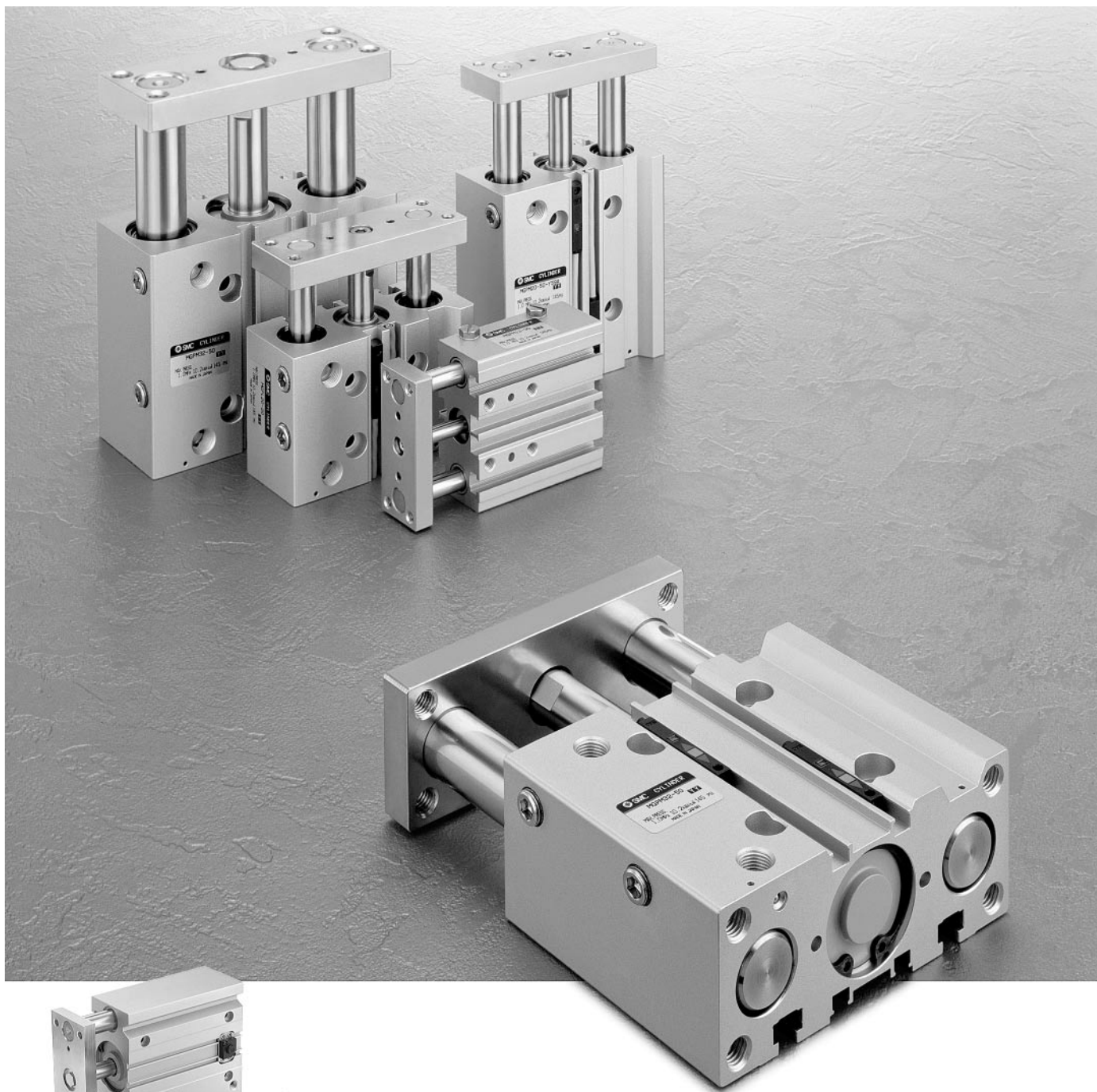


Compact Guide Cylinder *Series MGP*

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



**New end lock type
introduced to Series MGP**

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

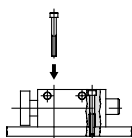
Compact Guide Cylinder Series *MGP*

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

Four mounting types provided

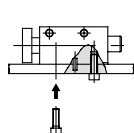
Piping is possible from two directions

1. Top mount



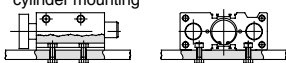
- Easy positioning
Knock pin holes provided on each mounting surface

2. Side mount

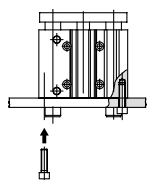


3. T-slot side mount

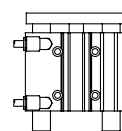
Easy adjustment of work piece and cylinder mounting



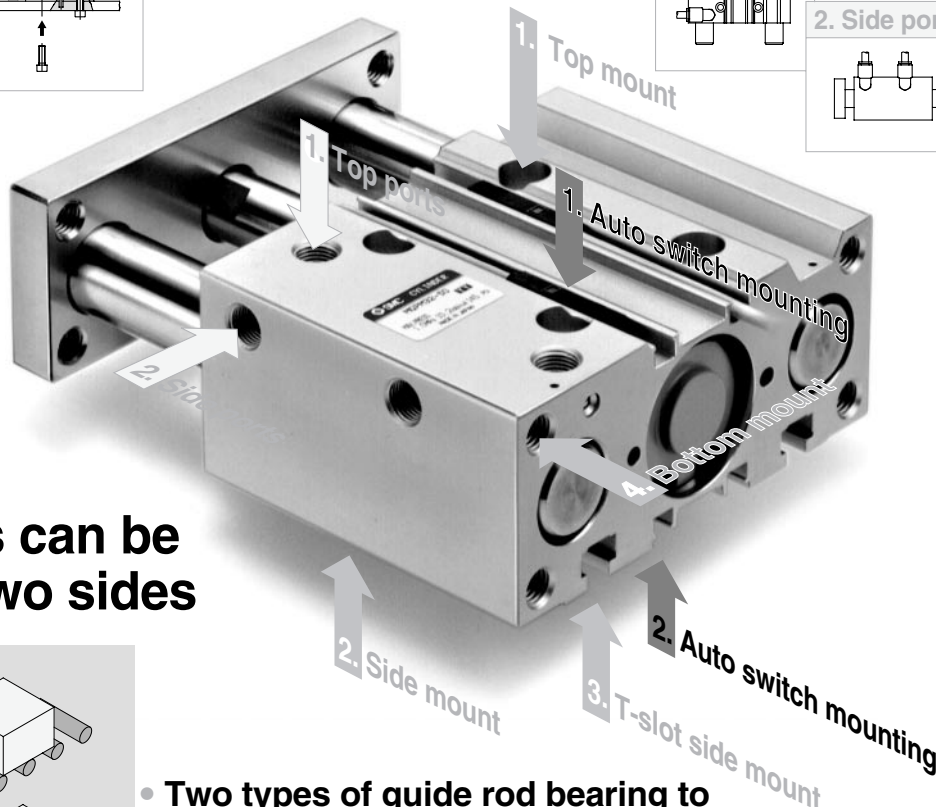
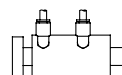
4. Bottom mount



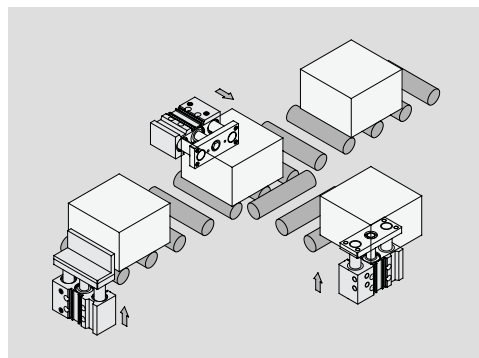
1. Top ports



2. Side ports



Auto switches can be mounted on two sides



- Two types of guide rod bearing to accommodate various applications

Slide bearing

The withstood lateral load is more than twice that of a conventional stopper cylinder (round bar type), and is suitable for use with lateral loads accompanied by impact, as in stoppers.

Ball bushing

Suitable for use as a pusher and lifter.

- Long strokes up to 400mm standardised.

Stroke Variations

Bearing type	Bore size (mm)	Stroke (mm)	Intermediate strokes	Order made
		10 20 25 30 40 50 75 100 125 150 175 200 250 300 350 400		
MGPM Slide bearing	12			
	16			
	20			
	25			
	32			
MGPL Ball bushing	40			
	50			
	63			
	80			
	100			

Spacer type available in stroke increments of 1mm & 5mm.

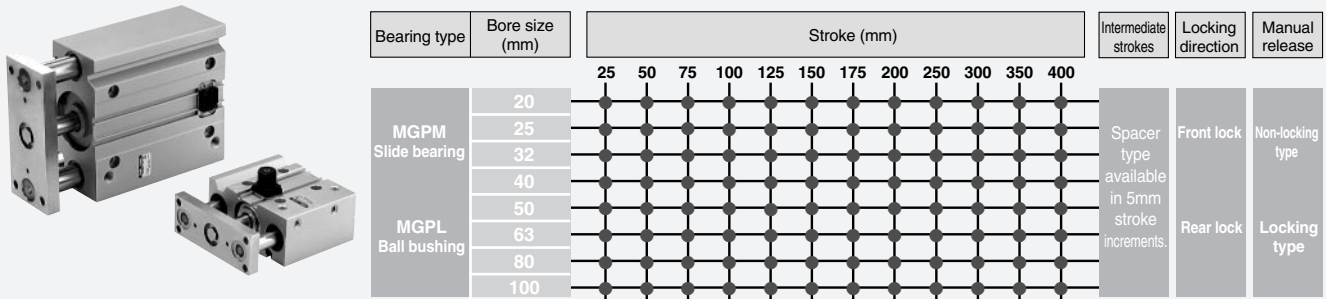
Special body type (-XB10) available in stroke increments of 1mm.

1. Intermediate stroke (using special body)
2. With air cushion/Intermediate stroke (spacer type)
3. Heat resistant cylinder
4. Low speed cylinder
5. Fluoro rubber seals
6. With heavy duty scraper New
7. With coil scraper New
8. Variable stroke cylinder Adjustable extension type New
9. Variable stroke cylinder Adjustable retraction type New
10. Stainless steel piston rod & plate, etc. New

• End lock type introduced

- Holds the cylinder's home position even if the air supply is cut off.
- Compact body length is only 25mm longer than standard.

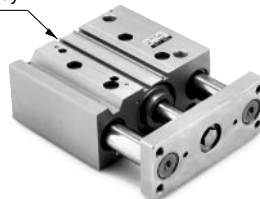
■ Stroke Variations



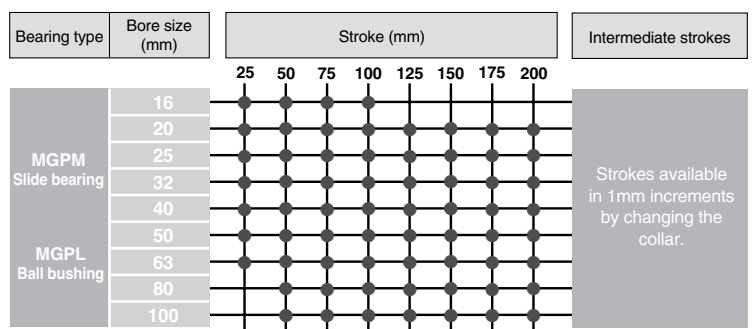
• Air cushion type standardized

- An air cushion has been added to the compact guide cylinder to suppress vibration and noise at the stroke end. It can absorb nearly three times as much kinetic energy as a rubber bumper.

Cushion valve is built into the body



■ Stroke Variations



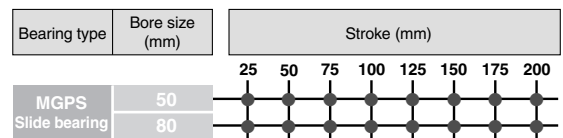
• Heavy duty guide rod type with improved load resistance

- Lateral load resistance: 10% increase
- Eccentric load resistance: 25% increase
- Impact load resistance: 140% increase (Compared with MGPM50 compact guide cylinder)

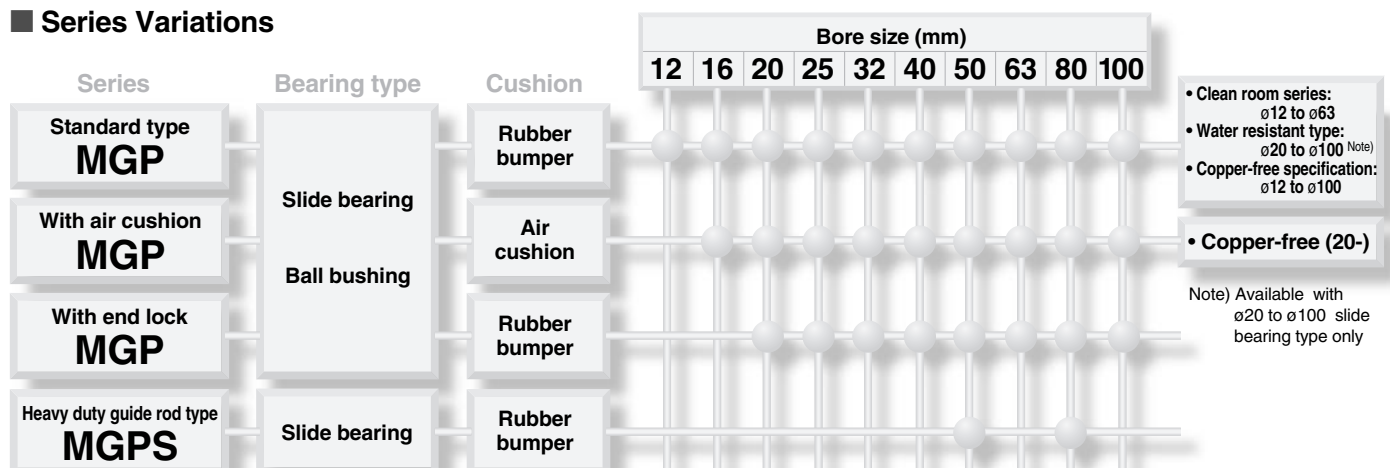
■ Stroke Variations



Bore size (mm)	Guide rod diameter (mm)	
	MGPS	MGPM
50	30	25
80	45	30



■ Series Variations



CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

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** **Z73**

Compact guide cylinder

Bearing type

M	Slide bearing
L	Ball bushing

Bore size

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

Number of auto switches

Nil	2 pcs.
S	1 pc.

Auto switch type

Nil	Without auto switch (built-in magnet cylinder)
-----	--

* Refer to the table below for auto switch model numbers.

Cylinder stroke (mm)

Refer to the standard stroke table on page 3.22-6.

Thread Port (Ø20 to Ø100)

—	Rc(PT)
TF	G(PF)

Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch model		Lead wire length (m) ^{Note 1)}			Applicable load	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	Relay, PLC
				2 wire	24V	12V	100V	—	Z73	●	●	●	—	
			No				5V 12V	100V or less	—	Z80	●	●	—	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC
				3 wire (PNP)				Y7PV	Y7P	●	●	○		
				2 wire				12V	Y69B	Y59B	●	●	○	
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V 12V		Y7NWV	Y7NW	●	●	○	IC circuit	
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○	—	
				2 wire				12V	Y7BWV	Y7BW	●	●	○	
	Water resistant (2 colour indicator)					—		Y7BA	—	●	○	—		
	Magnetic field resistant (2 colour indicator)					—		—	^{Note 3)} P5DW	—	●	●	—	

Note 1) Lead wire symbols 0.5m Nil (Example) Y69B
3m L Y69BL
5m Z Y69BZ

Note 2) Solid state auto switches marked with a "○" are produced upon receipt of order.

Note 3) Type D-P5DW cannot be mounted on bore sizes of Ø32 or less.

CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

MGZ

CY

MY

Series MGP



Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5MPa	
Maximum operating pressure	1.0MPa	
Minimum operating pressure	ø12, ø16	0.12MPa
	ø20 to ø100	0.1MPa
Ambient and fluid temperature	-10 to 60°C (with no freezing)	
Piston speed	ø12 to ø63	50 to 500mm/s
	ø80, ø100	50 to 400mm/s
Cushion	Rubber bumper at both ends	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_0$ mm	

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

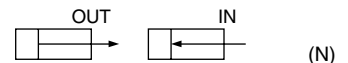
Modification method	Spacer installation type Spacers are installed in a standard stroke cylinder. • ø12 to 32 : Available in 1mm stroke increments • ø40 to 100 : Available in 5mm stroke increments		Special body type (-XB10) A special body is manufactured for the specified stroke. • All bore sizes are available in 1mm increments.	
Part number	Refer to standard part numbers and ordering procedure.		Indicate -XB10 at the end of the standard model no. Refer to P.52 for order made specifications.	
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—39 A spacer 1mm in width is installed in a MGPM20—40. C dimension is 77mm.		Part no.: MGPM20—39—XB10 Special body manufactured for 39mm stroke. C dimension is 76mm.	

Note) The minimum stroke for mounting auto switches is 10mm or more for two switches, and 5mm or more for one switch.

Auto switch mounting bracket part no. for D-P5DW

Bore size (mm)	Mounting bracket part no.	Notes
40, 50, 63, 80, 100	BMG1-040	Switch mounting bracket Hexagon socket head cap screw (M2.5 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	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	26	34	43	51	60	68	77	85
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	OUT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

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

Weights

Slide bearing: MGPM12 to 100

(kg)

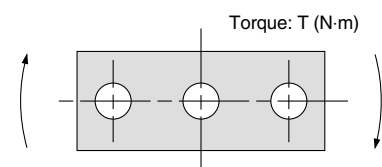
Bore size (mm)	Model	Standard stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPM12	0.24	0.28	—	0.31	0.35	0.39	0.50	0.59	0.70	0.79	0.89	0.98	1.17	—	—	—
16	MGPM16	0.33	0.38	—	0.43	0.48	0.53	0.68	0.80	0.97	1.09	1.22	1.35	1.60	—	—	—
20	MGPM20	—	0.67	—	0.75	0.83	0.91	1.17	1.37	1.57	1.76	1.96	2.16	2.63	3.03	3.42	3.82
25	MGPM25	—	0.95	—	1.05	1.16	1.27	1.65	1.92	2.19	2.47	2.74	3.01	3.67	4.21	4.76	5.30
32	MGPM32	—	—	1.69	—	—	2.07	2.47	2.85	3.24	3.62	4.00	4.38	5.33	6.09	6.86	7.62
40	MGPM40	—	—	1.95	—	—	2.37	2.83	3.25	3.68	4.10	4.53	4.95	5.99	6.85	7.70	8.55
50	MGPM50	—	—	3.36	—	—	4.00	4.73	5.37	6.01	6.65	7.29	7.93	9.54	10.8	12.1	13.4
63	MGPM63	—	—	4.18	—	—	4.94	5.78	6.54	7.29	8.05	8.80	9.56	11.4	12.9	14.4	15.9
80	MGPM80	—	—	6.49	—	—	7.43	8.67	9.61	10.5	11.5	12.4	13.4	15.8	17.7	19.5	21.4
100	MGPM100	—	—	10.5	—	—	11.9	13.6	14.9	16.3	17.6	18.9	20.2	23.6	26.2	28.9	31.5

Ball bushing: MGPL12 to 100

(kg)

Bore size (mm)	Model	Standard stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPL12	0.24	0.27	—	0.30	0.35	0.39	0.47	0.56	0.66	0.74	0.83	0.91	1.08	—	—	—
16	MGPL16	0.34	0.39	—	0.43	0.51	0.56	0.67	0.79	0.93	1.04	1.16	1.28	1.50	—	—	—
20	MGPL20	—	0.70	—	0.77	0.89	0.97	1.14	1.31	1.52	1.69	1.87	2.04	2.42	2.77	3.12	3.47
25	MGPL25	—	0.98	—	1.07	1.25	1.34	1.57	1.81	2.08	2.31	2.54	2.77	3.27	3.74	4.20	4.66
32	MGPL32	—	—	1.54	—	—	1.85	2.30	2.62	2.99	3.31	3.62	3.94	4.63	5.26	5.89	6.52
40	MGPL40	—	—	1.79	—	—	2.15	2.64	3.00	3.42	3.78	4.14	4.50	5.28	6.00	6.72	7.44
50	MGPL50	—	—	3.11	—	—	3.66	4.41	4.96	5.60	6.15	6.70	7.25	8.48	9.57	10.7	11.8
63	MGPL63	—	—	3.93	—	—	4.59	5.46	6.12	6.88	7.54	8.21	8.87	10.3	11.7	13.0	14.3
80	MGPL80	—	—	6.25	—	—	7.39	8.69	9.51	10.3	11.1	12.0	12.8	14.7	16.3	18.0	19.6
100	MGPL100	—	—	9.89	—	—	11.6	13.4	14.5	15.7	16.9	18.1	19.3	21.9	24.2	26.6	28.9

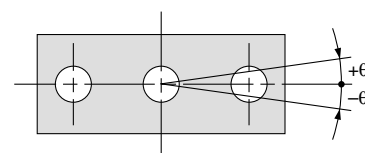
Allowable Rotational Torque of Plate



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	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	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	—	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	—	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	—	—	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	—	—	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	—	—	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	—	—	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	—	—	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	—	—	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



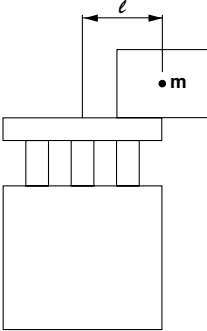
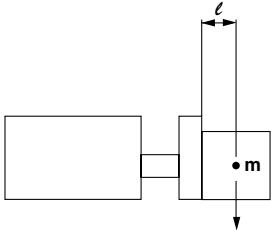
For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGPM	MGPL
12	$\pm 0.08^\circ$	$\pm 0.10^\circ$
16		
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25		
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40		
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63		
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100		

Series MGP

Model Selection

Selecting Conditions

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

Selection Example 1 (Vertical Mounting)

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

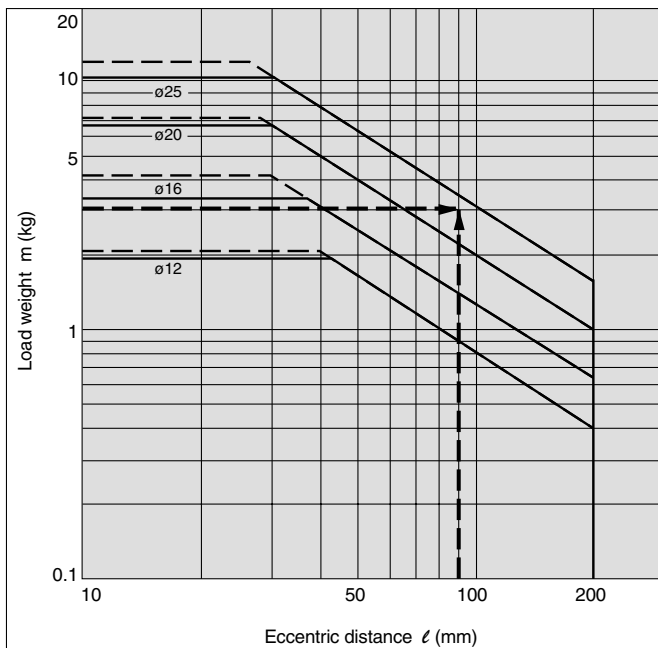
Find the point of intersection for the load weight of 3kg and the eccentric distance of 90mm on graph **5**, based on vertical mounting, ball bushing, 30mm stroke, and the speed of 200mm/s.
 →MGPL25-30 is selected.

Selection Example 2 (Horizontal Mounting)

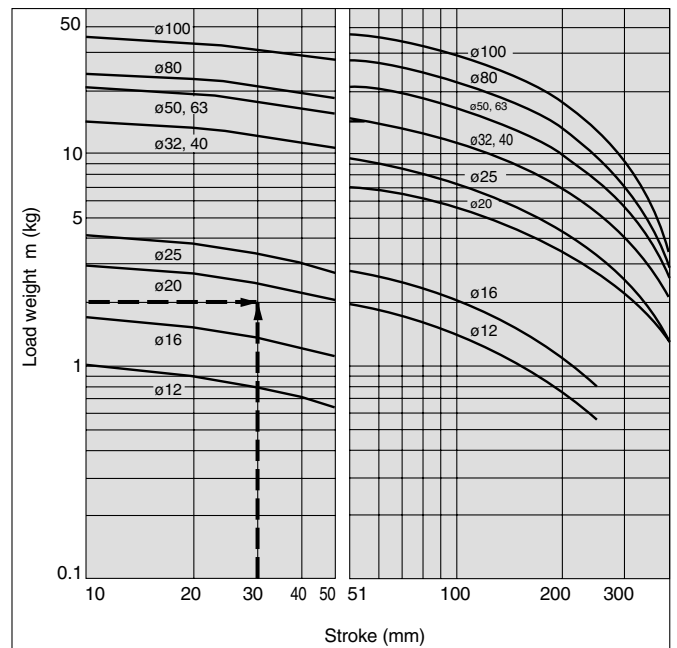
Selecting conditions
 Mounting: Horizontal
 Bearing type: Slide bearing
 Distance between plate and load center of gravity: 50mm
 Maximum speed: 200mm/s
 Load weight: 2kg
 Stroke: 30mm

Find the point of intersection for the load weight of 2kg and stroke of 30mm on graph **13**, based on horizontal mounting, slide bearing, the distance of 50mm between the plate and load center of gravity, and the speed of 200mm/s.
 →MGPM20-30 is selected.

5 Less than 40mm stroke V = 200mm/s



13 $l = 50\text{mm}$ V = 200mm/s

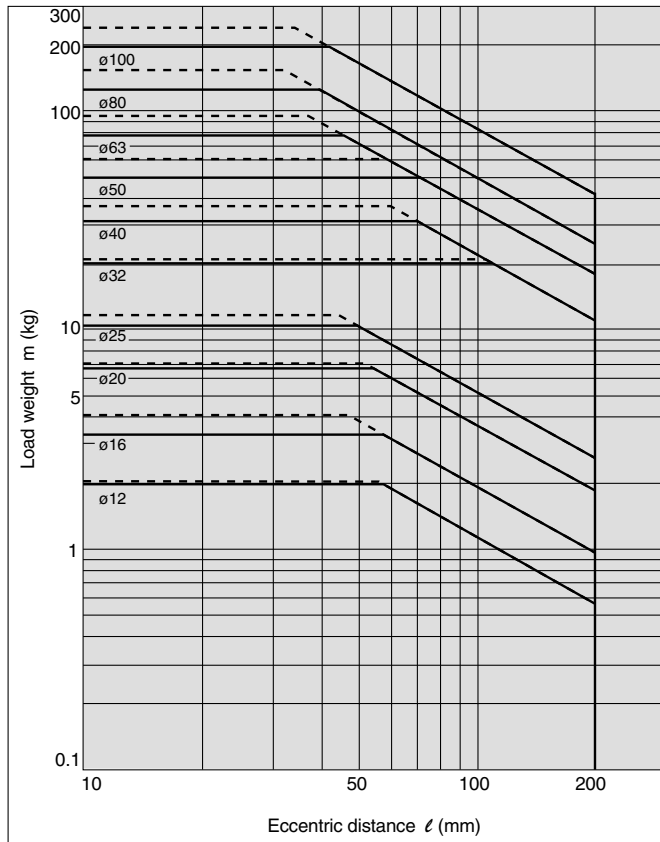


Vertical Mounting **Slide Bearing**

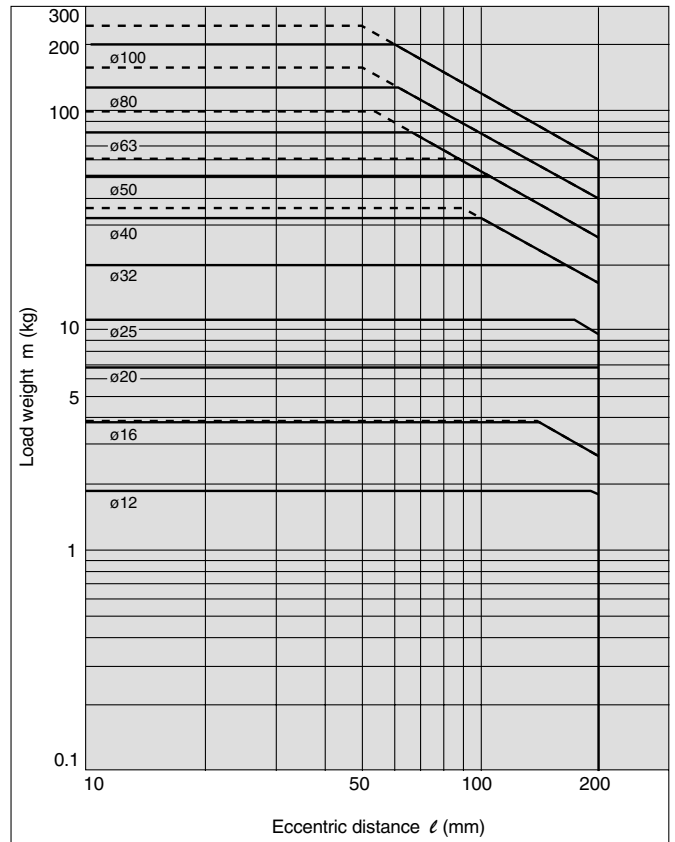
—— Operating pressure: 0.4MPa
 - - - - - Operating pressure: 0.5MPa or more

MGPM12 to 100

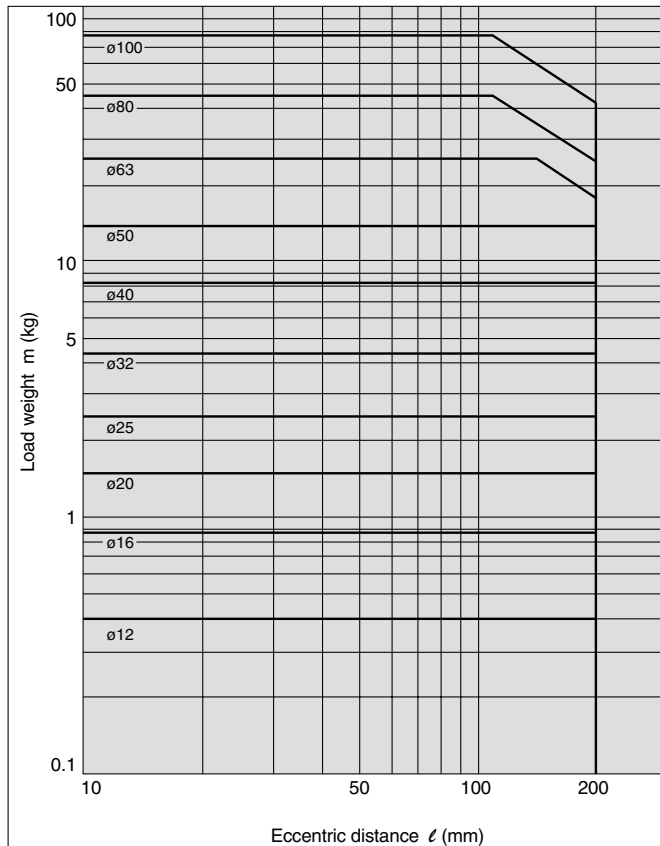
1 50mm stroke or less $V = 200\text{mm/s}$



