

# 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

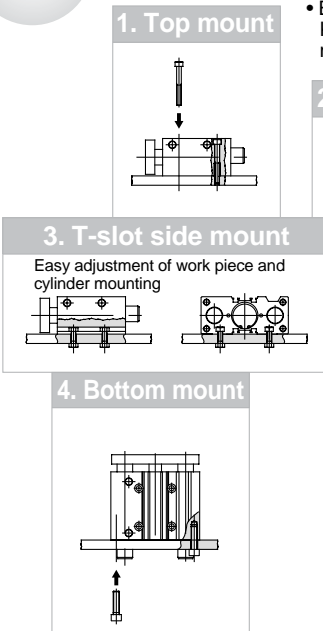
# Compact Guide Cylinder

## Series MGP

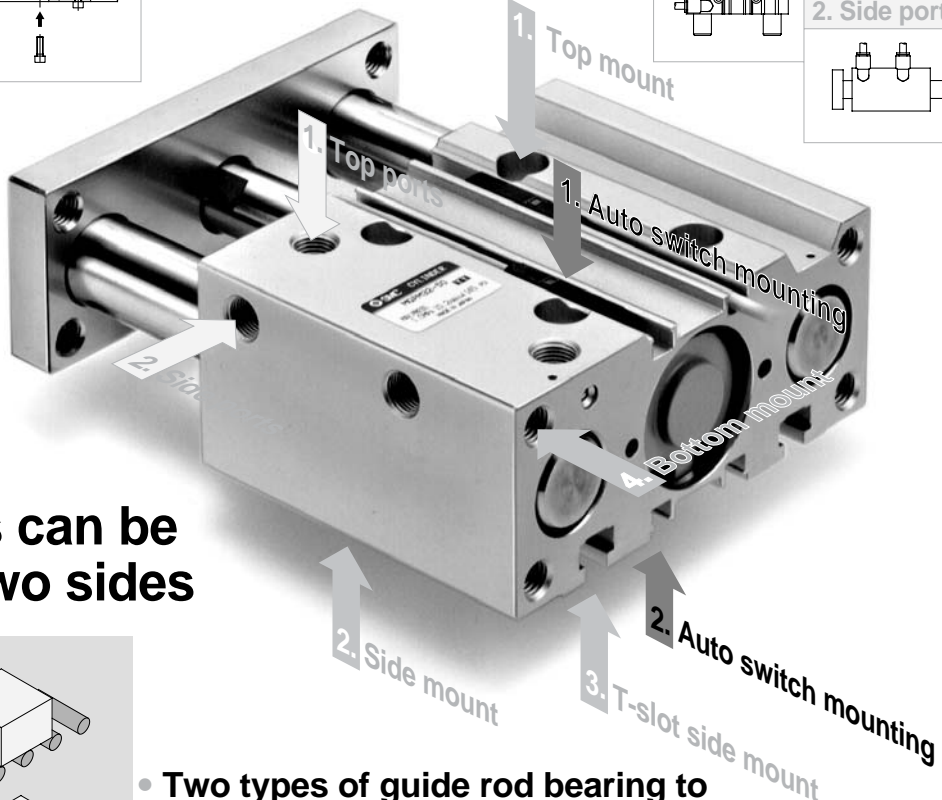
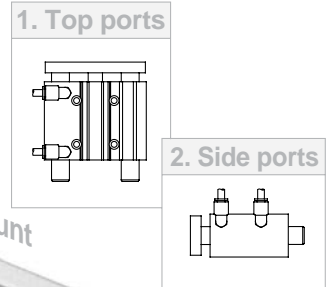
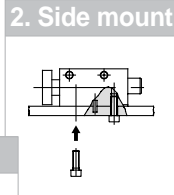
$\varnothing$ 12,  $\varnothing$ 16,  $\varnothing$ 20,  $\varnothing$ 25,  $\varnothing$ 32,  $\varnothing$ 40,  $\varnothing$ 50,  $\varnothing$ 63,  $\varnothing$ 80,  $\varnothing$ 100

### Four mounting types provided

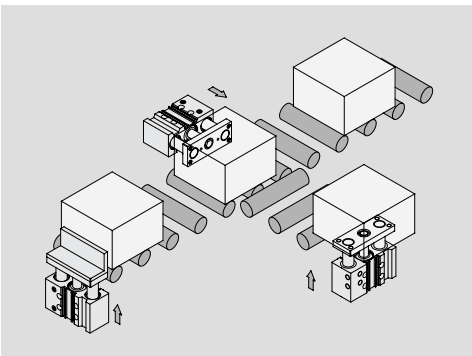
### Piping is possible from two directions



- Easy positioning  
Knock pin holes provided on each mounting surface



### 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.

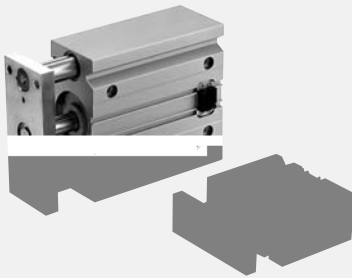
- Long strokes up to 400mm standardised.

### Stroke Variations

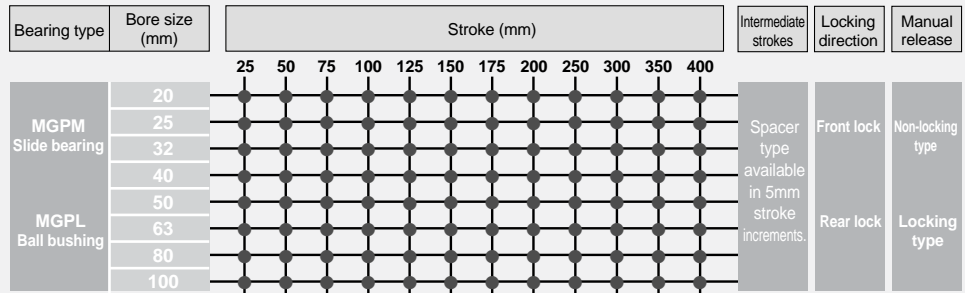
Bearing type	Bore size (mm)	Stroke (mm)	Intermediate strokes	Order made
		10 20 25 30 40 50 75 100 125 150 175 200 250 300 350 400		
MGP Slide bearing	12			1. Intermediate stroke (using special body) 2. With air cushion/Intermediate stroke (spacer type) 3. Heat resistant cylinder 4. Low speed cylinder 5. Fluoro rubber seals 6. With heavy duty scraper <i>New</i> 7. With coil scraper <i>New</i> 8. Variable stroke cylinder Adjustable extension type <i>New</i> 9. Variable stroke cylinder Adjustable retraction type <i>New</i> 10. Stainless steel piston rod & plate, etc. <i>New</i>
	16			
	20			
	25			
	32			
MGPL Ball bushing	40		Special body type (-XB10) available in stroke increments of 1mm.	
	50			
	63			
	80			
	100			

## • 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



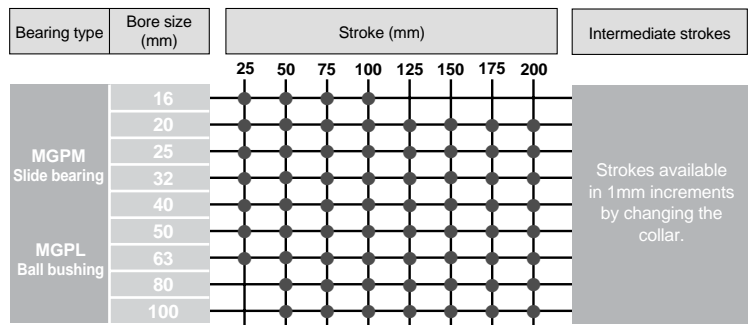
## • Air cushion type standardized

- 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



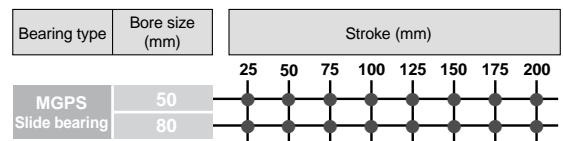
## • Heavy duty guide rod type with improved load resistance

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

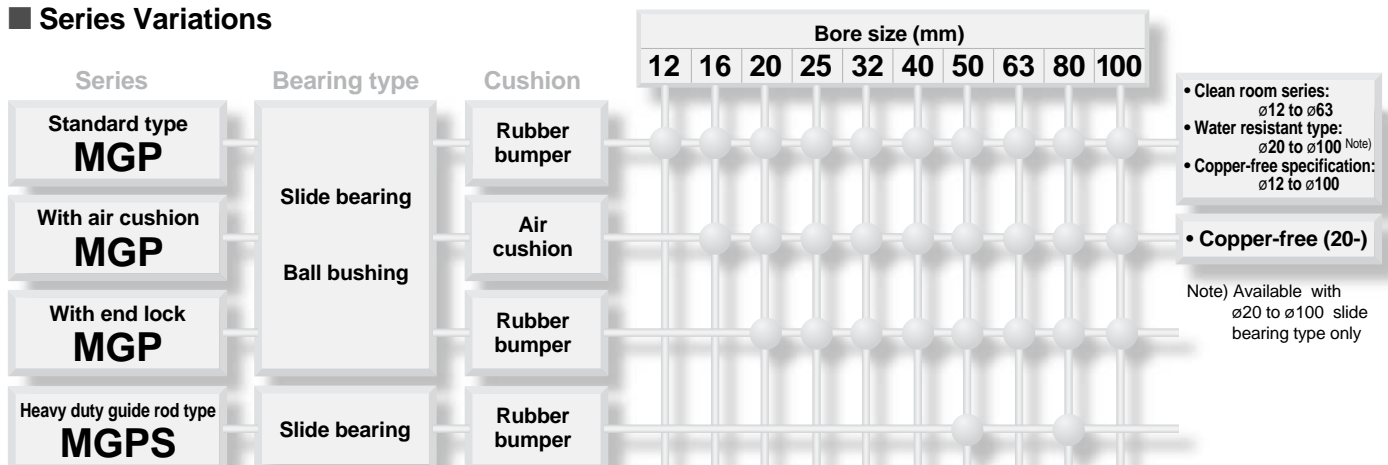


Bore size (mm)	Guide rod diameter (mm)	
	MGPS	MGPM
50	30	25
80	45	30

### ■ Stroke Variations



### ■ Series Variations



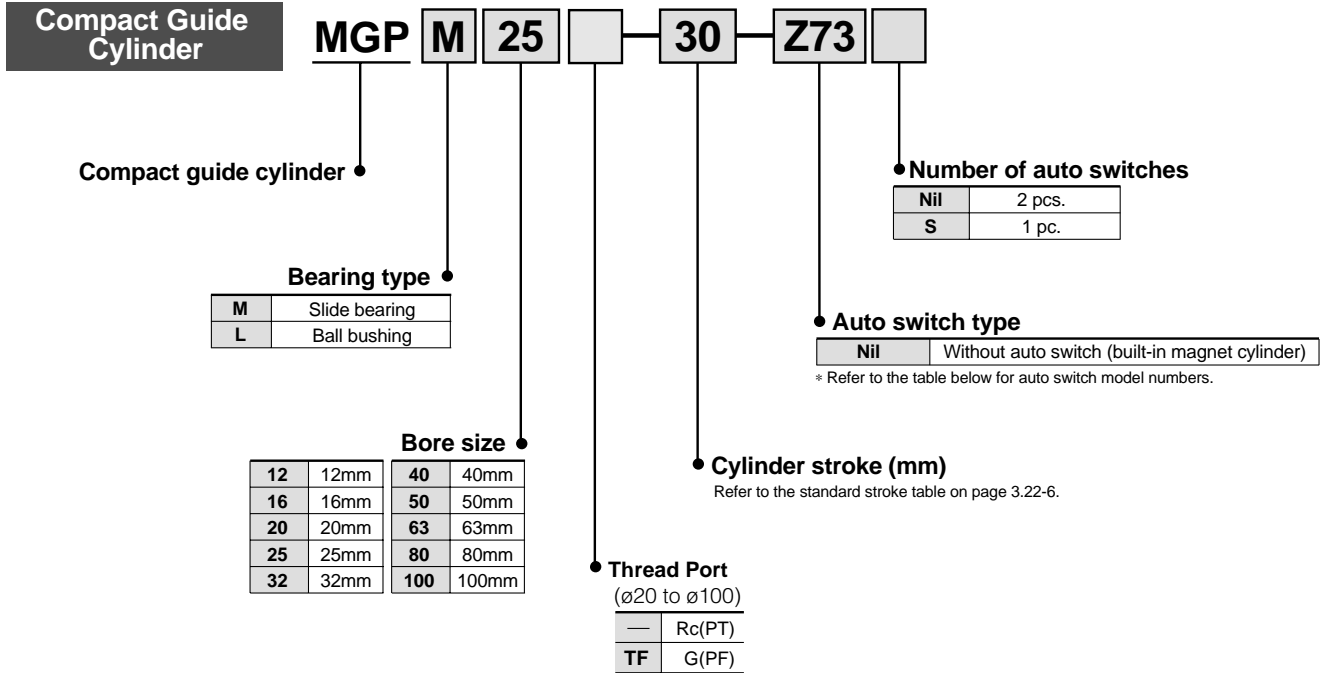
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# Compact Guide Cylinder Series MGP

Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63, Ø80, Ø100

## How to Order



## Applicable auto switches

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

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.

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# 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

<b>Modification method</b>	Spacer installation type Spacers are installed in a standard stroke cylinder. • ø12 to ø32 : Available in 1mm stroke increments • ø40 to ø100 : 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.		
<b>Part number</b>	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.		
<b>Applicable stroke (mm)</b>	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
<b>Example</b>	Part no.: <b>MGPM20—39</b> A spacer 1mm in width is installed in a <b>MGPM20—40</b> . C dimension is 77mm.	Part no.: <b>MGPM20—39—XB10</b> 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 0.45 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

## Theoretical Output

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	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 (mm<sup>2</sup>)

## **Weights**

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### **Slide bearing: MGPM12 to 100**

Bore size (mm)	80	Standard stroke (mm)
12	MGPM12	10
16	MGPM16	
20	MGPM20	
25	MGPM25	
32	MGPM32	
40	MGPM40	
50	MGPM50	
63	MGPM63	
80	MGPM80	
100	MGPM100	

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### **Allowable Rotational Torque of Plate**

### **Non-rotating Accuracy of Plate**

# Series MGP Model Selection

## Selecting Conditions

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

### 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

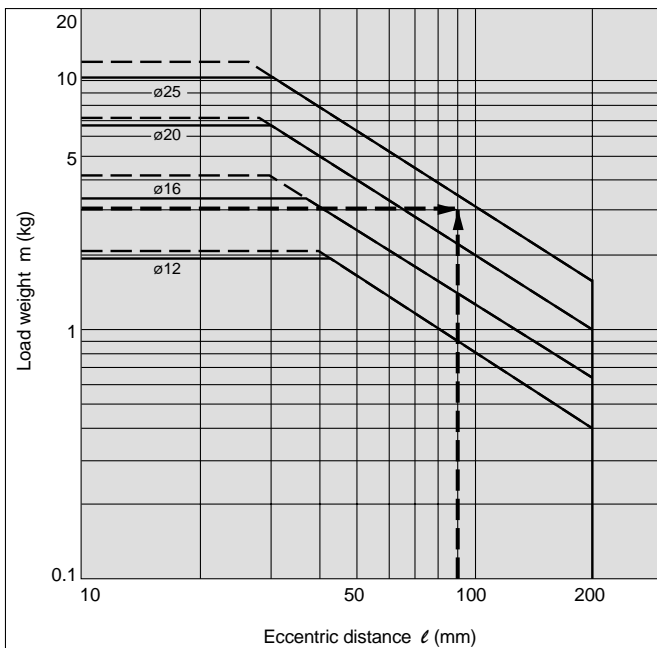
Find the point of intersection for the load weight of 3kg and the eccentric distance of 90mm on graph **5**, based on vertical mounting, ball bushing, 30mm stroke, and the speed of 200mm/s.  
 →MGPL25-30 is selected.

### Selection Example 2 (Horizontal Mounting)

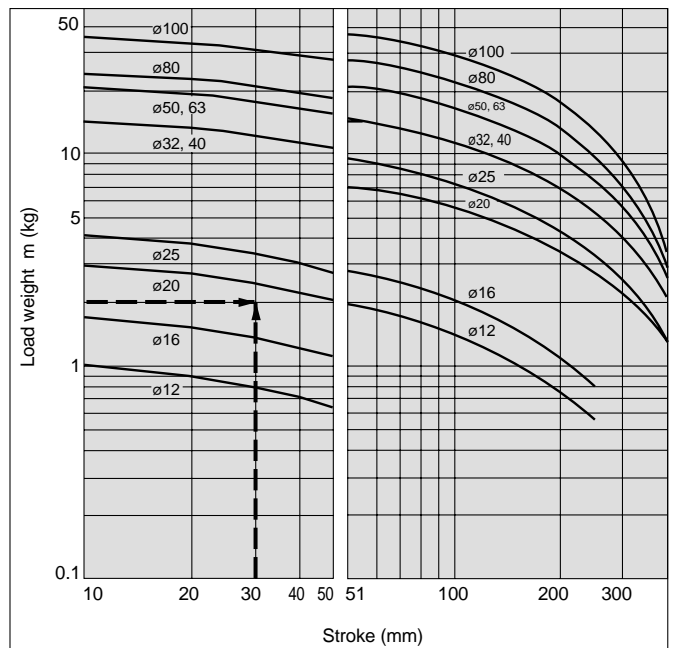
Selecting conditions  
 Mounting: Horizontal  
 Bearing type: Slide bearing  
 Distance between plate and load center of gravity: 50mm  
 Maximum speed: 200mm/s  
 Load weight: 2kg  
 Stroke: 30mm

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



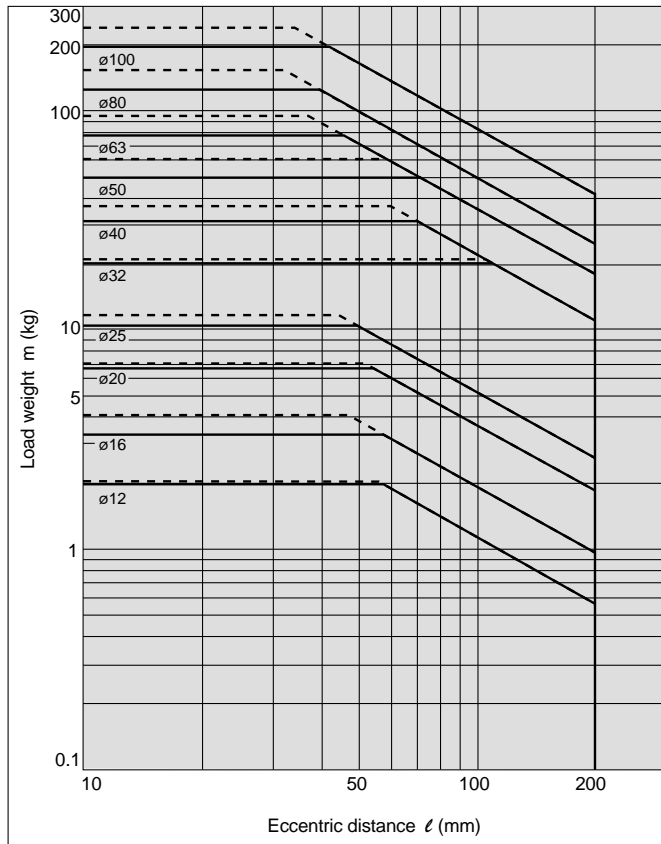


## Vertical Mounting **Slide Bearing**

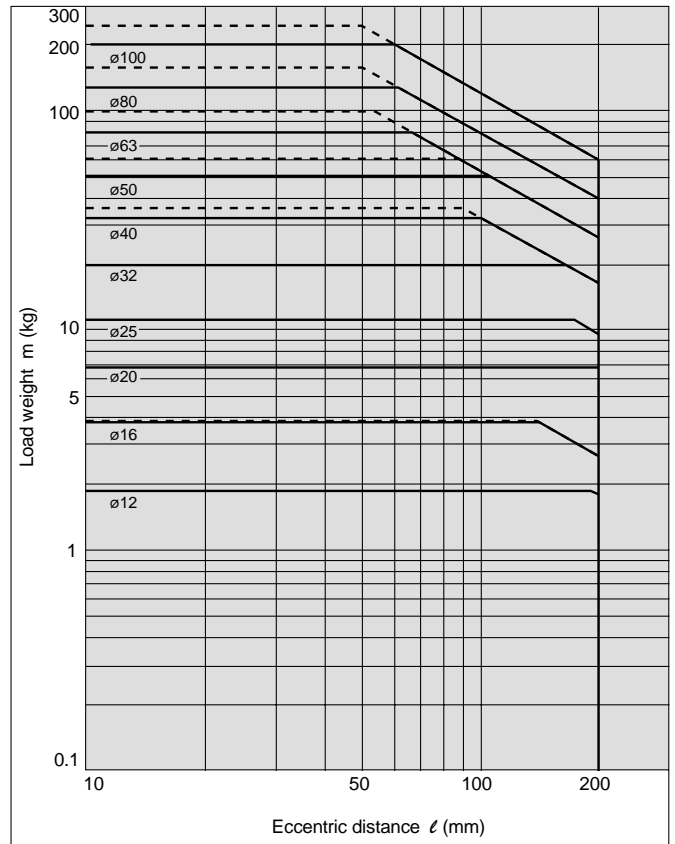
— Operating pressure: 0.4MPa  
 - - - - - Operating pressure: 0.5MPa or more

### MGPM12 to 100

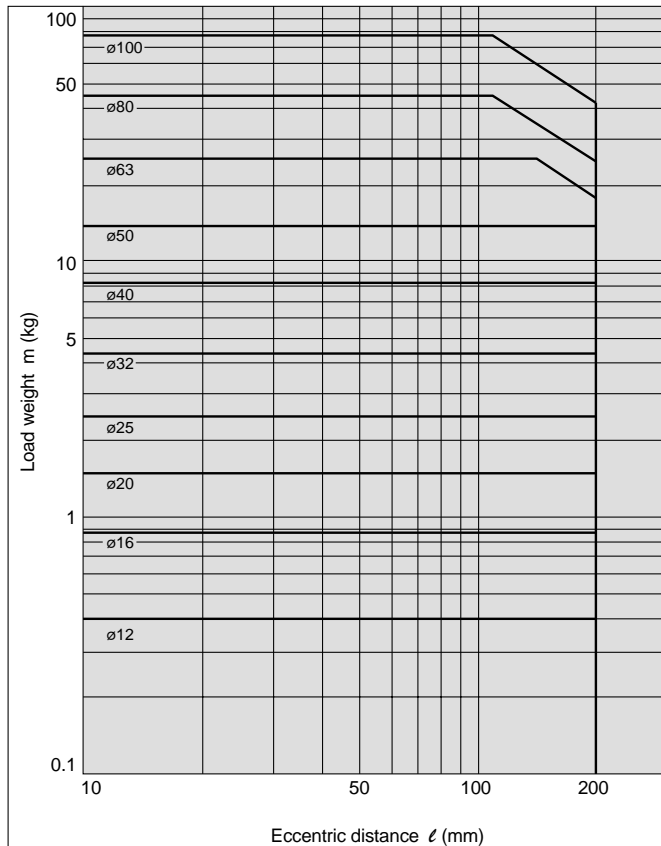
**1** 50mm stroke or less V = 200mm/s



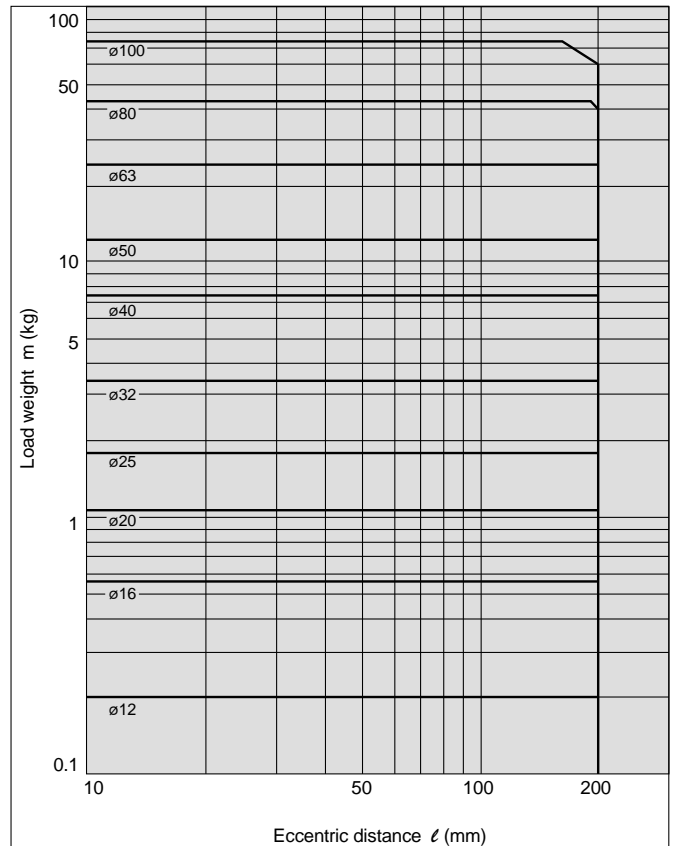
**2** Over 50mm stroke V = 200mm/s



**3** 50mm stroke or less V = 400mm/s



**4** Over 50mm stroke V = 400mm/s



CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

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MXF

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MXP

MG

**MGP**

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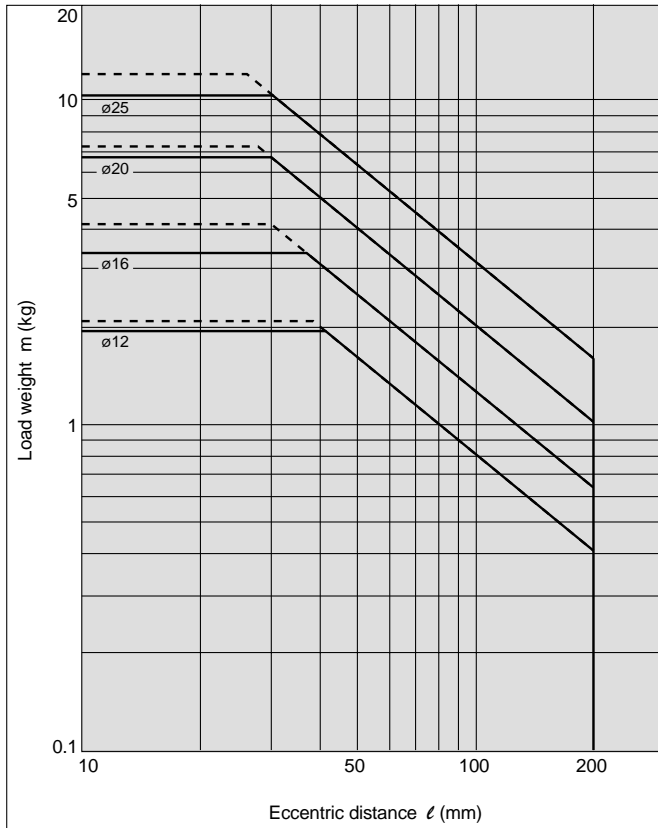
# Series MGP

## Vertical Mounting **Ball Bushing**

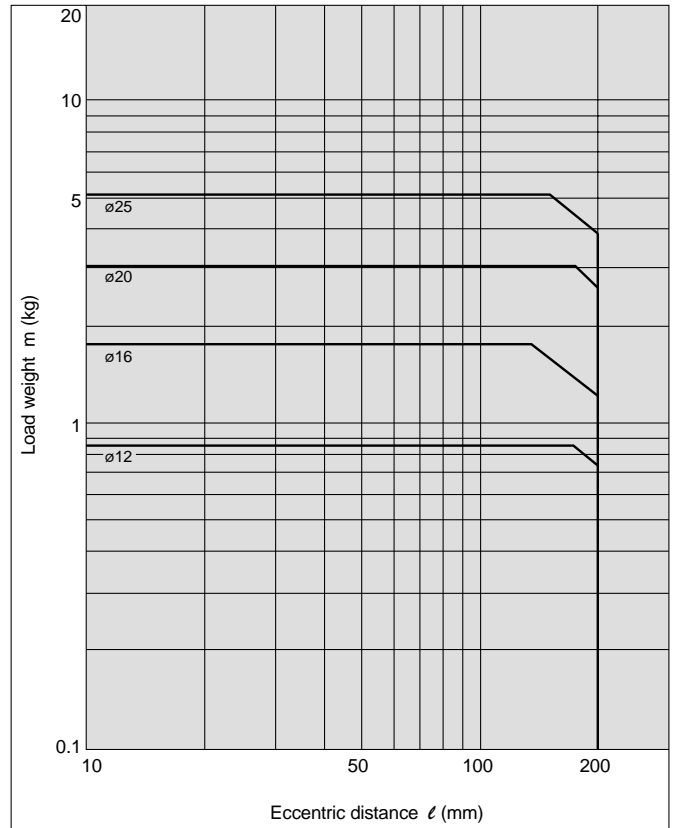
— Operating pressure: 0.4MPa  
 - - - - - Operating pressure: 0.5MPa or more

