

# Compact Guide Cylinder

## MGP Series

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

Up to  
**24%**  
Weight  
reduced!

Weight reduced by up to 24% with  
a shorter guide rod and thinner plate



**3 types of bearing**  
can be selected.

● Slide bearing

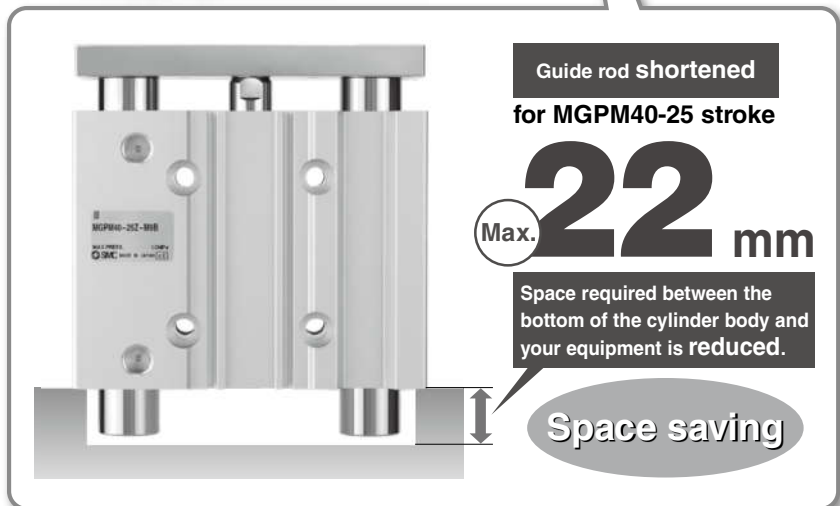
MGPM series

● Ball bushing

MGPL series

● High precision ball bushing

MGPA series



MGJ

JMGP

**MGP**

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT



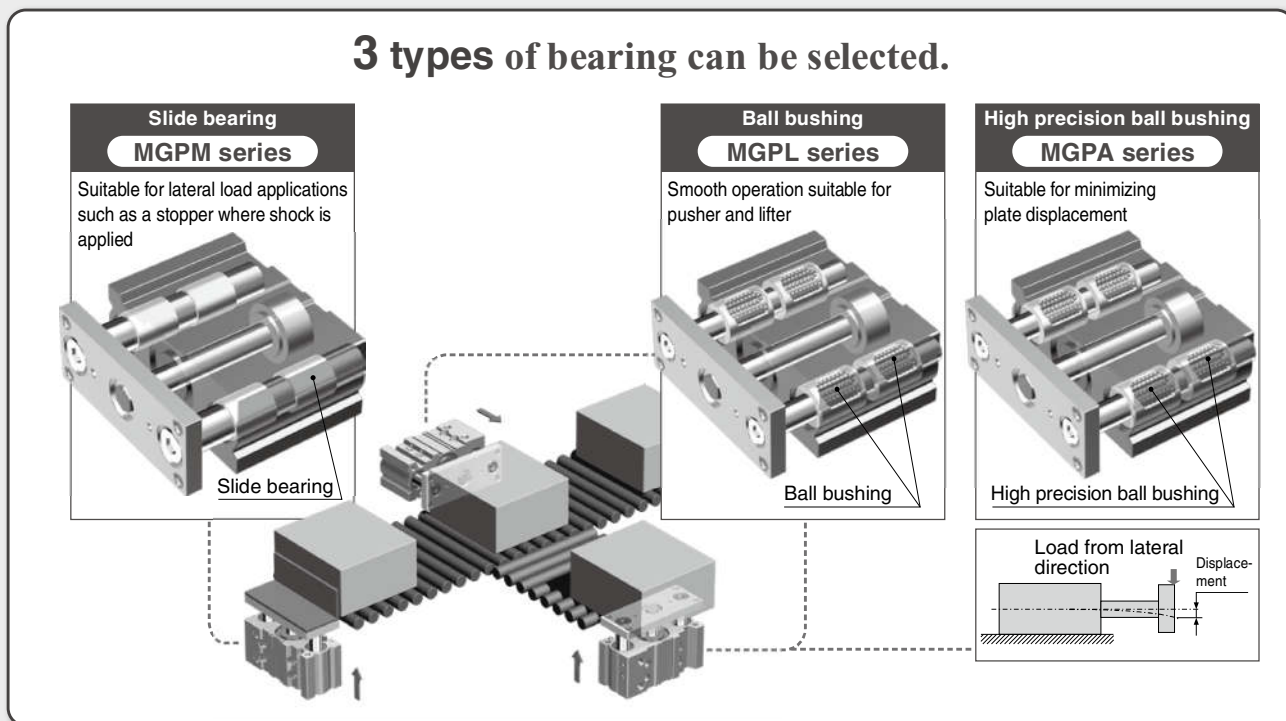
With air cushion

Water resistant cylinder

D-□

-X□

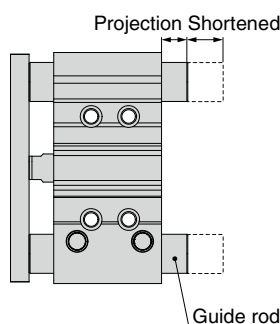
### 3 types of bearing can be selected.



## Basic Type

- Weight reduced by up to 17%
- Guide rod shortened

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



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

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

\*: Compared with the slide bearing type, ø12 to ø25-20 stroke  
\*: Compared with the slide bearing type, ø32 to ø100-25 stroke

- Performance and strength (rigidity) are equivalent to the current MGP series.
- Mounting dimensions are equivalent to the current MGP series.

### MGP Series (Basic Type), Stroke Variations

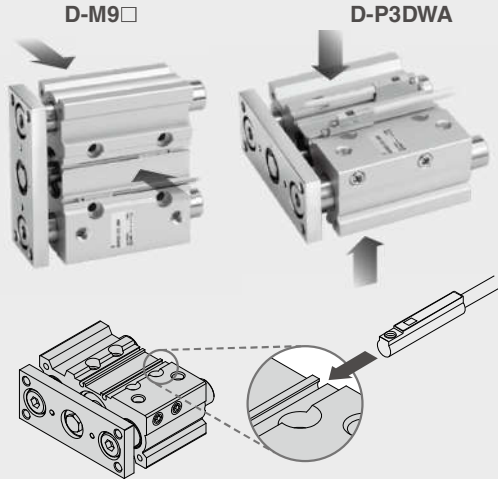
Bearing type	Bore size [mm]	Stroke [mm]																Made to Order
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
MGPM Slide bearing	12	●	●															<ul style="list-style-type: none"> <li>-XA□: Change of guide rod end shape</li> <li>-XB6: Heat resistant cylinder (-10 to 150°C)</li> <li>-XB10: Intermediate stroke (Using exclusive body)</li> <li>-XB13: Low speed cylinder (5 to 50 mm/s)</li> <li>-XC6: Made of stainless steel</li> <li>-XC8: Adjustable stroke cylinder/ Adjustable extension type</li> <li>-XC22: Fluororubber seal</li> <li>-XC35: With coil scraper</li> <li>-XC79: Tapped hole, drilled hole and pinned hole machined additionally</li> <li>-XC82: Bottom mounting type</li> <li>-X144: Symmetrical port position</li> <li>-X867: Side porting type (Plug location changed)</li> </ul>
	16	●	●															
	20	●	●	●														
MGPL Ball bushing	25		●	●														
	32			●	●													
MGPA High precision ball bushing	40				●	●												
	50					●	●											
	63						●	●										
	80							●	●									
	100								●	●								

\*: For details, refer to pages 491 and 1247 to 1440.

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

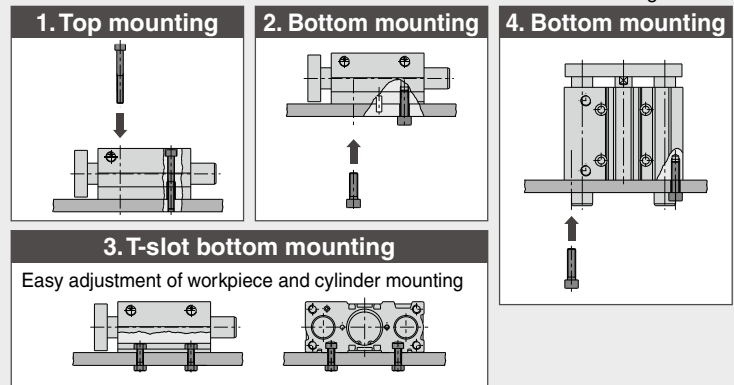
- D-M9□
- D-A9□
- D-P3DWA

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

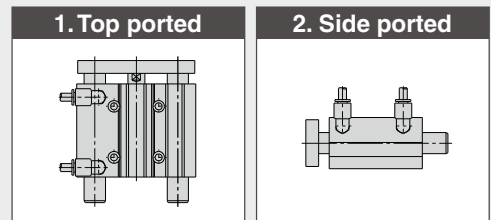


4 types of mounting are possible.

Easy positioning  
Knock pin holes provided on each mounting surface



Piping is possible from 2 directions.



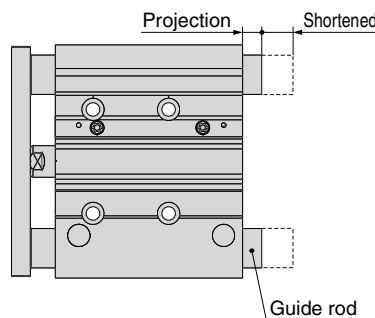
## With Air Cushion

Weight reduced by up to 24%

Bore size [mm]	Reduction rate [%]	Weight [kg]
φ16	12	1.28
φ20	18	1.91
φ25	22	2.52
φ32	24	3.57
φ40	23	4.13
φ50	23	6.56
φ63	22	8.04
φ80	21	11.35
φ100	19	17.72

\*: Compared with the current MGPM with air cushion, 200 stroke

Guide rod shortened by up to 35.5 mm (MGPM100-50 stroke) [mm]



Bore size	Guide rod	
	Shortened by	New dimension
φ32	33.5	9
φ40	33.5	2.5
φ50	22	12.5
φ63	22	7.5
φ80	35.5	10
φ100	35.5	10.5

\*: Compared with the current MGPM with air cushion, 50 stroke

Performance and strength are equivalent to the current MGP series with air cushion.