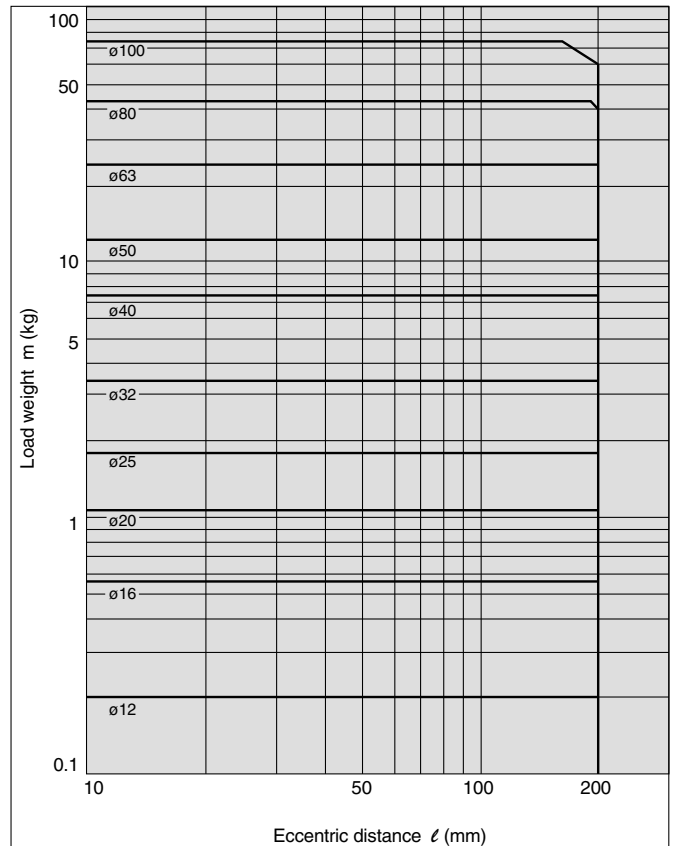
2 Over 50mm stroke $V = 200\text{mm/s}$



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



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



CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

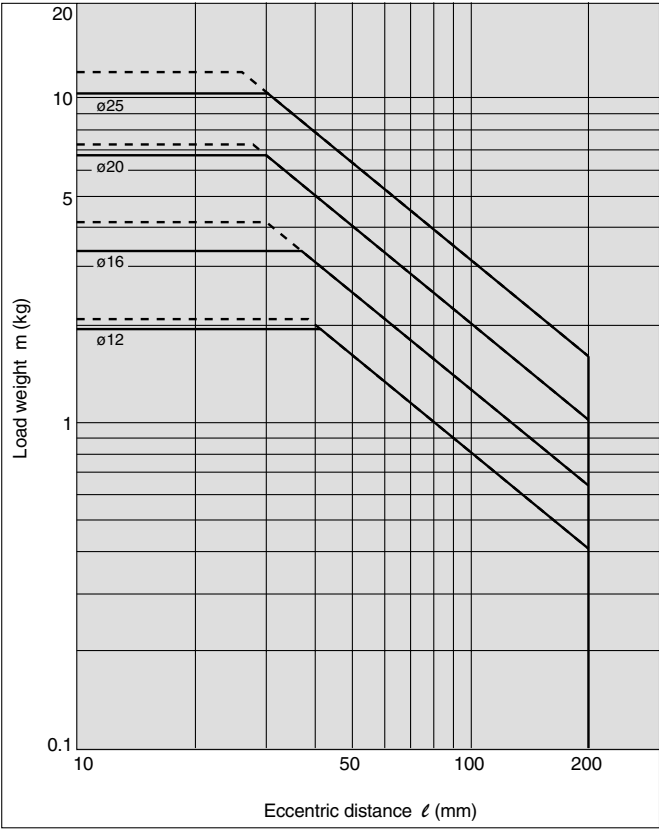
MGZ

CY

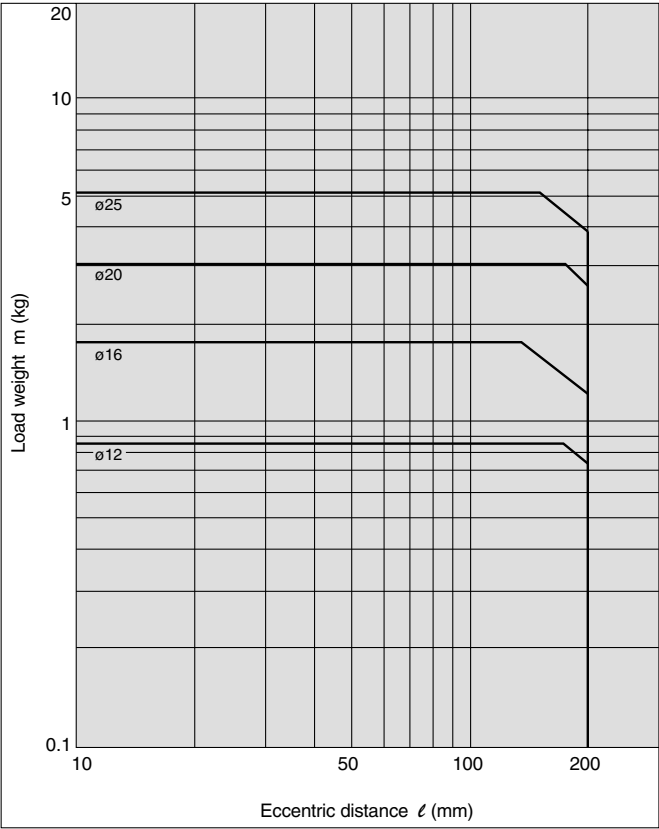
MY

MGPL12 to 25

5 30mm stroke or less V = 200mm/s

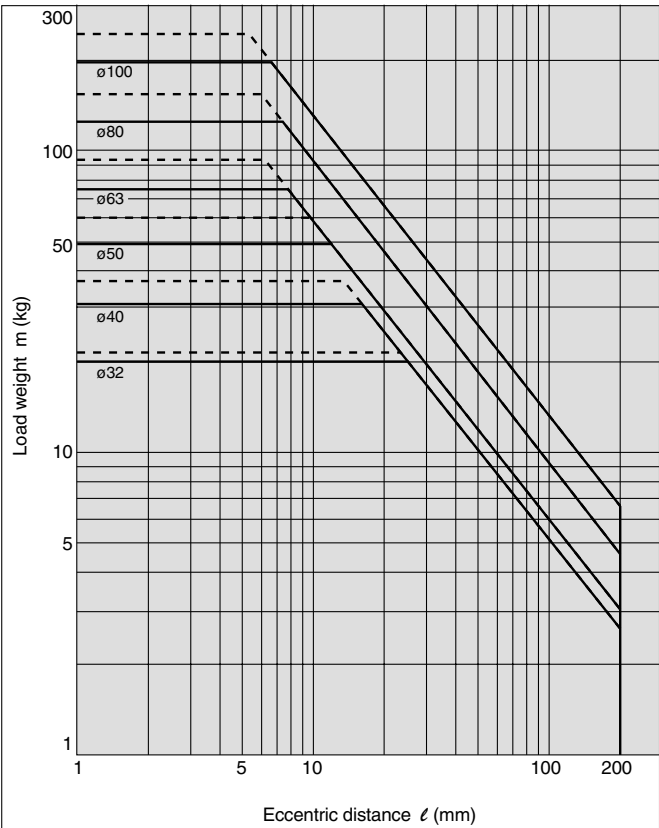


6 Over 30mm stroke V = 200mm/s

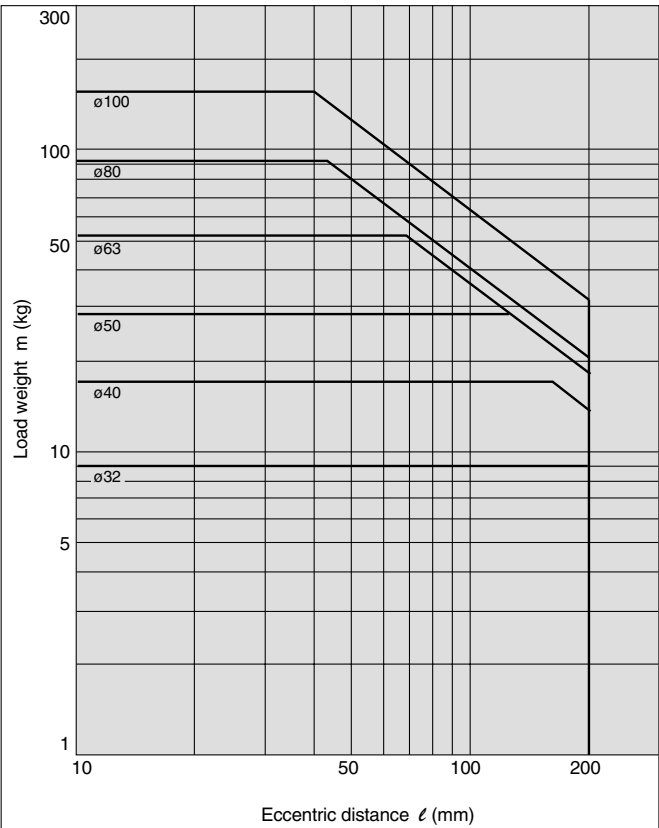


MGPL32 to 100

7 50mm stroke or less V = 200mm/s



8 Over 50mm stroke V = 200mm/s

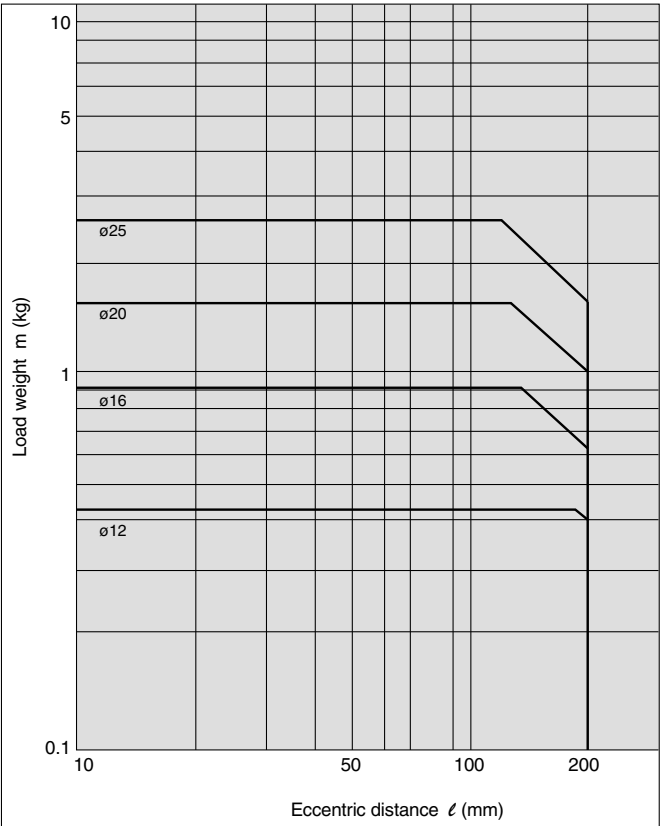


Vertical Mounting **Ball Bushing**

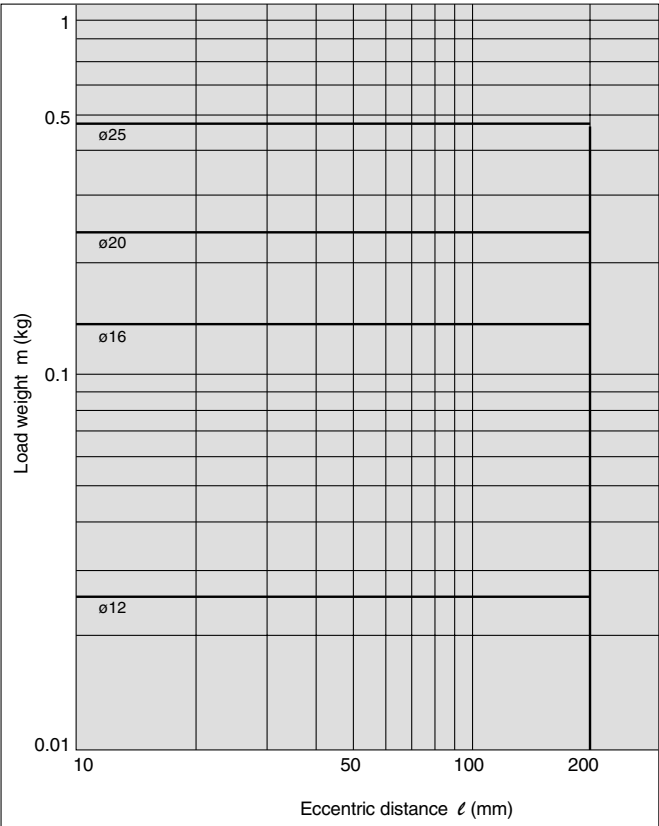
Operating pressure: 0.4MPa

MGPL12 to 25

9 30mm stroke or less $V = 400\text{mm/s}$

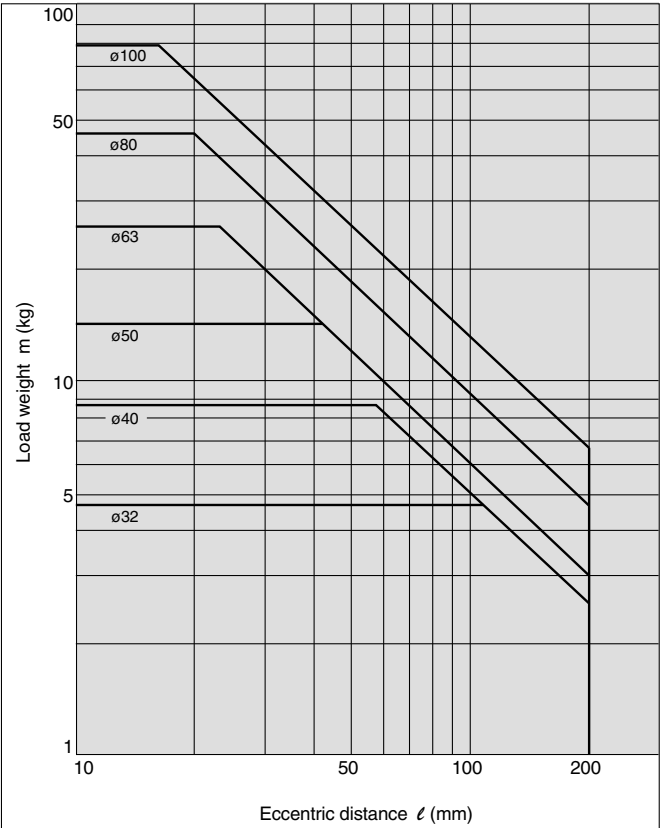


10 Over 30mm stroke $V = 400\text{mm/s}$

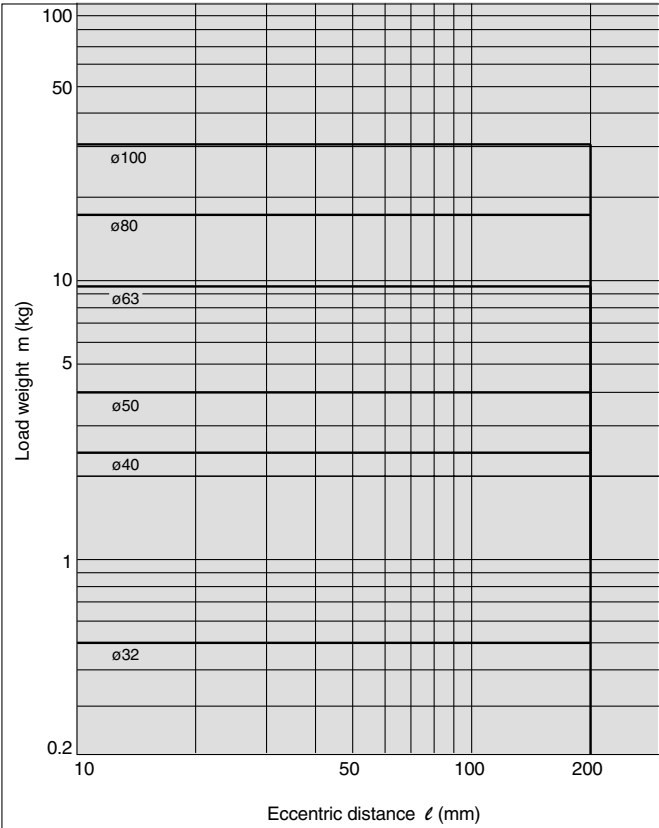


MGPL32 to 100

11 50mm stroke or less $V = 400\text{mm/s}$



12 Over 50mm stroke $V = 400\text{mm/s}$



CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

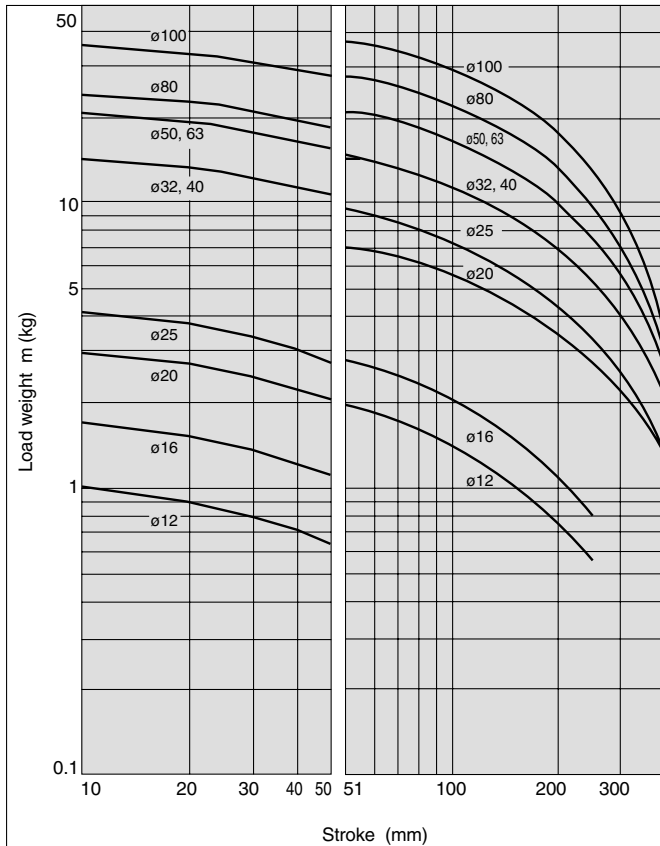
MGZ

CY

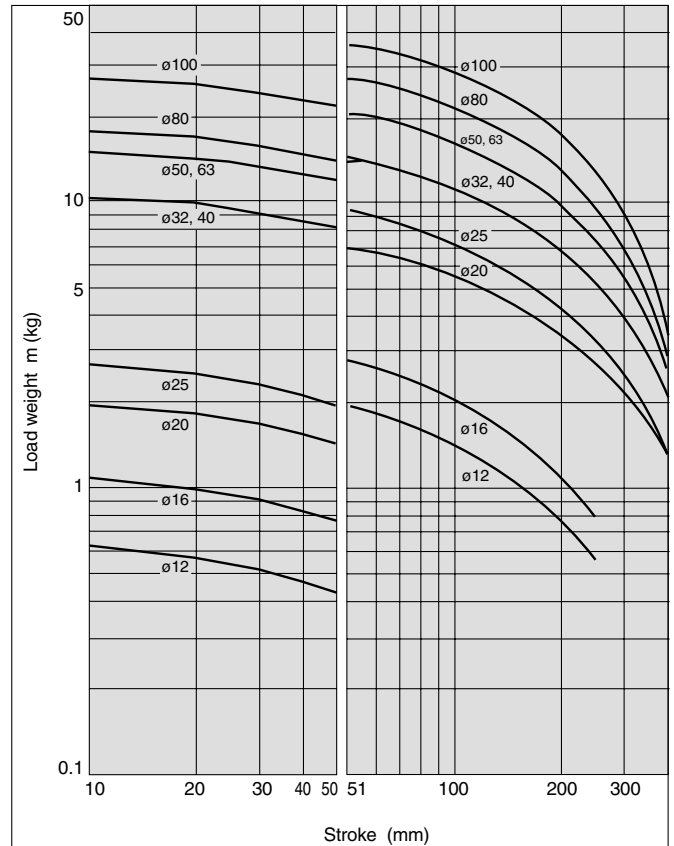
MY

MGPM12 to 100

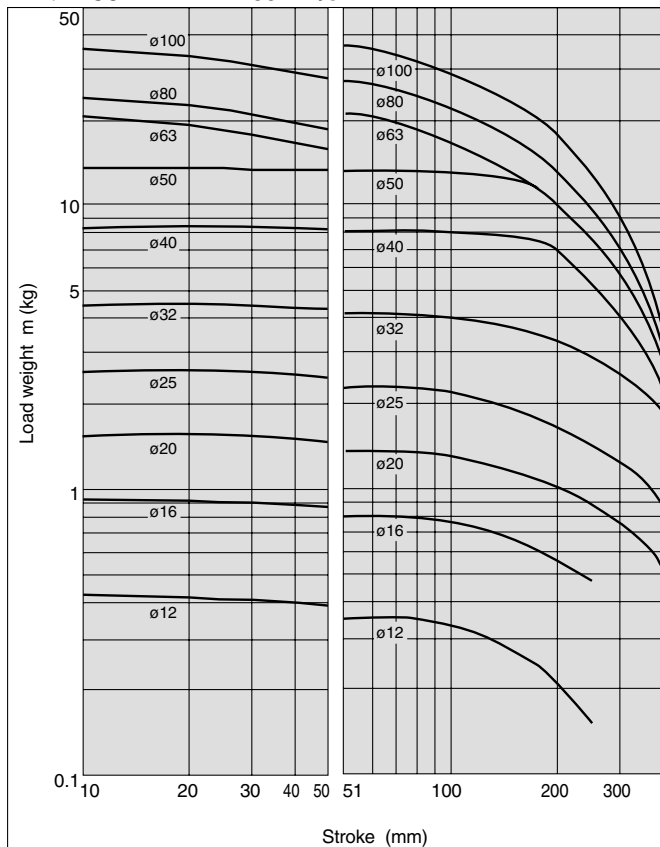
13 $\ell = 50\text{mm}$ $V = 200\text{mm/s}$



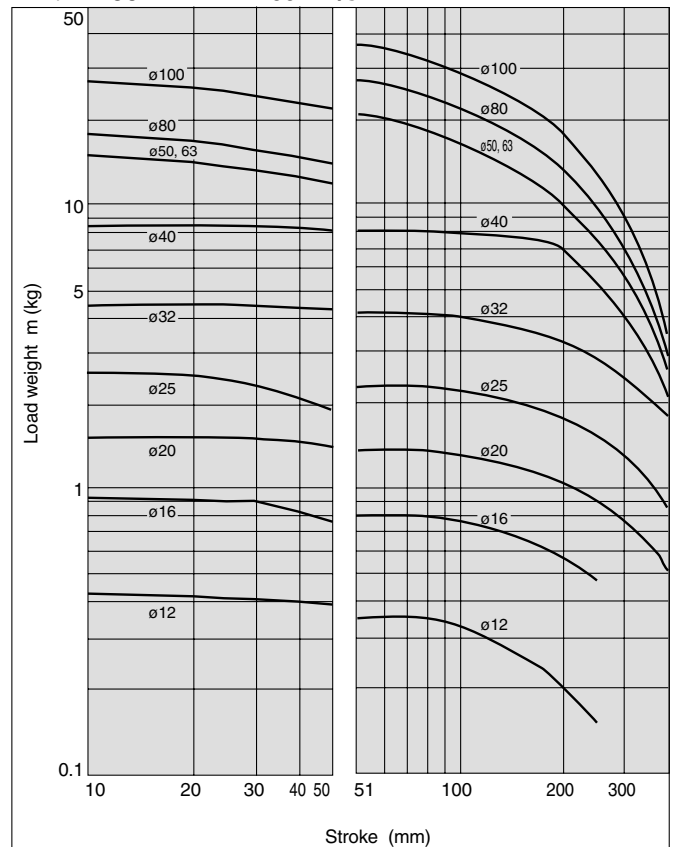
14 $\ell = 100\text{mm}$ $V = 200\text{mm/s}$



15 $\ell = 50\text{mm}$ $V = 400\text{mm/s}$

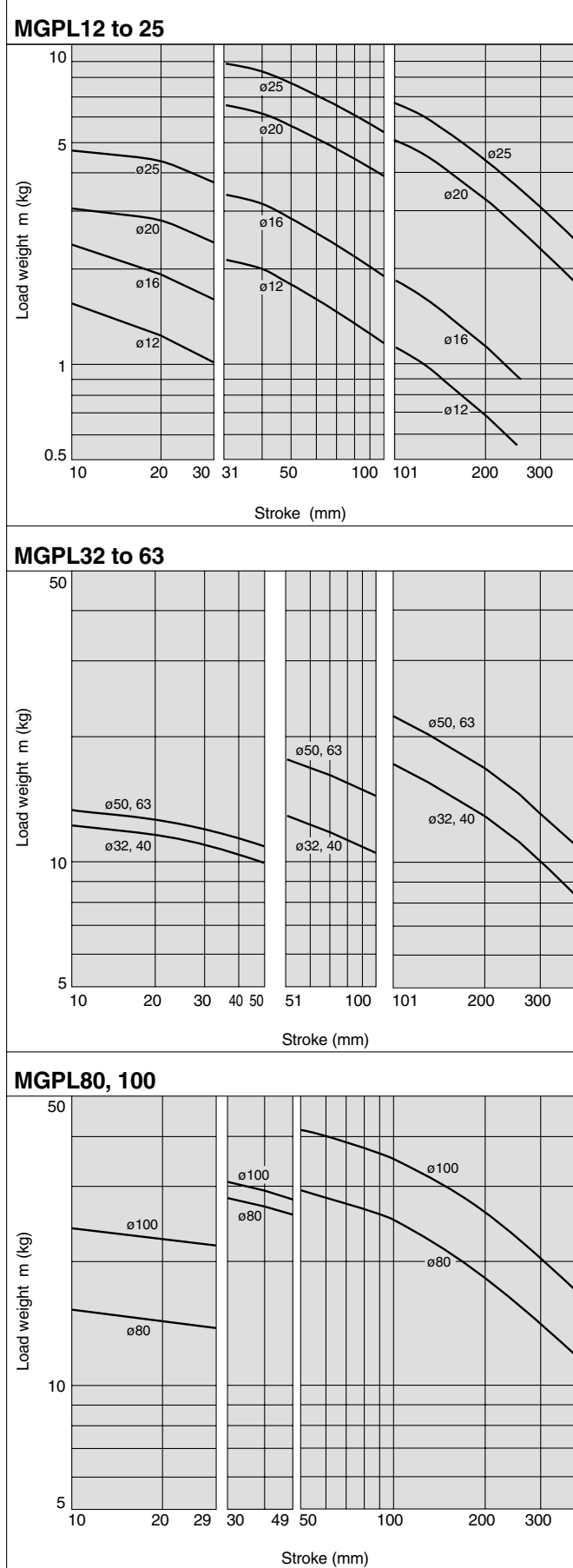


16 $\ell = 100\text{mm}$ $V = 400\text{mm/s}$

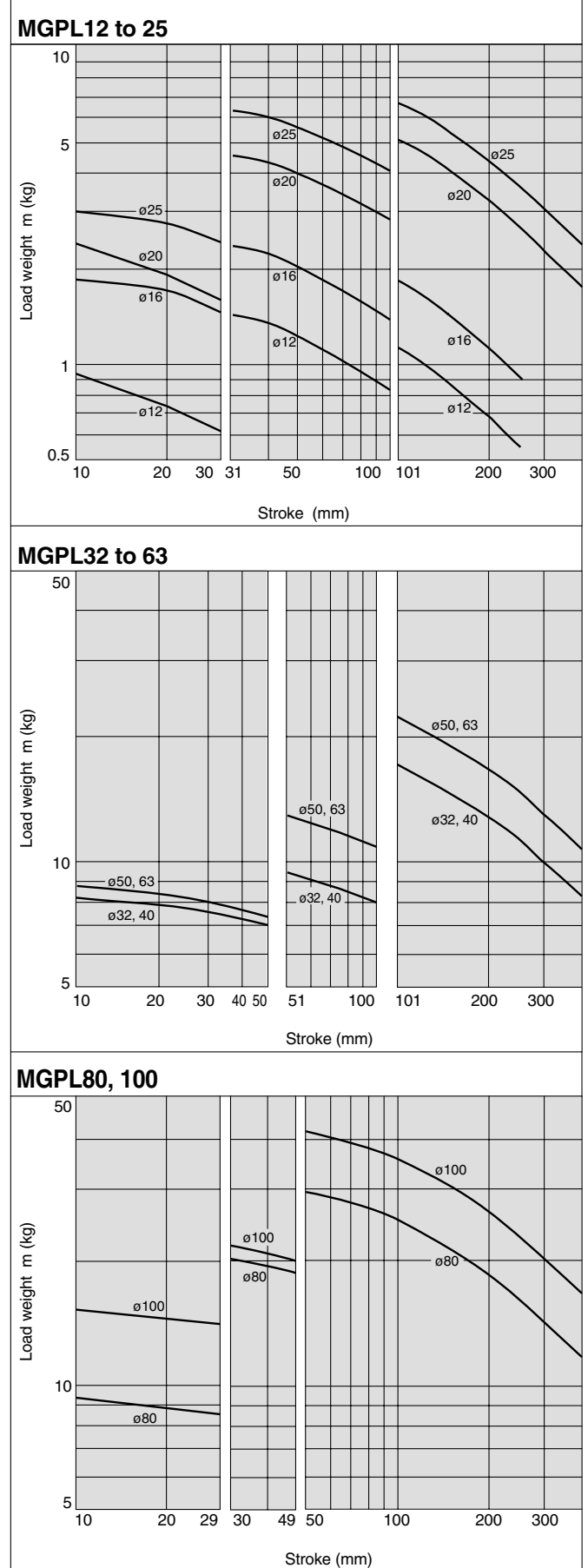


Horizontal Mounting **Ball Bushing**

17 $\ell = 50\text{mm}$ $V = 200\text{m/s}$

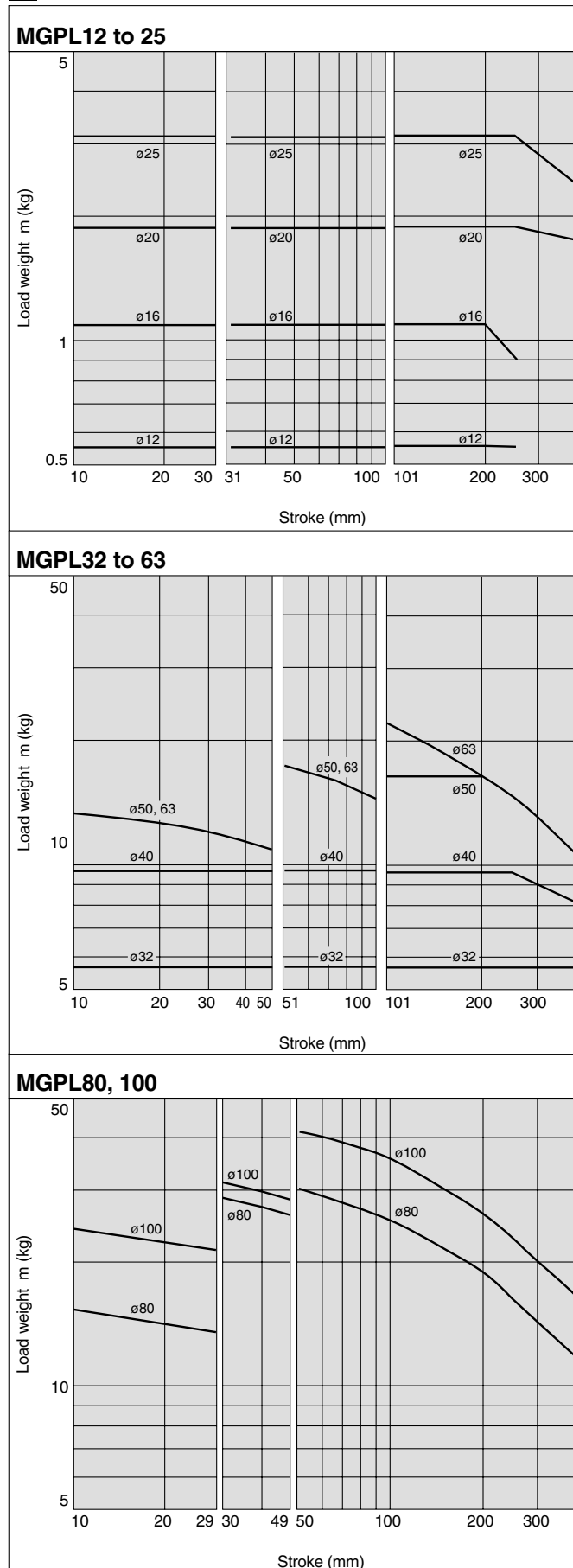


18 $\ell = 100\text{mm}$ $V = 200\text{m/s}$

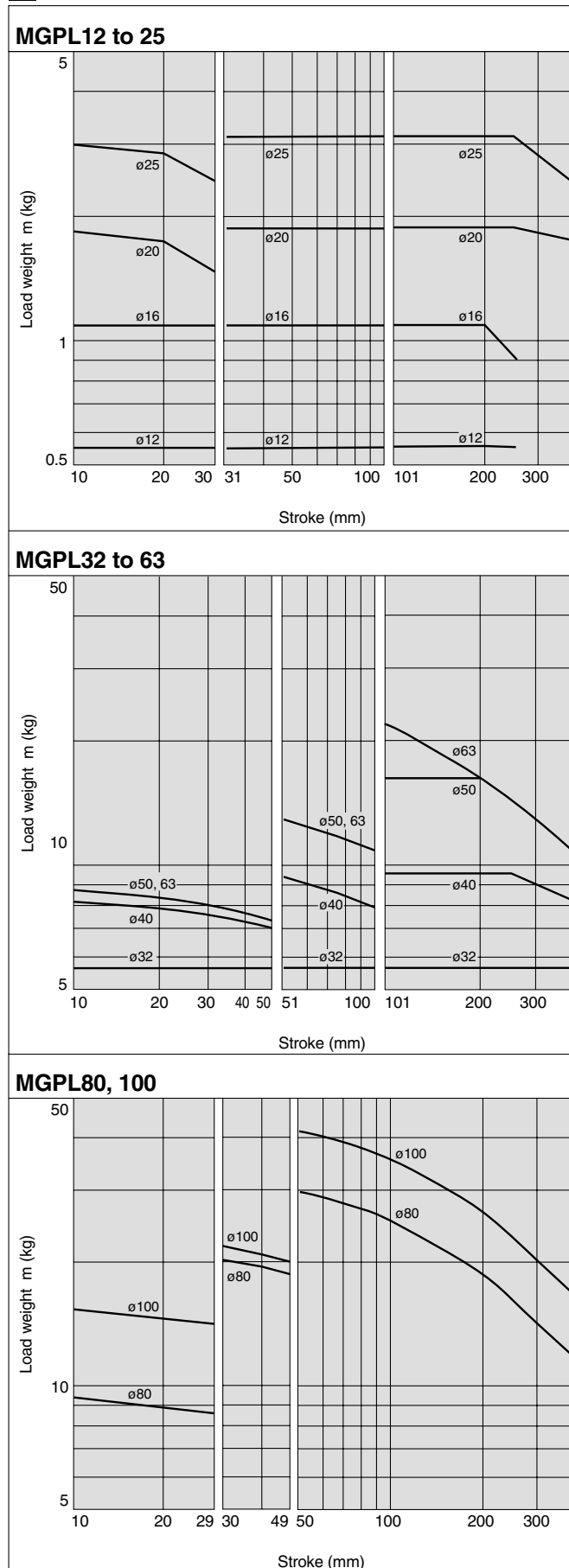


CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

19 $\ell = 50\text{mm}$ $V = 400\text{m/s}$

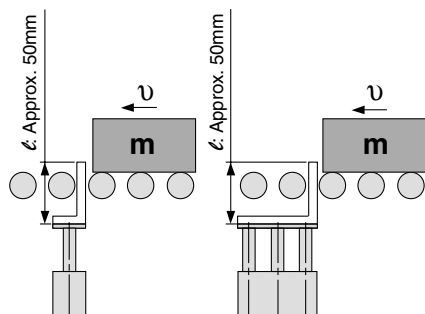


20 $\ell = 100\text{mm}$ $V = 400\text{m/s}$



Operating Range when Used as Stopper

Bore Sizes $\phi 12$ to 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.

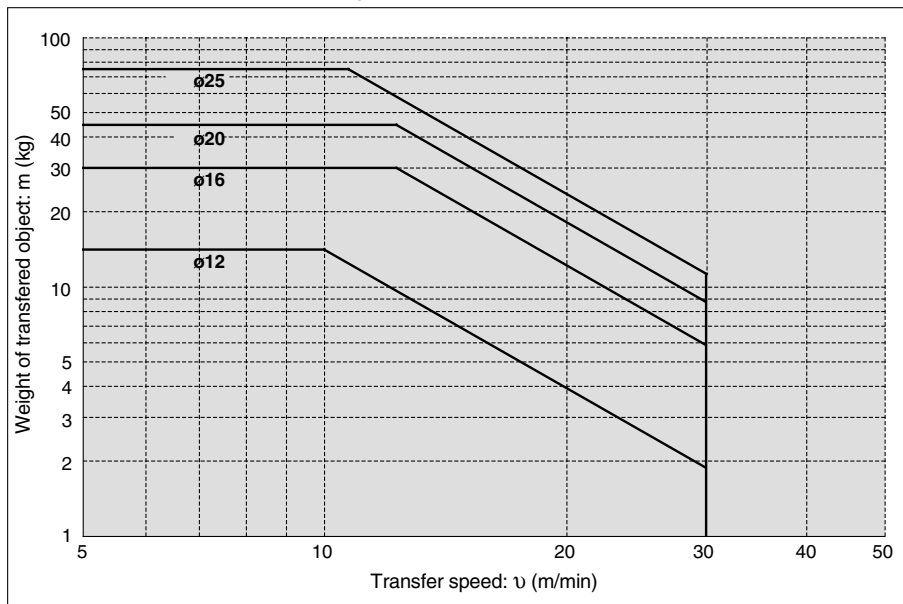
⚠ Caution

Handling precautions

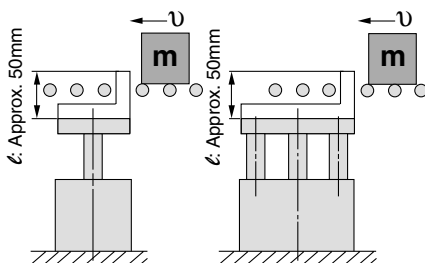
Note 1) When using as a stopper, select a model with a stroke of 30mm or less.

Note 2) Model MGPL (ball bushing) cannot be used as a stopper.

MGPM12 to 25 (Slide bearing)



Bore Sizes $\phi 32$ to 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.

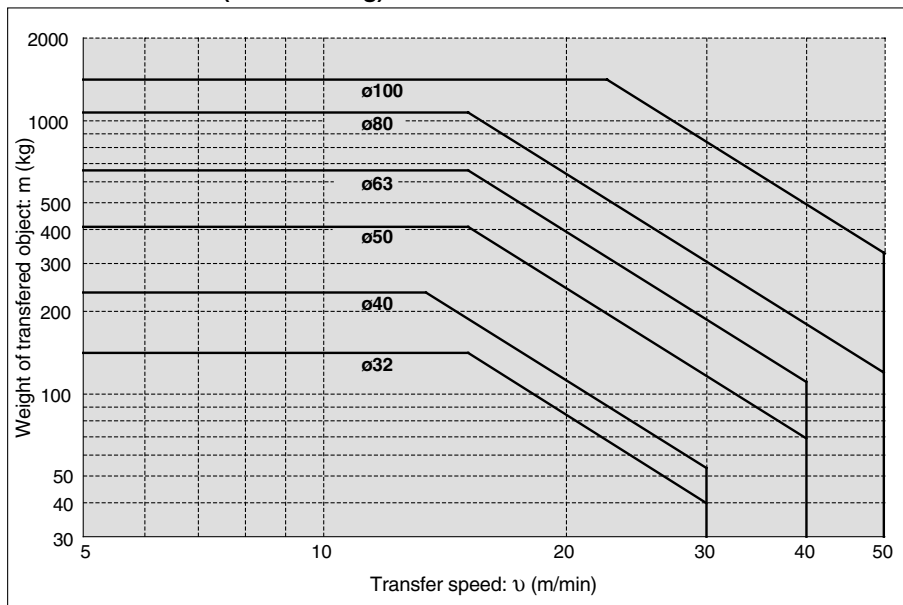
⚠ Caution

Handling precautions

Note 1) When using as a stopper, select a model with a stroke of 50mm or less.

Note 2) Model MGPL (ball bushing) cannot be used as a stopper.

MGPM32 to 100 (Slide bearing)



CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
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MGC
MGF
MGZ
CY
MY

Series MGP

1. Water Resistant

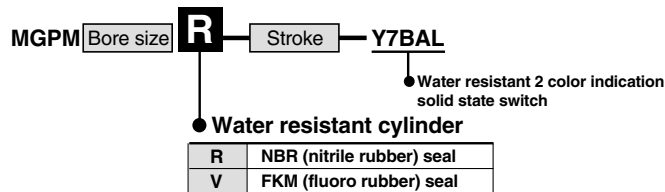
Ideal for use in a machine tool environment exposed to coolants. Also applicable for use in an environment with water splashing such as food processing and car wash equipment, etc.

Specifications

Applicable series	MGPM
Bearing type	Slide bearing
Bore size (mm)	20, 25, 32, 40, 50, 63, 80, 100
Cushion	MGPM□R Rubber cushion MGPM□V Without cushion

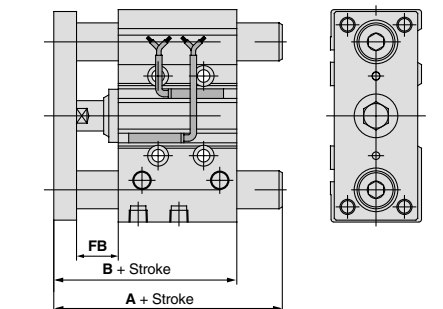
* Specifications other than above are identical to the standard basic type.

How to Order



* Stainless steel parts are available as special order products.

Dimensions



Bore size (mm)	A (mm)		B (mm)	FB (mm)
	50mm stroke or less	51mm stroke or more		
20	66	97.5	66	19
25	67.5	99	67.5	20
32	109	114	71.5	22
40	109	114	78	22
50	117.5	129	83	23
63	117.5	129	88	23
80	121	148	102.5	24
100	141	166	120	29

* Other dimensions are identical to the standard type.