### MGPL12 to 25

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

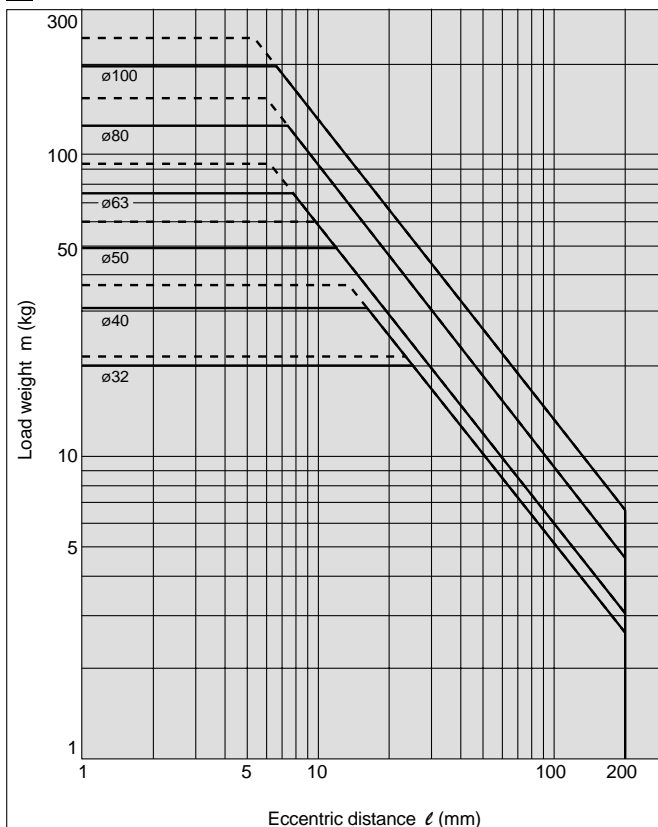


**6** Over 30mm stroke V = 200mm/s

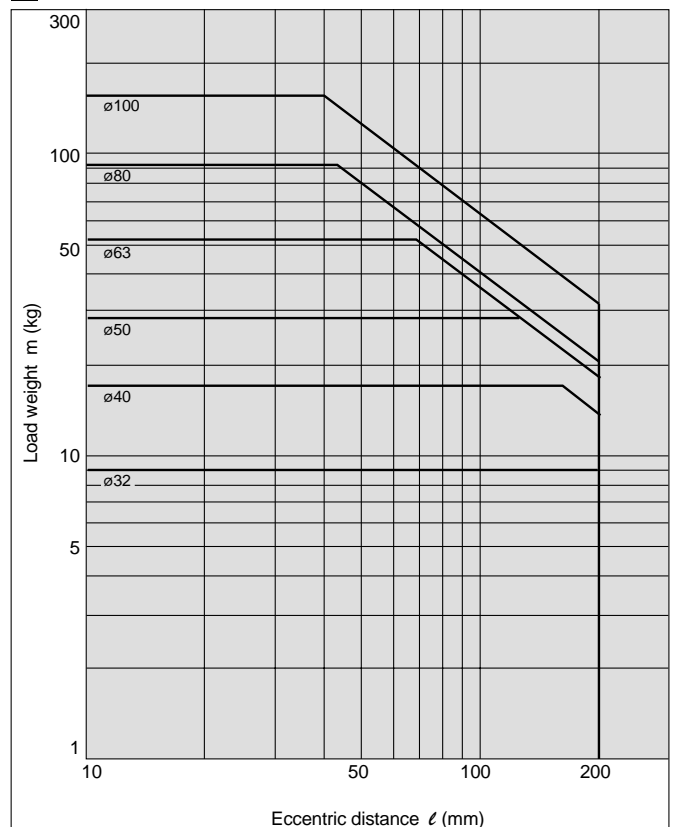


### MGPL32 to 100

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



**8** Over 50mm stroke V = 200mm/s

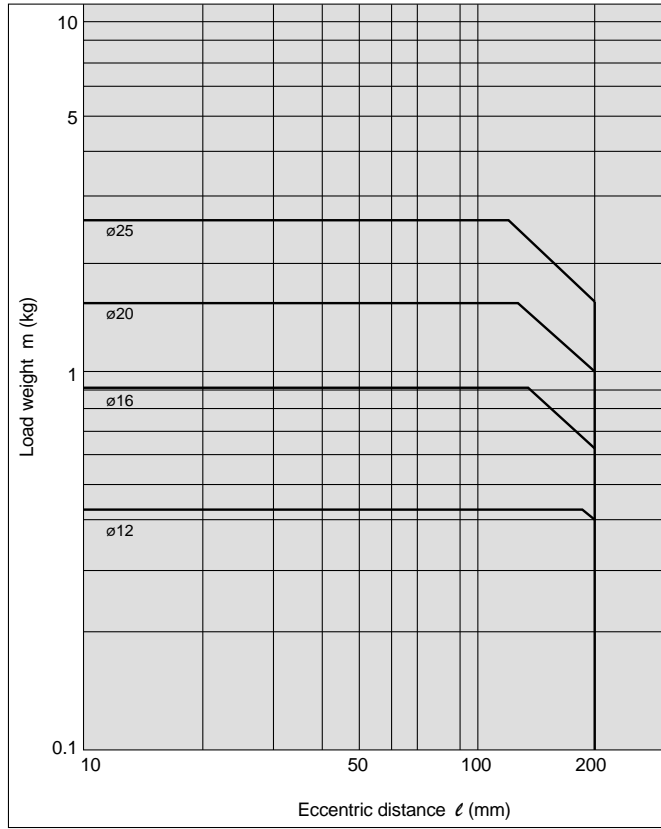


Vertical Mounting **Ball Bushing**

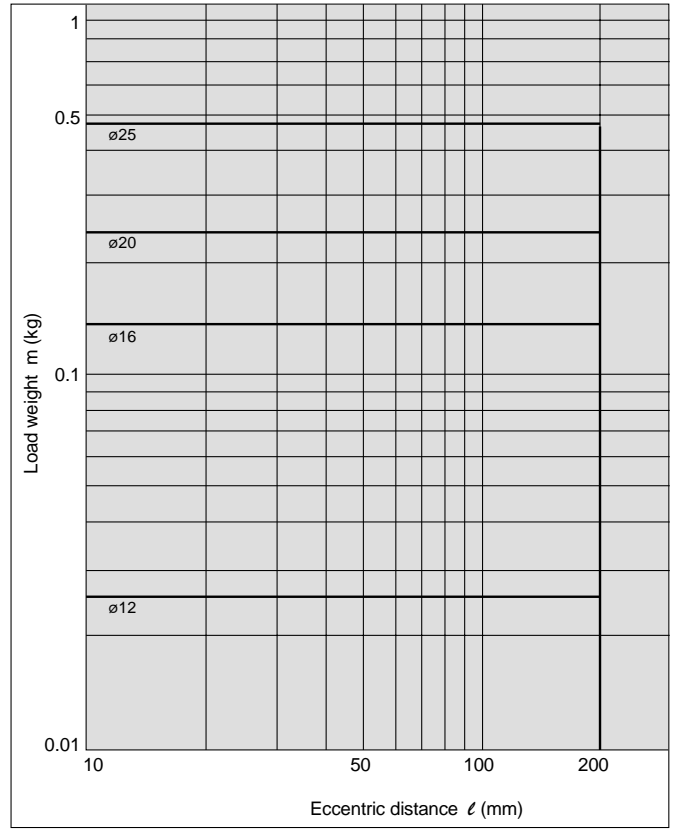
Operating pressure: 0.4MPa

**MGPL12 to 25**

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

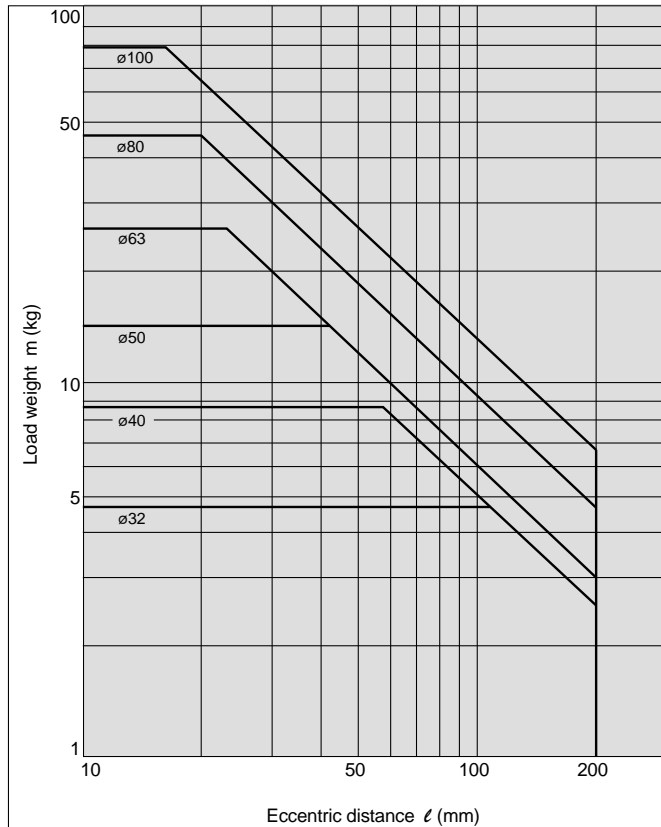


**10** Over 30mm stroke  $V = 400\text{mm/s}$

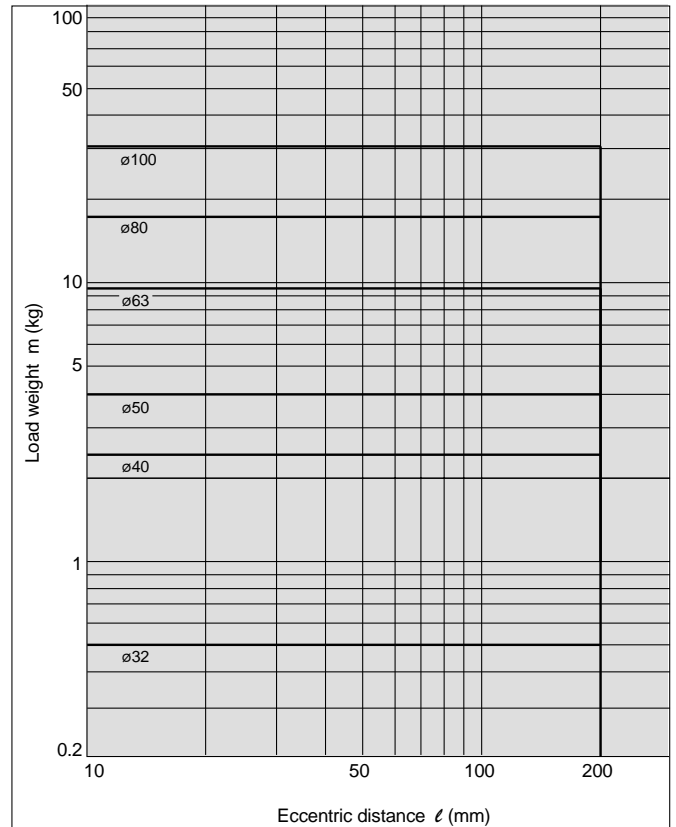


**MGPL32 to 100**

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



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



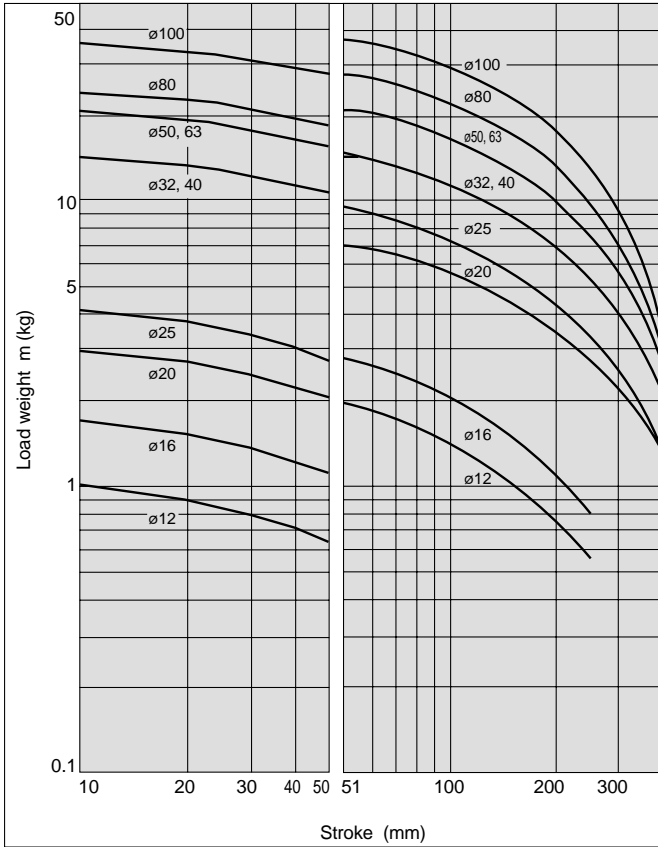
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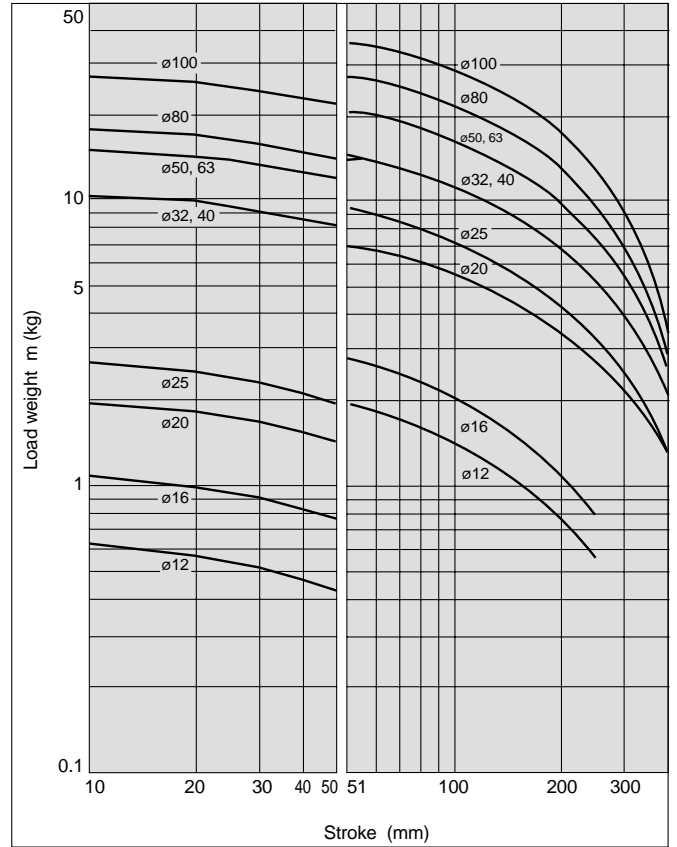
## Horizontal Mounting **Slide Bearing**

### MGPM12 to 100

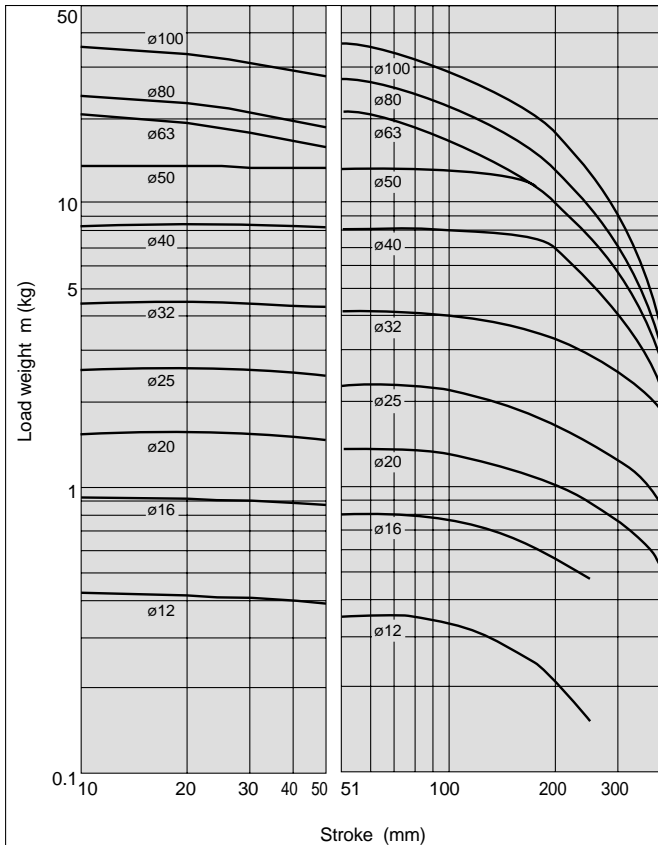
**13**  $\ell = 50\text{mm}$   $V = 200\text{mm/s}$



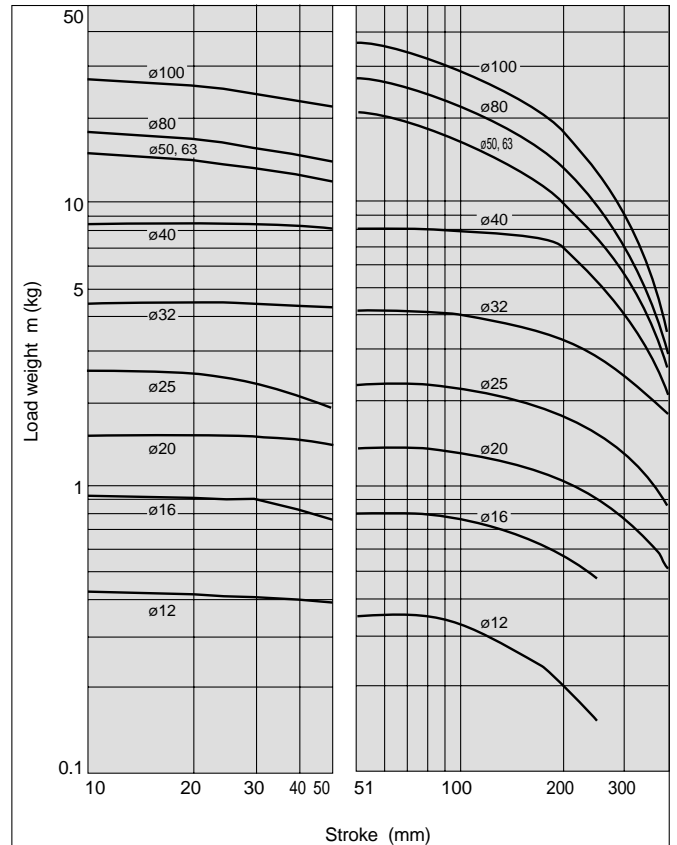
**14**  $\ell = 100\text{mm}$   $V = 200\text{mm/s}$

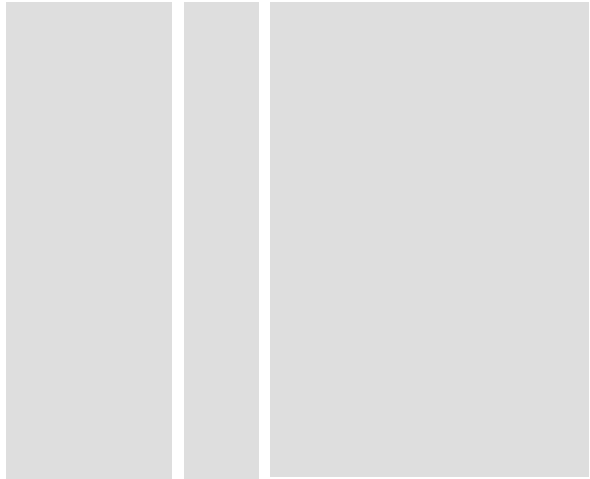
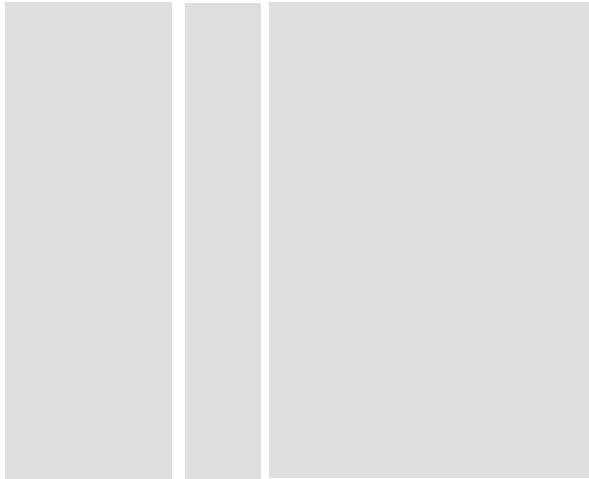


**15**  $\ell = 50\text{mm}$   $V = 400\text{mm/s}$



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

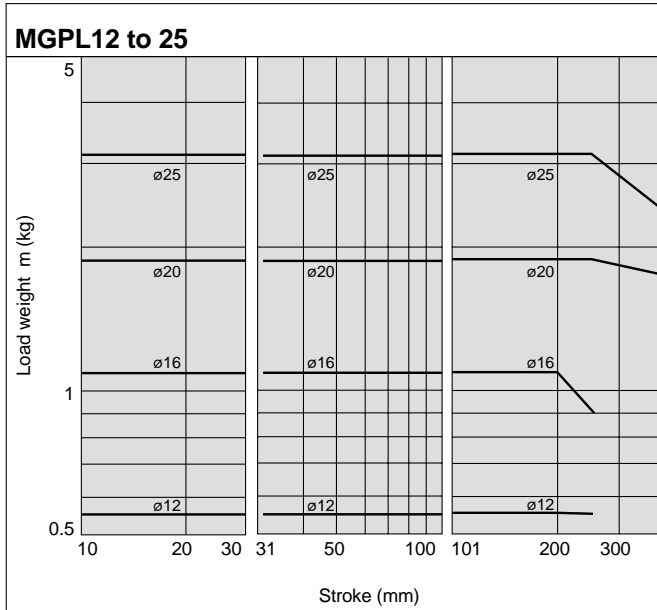




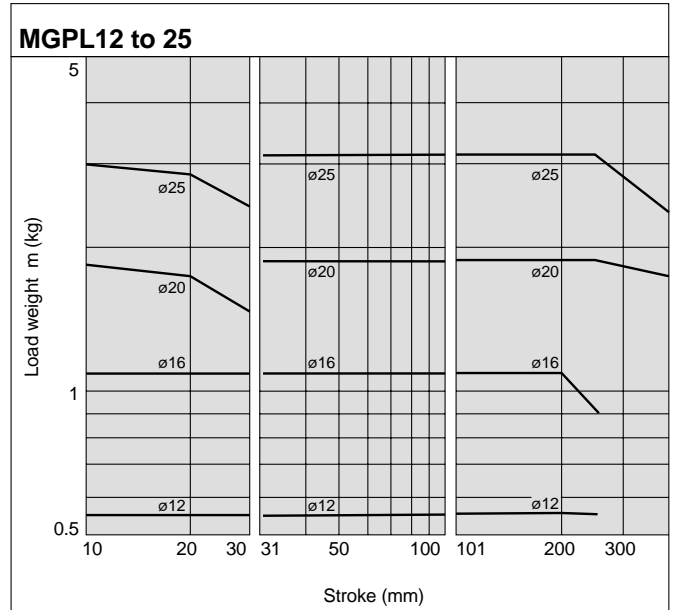
# Series MGP

## Horizontal Mounting **Ball Bushing**

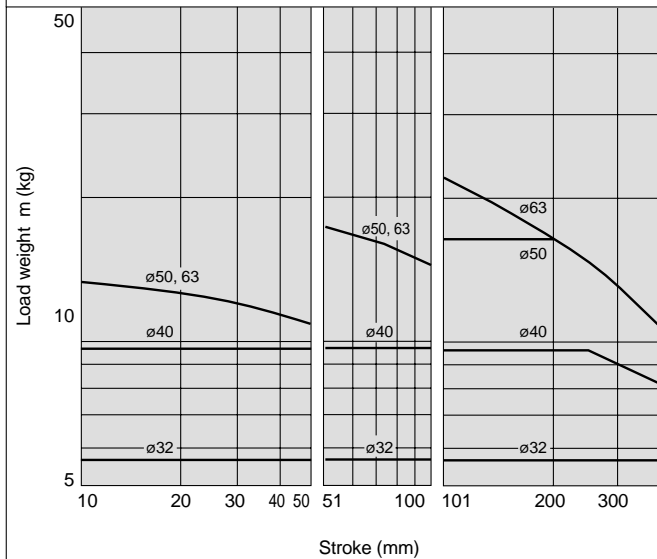
**19**  $l = 50\text{mm}$   $V = 400\text{m/s}$



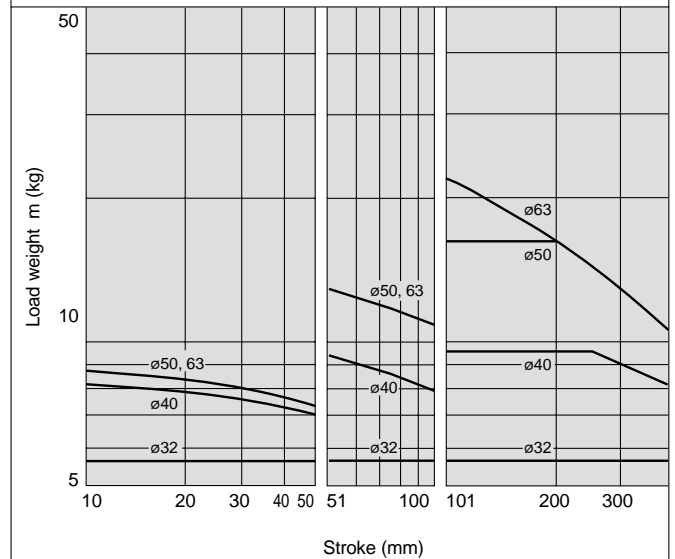
**20**  $l = 100\text{mm}$   $V = 400\text{m/s}$



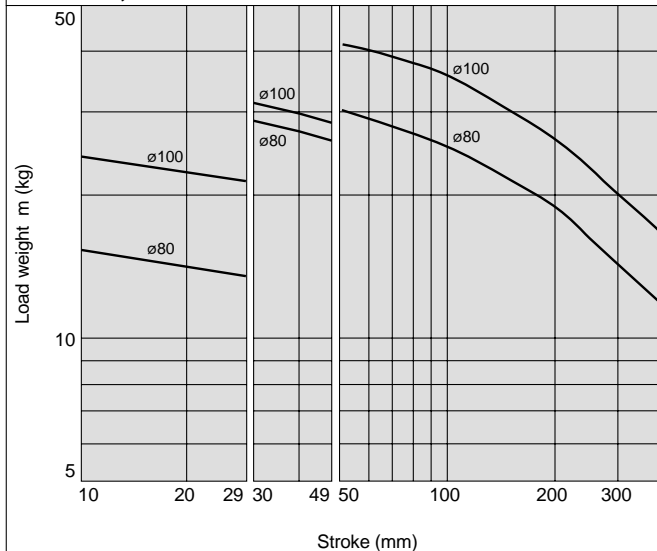
**MGPL32 to 63**



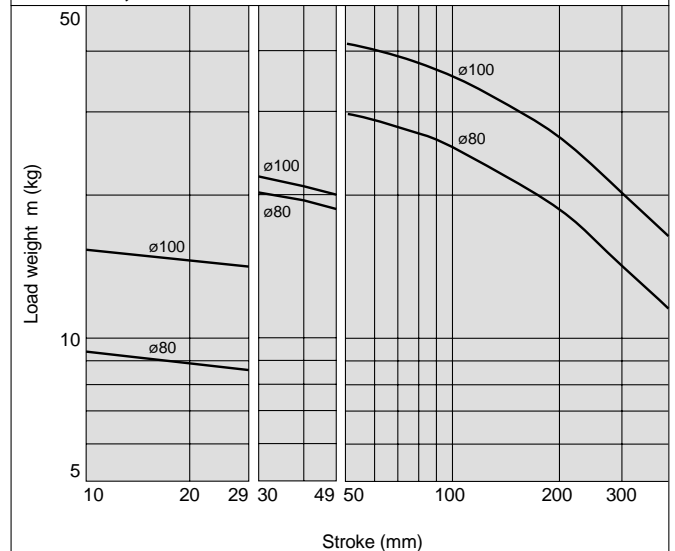
**MGPL32 to 63**



**MGPL80, 100**

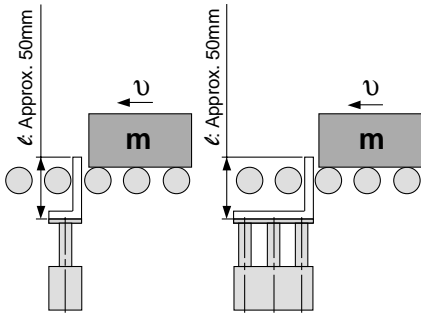


**MGPL80, 100**



**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.

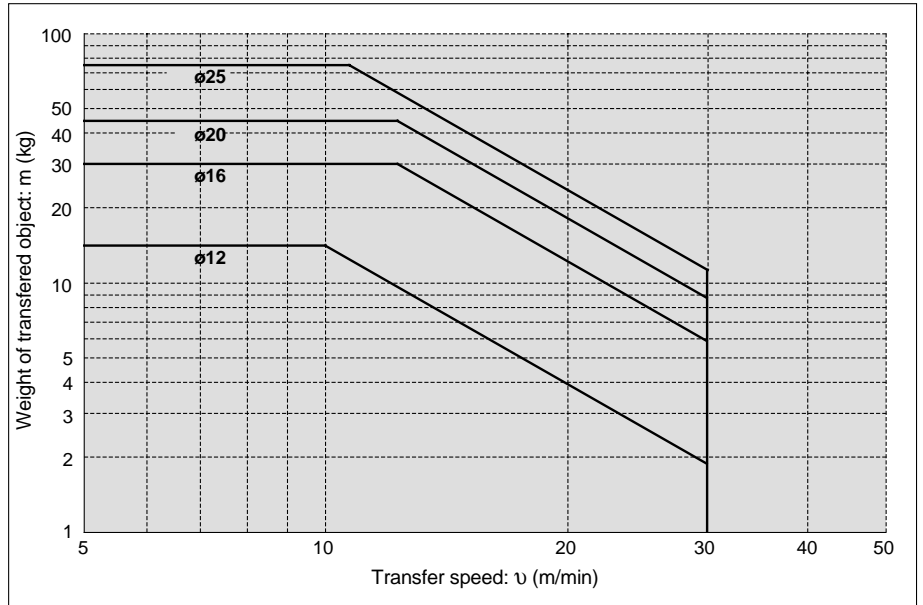
**⚠ Caution**

**Handling precautions**

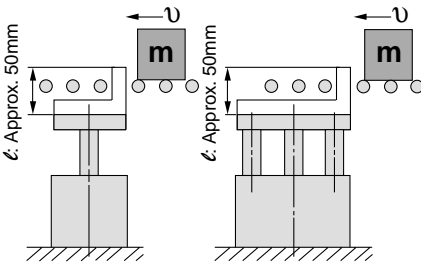
Note 1) When using as a stopper, select a model with a stroke of 30mm or less.

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.