Mounting dimensions are equivalent to the current MGP series with air cushion.

- MGJ
- JMGP
- MGP
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

## MGP Series (With Air Cushion), Stroke Variations

Bearing type	Bore size [mm]	Stroke [mm]											Made to Order		
		25	50	75	100	125	150	175	200	250	300	350		400	
MGPM-□A Slide bearing	16	●	●	●	●	●	●	●	●	●	●	●	●	●	-XC19: Intermediate stroke (Spacer type)  -XC79: Tapped hole, drilled hole, pinned hole machined additionally  -X867: Side porting type (Plug location changed)
	20	●	●	●	●	●	●	●	●	●	●	●	●	●	
	25	●	●	●	●	●	●	●	●	●	●	●	●	●	
MGPL-□A Ball bushing	32	●	●	●	●	●	●	●	●	●	●	●	●	●	
	40	●	●	●	●	●	●	●	●	●	●	●	●	●	
	50	●	●	●	●	●	●	●	●	●	●	●	●	●	
MGPA-□A High precision ball bushing	63	●	●	●	●	●	●	●	●	●	●	●	●	●	
	80	●	●	●	●	●	●	●	●	●	●	●	●	●	
	100	●	●	●	●	●	●	●	●	●	●	●	●	●	
	100	●	●	●	●	●	●	●	●	●	●	●	●	●	

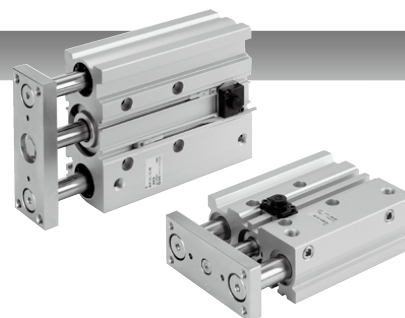
\*: For details, refer to pages 491 and 1247 to 1440.

- D-□
- X□

# Compact Guide Cylinder *MGP Series*

## With End Lock

- Holds the cylinder's home position even if the air supply is cut off.
- Compact body  $\varnothing 20$  to  $\varnothing 63$  ..... Standard + 25 mm body length  
 $\varnothing 80, \varnothing 100$  ..... Standard + 50 mm body length



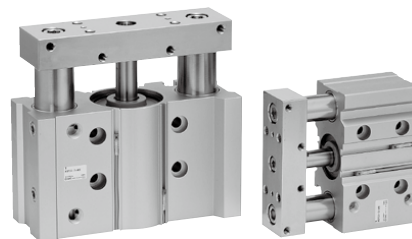
### Stroke Variations

Bearing type	Bore size [mm]	Stroke [mm]											Intermediate stroke	Lock direction	Manual release	
		25	50	75	100	125	150	175	200	250	300	350				400
<b>MGPM</b> Slide bearing	20	●	●	●	●	●	●	●	●	●	●	●	●	Spacer type available in 5 mm stroke increments.	Rod end lock	Non-lock type
	25	●	●	●	●	●	●	●	●	●	●	●	●			
	32	●	●	●	●	●	●	●	●	●	●	●	●			
<b>MGPL</b> Ball bushing bearing	40	●	●	●	●	●	●	●	●	●	●	●	●			
	50	●	●	●	●	●	●	●	●	●	●	●	●			
<b>MGPA</b> High precision ball bushing	63	●	●	●	●	●	●	●	●	●	●	●	●			
	80	●	●	●	●	●	●	●	●	●	●	●	●			
	100	●	●	●	●	●	●	●	●	●	●	●	●			

## Heavy duty guide rod type with improved load resistance

### Stroke Variations

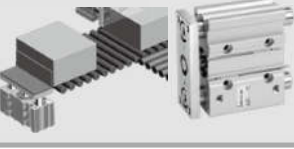

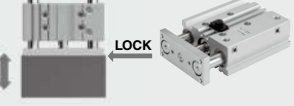




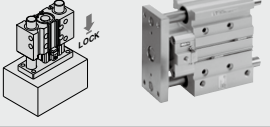
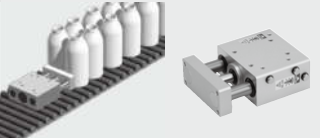
Bearing type	Bore size [mm]	Stroke [mm]							
		25	50	75	100	125	150	175	200
<b>MGPS</b> Slide bearing	50	●	●	●	●	●	●	●	●
	80	●	●	●	●	●	●	●	●



- Anti-lateral load : 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]	
	<b>MGPS</b>	<b>MGPM</b>
<b>50</b>	30	25
<b>80</b>	45	30

## Compact Guide Cylinders, Series Variations

Series	Bearing type	Bore size										Page				
		6	10	12	16	20	25	32	40	50	63		80	100		
<b>Basic type/MGP-Z</b> 	Slide bearing Ball bushing			●	●	●	●	●	●	●	●	●	●			Page 432
<b>With air cushion/MGP-AZ</b> 	High precision ball bushing			●	●	●	●	●	●	●	●	●	●			Page 452
<b>With end lock/MGP-H/R</b> 	Slide bearing Ball bushing High precision ball bushing					●	●	●	●	●	●	●	●			Page 469
<b>Heavy duty guide rod/MGPS</b> 	Slide bearing									●		●			Page 478	
<b>Clean series/12/13-MGP-Z</b> 	Ball bushing			●	●	●	●	●	●	●	●	●			Page 435	
<b>Water resistant cylinder/MGP R/V-Z</b> 	Slide bearing					●	●	●	●	●	●	●	●		Page 435	
<b>Miniature Guide Rod Cylinder/MGJ</b> 	Slide bearing	●	●												Page 401	
<b>Compact Guide Cylinder with Lock/MLGP</b> 	Slide bearing Ball bushing					●	●	●	●	●	●	●	●		Page 1075	
<b>Hygienic Design Cylinder/HYG</b> 	Slide bearing					●	●	●	●	●	●				Best Pneumatics No. 2-1	

- MGJ
- JMGP
- MGP**
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

- D-
- X

# Combinations of Standard and Made to Order Specifications

## MGP Series

- : Standard
- ◎: Made to Order
- : Special product (Please contact SMC for details.)
- : Not available

Type	Basic type		
Bearing type	Slide bearing	Ball bushing	High precision ball bushing
Model	MGPM	MGPL	MGPA
Page	432		

Symbol	Specifications	Applicable bore size	ø12 to ø100		
<b>Standard</b>	<b>Basic type</b>		●	●	●
<b>12-, 13-</b>	<b>Clean series</b>	ø12 to ø63	—	●	—
<b>25A-</b>	<b>Copper (Cu) and Zinc (Zn)-free *1</b>	ø12 to ø100	●	●	○
<b>20-</b>	<b>Copper and Fluorine-free *1</b>		●	●*3	●*3
<b>R/V</b>	<b>Water resistant</b>	ø20 to ø100	●	—	—
<b>MGP□M</b>	<b>Cylinder with stable lubrication function (Lube-retainer)</b>		●	●	○
<b>MGPM□G</b>	<b>Guide unit with Lube-retainer</b>		●	—	—
<b>MGP□F</b>	<b>With flange</b>		●*5	●	●
<b>-XA□</b>	<b>Change of guide rod end shape</b>	ø12 to ø100	◎	◎	◎
<b>-XB6</b>	<b>Heat resistant cylinder (-10 to 150°C) *2</b>		◎	—	—
<b>-XB10</b>	<b>Intermediate stroke (Using exclusive body)</b>	ø12 to ø100	◎	◎	◎
<b>-XB13</b>	<b>Low speed cylinder (5 to 50 mm/s)</b>		◎	◎	○
<b>-XB22</b>	<b>Shock absorber soft type RJ series type</b>	ø12 to ø40	◎	◎	◎
<b>-XC4</b>	<b>With heavy duty scraper</b>	ø20 to ø100	◎	◎	◎
<b>-XC6</b>	<b>Made of stainless steel</b>	ø12 to ø100	◎	◎	—
<b>-XC8</b>	<b>Adjustable stroke cylinder/Adjustable extension type</b>		◎	◎	◎
<b>-XC9</b>	<b>Adjustable stroke cylinder/Adjustable retraction type *2</b>		◎	◎	◎
<b>-XC19</b>	<b>Intermediate stroke (Spacer type)</b>	ø16 to ø100	—	—	—
<b>-XC22</b>	<b>Fluororubber seal *2</b>	ø12 to ø100	◎	—	—
<b>-XC35</b>	<b>With coil scraper</b>	ø20 to ø100	◎	◎	◎
<b>-XC69</b>	<b>With shock absorber *4</b>	ø12 to ø100	◎	◎	◎
<b>-XC79</b>	<b>Tapped hole, drilled hole, pinned hole machined additionally</b>	ø12 to ø100	◎	◎	◎
<b>-XC82</b>	<b>Bottom mounting type</b>		◎	—	—
<b>-XC85</b>	<b>Grease for food processing equipment</b>		◎	◎	◎
<b>-XC88</b>	<b>Spatter resistant coil scraper, Lube-retainer, Grease for welding (Rod parts: Stainless steel 304)</b>	ø32 to ø100	◎	○	○
<b>-XC89W</b>	<b>Spatter resistant coil scraper, Lube-retainer, Grease for welding (Rod parts: S45C)</b>		◎	○	○
<b>-XC91</b>	<b>Spatter resistant coil scraper, Grease for welding (Rod parts: S45C)</b>		◎	○	○
<b>-XC92</b>	<b>Dust resistant actuator *4</b>	ø12 to ø100	◎	○	○
<b>-X144</b>	<b>Symmetrical port position</b>	ø12 to ø100	◎	◎	◎
<b>-X471</b>	<b>Enlarged plate and body gap dimensions</b>	ø12 to ø63	◎	○	○
<b>-X867</b>	<b>Side porting type (Plug location changed)</b>	ø12 to ø100	◎	◎	◎

\*1: For details, refer to the **Web Catalog**.