2. Copper-free Series (applicable to CRT manufacturing process)

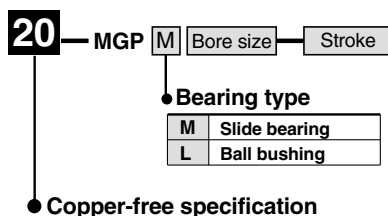
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used as component parts.

Specifications

Applicable series	MGPM	MGPL
Bearing type	Slide bearing	Ball bushing
Bore size (mm)	12, 16, 20, 25, 32 40, 50, 63, 80, 100	

* Specifications and dimensions other than above are identical to the standard basic type.

How to Order



3. Clean Room Series

Applicable in a clean room environment.

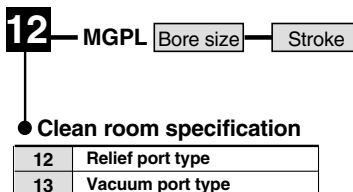
Ideal for use in conveyor lines for semi-conductor (LSI), liquid crystal (LCD), food processing, pharmaceutical, and electronic parts, etc.

Specifications

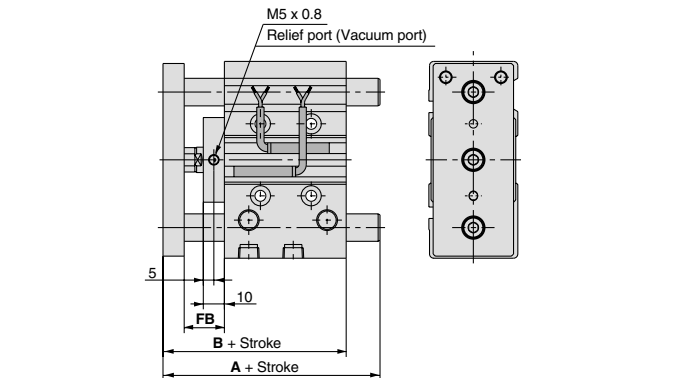
Applicable series	MGPL
Bearing type	Ball bushing
Bore size (mm)	12 16 20 25 32 40 50 63
Stroke (mm)	10 to 100 20 to 200 25 to 200

* Specifications other than above are identical to the standard basic type.

How to Order



Dimensions

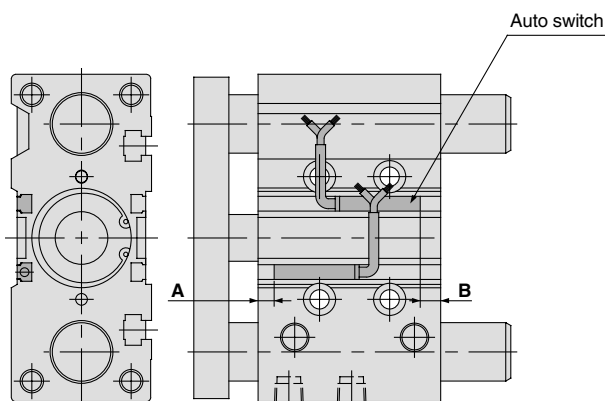


Bore size (mm)	A (mm)			B (mm)	FB (mm)
	30mm stroke or less	Over 30mm to 100mm stroke	Over 100mm stroke		
12	56	68	—	55	18
16	62	78	—	59	18
20	76	93	117	66	19
25	82.5	98.5	117.5	66.5	19

Bore size (mm)	A (mm)			B (mm)	FB (mm)
	50mm stroke or less	Over 50mm to 100mm stroke	Over 100mm stroke		
32	93	110	130	71.5	22
40	93	110	130	78	22
50	104	125	145	83	23
63	104	125	145	88	23

* Other dimensions are identical to the standard type.

Auto Switches/Proper Mounting Position for Stroke End Detection



Proper mounting position (mm)

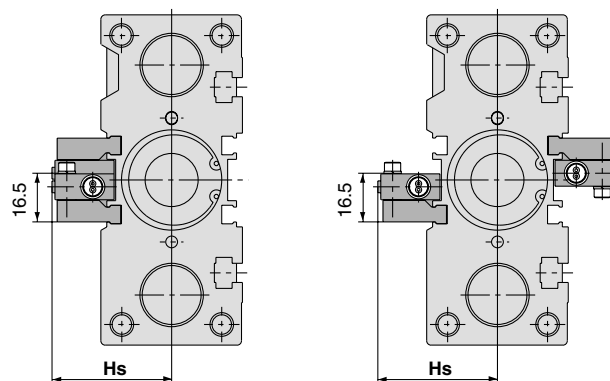
Bore size (mm)	A	B
12	1.5	3
16	4.5	4
20	4	8
25	4.5	8
32	5.5	7

Bore size (mm)	A	B
40	9.5	9.5
50	7.5	11.5
63	10	14
80	13	18.5
100	17.5	23.5

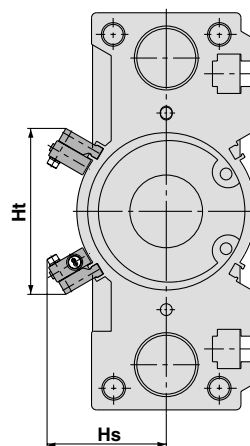
Note 1) Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Note 2) Type D-P5DW can be mounted only on bore sizes $\phi 40$ through $\phi 100$.

For D-P5DW (* Cannot be mounted on bore sizes $\phi 32$ or less.) $\phi 40$ to $\phi 63$



$\phi 80, \phi 100$



For 25mm stroke

* For bore sizes $\phi 40$ through 63 with two switches, one switch is mounted on each side.

Bore size (mm)	Hs	Ht
40	44.5	—
50	50	—
63	57	—
80	60.7	84.4
100	70.8	96.1

* Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Auto Switch Mounting

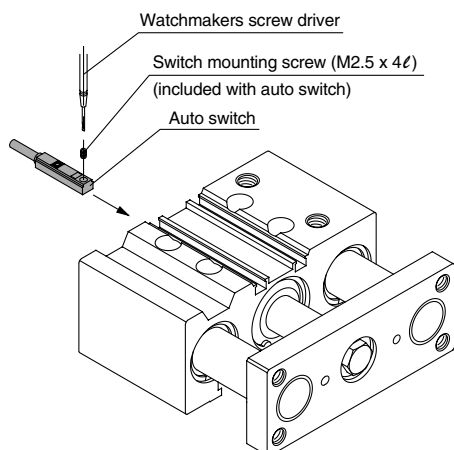
⚠ Caution

Auto switch mounting tool

- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers screw driver with a handle about 5 to 6mm in diameter.

Tightening torque

- Tighten with a torque of 0.05 to 0.1N·m. As a rule, it should be turned about 90° past the point at which tightening can be felt.



For D-P5DW

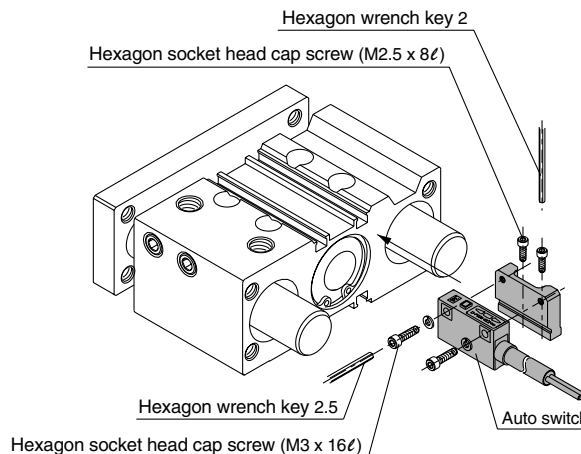
⚠ Caution

Auto switch mounting tool

- When tightening hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 or 2.5 with the appropriate screws.

Tightening torque

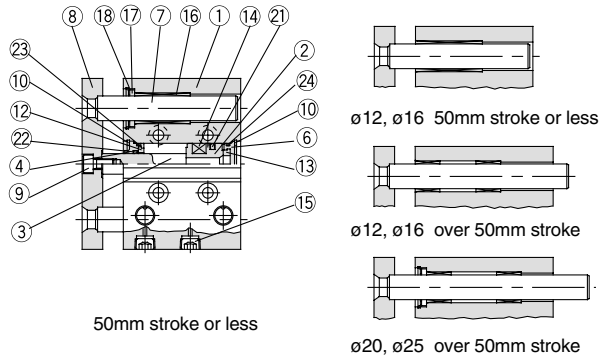
- Tighten M2.5 screws with a torque of about 0.3 to 0.5N·m, and M3 screws with a torque of about 0.5 to 0.7 N·m.



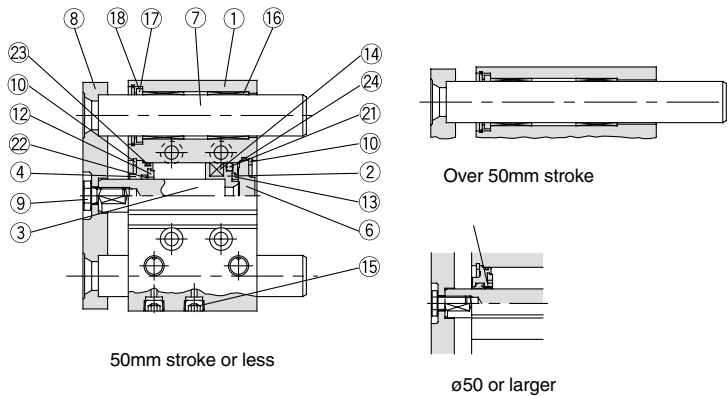
Construction

Series MGPM

MGPM12 to 25



MGPM32 to 100



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100 Hard chrome plated
4	Collar	Aluminum bearing alloy	ø12 to ø40 Clear anodized
		Aluminum alloy casting	ø50 to ø100 Coated
5	Bushing	Lead bronze casting	ø50 to ø100
6	Head cover	Aluminum alloy	ø12 to ø63 Clear chromated
			ø80 to ø100 Coated
7	Guide rod	Carbon steel	Hard chrome plated
8	Plate	Carbon steel	Nickel plated
9	Plate mounting bolt	Carbon steel	Nickel plated
10	Snap ring	Carbon tool steel	Phosphate coated
11	Snap ring	Carbon tool steel	Phosphate coated

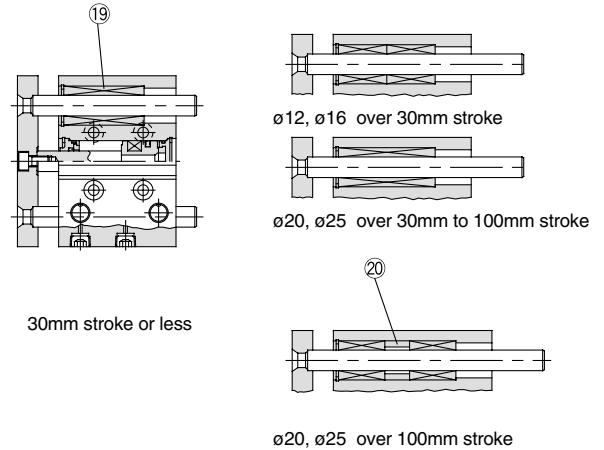
Replacement parts: Seal kits

Bore size (mm)	Order No.	Contents
12	MGP12-PS	Kits include items 21, 22, 23, and 24 from the table above.
16	MGP16-PS	
20	MGP20-PS	
25	MGP25-PS	
32	MGP32-PS	

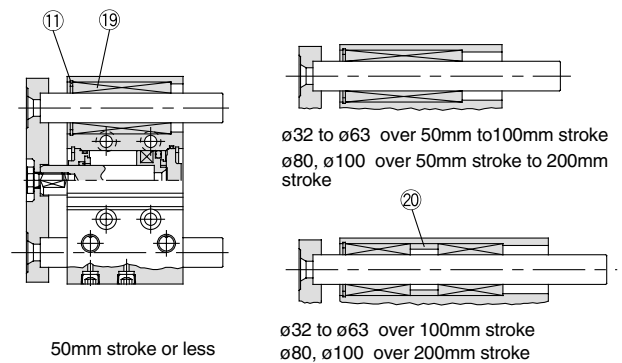
* Seal kits are sets consisting of items 21 through 24 above, and can be ordered using the order number for each bore size.

Series MGPL

MGPL12 to 25



MGPL32 to 100



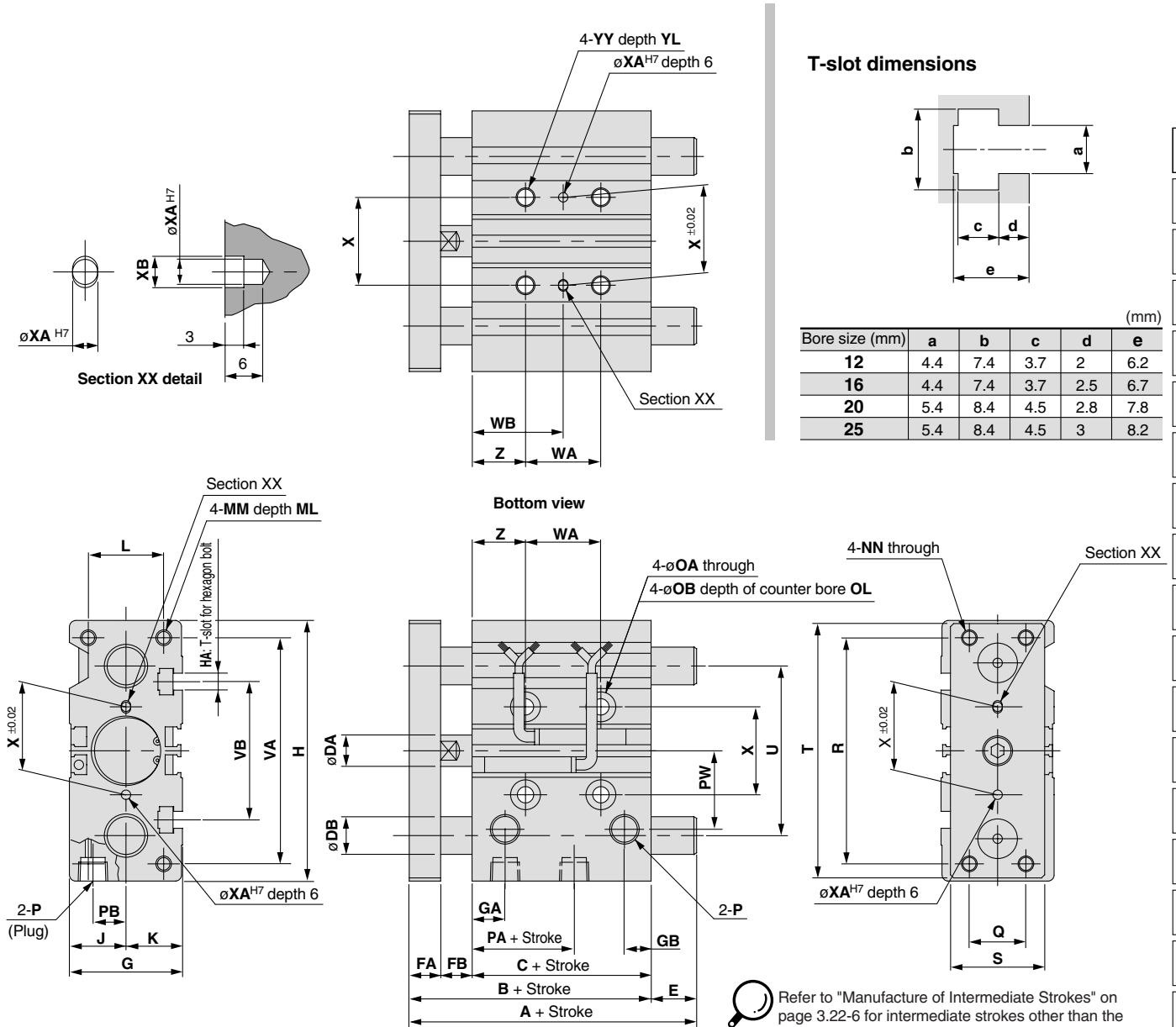
Parts list

No.	Description	Material	Note
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	Synthetic rubber	
15	Plug (M-5P)	Brass	ø12, ø16 Nickel plated
	Hexagon socket head taper plug	Carbon steel	ø20 to ø100 Nickel plated
16	Slide bearing	Lead bronze casting	
17	Felt	Felt	
18	Holder	Resin	
19	Ball bushing		
20	Spacer	Aluminum alloy	
21*	Piston seal	NBR	
22*	Rod seal	NBR	
23*	Gasket A	NBR	
24*	Gasket B	NBR	

Replacement parts: Seal kits

Bore size (mm)	Order no.	Contents
40	MGP40-PS	Kits include items 21, 22, 23, and 24 from the table above.
50	MGP50-PS	
63	MGP63-PS	
80	MGP80-PS	
100	MGP100-PS	

ø12 to ø25/MGPM, MGPL



MGPM, MGPL 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	PA	PB	PW
12	10, 20, 30, 40, 50, 75, 100	42	29	6	8	5	26	11	7.5	58	M4	13	13	18	M4	10	M4	4.3	8	4.5	M5	13	8	18
16	125, 150, 175, 200, 250	46	33	8	8	5	30	11	8	64	M4	15	15	22	M5	12	M5	4.3	8	4.5	M5	15	10	19
20	20, 30, 40, 50, 75, 100	53	37	10	10	6	36	10.5	8.5	83	M5	18	18	24	M5	13	M5	5.6	9.5	5.5	1/8	12.5	10.5	25
25	125, 150, 175, 200 250, 300, 350, 400	53.5	37.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6	15	M6	5.6	9.5	5.5	1/8	12.5	13.5	28.5

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

MGPM (slide bearing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 100st	Over 100st		50st or less	Over 50st to 100st	Over 100st
12	42	60.5	85	8	0	18.5	43
16	46	64.5	95	10	0	18.5	49

MGPM (slide bearing)/Dimensions A, DB, E (mm)

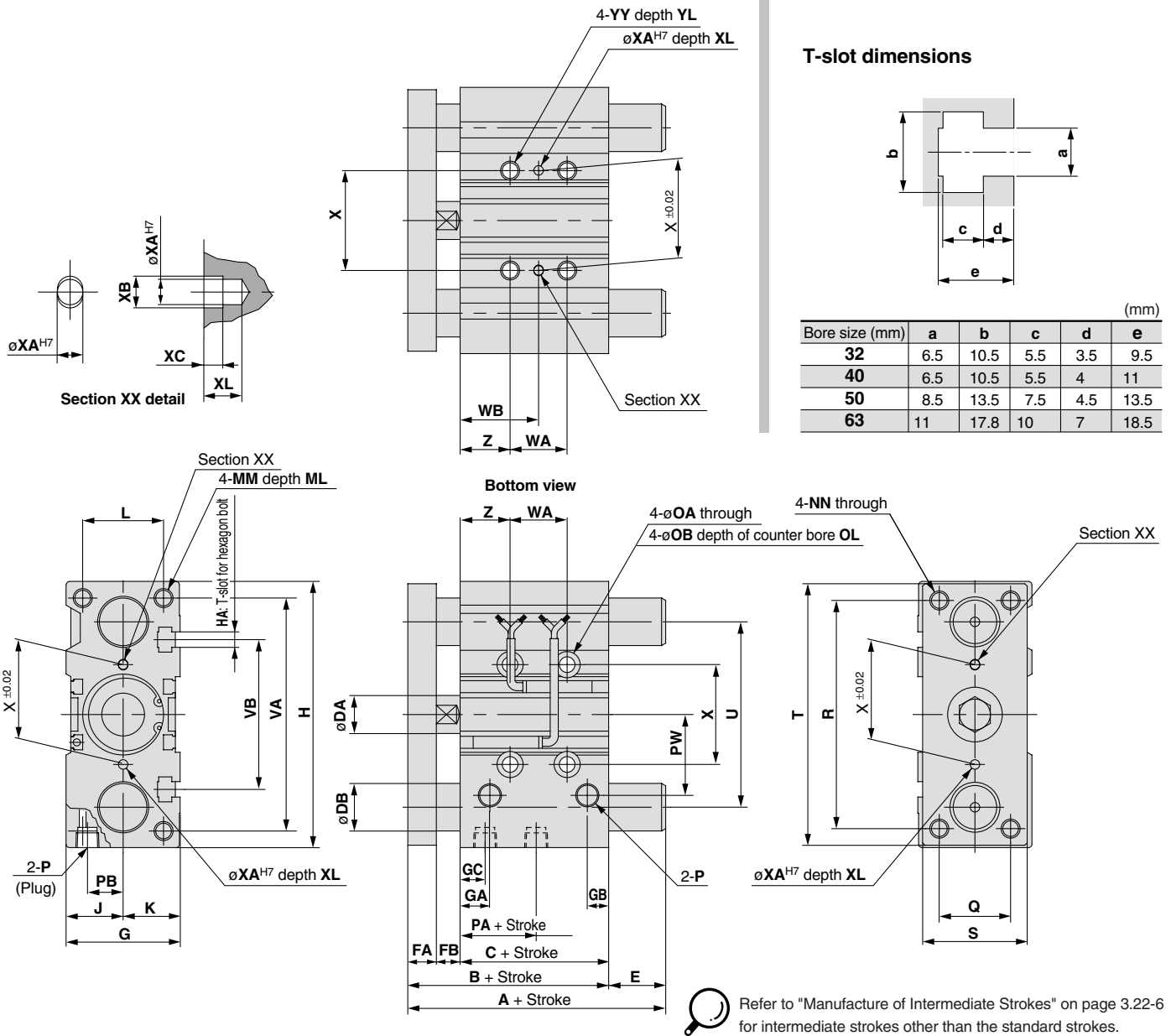
Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 200st	Over 200st		50st or less	Over 50st to 200st	Over 200st
20	53	84.5	122	12	0	31.5	69
25	53.5	85	122	16	0	31.5	68.5

MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	30st or less	Over 30st to 100st	Over 100st		30st or less	Over 30st to 100st	Over 100st
12	43	55	85	6	1	13	43
16	49	65	95	8	3	19	49

MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A				DB	E			
	30st or less	Over 30st to 100st	Over 100st to 200st	Over 200st		30st or less	Over 30st to 100st	Over 100st to 200st	Over 200st
20	63	80	104	122	10	10	27	51	69
25	69.5	85.5	104.5	122	13	16	32	51	68.5



MGPM, MGPL Common dimensions

Bore size (mm)	Standard stroke (mm)		B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
32	25, 50, 75, 100, 125, 150, 175, 200 250, 300, 350, 400		59.5	37.5	16	12	10	48	12.5	9	12.5	112	M6	24	24	34	M8	20	M8	6.6	11	7.5	1/8	7	15	34	30
40			66	44	16	12	10	54	14	10	14	120	M6	27	27	40	M8	20	M8	6.6	11	7.5	1/8	13	18	38	30
50			72	44	20	16	12	64	14	11	12	148	M8	32	32	46	M10	22	M10	8.6	14	9	1/4	9	21.5	47	40
63			77	49	20	16	12	78	16.5	13.5	16.5	162	M10	39	39	58	M10	22	M10	8.6	14	9	1/4	14	28	55	50
Bore size (mm)	R	S	T	U	VA	VB	WA					WB					X	XA	XB	XC	XL	YY	YL	Z			
							25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st	25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st											
32	96	44	110	78	98	63	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8	16	21			
40	104	44	118	86	106	72	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8	16	22			
50	130	60	146	110	130	92	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10	20	24			
63	130	70	158	124	142	110	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10	20	24			

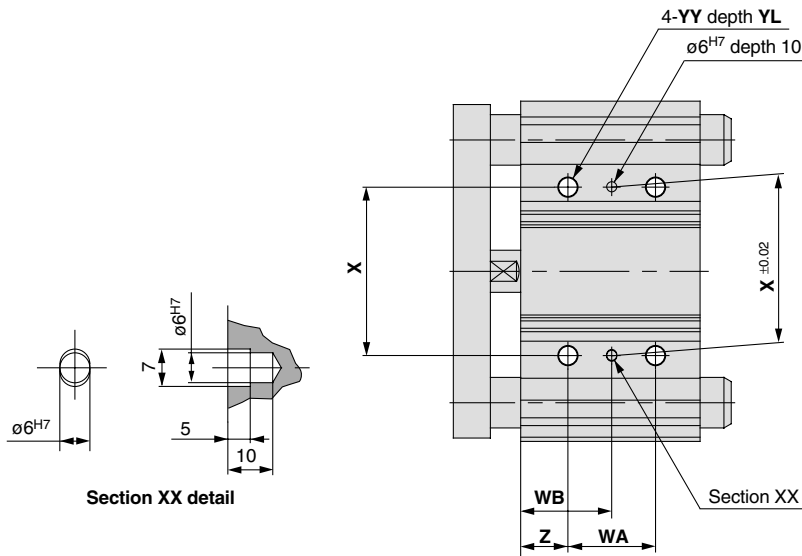
MGPM (slide bearing)/Dimensions A, DB, E

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 200st	Over 200st		50st or less	Over 50st to 200st	Over 200st
32	97	102	140	20	37.5	42.5	80.5
40	97	102	140	20	31	36	74
50	106.5	118	161	25	34.5	46	89
63	106.5	118	161	25	29.5	41	84

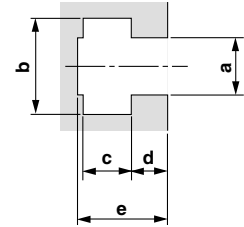
MGPL (ball bushing)/Dimensions A, DB, E

Bore size (mm)	A				DB	E			
	50st or less	Over 50st to 100st	Over 100st to 200st	Over 200st		50st or less	Over 50st to 100st	Over 100st to 200st	Over 200st
32	81	98	118	140	16	21.5	38.5	58.5	80.5
40	81	98	118	140	16	15	32	52	74
50	93	114	134	161	20	21	42	62	89
63	93	114	134	161	20	16	37	57	84

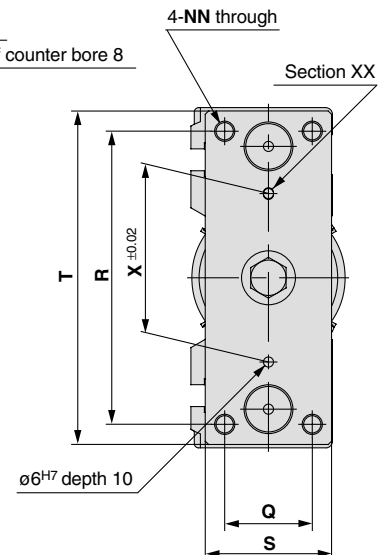
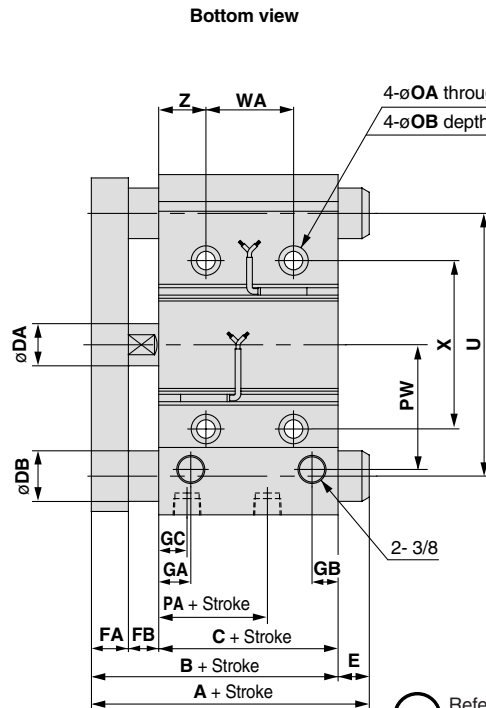
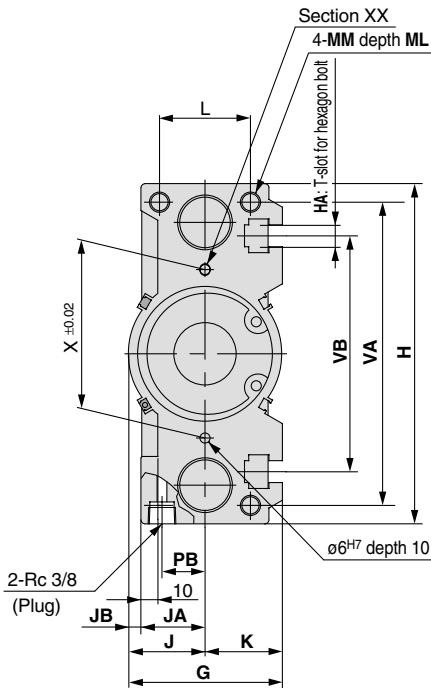
ø80, ø100/MGPM, MGPL



T-slot dimensions



Bore size (mm)	a	b	c	d	e
80	13.3	20.3	12	8	22.5
100	15.3	23.3	13.5	10	30



Refer to "Manufacture of Intermediate Strokes" on page 3.2-6 for intermediate strokes other than the standard strokes.

MGPM, MGPL Common dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L	MM	ML	NN	OA	OB	PA	PB	PW	Q	R
80	25, 50, 75, 100, 125, 150, 175, 200	96.5	56.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54	M12	25	M12	10.6	17.5	14.5	25.5	74	52	174
100	250, 300, 350, 400	116	66	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62	M14	31	M14	12.5	20	17.5	32.5	89	64	210

Bore size (mm)	S	T	U	VA	VB	WA					WB					X	YY	YL	Z
						25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st	25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st				
80	75	198	156	180	140	28	52	128	200	300	42	54	92	128	178	100	M12	24	28
100	90	236	188	210	166	48	72	148	220	320	35	47	85	121	171	124	M14	28	11

MGPM (slide bearing)/Dimensions A, DB, E

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 200st	Over 200st		50st or less	Over 50st to 200st	Over 200st
80	115	142	193	30	18.5	45.5	96.5
100	137	162	203	36	21	46	87

MGPL (ball bushing)/Dimensions A, DB, E

Bore size (mm)	A				DB	E			
	25st or less	Over 25st to 50st	Over 50st to 200st	Over 200st		25st or less	Over 25st to 50st	Over 50st to 200st	Over 200st
80	109.5	130	160	193	25	13	33.5	63.5	96.5
100	121	147	180	203	30	5	31	64	87

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
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MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

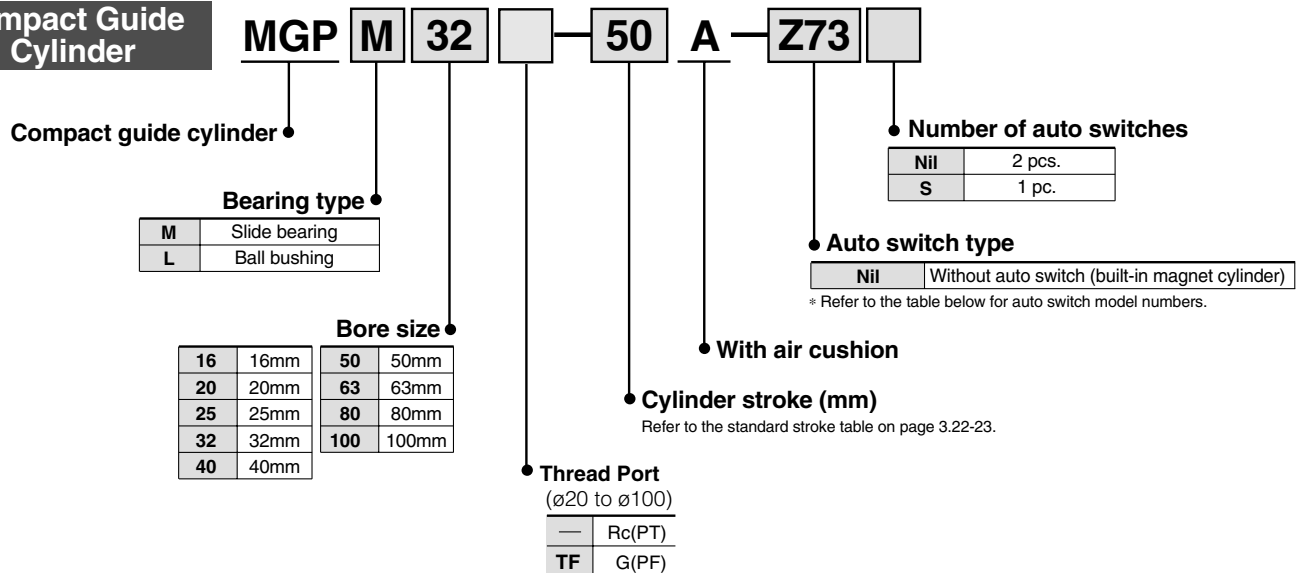
Compact Guide Cylinder: With Air Cushion

Series *MGP*

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

How to Order

Compact Guide Cylinder



Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch model		Lead wire length (m) Note 1)			Applicable load		
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)				
							Perpendicular	In-line							
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	Relay, PLC	
				2 wire	24V	12V	100V	—	Z73	●	●	●	—		
			No			5V 12V	100V or less	—	Z80	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC	
				3 wire (PNP)				Y7PV	Y7P	●	●	○			
				2 wire				Y69B	Y59B	●	●	○			
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V 12V		Y7NWV	Y7NW	●	●	○	IC circuit		
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○			
				2 wire				Y7BWV	Y7BW	●	●	○			
	Water resistant (2 colour indicator)					2 wire		12V	—	Y7BA	—	●	○		—
	Magnetic field resistant (2 colour indicator)								—	—	Note 3) P5DW	—	●		

Note 1) Lead wire symbols 0.5m Nil (Example) Y69B
 3m L Y69BL
 5m Z Y69BZ

Note 2) Solid state auto switches marked with a "○" are produced upon receipt of order.

Note 3) Type D-P5DW cannot be mounted on bore sizes of ø32 or less.

Specifications



Action	Double acting	
Fluid	Air	
Proof pressure	1.5MPa	
Maximum operating pressure	1.0MPa	
Minimum operating pressure	ø16	0.15MPa
	ø20 to ø100	0.12MPa
Ambient and fluid temperature	-10 to 60°C (with no freezing)	
Piston speed	ø16 to ø63	50 to 500mm/s
	ø80, ø100	50 to 400mm/s
Cushion	Air cushion at both ends (without bumper)	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_0$ mm	

Standard Strokes

Bore size (mm)	Standard stroke (mm)
16	25, 50, 75, 100
20 to 63	25, 50, 75, 100, 125, 150, 175, 200
80, 100	50, 75, 100, 125, 150, 175, 200

Manufacture of Intermediate Strokes

Modification method	Strokes provided in 1mm increments by changing the collar on a standard stroke cylinder.	
Part number	Indicate -XC19 at the end of the standard part number.	
Applicable stroke (mm)	ø16	26 to 99
	ø20 to ø63	26 to 199
	ø80, ø100	51 to 199
Example	Part no.: MGPM20-35A-XC19 A collar 15mm in width is installed in a MGPM20-50A . C dimension is 112mm.	

Note 1) Intermediate strokes (in 1mm increments) with a special body are available by special order.

