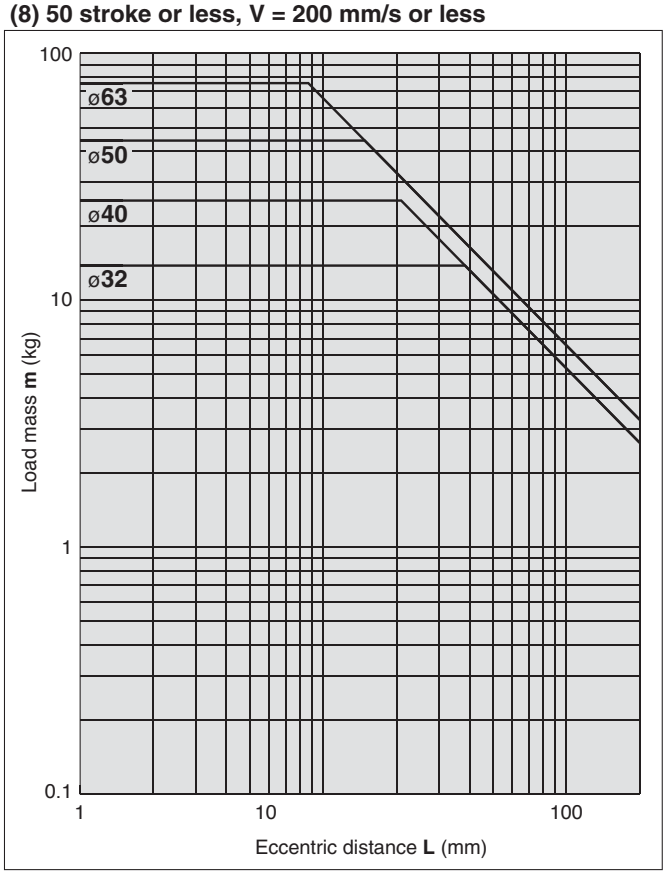


Vertical Mounting Ball bushing

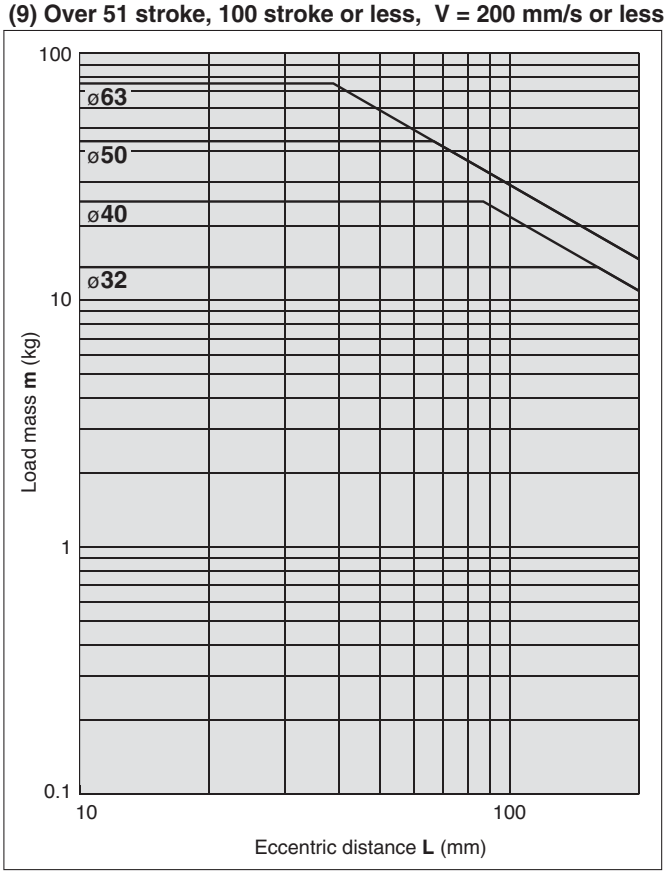
Operating pressure 0.5 MPa

MGPWL32 to 63, MGPWA32 to 63

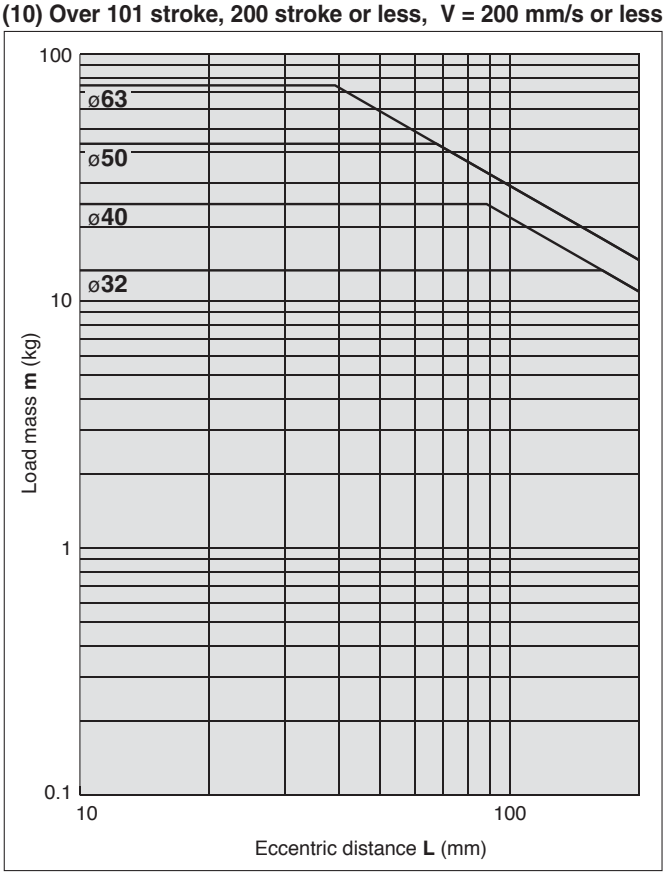
(8) 50 stroke or less, V = 200 mm/s or less