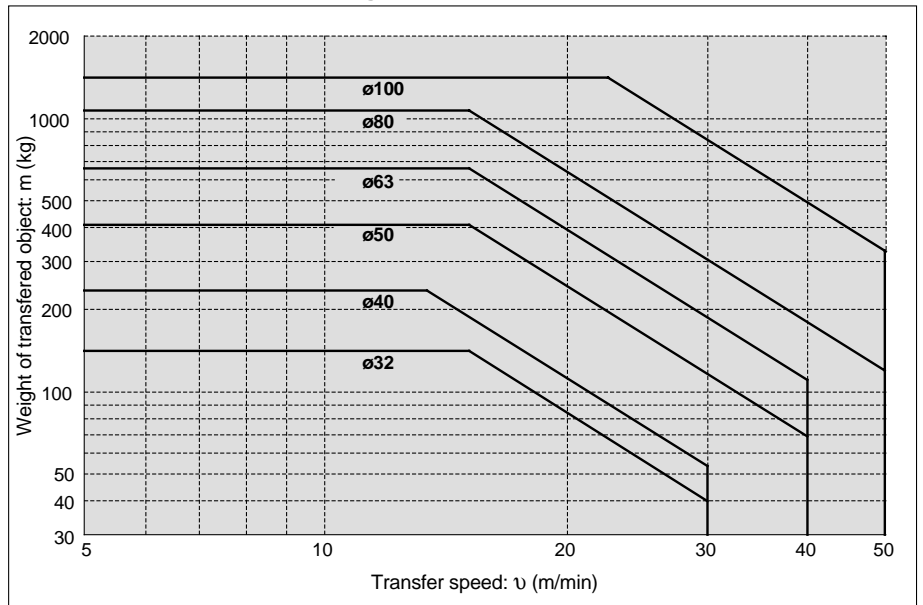
**⚠ Caution**

**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
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

# Series MGP

## 1. Water Resistant

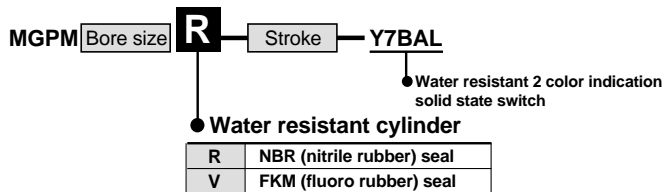
Ideal for use in a machine tool environment exposed to coolants. Also applicable for use in an environment with water splashing such as food processing and car wash equipment, etc.

### 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

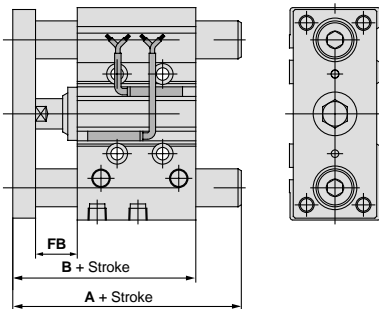
\* Specifications other than above are identical to the standard basic type.

### 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)

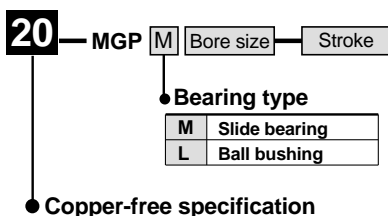
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used as component parts.

### 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.

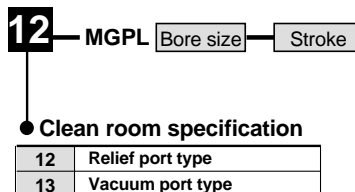
Ideal for use in conveyor lines for semi-conductor (LSI), liquid crystal (LCD), food processing, pharmaceutical, and electronic parts, etc.

### Specifications

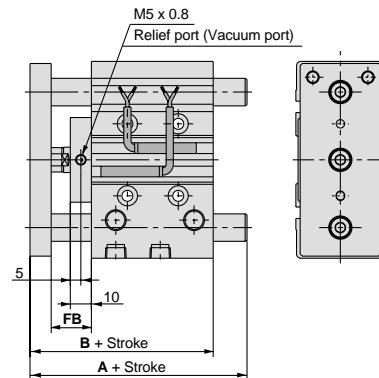
Applicable series	MGPL
Bearing type	Ball bushing
Bore size (mm)	12 16 20 25 32 40 50 63
Stroke (mm)	10 to 100 20 to 200 25 to 200

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

### How to Order



### Dimensions



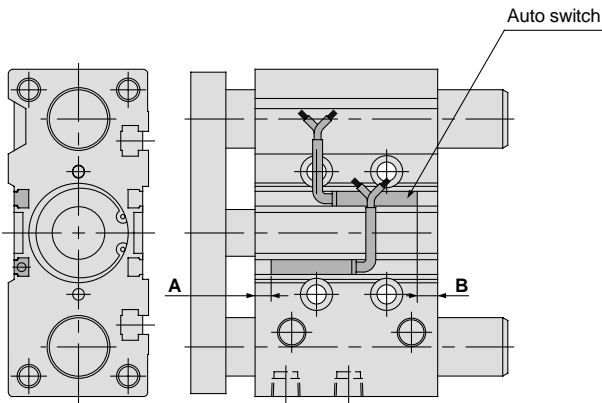
Bore size (mm)	A (mm)			B (mm)	FB (mm)
	30mm stroke or less	Over 30mm to 100mm stroke	Over 100mm stroke		
12	56	68	—	55	18
16	62	78	—	59	18
20	76	93	117	66	19
25	82.5	98.5	117.5	66.5	19

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)**

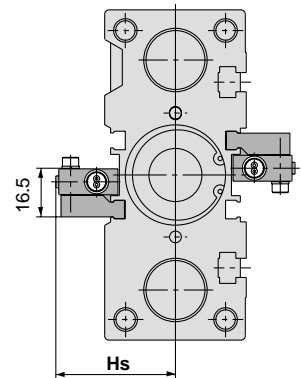
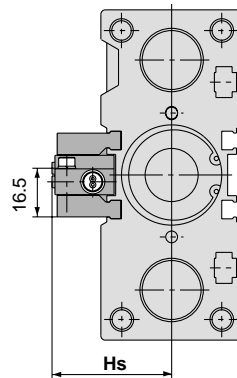
Bore size (mm)	A	B
12	1.5	3
16	4.5	4
20	4	8
25	4.5	8
32	5.5	7

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

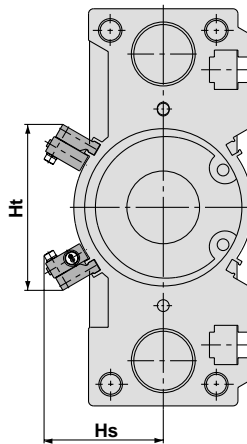
Note 1) Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Note 2) Type D-P5DW can be mounted only on bore sizes ø40 through ø100.

**For D-P5DW** (\* Cannot be mounted on bore sizes ø32 or less.)  
**ø40 to ø63**



**ø80, ø100**



**For 25mm stroke**

\* For bore sizes ø40 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**

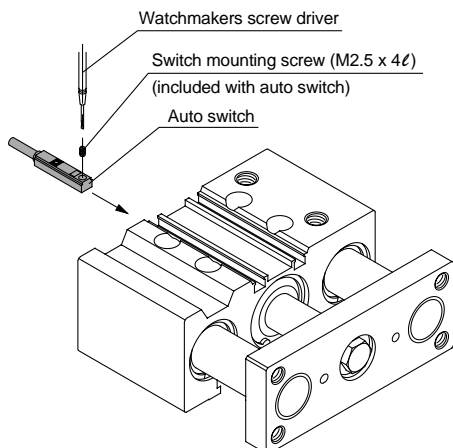
**⚠ Caution**

**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**

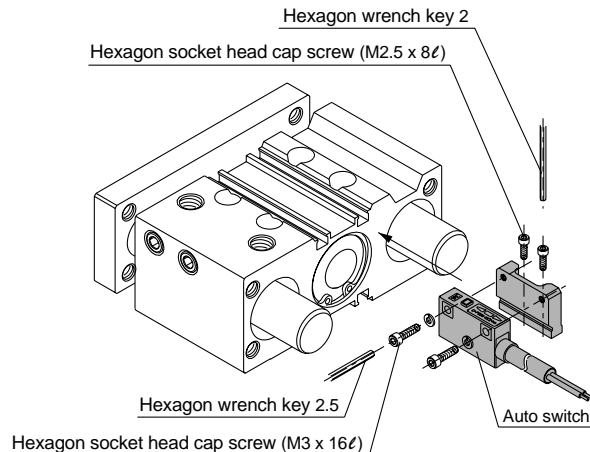
**⚠ Caution**

**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.

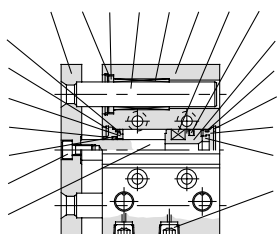


- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP**
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

## Construction

### Series MGPM

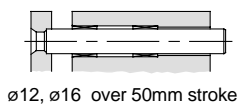
#### MGPM12 to 25



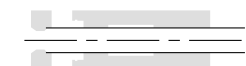
50mm stroke or less



ø12, ø16 50mm stroke or less



ø12, ø16 over 50mm stroke

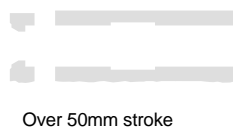


ø20, ø25 over 50mm stroke

#### MGPM32 to 100



50mm stroke or less



Over 50mm stroke



ø50 or larger

### Series MGPL

#### MGPL12 to 25



30mm stroke or less



ø12, ø16 over 30mm stroke



ø20, ø25 over 30mm to 100mm stroke



ø20, ø25 over 100mm stroke

#### MGPL32 to 100



50mm stroke or less



ø32 to ø63 over 100mm stroke  
ø80, ø100 over 200mm stroke

#### 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
4	Collar	Aluminum bearing alloy	ø12 to ø40
		Aluminum alloy casting	ø50 to ø100
5	Bushing	Lead bronze casting	ø50 to ø100
6	Head cover	Aluminum alloy	ø12 to ø63
			ø80 to ø100
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

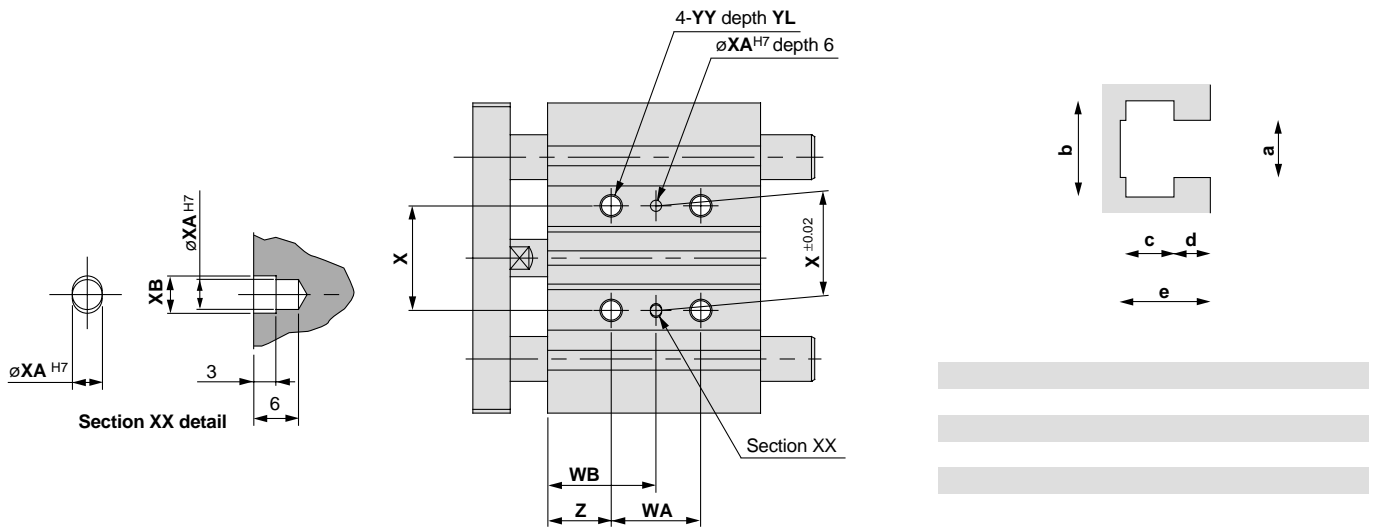
Bore size (mm)	Order No.
12	MGP12-PS
16	MGP16-PS
20	MGP20-PS
25	MGP25-PS
32	MGP32-PS

Kits include items  
21, 22, 23, and 24 from the table above.

#### 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
	Hexagon socket head taper plug	Carbon steel	ø20 to ø100
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	

# Ø12 to Ø25/MGPM, MGPL



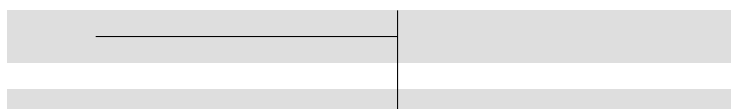
## MGPM, MGPL Common dimensions

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 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	13	8	18
16	125, 150, 175, 200, 250	46	33	8	8	5	30	11	8	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	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 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	1/8	12.5	10.5	25
25	125, 150, 175, 200	53.5	37.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	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 300st	30st or less	Over 30st to 100st										
12	14	48	22	56	41	50	37	20	40			—	15	25					23	3	3.5	M5 x 0.8	10	5
16	16	54	25	62	46	56	38	24	44			—	17	27					24	3	3.5	M5 x 0.8	10	5
20	18	70	30	81	54	72	44	24	44			300	29	39					28	3	3.5	M6 x 1.0	12	17
25	26	78	38	91	64	82	50	24	44			300	29	39					34	4	4.5	M6 x 1.0	12	17

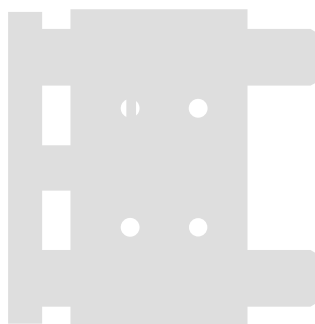
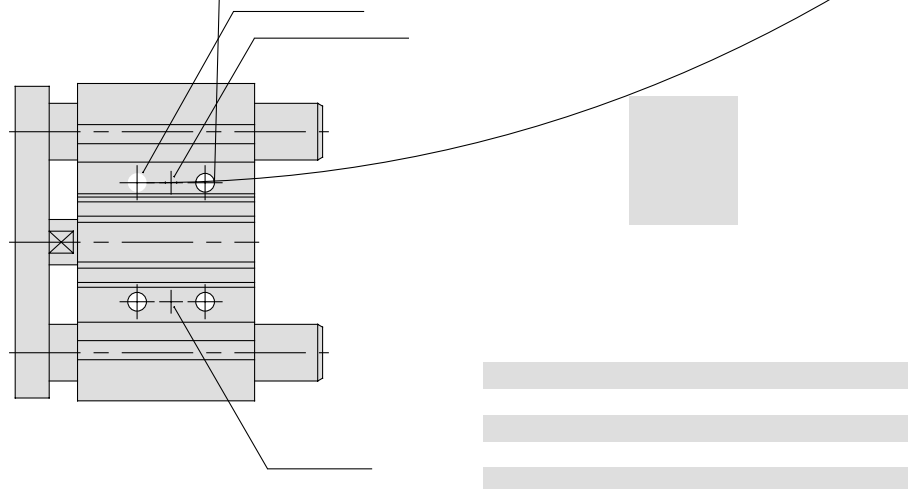
## MGPM (slide bearing)/Dimensions A, DB, E

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

	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



# Ø32 to Ø63/MGPM, MGPL



## 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 x 1.25	20	M8 x 1.25	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 x 1.25	20	M8 x 1.25	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 x 1.5	22	M10 x 1.5	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 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	14	28	55	50

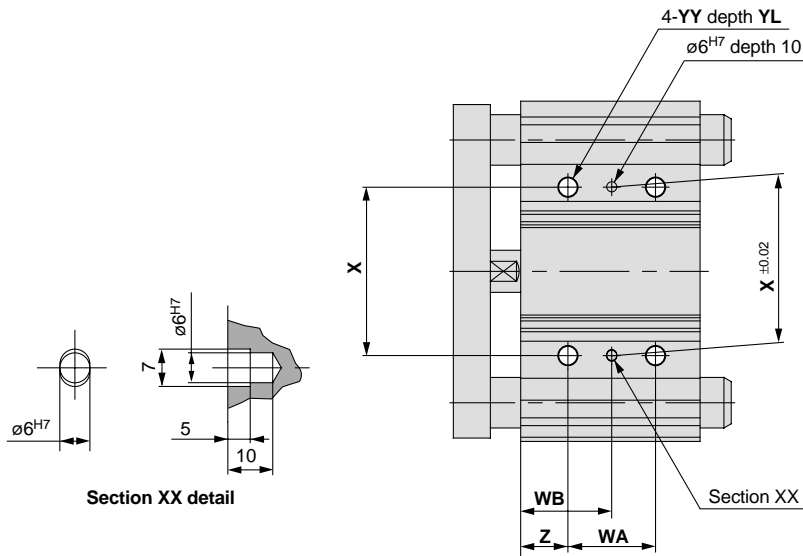
Bore size (mm)	R	S	T	U	VA	VB	WA				WB				X	XA	XB	XC	XL	YY	YL	Z
							25	30	35	40	50	60	70	80								
32	96	44	110	78	98	63	24	48							42	4	4.5	3	6	M8 x 1.25	16	21
40	104	44	118	86	106	72	24	48							50	4	4.5	3	6	M8 x 1.25	16	22
50	130	60	146	110	130	92	24	48							66	5	6	4	8	M10 x 1.5	20	24
63	130	70	158	124	142	110	28	52							80	5	6	4	8	M10 x 1.5	20	24

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

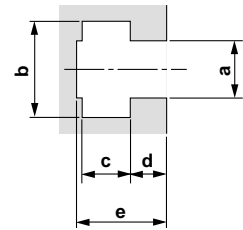
MGPL (ball bushing)/Dimensions A, DB, E



**ø80, ø100**/MGPM, MGPL

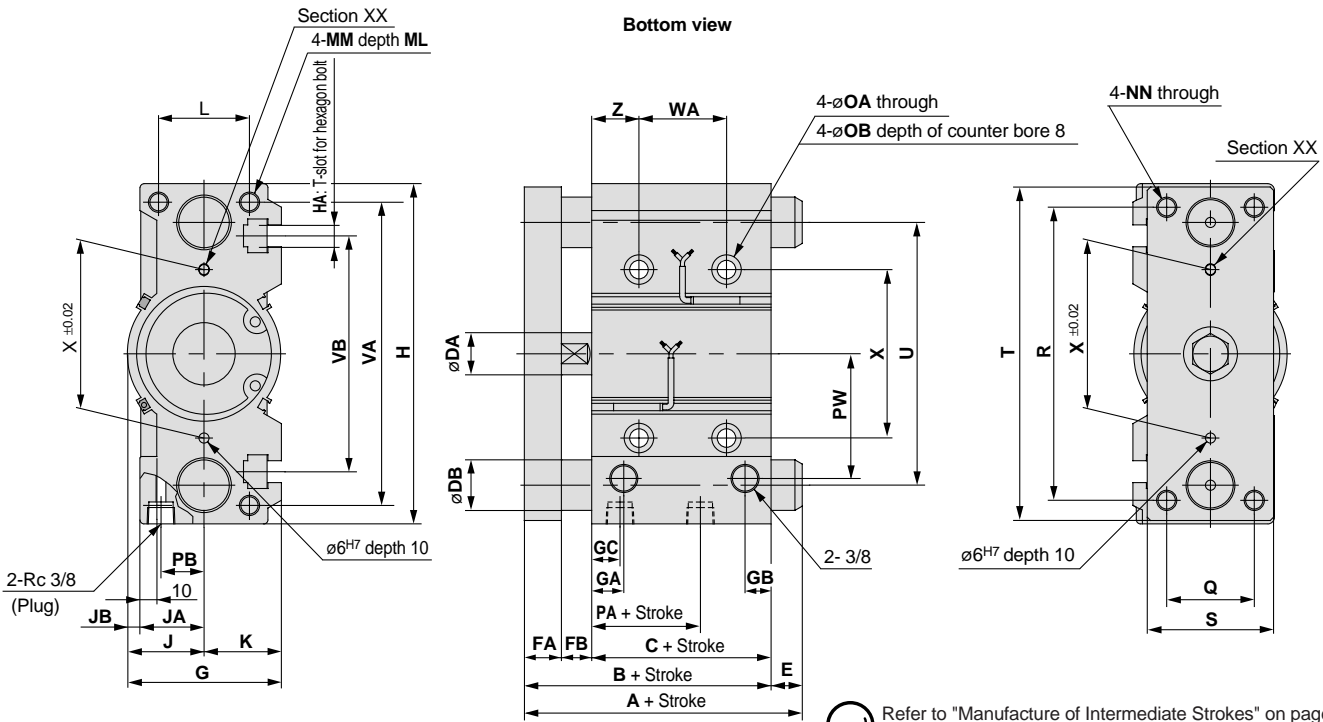


T-slot dimensions



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

(mm)



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 x 1.75	25	M12 x 1.75	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 x 2.0	31	M14 x 2.0	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 x 1.75	24	28
100	90	236	188	210	166	48	72	148	220	320	35	47	85	121	171	124	M14 x 2.0	28	11

**MGPM (slide bearing)/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
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** (mm)

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

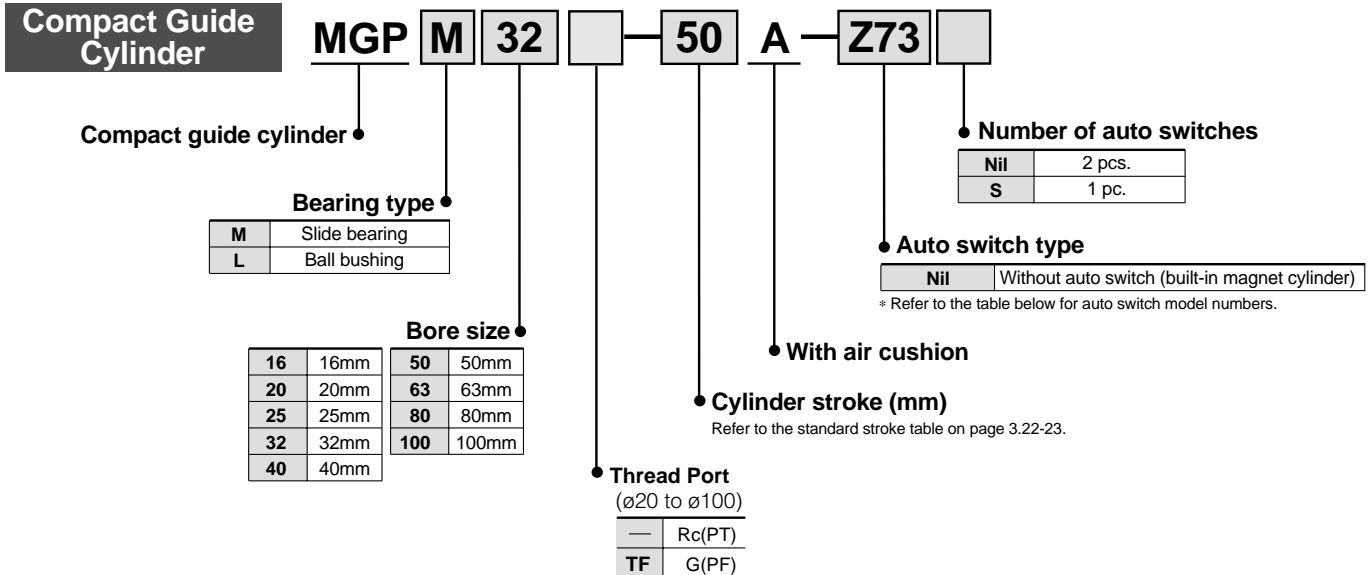
- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

# Compact Guide Cylinder: With Air Cushion

# Series *MGP*

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

## How to Order



## Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) <sup>Note 1)</sup>			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	●	●	○	—	
	3 wire (NPN)			Y7NWV				Y7NW	●	●	○	IC circuit		
	3 wire (PNP)			Y7PWV				Y7PW	●	●	○	—		
	2 wire			Y7BWV				Y7BW	●	●	○	—		
	2 wire			—				Y7BA	—	●	○	—		
—	—	<sup>Note 3)</sup> 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)
<b>16</b>	25, 50, 75, 100
<b>20 to 63</b>	25, 50, 75, 100, 125, 150, 175, 200
<b>80, 100</b>	50, 75, 100, 125, 150, 175, 200

## Manufacture of Intermediate Strokes

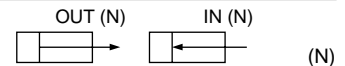
<b>Modification method</b>	Strokes provided in 1mm increments by changing the collar on a standard stroke cylinder.	
<b>Part number</b>	Indicate -XC19 at the end of the standard part number.	
<b>Applicable stroke (mm)</b>	ø16	26 to 99
	ø20 to ø63	26 to 199
	ø80, ø100	51 to 199
<b>Example</b>	Part no.: <b>MGPM20-35A-XC19</b> A collar 15mm in width is installed in a <b>MGPM20-50A</b> . 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 0.45 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

## Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	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 (mm<sup>2</sup>)

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

## Slide bearing: MGPM16 to 100

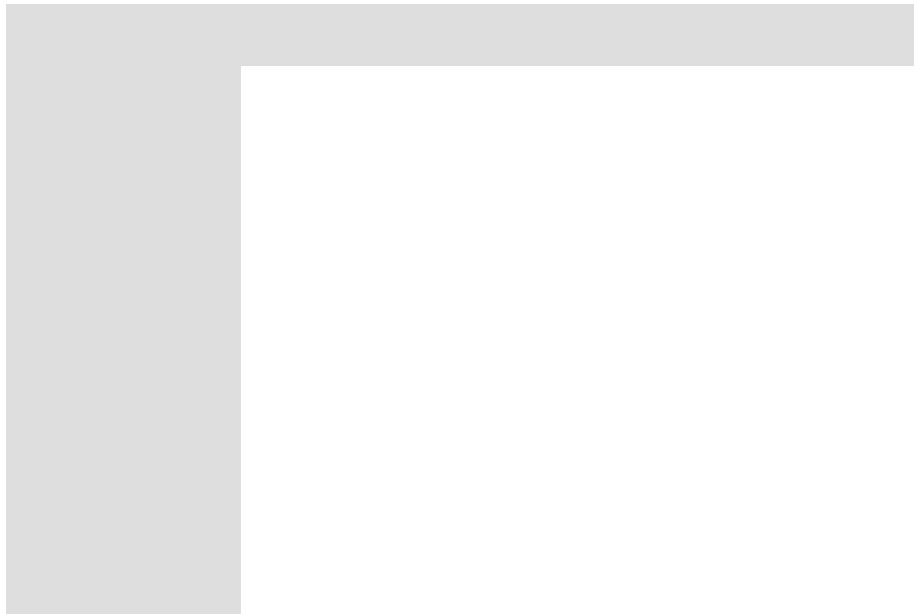
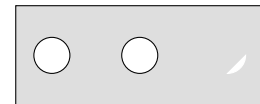
(kg)

		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

## Ball bushing: MGPL16 to 100

(kg)

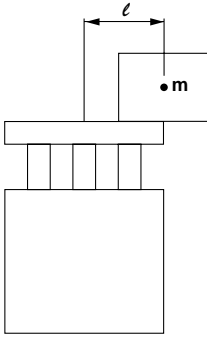
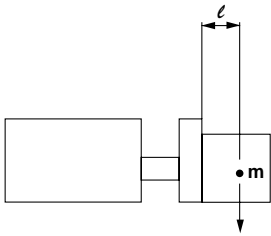
		Standard stroke (mm)							
		25	50	75	100	125	150	175	200
16	MGPL16	0.56	0.66	0.78	0.89	—	—	—	—
20	MGPL20	0.97	1.12	1.30	1.50	1.68	1.85	2.03	2.20
25	MGPL25	1.34	1.54	1.78	2.05	2.28	2.51	2.74	2.97
32	MGPL32	1.81	2.34	2.57	2.94	3.26	3.58	3.89	4.21
40	MGPL40	2.15	2.73	3.01	3.42	3.78	4.14	4.50	4.86
50	MGPL50	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





# Series MGP (With Air Cushion) Model Selection

## Selecting Conditions

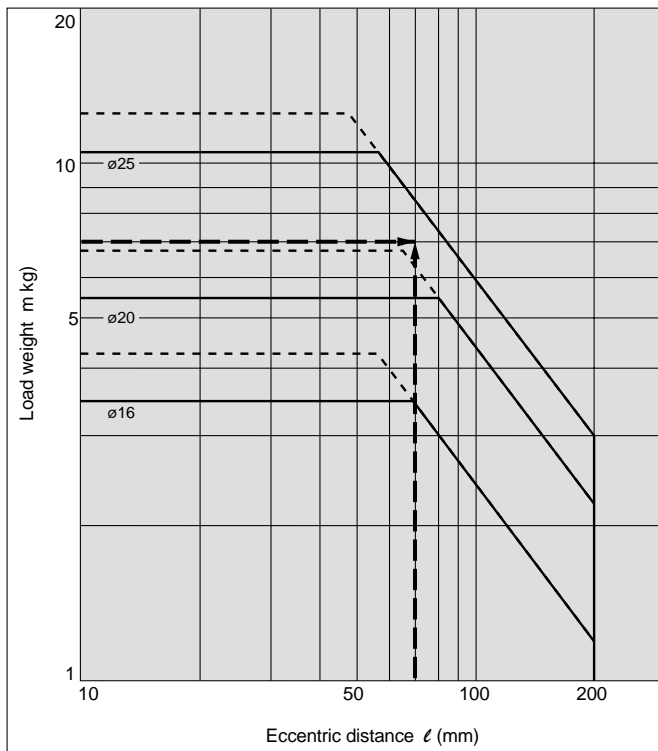
Mounting orientation	Vertical		Horizontal	
				
Maximum speed (mm/s)	200	400	200	400
Graph (Slide bearing type)	<b>1, 2</b>	<b>3, 4</b>	<b>15, 16</b>	<b>17, 18</b>
Graph (Ball bushing type)	<b>5 to 9</b>	<b>10 to 14</b>	<b>19, 20</b>	<b>21, 22</b>