Auto switch mounting bracket part no. for D-P5DW

Bore size (mm)	Mounting bracket part no.	Notes
40, 50, 63, 80, 100	BMG1-040	Switch mounting bracket Hexagon socket head cap screw (M2.5 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	Operating pressure (MPa)									
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
16	8	OUT	201	40	60	80	101	121	141	161	181	201	
		IN	151	30	45	60	76	91	106	121	136	151	
20	10	OUT	314	63	94	126	157	188	220	251	283	314	
		IN	236	47	71	94	118	142	165	189	212	236	
25	12	OUT	491	98	147	196	246	295	344	393	442	491	
		IN	378	76	113	151	189	227	265	302	340	378	
32	16	OUT	804	161	241	322	402	482	563	643	724	804	
		IN	603	121	181	241	302	362	422	482	543	603	
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257	
		IN	1056	211	317	422	528	634	739	845	950	1056	
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963	
		IN	1649	330	495	660	825	990	1154	1319	1484	1649	
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117	
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803	
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027	
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536	
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854	
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147	

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

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

Weights

Slide bearing: MGPM16 to 100

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
16	MGPM16	0.51	0.69	0.78	0.91	—	—	—	—
20	MGPM20	0.89	1.14	1.34	1.54	1.74	1.94	2.13	2.33
25	MGPM25	1.23	1.60	1.87	2.14	2.41	2.68	2.95	3.23
32	MGPM32	1.98	2.51	2.77	3.15	3.53	3.91	4.29	4.68
40	MGPM40	2.34	2.91	3.21	3.64	4.06	4.49	4.92	5.34
50	MGPM50	3.92	4.75	5.29	5.93	6.57	7.21	7.85	8.49
63	MGPM63	4.94	5.89	6.54	7.29	8.05	8.81	9.56	10.32
80	MGPM80	—	8.98	9.64	10.6	11.5	12.5	13.4	14.3
100	MGPM100	—	14.2	15.1	16.5	17.8	19.1	20.5	21.8

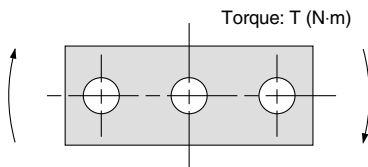
(kg)

Ball bushing: MGPL16 to 100

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
16	MGPL16	0.56	0.66	0.78	0.89	—	—	—	—
20	MGPL20	0.97	1.12	1.30	1.50	1.68	1.85	2.03	2.20
25	MGPL25	1.34	1.54	1.78	2.05	2.28	2.51	2.74	2.97
32	MGPL32	1.81	2.34	2.57	2.94	3.26	3.58	3.89	4.21
40	MGPL40	2.15	2.73	3.01	3.42	3.78	4.14	4.50	4.86
50	MGPL50	3.65	4.47	4.95	5.71	6.14	6.69	7.24	7.79
63	MGPL63	4.66	5.60	6.20	7.07	7.61	8.28	8.95	9.61
80	MGPL80	—	8.88	9.63	10.5	11.3	12.1	12.9	13.7
100	MGPL100	—	13.7	14.9	16.0	17.2	18.4	19.6	20.8

(kg)

Allowable Rotational Torque of Plate (Air Cushion)

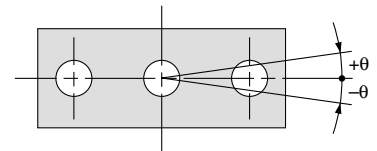


Torque: T (N-m)

Bore size (mm)	Bearing type	Stroke (mm)							
		25	50	75	100	125	150	175	200
16	MGPM	0.53	0.84	0.69	0.58	—	—	—	—
	MGPL	1.27	0.86	0.65	0.52	—	—	—	—
20	MGPM	0.99	2.23	1.88	1.63	1.44	1.28	1.16	1.06
	MGPL	2.66	1.94	1.52	1.57	1.34	1.17	1.03	0.93
25	MGPM	1.64	3.51	2.96	2.57	2.26	2.02	1.83	1.67
	MGPL	4.08	3.02	2.38	2.41	2.05	1.78	1.58	1.41
32	MGPM	6.35	6.64	5.69	4.97	4.42	3.98	3.61	3.31
	MGPL	5.95	5.89	5.11	6.99	6.34	5.79	5.33	4.93
40	MGPM	7.00	7.32	6.27	5.48	4.87	4.38	3.98	3.65
	MGPL	6.55	6.49	5.62	7.70	6.98	6.38	5.87	5.43
50	MGPM	13.0	13.8	12.0	10.6	9.50	8.60	7.86	7.24
	MGPL	9.17	11.2	9.8	12.8	11.6	10.7	9.80	9.10
63	MGPM	14.7	15.6	13.5	11.9	10.7	9.69	8.86	8.16
	MGPL	10.2	12.5	11.0	14.3	13.0	11.9	11.0	10.2
80	MGPM	—	26.0	22.9	20.5	18.6	17.0	15.6	14.5
	MGPL	—	25.2	22.7	20.6	18.9	17.3	16.0	14.8
100	MGPM	—	41.9	37.5	33.8	30.9	28.4	26.2	24.4
	MGPL	—	41.7	37.9	34.6	31.8	29.3	27.2	25.3

T (N-m)

Non-rotating Accuracy of Plate

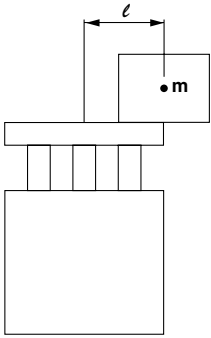
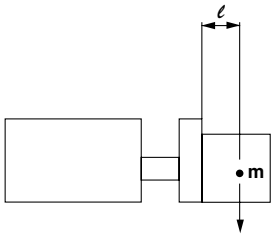


For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGPM	MGPL
16	$\pm 0.08^\circ$	$\pm 0.10^\circ$
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25		
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40		
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63		
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100		

Series MGP (With Air Cushion) Model Selection

Selecting Conditions

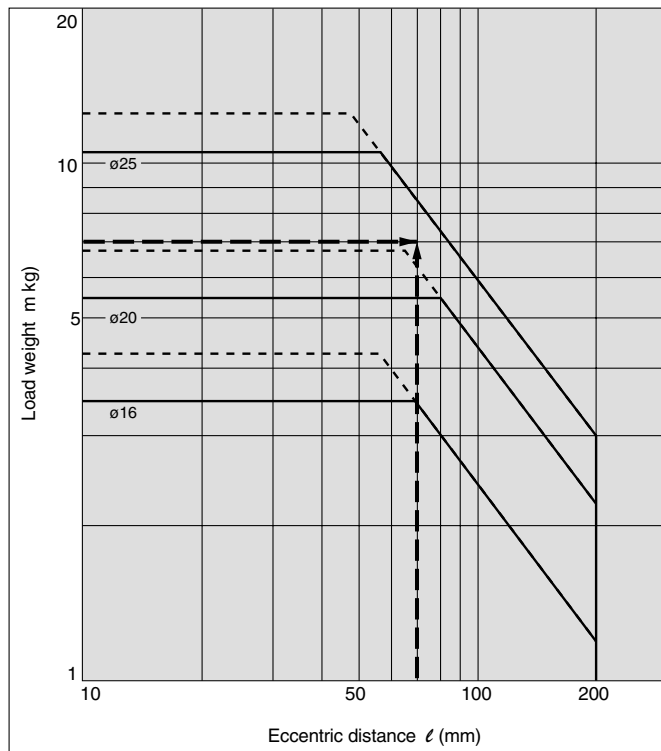
Mounting orientation	Vertical		Horizontal	
				
Maximum speed (mm/s)	200	400	200	400
Graph (Slide bearing type)	1, 2	3, 4	15, 16	17, 18
Graph (Ball bushing type)	5 to 9	10 to 14	19, 20	21, 22

Selection Example 1 (Vertical Mounting)

Selecting conditions
 Mounting: Vertical
 Bearing type: Ball bushing
 Stroke: 75mm
 Maximum speed: 200mm/s
 Load weight: 7kg
 Eccentric distance: 70mm

Find the point of intersection for the load weight of 7kg and the eccentric distance of 70mm on graph **5**, based on vertical mounting, ball bushing, 75mm stroke, and the speed of 200mm/s.
→MGPL25-75A is selected.

5 75mm stroke or less V = 200mm/s

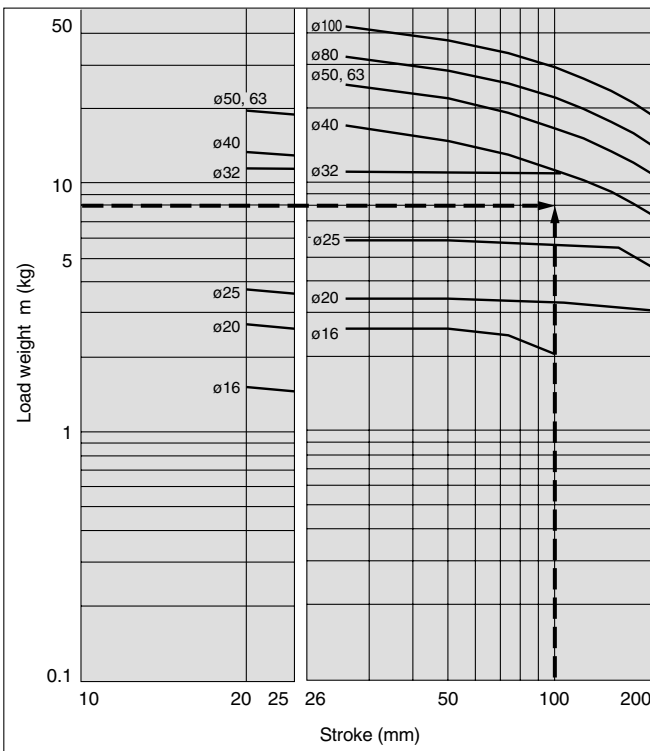


Selection Example 2 (Horizontal Mounting)

Selecting conditions
 Mounting: Horizontal
 Bearing type: Slide bearing
 Distance between plate and load center of gravity: 40mm
 Maximum speed: 300mm/s
 Load weight: 8kg
 Stroke: 100mm

Find the point of intersection for the load weight of 8kg and stroke of 100mm on graph **17**, based on horizontal mounting, slide bearing, the distance of 40mm between the plate and load center of gravity, and the speed of 300mm/s.
→MGPM32-100A is selected.

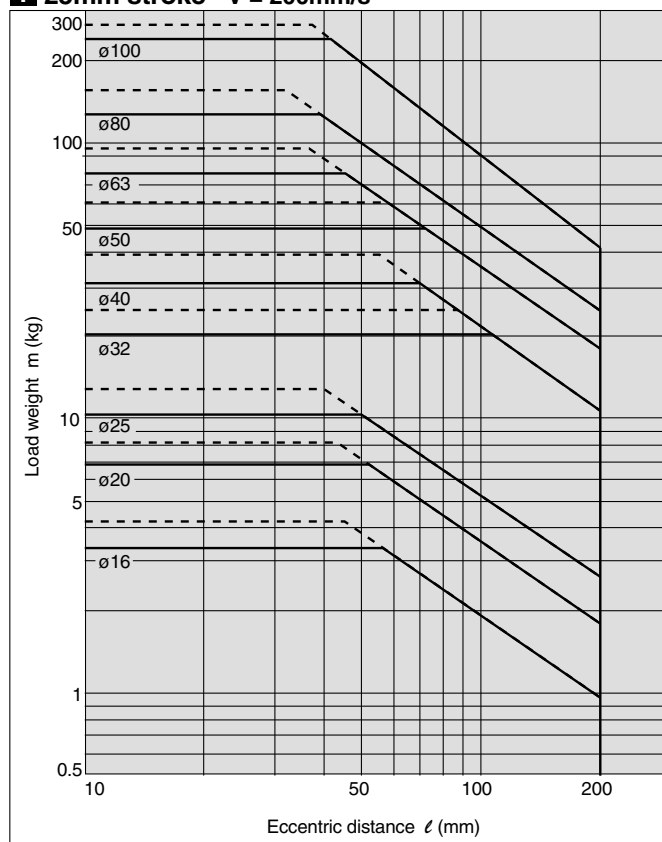
17 $l = 50\text{mm}$ V = 400mm/s



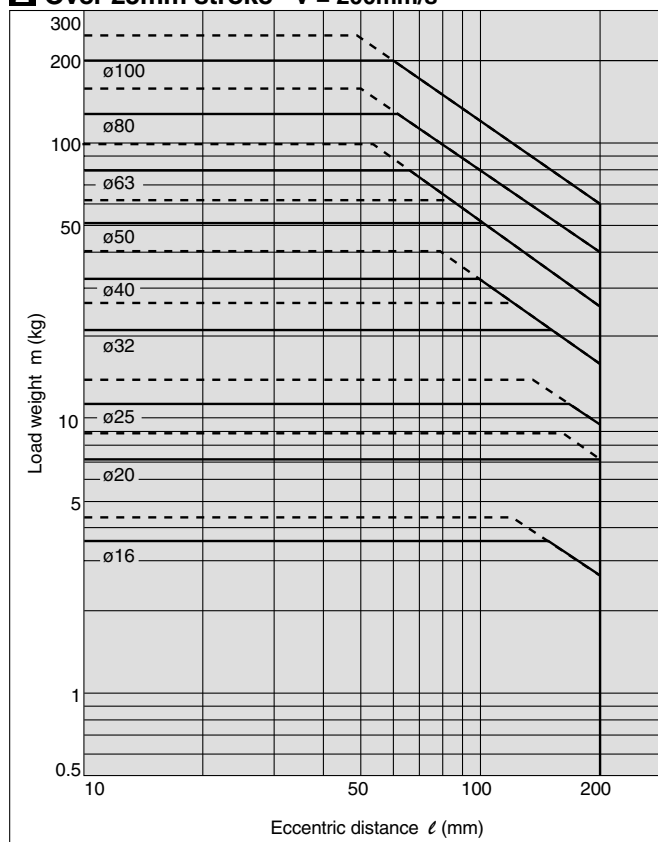
CL
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 MY

MGPM16 to 100

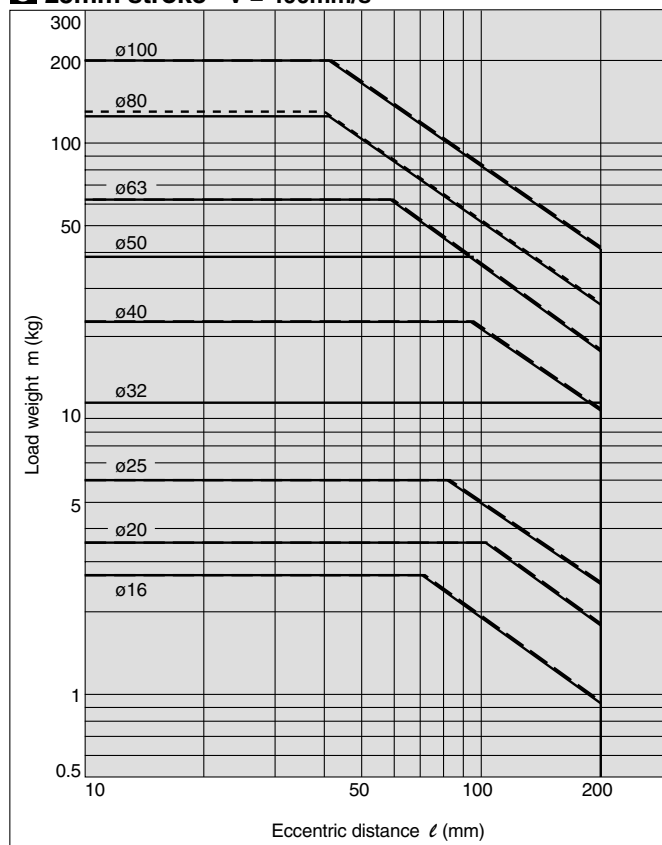
1 25mm stroke $V = 200\text{mm/s}$



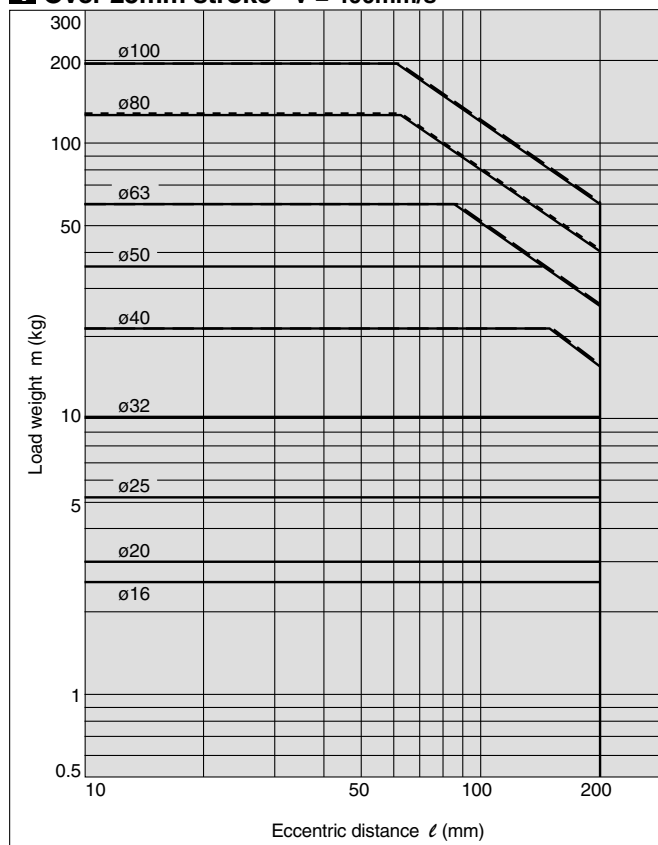
2 Over 25mm stroke $V = 200\text{mm/s}$



3 25mm stroke $V = 400\text{mm/s}$



4 Over 25mm stroke $V = 400\text{mm/s}$

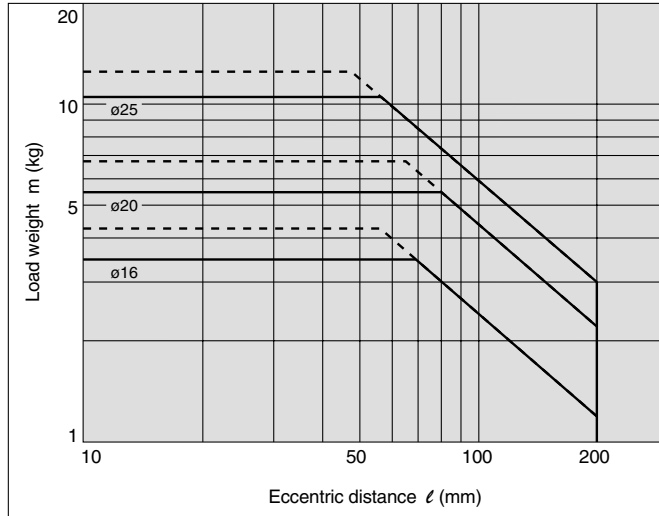


Vertical Mounting **Ball Bushing**

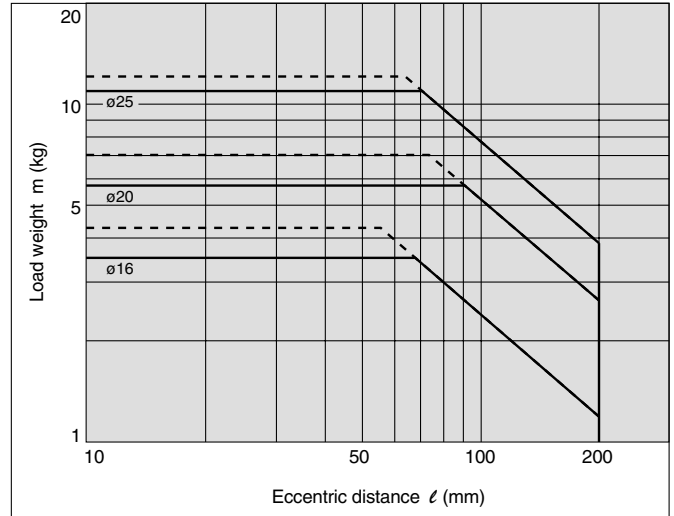
— Operating pressure: 0.4MPa
- - - - - Operating pressure: 0.5MPa or more

MGPL16 to 25

5 75mm stroke or less $V = 200\text{mm/s}$

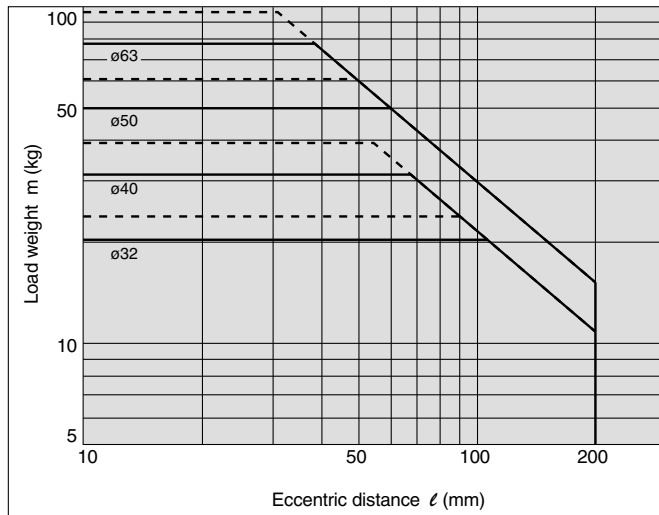


6 Over 75mm stroke $V = 200\text{mm/s}$

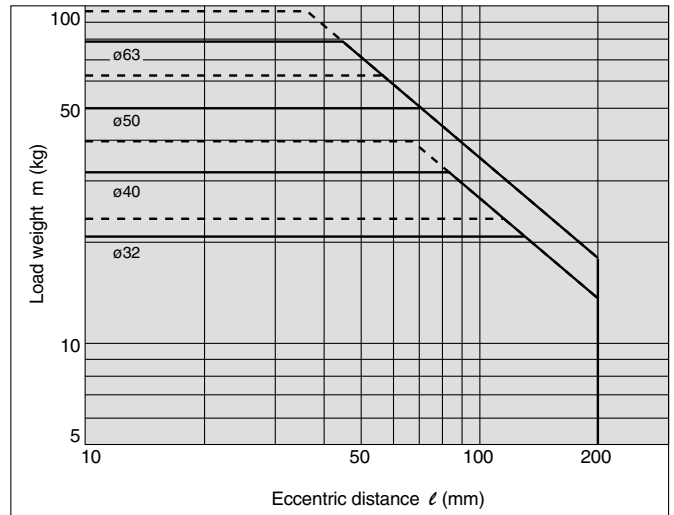


MGPL32 to 63

7 25mm stroke $V = 200\text{mm/s}$

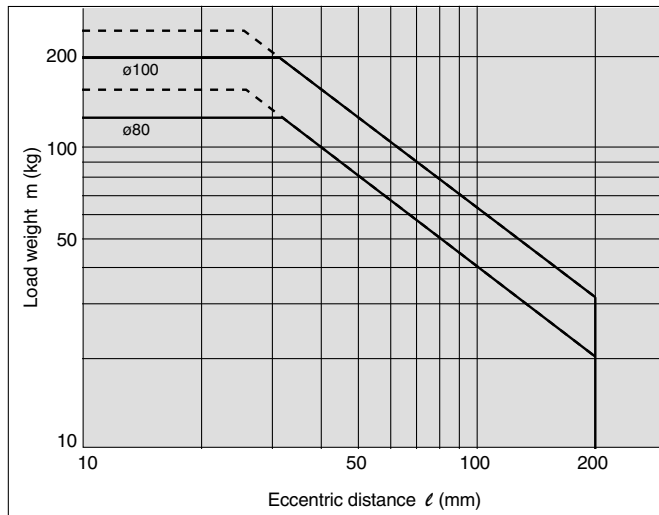


8 Over 25mm stroke $V = 200\text{mm/s}$



MGPL80, 100

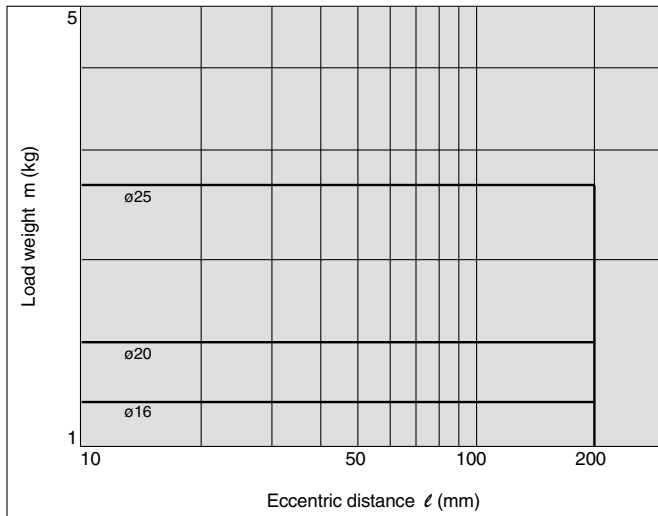
9 $V = 200\text{mm/s}$



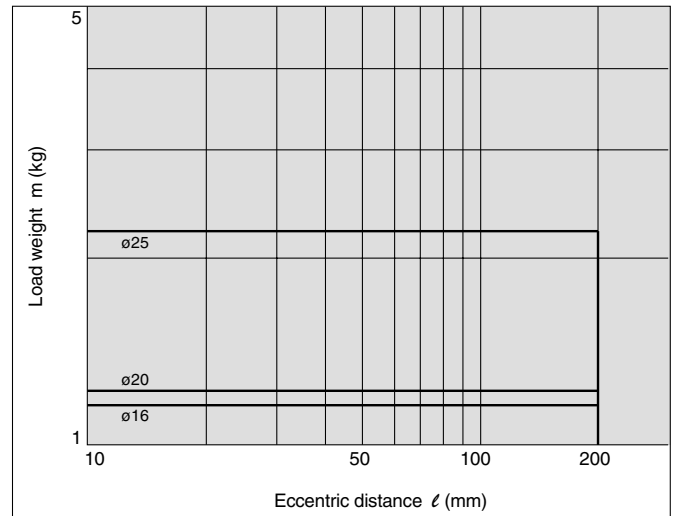
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CXW
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CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

MGPL16 to 25

10 75mm stroke or less V = 400mm/s

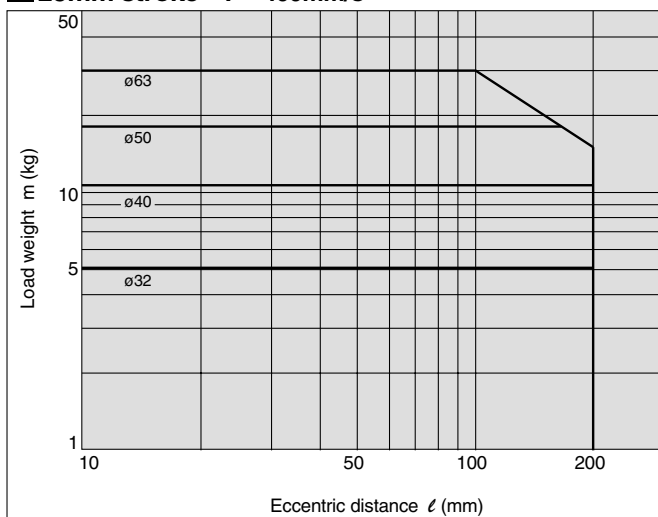


11 Over 75mm stroke V = 400mm/s

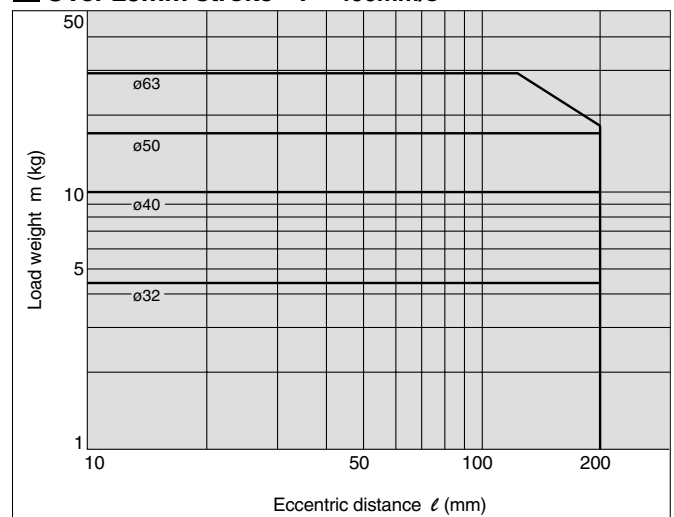


MGPL32 to 63

12 25mm stroke V = 400mm/s

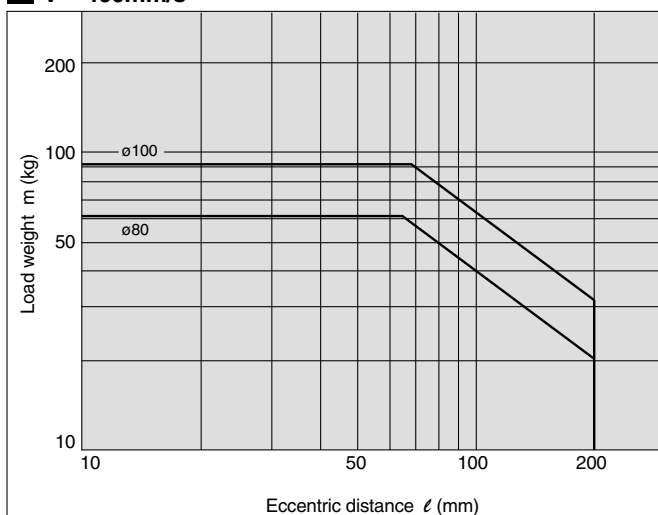


13 Over 25mm stroke V = 400mm/s



MGPL80, 100

14 V = 400mm/s



Horizontal Mounting

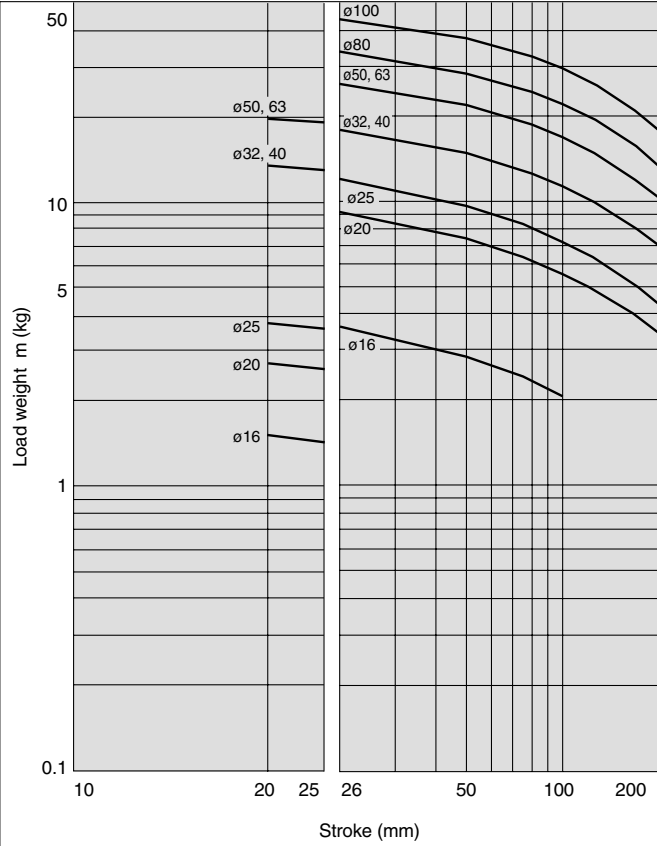
Slide Bearing

MGPM16 to 100

15

$\ell = 50\text{mm}$

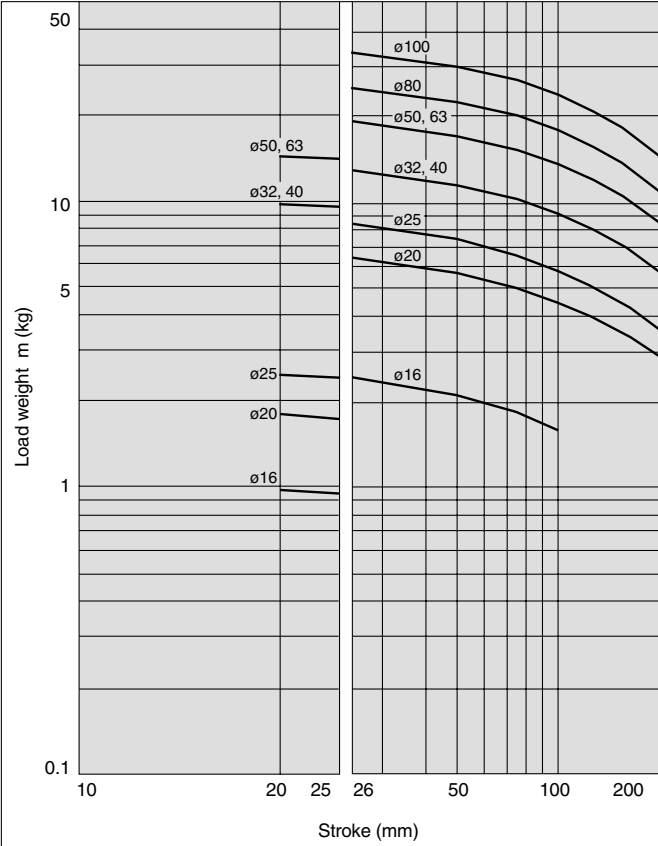
$V = 200\text{mm/s}$



16

$\ell = 100\text{mm}$

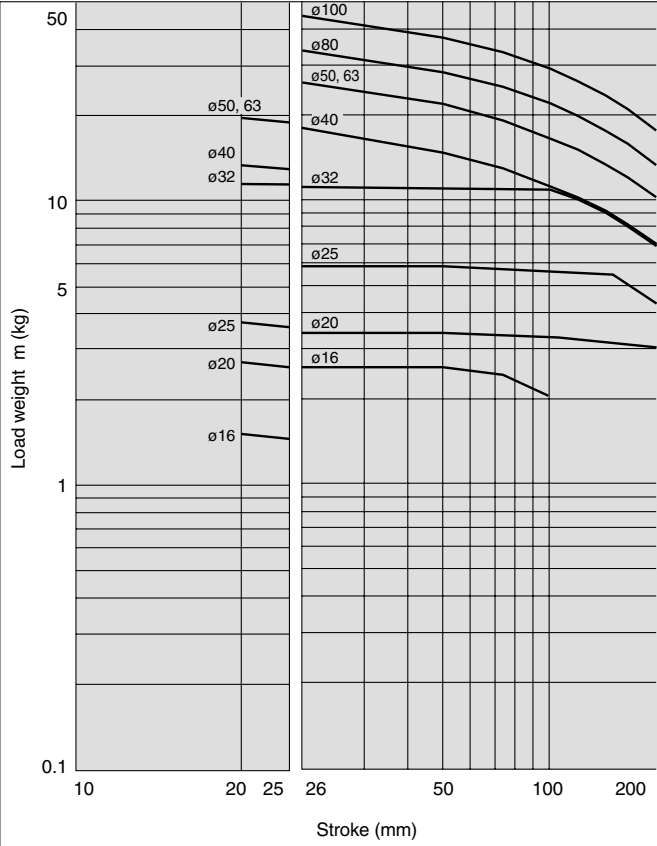
$V = 200\text{mm/s}$



17

$\ell = 50\text{mm}$

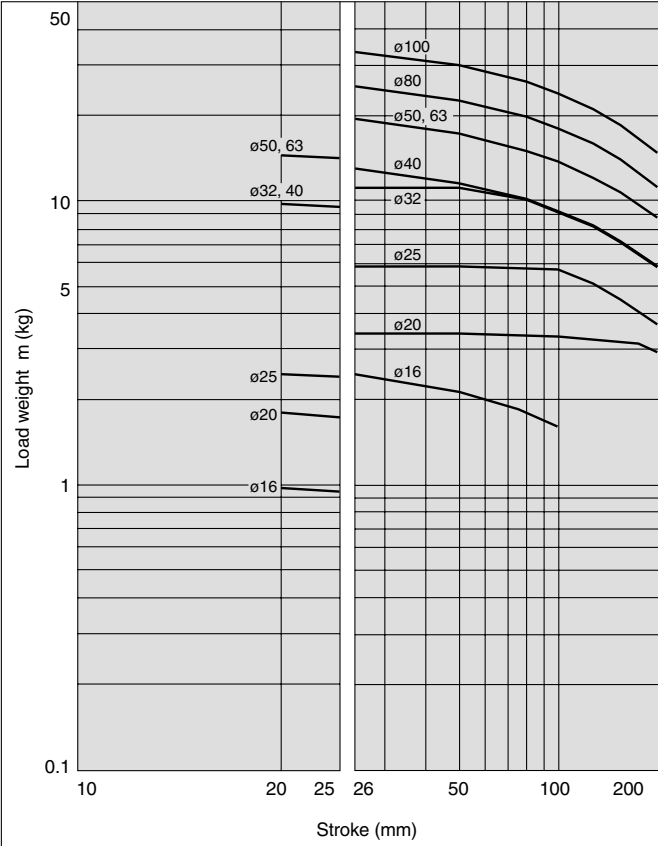
$V = 400\text{mm/s}$



18

$\ell = 100\text{mm}$

$V = 400\text{mm/s}$



CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

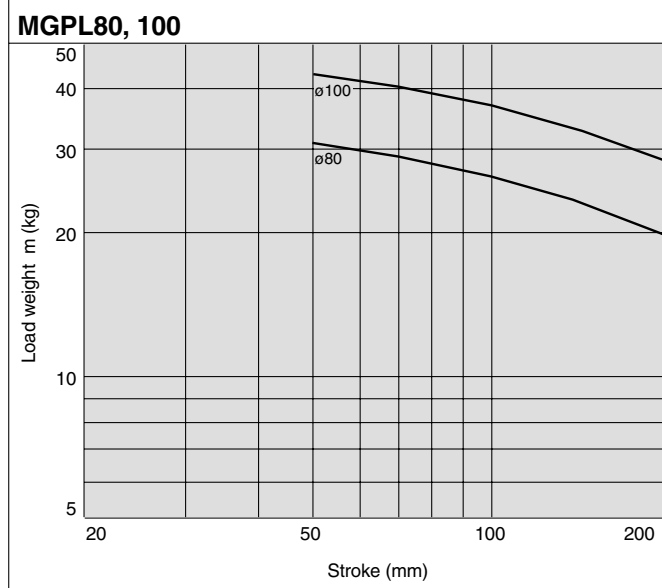
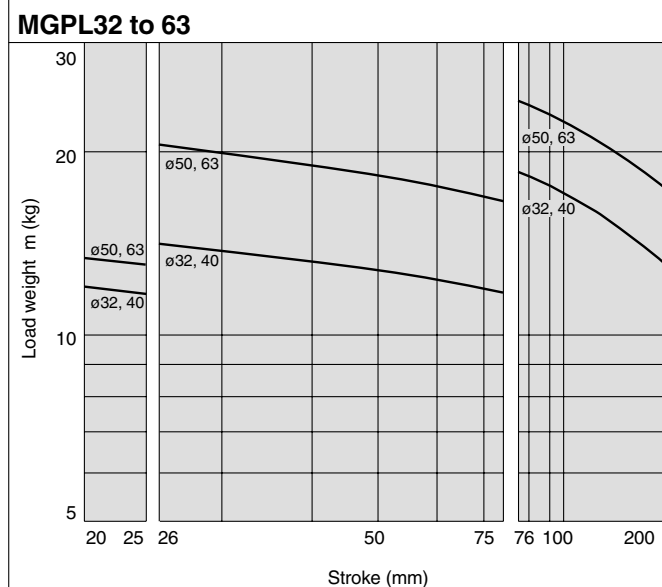
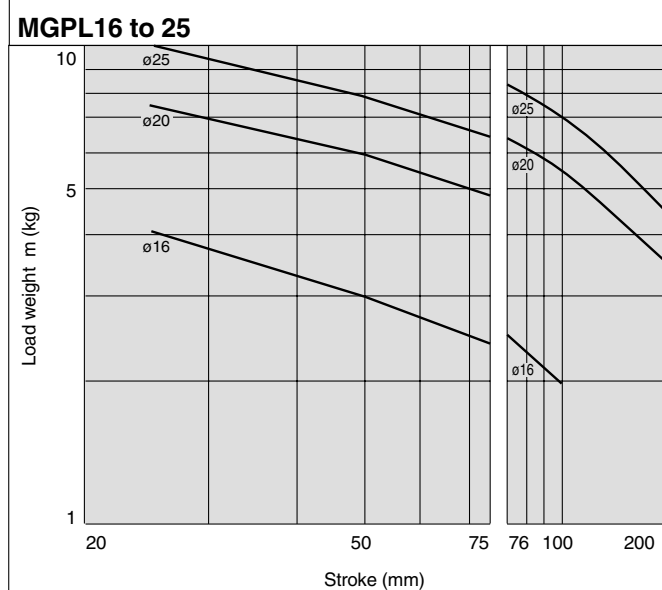
MGZ