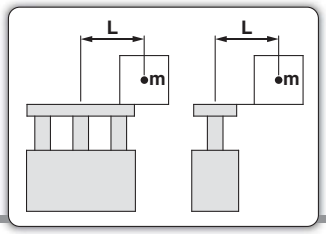


(9) Over 51 stroke, 100 stroke or less, V = 200 mm/s or less



(10) Over 101 stroke, 200 stroke or less, V = 200 mm/s or less



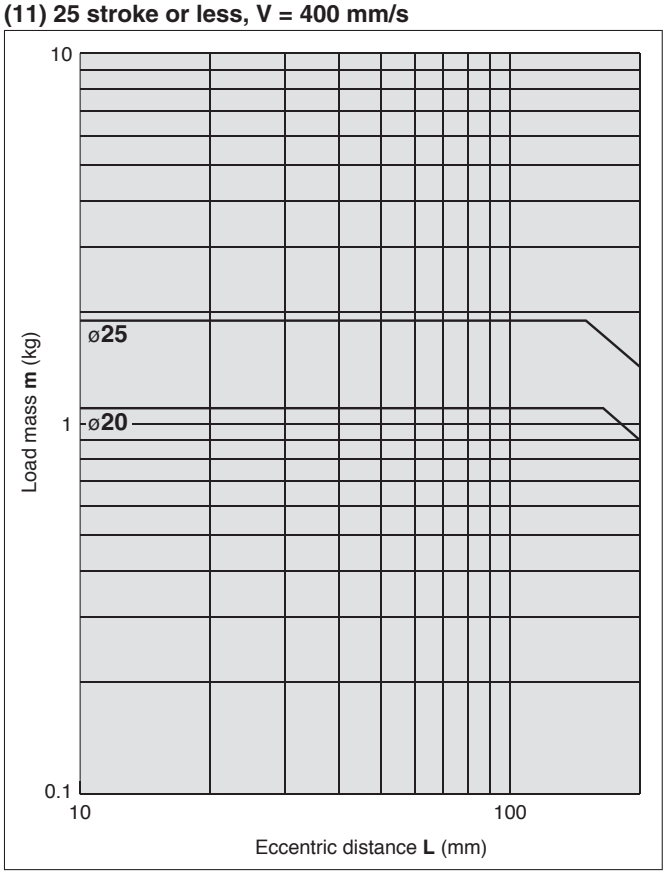


Vertical Mounting Ball bushing

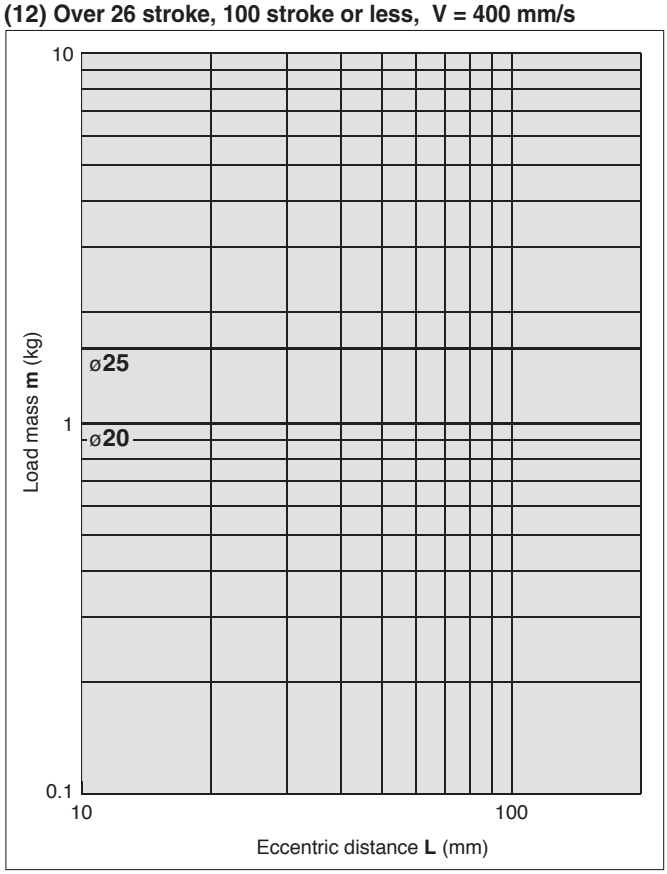
Operating pressure 0.5 MPa

MGPWL20 to 25, MGPWA20 to 25

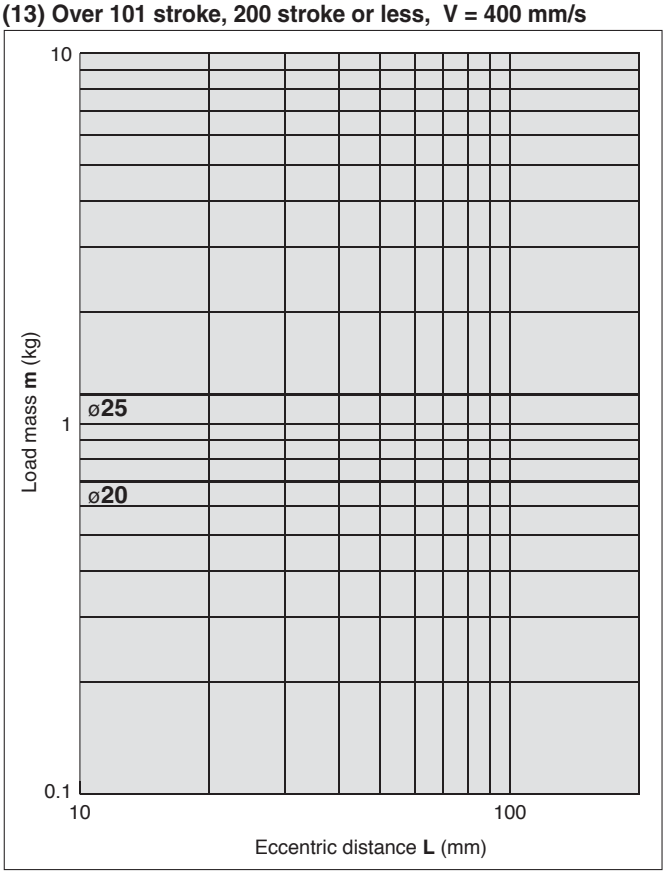
(11) 25 stroke or less, V = 400 mm/s

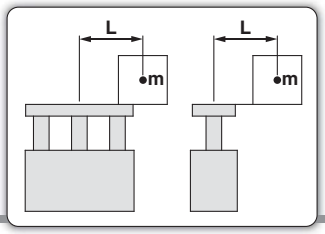


(12) Over 26 stroke, 100 stroke or less, V = 400 mm/s



(13) Over 101 stroke, 200 stroke or less, V = 400 mm/s



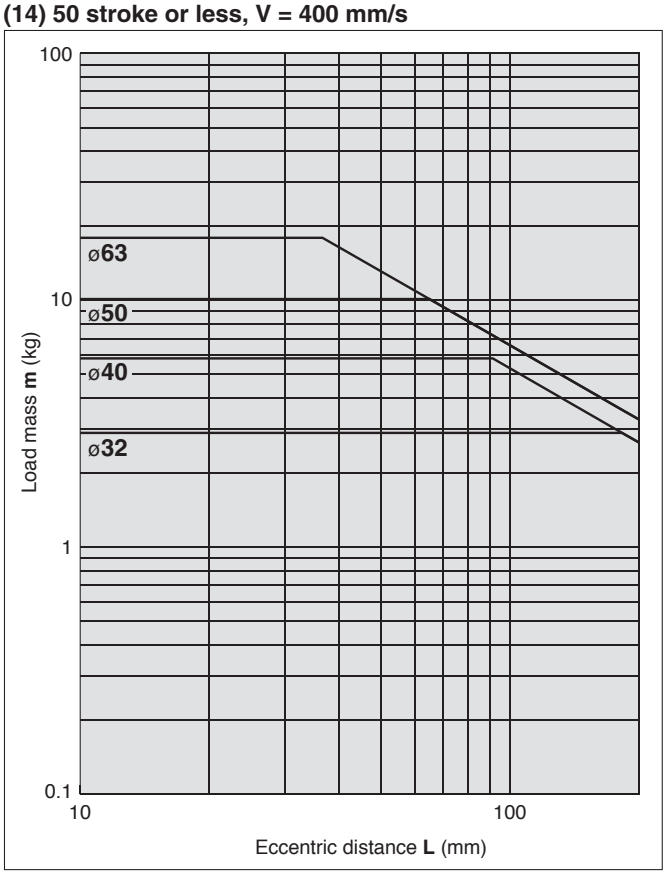


Vertical Mounting Ball bushing

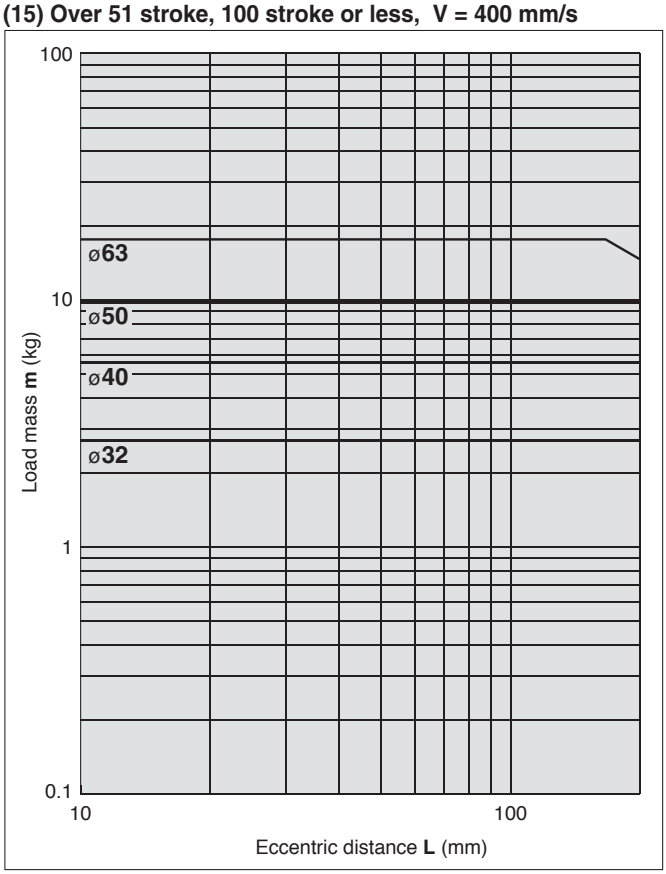
Operating pressure 0.5 MPa

MGPWL32 to 63, MGPWA32 to 63

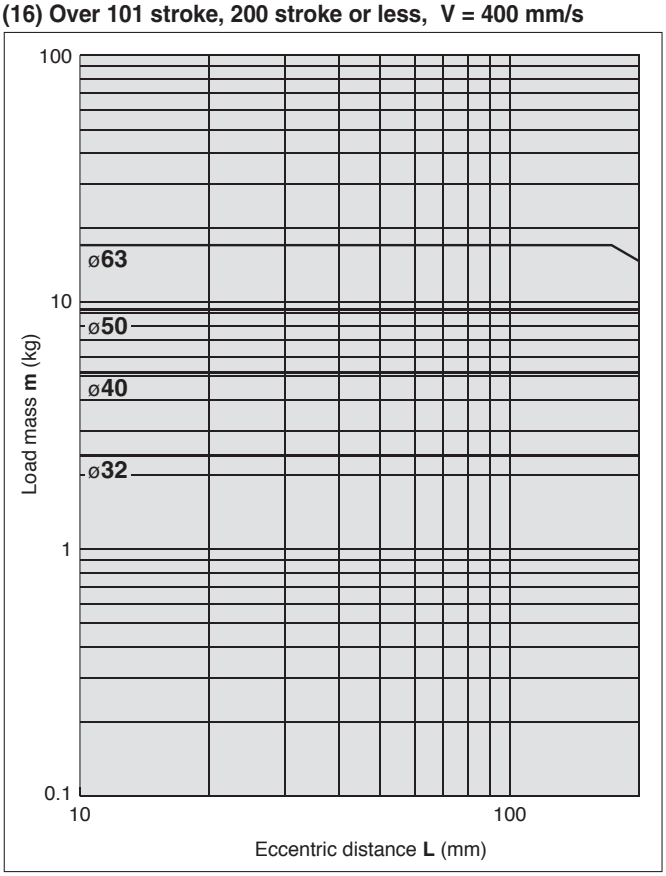
(14) 50 stroke or less, V = 400 mm/s

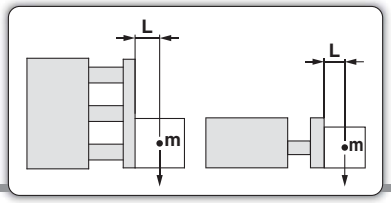