### 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

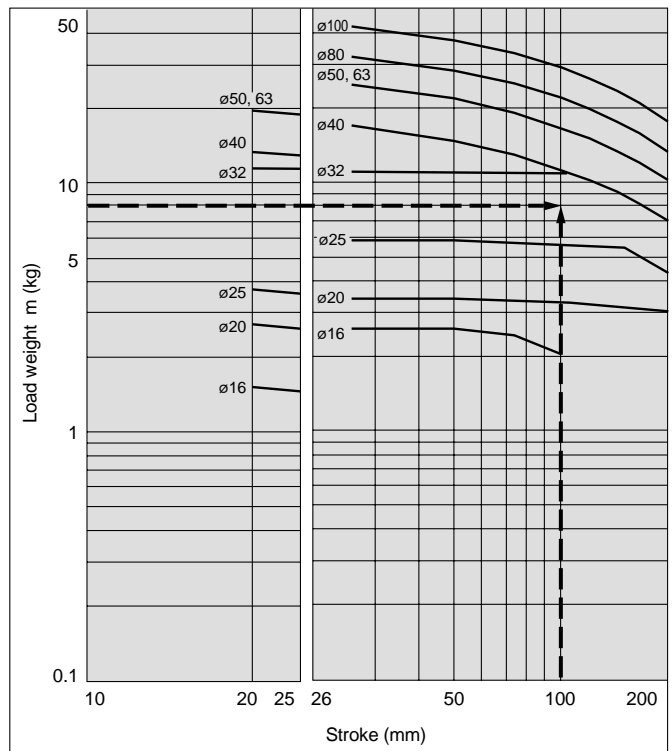


### Selection Example 2 (Horizontal Mounting)

**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

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

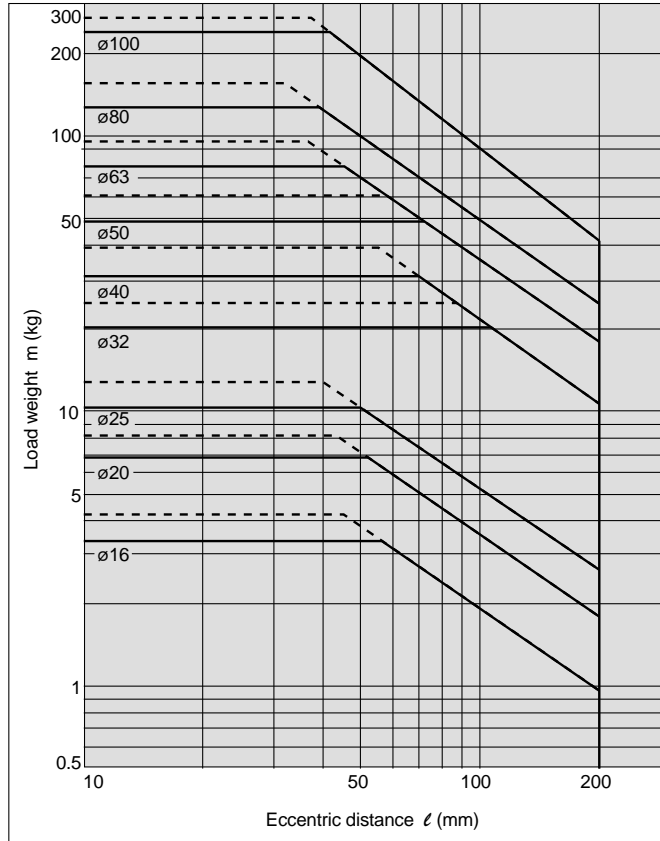
# Series MGP

## Vertical Mounting **Slide Bearing**

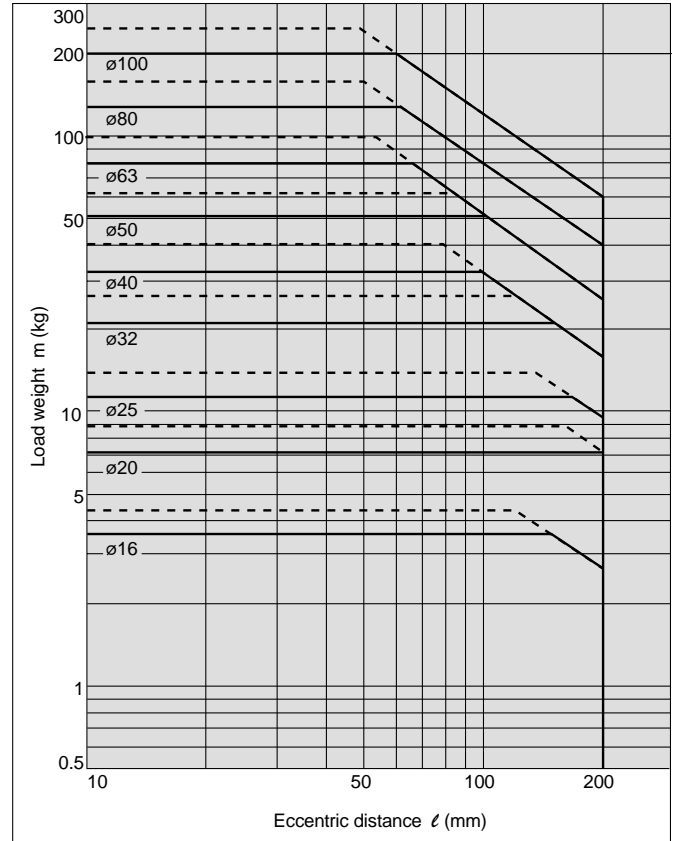
— Operating pressure: 0.4MPa  
 - - - - - Operating pressure: 0.5MPa or more

### MGPM16 to 100

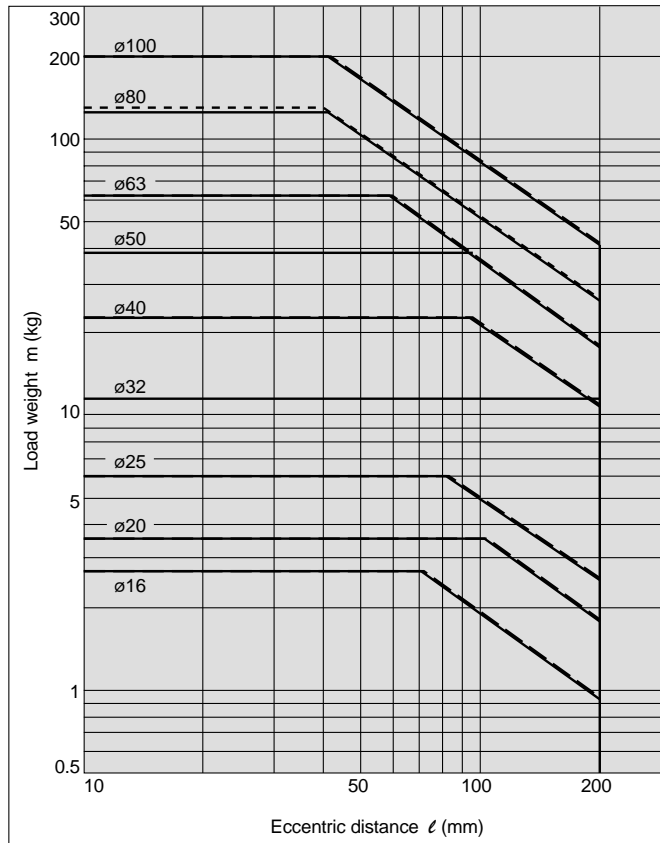
**1** 25mm stroke V = 200mm/s



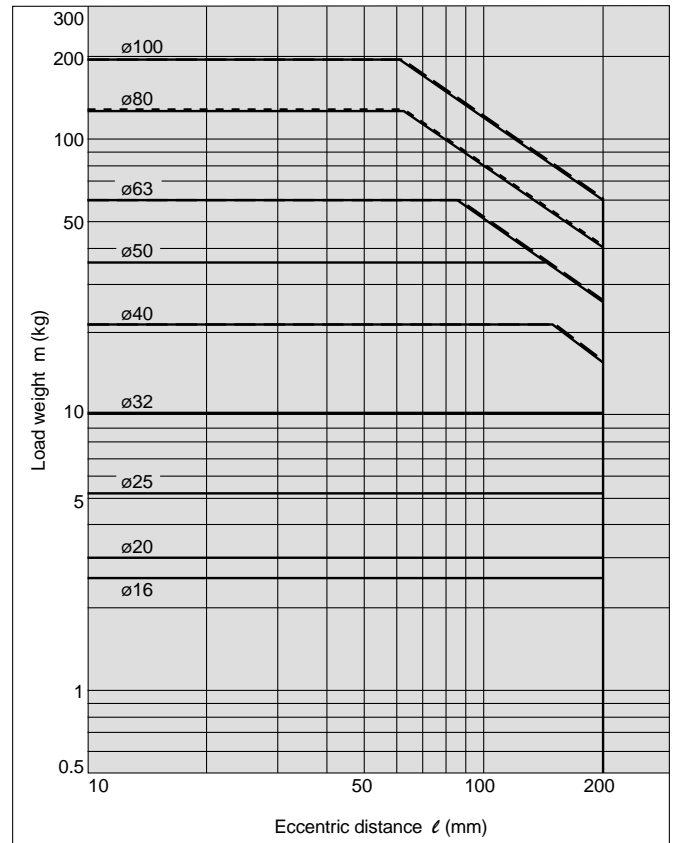
**2** Over 25mm stroke V = 200mm/s



**3** 25mm stroke V = 400mm/s



**4** Over 25mm stroke V = 400mm/s

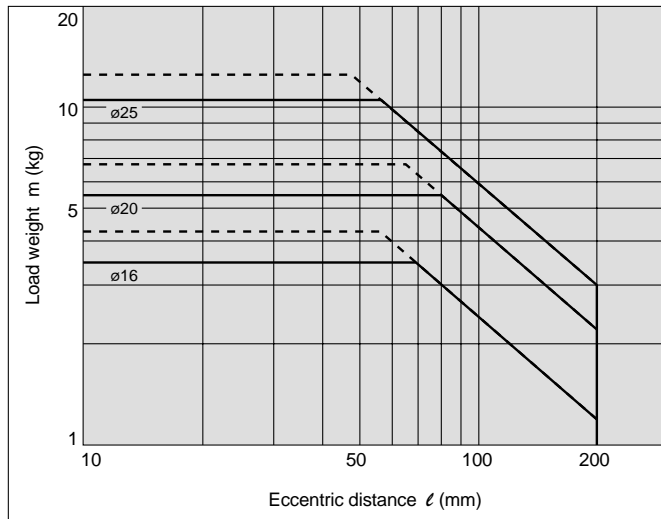


**Vertical Mounting** **Ball Bushing**

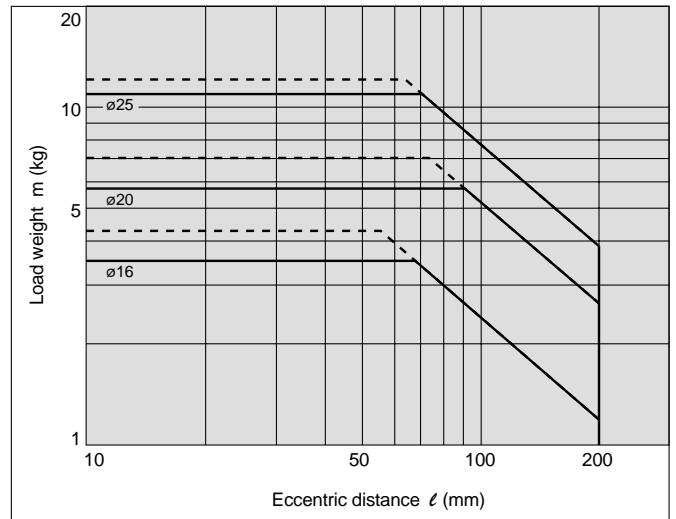
— Operating pressure: 0.4MPa  
 - - - - - Operating pressure: 0.5MPa or more

**MGPL16 to 25**

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

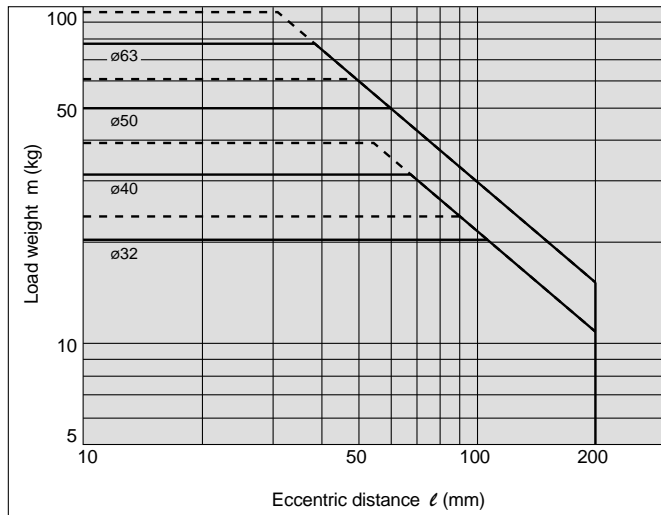


**6** Over 75mm stroke  $V = 200\text{mm/s}$

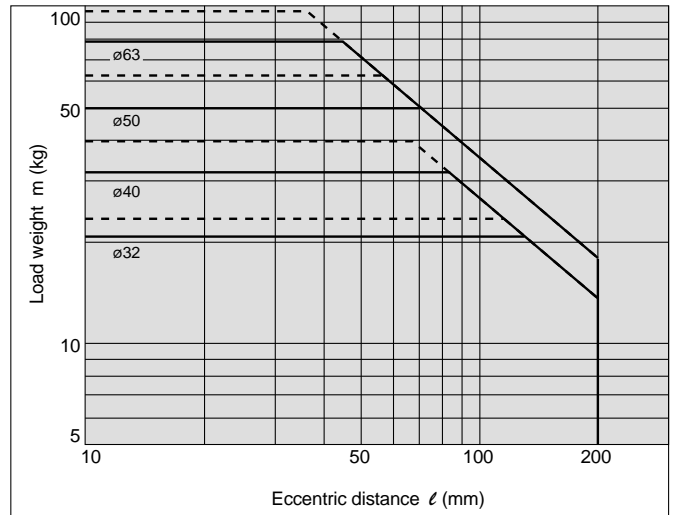


**MGPL32 to 63**

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

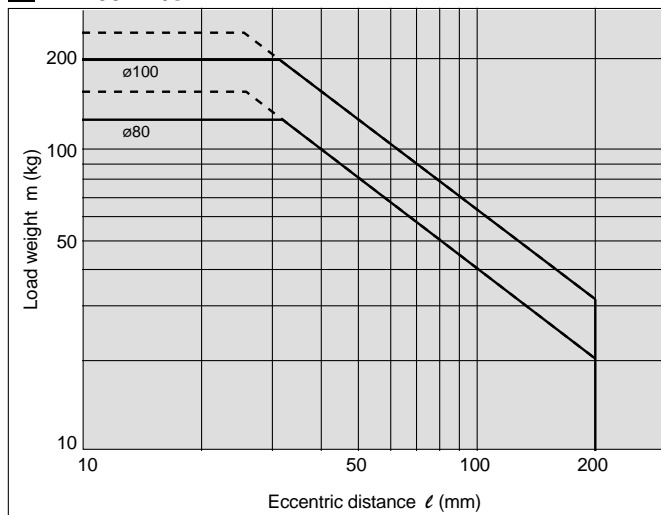


**8** Over 25mm stroke  $V = 200\text{mm/s}$



**MGPL80, 100**

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



- 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

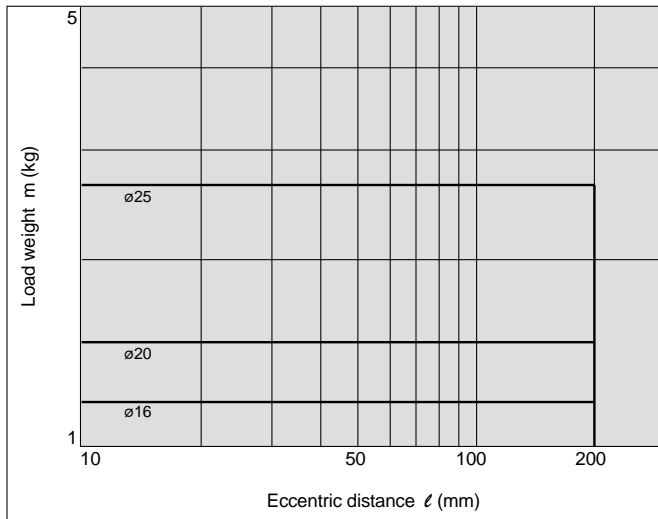
# Series MGP

## Vertical Mounting **Ball Bushing**

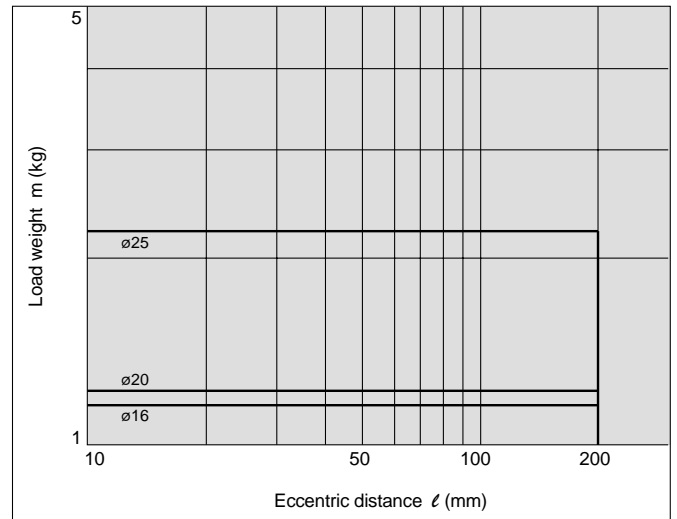
Operating pressure: 0.4MPa

### MGPL16 to 25

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

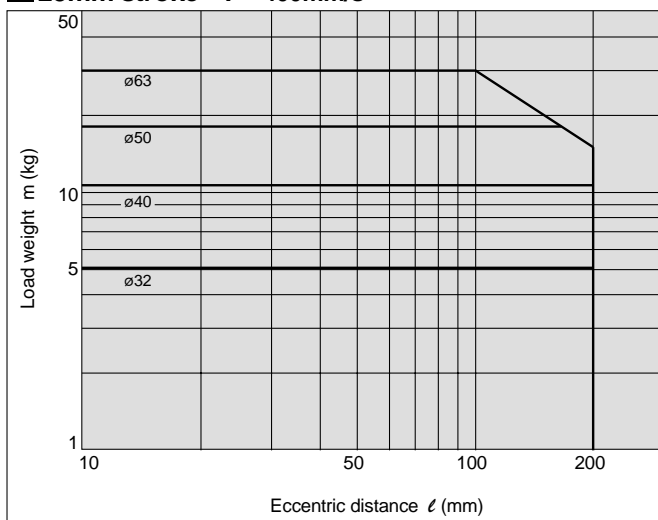


#### 11 Over 75mm stroke V = 400mm/s

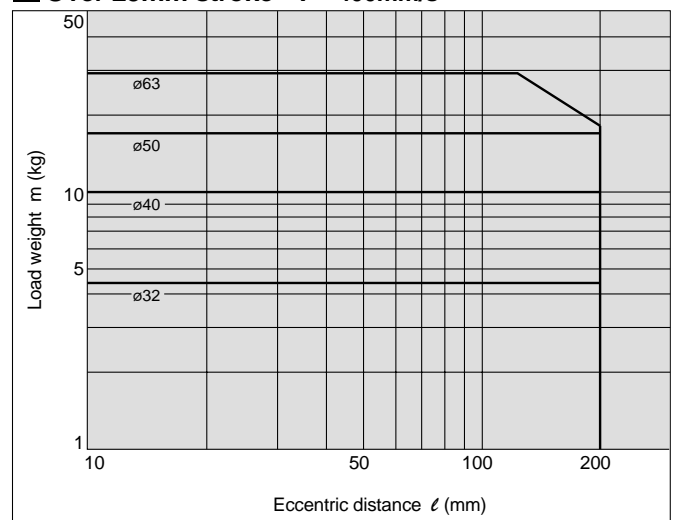


### MGPL32 to 63

#### 12 25mm stroke V = 400mm/s

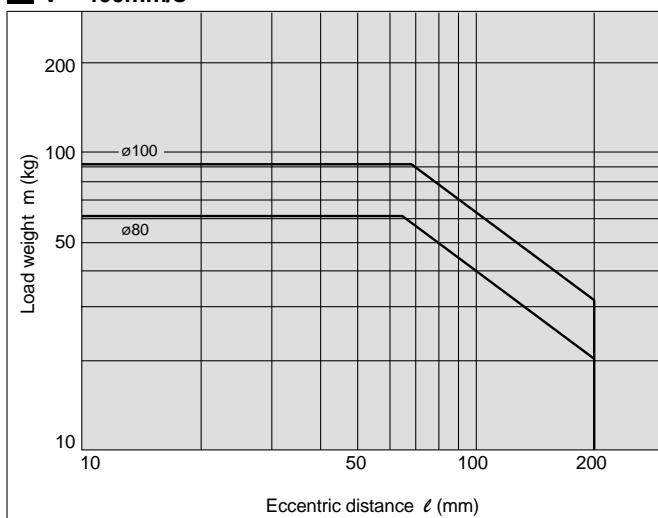


#### 13 Over 25mm stroke V = 400mm/s



### MGPL80, 100

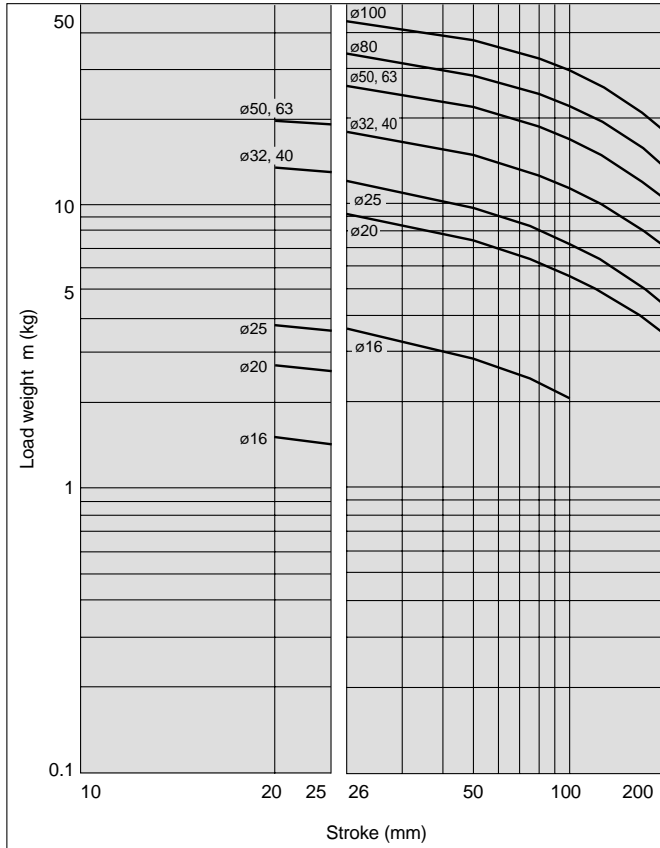
#### 14 V = 400mm/s



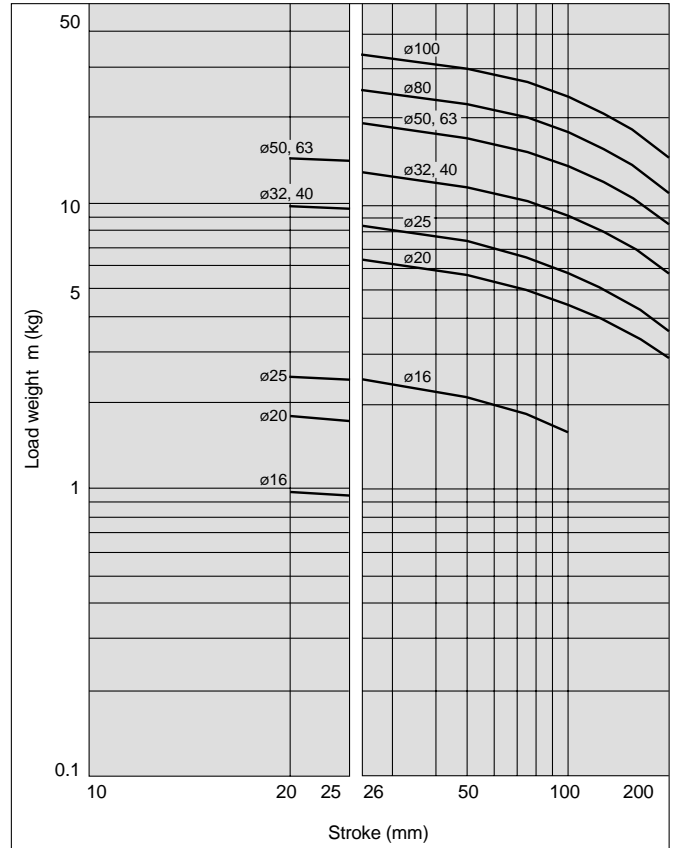
Horizontal Mounting **Slide Bearing**

MGPM16 to 100

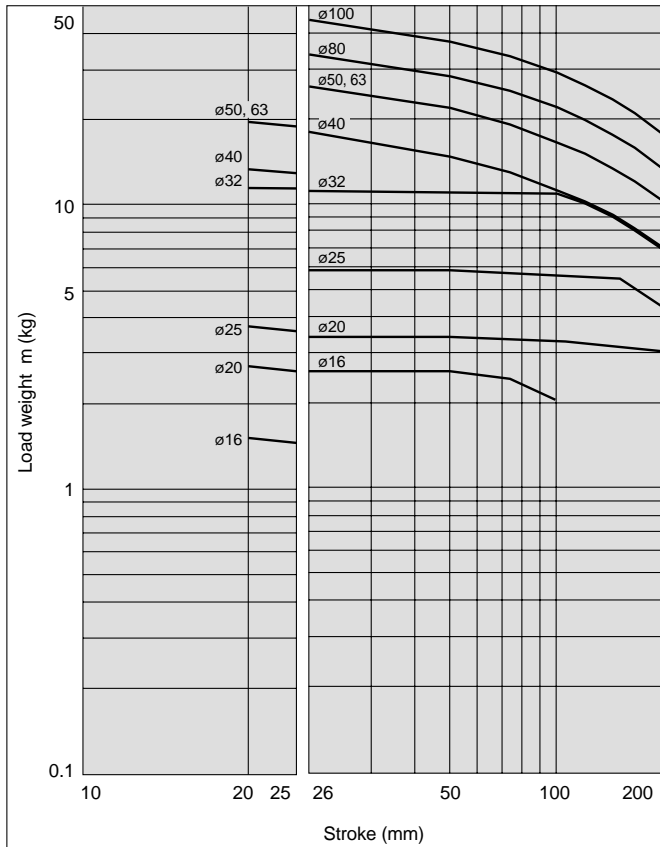
**15**  $\ell = 50\text{mm}$   $V = 200\text{mm/s}$



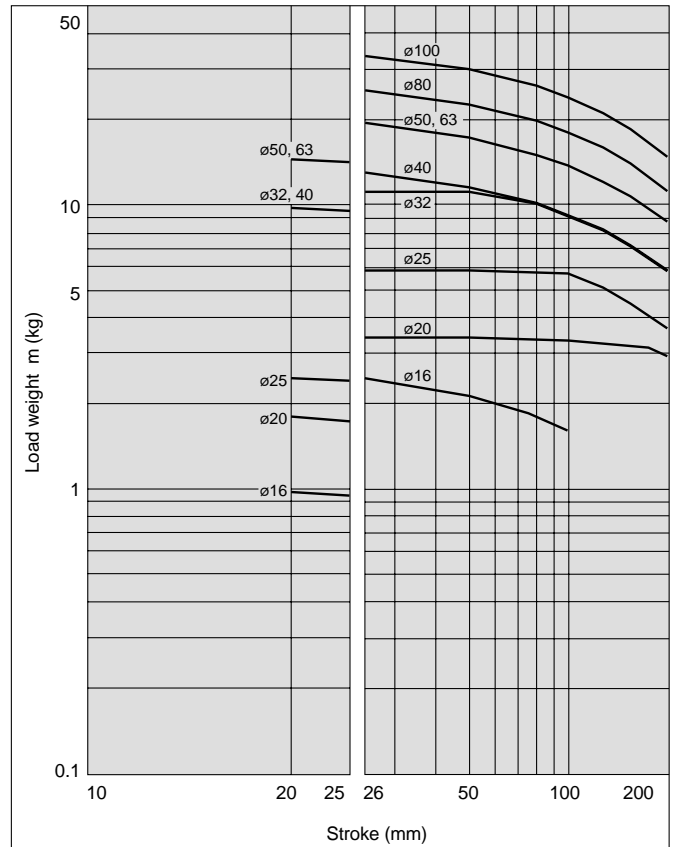
**16**  $\ell = 100\text{mm}$   $V = 200\text{mm/s}$



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



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

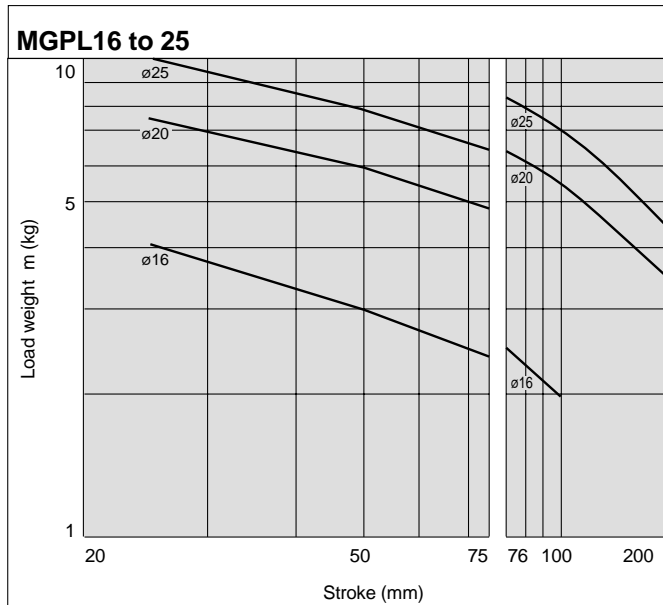


- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP**
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