\*2: Without cushion

\*3: Copper and fluorine-free are available as standard products.

\*4: The shape is the same as the current product.

\*5: This product cannot be used as a stopper.



# MGP Series

	With air cushion			With end lock *4			Heavy duty guide *4 rod type	Symbol
	Slide bearing	Ball bushing	High precision ball bushing	Slide bearing	Ball bushing	High precision ball bushing	Slide bearing	
	MGPM	MGPL	MGPA	MGPM	MGPL	MGPA	MGPS	
	452			469			478	
	ø16 to ø100			ø20 to ø100		ø20 to ø100	ø50, ø80	
	●	●	●	—	—	—	●	Standard
	—	—	—	—	○	—	—	12-, 13-
	○	○	○	○	○	○	○	25A-
	●	●*3	●*3	○	○	○	○	20-
	○	—	—	○	—	—	○	R/V
	○	○	○	—	—	—	—	MGP□M
	○	—	—	—	—	—	—	MGPM□G
	○	○	○	○	○	○	○	MGP□F
	◎	◎	◎	—	—	—	—	-XA□
	○	—	—	○	—	—	○	-XB6
	○	○	○	○	○	○	○	-XB10
	○	○	○	○	○	○	○	-XB13
	—	—	—	○	○	○	○	-XB22
	○	○	○	○	○	○	○	-XC4
	○	○	—	○	○	—	○	-XC6
	—	—	—	—	—	—	○	-XC8
	—	—	—	—	—	—	○	-XC9
	◎	◎	◎	—	—	—	—	-XC19
	○	—	—	○	—	—	○	-XC22
	○	○	○	○	○	○	○	-XC35
	—	—	—	—	—	—	○	-XC69
	◎	◎	◎	◎	◎	◎	○	-XC79
	○	—	—	○	—	—	○	-XC82
	◎	◎	◎	—	—	—	◎	-XC85
	○	○	○	○	○	○	○	-XC88
	○	○	○	○	○	○	○	-XC89W
	○	○	○	○	○	○	○	-XC91
	○	○	—	○	○	○	○	-XC92
	○	○	○	○	○	○	○	-X144
	○	○	○	○	○	○	○	-X471
	◎	◎	◎	◎	◎	◎	◎	-X867

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- MGT

- D-□
- X□





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### ● Compact Guide Cylinder/Heavy Duty Guide Rod Type *MGPS Series*

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MGJ
JMGP
<b>MGP</b>
MGPW
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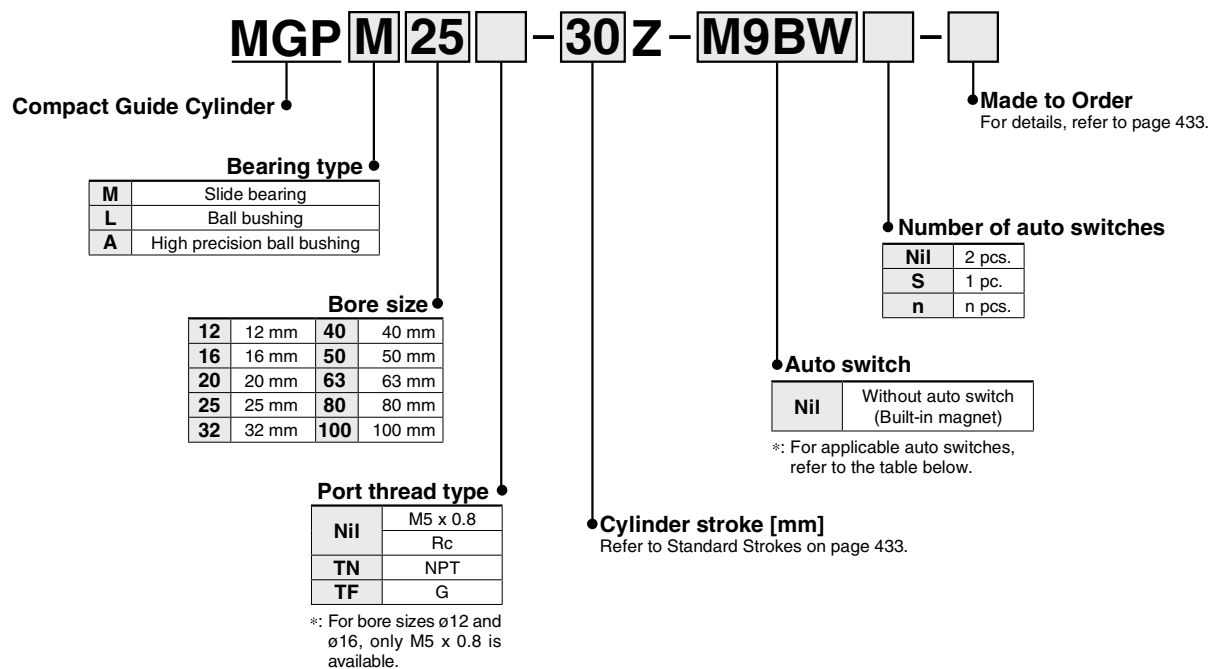
D-□
-X□

# Compact Guide Cylinder

# MGP Series

∅12, ∅16, ∅20, ∅25, ∅32, ∅40, ∅50, ∅63, ∅80, ∅100

## How to Order



## Applicable Auto Switches/Refer to pages 1119 to 1245 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]				Pre-wired connector	Applicable load		
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)		IC circuit	Relay, PLC	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire	12 V			M9BV	M9B	●	●	●	○	○	—	
				3-wire (NPN)	5 V, 12 V			M9NWV	M9NW	●	●	●	○	○	IC circuit	
	3-wire (PNP)			M9PWV				M9PW	●	●	●	○	○			
	Diagnostic indication (2-color indicator)			2-wire	12 V			M9BWV	M9BW	●	●	●	○	○	—	
				3-wire (NPN)	5 V, 12 V			M9NAV <sup>*1</sup>	M9NA <sup>*1</sup>	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV <sup>*1</sup>	M9PA <sup>*1</sup>	○	○	●	○	○		
				2-wire	12 V			M9BAV <sup>*1</sup>	M9BA <sup>*1</sup>	○	○	●	○	○	—	
	Magnetic field resistant (2-color indicator)			2-wire (Non-polar)	—			—	P3DWA <sup>*2</sup>	●	—	●	●	○	—	
—		Grommet	Yes	3-wire (NPN equivalent)	24 V	12 V	100 V	A96V	A96	●	—	●	—	—	IC circuit	—
2-wire	100 V or less			A93V <sup>*3</sup>				A93	●	●	●	●	—	—	Relay, PLC	
Reed auto switch	—	Grommet	No	2-wire	24 V	12 V	100 V or less	A90V	A90	●	—	●	—	—	IC circuit	Relay, PLC

\*1: Water resistant type auto switches are mountable on the above models, but in such case SMC cannot guarantee water resistance.

A water resistant type cylinder is recommended for use in an environment which requires water resistance.

However, please contact SMC for water resistant products of ∅12 and ∅16.

\*2: The D-P3DWA□ is mountable on bore size ∅25 to ∅100.

\*3: 1 m type lead wire is only applicable to the D-A93.

\*: Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
 1 m..... M (Example) M9NWM  
 3 m..... L (Example) M9NWL  
 5 m..... Z (Example) M9NWZ

\*: Solid state auto switches marked with "○" are produced upon receipt of order.

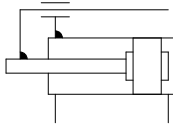
\*: Other than the auto switches listed above, the D-P4DW type can be mounted. Refer to page 489 for details.

\*: For details about auto switches with pre-wired connector, refer to pages 1192 and 1193.

\*: Auto switches are shipped together, (but not assembled).



**Symbol**  
Rubber bumper



**Made to Order: Individual Specifications**  
(For details, refer to page 491.)

Symbol	Specifications
-X144	Symmetrical port position
-X471	Enlarged plate and body gap dimensions
-X867	Side porting type (Plug location changed)



**Made to Order**  
[Click here for details](#)

Symbol	Specifications
-XA□	Change of guide rod end shape
-XB6	Heat resistant cylinder (-10 to 150°C)
-XB10	Intermediate stroke (Using exclusive body)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XB22	Shock absorber soft type <b>RJ series</b> type
-XC4	With heavy duty scraper
-XC6	Made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC22	Fluororubber seal
-XC35	With coil scraper
-XC69	With shock absorber *1
-XC79	Tapped hole, drilled hole, pinned hole machined additionally
-XC82	Bottom mounting type
-XC85	Grease for food processing equipment
-XC88	Spatter resistant coil scraper, Lube-retainer, Grease for welding (Rod parts: Stainless steel 304)
-XC89W	Spatter resistant coil scraper, Lube-retainer, Grease for welding (Rod parts: S45C)
-XC91	Spatter resistant coil scraper, Grease for welding (Rod parts: S45C)
-XC92	Dust resistant actuator *1

\*1: The shape is the same as the current product.

Refer to pages 486 to 490 for cylinders with auto switches.
<ul style="list-style-type: none"> <li>• Auto switch proper mounting position (detection at stroke end) and its mounting height</li> <li>• Minimum stroke for auto switch mounting</li> <li>• Operating range</li> <li>• Auto switch mounting brackets/Part no.</li> <li>• Auto Switch Mounting</li> </ul>

## Specifications

Bore size [mm]	12	16	20	25	32	40	50	63	80	100
<b>Action</b>	Double acting									
<b>Fluid</b>	Air									
<b>Proof pressure</b>	1.5 MPa									
<b>Maximum operating pressure</b>	1.0 MPa									
<b>Minimum operating pressure</b>	0.12 MPa	0.1 MPa								
<b>Ambient and fluid temperature</b>	-10 to 60°C (No freezing)									
<b>Piston speed *1</b>	50 to 500 mm/s									50 to 400 mm/s
<b>Cushion</b>	Rubber bumper on both ends									
<b>Lubrication</b>	Not required (Non-lube)									
<b>Stroke length tolerance</b>	$^{+1.5}_0$ mm									

\*1: Maximum speed with no load. Depending on the operating conditions, the piston speed may not be satisfied.  
Make a model selection, considering a load according to the graph on pages 439 to 445.