(15) Over 51 stroke, 100 stroke or less, V = 400 mm/s



(16) Over 101 stroke, 200 stroke or less, V = 400 mm/s

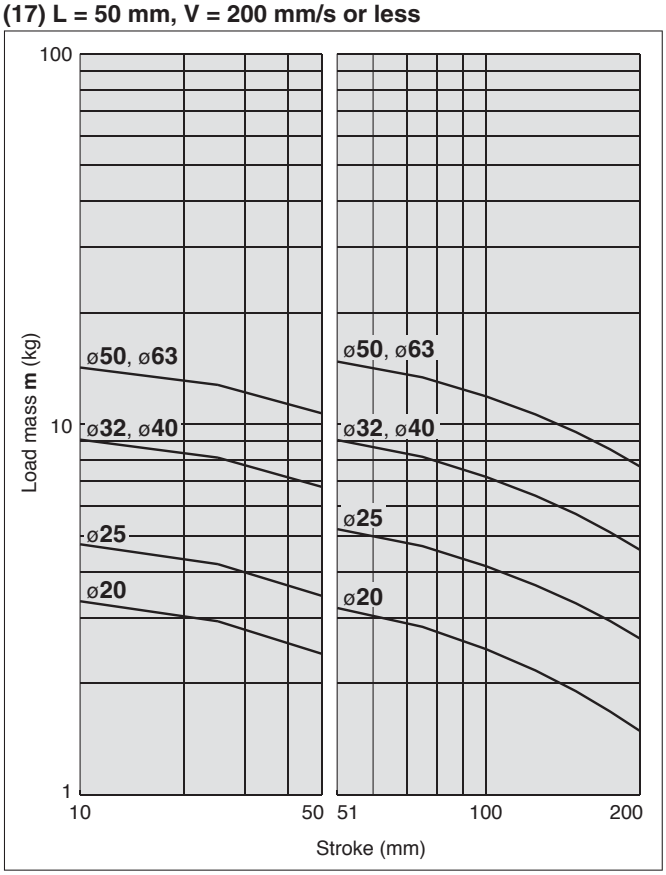




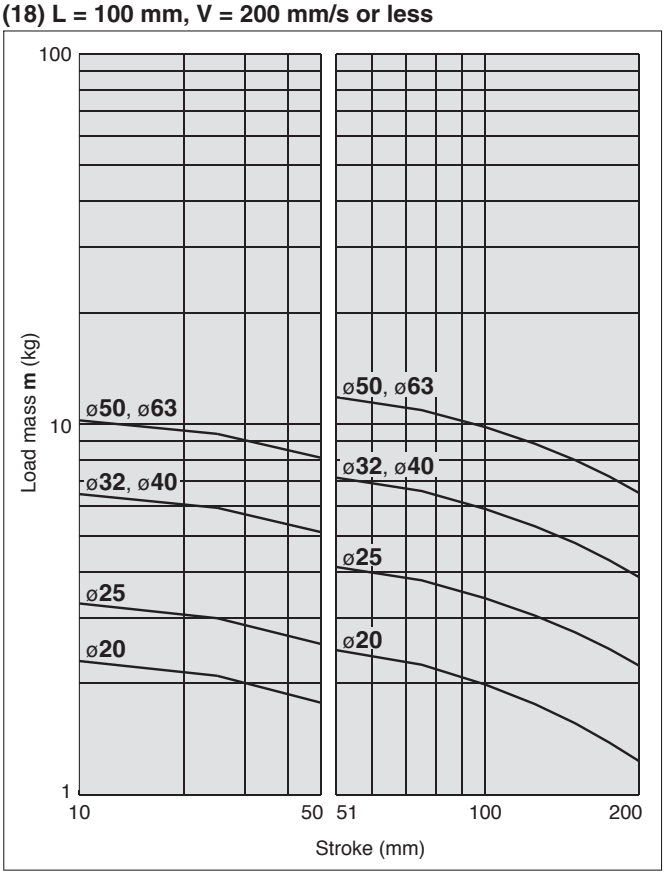
Horizontal Mounting Slide bearing

MGPWM20 to 63

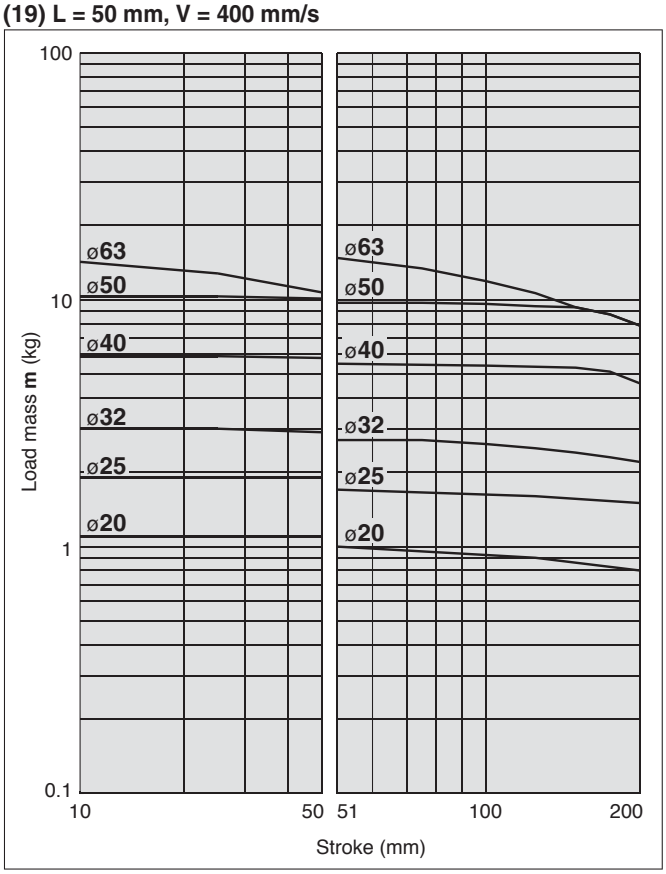
(17) L = 50 mm, V = 200 mm/s or less



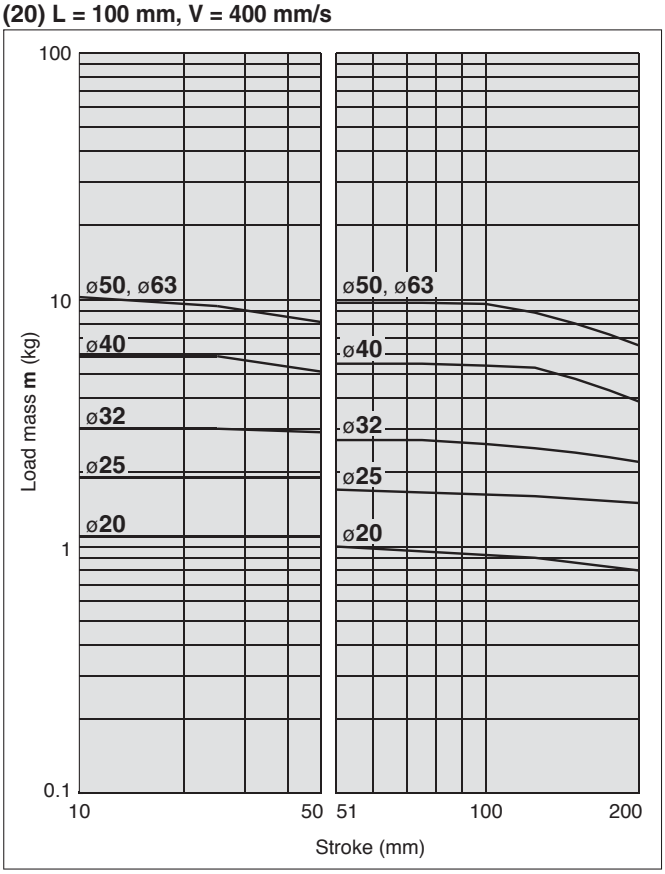
(18) L = 100 mm, V = 200 mm/s or less

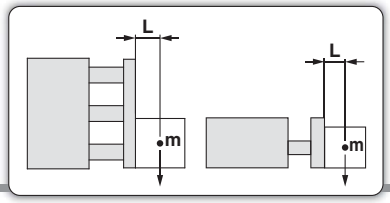


(19) L = 50 mm, V = 400 mm/s



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

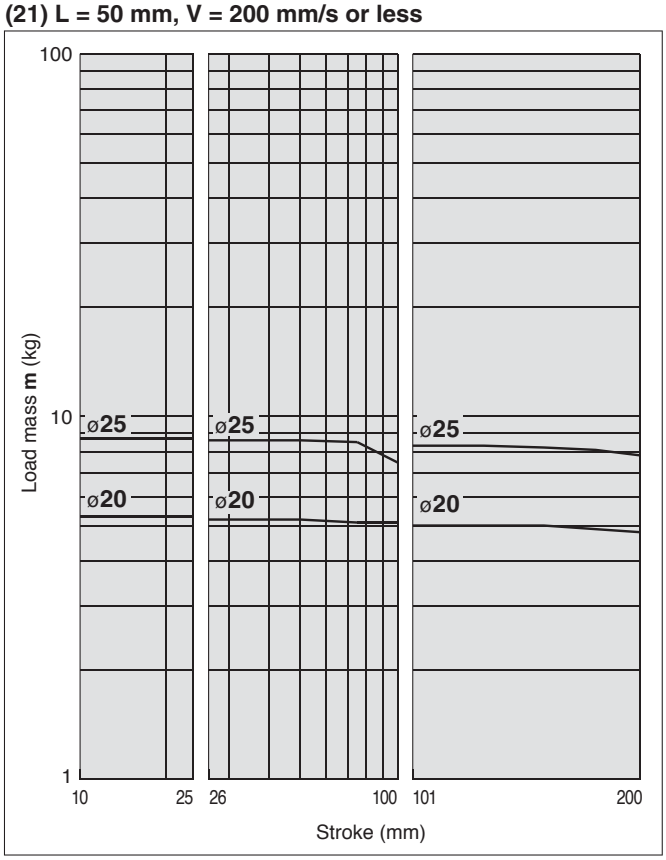




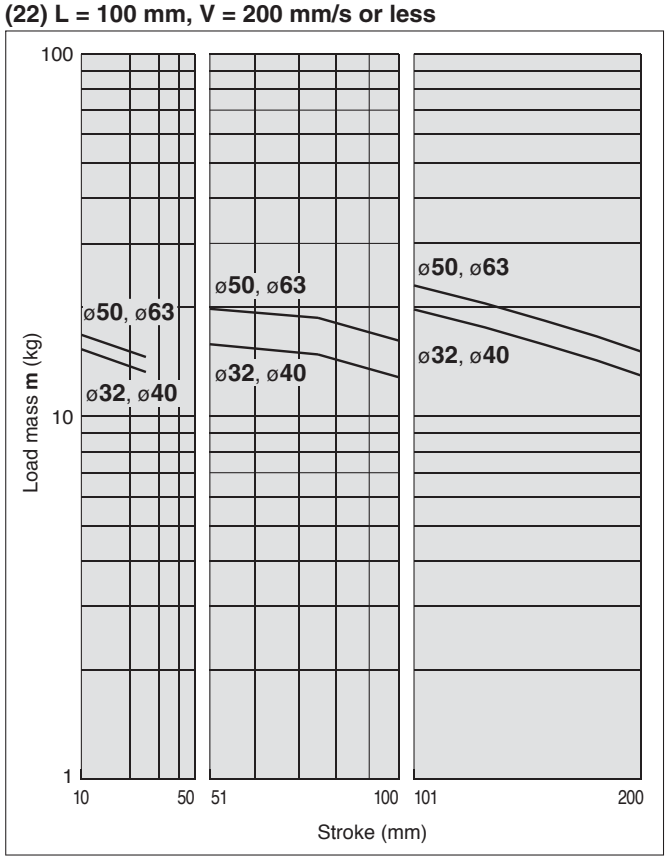
Horizontal Mounting Ball bushing

MGPWL20 to 25, MGPWA20 to 25

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

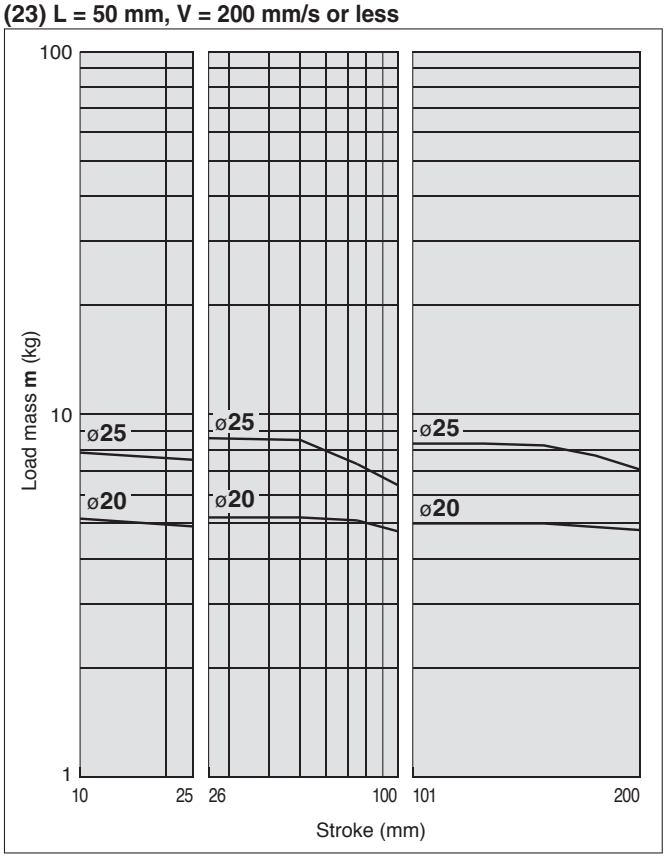


(22) L = 100 mm, V = 200 mm/s or less

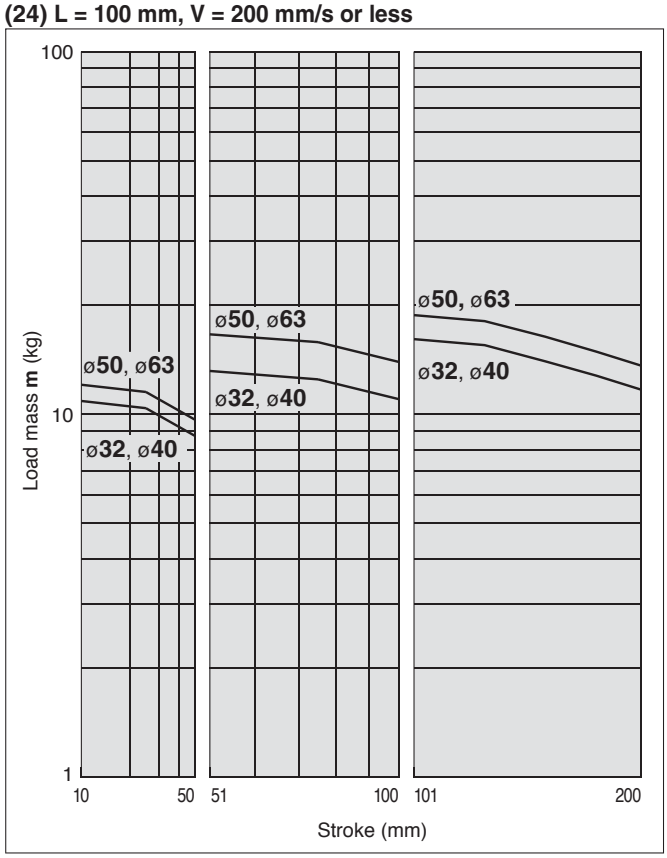


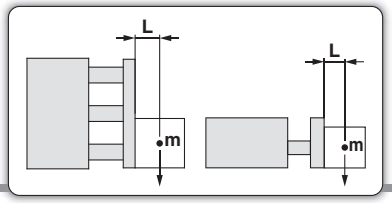