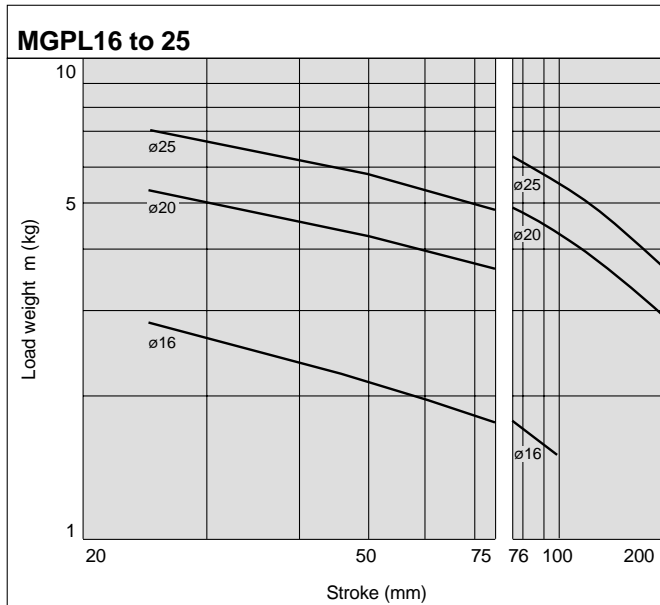
# Series MGP

## Horizontal Mounting **Ball Bushing**

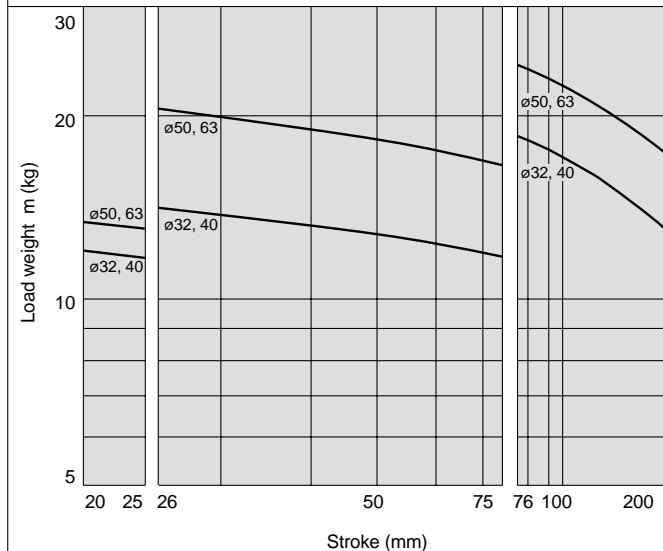
**19**  $\ell = 50\text{mm}$   $V = 200\text{m/s}$



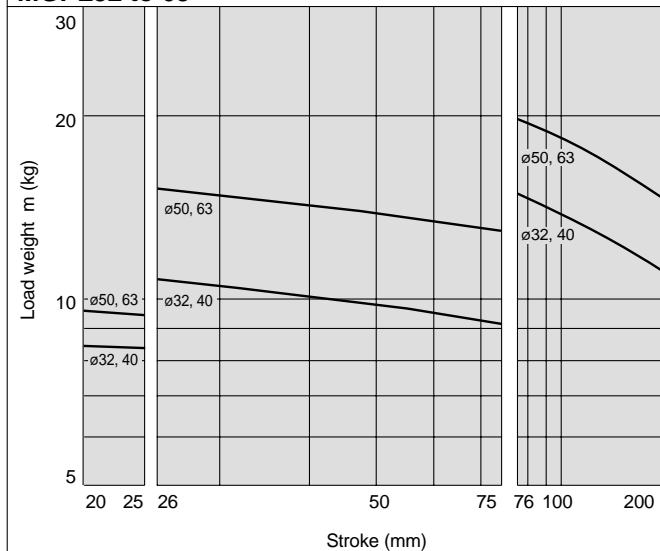
**20**  $\ell = 100\text{mm}$   $V = 200\text{m/s}$



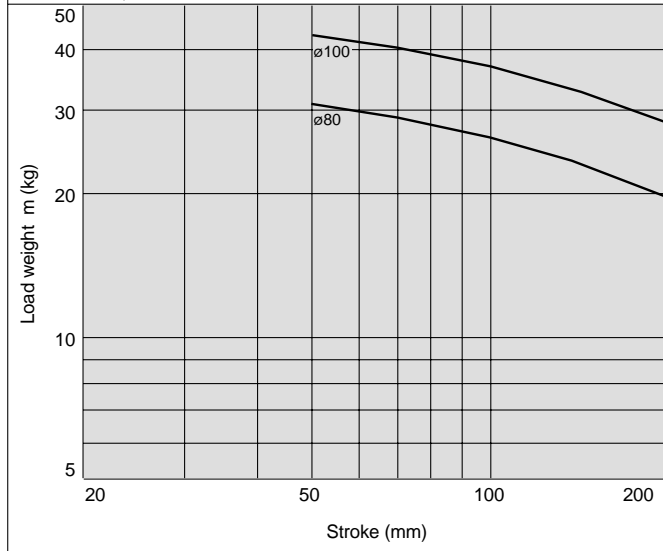
**MGPL32 to 63**



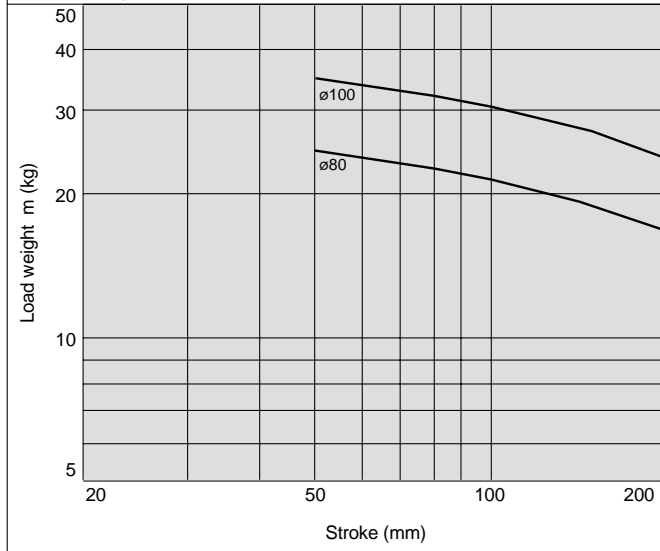
**MGPL32 to 63**



**MGPL80, 100**

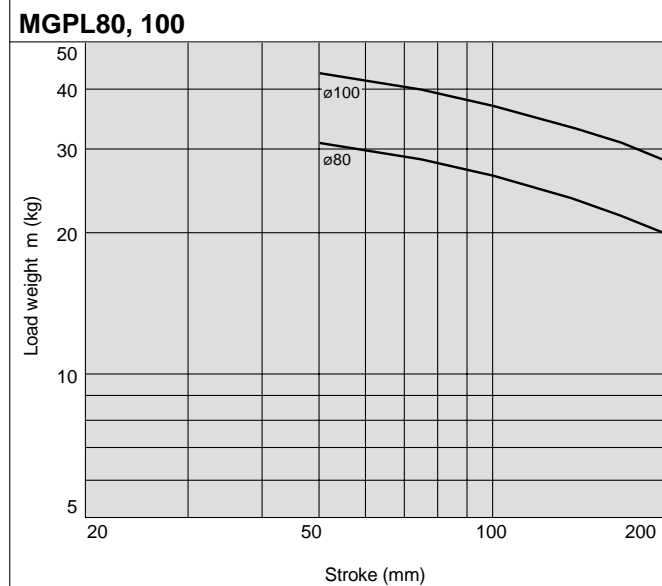
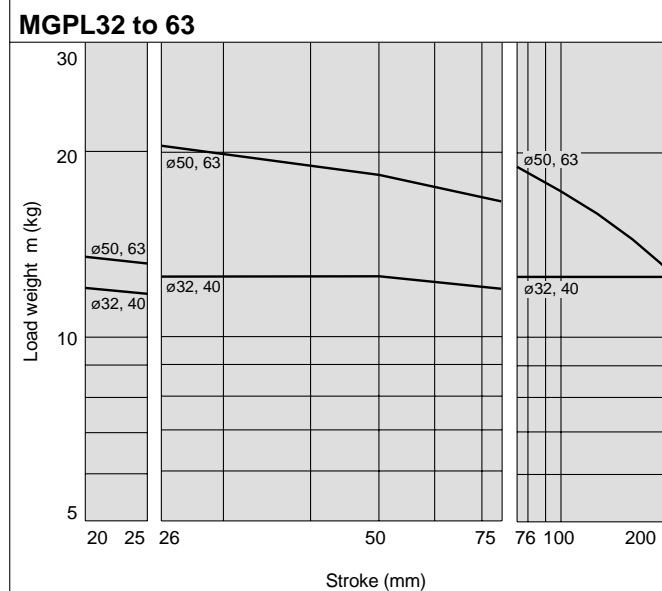
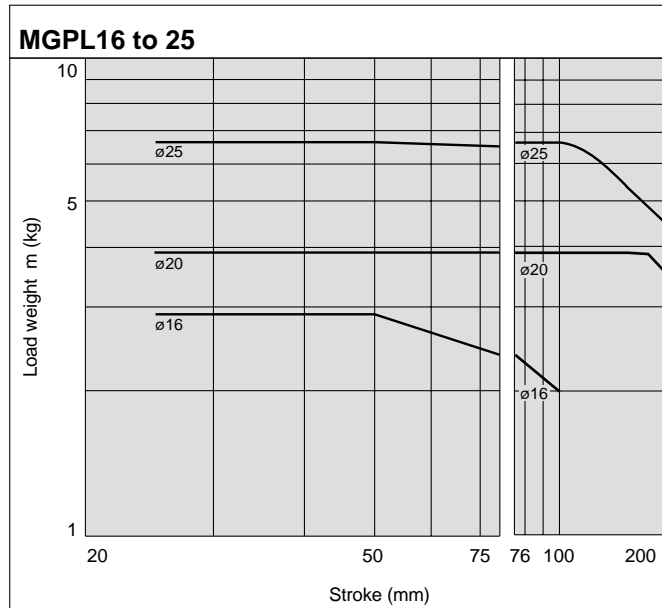


**MGPL80, 100**

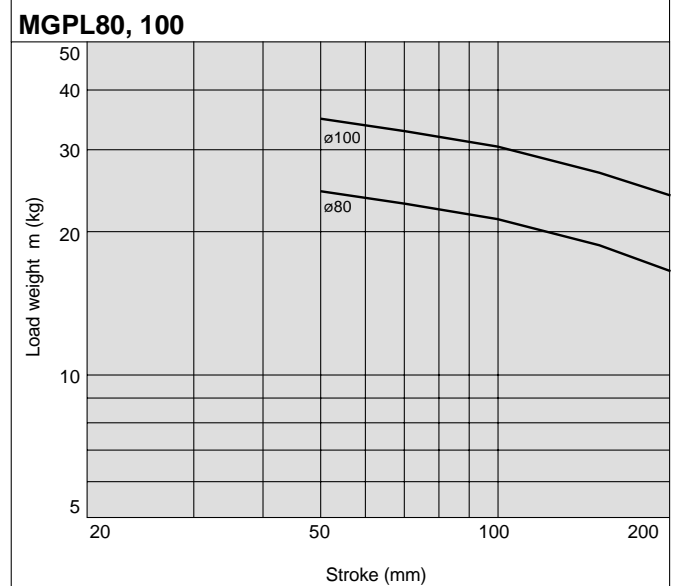
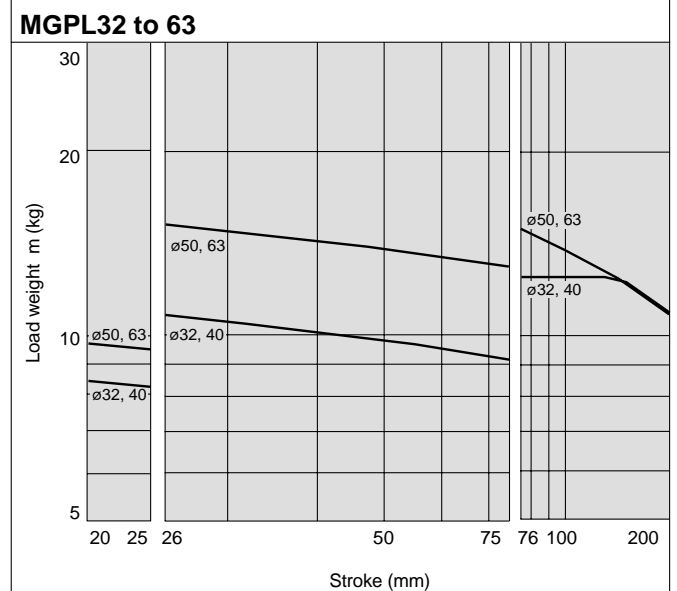
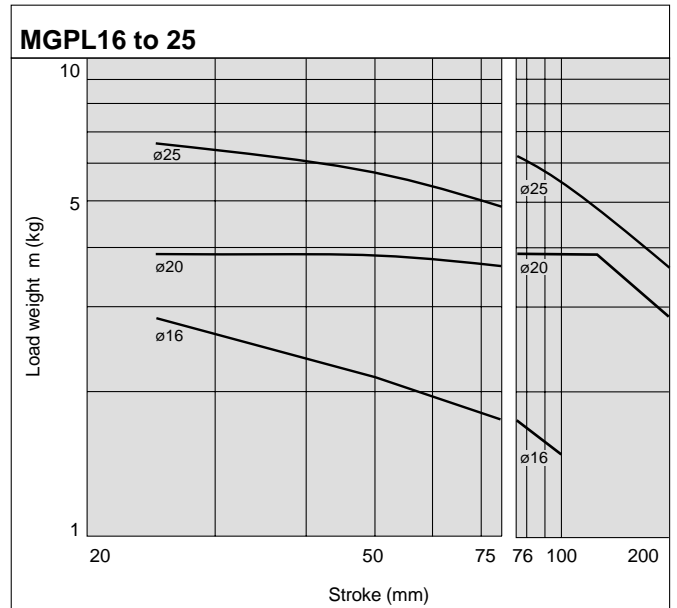


**Horizontal Mounting** **Ball Bushing**

**21**  $l = 50\text{mm}$   $V = 400\text{m/s}$



**22**  $l = 100\text{mm}$   $V = 400\text{m/s}$

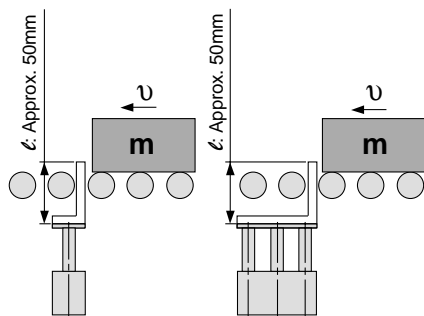


- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP**
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

# Series MGP

## 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.

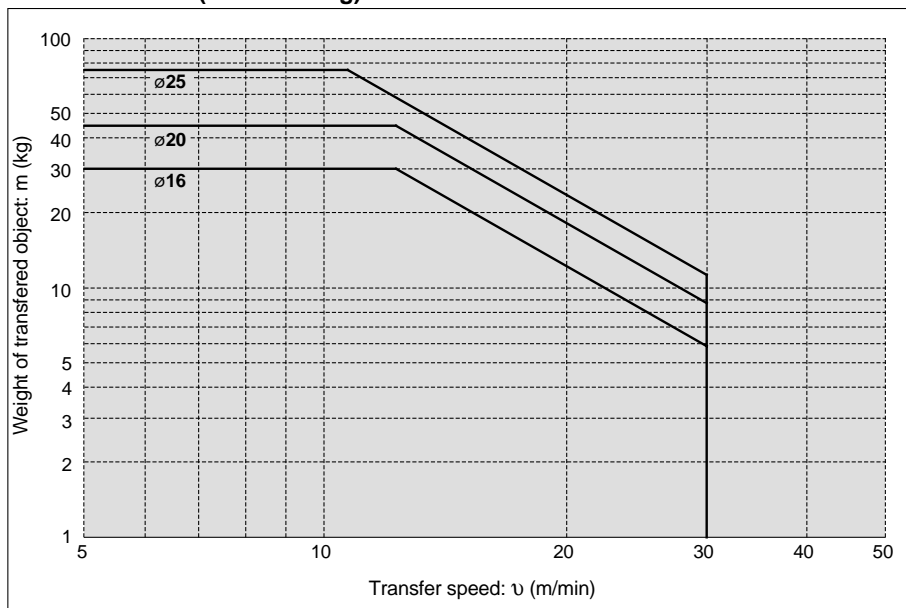
#### ⚠ Caution

##### Handling precautions

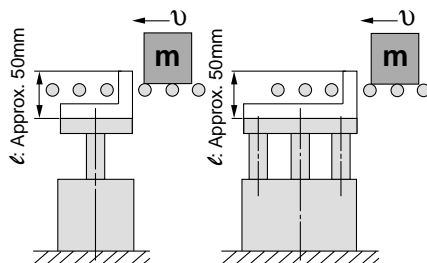
Note 1) When using as a stopper, select a model with a stroke of 25mm or less.

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.

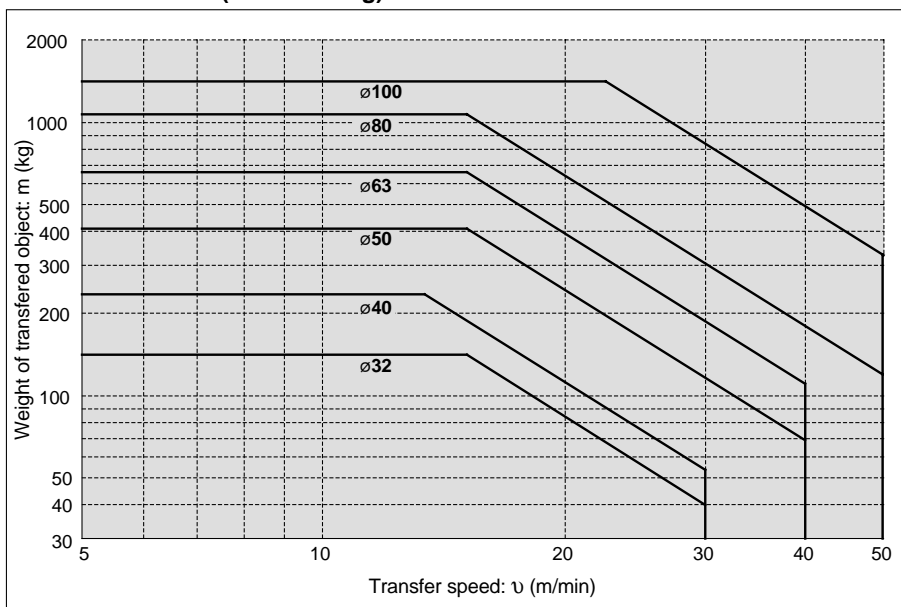
#### ⚠ Caution

##### 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.

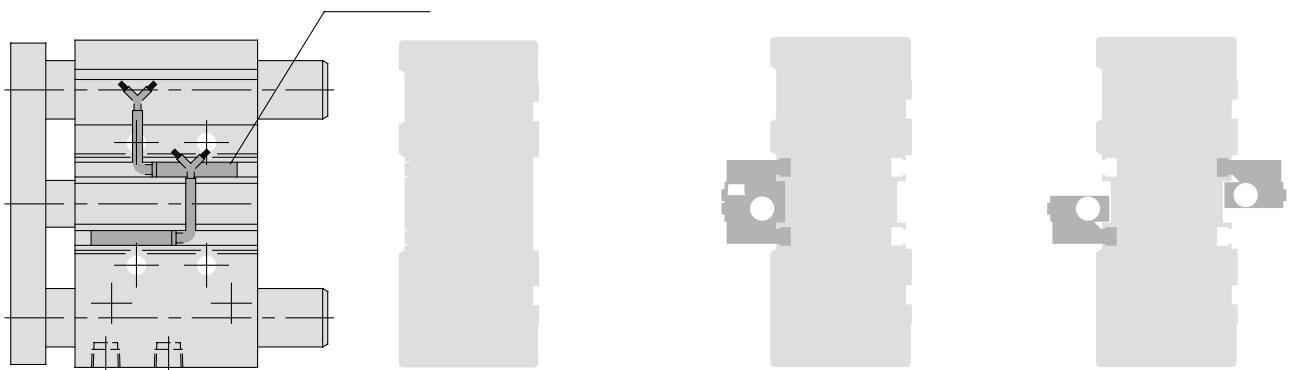
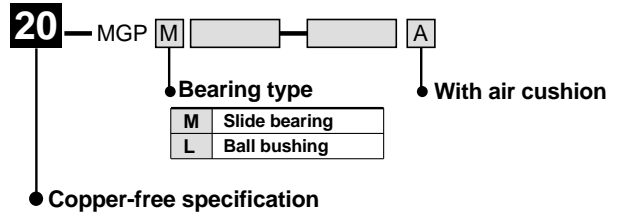
#### MGPM32 to 100 (Slide bearing)



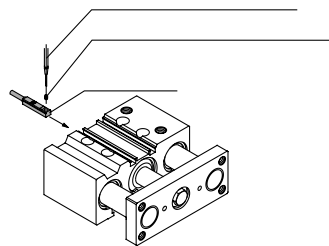
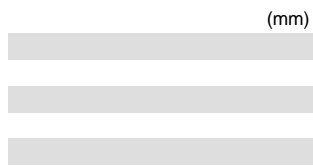


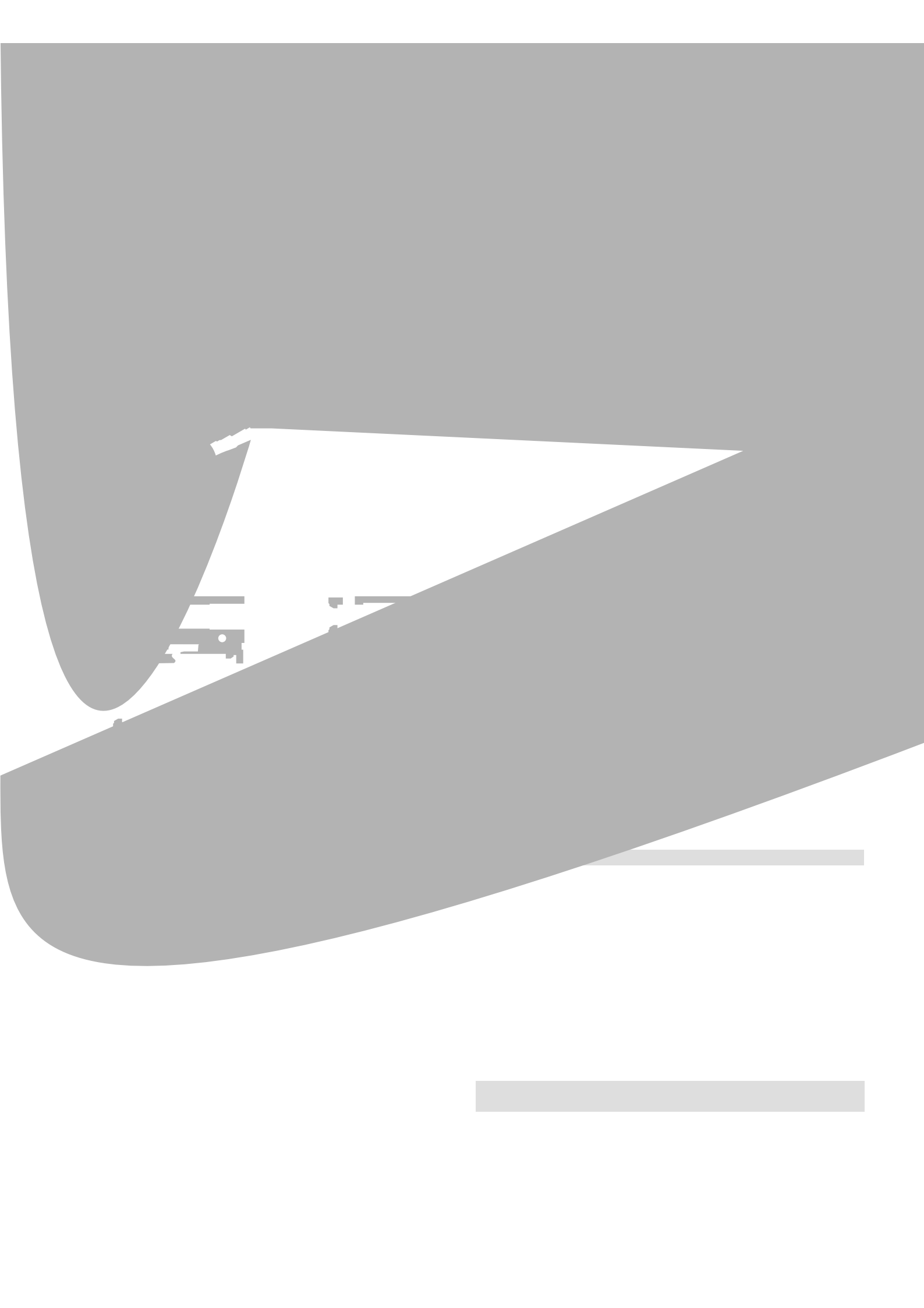
		16, 20, 25, 32, 40, 50, 63, 80, 100

### How to Order

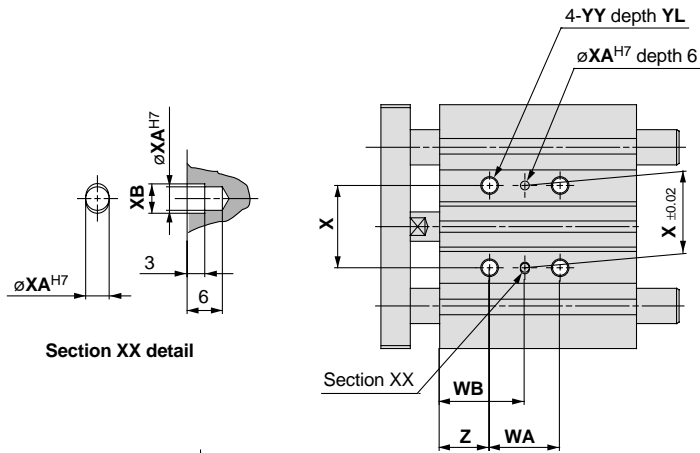


Bore size (mm)	(mm)	
	A	B
16	17.5	15.5
20	26	11
25	23	14.5
32	16	21.5

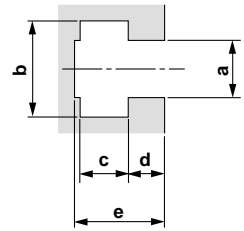




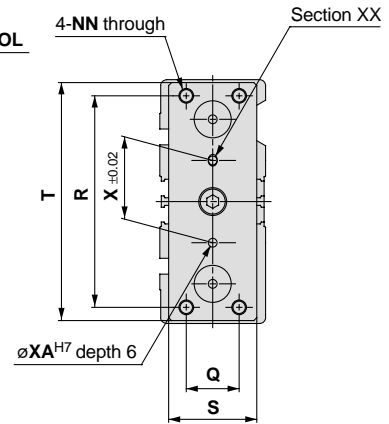
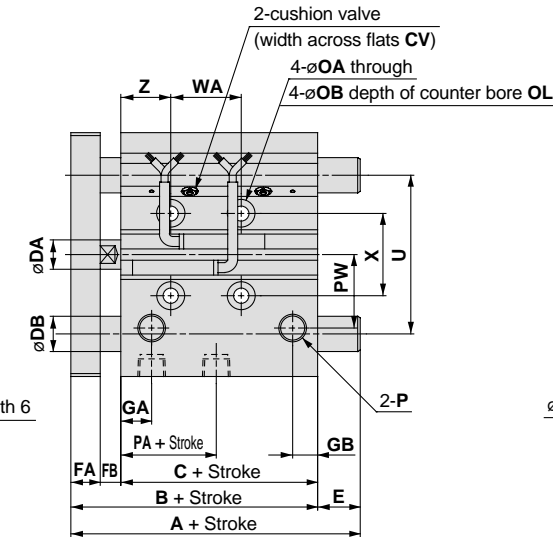
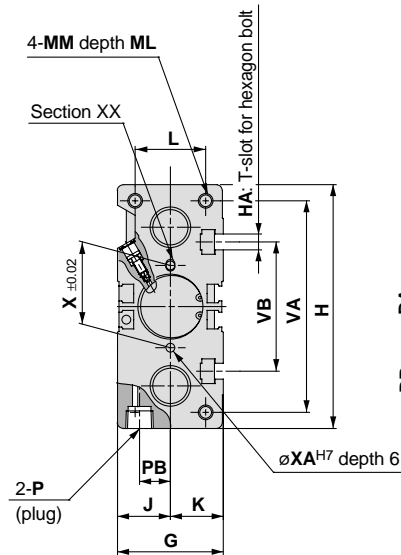
# ∅16 to ∅25/MGPM, MGPL (With Air Cushion)



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 ∅16 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	(mm)											
																											WA	WB	X	XA	XB	YY	YL	Z				
16	25, 50, 75, 100	71	58	—	8	8	5	30	11	8	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	40	10	19	16	75st or less	100 to 175st	200st	75st or less	100 to 175st	200st	24	3	3.5	M5 x 0.8	10	5
20	25, 50, 75, 100,	78	62	1.5	10	10	6	36	10.5	8.5	83	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	1/8	37.5	10.5	25	18	75st or less	100 to 175st	200st	75st or less	100 to 175st	200st	28	3	3.5	M6 x 1.0	12	17
25	125, 150, 175, 200	78.5	62.5	1.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.6	9.5	5.5	1/8	37.5	13.5	28.5	26	75st or less	100 to 175st	200st	75st or less	100 to 175st	200st	34	4	4.5	M6 x 1.0	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

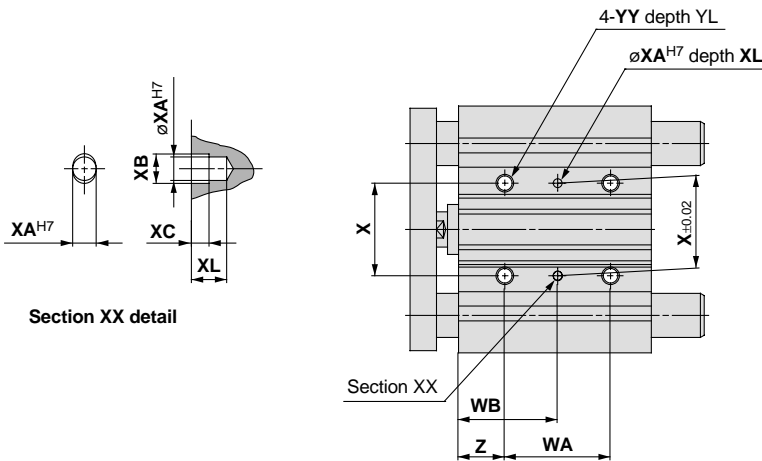
## MGPL (ball bushing)/Dimensions A, DB, E (mm)