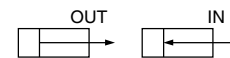
## Standard Strokes

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

## Manufacture of Intermediate Strokes

Description	Spacer installation type	Exclusive body (-XB10)												
	Spacers are installed in the standard stroke cylinder. • $\phi 12$ to $\phi 32$ : Available in 1 mm stroke increments. • $\phi 40$ to $\phi 100$ : Available in 5 mm stroke increments.	Dealing with the stroke by making an exclusive body. • All bore sizes are available in 1 mm increments.												
<b>Model no.</b>	Refer to How to Order for the standard model numbers.	Add "-XB10" to the end of standard model number. For details, refer to Made to Order.												
<b>Applicable stroke [mm]</b>	<table border="1"> <tr> <td><math>\phi 12, \phi 16</math></td> <td>1 to 249</td> </tr> <tr> <td><math>\phi 20, \phi 25, \phi 32</math></td> <td>1 to 399</td> </tr> <tr> <td><math>\phi 40</math> to <math>\phi 100</math></td> <td>5 to 395</td> </tr> </table>	$\phi 12, \phi 16$	1 to 249	$\phi 20, \phi 25, \phi 32$	1 to 399	$\phi 40$ to $\phi 100$	5 to 395	<table border="1"> <tr> <td><math>\phi 12, \phi 16</math></td> <td>11 to 249</td> </tr> <tr> <td><math>\phi 20, \phi 25</math></td> <td>21 to 399</td> </tr> <tr> <td><math>\phi 32</math> to <math>\phi 100</math></td> <td>26 to 399</td> </tr> </table>	$\phi 12, \phi 16$	11 to 249	$\phi 20, \phi 25$	21 to 399	$\phi 32$ to $\phi 100$	26 to 399
$\phi 12, \phi 16$	1 to 249													
$\phi 20, \phi 25, \phi 32$	1 to 399													
$\phi 40$ to $\phi 100$	5 to 395													
$\phi 12, \phi 16$	11 to 249													
$\phi 20, \phi 25$	21 to 399													
$\phi 32$ to $\phi 100$	26 to 399													
<b>Example</b>	Part no.: MGPM20-39Z A spacer 1 mm in width is installed in the MGPM20-40. C dimension is 77 mm.	Part no.: MGPM20-39Z-XB10 Special body manufactured for 39 stroke. C dimension is 76 mm.												

## Theoretical Output



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

\*: Theoretical output [N] = Pressure [MPa] x Piston area [mm<sup>2</sup>]

- MGJ
- JMG
- MGP**
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

- D-□
- X□

# MGP Series

## Weights

### Slide Bearing: MGPM12 to 100

[kg]

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

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

[kg]

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



## ① Clean Series

Applicable in a clean room environment. Ideal for use in conveyor lines for semiconductor (LSI), liquid crystal (LCD), food processing, pharmaceutical, and electronic parts, etc.

### How to Order

**12** — MGPL — **Bore size** — **Stroke** **Z**

#### ● Clean room specifications

<b>12</b>	Relief port type
<b>13</b>	Vacuum port type

#### ● Thread type

<b>Nil</b>	M5 x 0.8
<b>Rc</b>	Rc
<b>N</b>	NPT
<b>TF</b>	G

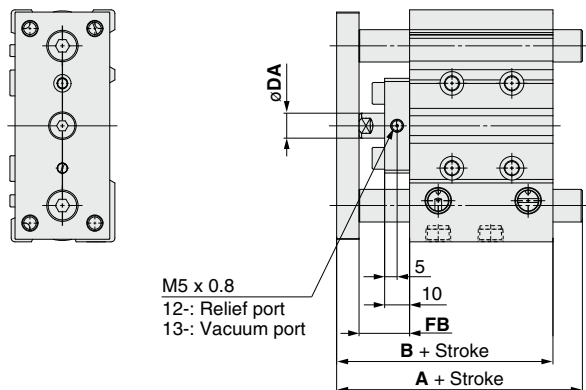
\*: For bore sizes 12 and 16, M5 x 0.8 is only available.

### Specifications

Applicable series	MGPL							
Bearing type	Ball bushing bearing							
Bore size [mm]	12	16	20	25	32	40	50	63
Stroke [mm]	10 to 250		20 to 400			25 to 400		

\*: Specifications other than above are the same as standard, basic type.

### Dimensions



\*: For details, refer to "Pneumatic Clean Series" catalog (CAT. E02-23).

\*: Other dimensions are the same as standard products. \*: The dimensions in ( ) are the same as standard type. [mm]

Bore size [mm]	A				B	DA	FB
	30 st or less	Over 30 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st			
<b>12</b>	56	68	97.5	97.5	55	(6)	19
<b>16</b>	62	78	107.5	107.5	59	(8)	19
<b>20</b>	72	89	113	130.5	66	(10)	21
<b>25</b>	78.5	94.5	113.5	130.5	66.5	(10)	20

\*: For bore size ø12 and ø16, only M5 x 0.8 port is available.

\*: For bore size ø20 or more, choice of Rc, NPT, G port is available. (Refer to page 432.)

Bore size [mm]	A				B	DA	FB
	50 st or less	Over 50 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st			
<b>32</b>	91.5	108.5	128.5	150.5	71.5	(14)	24
<b>40</b>	91.5	108.5	128.5	150.5	78	(14)	24
<b>50</b>	102.5	123.5	143.5	170.5	83	20	27
<b>63</b>	102.5	123.5	143.5	170.5	88	20	27

\*: Choice of Rc, NPT, G port is available. (Refer to page 432.)

MGJ

JMGP

**MGP**

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□



## ② Water Resistant Cylinder

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



### How to Order

MGPM  Bore size  **R** - Stroke  Z - M9  A(V)L - **XC6A**

Thread type	
Nil	Rc
TN	NPT
TF	G

Water Resistant Cylinder	
<b>R</b>	NBR seals (Nitrile rubber)
<b>V</b>	FKM seals (Fluororubber)

Water resistant  
2-color indicator  
solid state auto  
switch

Made to Order

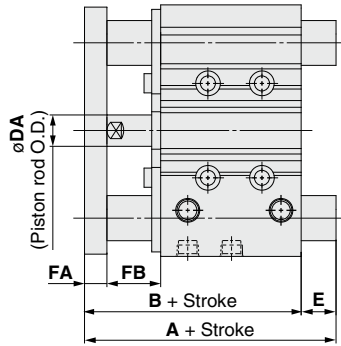
- \*: Piston rod and guide rod are made of stainless steel.
- \*: Please contact SMC when using liquids that contain sulfur.

### Specifications

Applicable series	<b>MGPM</b>	
Bearing type	Slide bearing	
Bore size [mm]	20, 25, 32, 40, 50, 63, 80, 100	
Cushion	MGPM□□R	Rubber bumper
	MGPM□□V	Without cushion
Minimum operating pressure	0.13 MPa	
Made to Order	<b>XC6A</b> Specified parts made of stainless steel	

- \*: Specifications other than above are the same as standard, basic type.
- \*: For details on the made-to-order XC6A with specified parts made of stainless steel, refer to page 1310.

### Dimensions



#### Water resistant

[mm]

Bore size [mm]	A			B	DA	FA	FB
	50 st or less	Over 50 st and up to 200 st	Over 200 st				
20	66	90.5	123	66	(10)	(8)	21
25	67.5	91.5	123.5	67.5	(10)	(9)	21
32	87	105.5	141.5	71.5	(14)	(10)	24
40	87	105.5	141.5	78	(14)	(10)	24
50	99.5	120.5	161.5	83	20	(12)	27
63	99.5	120.5	161.5	88	20	(12)	27
80	110.5	137.5	186.5	102.5	25	(16)	30
100	130.5	155.5	194.5	120	30	(19)	35

#### Water resistant + XC6A

[mm]

Bore size [mm]	A			B	DA	FA	FB
	50 st or less	Over 50 st and up to 200 st	Over 200 st				
20	66	90.5	123	66	(10)	9	20
25	67.5	91.5	123.5	67.5	(10)	10	20
32	87	105.5	141.5	71.5	(14)	12	22
40	87	105.5	141.5	78	(14)	12	22
50	99.5	120.5	161.5	83	20	16	23
63	99.5	120.5	161.5	88	20	16	23
80	110.5	137.5	186.5	102.5	25	19	27
100	130.5	155.5	194.5	120	30	22	32

- \*: Other dimensions are the same as standard products.
- \*: The dimensions in ( ) are the same as standard type.

MGJ

JMGF

MGF

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□



# MGP Series

## ③ Cylinder with Stable Lubrication Function (Lube-retainer)

Improves durability in environments with micro-powder. (Compared with the standard model)  
In addition, the overall length and mounting are the same as those of the standard model.



### How to Order

MGP **Bearing type** **Bore size** **Port thread type** **M** — **Stroke** **Z** — **Auto switch**

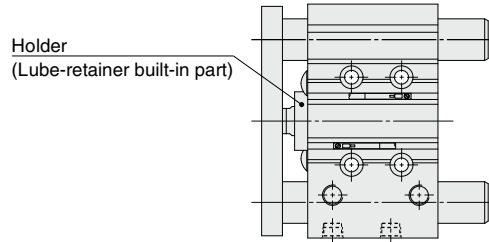
● Cylinder with stable lubrication function (Lube-retainer)

### Specifications

Bore size [mm]	20, 25, 32, 40, 50, 63, 80, 100
Action	Double acting
Minimum operating pressure	0.15 MPa
Cushion	Rubber bumper on both ends

\*: Specifications other than above are the same as standard, basic type.

### Dimensions (Dimensions are the same as the standard type.)



For details, refer to the **WEB catalog**.