MGPWL32 to 63, MGPWA32 to 63

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



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

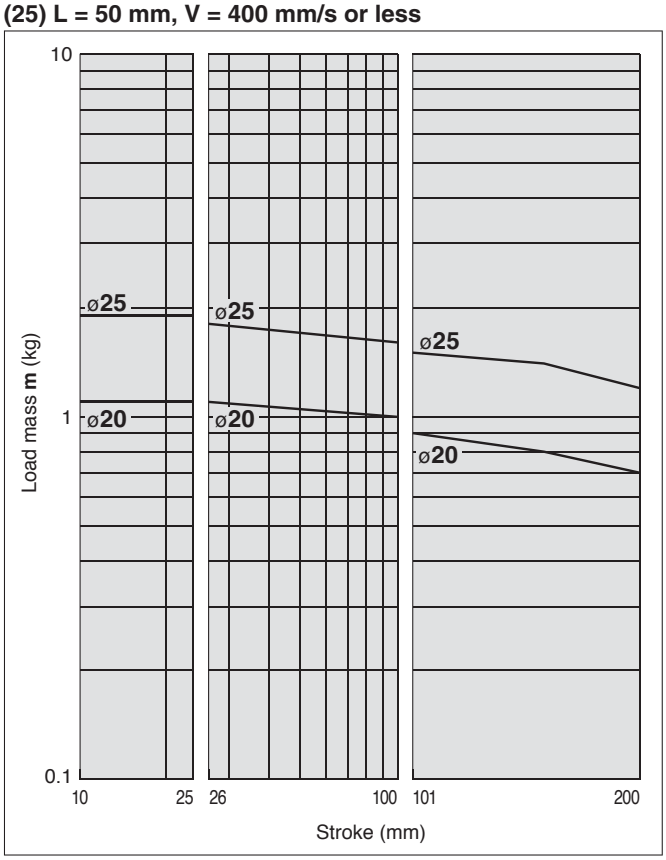




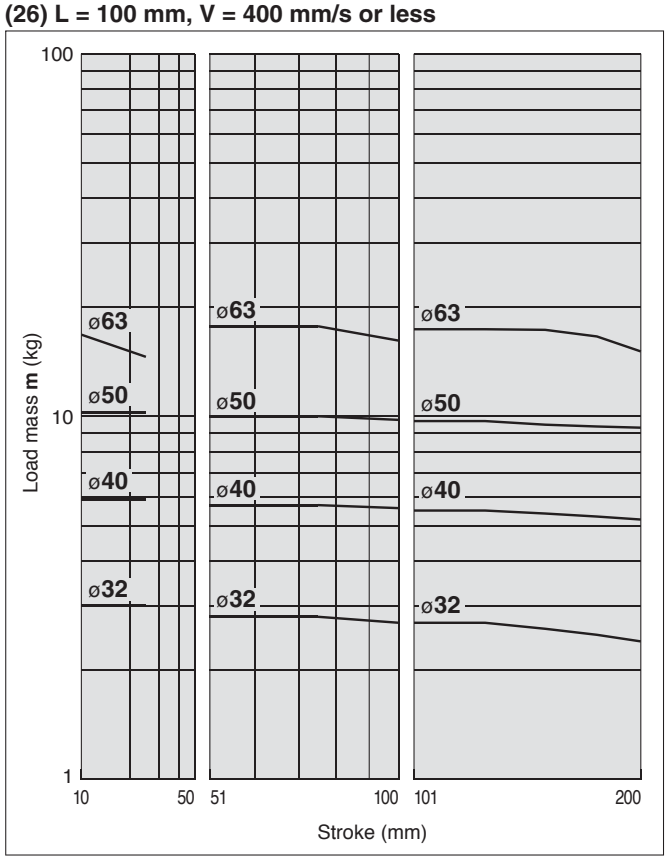
Horizontal Mounting Ball bushing

MGPWL20 to 25, MGPWA20 to 25

(25) L = 50 mm, V = 400 mm/s or less

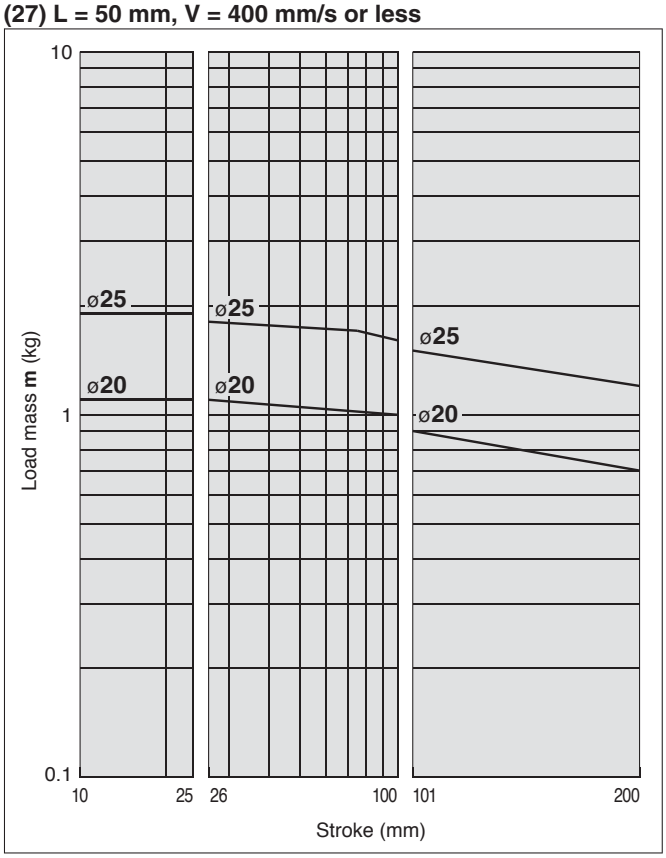


(26) L = 100 mm, V = 400 mm/s or less

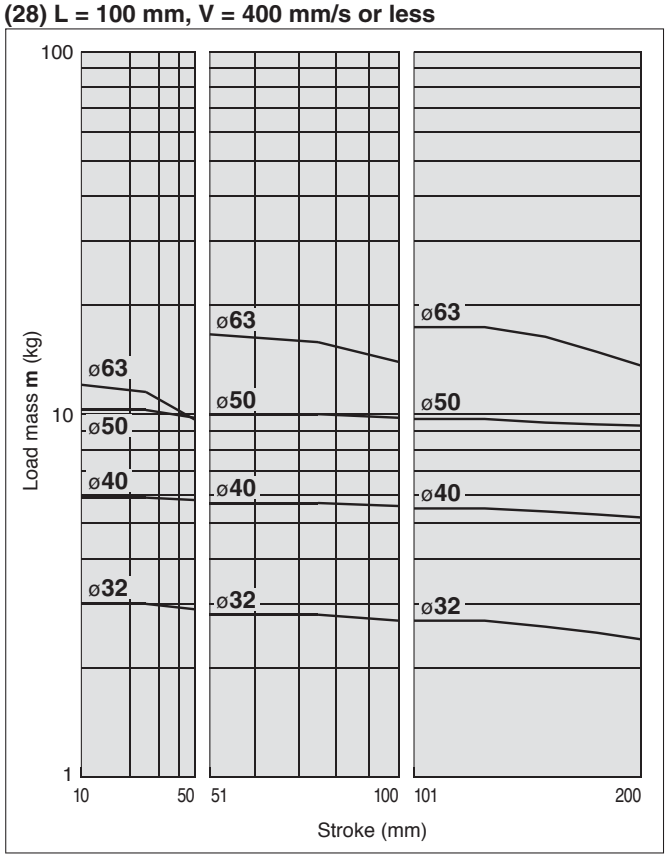


MGPWL32 to 63, MGPWA32 to 63

(27) L = 50 mm, V = 400 mm/s or less

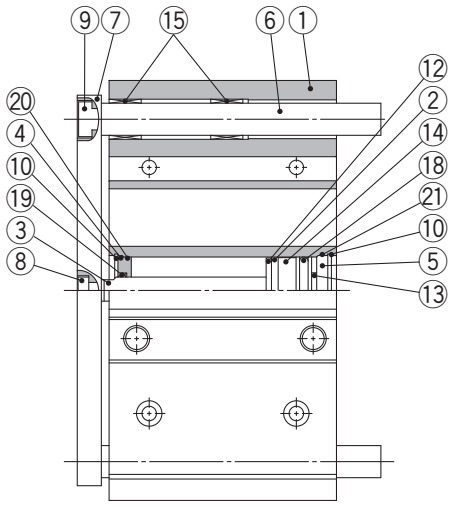


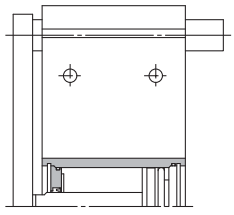
(28) L = 100 mm, V = 400 mm/s or less



Construction/Series MGPWM, MGPWL, MGPWA

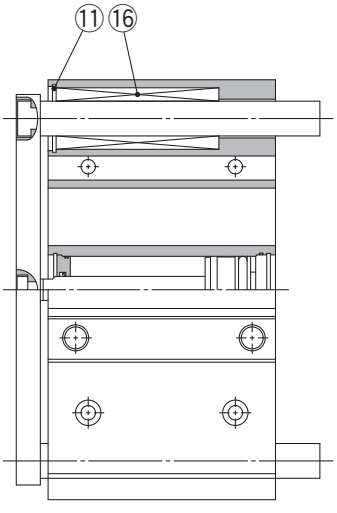
MGPWM20 to 63

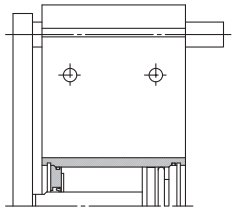




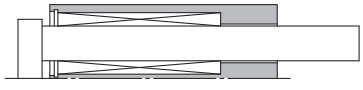
ø40 or more

MGPWL20 to 63
MGPWA20 to 63

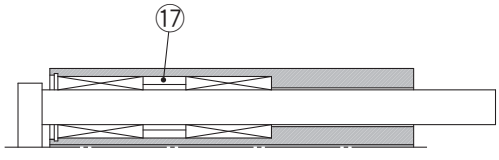