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	

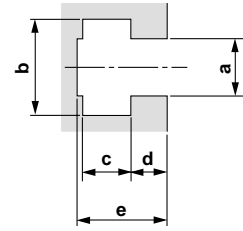
- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG

# Series MGP

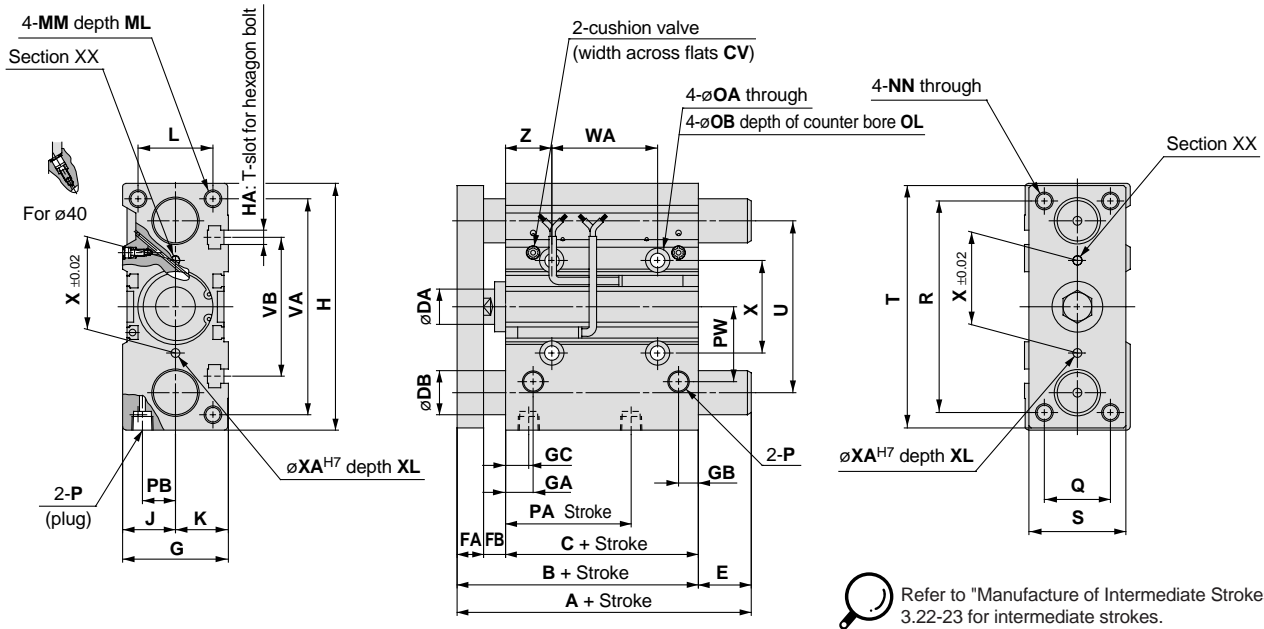
## Ø32 to Ø63/MGPM, MGPL (With Air Cushion)



### 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 x 1.25	20	M8 x 1.25	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 x 1.25	20	M8 x 1.25	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 x 1.5	22	M10 x 1.5	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 x 1.5	22	M10 x 1.5	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 x 1.25	16	21
40	100, 125,	104	44	118	86	106	72	48	124	200	46	84	122	50	4	4.5	3	6	M8 x 1.25	16	22
50	150, 175, 200	130	60	146	110	130	92	48	124	200	48	86	124	66	5	6	4	8	M10 x 1.5	20	24
63		130	70	158	124	142	110	52	128	200	50	88	124	80	5	6	4	8	M10 x 1.5	20	24

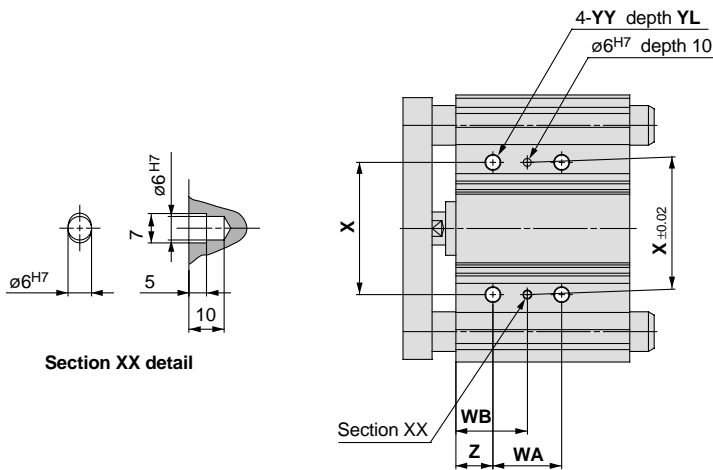
### MGPM (slide bearing)/Dimensions A, DB, E (mm)

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

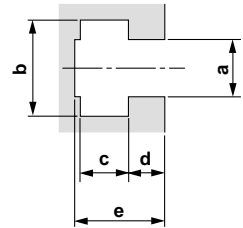
### MGPL (ball bushing)/Dimensions A, DB, E (mm)

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

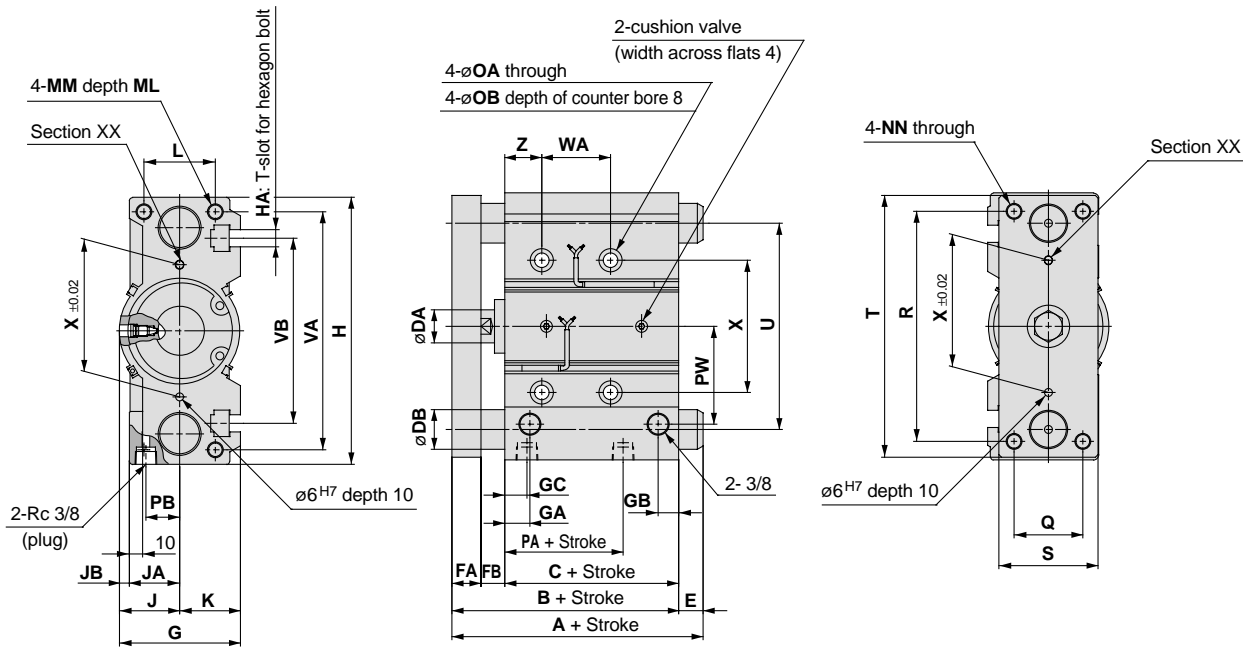
# Ø80, Ø100/MGPM, MGPL (With Air Cushion)



T-slot dimensions



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 x 1.75	25	M12 x 1.75	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 x 2.0	31	M14 x 2.0	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 x 1.75	24	28
100	150, 175, 200	64	210	90	236	188	210	166	72	148	220	47	85	121	124	M14 x 2.0	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
- 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







## 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	$\begin{matrix} +1.5 \\ 0 \end{matrix}$ 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.: <b>MGPM50-35-HN</b> A spacer 15mm in width is installed in a <b>MGPM50-50-HN</b> . 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 0.45 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

## Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	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 (mm<sup>2</sup>)



## Weights

### Slide bearing: MGPM20 to 100 (Basic weight)

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)

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

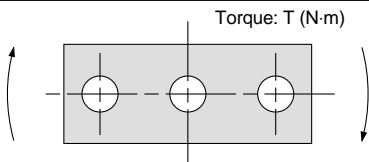
### Lock unit additional weight

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

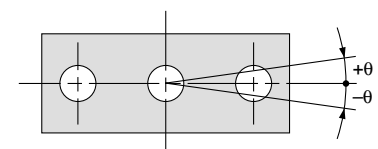
### Allowable Rotational Torque of Plate



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

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

### Non-rotating Accuracy of Plate

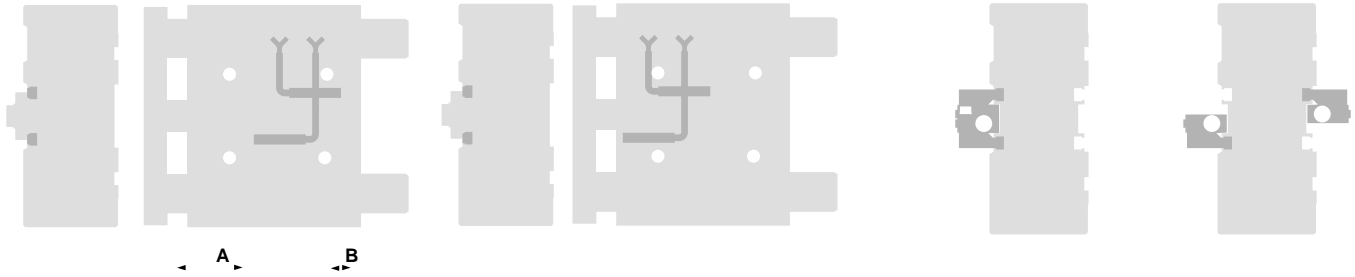


For non-rotating accuracy  $\theta$  without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy $\theta$	
	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	$\pm 0.04^\circ$	$\pm 0.05^\circ$

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 switch



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

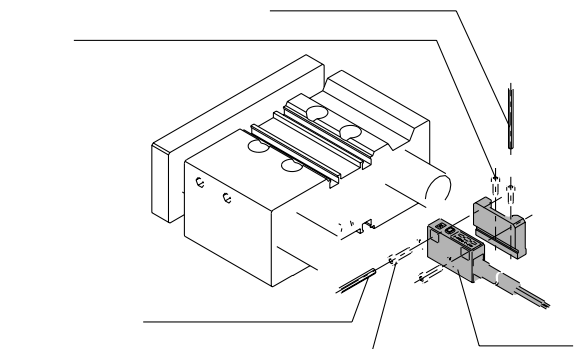
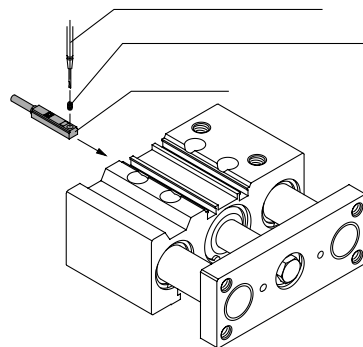
Bore size (mm)	A	B
20	4	33
25	5	32.5
32	5.5	32
40	9.5	34.5
50	7.5	36.5
63	10	39
80	13	68.5
100	17.5	73.5



## Auto Switch Mounting

For D-P5DW

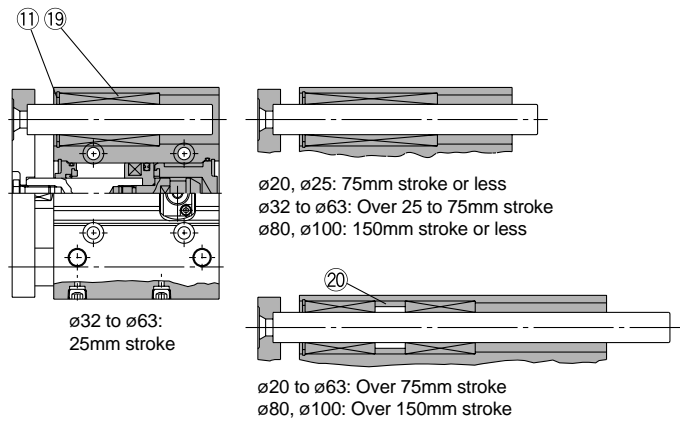
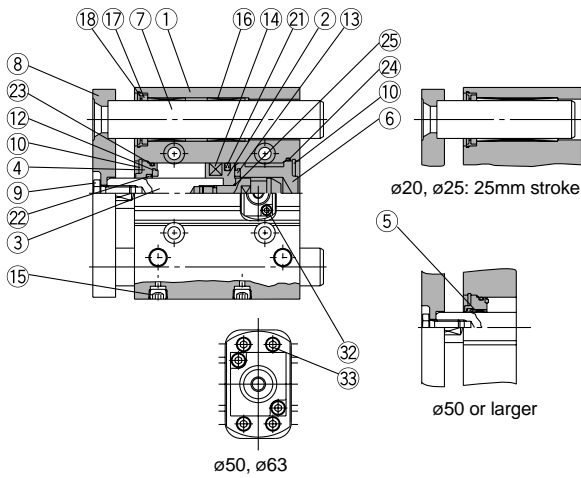
### ⚠ Caution



**Construction**

**Series MGPM**

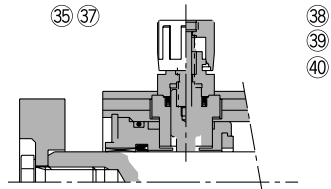
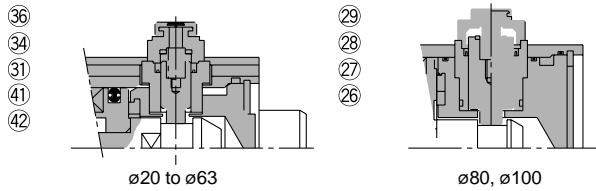
**Series MGPL**



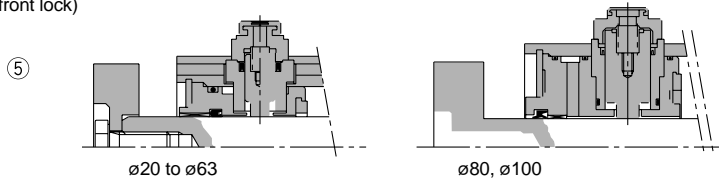
**Non-locking type**

**Locking type**

(Rear side lock)



(With front lock)



No.			
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	Hard chrome plated
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	

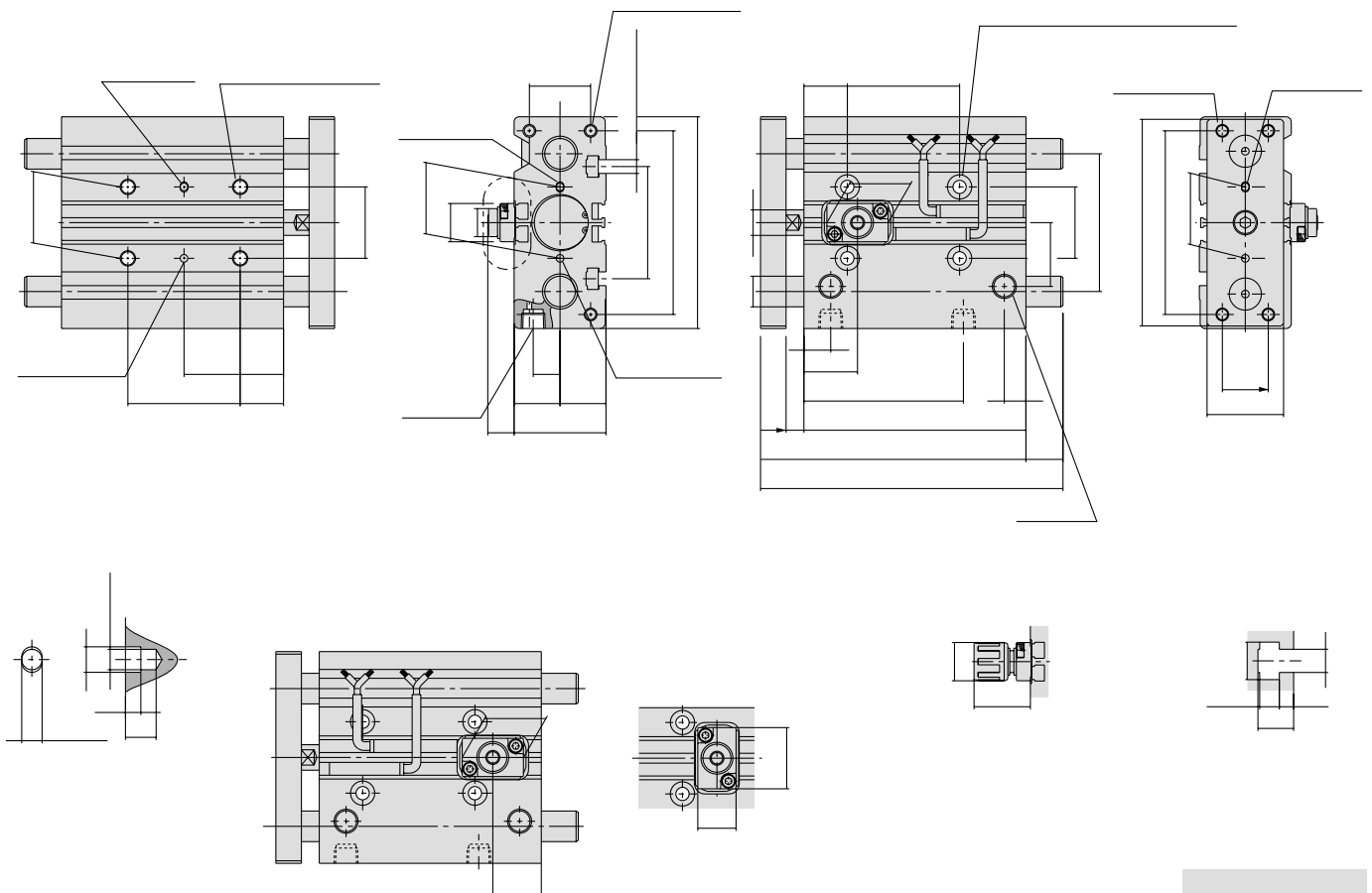
No.			
22*	Rod seal	NBR	
23*	Gasket A	NBR	
24*	Gasket B	NBR	
25	Piston gasket	NBR	ø32 to ø100 only
26	Lock bolt	Carbon steel	Zinc chromated
27	Lock holder	Brass	Electroless nickel plated
28	Lock piston	Carbon steel	Nickel plated
29	Lock spring	Stainless steel	
30	Seal retainer	Carbon steel	Zinc chromated (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	

		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	

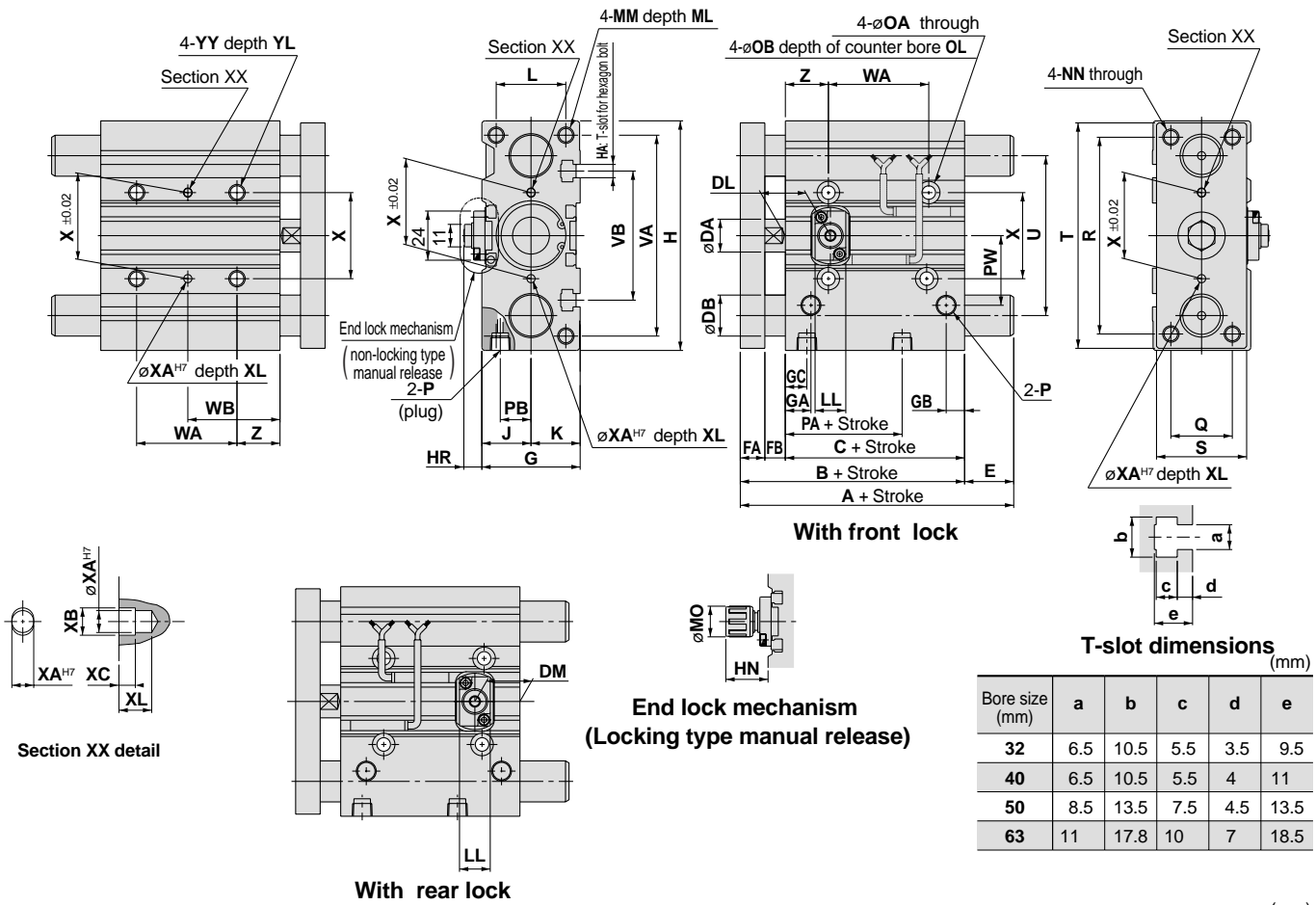
		Contents
63	MGP63-B-PS	Kits include items 21, 22, 23, 24, 32, 33, 41 and 42 from the table above.
80	MGP80-B-PS	
100	MGP100-B-PS	

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

# Dimensions/Ø20, Ø25



# Dimensions/Ø32 to Ø63



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

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MM	ML	NN	OA
32	25, 50, 75, 100	84.5	62.5	16	12	10	48	12.5	9	12.5	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6
40	125, 150, 175	91	69	16	12	10	54	14	10	14	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6
50	200, 250, 300	97	69	20	16	12	64	14	11	12	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6
63	350, 400	102	74	20	16	12	78	16.5	13.5	16.5	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6

Bore size (mm)	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB	WA			WB				
														75st or less	Over 75st to 175st	Over 175st to 275st	Over 275st	75st or less	Over 75st to 175st	Over 175st to 275st	Over 275st
32	11	7.5	1/8	32	15	34	30	96	44	110	78	98	63	48	124	200	300	45	83	121	171
40	11	7.5	1/8	38	18	38	30	104	44	118	86	106	72	48	124	200	300	46	84	122	172
50	14	9	1/4	34	21.5	47	40	130	60	146	110	130	92	48	124	200	300	48	86	124	174
63	14	9	1/4	39	28	55	50	130	70	158	124	142	110	52	128	200	300	50	88	124	174

Bore size (mm)	X	XA	XB	XC	XL	YY	YL	Z
32	42	4	4.5	3	6	M8 x 1.25	16	21
40	50	4	4.5	3	6	M8 x 1.25	16	22
50	66	5	6	4	8	M10 x 1.5	20	24
63	80	5	6	4	8	M10 x 1.5	20	24

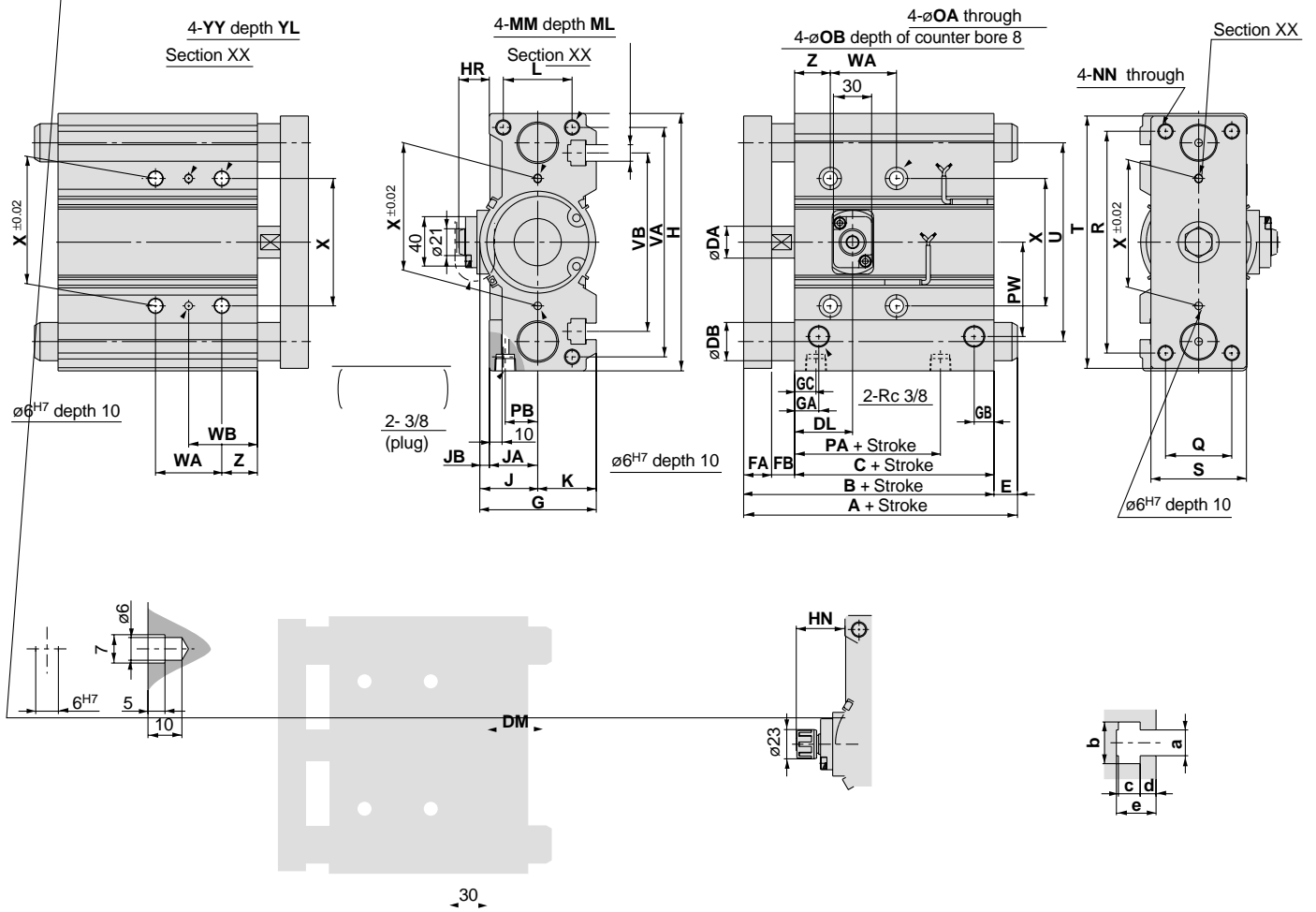
Bore size (mm)	A			DB	E		
	25st or less	Over 25st to 75st	Over 75st to 175st		25st or less	Over 25st to 75st	Over 175st
32	97	102	140	20	12.5	17.5	55.5
40	97	102	140	20	6	11	49
50	106.5	118	161	25	9.5	21	64
63	106.5	118	161	25	4.5	16	59

Bore size (mm)	DL	DM	HR	HN (max.)	LL	MO
32	22	22	9.5	21	15	15
40	26	23	11.5	25.5	21	19
50	24	23	13	27	21	19
63	25	25.5	11	25	21	19

Bore size (mm)	A				DB	E			
	25st or less	Over 25st to 75st	Over 75st to 175st	Over 175st		25st or less	Over 25st to 75st	Over 75st to 175st	Over 175st
32	84.5	98	118	140	16	0	13.5	33.5	55.5
40	91	98	118	140	16	0	7	27	49
50	97	114	134	161	20	0	17	37	64
63	102	114	134	161	20	0	12	32	59

- 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

# Dimensions/Ø80, Ø100



	PB	PW	Q	R	S	T	U	VA	VB	WA			
										50st or less	Over 50st to 150st	Over 150st to 250st	Over 250st
	25.5	74	52	174	75	198	156	180	140	52	128	200	300
	32.5	89	64	210	90	236	188	210	166	72	148	220	320