## ④ Guide Unit with Lube-retainer

### How to Order

MGP **M** **Bore size** **Port thread type** **G** — **Stroke** **Z** — **Auto switch**

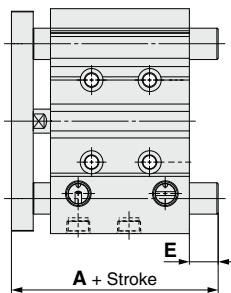
● Slide bearing

● Guide unit with Lube-retainer



The dimensions in ( ) are the same as standard type.

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



Bore size [mm]	A			E		
	50 st or less	Over 50 st to 200 st	Over 200 st	50 st or less	Over 50 st to 200 st	Over 200 st
20	(53)	83	115.5	(0)	30	62.5
25	(53.5)	83.5	115.5	(0)	30	62
32	82	100.5	136.5	22.5	41	77
40	82	100.5	136.5	16	34.5	70.5
50	95.5	116.5	157.5	23.5	44.5	85.5
63	95.5	116.5	157.5	18.5	39.5	80.5
80	113.5	140.5	189.5	17	44	93
100	135.5	160.5	199.5	19.5	44.5	83.5

The dimensions in ( ) are the same as standard type.

## ⑤ With Flange

Plate side flange type is added.



### How to Order

MGP **Bearing type** **F** **Bore size** **Port thread type** — **Stroke** **Z** — **Auto switch**

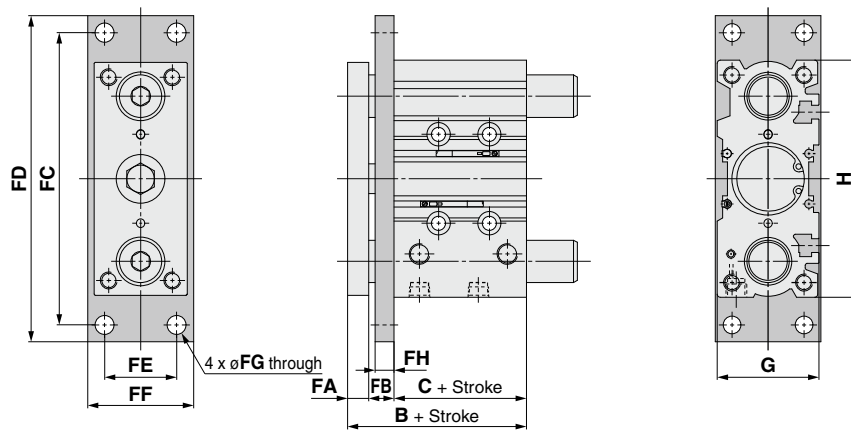
● With flange

### ⚠ Caution

This product cannot be used as a stopper.

**Specifications: Same as standard type**

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



Bore size	B	C	FA	FB	FC	FD	FE	FF	FG	FH	G	H	Flange weight (kg)
12	42	29	7	6	80	89	18	25	4.5	5	26	58	0.08
16	46	33	7	6	88	98	22	32	5.5	5	30	64	0.11
20	53	37	8	8	102	112	24	38	5.5	6	36	83	0.17
25	53.5	37.5	9	7	114	126	30	40	6.6	6	42	93	0.20
32	59.5	37.5	10	12	138	154	34	50	9	9	48	112	0.46
40	66	44	10	12	146	162	40	60	9	9	54	120	0.60
50	72	44	12	16	178	198	46	65	11	10	64	148	0.87
63	77	49	12	16	192	212	58	75	11	10	78	162	1.09
80	96.5	56.5	16	24	238	262	54	90	13.5	16	91.5	202	2.59
100	116	66	19	31	280	308	62	100	15.5	22	111.5	240	4.63

MGJ

JMG

**MGP**

MGPW

MGQ

MGG

MGC

MGF

MGZ

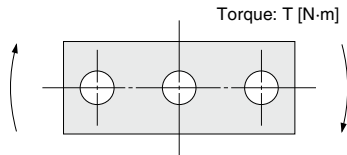
MGT

D-□

-X□

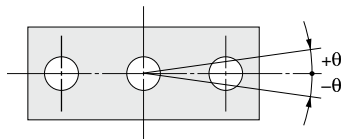


## Allowable Rotational Torque of Plate



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

## Non-rotating Accuracy of Plate



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

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

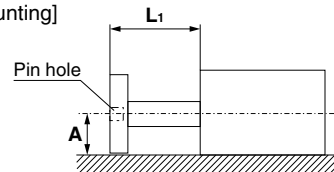
## High Precision Ball Bushing/MGPA

### ⚠ Caution

#### Positioning accuracy for pin hole on the plate

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

[Side mounting]

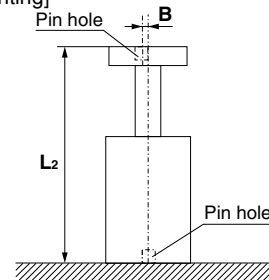


$$A = \text{[Catalog dimension]} \pm \begin{matrix} * \\ (0.1 + L1 \times 0.0008) \end{matrix} \text{ [mm]}$$

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

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

[Bottom mounting]



$$B = \pm (0.045 + L2 \times 0.0016) \text{ [mm]}$$

MGJ

JMG

MG

MGW

MGQ

MGG

MGC

MGF

MGZ

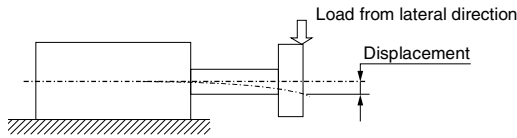
MGT

D-□

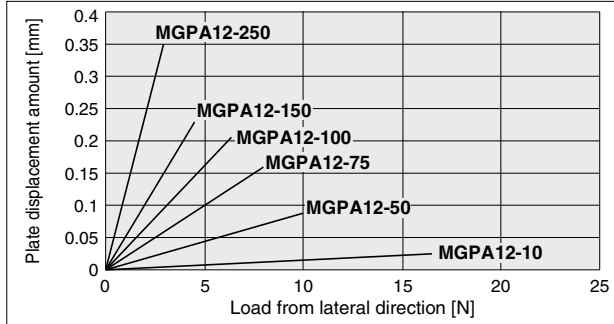
-X□

# MGP Series

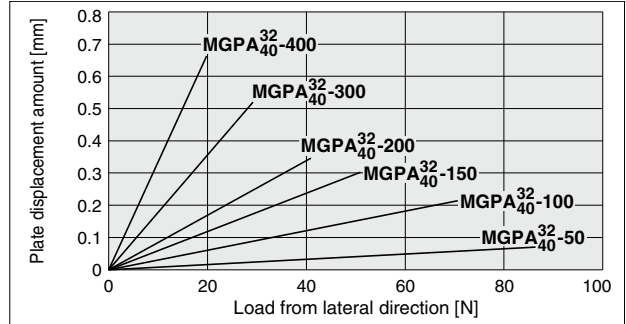
## High Precision Ball Bushing/MGPA Plate Displacement Amount (Reference Values)



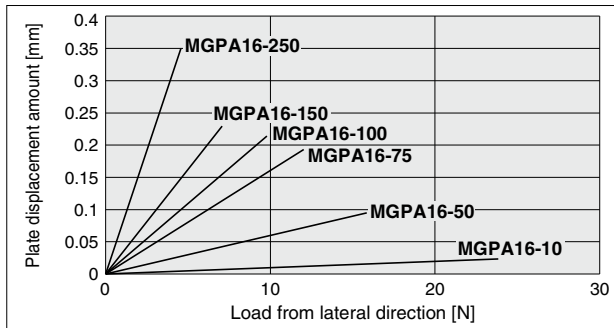
**MGPA12**



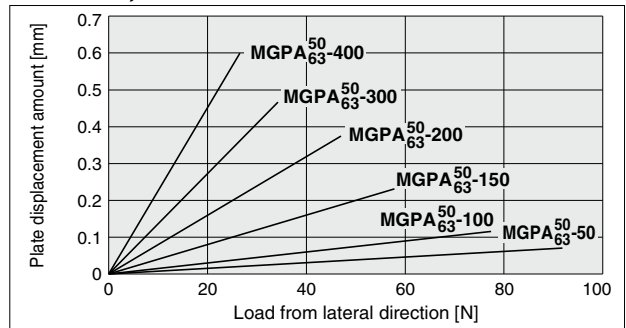
**MGPA32, 40**



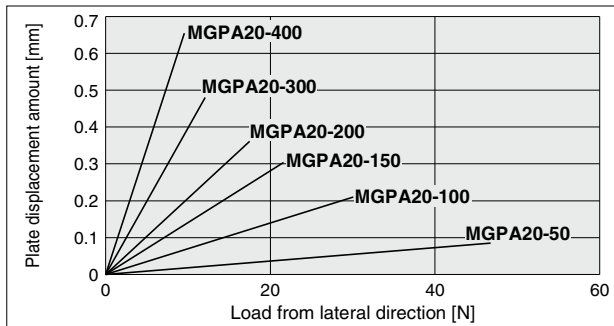
**MGPA16**



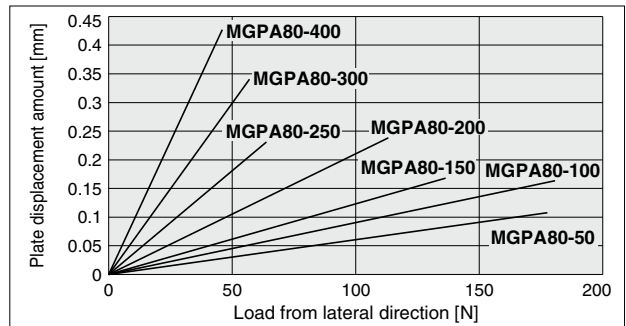
**MGPA50, 63**



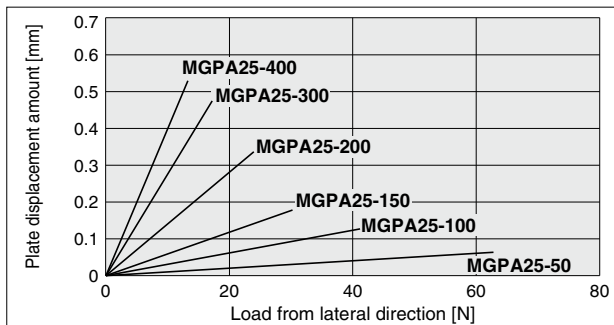
**MGPA20**



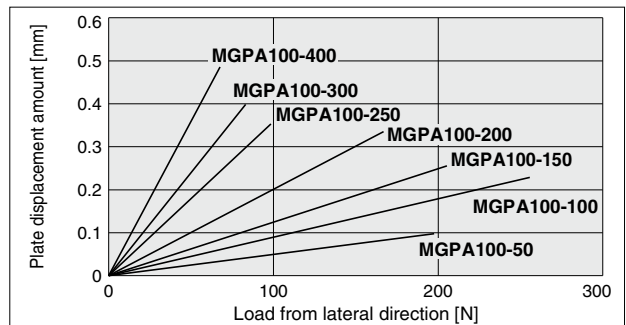
**MGPA80**



**MGPA25**



**MGPA100**



※: The guide rod and self-weight for the plate are not included in the above displacement values.