ø40 or more



100 stroke or less



Over 100 stroke

Component Parts

No.	Description	Material	Note	
1	**Body**	Aluminum alloy	Hard anodized	
2	**Piston**	Aluminum alloy	Chromated	
3	**Piston rod**	Stainless steel	ø20 to ø25	
		Carbon steel	ø32 to ø63	Hard chrome plated
4	**Collar**	Aluminum alloy	Chromated	
5	**Head cover**	Aluminum alloy	Chromated	
6	**Guide rod**	Carbon steel	Hard chrome plated	
7	**Plate**	Aluminum alloy	Anodized	
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	**Slide bearing**	Babbitt		

Component Parts

No.	Description	Material	Note
16	**Ball bushing**		
17	**Spacer**	Aluminum alloy	
18∗	**Piston seal**	NBR	
19∗	**Rod seal**	NBR	
20∗	**Gasket A**	NBR	
21∗	**Gasket B**	NBR	

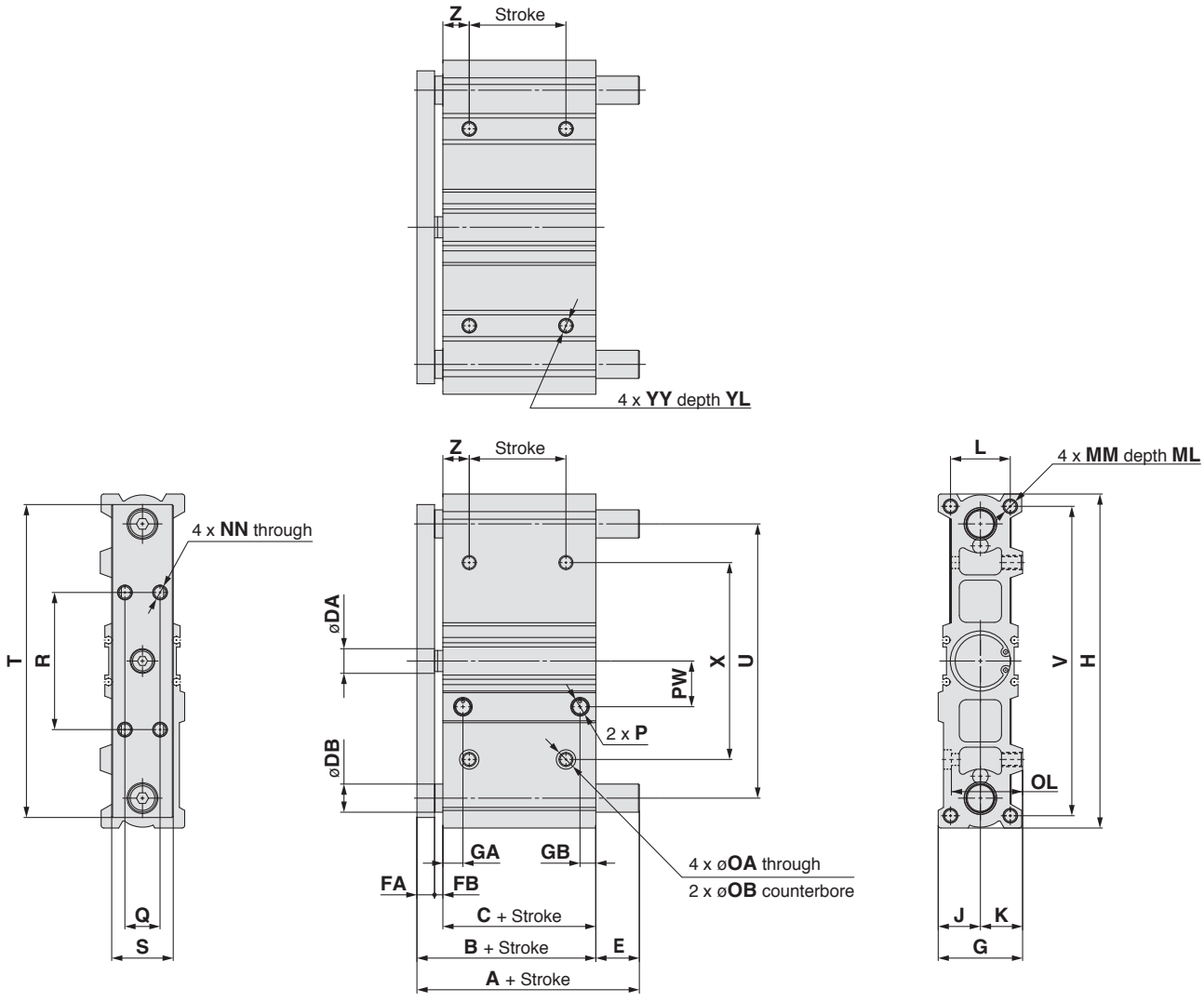
Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
20	MGP20-Z-PS	Set of nos. above ⑱, ⑲, ⑳, ㉑
25	MGP25-Z-PS	
32	MGP32-Z-PS	