CY

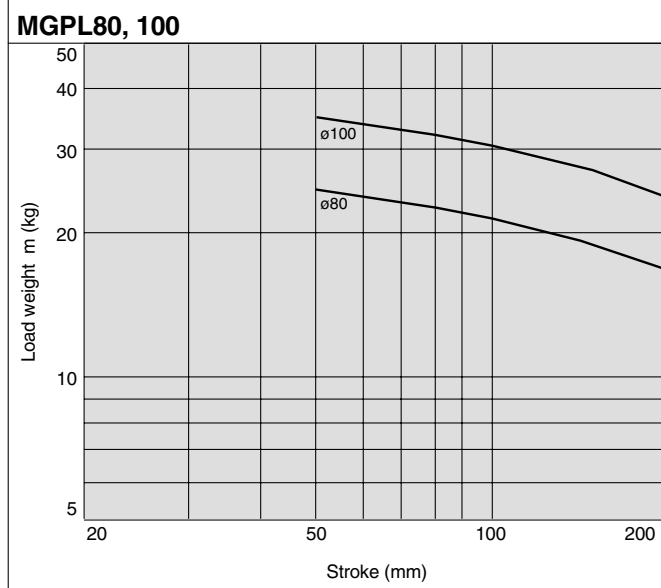
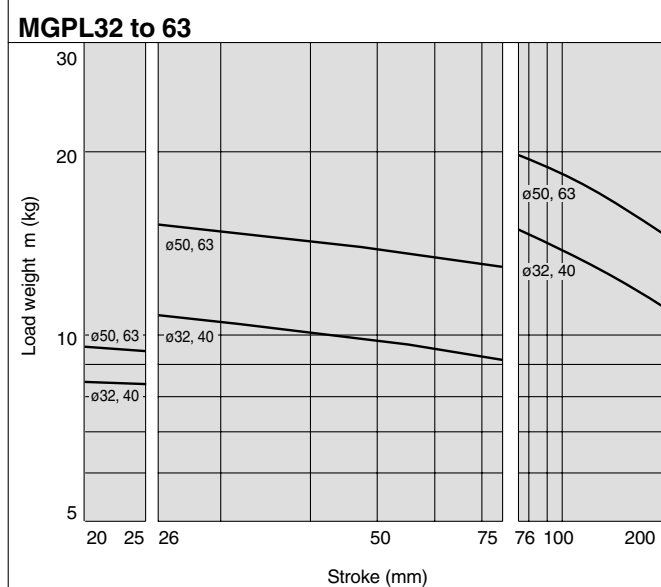
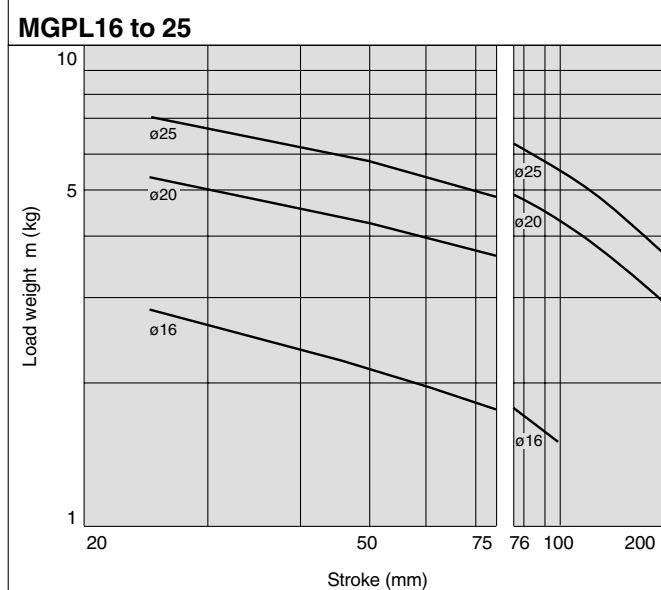
MY

Horizontal Mounting **Ball Bushing**

19 $\ell = 50\text{mm}$ $V = 200\text{m/s}$



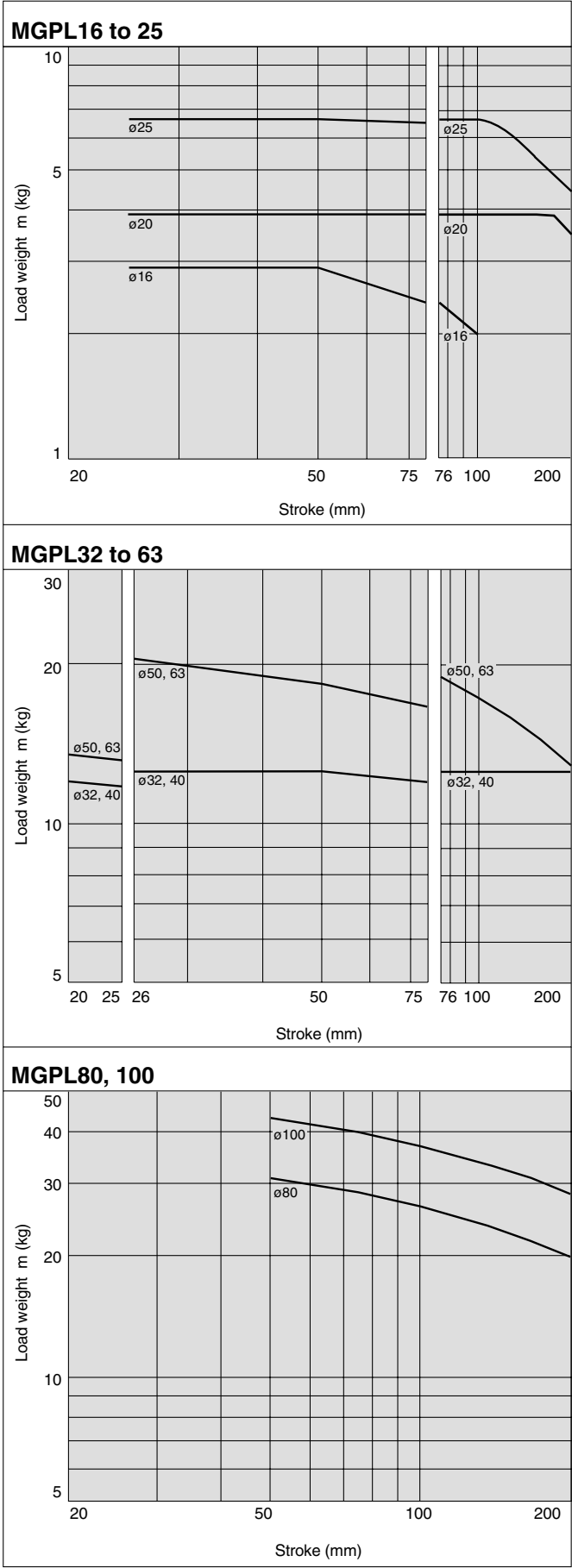
20 $\ell = 100\text{mm}$ $V = 200\text{m/s}$



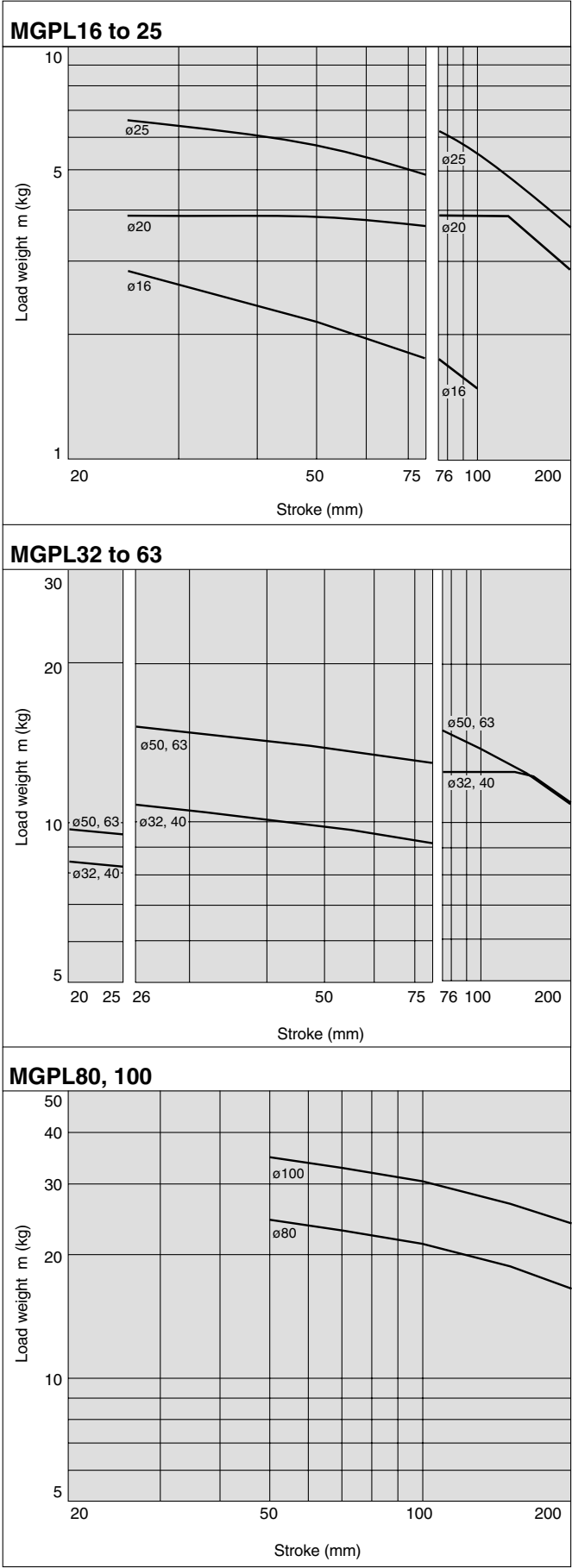
Horizontal Mounting

Ball Bushing

21 ℓ = 50mm V = 400m/s



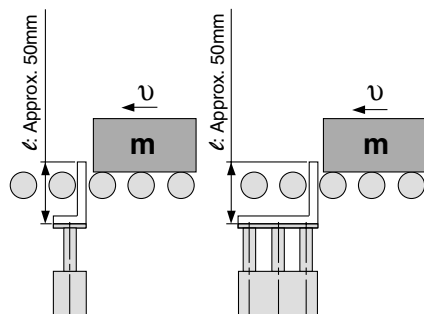
22 ℓ = 100mm V = 400m/s



CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

Operating Range when Used as Stopper

Bore Sizes $\phi 16$ to 25/MGPM16 to 25 (Slide bearing)



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

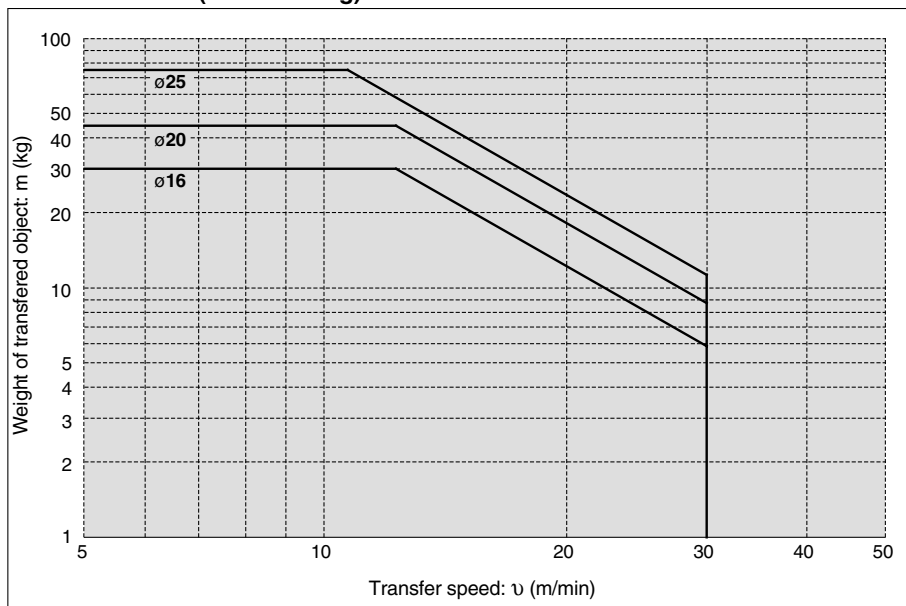
⚠ Caution

Handling precautions

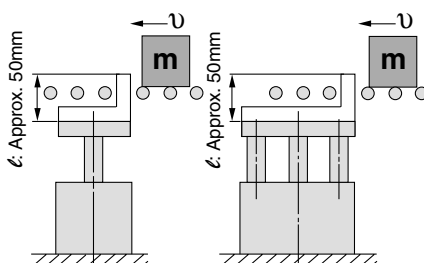
Note 1) When using as a stopper, select a model with a stroke of 25mm or less.

Note 2) Model MGPL (ball bushing) cannot be used as a stopper.

MGPM16 to 25 (Slide bearing)



Bore Sizes $\phi 32$ to 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.

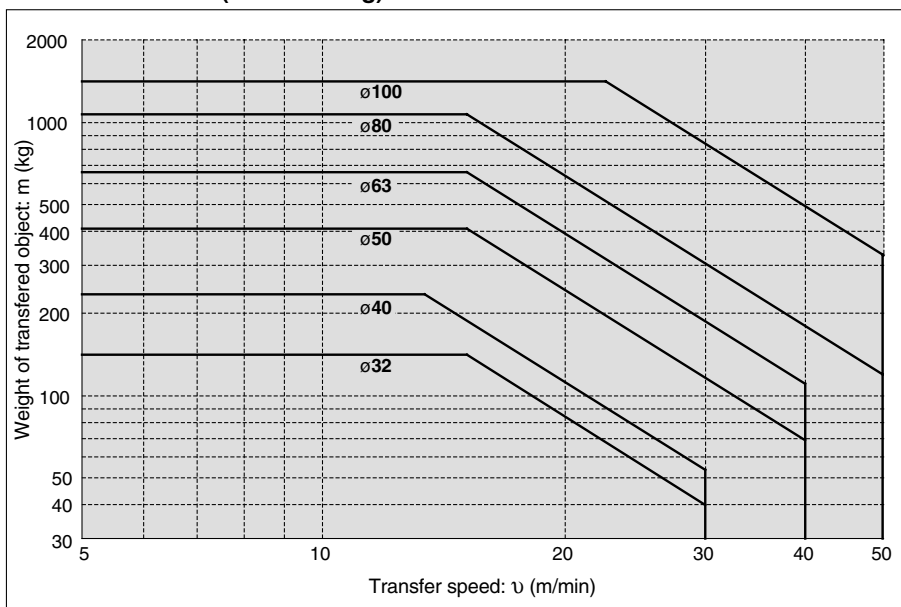
⚠ Caution

Handling precautions

Note 1) When using as a stopper, select a model with a stroke of 50mm or less.

Note 2) Model MGPL (ball bushing) cannot be used as a stopper.

MGPM32 to 100 (Slide bearing)



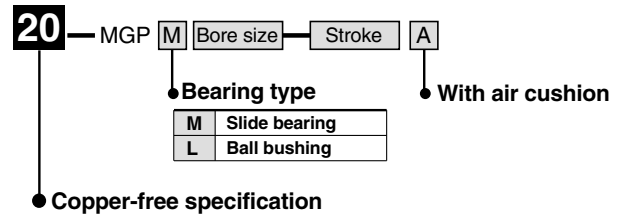
Copper-free Series (Applicable to CRT Manufacturing Process)

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

Specifications

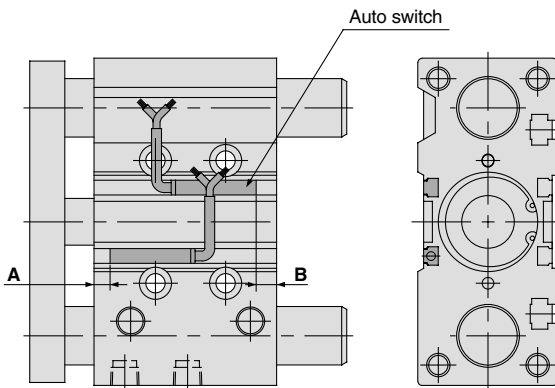
Applicable series	MGPM	MGPL
Bearing type	Slide bearing	Ball bushing
Bore size (mm)	16, 20, 25, 32, 40, 50, 63, 80, 100	

* Specifications and dimensions other than above are identical to the standard basic type.

How to Order**Auto Switches/Proper Mounting Position for Stroke End Detection**

For D-P5DW (* Cannot be mounted on bore sizes $\phi 32$ or less.)

$\phi 40$ to $\phi 63$



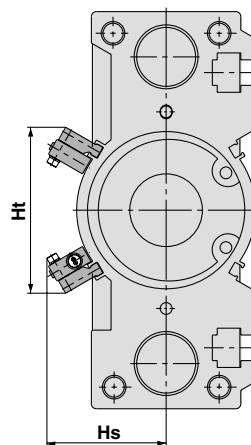
Proper mounting position (mm)

Bore size (mm)	A	B
16	17.5	15.5
20	26	11
25	23	14.5
32	16	21.5

Bore size (mm)	A	B
40	26	18
50	27.5	16.5
63	28	21
80	25	31.5
100	28.5	37.5

Note 1) Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

$\phi 80, \phi 100$



For 25mm stroke

* For bore sizes $\phi 40$ through 63 with two switches, one switch is mounted on each side.

Bore size (mm)	Hs	Ht
40	44.5	—
50	50	—
63	57	—
80	60.7	84.4
100	70.8	96.1

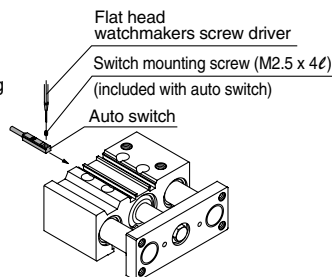
* Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Auto Switch Mounting**Caution****Auto switch mounting tool**

- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers screw driver with a handle about 5 to 6mm in diameter.

Tightening torque

- Tighten with a torque of 0.05 to 0.1N·m. As a rule, it should be turned about 90° past the point at which tightening can be felt.



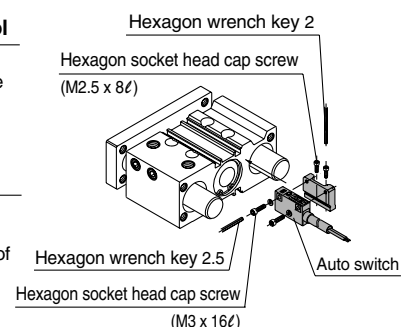
For D-P5DW

Caution**Auto switch mounting tool**

- When tightening hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 or 2.5 with the appropriate screws.

Tightening torque

- Tighten M2.5 screws with a torque of about 0.3 to 0.5N·m, and M3 screws with a torque of about 0.5 to 0.7 N·m.

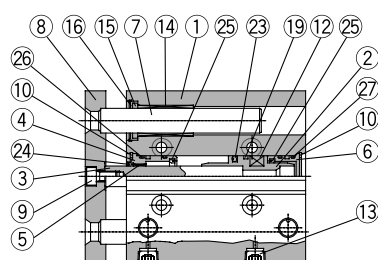


Series MGP

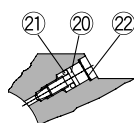
Construction (With Air Cushion)

Series MGPM

MGPM16 to 25



25mm stroke



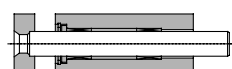
Cushion valve section



ø16: 25mm stroke



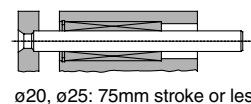
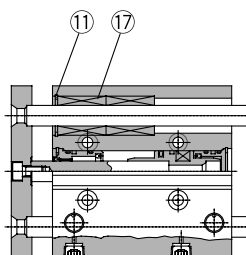
ø16: 50mm stroke or larger



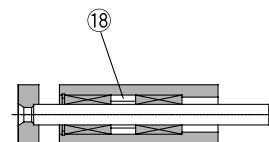
ø20, ø25: 50mm stroke or larger

Series MGPL

MGPL16 to 25

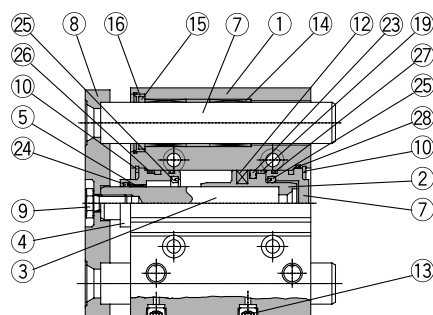


ø20, ø25: 75mm stroke or less



ø20, ø25: 100mm stroke or larger

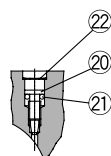
MGPM32 to 100



25mm stroke

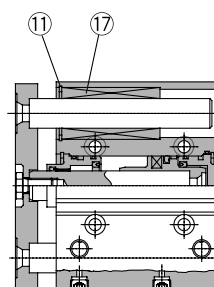


50mm stroke or larger



Cushion valve section

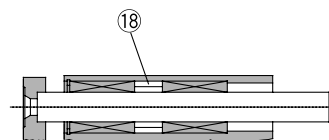
MGPL32 to 100



25mm stroke



ø32 to ø63: 50, 75mm stroke
ø80, ø100: 50mm stroke or larger



ø32 to ø63: 100mm stroke or larger

Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel	ø16 to ø25
		Carbon steel	ø32 to ø100 Hard chrome plated
4	Collar	Aluminum alloy	ø16 to ø63 Clear anodized
			ø80, ø100 Coated
5	Bushing	Lead bronze casting	
6	Head cover	Aluminum alloy	ø16 to ø25 Clear anodized
			ø32 to ø100 Coated
7	Guide rod	Carbon steel	Hard chrome plated
8	Plate	Carbon steel	Nickel plated
9	Plate mounting bolt	Carbon steel	Nickel plated
10	Snap ring	Carbon tool steel	Phosphate coated
11	Snap ring	Carbon tool steel	Phosphate coated
12	Magnet	Synthetic rubber	
13	Plug (M-5P) Hexagon socket head taper plug	Brass	ø16 Nickel plated
		Carbon steel	ø20 to ø100 Nickel plated
14	Slide bearing	Lead bronze casting	
15	Felt	Felt	
16	Holder	Resin	
17	Ball bushing		

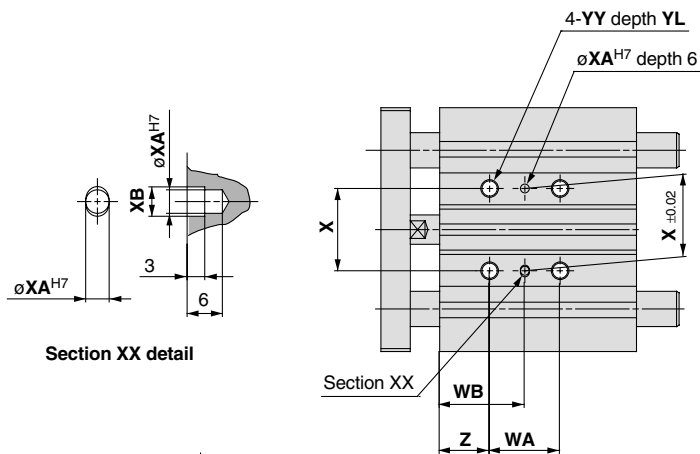
Parts list

No.	Description	Material	Note
18	Spacer	Aluminum alloy	
19	Wear ring	Resin	
20	Cushion valve	Steel	
21	Gasket	NBR	
22	Snap ring	Carbon tool steel	Except ø16
23*	Piston seal	NBR	
24*	Rod seal	NBR	
25*	Cushion seal	Urethane	
26*	Gasket A	NBR	
27*	Gasket B	NBR	
28*	Gasket C	NBR	

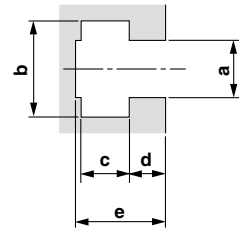
Replacement parts: Seal kits

Bore size (mm)	Kit no.	Contents	Bore size (mm)	Kit no.	Contents
16	MGP16-A-PS	Kits include items 23, 24, 25, 26, 27, 28 from the table above.	50	MGP50-A-PS	Kits include items 23, 24, 25, 26, 27, 28 from the table above.
20	MGP20-A-PS		63	MGP63-A-PS	
25	MGP25-A-PS		80	MGP80-A-PS	
32	MGP32-A-PS		100	MGP100-A-PS	
40	MGP40-A-PS				

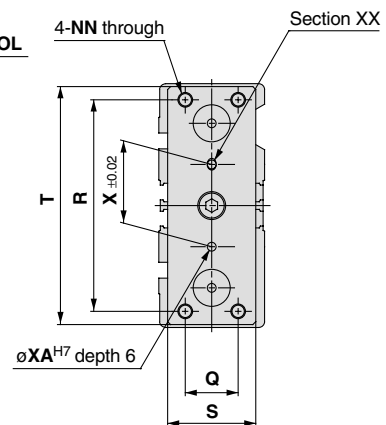
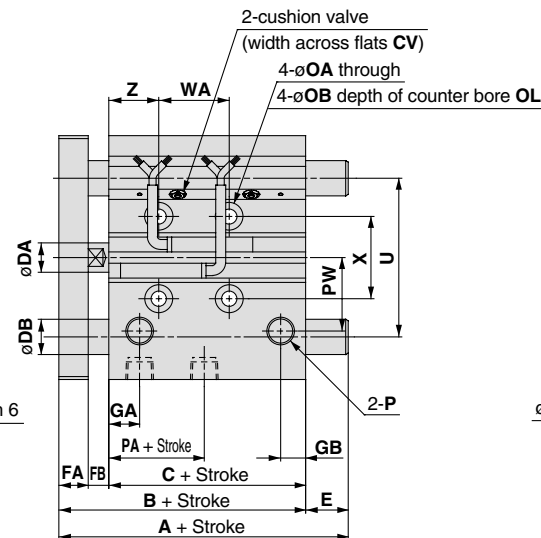
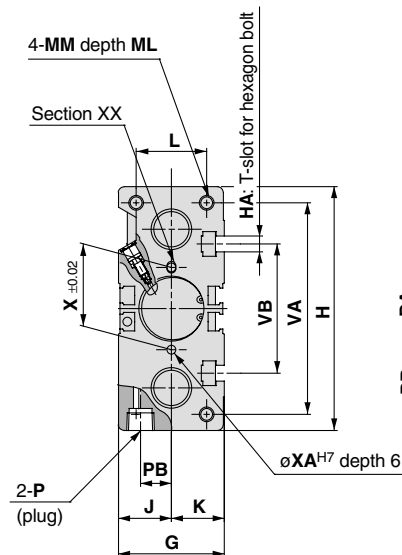
* Seal kits are sets consisting of items 23 through 28 above, and can be ordered using the kit number for each bore size.

ø16 to ø25/MGPM, MGPL (With Air Cushion)

T-slot dimensions



Bore size (mm)	a	b	c	d	e
16	4.4	7.4	3.7	2.5	6.7
20	5.4	8.4	4.5	2.8	7.8
25	5.4	8.4	4.5	3	8.2



Note 1) Refer to "Manufacture of Intermediate Strokes" on page 3.22-23 for intermediate strokes.
Note 2) When adjusting the ø16 cushion valve, use a 3mm flat head watchmakers screw driver.

MGPM, MGPL Common dimensions

Bore size (mm)	Standard stroke (mm)	B	C	CV	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
16	25, 50, 75, 100	71	58	—	8	8	5	30	11	8	64	M4	15	15	22	M5	12	M5 x 0.8	4.3	8	4.5	M5	40	10	19	16
20	25, 50, 75, 100, 125, 150, 175, 200	78	62	1.5	10	10	6	36	10.5	8.5	83	M5	18	18	24	M5	13	M5 x 0.8	5.6	9.5	5.5	1/8	37.5	10.5	25	18
25	125, 150, 175, 200	78.5	62.5	1.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6	15	M6 x 1.0	5.6	9.5	5.5	1/8	37.5	13.5	28.5	26

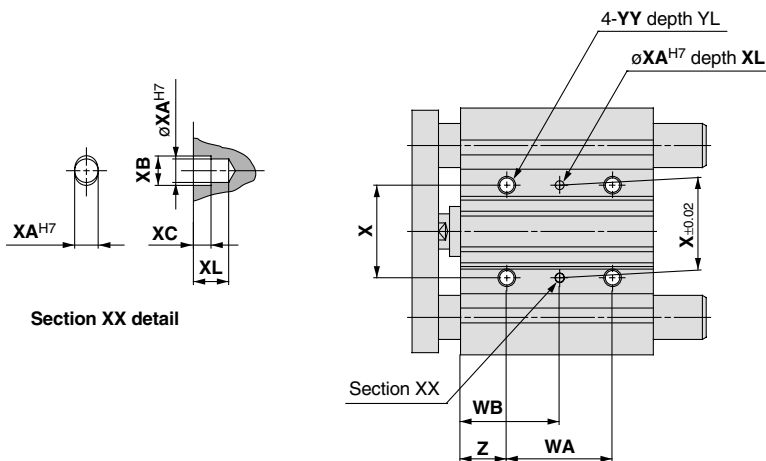
Bore size (mm)	Standard stroke (mm)	R	S	T	U	VA	VB	WA			WB			X	XA	XB	YY	YL	Z
								75st or less	100 to 175st	200st	75st or less	100 to 175st	200st						
16	25, 50, 75, 100	54	25	62	46	56	38	44	110	—	27	60	—	24	3	3.5	M5	10	5
20	25, 50, 75, 100, 125, 150, 175, 200	70	30	81	54	72	44	44	120	200	39	77	117	28	3	3.5	M6	12	17
25	125, 150, 175, 200	78	38	91	64	82	50	44	120	200	39	77	117	34	4	4.5	M6	12	17

MGPM (slide bearing)/Dimensions A, DB, E (mm)

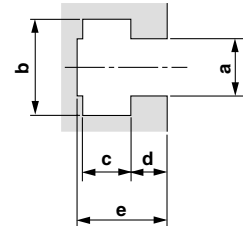
Bore size (mm)	A			DB	E		
	25st	50st	75st or more		25st	50st	75st or more
16	71	89.5	71	10	0	18.5	0
20	78	86.5	84.5	12	0	8.5	6.5
25	78.5	87	85	16	0	8.5	6.5

MGPL (ball bushing)/Dimensions A, DB, E (mm)

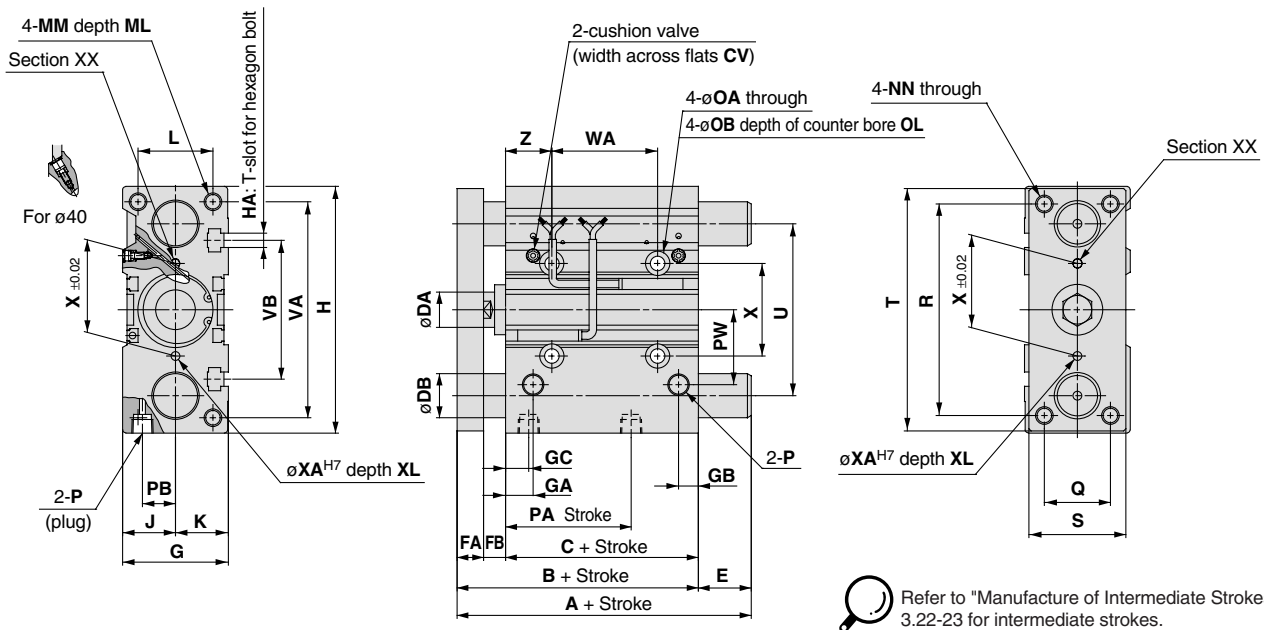
Bore size (mm)	A				DB	E			
	25st	50, 75st	100st	125st or more		25st	50, 75st	100st	125st or more
16	80	71	71	—	8	9	0	0	—
20	95	80	99	104	10	17	2	21	26
25	100.5	85.5	99.5	104.5	13	22	7	26	26



T-slot dimensions



Bore size (mm)	a	b	c	d	e
32	6.5	10.5	5.5	3.5	9.5
40	6.5	10.5	5.5	4	11
50	8.5	13.5	7.5	4.5	13.5
63	11	17.8	10	7	18.5



Refer to "Manufacture of Intermediate Strokes" on page 3.22-23 for intermediate strokes.