※: Allowable rotating torque, and operating range when used as a lifter, are the same as those of the MGPL series.

# Basic Type MGP Series Model Selection

## Selection Conditions

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

### Selection Example 1 (Vertical Mounting)

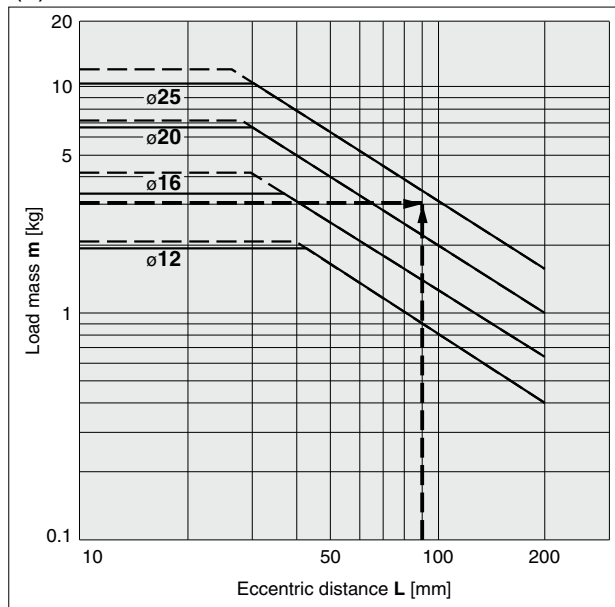
#### Selection conditions

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

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

→ **MGPL25-30Z** is selected.

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



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

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

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

### Selection Example 2 (Horizontal Mounting)

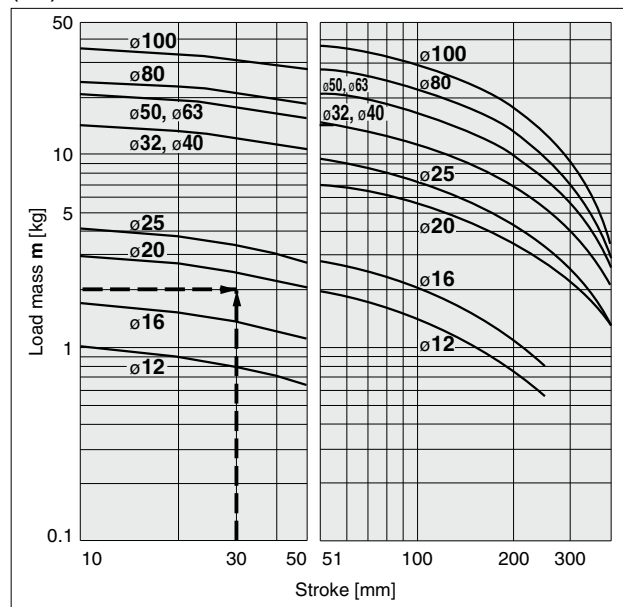
#### Selection conditions

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

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

→ **MGPM20-30Z** is selected.

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



MGJ

JMGP

**MGP**

MGPW

MGQ

MGG

MGC

MGF

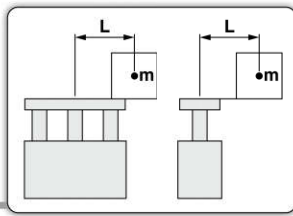
MGZ

MGT

D-

-X

# MGP Series

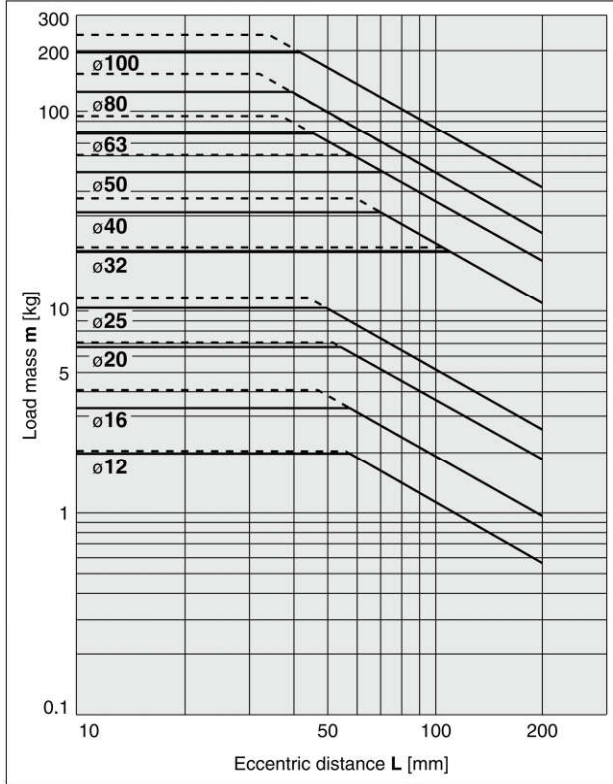


## Vertical Mounting Slide Bearing

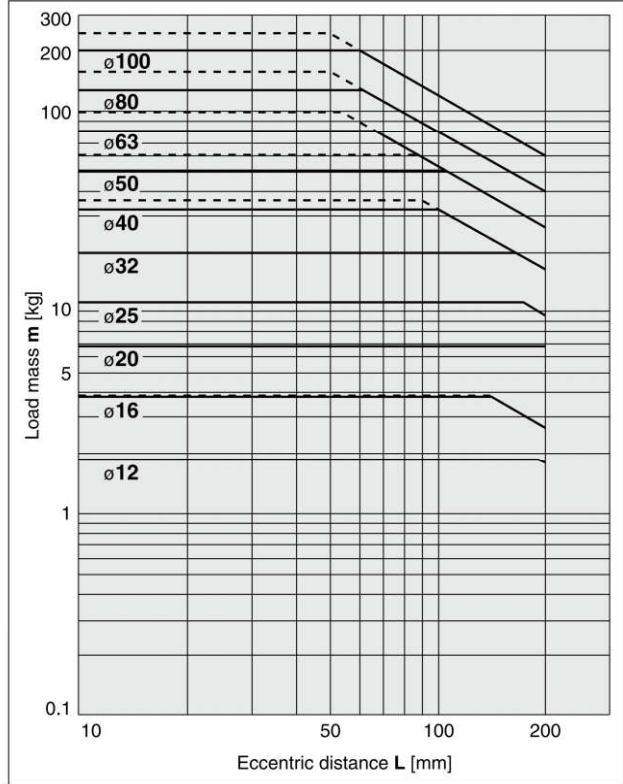
— Operating pressure 0.4 MPa  
 - - - Operating pressure 0.5 MPa or more

### MGPM12 to 100

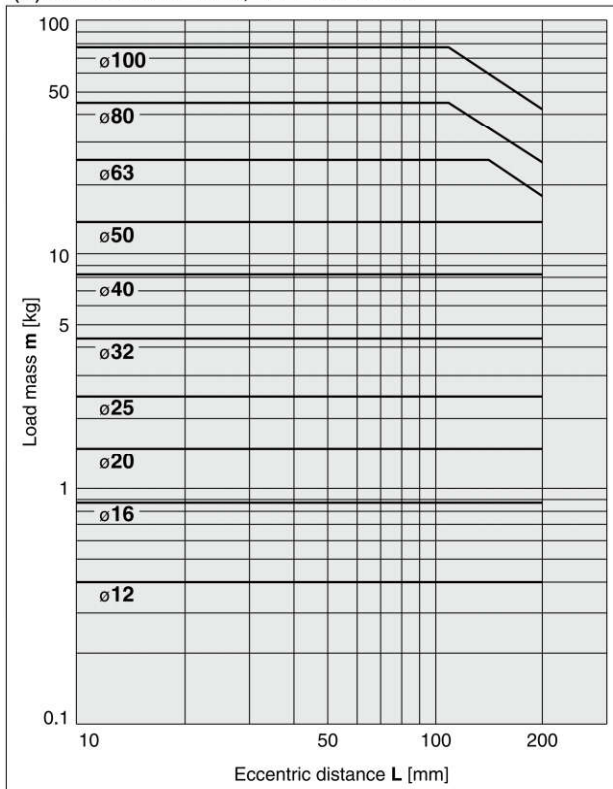
(1) 50 stroke or less,  $V = 200$  mm/s or less