Bore size (mm)	Kit no.	Contents
40	MGP40-Z-PS	Set of nos. above ⑱, ⑲, ⑳, ㉑
50	MGP50-Z-PS	
63	MGP63-Z-PS	

∗ Seal kit includes ⑱ to ㉑. 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)

ø20 to ø63/MGPWM



∗ For intermediate strokes other than standard strokes, refer to “Manufacture of Intermediate Strokes” on page 3.

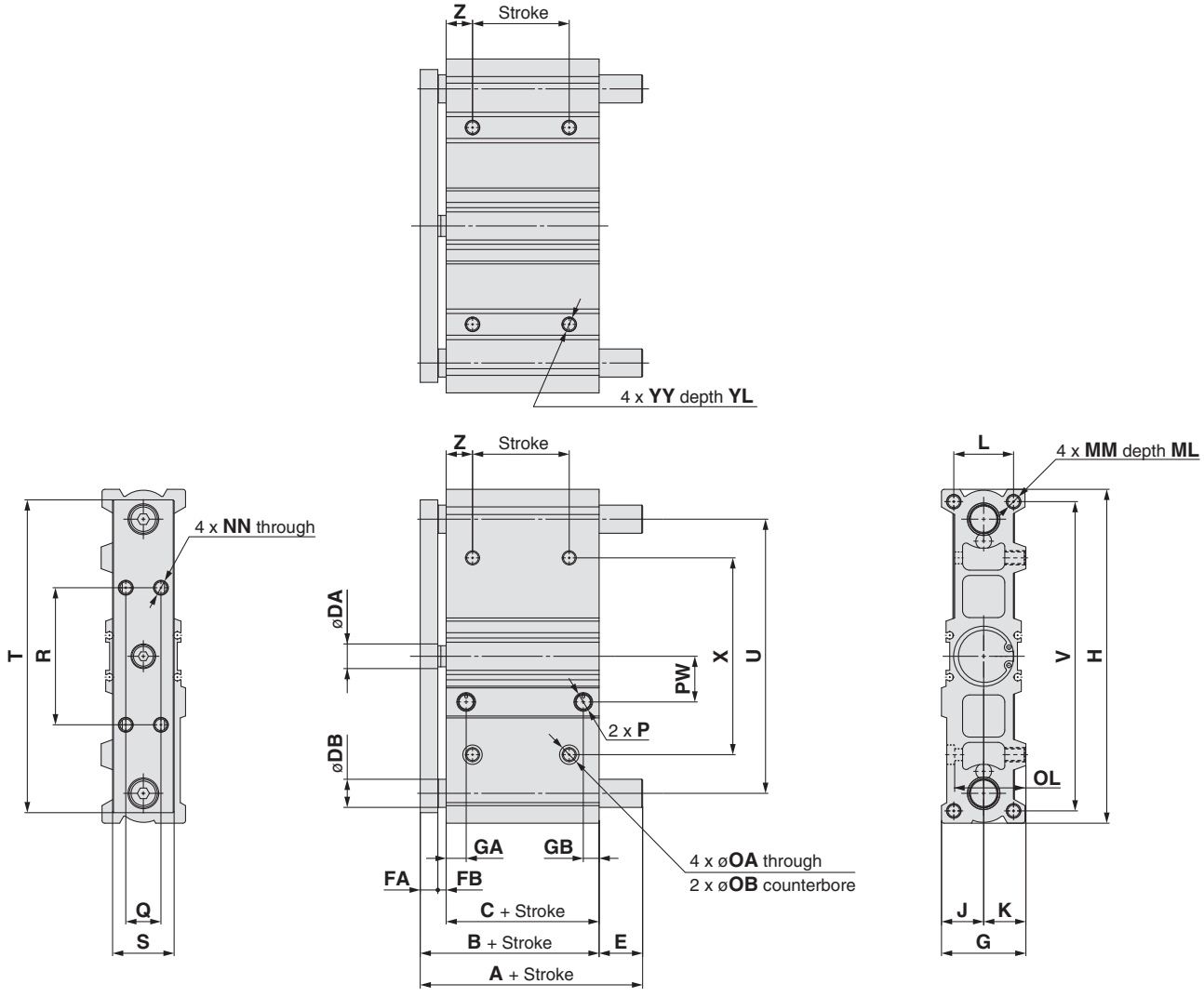
MGPWM Common Dimensions

(mm)

Bore size (mm)	Standard stroke (mm)	A		B	C	DA	DB	E		FA	FB	G	GA	GB	H	J	K	L
		50 st or less	Over 50 stroke					50 st or less	Over 50 stroke									
20	25, 50, 75, 100, 125, 150, 175, 200	62	92	44.5	34	10	10	17.5	47.5	7.5	3	36	9.9	7.5	137	18	18	24
25		63.5	113.5	47	35	10	12	16.5	66.5	9	3	42	10.3	8.7	157	21	21	30
32		76.5	116.5	52	37	14	16	24.5	64.5	10	5	48	11.4	9	190	24	24	34
40		76.5	116.5	56	41	14	16	20.5	60.5	10	5	54	13.5	10.5	206	27	27	40
50		85	135	60.5	42	18	20	24.5	74.5	12.5	6	64	14	11.1	258	32	32	46
63		85	135	67.5	49	18	20	17.5	67.5	12.5	6	78	15.5	13.5	286	39	39	58

Bore size (mm)	MM	ML	NN	OA	OB	OL	P			PW	Q	R	S	T	U	V	X	YY	YL	Z
							Nil	TN	TF											
20	M5 x 0.8	13	M5 x 0.8	5.4	9.5	30.5	Rc1/8	NPT1/8	G1/8	17	14	64	24	123	108	126	76	M6 x 1	9	20
25	M6 x 1	15	M6 x 1	5.4	9.5	36.5	Rc1/8	NPT1/8	G1/8	18	16	68	26	146	128	146	92	M6 x 1	9	20
32	M8 x 1.25	20	M8 x 1.25	6.7	11	40.5	Rc1/8	NPT1/8	G1/8	26	20	78	35	178	156	176	112	M8 x 1.25	12	20
40	M8 x 1.25	20	M8 x 1.25	6.7	11	46.5	Rc1/8	NPT1/8	G1/8	27	20	92	35	193	172	192	128	M8 x 1.25	12	23
50	M10 x 1.5	22	M10 x 1.5	8.6	14	54.5	Rc1/4	NPT1/4	G1/4	28.5	26	132	44	247	220	240	168	M10 x 1.5	15	25
63	M10 x 1.5	22	M10 x 1.5	8.6	14	68.5	Rc1/4	NPT1/4	G1/4	30	30	160	48	274	248	266	196	M10 x 1.5	15	27

ø20 to ø63/MGPWL, MGPWA



∗ For intermediate strokes other than standard strokes, refer to “Manufacture of Intermediate Strokes” on page 3.

MGPWL, MGPWA Common Dimensions

(mm)

Bore size (mm)	Standard stroke (mm)	B	C	DA	DB	FA	FB	G	GA	GB	H	J	K	L	MM	ML
20	25, 50, 75, 100, 125, 150, 175, 200	44.5	34	10	10	7.5	3	36	9.9	7.5	137	18	18	24	M5 x 0.8	13
25		47	35	10	13	9	3	42	10.3	8.7	157	21	21	30	M6 x 1	15
32		52	37	14	16	10	5	48	11.4	9	190	24	24	34	M8 x 1.25	20
40		56	41	14	16	10	5	54	13.5	10.5	206	27	27	40	M8 x 1.25	20
50		60.5	42	18	20	12.5	6	64	14	11.1	258	32	32	46	M10 x 1.5	22
63		67.5	49	18	20	12.5	6	78	15.5	13.5	286	39	39	58	M10 x 1.5	22

Bore size (mm)	NN	OA	OB	OL	P			PW	Q	R	S	T	U	V	X	YY	YL	Z
					Nil	TN	TF											
20	M5 x 0.8	5.4	9.5	30.5	Rc1/8	NPT1/8	G1/8	17	14	64	24	123	108	126	76	M6 x 1	9	20
25	M6 x 1	5.4	9.5	36.5	Rc1/8	NPT1/8	G1/8	18	16	68	26	146	128	146	92	M6 x 1	9	20
32	M8 x 1.25	6.7	11	40.5	Rc1/8	NPT1/8	G1/8	26	20	78	35	178	156	176	112	M8 x 1.25	12	20
40	M8 x 1.25	6.7	11	46.5	Rc1/8	NPT1/8	G1/8	27	20	92	35	193	172	192	128	M8 x 1.25	12	23
50	M10 x 1.5	8.6	14	54.5	Rc1/4	NPT1/4	G1/4	28.5	26	132	44	247	220	240	168	M10 x 1.5	15	25
63	M10 x 1.5	8.6	14	68.5	Rc1/4	NPT1/4	G1/4	30	30	160	48	274	248	266	196	M10 x 1.5	15	27