MGPM, MGPL Common dimensions

Bore size (mm)	Standard stroke (mm)	B	C	CV	DA	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
32	25, 50, 75,	84.5	62.5	1.5	16	12	10	48	12.5	9	12.5	112	M6	24	24	34	M8	20	M8	6.6	11	7.5	1/8	32	15	34	30
40	100, 125,	91	69	1.5	16	12	10	54	14	10	14	120	M6	27	27	40	M8	20	M8	6.6	11	7.5	1/8	38	18	38	30
50	150, 175, 200	97	69	2.5	20	16	12	64	14	11	12	148	M8	32	32	46	M10	22	M10	8.6	14	9	1/4	34	21.5	47	40
63		102	74	2.5	20	16	12	78	16.5	13.5	16.5	162	M10	39	39	58	M10	22	M10	8.6	14	9	1/4	39	28	55	50

Bore size (mm)	Standard stroke (mm)	R	S	T	U	VA	VB	WA			WB			X	XA	XB	XC	XL	YY	YL	Z
								25, 50, 75st	100 to 175st	200st	25, 50, 75st	100 to 175st	200st								
32	25, 50, 75,	96	44	110	78	98	63	48	124	200	45	83	121	42	4	4.5	3	6	M8	16	21
40	100, 125,	104	44	118	86	106	72	48	124	200	46	84	122	50	4	4.5	3	6	M8	16	22
50	150, 175, 200	130	60	146	110	130	92	48	124	200	48	86	124	66	5	6	4	8	M10	20	24
63		130	70	158	124	142	110	52	128	200	50	88	124	80	5	6	4	8	M10	20	24

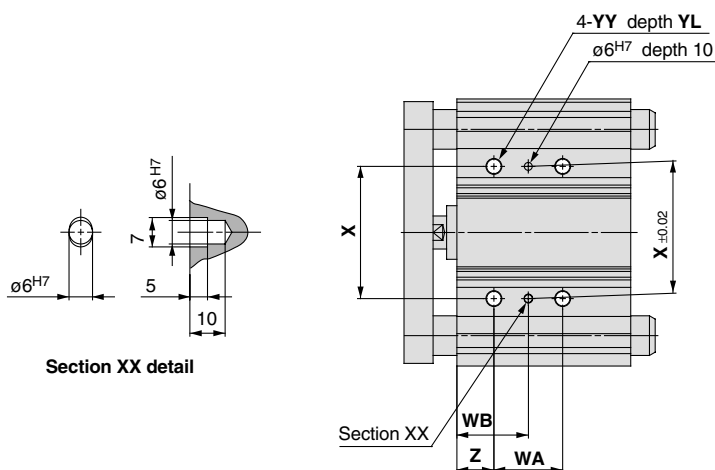
MGPM (slide bearing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	25st	50st	75st or more		25st	50st	75st or more
32	97	127	102	20	12.5	42.5	17.5
40	97	127	102	20	6	36	11
50	106.5	131.5	118	25	9.5	34.5	21
63	106.5	131.5	118	25	4.5	29.5	16

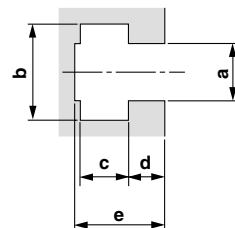
MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A					DB	E				
	25st	50st	75st	100st	125st or more		25st	50st	75st	100st	125st or more
32	84.5	123	98	115.5	118	16	0	38.5	13.5	31	33.5
40	91	123	98	115.5	118	16	0	32	7	24.5	27
50	97	127.5	114	159	134	20	0	30.5	17	62	37
63	102	127.5	114	159	134	20	0	25.5	12	57	32

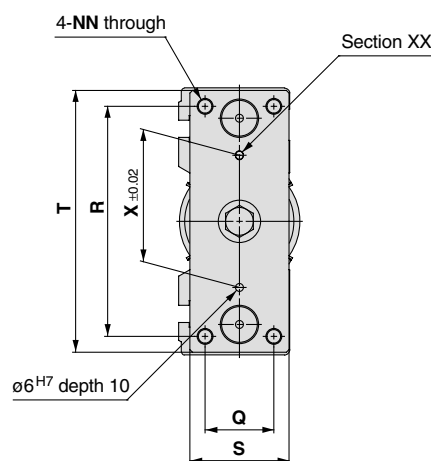
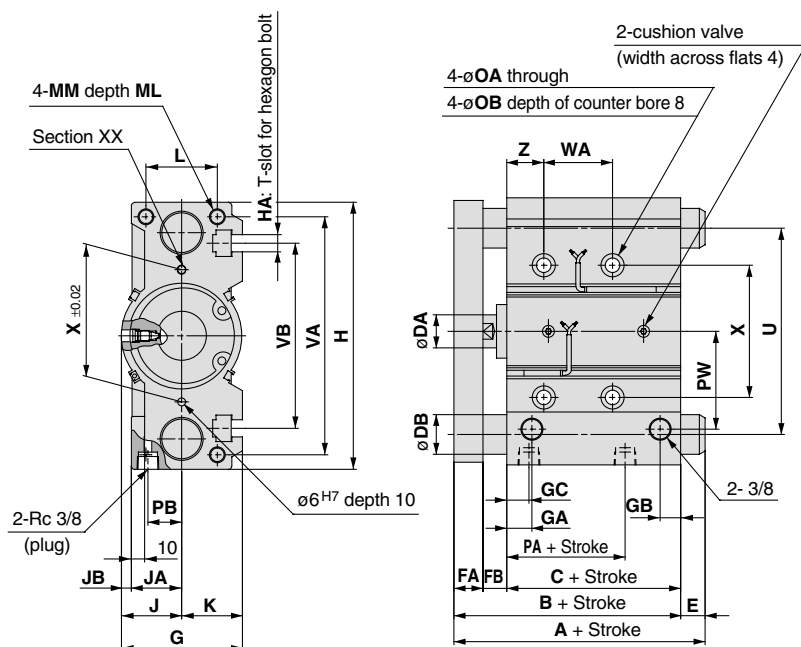
Ø80, Ø100/MGPM, MGPL (With Air Cushion)



T-slot dimensions



	(mm)				
Bore size (mm)	a	b	c	d	e
80	13.3	20.3	12	8	22.5
100	15.3	23.3	13.5	10	30



Refer to "Manufacture of Intermediate Strokes" on page 3.22-23 for intermediate strokes.

MGPM, MGPL Common dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L	MM	ML	NN	OA	OB	PA	PB	PW
80	50, 75, 100, 125,	121.5	81.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54	M12	25	M12	10.6	17.5	39.5	25.5	74
100	150, 175, 200	141	91	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62	M14	31	M14	12.5	20	42.5	32.5	89

Bore size (mm)	Standard stroke (mm)	Q	R	S	T	U	VA	VB	WA			WB			X	YY	YL	Z
									50, 75st	100 to 175st	200st	50, 75st	100 to 175st	200st				
80	50, 75, 100, 125,	52	174	75	198	156	180	140	52	128	200	54	92	128	100	M12	24	28
100	150, 175, 200	64	210	90	236	188	210	166	72	148	220	47	85	121	124	M14	28	11

MGPM (slide bearing)/Dimensions A, DB, E (mm)

Bore size (mm)	A		DB	E	
	50st	75st or more		50st	75st or more
80	167	142	30	45.5	20.5
100	187	162	36	46	21

MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A		DB	E	
	50st	75st or more		50st	75st or more
80	168.5	160	25	47	38.5
100	178.5	180	30	37.5	39

CL
MLG
CNA
CNG
MNE
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

Compact Guide Cylinder: With End Lock

Series *MGP*

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

How to Order

Compact Guide Cylinder

MGP M 32 100 H N Z73

- Compact guide cylinder**
- Bearing type**

M	Slide bearing
L	Ball bushing
- Bore size**

20	20mm
25	25mm
32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm
- Thread Port**

—	Rc(PT)
TF	G(PF)
- Cylinder stroke (mm)**
Refer to the standard stroke table on page 3.22-40.
- Manual release type**

N	Non-locking type
L	Locking type
- Lock position**

H	Rear lock
R	Front lock
- Auto switch type**

Nil	Without auto switch (built-in magnet cylinder)
-----	--

* Refer to the table below for auto switch model numbers.
- Number of auto switches**

Nil	2 pcs.
S	1 pc.

Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch model		Lead wire length (m) ^{Note 1)}			Applicable load		
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)				
							Perpendicular	In-line							
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	Relay, PLC	
				2 wire	24V	12V	100V	—	Z73	●	●	●	—		
			No			5V 12V	100V or less	—	Z80	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC	
				3 wire (PNP)				Y7PV	Y7P	●	●	○			
				2 wire				12V	Y69B	Y59B	●	●			○
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V 12V		Y7NWV	Y7NW	●	●	○	IC circuit		
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○			
				2 wire				12V	Y7BWV	Y7BW	●	●			○
								Water resistant (2 colour indicator)	—	Y7BA	—	●	○		
									Magnetic field resistant (2 colour indicator)	—	^{Note 3)} P5DW	—	●		●

Note 1) Lead wire symbols 0.5m Nil (Example) Y69B
 3m L Y69BL
 5m Z Y69BZ

Note 2) Solid state auto switches marked with a "○" are produced upon receipt of order.

Note 3) Type D-P5DW cannot be mounted on bore sizes of ø32 or less.



Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5MPa	
Maximum operating pressure	1.0MPa	
Minimum operating pressure	0.15MPa *	
Ambient and fluid temperature	-10 to 60°C (with no freezing)	
Piston speed	ø20 to ø63	50 to 500mm/s
	ø80, ø100	50 to 400mm/s
Cushion	Rubber bumper at both ends	
Lubrication	Non-lube	
Stroke length tolerance	$+1.5$ 0 mm	

* 0.1MPa except for the lock unit.

Lock Specifications

Lock position	Rear, Front side							
Holding force (max.) N	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
	215	330	550	860	1340	2140	3450	5390
Backlash	2mm or less							
Manual release	Non-locking type, Locking type							

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

Standard Strokes

Bore size (mm)	Standard stroke (mm)
20, 25, 32, 40, 50, 63, 80, 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Strokes

Modification method	Spacer installation type Spacers are installed in a standard stroke cylinder. Available in 5mm stroke increments
Part number	Refer to page 35 for standard part numbers and ordering procedure.
Applicable stroke (mm)	5 to 395
Example	Part no.: MGPM50-35-HN A spacer 15mm in width is installed in a MGPM50-50-HN . C dimension is 119mm.

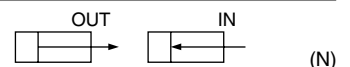
Note 1) The minimum stroke for mounting auto switches is 10mm or more for two switches, and 5mm or more for one switch.

Note 2) Intermediate strokes (in 1mm increments) with a special body are available by special order.

Auto switch mounting bracket part no. for D-P5DW

Bore size (mm)	Mounting bracket part no.	Notes
40, 50, 63, 80, 100	BMG1-040	Switch mounting bracket Hexagon socket head cap screw (M2.5 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)									
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
20	10	OUT	314	63	94	126	157	188	220	251	283	314	
		IN	236	47	71	94	118	142	165	189	212	236	
25	12	OUT	491	98	147	196	246	295	344	393	442	491	
		IN	378	76	113	151	189	227	265	302	340	378	
32	16	OUT	804	161	241	322	402	482	563	643	724	804	
		IN	603	121	181	241	302	362	422	482	543	603	
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257	
		IN	1056	211	317	422	528	634	739	845	950	1056	
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963	
		IN	1649	330	495	660	825	990	1154	1319	1484	1649	
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117	
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803	
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027	
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536	
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854	
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147	

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

Weights

Slide bearing: MGPM20 to 100 (Basic weight)

(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
20	MGPM20	0.86	1.12	1.32	1.52	1.71	1.91	2.11	2.31	2.78	3.18	3.57	3.97
25	MGPM25	1.18	1.56	1.83	2.10	2.38	2.65	2.92	3.19	3.85	4.39	4.94	5.48
32	MGPM32	1.92	2.32	2.70	3.09	3.47	3.85	4.23	4.61	5.56	6.32	7.09	7.85
40	MGPM40	2.20	2.66	3.08	3.51	3.93	4.36	4.78	5.20	6.24	7.10	7.95	8.80
50	MGPM50	3.73	4.46	5.10	5.74	6.38	7.02	7.66	8.30	9.91	11.2	12.5	13.8
63	MGPM63	4.61	5.45	6.21	6.96	7.72	8.47	9.23	9.99	11.8	13.3	14.8	16.3
80	MGPM80	7.88	8.70	9.49	10.3	11.2	12.0	12.8	13.9	15.5	17.2	18.8	20.5
100	MGPM100	12.1	13.2	14.4	15.6	16.8	18.0	19.1	20.6	22.9	25.3	27.6	30.0

Ball bushing: MGPL20 to 100 (Basic weight)

(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
20	MGPL20	0.93	1.10	1.27	1.48	1.65	1.83	2.00	2.17	2.55	2.90	3.25	3.60
25	MGPL25	1.27	1.50	1.74	2.01	2.24	2.47	2.70	2.94	3.44	3.91	4.37	4.83
32	MGPL32	1.74	2.19	2.51	2.88	3.20	3.51	3.83	4.15	4.84	5.47	6.10	6.73
40	MGPL40	2.02	2.51	2.87	3.29	3.65	4.01	4.37	4.73	5.51	6.23	6.95	7.67
50	MGPL50	3.46	4.21	4.76	5.40	5.95	6.50	7.05	7.60	8.83	9.92	11.1	12.2
63	MGPL63	4.33	5.20	5.86	6.62	7.28	7.95	8.61	9.27	10.7	12.1	13.4	14.7
80	MGPL80	8.05	8.87	9.66	10.5	11.4	12.2	13.0	14.1	15.7	17.4	19.0	20.7
100	MGPL100	12.4	13.5	14.7	15.9	17.1	18.3	19.4	20.9	23.2	25.6	27.9	30.3

Lock unit additional weight

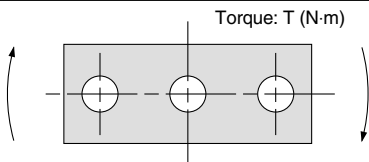
(kg)

Bore size (mm)	With rear lock		With front lock	
	HN	HL	RN	RL
20	0.05	0.07	0.05	0.06
25	0.06	0.07	0.05	0.07
32	0.09	0.10	0.09	0.10
40	0.15	0.18	0.14	0.18
50	0.24	0.27	0.23	0.27

Bore size (mm)	With rear lock		With front lock	
	HN	HL	RN	RL
63	0.36	0.40	0.35	0.39
80	0.90	0.97	1.03	1.10
100	1.52	1.60	1.60	1.68

Calculation (example) MGPM50-100-HN
 • Basic weight + Lock unit additional weight
 • 5.74 + 0.24 = 5.99kg

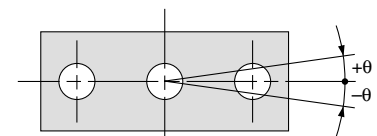
Allowable Rotational Torque of Plate



T (N-m)

Bore size (mm)	Bearing type	Stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
20	MGPM	0.99	0.75	1.88	1.63	1.44	1.28	1.16	1.06	0.90	0.78	0.69	0.62
	MGPL	2.66	1.94	1.52	1.25	1.34	1.17	1.03	0.93	0.76	0.65	0.56	0.49
25	MGPM	1.64	1.25	2.96	2.57	2.26	2.02	1.83	1.67	1.42	1.24	1.09	0.98
	MGPL	4.08	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	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	5.98	3.65	3.13	2.74	2.43	2.19
	MGPL	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	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	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	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	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



For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGPM	MGPL
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25	$\pm 0.07^\circ$	$\pm 0.09^\circ$
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40	$\pm 0.06^\circ$	$\pm 0.08^\circ$
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63	$\pm 0.05^\circ$	$\pm 0.06^\circ$
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100	$\pm 0.04^\circ$	$\pm 0.05^\circ$

Model selection is the same as MGP/Standard.
 Refer to page 3.22-8.

CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

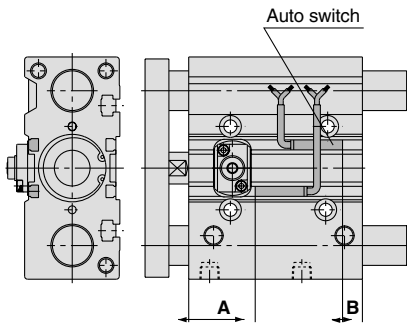
MGZ

CY

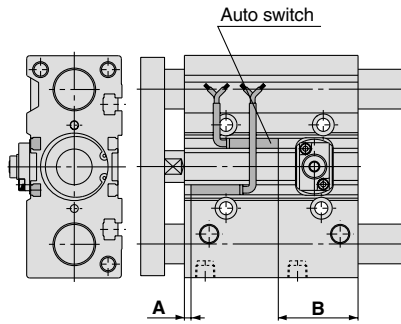
MY

Auto Switches/Proper Mounting Position for Stroke End Detection

With front lock

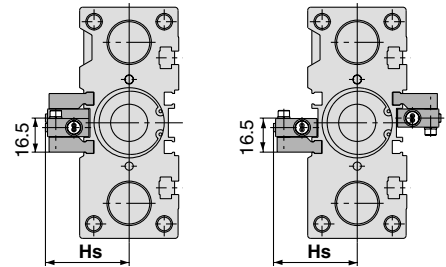


With rear lock



For D-P5DW (* Cannot be mounted on bore sizes $\phi 32$ or less.)

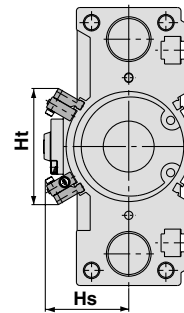
$\phi 40$ to $\phi 63$



For 25mm stroke

* For bore sizes $\phi 40$ through $\phi 63$ with two switches, one switch is mounted on each side.

$\phi 80, \phi 100$



Proper mounting position (mm)

Bore size (mm)	A	B
20	47.5	1.5
25	35.5	1.5
32	32.5	5
40	38.5	5.5
50	38.5	4.5
63	42	7
80	63	18.5
100	67.5	23.5

* Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

(mm)

Bore size (mm)	A	B
20	4	33
25	5	32.5
32	5.5	32
40	9.5	34.5
50	7.5	36.5
63	10	39
80	13	68.5
100	17.5	73.5

* Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

(mm)

Bore size (mm)	Hs	Ht
40	44.5	—
50	50	—
63	57	—
80	60.7	84.4
100	70.8	96.1

* Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Auto Switch Mounting

⚠ Caution

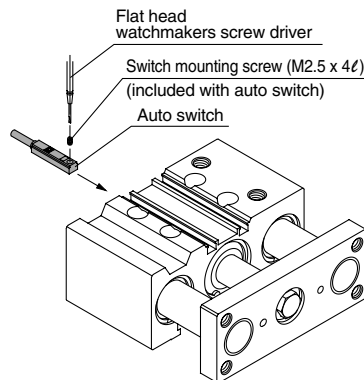
Auto switch mounting tool

- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers screw driver with a handle about 5 to 6mm in diameter

Tightening torque

- Tighten with a torque of 0.05 to 0.1N·m. As a rule, it should be turned about 90° past the point at which tightening can be felt.

When mounting an auto switch on the side with the end lock, insert the auto switch from the rod side for the rear lock, and from the head side for the front lock.



For D-P5DW

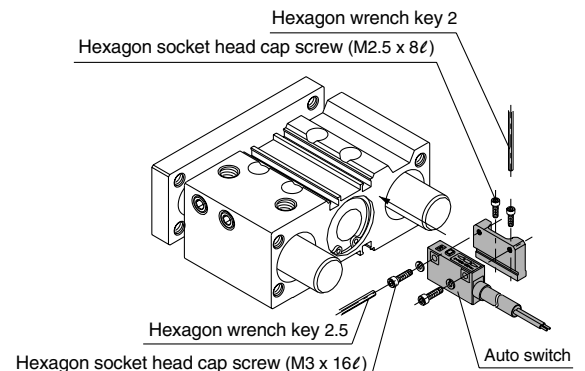
⚠ Caution

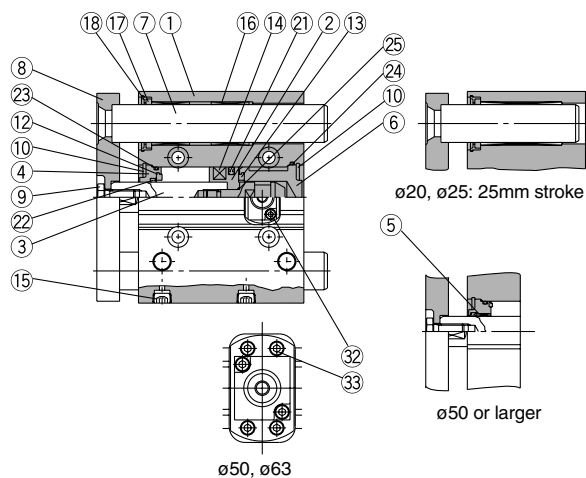
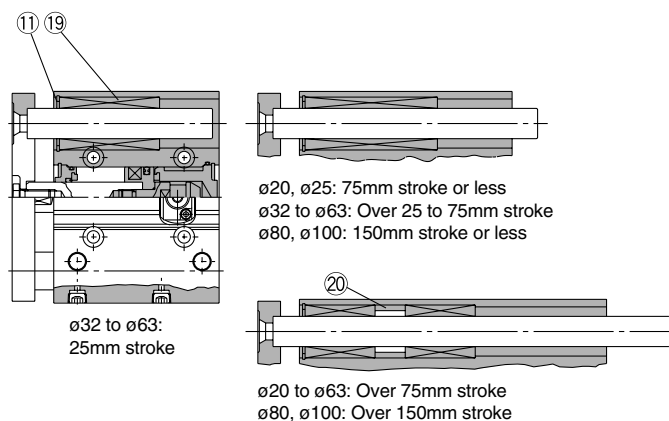
Auto switch mounting tool

- When tightening hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 or 2.5 with the appropriate screws.

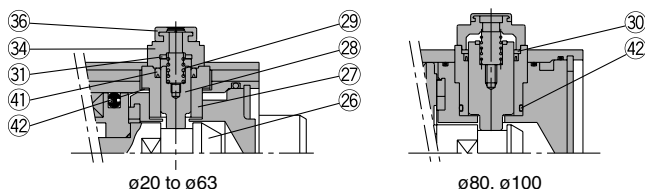
Tightening torque

- Tighten M2.5 screws with a torque of about 0.3 to 0.5N·m, and M3 screws with a torque of about 0.5 to 0.7 N·m.

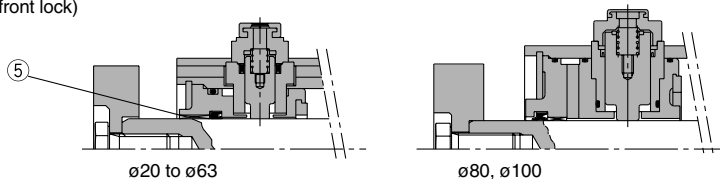
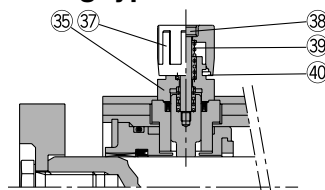


Construction**Series MGPM****Series MGPL****Non-locking type**

(Rear side lock)



(With front lock)

**Locking type****Parts list**

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel ø20, ø25	Hard chrome plated with front end lock only
		Carbon steel ø32 to ø100	
4	Collar	Aluminum alloy	Clear anodized
5	Bushing	Lead bronze casting	
6	Head cover	Aluminum alloy	Colorless chromated
7	Guide rod	Carbon steel	Hard chrome plated
8	Plate	Carbon steel	Nickel plated
9	Plate mounting bolt	Carbon steel	Nickel plated
10	Snap ring	Carbon tool steel	Phosphate coated
11	Snap ring	Carbon tool steel	Phosphate coated
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	Synthetic rubber	
15	Hexagon socket head taper plug	Carbon steel	Nickel plated
16	Slide bearing	Lead bronze casting	
17	Felt	Felt	
18	Holder	Resin	
19	Ball bushing		
20	Spacer	Aluminum alloy	
21*	Piston seal	NBR	

Replacement parts: Seal kits

Bore size (mm)	Kit No.	Contents
20	MGP20-B-PS	Kits include items 21, 22, 23, 24, 32, 33, 41 and 42 from the table above.
25	MGP25-B-PS	
32	MGP32-B-PS	
40	MGP40-B-PS	
50	MGP50-B-PS	

* Seal kits are sets consisting of items 21 through 24, 32, 33, 41 and 42 above, and can be ordered using the kit number for each bore size.

Parts list

No.	Description	Material	Note
22*	Rod seal	NBR	
23*	Gasket A	NBR	
24*	Gasket B	NBR	
25	Piston gasket	NBR	ø32 to ø100 only
26	Lock bolt	Carbon steel	Zinc chromated
27	Lock holder	Brass	Electroless nickel plated
28	Lock piston	Carbon steel	Nickel plated
29	Lock spring	Stainless steel	
30	Seal retainer	Carbon steel	Zinc chromated (ø80, ø100 only)
31	Bumper	Urethane	
32*	Hexagon socket head cap screw	Carbon steel	Black zinc chromated
33*	Hexagon socket head cap screw	Carbon steel	Nickel plated (ø50, ø63 only)
34	Cap A	Die-cast aluminum	Black coated
35	Cap B	Carbon steel	SQ treated
36	Rubber cap	Synthetic rubber	
37	M/O knob	Die-cast zinc	Black coated
38	M/O bolt	Alloy steel	Black zinc chromated
39	M/O spring	Steel wire	Chromated
40	Stopper ring	Carbon steel	Chromated
41*	Lock piston seal	NBR	
42*	Lock holder gasket	NBR	

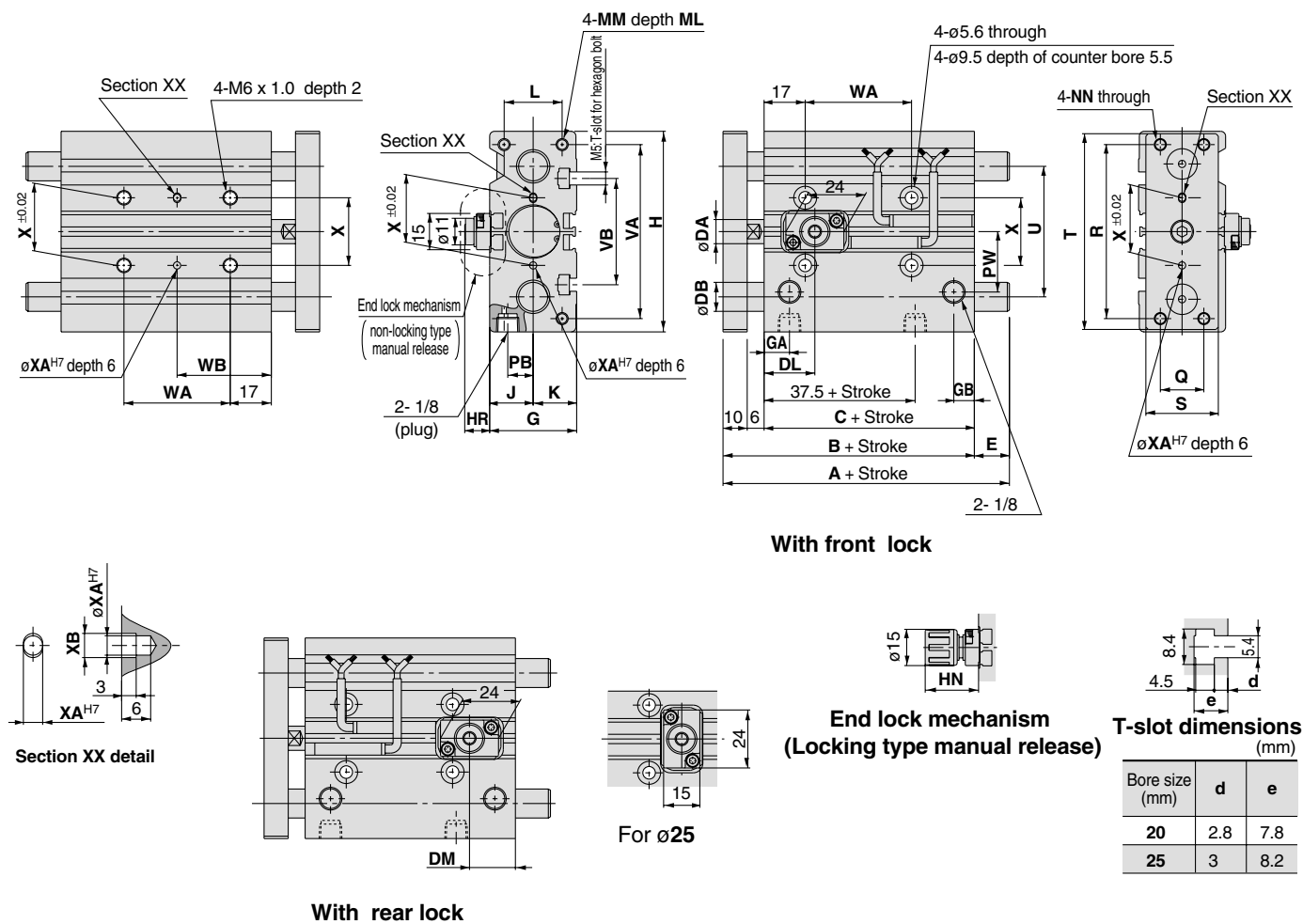
Replacement parts: Seal kits

Bore size (mm)	Kit no.	Contents
63	MGP63-B-PS	Kits include items 21, 22, 23, 24, 32, 33, 41 and 42 from the table above.
80	MGP80-B-PS	
100	MGP100-B-PS	

* Items 32 and 33 are not included for bores sizes 80 and 100.

Series MGP

Dimensions/Ø20, Ø25



Refer to "Manufacture of Intermediate Strokes" on page 3.22-40 for intermediate strokes.

Bore size (mm)	Standard stroke (mm)	B	C	DA	G	GA	GB	H	J	K	L	MM	ML	NN	PB	PW	Q	R
20	25, 50, 75, 100, 125, 150, 175	78	62	10	36	10.5	8.5	83	18	18	24	M5	13	M5	10.5	25	18	70
25	200, 250, 300, 350, 400	78.5	62.5	12	42	11.5	9	93	21	21	30	M6	15	M6	13.5	28.5	26	78

Bore size (mm)	S	T	U	VA	VB	WA				WB				X	XA	XB
						75st or less	Over 75st to 175st	Over 175st to 250st	Over 250st	75st or less	Over 75st to 175st	Over 175st to 250st	Over 250st			
20	30	81	54	72	44	44	120	200	300	39	77	117	167	28	3	3.5
25	38	91	64	82	50	44	120	200	300	39	77	117	167	34	4	4.5

End lock mechanism dimensions (mm)

Bore size (mm)	DL	DM	HR	HN
20	21	19	10.5	22
25	26.5	16	8	19.5

MGPM (slide bearing)/Dimensions A, DB, E (mm)

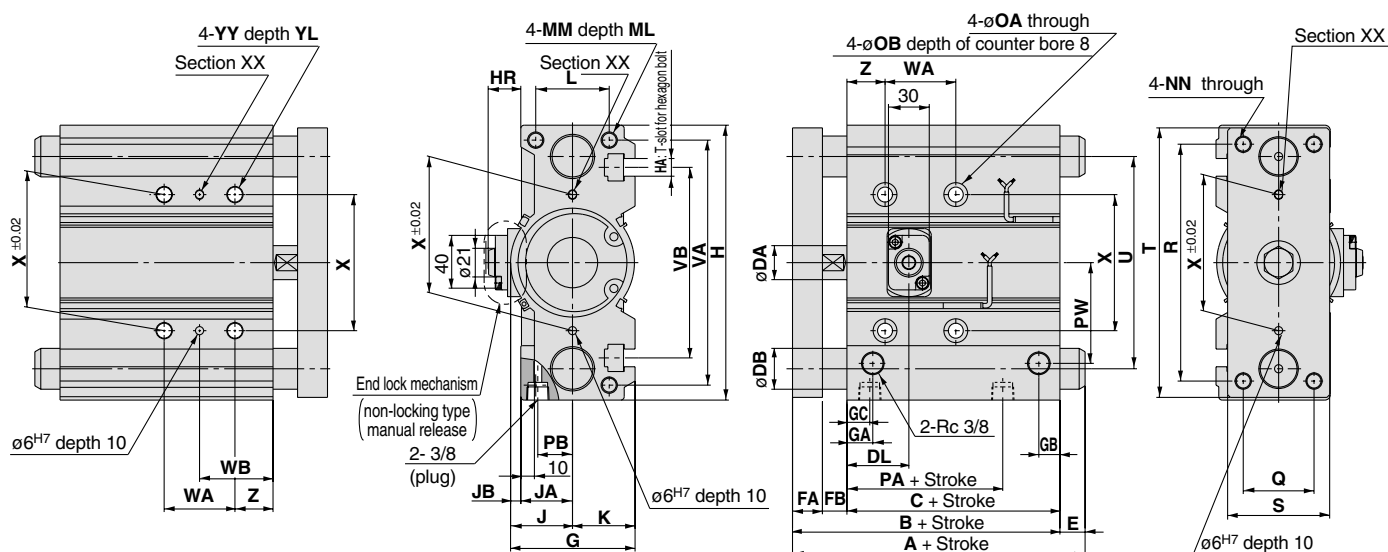
Bore size (mm)	A			DB	E		
	75st or less	Over 75st to 175st	Over 175st		75st or less	Over 75st to 175st	Over 175st
20	78	84.5	122	12	0	6.5	44
25	78.5	85	122	16	0	6.5	43.5

MGPL (ball bushing)/Dimensions A, DB, E (mm)

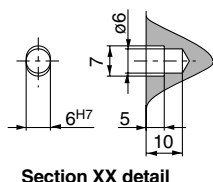
Bore size (mm)	A			DB	E		
	25st or less	Over 25st to 175st	Over 175st		25st or less	Over 25st to 175st	Over 175st
20	80	104	122	10	2	26	44
25	85.5	104.5	122	13	7	26	43.5

Series MGP

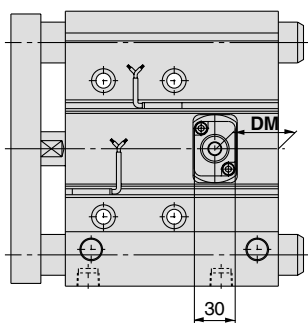
Dimensions/Ø80, Ø100



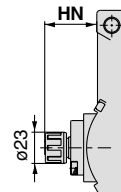
With front lock



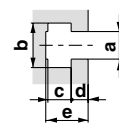
Section XX detail



With rear lock



End lock mechanism
(Locking type manual release)



T-slot dimensions

Bore size (mm)	(mm)				
	a	b	c	d	e
80	13.3	20.3	12	8	22.5
100	15.3	23.3	13.5	10	30

Bore size (mm)	Standard stroke (mm)	(mm)															
		B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L
80	25, 50, 75, 100, 125, 150, 175	146.5	106.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54
100	200, 250, 300, 350, 400	166	116	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62

Bore size (mm)	MM	ML	NN	OA	OB	PA	PB	PW	Q	R	S	T	U	VA	VB	WA			
																50st or less	Over 50st to 150st	Over 150st to 250st	Over 250st
80	M12	25	M12	10.6	17.5	64.5	25.5	74	52	174	75	198	156	180	140	52	128	200	300
100	M14	31	M14	12.5	20	67.5	32.5	89	64	210	90	236	188	210	166	72	148	220	320

Bore size (mm)	WB				X	YY	YL	Z
	50st or less	Over 50st to 150st	Over 150st to 250st	Over 250st				
80	54	92	128	178	100	M12	24	28
100	47	85	121	171	124	M14	28	11

End lock mechanism dimensions (mm)

Bore size (mm)	DL	DM	HR	HN
80	45.5	40.5	24	38.5
100	49	43.5	26.5	41

MGPM (slide bearing)/Dimensions/A, DB, E (mm)

Bore size (mm)	A		DB	E	
	150st or less	Over 150st		150st or less	Over 150st
80	146.5	193	30	0	46.5
100	166	203	36	0	37

MGPL (ball bushing)/Dimensions A, DB, E (mm)

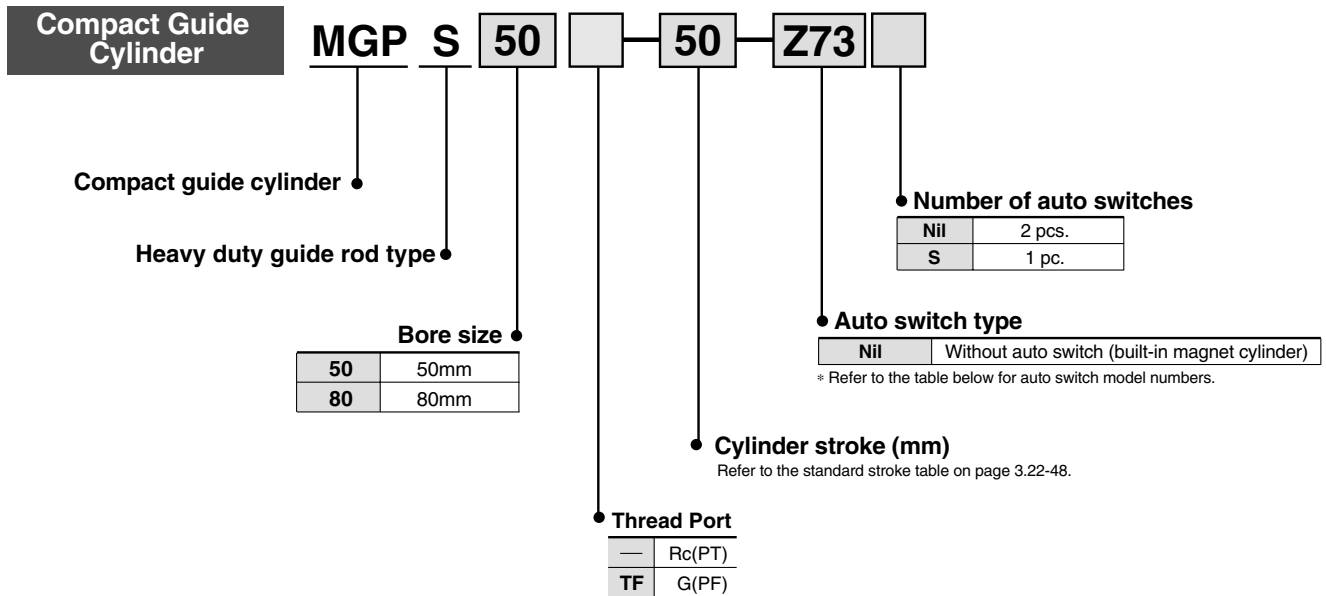
Bore size (mm)	A		DB	E	
	150st or less	Over 150st		150st or less	Over 150st
80	160	193	25	13.5	46.5
100	180	203	30	14	37

Compact Guide Cylinder: Heavy Duty Guide Rod Type

Series *MGPS*

ø50, ø80

How to Order



Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch model		Lead wire length (m) ^{Note 1)}			Applicable load	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	Relay, PLC
				2 wire	24V	12V	100V	—	Z73	●	●	●	—	
			No				5V 12V	100V or less	—	Z80	●	●	—	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC
				3 wire (PNP)				Y7PV	Y7P	●	●	○	—	
				2 wire				Y69B	Y59B	●	●	○	—	
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V 12V		Y7N WV	Y7N W	●	●	○	IC circuit	
				3 wire (PNP)				Y7P WV	Y7P W	●	●	○	—	
				2 wire				Y7B WV	Y7B W	●	●	○	—	
	Water resistant (2 colour indicator)					2 wire		—	Y7BA	—	●	○	—	
	Magnetic field resistant (2 colour indicator)							—	P5DW	—	●	●	—	

Note 1) Lead wire symbols 0.5m Nil (Example) Y69B
 3m L Y69BL
 5m Z Y69BZ

Note 2) Solid state auto switches marked with a "○" are produced upon receipt of order.