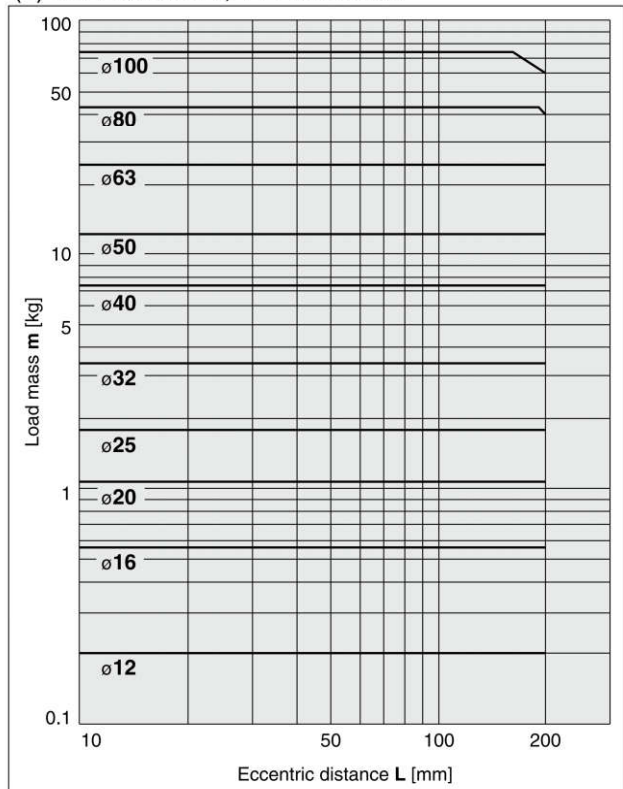
(2) Over 50 stroke,  $V = 200$  mm/s or less



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



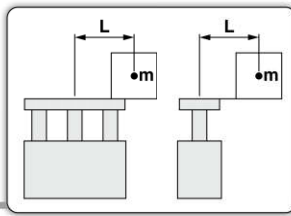
(4) Over 50 stroke,  $V = 400$  mm/s



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



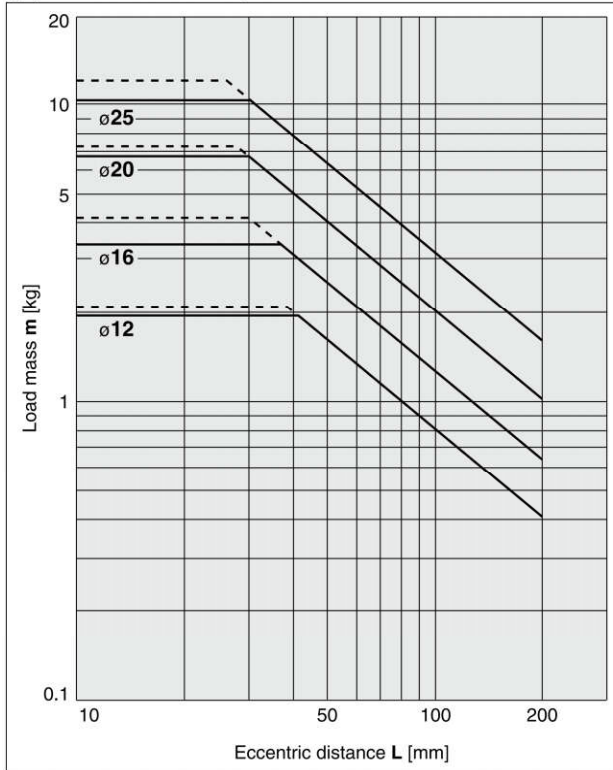
## Vertical Mounting **Ball Bushing**



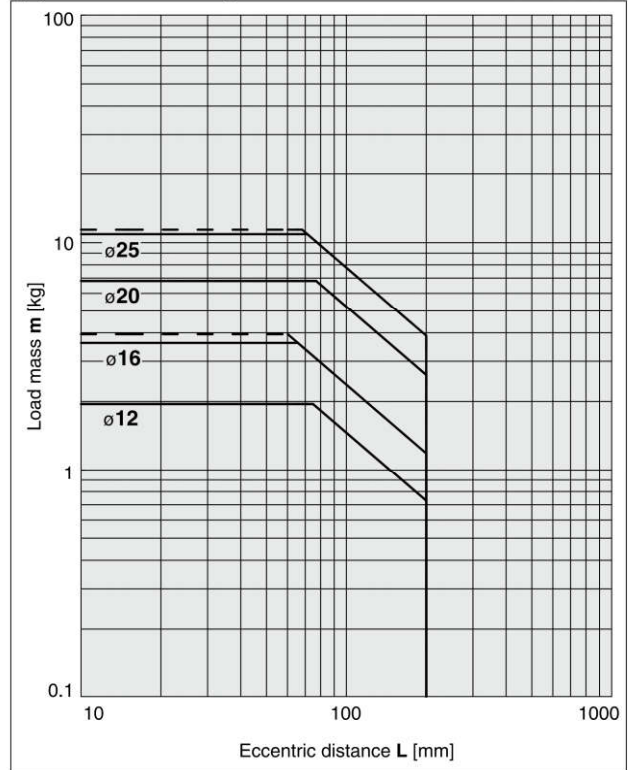
— Operating pressure 0.4 MPa  
 - - - Operating pressure 0.5 MPa or more