MGPWL, MGPWA ø20, ø25/A, E Dimensions

(mm)

Bore size (mm)	A			E		
	25 st or less	Over 25 st 100 st or less	Over 100 st	25 st or less	Over 25 st 100 st or less	Over 100 st
20	53.5	70.5	94.5	9	26	50
25	61.5	77.5	96.5	14.5	30.5	49.5

MGPWL, MGPWA ø32 to ø63/A, E Dimensions

(mm)

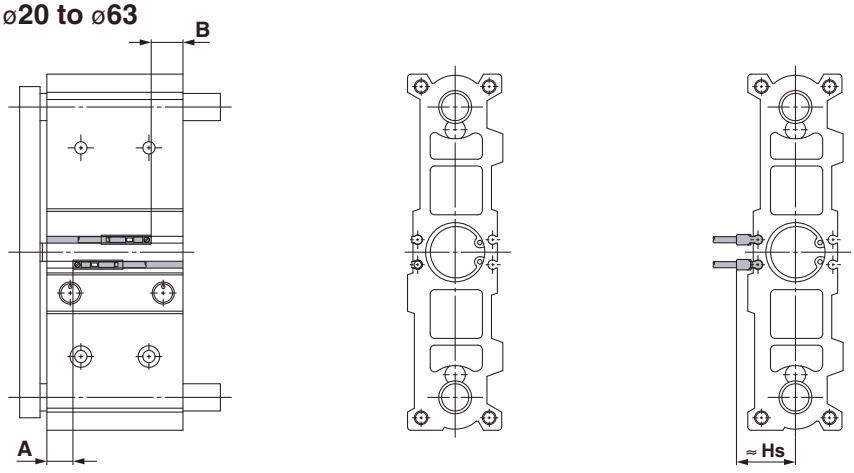
Bore size (mm)	A			E		
	50 st or less	Over 50 st 100 st or less	Over 100 st	50 st or less	Over 50 st 100 st or less	Over 100 st
32	72.5	89.5	109.5	20.5	37.5	57.5
40	72.5	89.5	109.5	16.5	33.5	53.5
50	82	103	123	21.5	42.5	62.5
63	82	103	123	14.5	35.5	55.5

Auto Switch Mounting 1

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

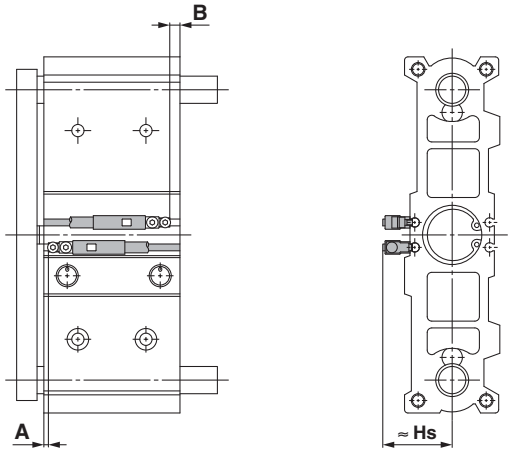
D-M9□
D-M9□V
D-M9□W
D-M9□WV
D-M9□A
D-M9□AV
D-A9□
D-A9□V

ø20 to ø63



D-P3DW

ø32 to ø63



Auto Switch Proper Mounting Position
Applicable Cylinder Series: MGPW

(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
20	11	11	7	7	—	—
25	10.5	12.5	6.5	8.5	—	—
32	12	13	8	9	7.5	8.5
40	14	15	10	11	9.5	10.5
50	13.5	16	9.5	12	9	11.5
63	16.5	20	12.5	16	12	15.5

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-M9□V D-M9□WV D-M9□AV	D-A9□V	D-P3DW
	Hs	Hs	Hs
20	24.5	22	—
25	26	24	—
32	29	26.5	33
40	33	30.5	37
50	38.5	36	42.5
63	45.5	43	49.5

Auto Switch Mounting 2

Minimum Stroke for Auto Switch Mounting

(mm)

Auto switch model	No. of auto switches mounted	ø20	ø25	ø32	ø40	ø50	ø63
D-M9□	1 pc.	5 Note 1)		5			
	2 pcs.	10					
D-M9□W	1 pc.	5 Note 2)					
	2 pcs.	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-M9□V	1 pc.	5					
	2 pcs.	5					
D-A9□V	1 pc.	5					
	2 pcs.	10					
D-A9□	1 pc.	5					
	2 pcs.	10					
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 ø63.

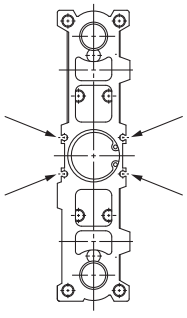
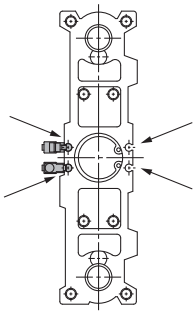
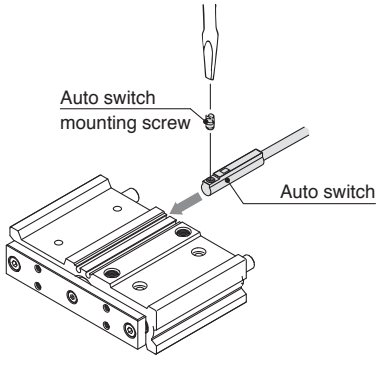
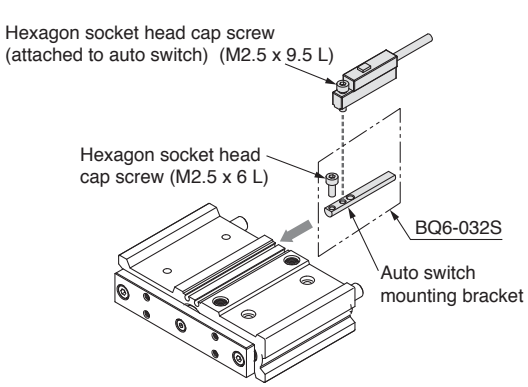
Other than the applicable auto switches listed in "How to Order", the following auto switches are mountable.
Refer to pages 1719 to 1827 in Best Pneumatics No. 3 for detailed specifications.

Type	Model	Electrical entry	Features
Solid state switch	D-P4DW	Grommet (In-line)	Diagnostic indication (2-color display) Bore size: ø32 to ø63

* With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1784 and 1785 in Best Pneumatics No. 3.
* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to page 1746 in Best Pneumatics No. 3.
* When installing the D-P4DW, use the BMG7-032 auto switch mounting bracket.

Auto Switch Mounting Brackets/Part No.

Applicable Cylinder Series: MGPWM, MGPWL, MGPWA

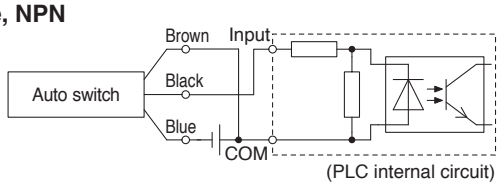
Applicable auto switches	**D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V**	**D-P3DW**
Bore size (mm)	**ø20 to ø63**	**ø32 to ø63**
Auto switch mounting bracket part no.	–	BQ6-032S
Auto switch mounting bracket fitting parts lineup/Weight	–	• Hexagon socket head cap screw (M2.5 x 6 L) • Auto switch mounting 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	 • 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) Auto switch model: **D-M9□(V)**, **D-M9□W(V)**, **D-M9□A(V)** — Tightening torque: 0.05 to 0.15 Auto switch model: **D-A9□(V)** — Tightening torque: 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 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). * ④ 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. 

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.

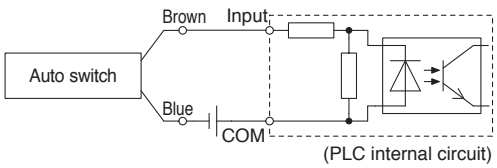
Prior to Use
Auto Switch Connection and Example

Sink Input Specifications

3-wire, NPN

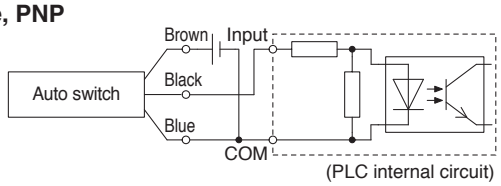


2-wire

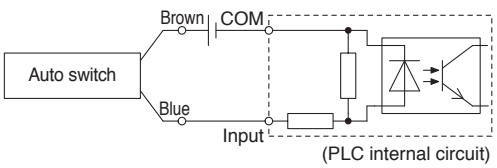


Source Input Specifications

3-wire, PNP



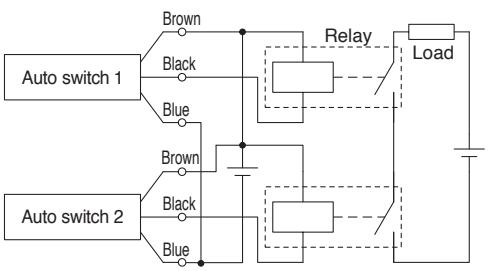
2-wire



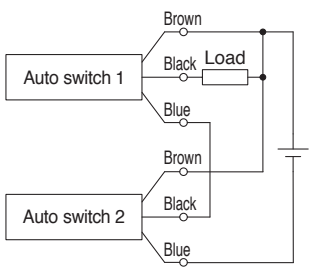
Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