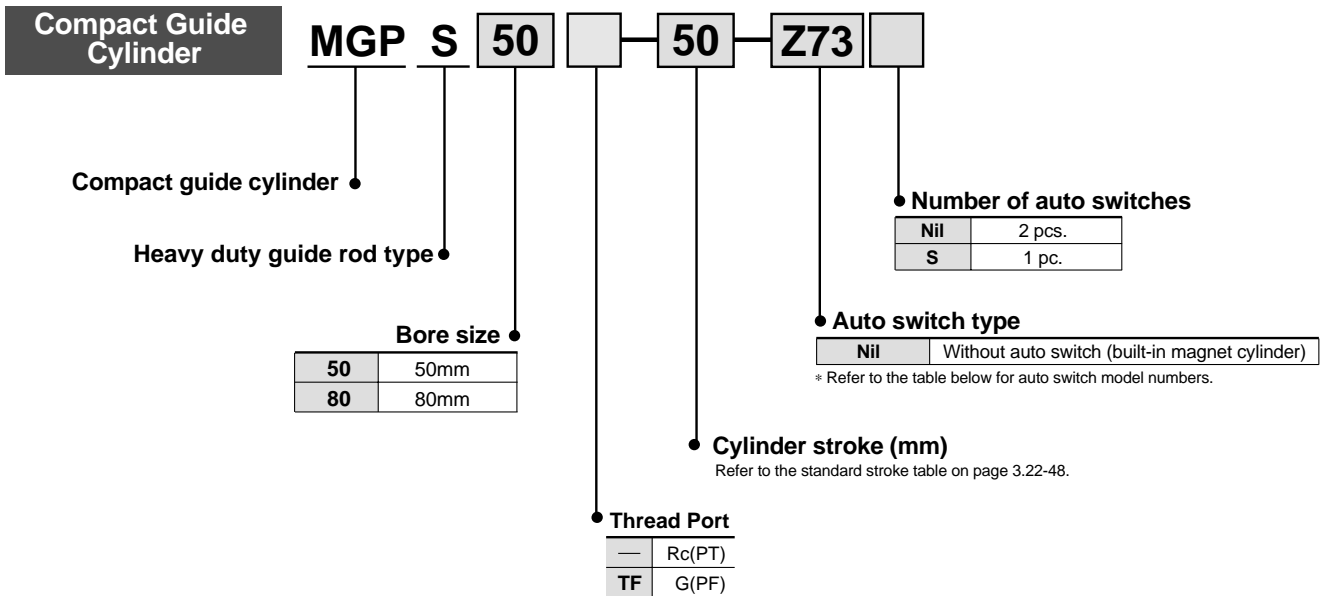
	X	YL	Z
	100	24	28
	124	28	11

# 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) <sup>Note 1)</sup>			Applicable load		
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)	IC circuit	Relay, PLC	
							Perpendicular	In-line						
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	—
				2 wire	24V	12V	100V	—	Z73	●	●	●	—	Relay, PLC
Reed switch	—	Grommet	No	2 wire	24V	5V 12V	100V or less	—	Z80	●	●	—	IC circuit	—
				3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC
3 wire (PNP)	Y7PV	Y7P	●	●				○	—					
Solid state switch	—	Grommet	Yes	2 wire	24V	12V	—	Y69B	Y59B	●	●	○	—	Relay, PLC
				3 wire (NPN)				Y7NWV	Y7NW	●	●	○	IC circuit	
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○	—	
	Water resistant (2 colour indicator)	2 wire	12V	—	Y7BWV	Y7BW	●	●	○	—				
	Magnetic field resistant (2 colour indicator)				—	Y7BA	—	●	○	—				
	—				—	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

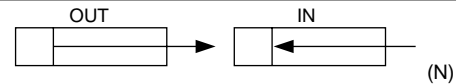
Bore size (mm)	Standard stroke (mm)
50, 80	25, 50, 75, 100, 125, 150, 175, 200

## Manufacture of Intermediate Strokes

<b>Modification method</b>	Spacer installation type Spacers are installed in a standard stroke cylinder. Available in 5mm stroke increments
<b>Part number</b>	Refer to page 3.22-47 for standard part numbers and ordering procedure.
<b>Applicable stroke (mm)</b>	5 to 195
<b>Example</b>	Part no.: <b>MGPS50-35</b> A spacer 15mm in width is installed in a <b>MGPS50-50</b> . 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 0.45 x 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (nominal size 3)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	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

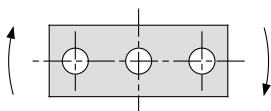
Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## 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	

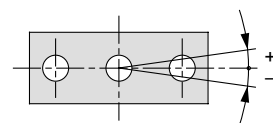
## Allowable Rotational Torque of Plate

Torque: T (N·m)



Bore size (mm)	Model	Standard stroke (mm)								T (N·m)
		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  $\theta$  without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Model	Non-rotating accuracy $\theta$
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)	<b>1, 2</b>	<b>3, 4</b>	<b>5, 6</b>	<b>7, 8</b>

### 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.

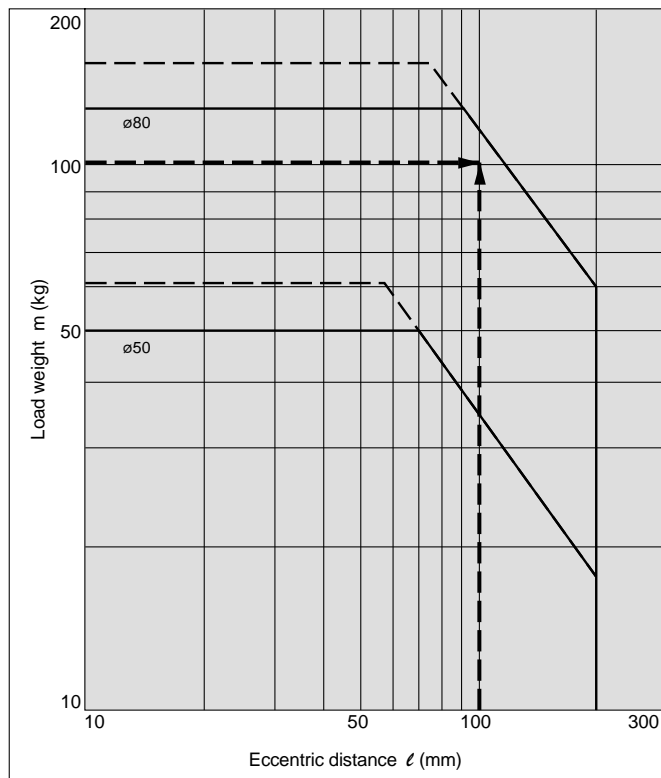
### Selection Example 2 (Horizontal Mounting)

Selecting conditions  
 Mounting: Horizontal  
 Distance between plate and load center of gravity: 50mm  
 Maximum speed: 200mm/s  
 Load weight: 30kg  
 Stroke: 100mm

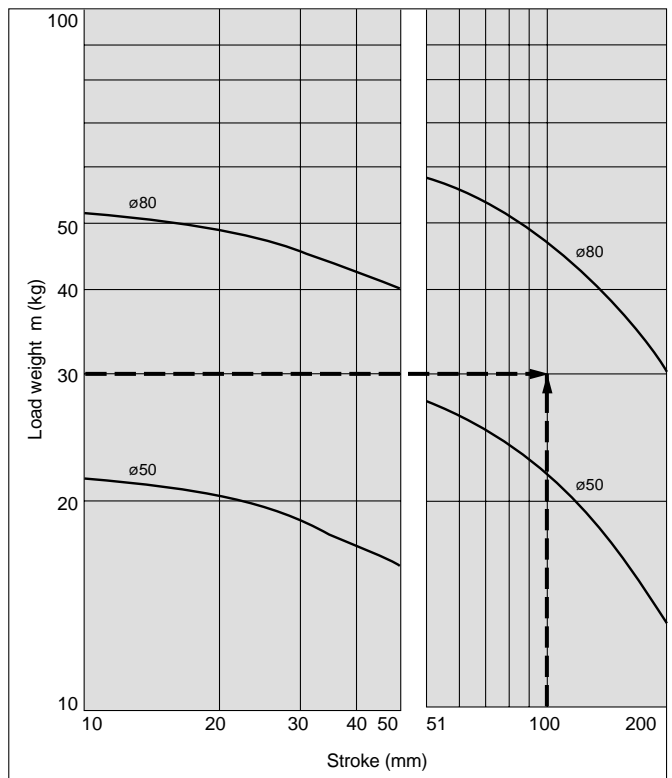
Find the point of intersection for the load weight of 30kg and stroke of 100mm on graph **5**, based on horizontal mounting, the distance of 50mm between the plate and load center of gravity, and the speed of 200mm/s.

→MGPS80-100 is selected.

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



**5**  $l = 50\text{mm}$  V = 200mm/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

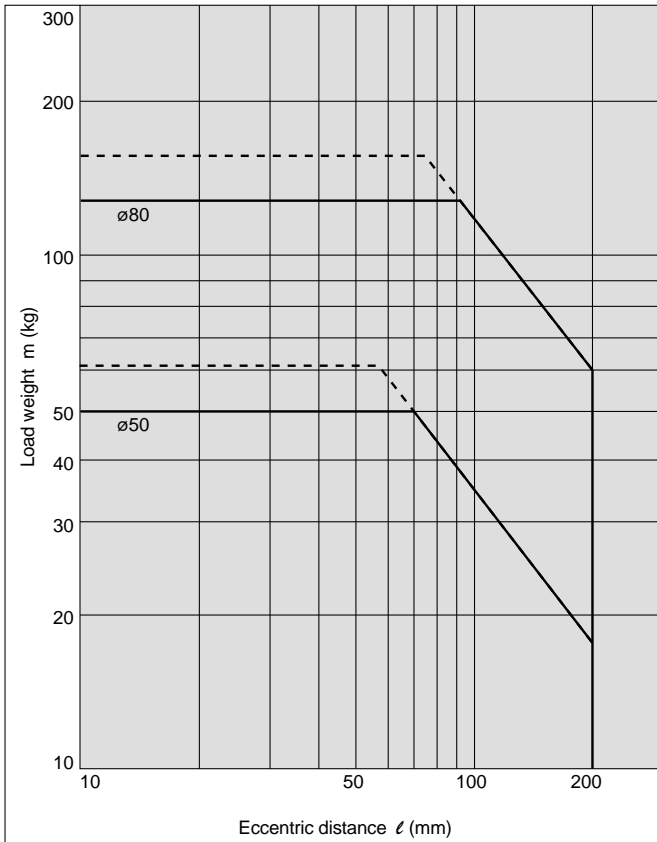
# Series MGPS

## Vertical Mounting **Slide Bearing**

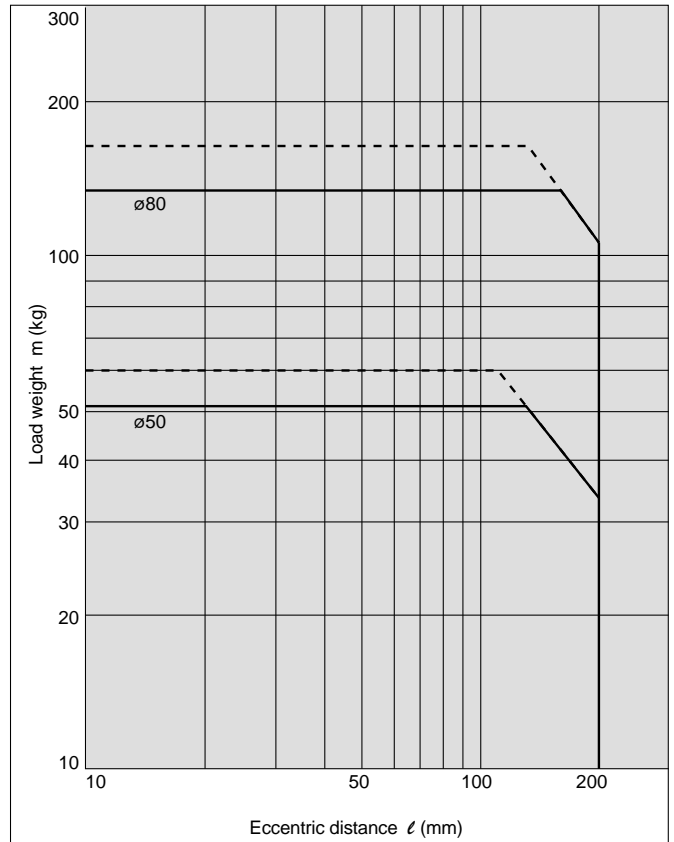
— Operating pressure: 0.4MPa  
 - - - - Operating pressure: 0.5MPa or more

### MGPS50, 80

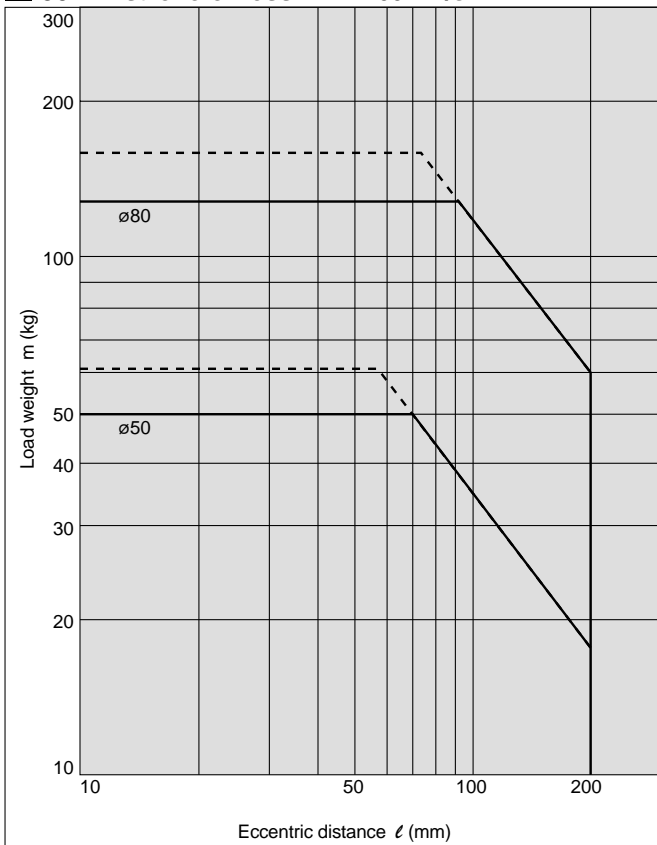
**1** 50mm stroke or less V = 200mm/s



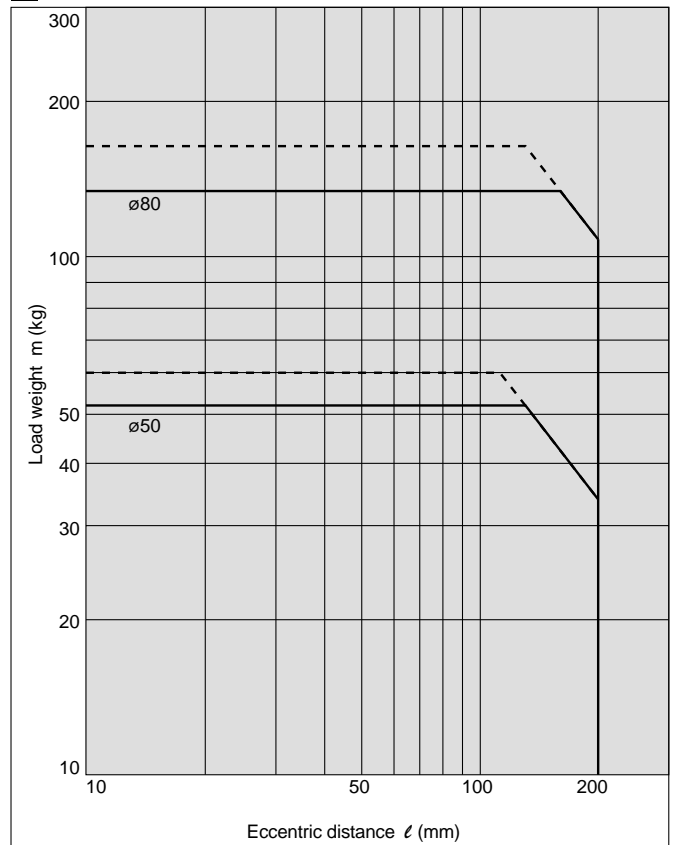
**2** Over 50mm stroke V = 200mm/s



**3** 50mm stroke or less V = 400mm/s



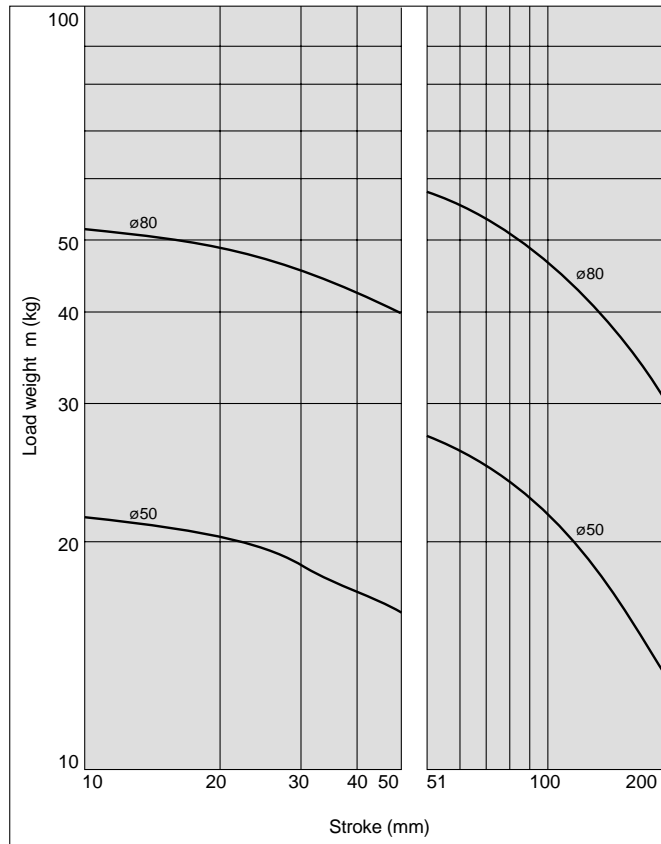
**4** Over 50mm stroke V = 400mm/s



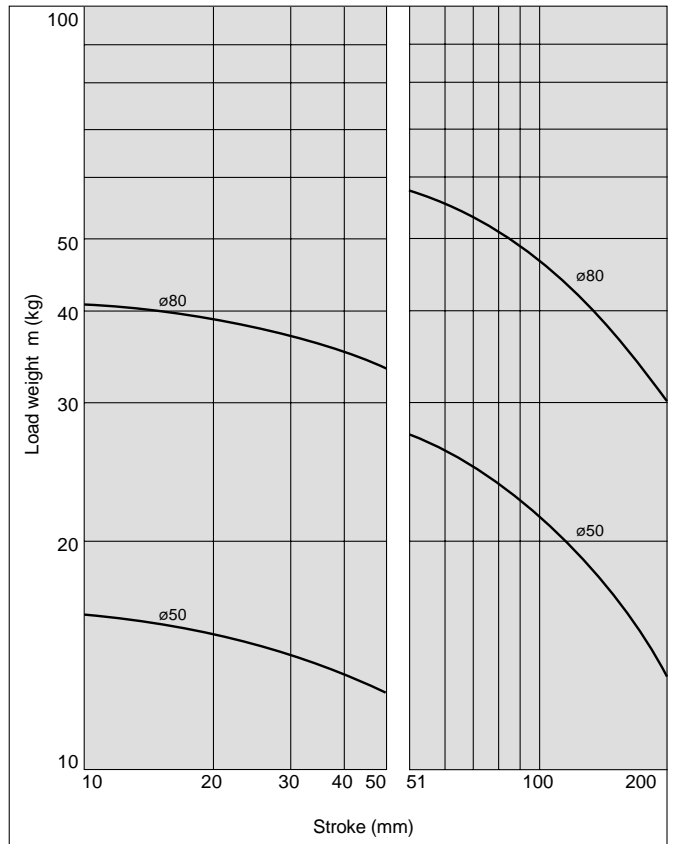
**Horizontal Mounting** Slide Bearing

**MGPS50, 80**

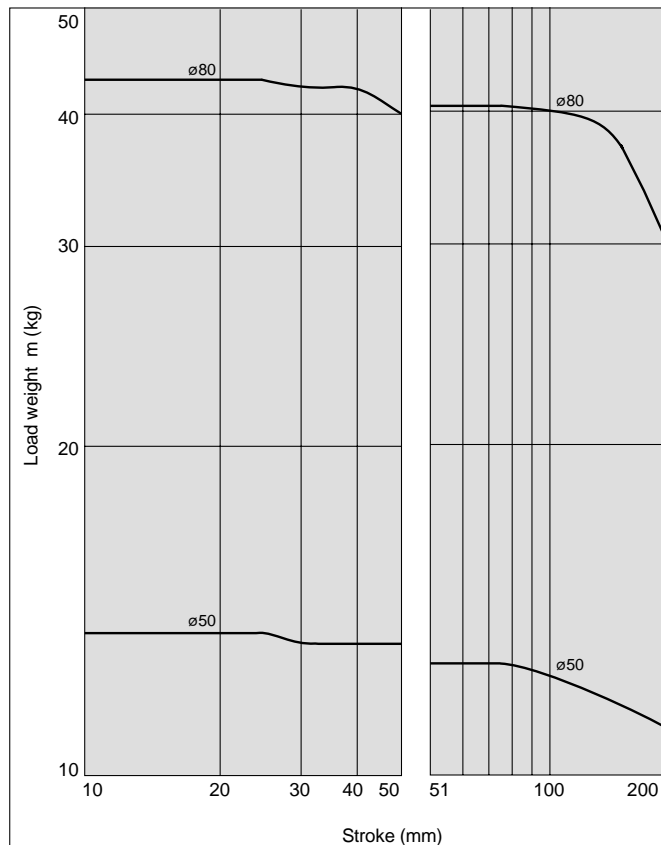
**5**  $\ell = 50\text{mm}$   $V = 200\text{mm/s}$



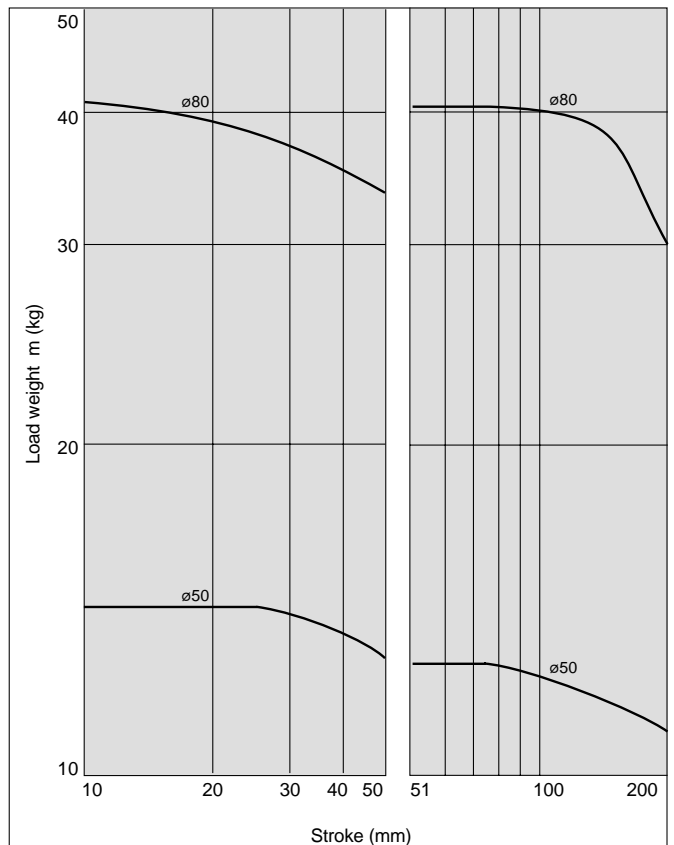
**6**  $\ell = 100\text{mm}$   $V = 200\text{mm/s}$



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



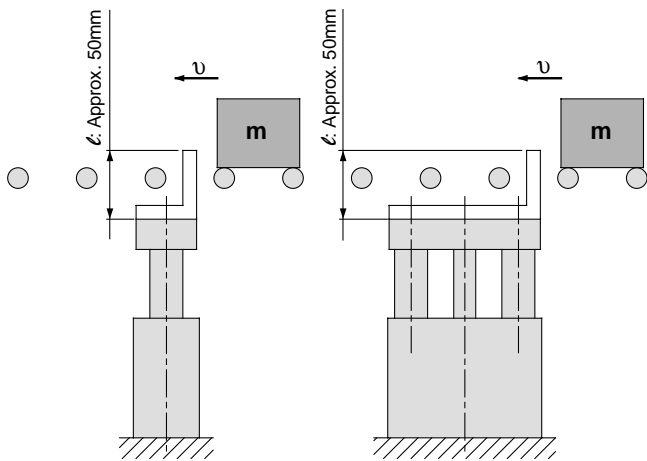
**8**  $\ell = 100\text{mm}$   $V = 400\text{mm/s}$



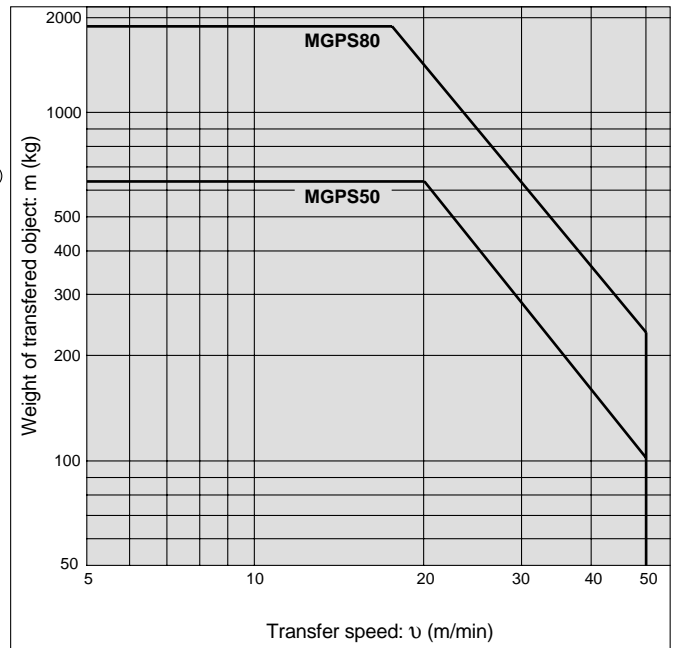
- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP**
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY
- MY

# Series MGPS

## Operating Range when Used as Stopper



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

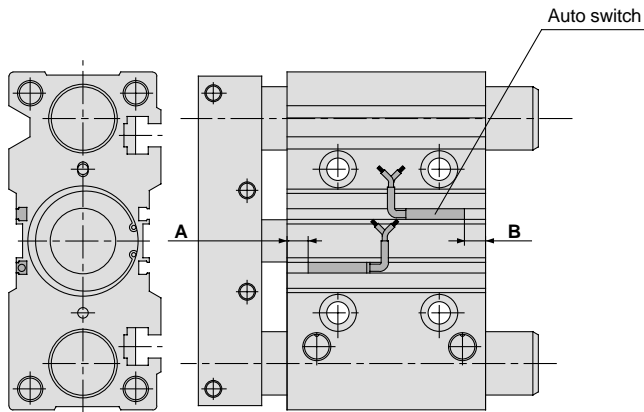


### **⚠ Caution**

#### 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

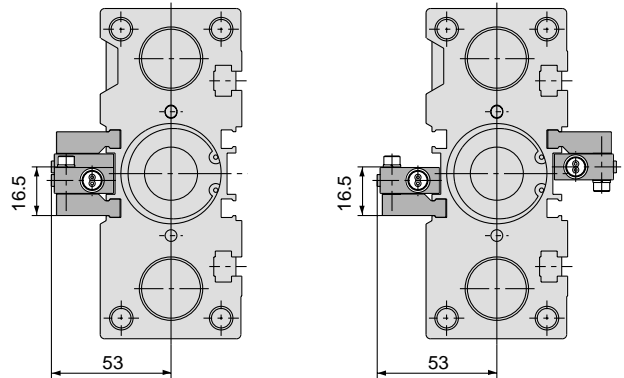


### Proper mounting position (mm)

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

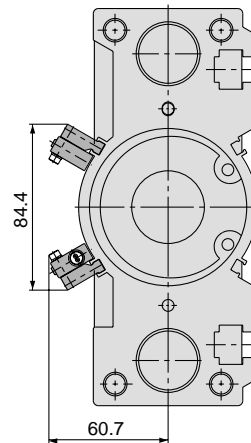
Note ) Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

### 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

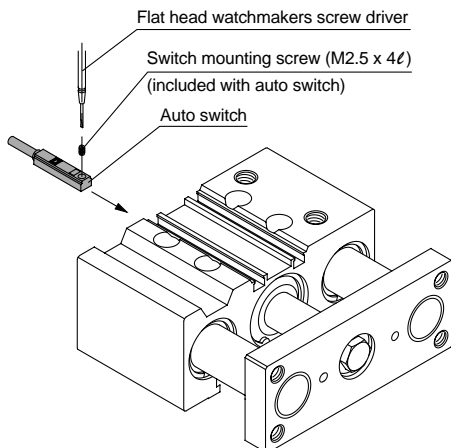
### ⚠ Caution

#### 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

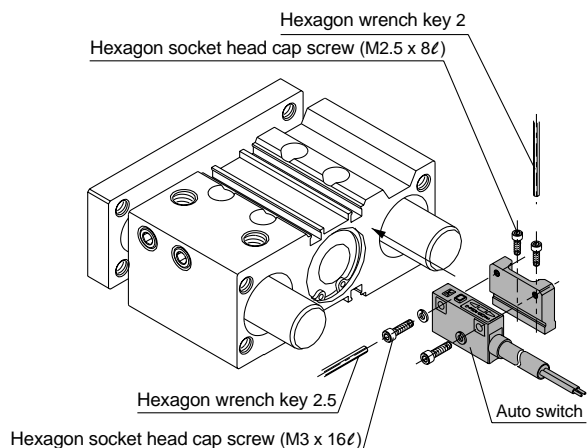
### ⚠ Caution

#### Auto switch mounting tool

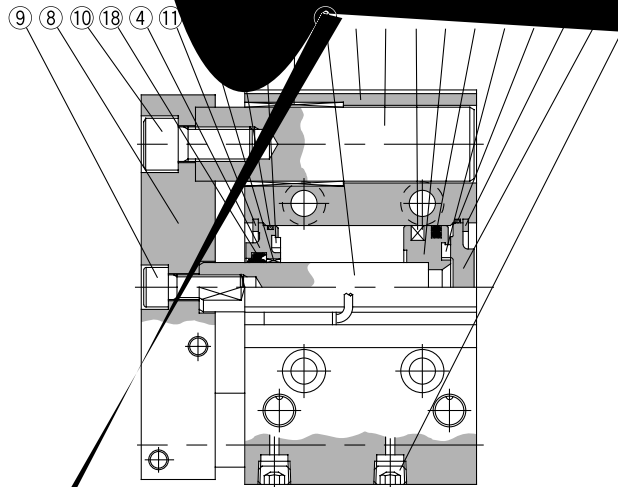
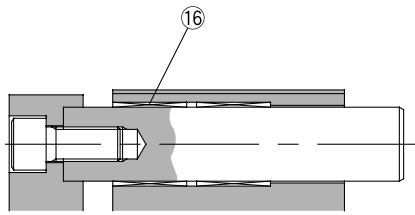
- When tightening hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 or 2.5 with the appropriate screws.