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

Series MGPS



Specifications

Action	Double acting
Fluid	Air
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.1MPa
Ambient and fluid temperature	-10 to 60°C (with no freezing)
Piston speed	50 to 400mm/s
Cushion	Rubber bumper at both ends
Lubrication	Non-lube
Stroke length tolerance	$^{+1.5}_0$ mm

Standard Strokes

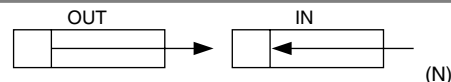
Bore size (mm)	Standard stroke (mm)
50, 80	25, 50, 75, 100, 125, 150, 175, 200

Manufacture of Intermediate Strokes

Modification method	Spacer installation type Spacers are installed in a standard stroke cylinder. Available in 5mm stroke increments
Part number	Refer to page 3.22-47 for standard part numbers and ordering procedure.
Applicable stroke (mm)	5 to 195
Example	Part no.: MGPS50—35 A spacer 15mm in width is installed in a MGPS50—50 . C dimension is 94mm.

Note 1) The minimum stroke for mounting auto switches is 10mm or more for two switches, and 5mm or more for one switch.
Note 2) Intermediate strokes (in 1mm increments) with a special body are available by special order.

Theoretical Output



Auto switch mounting bracket part no. for D-P5DW

Bore size (mm)	Mounting bracket part no.	Notes
50, 80	BMG1-040	Switch mounting bracket Hexagon socket head cap screw (M2.5 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

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
50	20	OUT	1963	393	589	785	982	1178	1374	1571	1767	1963
		IN	1649	330	495	660	825	990	1155	1319	1484	1649
80	25	OUT	5027	1005	1508	2011	2513	3016	3519	4021	4524	5027
		IN	4536	907	1361	1814	2268	2721	3175	3629	4082	4536

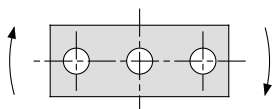
Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm²)

Weights

Bore size (mm)	Model	Standard stroke (mm)								(kg)
		25	50	75	100	125	150	175	200	
50	MGPS50	3.90	4.68	5.74	6.52	7.30	8.08	8.86	9.64	
80	MGPS80	9.21	10.7	13.0	14.5	15.9	17.9	18.9	20.3	

Allowable Rotational Torque of Plate

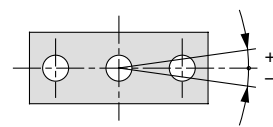
Torque: T (N·m)



T (N·m)

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
50	MGPS50	15	12	16	15	13	12	11	9.8
80	MGPS80	49	41	51	45	41	38	35	32

Non-rotating Accuracy of Plate



For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Model	Non-rotating accuracy θ
50	MGPS50	$\pm 0.05^\circ$
80	MGPS80	$\pm 0.04^\circ$

Series MGPS Model Selection

Selecting Conditions

Mounting orientation	Vertical		Horizontal	
Maximum speed (mm/s)	200	400	200	400
Graph (Slide bearing type)	1, 2	3, 4	5, 6	7, 8

Selection Example 1 (Vertical Mounting)

Selecting conditions

Mounting: Vertical

Stroke: 50mm

Maximum speed: 200mm/s

Load weight: 100kg

Eccentric distance: 100mm

Find the point of intersection for the load weight of 100kg and the eccentric distance of 100mm on graph **1**, based on vertical mounting, 50mm stroke, and the speed of 200mm/s.

→MGPS80-50 is selected.

Selection Example 2 (Horizontal Mounting)

Selecting conditions

Mounting: Horizontal

Distance between plate and load center of gravity: 50mm

Maximum speed: 200mm/s

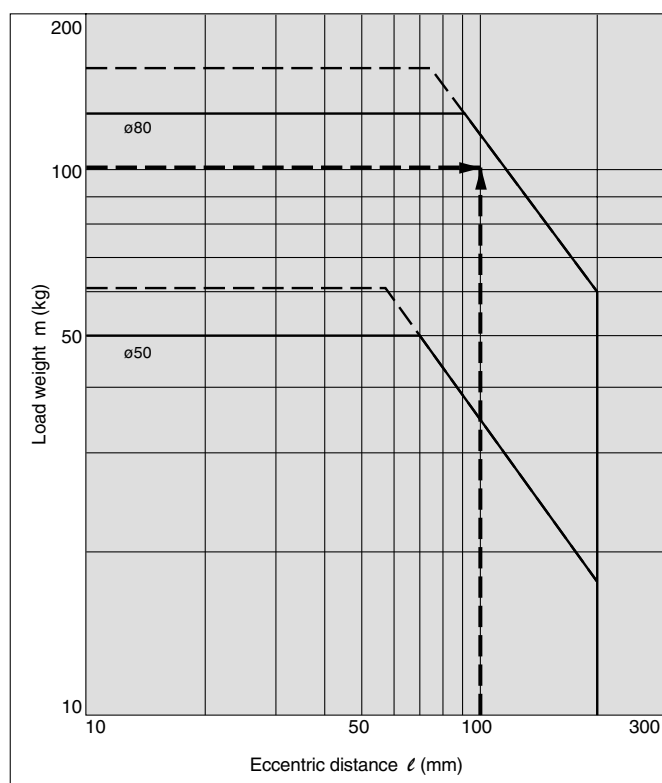
Load weight: 30kg

Stroke: 100mm

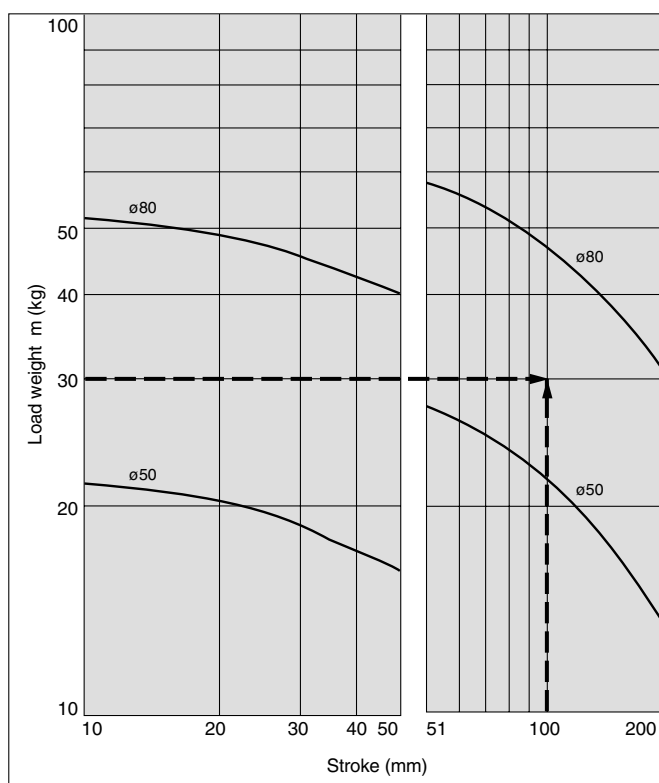
Find the point of intersection for the load weight of 30kg and stroke of 100mm on graph **5**, based on horizontal mounting, the distance of 50mm between the plate and load center of gravity, and the speed of 200mm/s.

→MGPS80-100 is selected.

1 50mm stroke or less V = 200mm/s

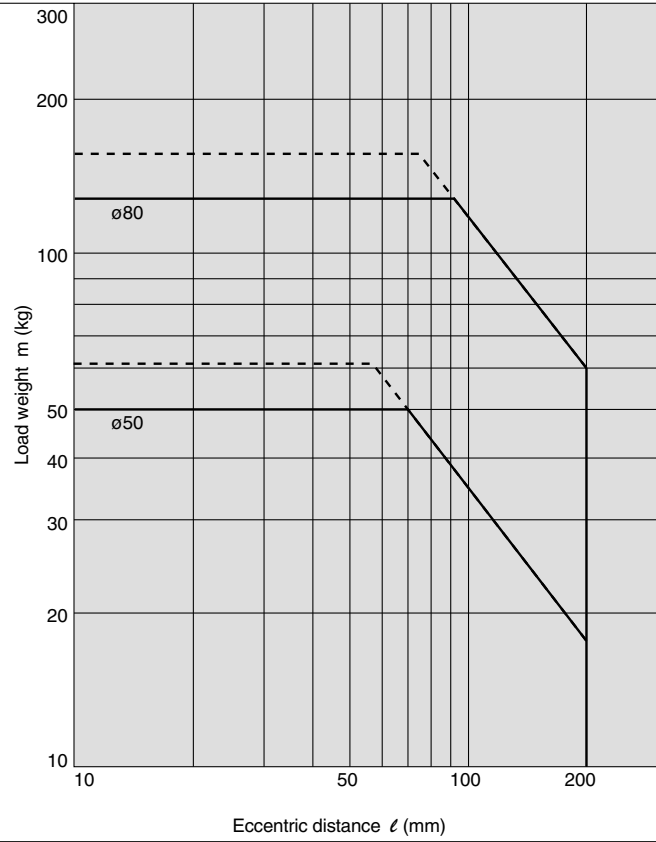


5 $l = 50$ mm V = 200mm/s

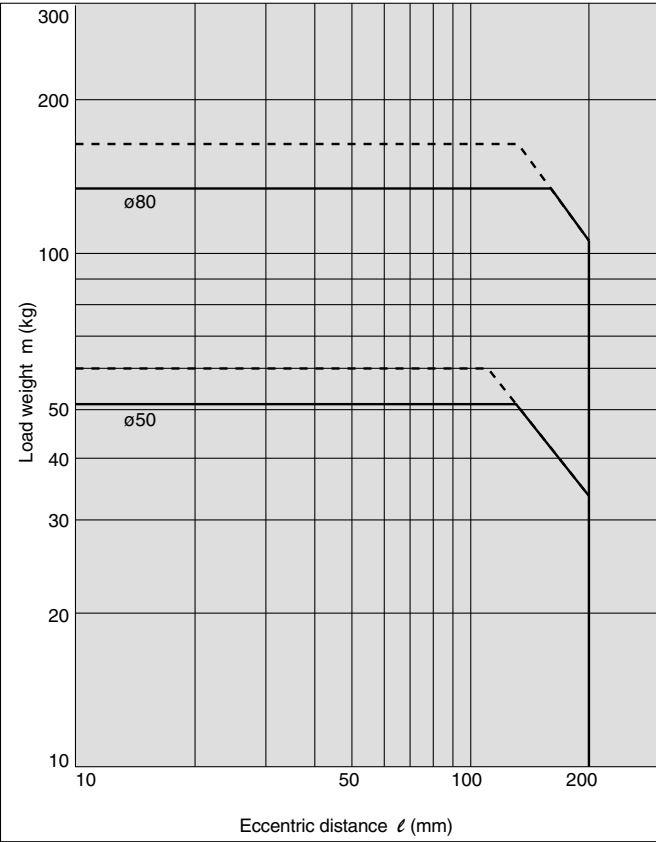


MGPS50, 80

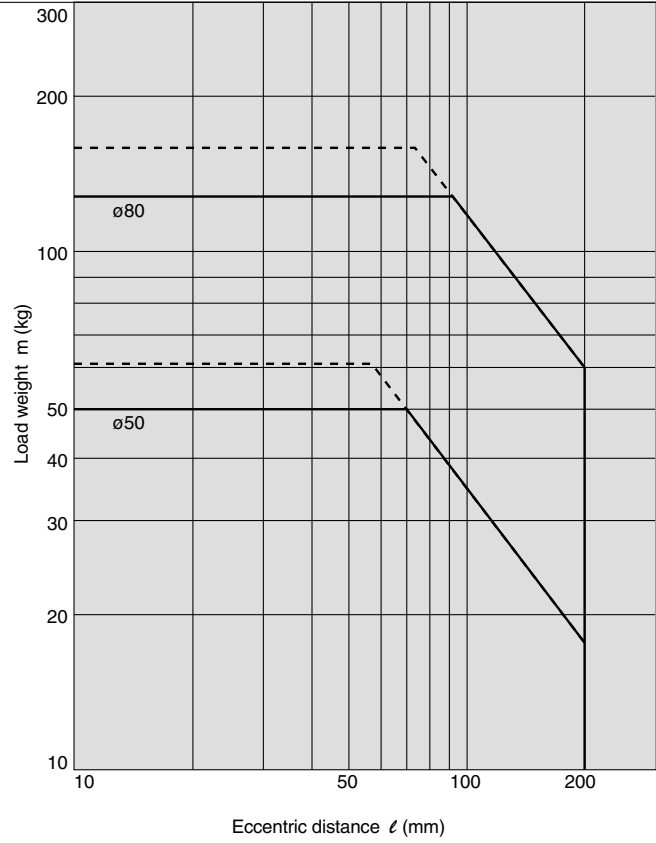
1 50mm stroke or less $V = 200\text{mm/s}$



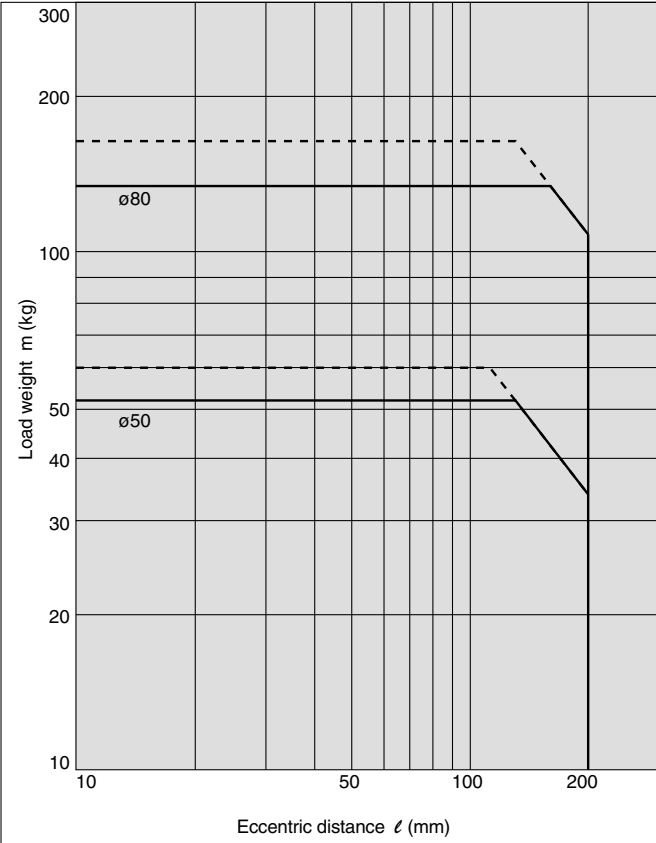
2 Over 50mm stroke $V = 200\text{mm/s}$



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



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

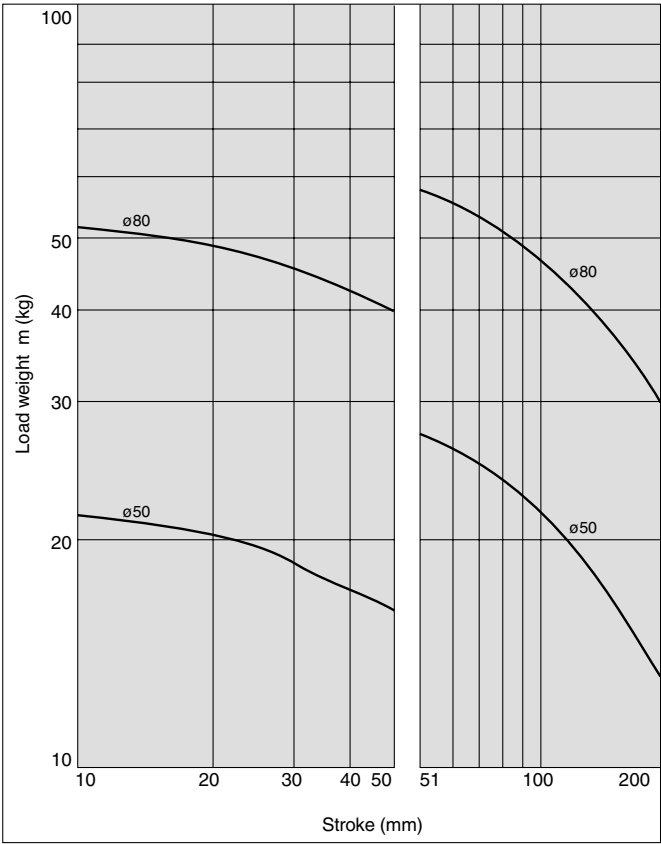


Horizontal Mounting

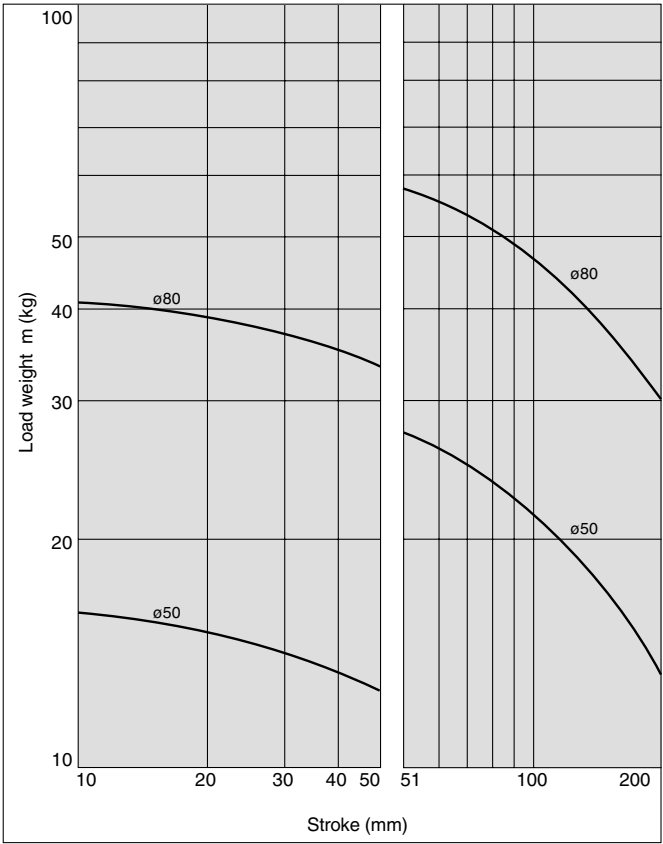
Slide Bearing

MGPS50, 80

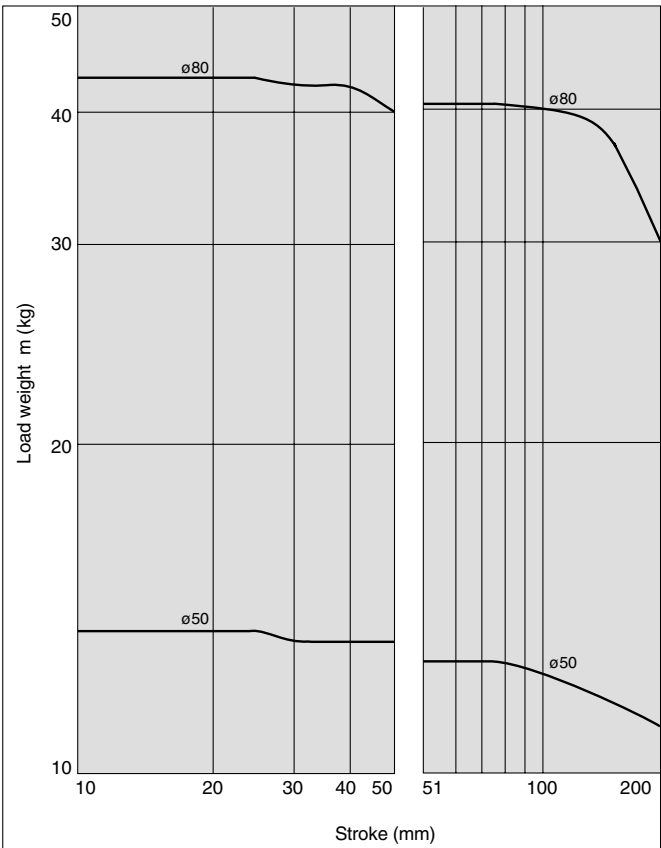
5 $\ell = 50\text{mm}$ $V = 200\text{mm/s}$



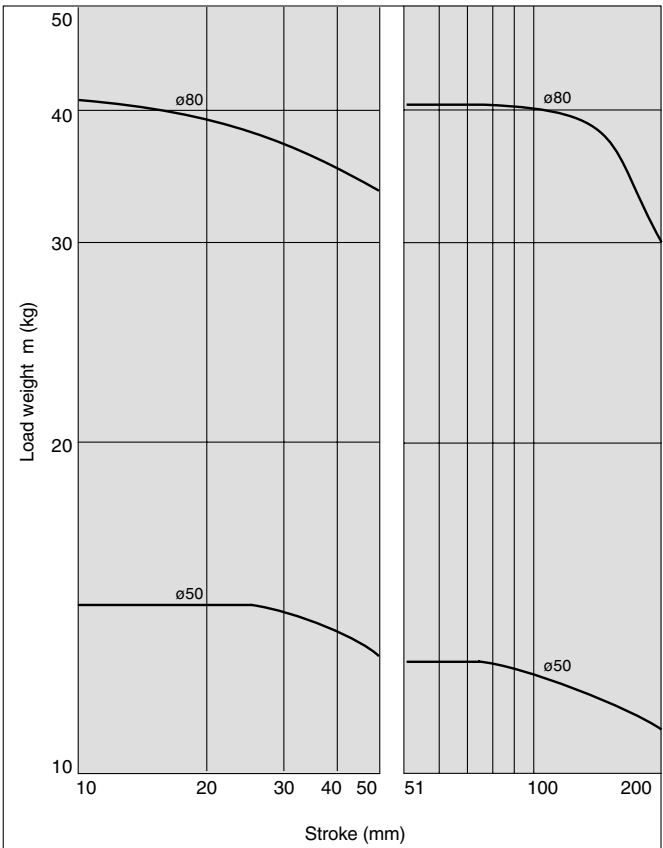
6 $\ell = 100\text{mm}$ $V = 200\text{mm/s}$



7 $\ell = 50\text{mm}$ $V = 400\text{mm/s}$

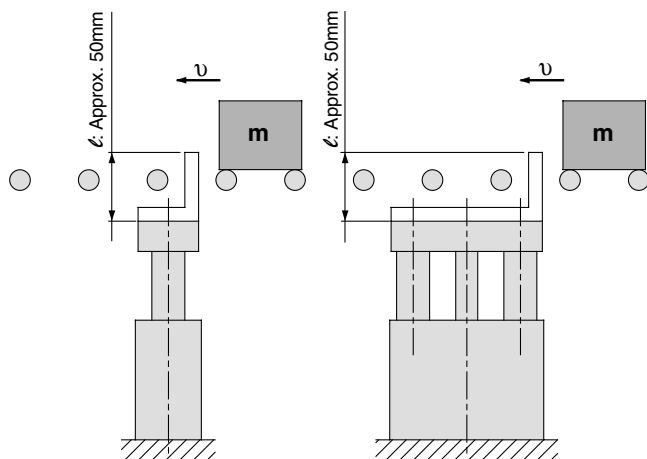


8 $\ell = 100\text{mm}$ $V = 400\text{mm/s}$

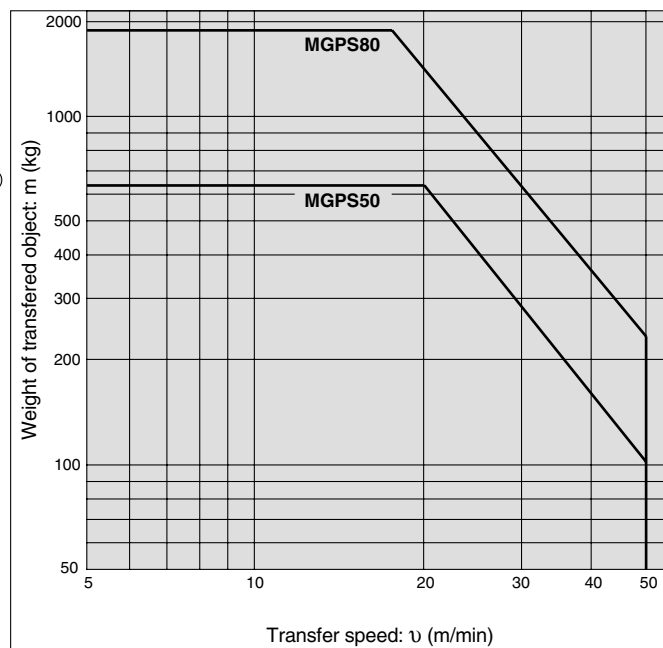


- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP**
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

Operating Range when Used as Stopper



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

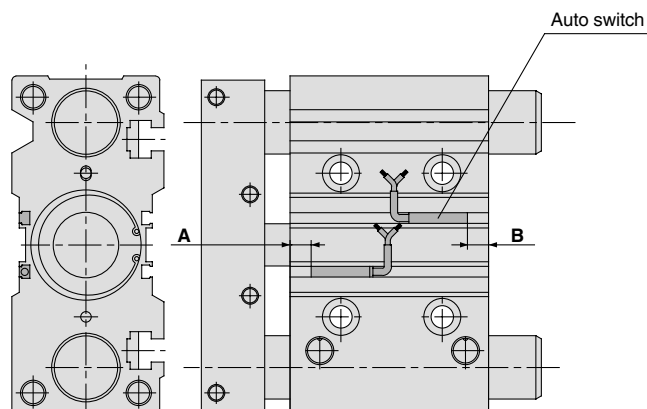


Caution

Handling precautions

Note) When using as a stopper, select a model with a stroke of 50mm or less.

Auto Switches/Proper Mounting Position for Stroke End Detection



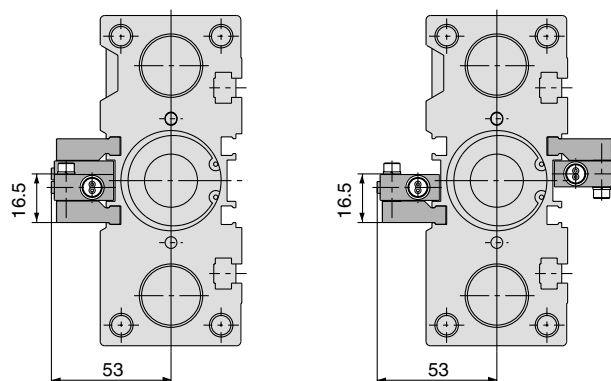
Proper mounting position (mm)

Bore size (mm)	A	B
50	7.5	11.5
80	13	37

Note) Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

For D-P5DW

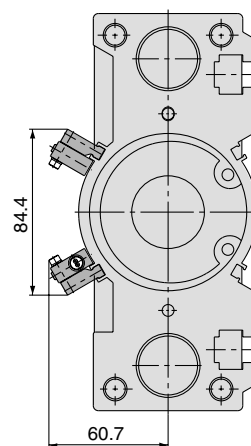
Ø50



For 25mm stroke

* For bore sizes Ø40 through 63 with two switches, one switch is mounted on each side.

Ø80



Auto Switch Mounting

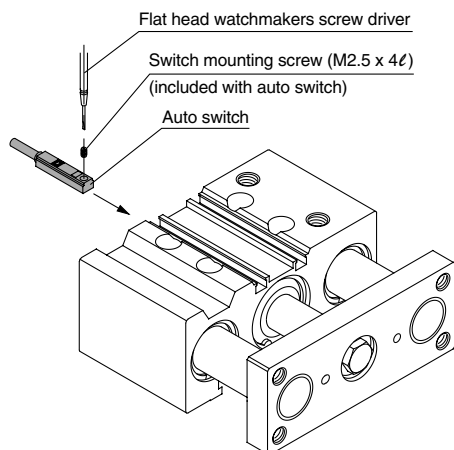
⚠ Caution

Auto switch mounting tool

- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers screw driver with a handle about 5 to 6mm in diameter.

Tightening torque

- Tighten with a torque of 0.05 to 0.1N·m. As a rule, it should be turned about 90° past the point at which tightening can be felt.



For D-P5DW

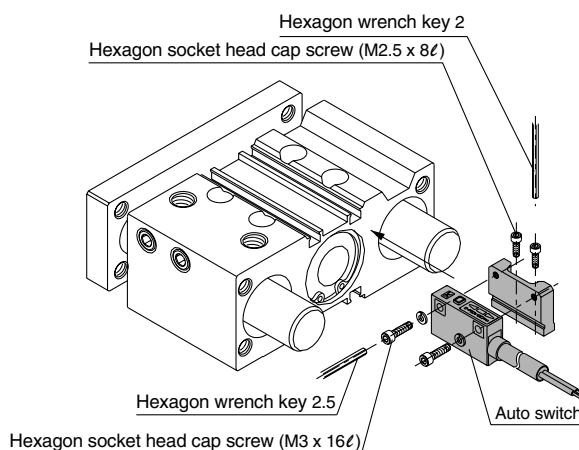
⚠ Caution

Auto switch mounting tool

- When tightening hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 or 2.5 with the appropriate screws.

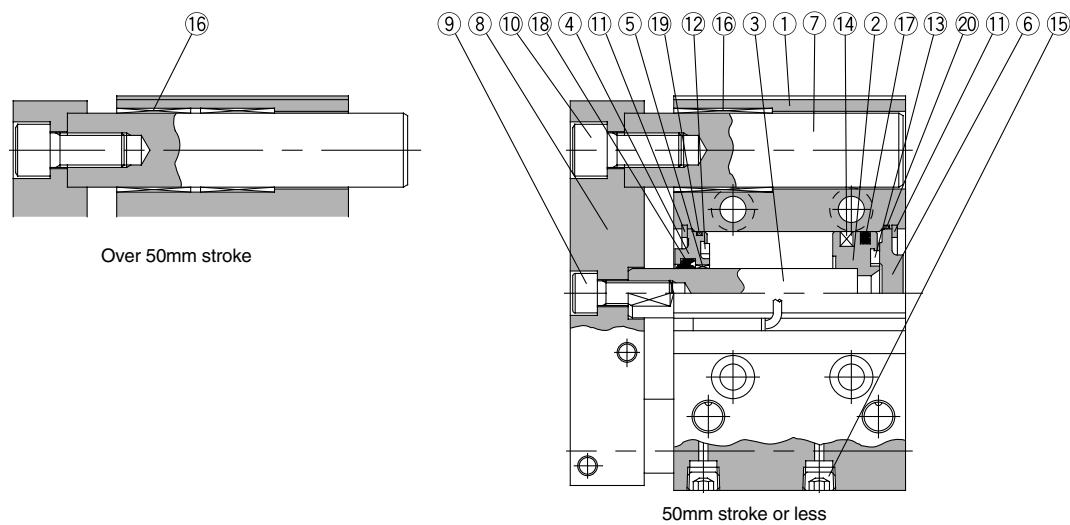
Tightening torque

- Tighten M2.5 screws with a torque of about 0.3 to 0.5N·m, and M3 screws with a torque of about 0.5 to 0.7N·m.



Series MGPS

Construction



Parts list

No.	Description	Material	Note	
1	Body	Aluminum alloy	Hard anodized	
2	Piston	Aluminum alloy	Chromated	
3	Piston rod	Carbon steel	Hard chrome plated	
4	Collar	Aluminum alloy casting	Coated	
5	Bushing	Lead bronze casting		
6	Head cover	Aluminum alloy	ø50	Colorless chromated
			ø80	Coated
7	Guide rod	Carbon steel	Hard chrome plated	
8	Plate	Carbon steel	Nickel plated	
9	Plate mounting bolt A	Carbon steel	Nickel plated	For piston rod
10	Plate mounting bolt B	Carbon steel	Nickel plated	For guide rod

Parts list

No.	Description	Material	Note
11	Snap ring	Carbon tool steel	Phosphate coated
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	Synthetic rubber	
15	Hexagon socket head taper plug	Carbon steel	Nickel plated
16	Slide bearing	Lead bronze casting	
17*	Piston seal	NBR	
18*	Rod seal	NBR	
19*	Gasket A	NBR	
20*	Gasket B	NBR	

Replacement parts: Seal kits

Bore size (mm)	Kit no.	Contents
50	MGP50-PS	Kits include items 17, 18, 19 and 20 from the table above.
80	MGP80-PS	

* Seal kits are sets consisting of items 17 through 20 above, and can be ordered using the kit number for each bore size.

MY

Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

Order made specification		Symbol
①	Intermediate stroke (special body type)	-XB10
②	With air cushion/Intermediate stroke (spacer installed type)	-XC19
③	Heat resistant cylinder	-XB6
④	Low speed cylinder	-XB13
⑤	Fluoro rubber seal	-XC22

Order made specification		Symbol
⑥	With heavy duty scraper	-XC4
⑦	With coil scraper	-XC35
⑧	Adjustable stroke cylinder/Adjustable extension type	-XC8
⑨	Adjustable stroke cylinder/Adjustable retraction type	-XC9
⑩	Stainless steel used for piston rod, plate, etc.	-XC6

① Intermediate Strokes (Special Body Type)

-XB10

MGP^M **Bore size** — **Stroke** — **XB10**

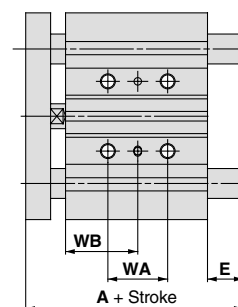
Intermediate stroke ●

When using an intermediate stroke, the overall length of the cylinder can be shortened by using a special body without the installation of spacers.

Stroke ranges

Bore size (mm)	Stroke range (mm)
12, 16	10 to 250
20, 25	20 to 400
32, 40, 50, 63, 80, 100	25 to 400

* Specifications other than the stroke range are the same as standard products.



Dimensions

MGPM, MGPL-XB10/Dimensions WA, WB

(mm)

Bore size (mm)	Standard stroke (mm)	WA				WB			
		10 to 39st	40 to 100st	101 to 200st	201 to 250st	10 to 39st	40 to 100st	101 to 200st	201 to 250st
12	10 to 250	20	40	110	200	15	25	60	105
16		24	44	110	200	17	27	60	105

Bore size (mm)	Standard stroke (mm)	WA					WB				
		20 to 39st	40 to 124st	125 to 200st	201 to 300st	301 to 400st	20 to 39st	40 to 124st	125 to 200st	201 to 300st	301 to 400st
20	20 to 400	24	44	120	200	300	29	39	77	117	167
25		24	44	120	200	300	29	39	77	117	167

Bore size (mm)	Standard stroke (mm)	WA					WB				
		25 to 49st	50 to 124st	125 to 200st	201 to 300st	301 to 400st	25 to 49st	50 to 124st	125 to 200st	201 to 300st	301 to 400st
32	25 to 400	24	48	124	200	300	33	45	83	121	171
40		24	48	124	200	300	34	46	84	122	172
50		24	48	124	200	300	36	48	86	124	174
63		28	52	128	200	300	38	50	88	124	174
80		28	52	128	200	300	42	54	92	128	178
100		48	72	148	220	320	35	47	85	121	171

MGPM (slide bearing)/Dimensions A, E

(mm)

Bore size (mm)	A			E		
	10 to 74st	75 to 100st	101 to 250st	10 to 74st	75 to 100st	101 to 250st
12	42	60.5	85	0	18.5	43
16	46	64.5	95	0	18.5	49

Bore size (mm)	A			E		
	20 to 74st	75 to 200st	201 to 400st	20 to 74st	75 to 200st	201 to 400st
20	53	84.5	122	0	31.5	69
25	53.5	85	122	0	31.5	68.5

Bore size (mm)	A			E		
	25 to 74st	75 to 200st	201 to 400st	25 to 74st	75 to 200st	201 to 400st
32	97	102	140	37.5	42.5	80.5
40	97	102	140	31	36	74
50	106.5	118	161	34.5	46	89
63	106.5	118	161	29.5	41	84
80	115	142	193	18.5	45.5	96.5
100	137	162	203	21	46	87

* Dimensions other than those in the above tables are the same as standard products.