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

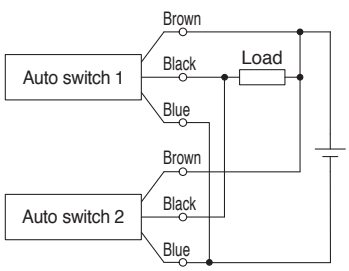
3-wire,
AND connection for NPN output
(Using relays)



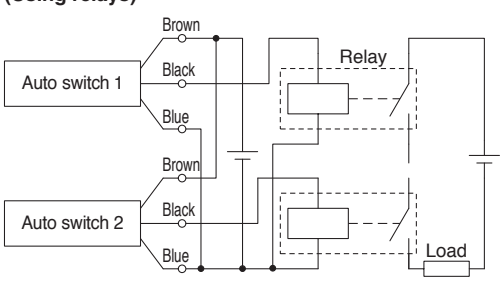
(Performed with auto switches only)



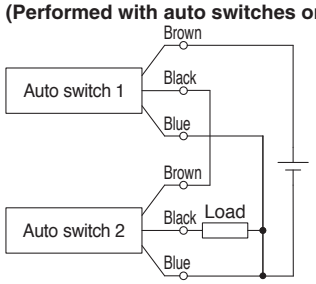
3-wire,
OR connection for NPN output



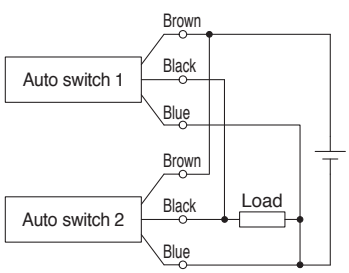
3-wire,
AND connection for PNP output
(Using relays)



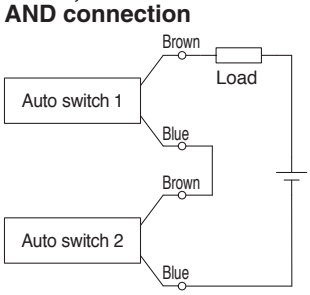
(Performed with auto switches only)



3-wire,
OR connection for PNP output



2-wire,
AND connection

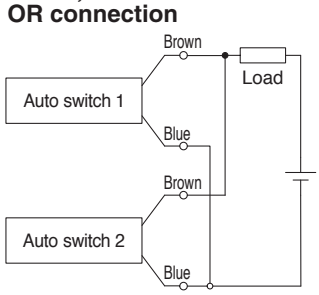


When two auto switches are connected in series, malfunction may occur because the load voltage will decrease in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

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,
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.

Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1 mA x 2 pcs. x 3 kΩ
= 6 V

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

(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.

Made to Order 1

Please contact SMC for detailed dimensions, specifications, and lead times.

Made to Order

1 With Knock Pin Holes

Symbol **-XC56**

Cylinder with knock positioning pin hole

How to Order

MGPW [**Standard model no.**] **–XC56**

With knock pin holes

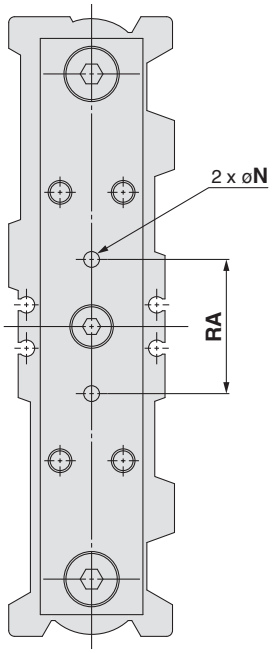
Specifications: Same as standard type

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

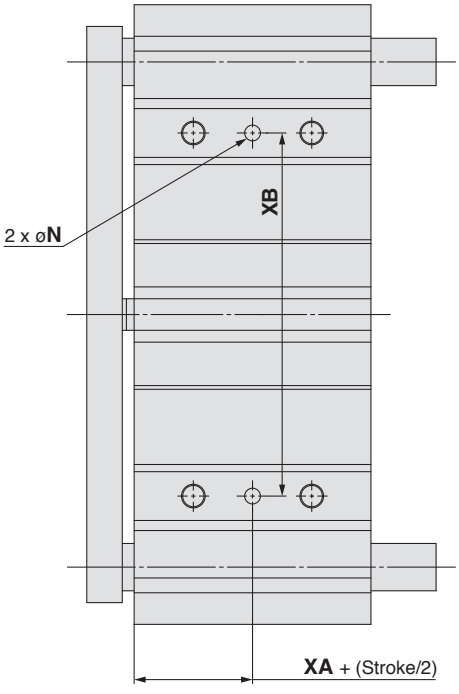
(mm)

Bore size (mm)	HA	HB	N	RA	XA	XB
20	25 ±0.02	25 ±0.02	$3^{H7}\ ^{+0.010}_{0}$ depth 6	28 ±0.02	17	76 ±0.03
25	28 ±0.02	28 ±0.02	$4^{H7}\ ^{+0.012}_{0}$ depth 6	34 ±0.02	18	92 ±0.03
32	34 ±0.02	34 ±0.02	$4^{H7}\ ^{+0.012}_{0}$ depth 6	42 ±0.02	19	112 ±0.03
40	38 ±0.02	38 ±0.02	$4^{H7}\ ^{+0.012}_{0}$ depth 6	50 ±0.02	21	128 ±0.04
50	49 ±0.02	49 ±0.02	$5^{H7}\ ^{+0.012}_{0}$ depth 8	65 ±0.03	21	168 ±0.04
63	58 ±0.03	58 ±0.03	$5^{H7}\ ^{+0.012}_{0}$ depth 8	80 ±0.03	25	196 ±0.04

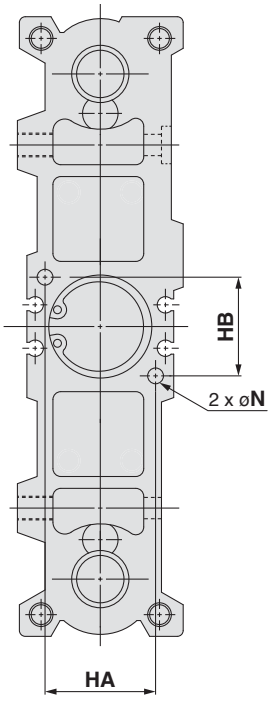
Top of the plate



Side of the cylinder (Bottom)



Bottom of the cylinder



Made to Order 2

Please contact SMC for detailed dimensions, specifications, and lead times.

Made to Order

Symbol

2 Side Porting Type -X867

Ports are only on the top of the cylinder for the standard model, but side ports are also available.

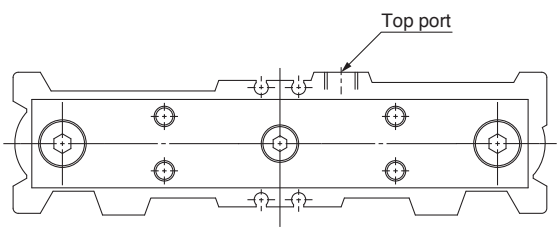
How to Order

MGPW | Standard model no. | −X867

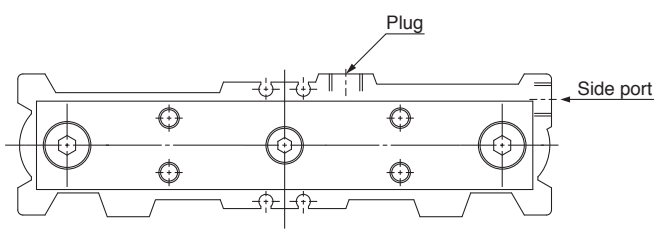
−X867: Side porting type

Port positions

Standard

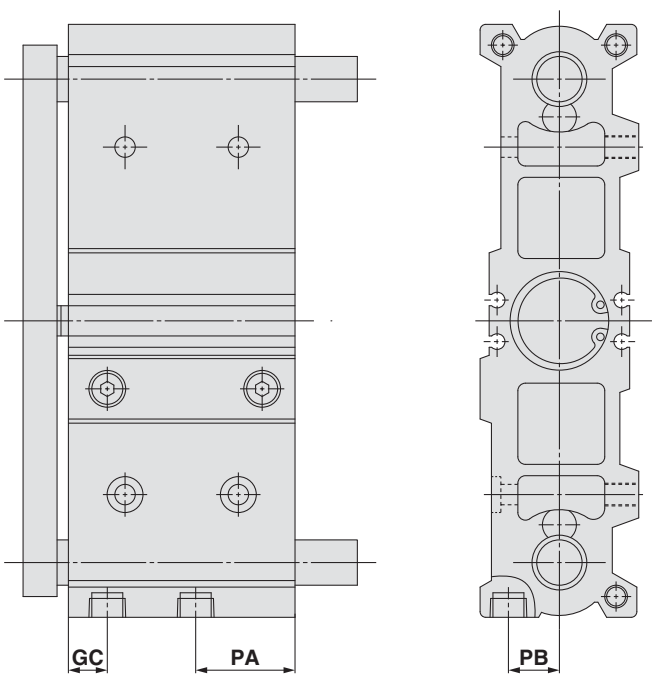


-X867



Specifications: Same as standard type

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



(mm)

Bore size (mm)	GC	PA	PB
20	9.9	23.5	10.5
25	10.3	25	13.5
32	11.4	31	16
40	13.5	31	18
50	14	35	21.5
63	15.5	36	28

⚠ 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

1. 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 catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. 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.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
1. 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.
2. 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.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. 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 catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. 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

1. 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

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. 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.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog 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

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. 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
Akihabara UDX 15F,
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Phone: 03-5207-8249 Fax: 03-5298-5362
http://www.smcworld.com

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
D-DN
1st printing QS printing QS 8100SZ Printed in Japan.