#### 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.



- 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



		Notes
		Hard anodized
		Chrom plated
		Hard chrome plated
		Coated
		Hard chrome plated
		Nickel plated
		Nickel plated
		Nickel plated

### Parts list

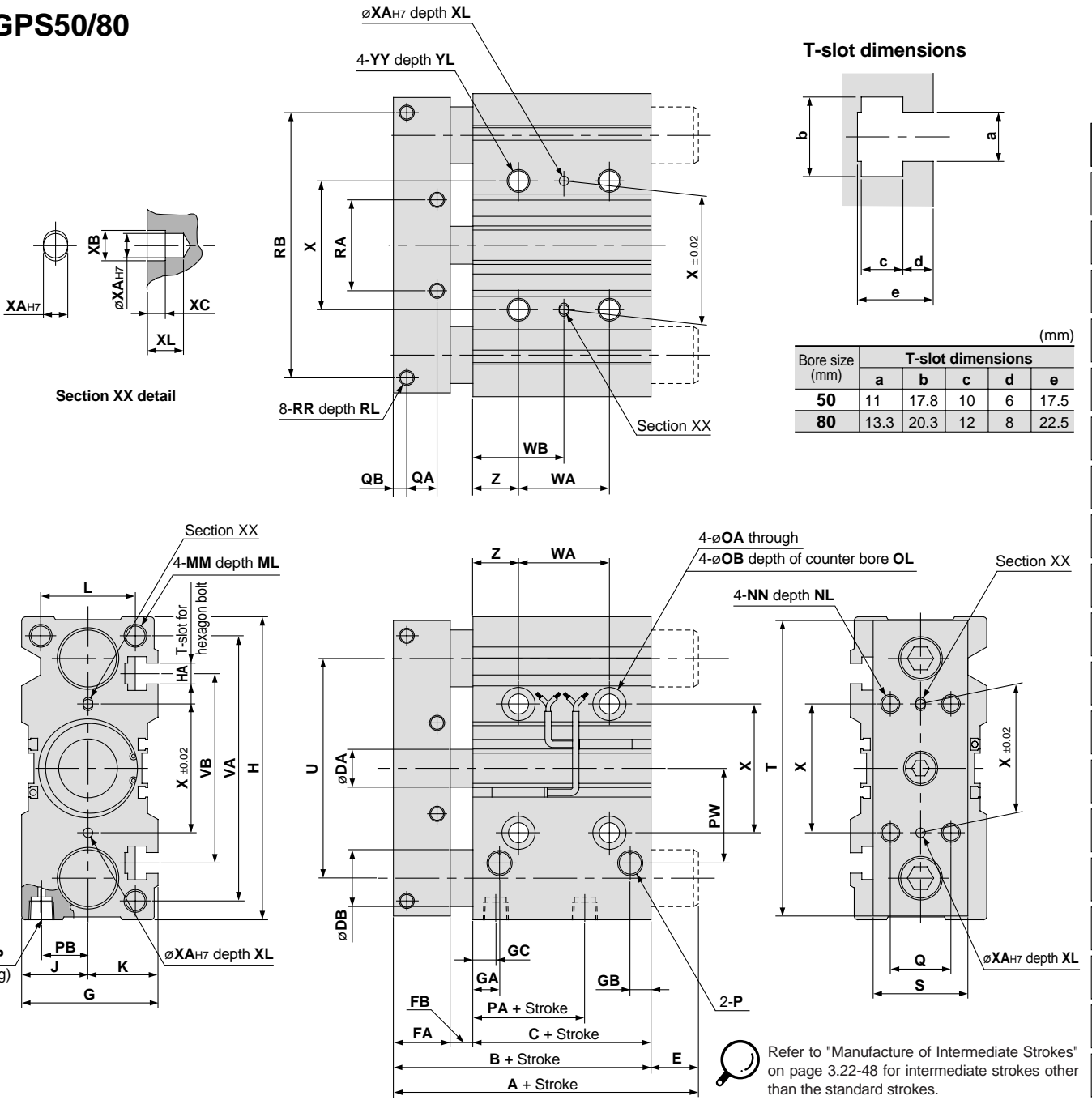
Description	Material	Note
Snap ring	Carbon tool steel	Phosphate coated
Bumper A	Urethane	
Bumper B	Urethane	
Magnet	Synthetic rubber	
Hexagon socket head taper plug	Carbon steel	Nickel plated
Slide bearing	Lead bronze casting	
Piston seal	NBR	
Rod seal	NBR	
Gasket A	NBR	
Gasket B	NBR	

### Replacement parts: Seal kits

Bore size (mm)	Kit no.	Contents
50	MGP50-PS	Kits include items 7, 18, 19 and 20 from the table above.
80	MGP80-PS	

**Dimensions**

**MGPS50/80**



**Dimensions**

Bore size (mm)	Standard stroke (mm)	A		B	C	DA	DB	E			FA	FB	G	GA	GB	GC	H	HA	J	K	L
		25, 50st	Over 50st					25, 50st	Over 50st	P											
50	25, 50, 75, 100,	86	110	86	44	20	30	0	24	30	12	72	14	11	12	160	M10	35	37	50	
80	125, 150, 175, 200	118	151	118	65	25	45	0	33	35	18	95	19	24	14.5	242	M12	47	48	66	
Bore size (mm)	Standard stroke (mm)	MM	ML	NN	NL	OA	OB	OL	P	PA	PB	PW	Q	QA	QB	RA	RB	RR	RL		
50	25, 50, 75, 100,	M12 x 1.75	20	M10 x 1.5	20	10.6	17.5	13	1/4	9	24.5	50	32	16	7	48	140	M8 x 1.25	14		
80	125, 150, 175, 200	M16 x 2	32	M12 x 1.75	24	12.5	20	17.5	3/8	14.5	29	77	40	18	9	80	200	M10 x 1.5	20		
Bore size (mm)	Standard stroke (mm)	S	T	U	VA	VB	WA			WB			X	XA	XB	XC	XL				
							25st	50, 75, 100st	Over 100st	25st	50, 75, 100st	Over 100st									
50	25, 50, 75, 100,	50	156	116	140	100	24	48	124	36	48	86	68	5	6	4	8				
80	125, 150, 175, 200	65	228	170	214	138	28	52	128	42	54	92	100	6	7	5	10				
Bore size (mm)	Standard stroke (mm)	YY	YL	Z																	
50	25, 50, 75, 100,	M12 x 1.75	24	24																	
80	125, 150, 175, 200	M14 x 2	28	28																	

- 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.

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

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

## ① Intermediate Strokes (Special Body Type)

**-XB10**

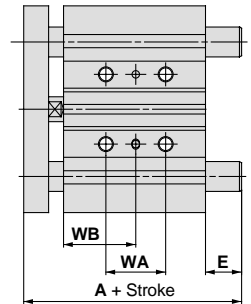
MGP<sup>M</sup><sub>L</sub> Bore size — Stroke — XB10  
Intermediate stroke ●

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
		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
		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



**-XC19**

MGP<sup>M</sup><sub>L</sub> Bore size — Stroke — A — XC19

With air cushion/Intermediate stroke ●

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.

**-XB6**

MGPM Bore size — Stroke — XB6

Heat resistant cylinder ●

**Specifications**

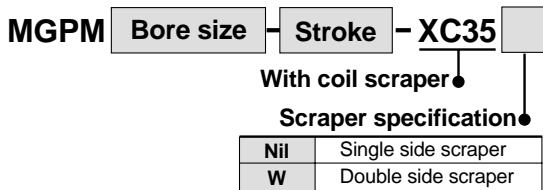
Applicable series	MGPM
Bearing type	Slide bearing
Cylinder bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Ambient temperature range	-10 to 150°C
Seal material	Fluoro rubber
Grease	Heat resistant grease
Cushion	None
Auto switch	Not applicable

\* 1. Dimensions are the same as standard products.

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

**Specifications**

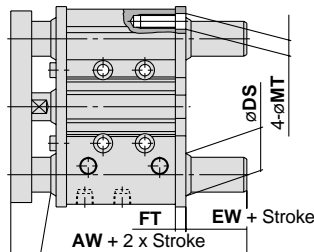
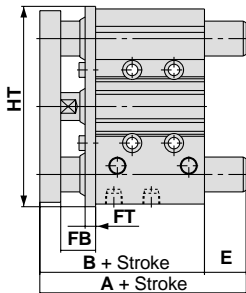
Aons	



**Specifications**

Applicable series		<b>MGPM</b>
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

**With Heavy Duty Scraper/With Coil Scraper Common Dimensions**



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

**For cylinder with double side scraper**

**MGPM, MGPL Common dimensions (mm)**

Bore size (mm)	<b>B</b>	<b>FB</b>	<b>FT</b>
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)	<b>AW</b>	<b>EW</b>	<b>MT</b>	<b>DS *</b>	
				<b>MGPM</b>	<b>MGPL</b>
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)	<b>A</b>			<b>E</b>			<b>HT</b>	
	50st or less	Over 50st to 200st	Over 200st	50st or less	Over 50st to 200st	Over 200st	<b>XC4</b>	<b>XC35</b>
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

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

Bore size (mm)	<b>A</b>				<b>E</b>				<b>HT</b>
	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)	<b>A</b>				<b>E</b>				<b>HT</b>
	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)	<b>A</b>				<b>E</b>				<b>HT</b>
	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	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**

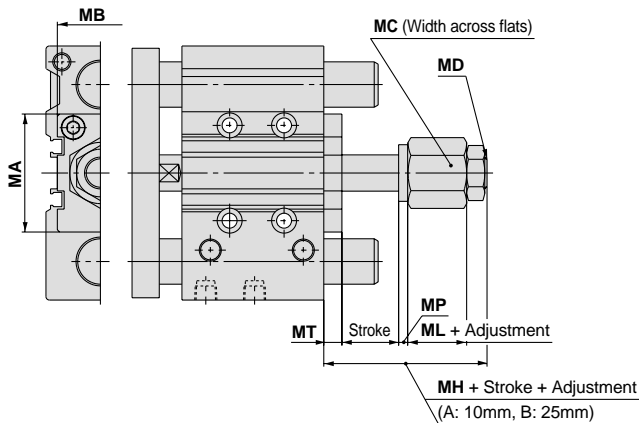
MGP<sup>M</sup><sub>L</sub> Bore size — Stroke A — XC8

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 x 0.8	22	9	3	5
16	29	19	14	M5 x 0.8	22	9	3	5
20	34	30	22	M8 x 1.25	30	12.5	3	8
25	40	30	22	M8 x 1.25	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**

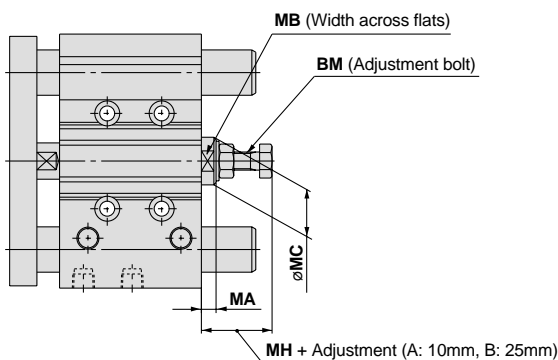
MGP<sup>M</sup><sub>L</sub> Bore size — Stroke A — XC9

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 x 0.8	5	8	12.5	19
16	M6 x 1.0	5	10	11.5	19
20	M8 x 1.25	6.5	13	16	27
25	M8 x 1.25	6.5	13	16	26.5
32	M8 x 1.25	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 <sup>M</sup> <sub>L</sub> Bore size - Stroke - XC6 A

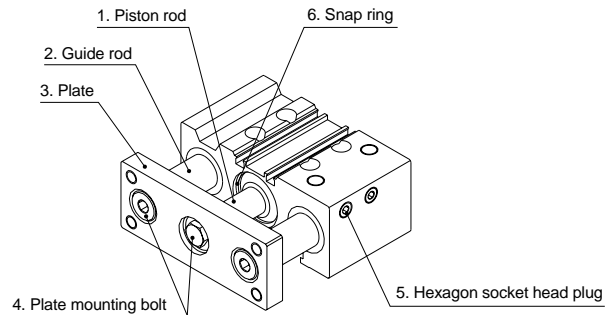
Stainless steel material ●

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

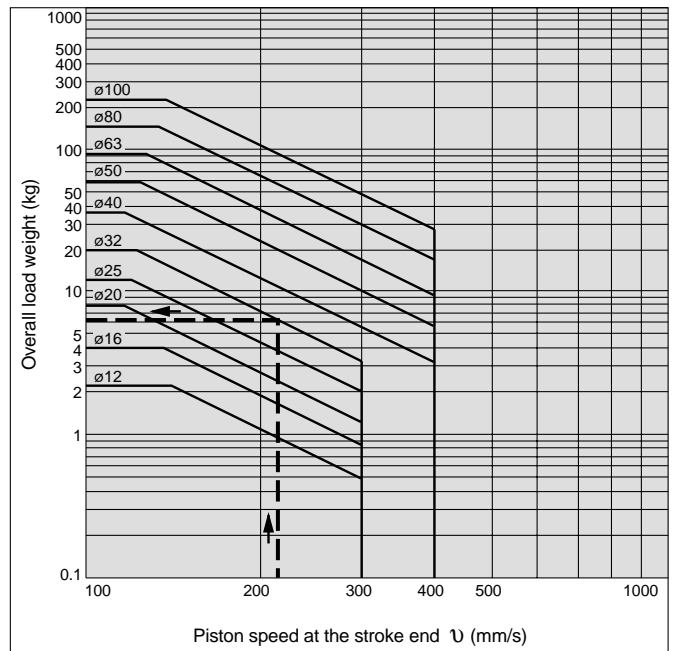


## ⚠ Allowable Kinetic Energy for Order Made Specifications (without Bumper)

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

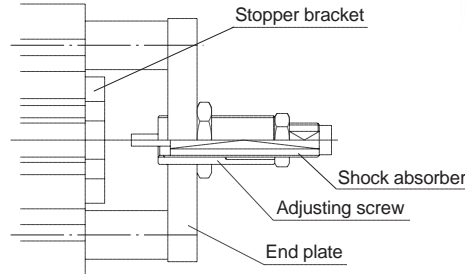
**-XC69**

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) ● Auto switch type ● Number of auto switches ● With shock absorber

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

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

Number of auto switches	
Nil	2 pcs.
S	1 pc.

\* 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	—	—	<b>Z76</b>	●	●	—	IC circuit	—	
			No	2 wire	24V	12V	100V	—	<b>Z73</b>	●	●	●	—	Relay, PLC	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V	—	—	<b>Y69A</b>	<b>Y59A</b>	●	●	○	IC circuit	Relay, PLC
				3 wire (PNP)		12V			<b>Y7PV</b>	<b>Y7P</b>	●	●	○	IC circuit	
				2 wire		12V			<b>Y69B</b>	<b>Y59B</b>	●	●	○	—	
				3 wire (NPN)		5V			<b>Y7NWV</b>	<b>Y7NW</b>	●	●	○	IC circuit	
	3 wire (PNP)	12V	<b>Y7PWV</b>	<b>Y7PW</b>	●	●	○	—							
	2 wire	12V	<b>Y7BWV</b>	<b>Y7BW</b>	●	●	○	—							
	—	—	<b>Y7BAL</b>	—	●	○	—	—							
	—	—	<b>P5DW</b>	—	●	●	—	—							

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	<small>Note 1)</small> $\phi 12, \phi 16$ $\phi 20$ to $\phi 100$	0.12MPa 0.10MPa
Ambient and fluid temperature	-10 to 60°C	
Piston speed	<small>Note 2)</small> 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.

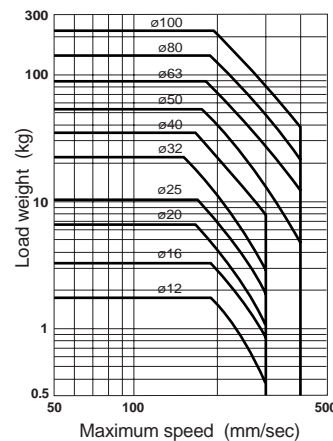
## Extension Adjustment Mechanism Specifications

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

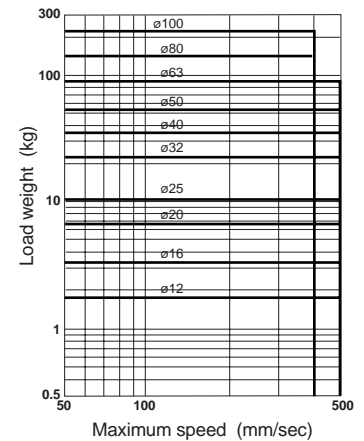
## Allowable Kinetic Energy

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

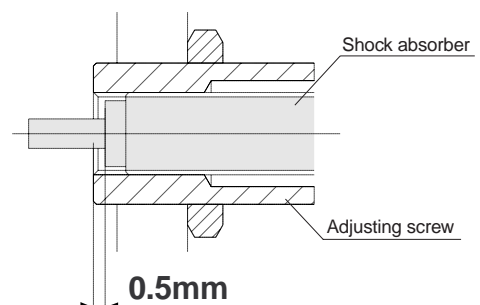
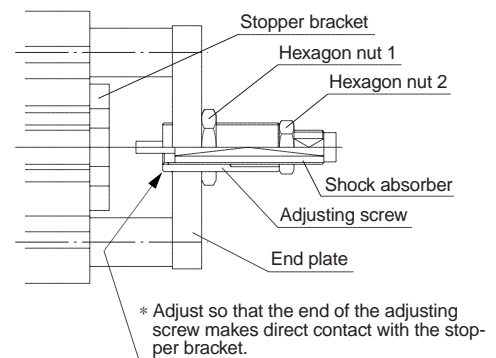
##### 1. Adjusting screw adjustment (stroke adjustment)

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.)

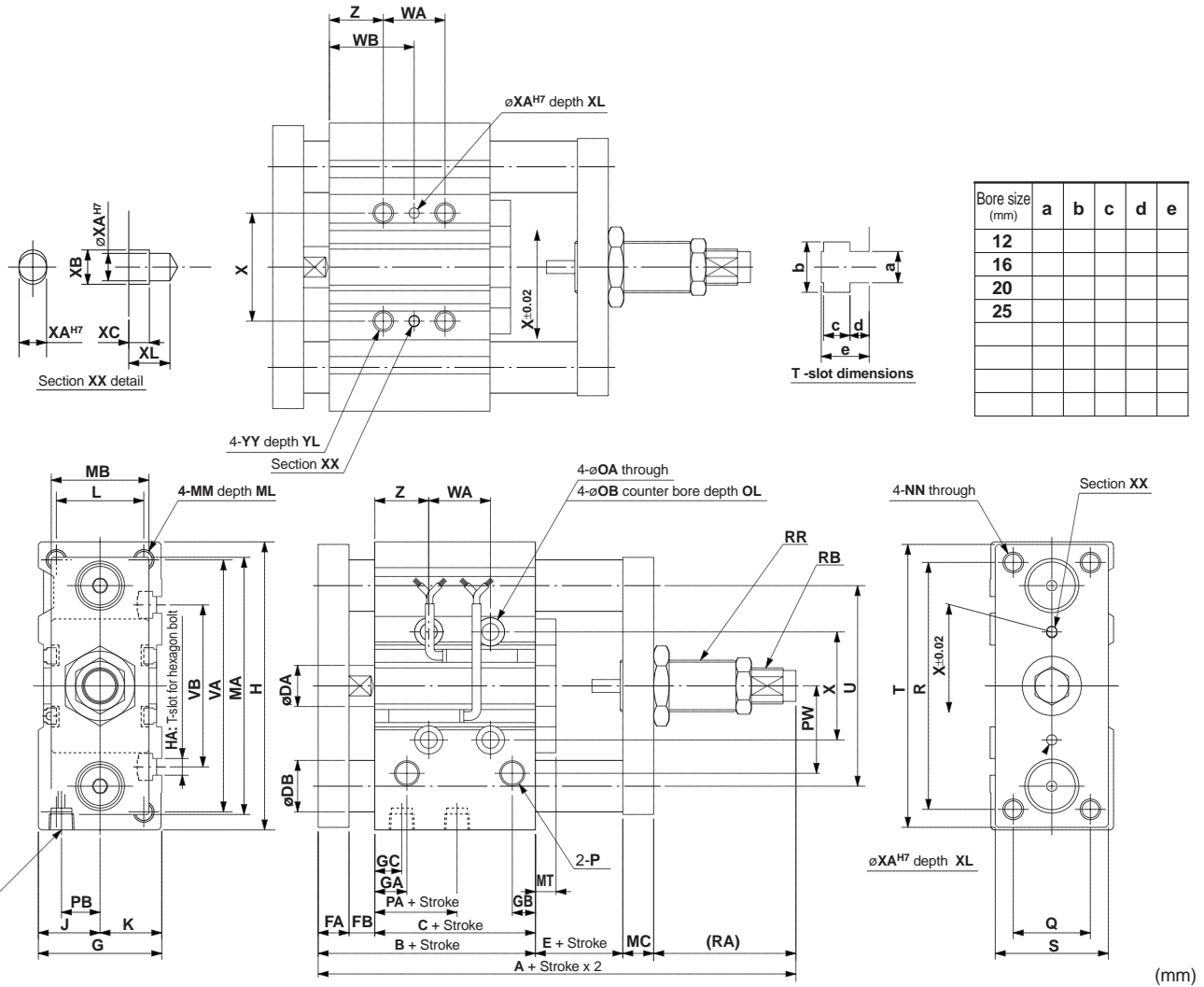
##### 2. Shock absorber replacement

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.



# Dimensions/Ø12 to Ø63



Bore size (mm)	Standard stroke (mm)	A	B	C	DA	E	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MA	MB	MC	MT	MM
12	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250																					
16	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400																					
20	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400																					
25																						
32																						
40																						
50																						
63																						

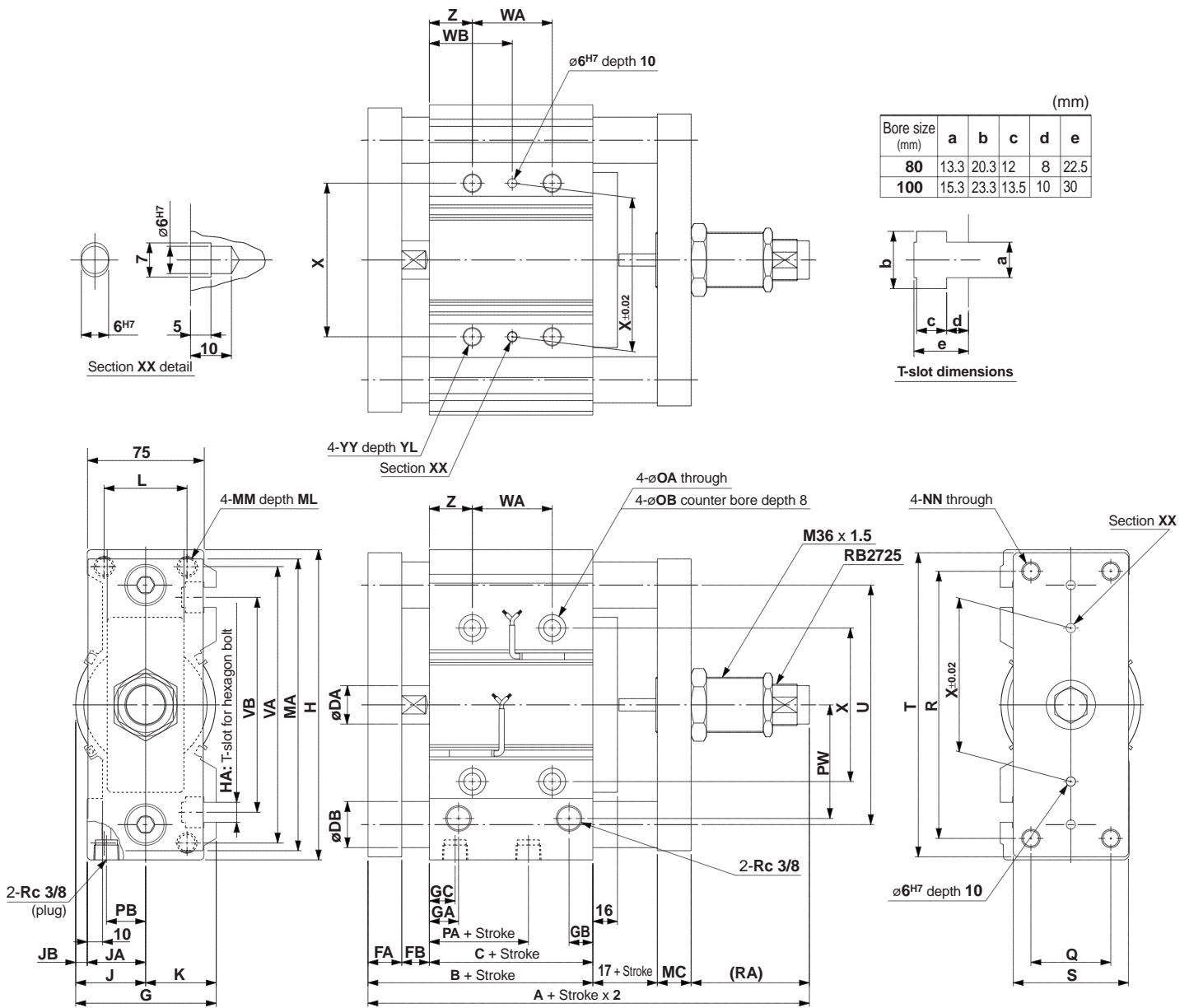
Bore size (mm)	ML	NN	OA	OB	OL	P	PA	PB	PW	Q	R	RA	RB	RR	S	T	U	VA	VB	X	XA	XB	YY	YL	Z		
12										14	48	33	RB0806		22	56	41	50	37	23	3	3.5		M5 x 0.8	10	5	
16										16	54	33	RB0806		25	62	46	56	38	24	3	3.5		M5 x 0.8	10	5	
20										18	70	37	RB1007		30	81	54	72	44	28	3	3.5		M6 x 1.0	12	17	
25										26	78	37	RB1007		38	91	64	82	50	34	4	4.5		M6 x 1.0	12	17	
32										30	96	55			44	110	78	98	63	42	4	4.5	3	6	M8 x 1.25	16	21
40										30	104	57	(86)T1.0-1.2751244		44	118	86	106	72	50	4	4.5	3	6	M8 x 1.25	16	22
50										40	130	57			60	146	110	130	92	66	5	6	4	8	M10 x 1.5	20	24
63										50	130	57			70	158	124	142	110	80	5	6	4	8	M10 x 1.5	20	24

Bore size (mm)	WA					WB				
	30 stroke or less	Over 30 stroke to 100 stroke	Over 100 stroke to 200 stroke	Over 200 stroke to 300 stroke	Over 300 stroke	30 stroke or less	Over 30 stroke to 100 stroke	Over 100 stroke to 200 stroke	Over 200 stroke to 300 stroke	Over 300 stroke
20	40	110	200	200	-	15	25	60	105	-
24	44	110	200	200	-	17	27	60	105	-
24	44	120	200	300	29	39	77	117	167	
24	44	120	200	300	29	39	77	117	167	

Bore size (mm)	25 stroke or less	Over 25 stroke to 100 stroke	Over 100 stroke to 200 stroke	Over 200 stroke to 300 stroke	Over 300 stroke	25 stroke or less	Over 25 stroke to 100 stroke	Over 100 stroke to 200 stroke	Over 200 stroke to 300 stroke	Over 300 stroke
	24	48	124	200	300	33	45	83	121	171
24	48	124	200	300	34	46	84	122	172	
24	48	124	200	300	36	48	86	124	174	
28	52	128	200	300	38	50	88	124	174	

# Series MGP Order Made Specifications

## Dimensions/Ø80, Ø100



(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

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	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 x 1.75	25	M12 x 1.75	10.6
	125, 150, 175, 200	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 x 2.0	31	M14 x 2.0	12.5
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 x 2.0	31	M14 x 2.0	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 x 1.75	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 x 2.0	28	11



## 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.

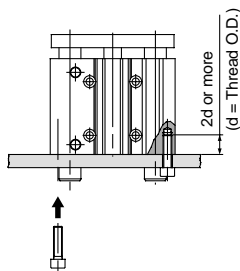
Damage to seals can cause air leaks or malfunction, etc.

#### 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.

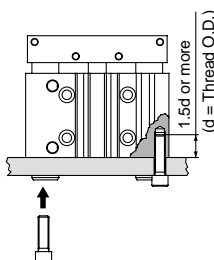
Moreover, in applications where impact occurs from a stopper, etc., the mounting bolts should be inserted to a depth of 2d or more (1.5d or more for MGPS).

### 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 x 0.7
16	56	22	46	12	10	M5 x 0.8
20	72	24	54	14	12	M5 x 0.8
25	82	30	64	18	15	M6 x 1.0
32	98	34	78	22	18	M8 x 1.25
40	106	40	86	22	18	M8 x 1.25
50	130	46	110	27	22	M10 x 1.5
63	142	58	124	27	22	M10 x 1.5
80	180	54	156	33	28	M12 x 1.75
100	210	62	188	39	33	M14 x 2.0

### Series MGPS



Bore size (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Hexagon socket mounting bolt
50	140	50	116	32	M12 x 1.75
80	214	66	170	47	M16 x 2

## 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.

### ! Caution

#### 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**

**⚠ Caution**

Exhaust Speed

**⚠ Caution**

Operation

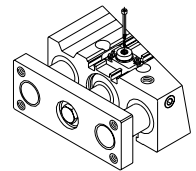
**⚠ Caution**

Releasing the Lock

**⚠ Warning**

Manual Release

**⚠ Caution**



\* 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.