MGPL (ball bushing)/Dimensions A, E

(mm)

Bore size (mm)	A			E		
	10 to 39st	40 to 100st	101 to 250st	10 to 39st	40 to 100st	101 to 250st
12	43	55	85	1	13	43
16	49	65	95	3	19	49

Bore size (mm)	A				E			
	20 to 39st	40 to 124st	125 to 200st	201 to 400st	20 to 39st	40 to 124st	125 to 200st	201 to 400st
20	63	80	104	122	10	27	51	69
25	69.5	85.5	104.5	122	16	32	51	68.5

Bore size (mm)	A				E			
	25 to 74st	75 to 124st	125 to 200st	201 to 400st	25 to 74st	75 to 124st	125 to 200st	201 to 400st
32	81	98	118	140	21.5	38.5	58.5	80.5
40	81	98	118	140	15	32	52	74
50	93	114	134	161	21	42	62	89
63	93	114	134	161	16	37	57	84

Bore size (mm)	A				E			
	25 to 49st	50 to 74st	75 to 200st	201 to 400st	25 to 49st	50 to 74st	75 to 200st	201 to 400st
80	109.5	130	160	193	13	33.5	63.5	96.5
100	121	147	180	203	5	31	64	87

Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

② With Air Cushion/Intermediate Strokes (Spacer Installed Type)

-XC19

MGP^M_L Bore size — Stroke — A — XC19

With air cushion/Intermediate stroke ●

The collar of the standard stroke cylinder is changed to accommodate intermediate strokes in 1mm increments.

(Intermediate strokes (in 1mm increments) with a special body are available by special order.)

Bore size (mm)	Stroke range (mm)
ø16	26 to 99
ø20 to ø63	26 to 199
ø80, ø100	51 to 199

* Specifications and dimensions are the same as the standard products with air cushion.

③ Heat Resistant Cylinder

-XB6

MGPM Bore size — Stroke — XB6

Heat resistant cylinder ●

Cylinder with modified seal and grease materials to make possible high temperature operation up to an ambient temperature of 150°C.

Specifications

Applicable series	MGPM
Bearing type	Slide bearing
Cylinder bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Ambient temperature range	-10 to 150°C
Seal material	Fluoro rubber
Grease	Heat resistant grease
Cushion	None
Auto switch	Not applicable

* 1. Dimensions are the same as standard products.

* 2. Refer to page 3.22-60 for allowable kinetic energy.

④ Low Speed Cylinder

-XB13

MGP^M_L Bore size — Stroke — XB13

Low speed cylinder ●

Operates smoothly, without sticking and slipping, at drive speeds as low as 5 to 50mm/s.

Specifications

Applicable series	MGPM, MGPL
Bearing type	Slide bearing, Ball bushing
Cylinder bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Piston speed	5 to 50mm/s
Cushion	Rubber bumper

* Dimensions are the same as standard products.

⑤ Fluoro Rubber Seals

-XC22

MGPM Bore size — Stroke — XC22

Fluoro rubber seals ●

Seals are changed to a fluoro rubber material which has outstanding resistance to chemicals.

Specifications

Applicable series	MGPM
Bearing type	Slide bearing
Cylinder bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Cushion	None
Auto switch	Mountable

* 1. Dimensions are the same as standard products.

* 2. Refer to page 3.22-60 for allowable kinetic energy.

CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

MGZ

CY

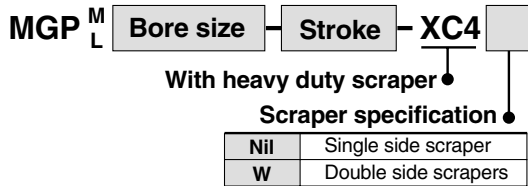
MY

Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

6 With Heavy Duty Scraper

-XC4



With a heavy duty scraper used for the piston rod and guide rod sections, this specification is ideal for cylinders used in a dusty environment, or in environments where there is contact with earth and sand, such as molding machines, construction equipment, and industrial vehicles, etc. Furthermore, depending on the mounting orientation, the scraper on the plate side only (–XC4) or the double side scraper (–XC4W) can be selected.

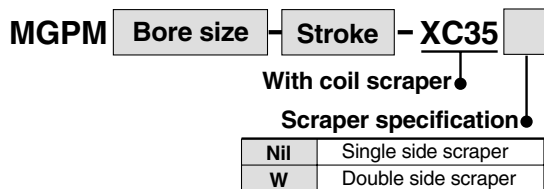
Specifications

Applicable series		MGPM, MGPL
Bearing type		Slide bearing, Ball bushing
Cylinder bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Minimum operating pressure	Single side	0.12MPa
	Double side	0.14MPa

* Refer to the tables below for dimensions.

7 With Coil Scraper

-XC35



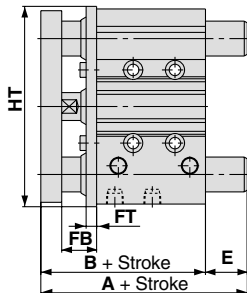
Removes frost, welding spatter, and machining chips from the piston rod and the guide rod, and protects the seals. Furthermore, depending on the mounting orientation, the scraper on the plate side only (–XC35) or the double side scraper (–XC35W) can be selected.

Specifications

Applicable series		MGPM
Bearing type		Slide bearing
Cylinder bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Minimum operating pressure	Single side	0.12MPa
	Double side	0.14MPa

* Refer to the tables below for dimensions.

With Heavy Duty Scraper/With Coil Scraper Common Dimensions



MGPM, MGPL
Common dimensions (mm)

Bore size (mm)	B	FB	FT
20	63	16	5
25	63.5	16	5
32	69.5	20	6
40	76	20	6
50	82	22	6
63	87	22	6
80	106.5	28	6
100	126	35	9

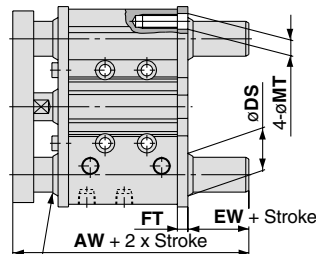
With double side scrapers
Dimensions AW, EW, MT, DS (mm)

Bore size (mm)	AW	EW	MT	DS *	
				MGPM	MGPL
20	74	6	6	17	15
25	74.5	6	7	21	19
32	82.5	7	8.5	26	21
40	89	7	9	26	21
50	95	7	11	31	26
63	100	7	11	31	26
80	120.5	8	14	36	31
100	143	8	16	44	36

* By-pass port size for guide rod with bottom mount

MGPM (slide bearing)/Dimensions A, E, HT (mm)

Bore size (mm)	A			E			HT	
	50st or less	Over 50st to 200st	Over 200st	50st or less	Over 50st to 200st	Over 200st	XC4	XC35
20	63	94.5	132	0	31.5	69	80	80
25	63.5	95	132	0	31.5	68.5	93	93
32	97	112	150	27.5	42.5	80.5	113	110
40	97	112	150	21	36	74	121	118
50	106.5	128	171	24.5	46	89	153	146
63	106.5	128	171	19.5	41	84	167	160
80	125	152	203	18.5	45.5	96.5	205	200
100	147	172	213	21	46	87	244	238



The figure shows the heavy duty scraper (–XC4).
Cylinders with coil scraper (–XC35) are without this lip.

For cylinder with double side scraper

MGPL (ball bushing)/Dimensions A, E, HT (mm)

Bore size (mm)	A				E				HT
	30st or less	Over 30st to 100st	Over 100st to 200st	Over 200st	30st or less	Over 30st to 100st	Over 100st to 200st	Over 200st	
20	73	90	114	132	10	27	51	69	80
25	79.5	95.5	114.5	132	16	32	51	68.5	93

Bore size (mm)	A				E				HT
	50st or less	Over 50st to 100st	Over 100st to 200st	Over 200st	50st or less	Over 50st to 100st	Over 100st to 200st	Over 200st	
32	91	108	128	150	21.5	38.5	58.5	80.5	110
40	91	108	128	150	15	32	52	74	118
50	103	124	144	171	21	42	62	89	146
63	103	124	144	171	16	37	57	84	160

Bore size (mm)	A				E				HT
	25st or less	Over 25st to 50st	Over 50st to 100st	Over 100st to 200st	25st or less	Over 25st to 50st	Over 50st to 100st	Over 100st to 200st	
80	119.5	140	170	203	13	33.5	63.5	96.5	201
100	131	157	190	213	5	31	64	87	238

Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

8 Adjustable Stroke Cylinder/Adjustable Extension Type

-XC8

MGP ^M_L Bore size — Stroke A — XC8

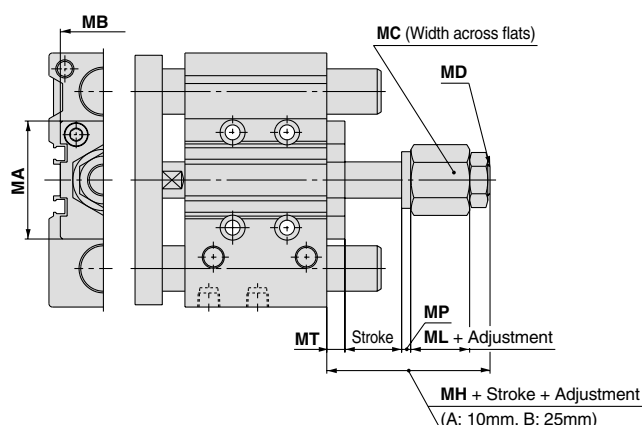
Stroke adjustment ●

A	10mm adjustment
B	25mm adjustment

Adjustable stroke cylinder
Adjustable extension type ●

The extended stroke of the cylinder can be adjusted 0 to 10mm or 0 to 25mm from the full stroke.

Install a stroke adjustment mechanism at the head side to adjust the extended stroke.



Specifications

Applicable series		MGPM, MGPL
Bearing type		Slide bearing, Ball bushing
Cylinder bore size (mm)		12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Piston speed	ø12 to ø32	50 to 300mm/s
	ø40 to ø100	50 to 400mm/s
Stroke adjustment	A	10mm
	B	25mm

MGPM, MGPL Common dimensions (mm)

Bore size (mm)	MA	MB	MC	MD	MH	ML	MP	MT
12	28	16	14	M5	22	9	3	5
16	29	19	14	M5	22	9	3	5
20	34	30	22	M8	30	12.5	3	8
25	40	30	22	M8	30	12.5	3	8
32	52	38	27	M14 x 1.5	37	16	4	8
40	60	38	27	M14 x 1.5	37	16	4	8
50	68	50	36	M18 x 1.5	47	20	4	9
63	84	50	36	M18 x 1.5	47	20	4	9
80	114	50	46	M22 x 1.5	58	28	4	12
100	140	65	46	M22 x 1.5	62	28	4	16

9 Adjustable Stroke Cylinder/Adjustable Retraction Type

-XC9

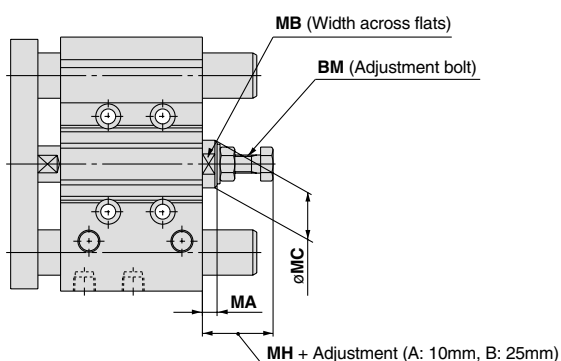
MGP ^M_L Bore size — Stroke A — XC9

Stroke adjustment ●

A	10mm adjustment
B	25mm adjustment

Adjustable stroke cylinder
Adjustable retraction type ●

With an adjustment bolt, the retracted stroke of the cylinder can be adjusted 0 to 10mm or 0 to 25mm from the full stroke. (After the stroke adjustment, only the rod side is equipped with a rubber bumper.)



Specifications

Applicable series		MGPM, MGPL
Bearing type		Slide bearing, Ball bushing
Cylinder bore size (mm)		12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Piston speed	ø12 to ø32	50 to 300mm/s
	ø40 to ø100	50 to 400mm/s
Cushion	Rod side	Rubber bumper
	Head side	None
Stroke adjustment	A	10mm
	B	25mm

* Refer to page 3.22-60 for the allowable kinetic energy on the retracted side.

MGPM, MGPL Common dimensions (mm)

Bore size (mm)	BM	MA	MB	MC	MH
12	M5	5	8	12.5	19
16	M6	5	10	11.5	19
20	M8	6.5	13	16	27
25	M8	6.5	13	16	26.5
32	M8	6.5	19	21	26.5
40	M12 x 1.5	9	27	30	33
50	M12 x 1.5	9	30	34	32.5
63	M16 x 1.5	10	36	40	37
80	M20 x 1.5	15	41	46	53.5
100	M24 x 1.5	18	46	52	57.5

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

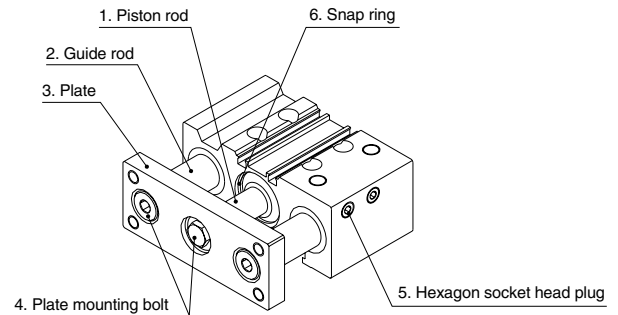
10 Stainless Steel Piston Rod, Plate, etc.

-XC6

MGP ^M _L	Bore size	Stroke	-XC6	A
	Stainless steel material			
	Stainless steel specification			
	A	Stainless steel parts		
	B	Stainless steel rod parts		

The materials used for some of the standard product parts are modified to stainless steel.

	Stainless steel modified parts
XC6A	1, 2, 3, 4, 5, 6
XC6B	1, 2, 5, 6

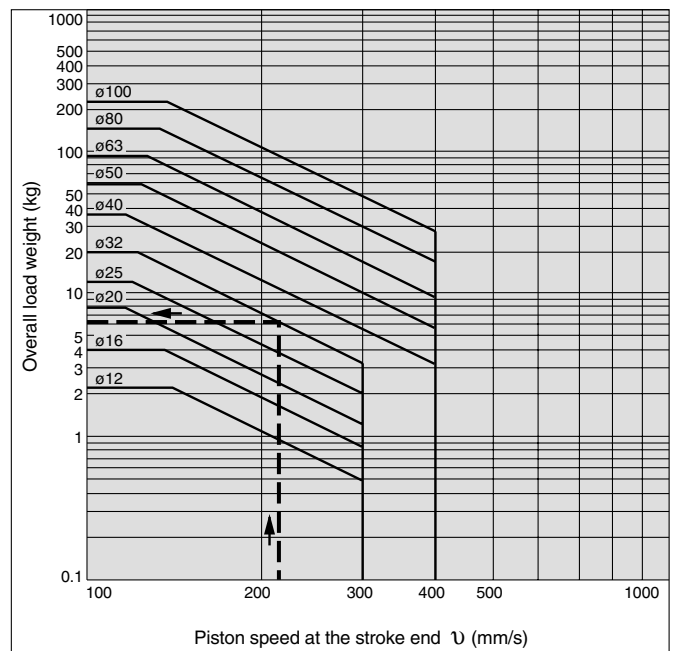


⚠ Allowable Kinetic Energy for Order Made Specifications (without Bumper)

Some of the order made specification cylinders have a construction without internal bumpers. For the following order made products, refer to the graph for their overall load weight (load weight + weight of the moving parts of the cylinder) and piston speed at the stroke end.

Applicable order made products:

- Heat resistant cylinder (-XB6)
- Adjustable stroke cylinder/Adjustable retraction type (-XC9)
- Fluoro rubber seals (-XC22)



Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

11 Compact Guide Cylinder with Shock Absorber

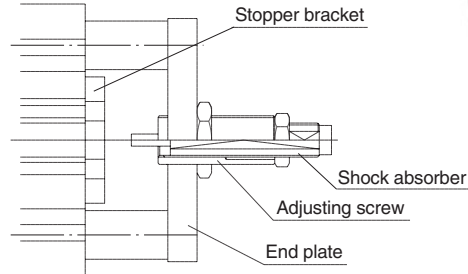
-XC69

Absorbs the impact at the extension stroke end.

Extension adjusting mechanism using an adjusting screw.

Extension stroke adjustment

- $\phi 12$ to $\phi 25$: 15mm
- $\phi 32$ to $\phi 63$: 25mm
- $\phi 80$, $\phi 100$: 30mm



How to Order

MGP M 32-50-Z73 **-XC69**

Compact guide cylinder • Bearing type • Bore size • Cylinder stroke (mm) • Number of auto switches • Auto switch type • With shock absorber

Symbol	Description
M	Slide bearing
L	Ball bushing

Symbol	Size (mm)
12	12mm
16	16mm
20	20mm
25	25mm
32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm

Symbol	Quantity
Nil	2 pcs.
S	1 pc.

Symbol	Description
Nil	Without auto switch (built-in magnet cylinder)

* Refer to the table below for auto switch model numbers.

Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch model		Lead wire length (m)			Applicable load	
					DC		AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)		
								Perpendicular	In-line					
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	Relay, PLC
			No	2 wire	24V	12V	100V	—	Z73	●	●	●	—	
						5V, 12V	100V or less	—	Z80	●	●	—	IC circuit	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC
				3 wire (PNP)		12V		Y7PV	Y7P	●	●	○	IC circuit	
				2 wire		12V		Y69B	Y59B	●	●	○	—	
	3 wire (NPN)			5V		Y7NWV		Y7NWW	●	●	○	IC circuit		
	3 wire (PNP)			12V		Y7PWV		Y7PW	●	●	○			
	2 wire			12V		Y7BWV		Y7BW	●	●	○			
						—		Y7BAL	—	●	○	—		
								P5DW	—	●	●			

Note 1) Lead wire symbols 0.5m Nil (Example) Y69B
3m L Y69BL
5m Z Y69BZ

Note 2) Solid state auto switches marked with a "O" are produced upon receipt of order.

Note 3) Type P5DW is applicable only to bore sizes $\phi 40$ to $\phi 100$.

For a 25mm stroke, only one switch is mounted.

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY
MY

Series MGP Order Made Specifications

Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

Specifications

Action	Double acting
Fluid	Air
Maximum operating pressure	1.0MPa
Proof Pressure	1.5MPa
Minimum operating pressure	0.12MPa
Ambient and fluid temperature	-10 to 60°C
Piston speed	Refer to the graphs on the right.
Cushion	Extended end: Shock absorber Retracted end: Rubber cushion
Bearing type	Slide bearing, Ball bushing

Note 1) Excluding the cushion stroke generated by the shock absorber.

Note 2) Operate at a piston speed that does not exceed the cylinder's allowable kinetic energy.

Standard Strokes

Model	Standard stroke (mm)
MGP M 12	10, 20, 30, 40, 50, 75, 100, 125, 150, 175
L 16	200, 250
MGP M 20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200
L 25	250, 300, 350, 400
32	
40	
MGP M 50	25, 50, 75, 100, 125, 150, 175, 200, 250
L 63	300, 350, 400
80	
100	

Note 1) Intermediate strokes (in 5mm increments) are produced by installing spacers of 5, 10, 15 and 20mm widths.

The overall length (A + stroke x 2) and the guide rod length (E + stroke) shown in the dimensions section do not include the spacer widths. Contact SMC when a special intermediate stroke body is needed.

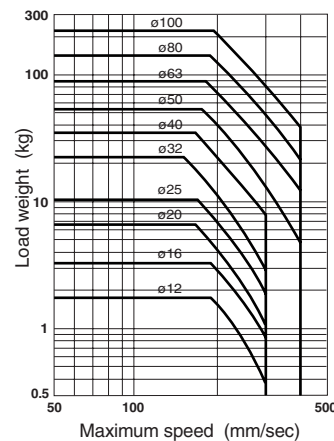
Extension Adjustment Mechanism Specifications

Bore size (mm)	12, 16	20, 25	32, 40	50, 63	80, 100
Shock absorber model	RB0806	RB1007	RB1411	RB2015	RB2725
Max. absorbed energy (J)	2.94	5.88	19.6	58.8	147
Stroke adjustment range (mm)	0 to -15		0 to -25		0 to -30

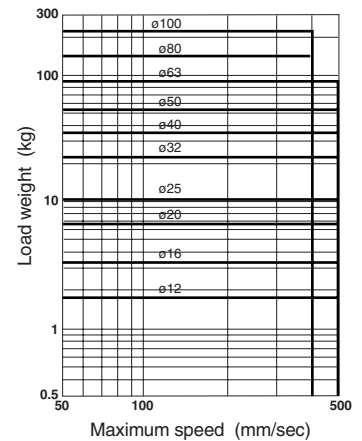
Allowable Kinetic Energy

Operate with a load weight and maximum speed within the ranges shown in the graph below.

Retraction stroke end (rubber bumper)



Extension stroke end (shock absorber)



⚠ Specific Product Precautions

Be sure to read before handling. Consult SMC when outside the specifications.

Mounting

⚠ Warning

Do not put hands or fingers, etc., near the cylinder during operation.

If fingers, etc., are caught in the space between the shock absorber and body, human injury and damage to nearby equipment may occur. Implement protective measures such as mounting of protective covers as needed.

⚠ Caution

As a rule, do not bottom mount the cylinder.

Mounting space is limited at the bottom of the cylinder due to the guide rod and end plate. Use the top or side mount method to mount the cylinder.

Adjustment

⚠ Caution

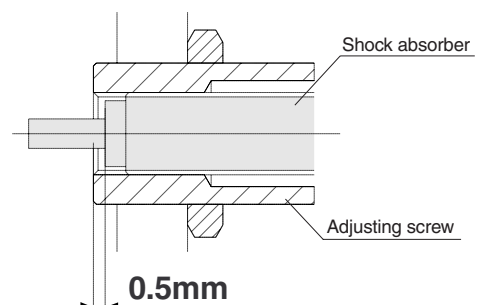
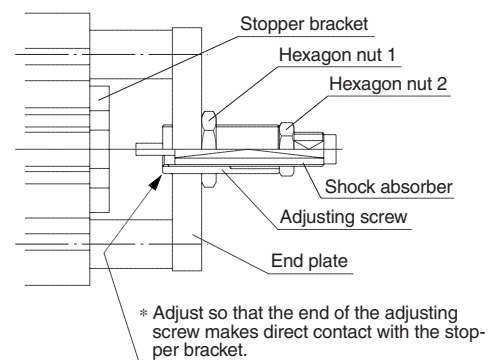
1. Adjusting screw adjustment (stroke adjustment)

To make a stroke adjustment, loosen only hexagon nut 1 and rotate the adjusting screw. After adjusting, lock the adjustment with hexagon nut 1. To put the end of the adjusting screw in direct contact with the stopper bracket, fix the adjusting screw at a position where its end protrudes from the end plate. (Refer to the figure on the top right.)

2. Shock absorber replacement

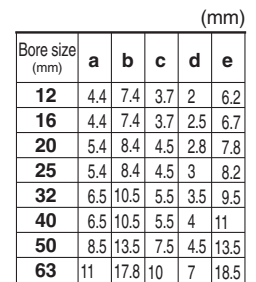
Loosen hexagon nut 2, then rotate the shock absorber counter clockwise and remove it. When mounting a new shock absorber, the end of the adjusting screw must protrude approximately 0.5mm from the shock absorber. (Refer to the figure on the right.)

When the shock absorber position is adjusted, be sure to lock it with hexagon nut 2.



Contact SMC for detailed specifications and lead times, and for applications of cylinders with air cushion, heavy duty guide rod type, and lock type.

Dimensions/Ø 12 to Ø 63



2-P
(Plug)

2-P
(Plug)

(mm)

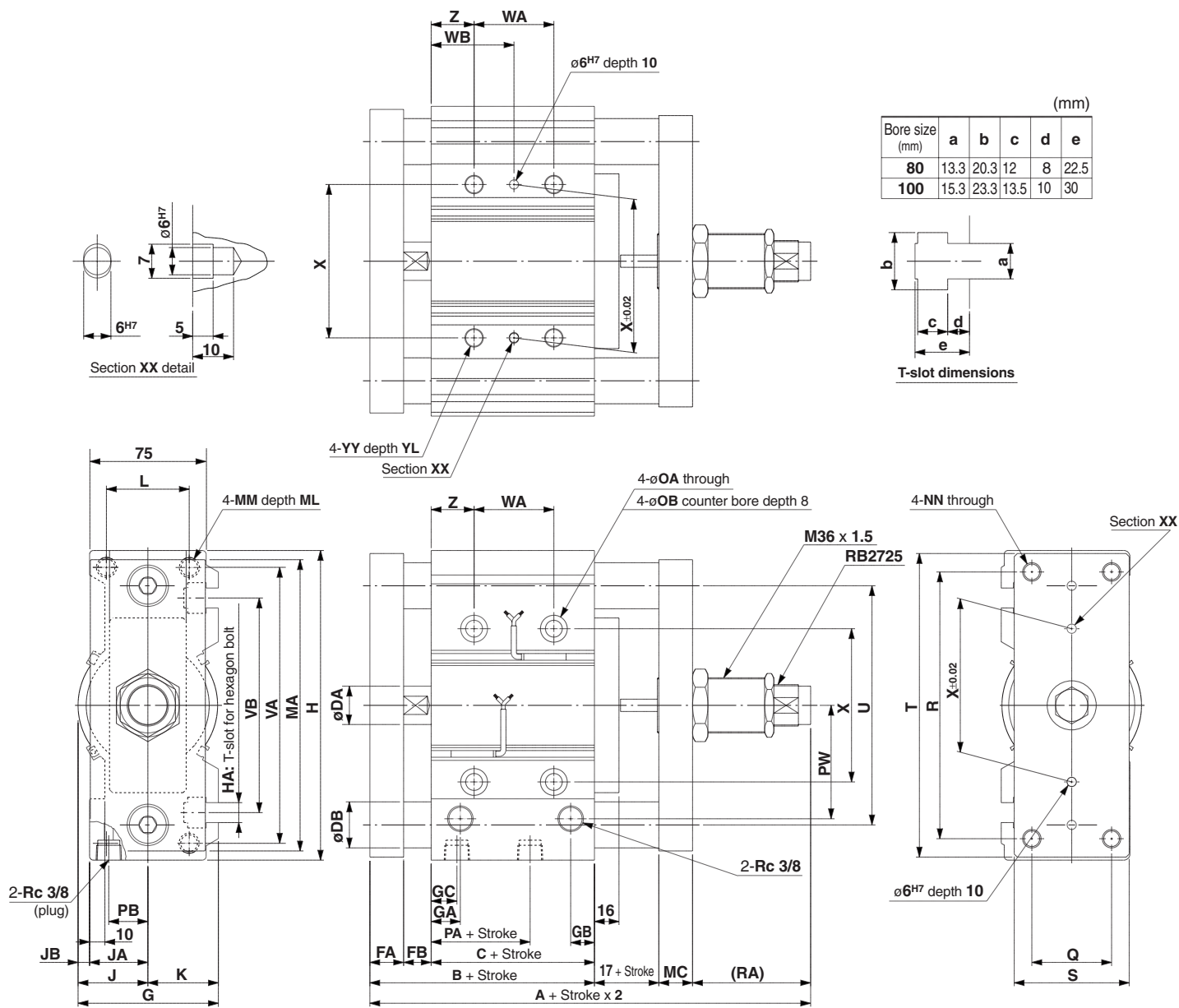
(mm)

(mm)

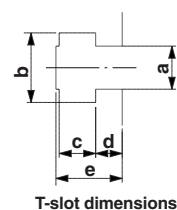
(mm)

Series MGP Order Made Specifications

Dimensions/Ø80, Ø100



Bore size (mm)	a	b	c	d	e
80	13.3	20.3	12	8	22.5
100	15.3	23.3	13.5	10	30



(mm)																										
Bore size (mm)	Standard stroke (mm)	A	B	C	DA	DB		FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L	MA	MC	MM	ML	NN	OA
						Slide bearing	Ball bushing																			
80	25, 50, 75, 100 125, 150, 175, 200	212.5	96.5	56.5	25	30	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54	190	22	M12	25	M12	10.6
100	250, 300, 350, 400	232	116	66	30	36	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62	228	25	M14	31	M14	12.5

Bore size (mm)	OB	PA	PB	PW	Q	R	RA	S	T	U	VA	VB	WA					WB					X	YY	YL	Z
													25 stroke	Over 25 stroke to 100 stroke	Over 100 stroke to 200 stroke	Over 200 stroke to 300 stroke	Over 300 stroke	25 stroke	Over 25 stroke to 100 stroke	Over 100 stroke to 200 stroke	Over 200 stroke to 300 stroke	Over 300 stroke				
80	17.5	14.5	25.5	74	52	174	77	75	198	156	180	140	28	52	128	200	300	42	54	92	128	178	100	M12	24	28
100	20	17.5	32.5	89	64	210	74	90	236	188	210	166	48	72	148	220	320	35	47	85	121	171	124	M14	28	11



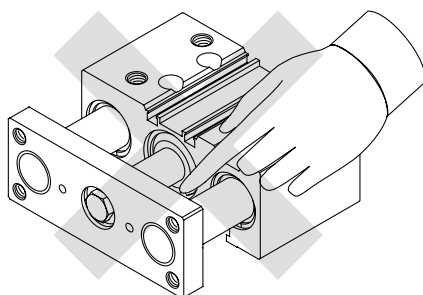
Series MGP Specific Product Precautions

Mounting

⚠ Warning

1. Do not put hands or fingers, etc. between the plate and body.

Be careful that hands or fingers, etc., do not get caught in the space between the cylinder body and the plate when air pressure is applied.



⚠ Caution

1. Do not scratch or nick the sliding parts of the piston rod and guide rods.

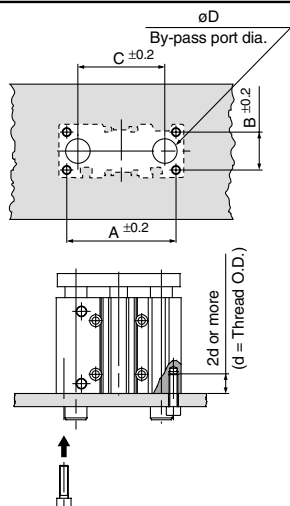
Damage to seals can cause air leaks or malfunction, etc.

2. 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 by-pass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head screws which are used for mounting.

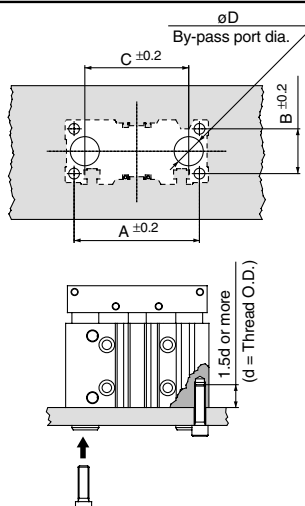
Moreover, in applications where impact occurs from a stopper, etc., the mounting bolts should be inserted to a depth of 2d or more (1.5d or more for MGPS).

Series MGP



Bore size (mm)	A (mm)	B (mm)	C (mm)	D (mm)		Hexagon socket mounting bolt
				MGPM	MGPL	
12	50	18	41	10	8	M4
16	56	22	46	12	10	M5
20	72	24	54	14	12	M5
25	82	30	64	18	15	M6
32	98	34	78	22	18	M8
40	106	40	86	22	18	M8
50	130	46	110	27	22	M10
63	142	58	124	27	22	M10
80	180	54	156	33	28	M12
100	210	62	188	39	33	M14

Series MGPS



Bore size (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Hexagon socket mounting bolt
50	140	50	116	32	M12
80	214	66	170	47	M16

Cushion

When equipped with air cushion

⚠ Caution

1. Keep the adjustment range of the cushion valve within 3 rotations of the completely closed position.

When adjusting the cushion valve, use the following screw driver or hexagon wrenches. Keep the adjustment range of the cushion valve within 3 rotations of the completely closed position. Air leakage will occur if operated after opening by 4 rotations or more. Furthermore, a stopper mechanism is provided for the cushion valve, and it should not be forced open beyond that position.

Bore size (mm)	Applicable tool
16	Flat head watchmakers screw driver 3mm
20, 25, 32, 40	JIS B4648 hexagon wrench key 1.5
50, 63	JIS B4648 hexagon wrench key 2.5
80, 100	JIS B4648 hexagon wrench key 4

2. Be sure to activate the air cushion at the cylinder stroke end.

Be sure to activate the air cushion at the end of the cylinder stroke. When it is intended to operate with the cushion valve fully opened, select a cylinder equipped with rubber bumper. If operated without confirming this point, the piston rod assembly, etc., may be damaged.

3. Be sure to operate a cylinder equipped with air cushion to the end of the stroke.

If it is not operated to the end of the stroke, the effect of the air cushion will not be fully exhibited. Consequently, in cases where the stroke is regulated by an external stopper, etc., caution must be exercised, as the air cushion may become completely ineffective.

Piping

⚠ Caution

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

1. For M5

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

2. For taper thread

Use the correct tightening torques listed below. Before tightening the plug, wrap pipe tape around it.

Connection thread size	Correct tightening torque N·m
R 1/8	7 to 9
R 1/4	12 to 14
R 3/8	22 to 24

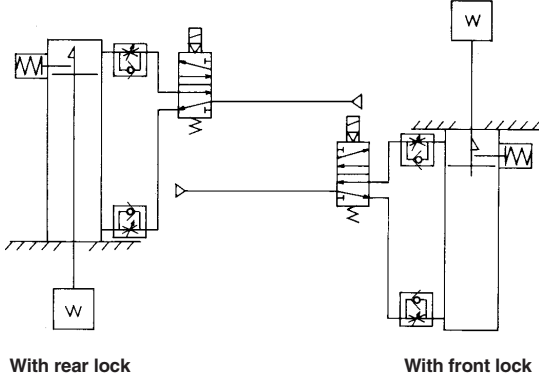


Series MGP Specific Product Precautions

Use the recommended pneumatic circuits.

⚠ Caution

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



Operation

⚠ Caution

1. Do not use 3 position solenoid valves.

Avoid use in combination with 3 position solenoid valves (especially closed centre metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked.

Furthermore, even after being locked, the lock may be released after some time, due to air leaking from the solenoid valve and entering the cylinder.

2. Back pressure is required when releasing the lock.

Before starting operation, be sure to control the system so that air is supplied to the side without the lock mechanism as shown in the figure above. There is a possibility that the lock may not be released. (Refer to the section on releasing the lock.)

3. Release the lock when mounting or adjusting the cylinder.

If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.

4. Operate with a load ratio of 50% or less.

If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit. Furthermore, do not exceed the operating ranges indicated in the series MGP catalog (Best Pneumatics No. 2) when making selections.

5. Do not operate multiple synchronized cylinders.

Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.

6. Use a speed controller with the meter-out function.

It may not be possible to release the lock with meter-in control.

7. Be sure to operate completely to the cylinder stroke end on the side with the lock.

If the cylinder piston does not reach the end of the stroke, locking and unlocking may not be possible.

8. Do not use an air cylinder as an air-hydro cylinder.

This will cause leakage of hydraulic fluid.

9. Adjust an auto switch's position so that it operates for movement to both the stroke and backlash (2mm) positions.

A 2 colour indication switch adjusted for green indication at the stroke end may change to red indication after the backlash return, but this is not abnormal.

Operating Pressure

⚠ Caution

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

Exhaust Speed

⚠ Caution

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

Releasing the Lock

⚠ Warning

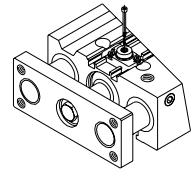
1. Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. (Refer to the recommended pneumatic circuits.) If the lock is released when the port on the other side is in an exhaust state, and with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

Manual Release

⚠ Caution

1. Non-locking type manual release

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



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

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

2. Locking type manual release

While pushing the M/O knob turn it 90° counter clockwise. The lock is released (and remains in a released state) by aligning the ▲ mark on the cap with the ▼ OFF mark on the M/O knob. To operate the lock, turn the M/O knob 90° clockwise while pushing it all the way down, and align the ▲ mark on the cap with the ▼ ON mark on the M/O knob. When doing this, be sure that it locks into place with a click. Failure to click into place properly, can cause the lock to disengage.