### MGPL12 to 25, MGPA12 to 25

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

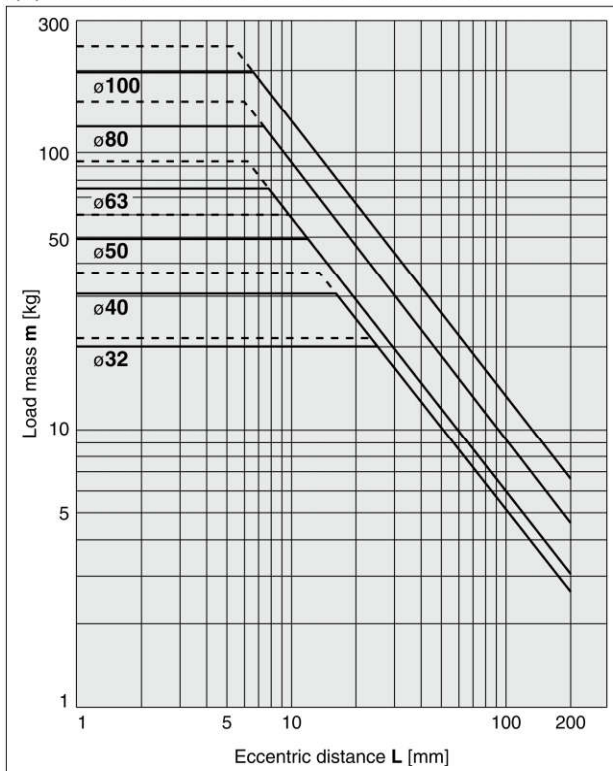


(6) Over 30 stroke,  $V = 200$  mm/s or less

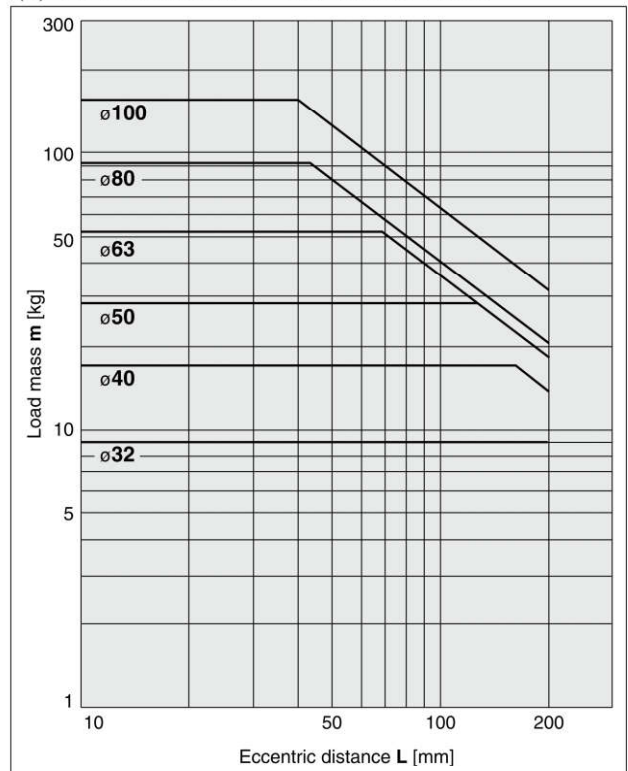


### MGPL32 to 100, MGPA32 to 100

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



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



**MGJ**

**JMG**

**MGP**

**MGPW**

**MGQ**

**MGG**

**MGC**

**MGF**

**MGZ**

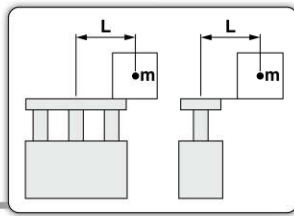
**MGT**

**D-□**

**-X□**

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

# MGP Series

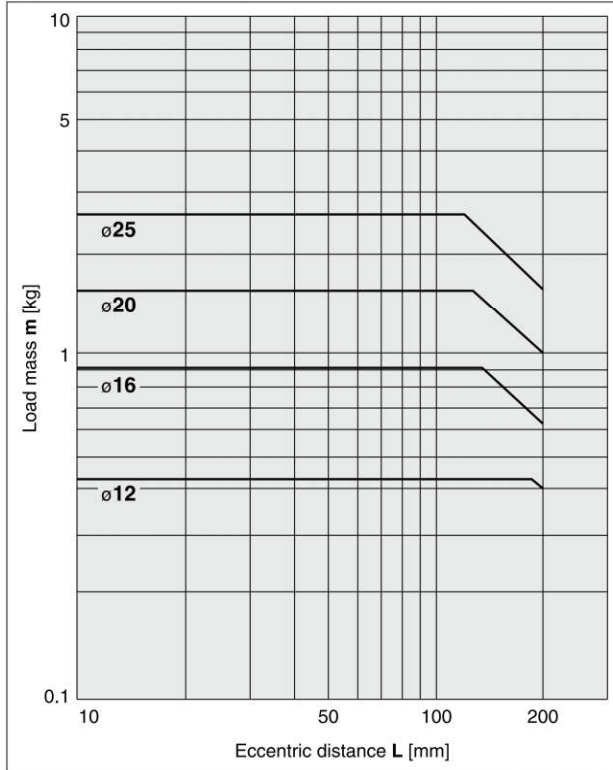


## Vertical Mounting **Ball Bushing**

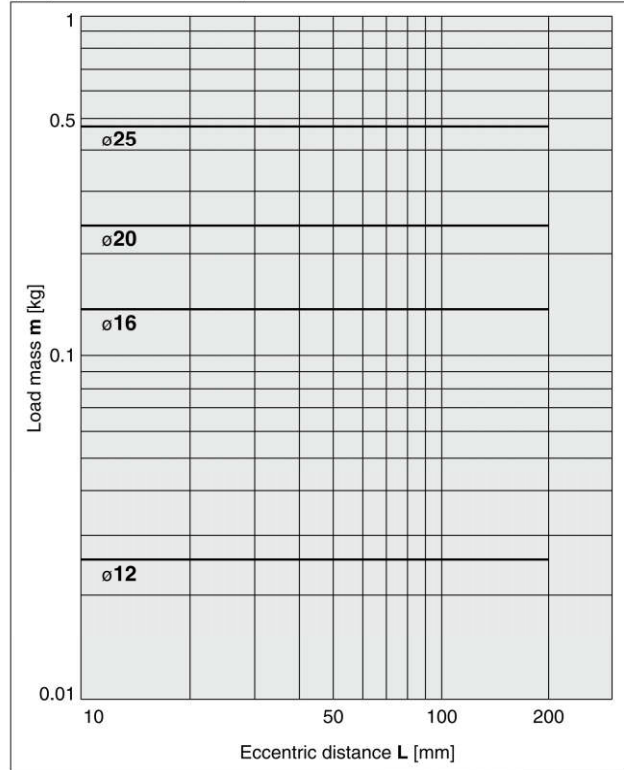
Operating pressure 0.4 MPa

### MGPL12 to 25, MGPA12 to 25

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

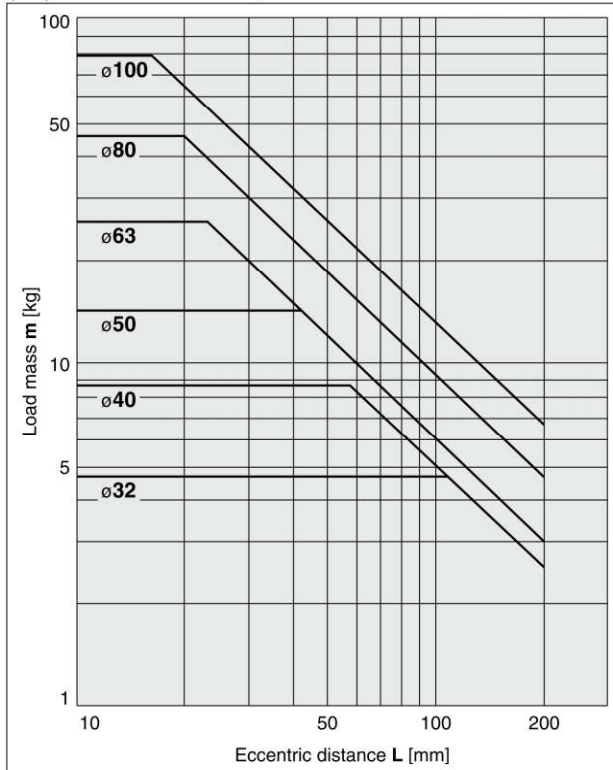


(10) Over 30 stroke, V = 400 mm/s

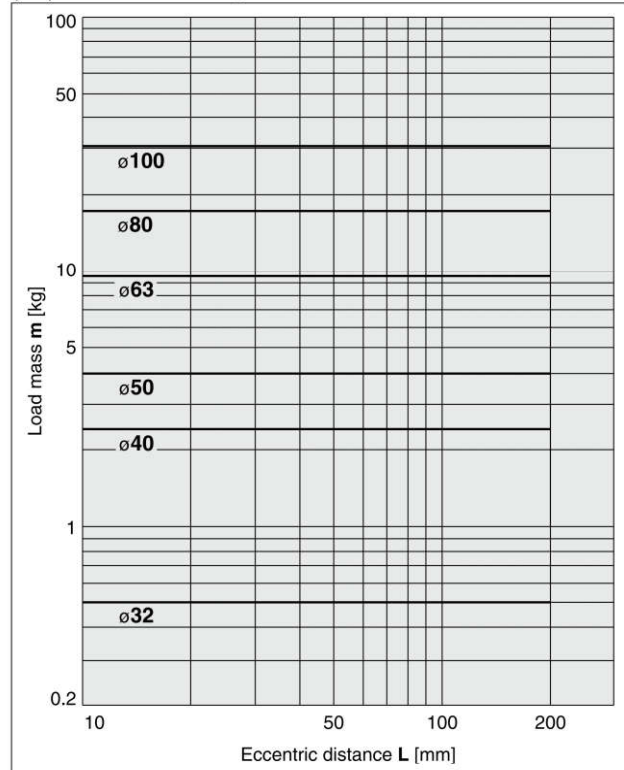


### MGPL32 to 100, MGPA32 to 100

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

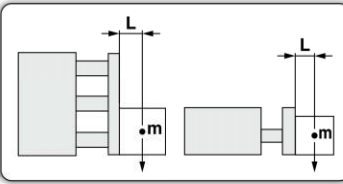


(12) Over 50 stroke, V = 400 mm/s



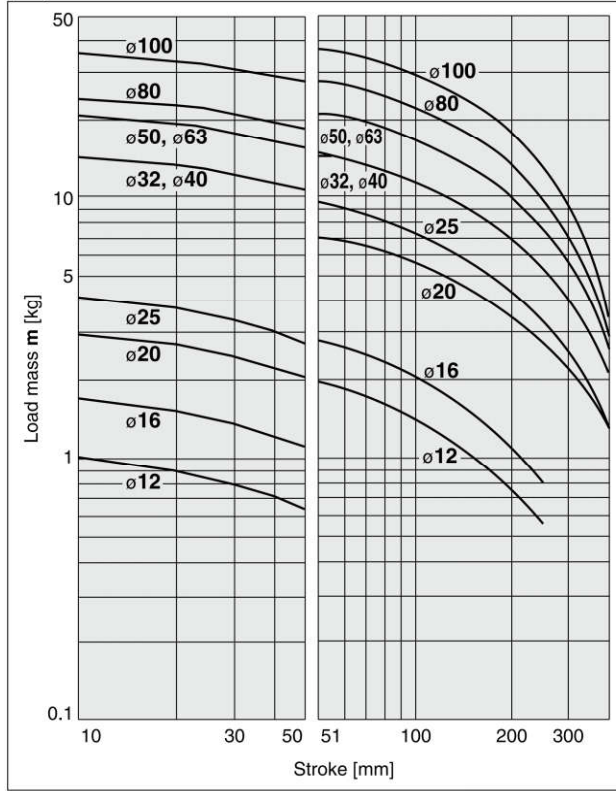
· Use the Guide Cylinder Selection Software, when the eccentric distance is 200 mm or more.

**Horizontal Mounting Slide Bearing**

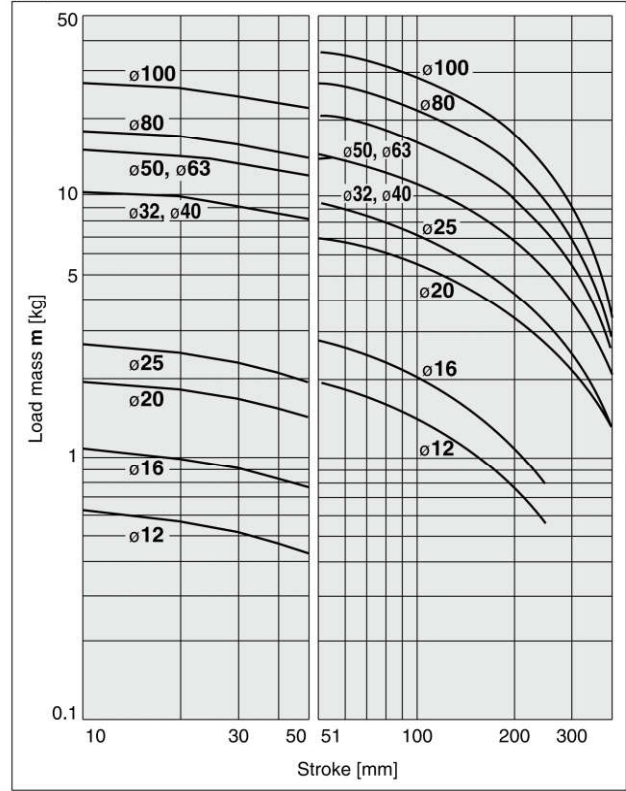


**MGPM12 to 100**

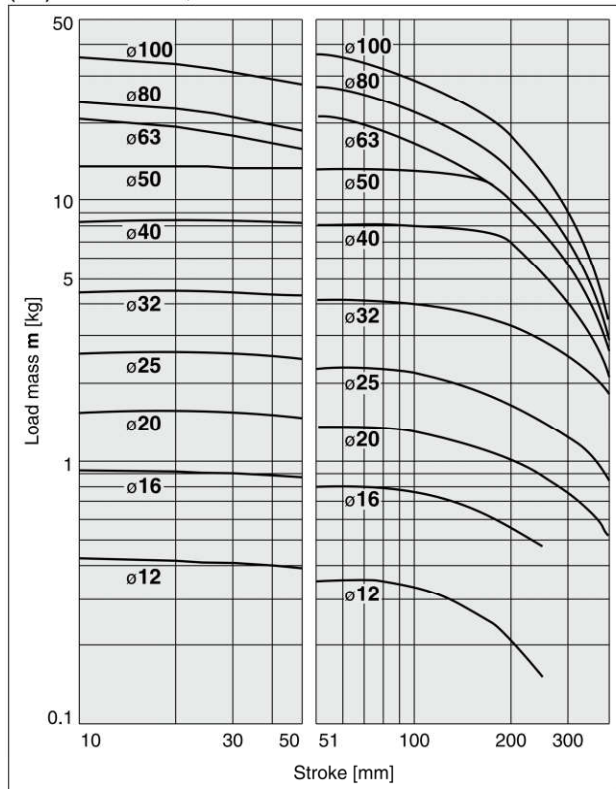
(13) L = 50 mm, V = 200 mm/s or less



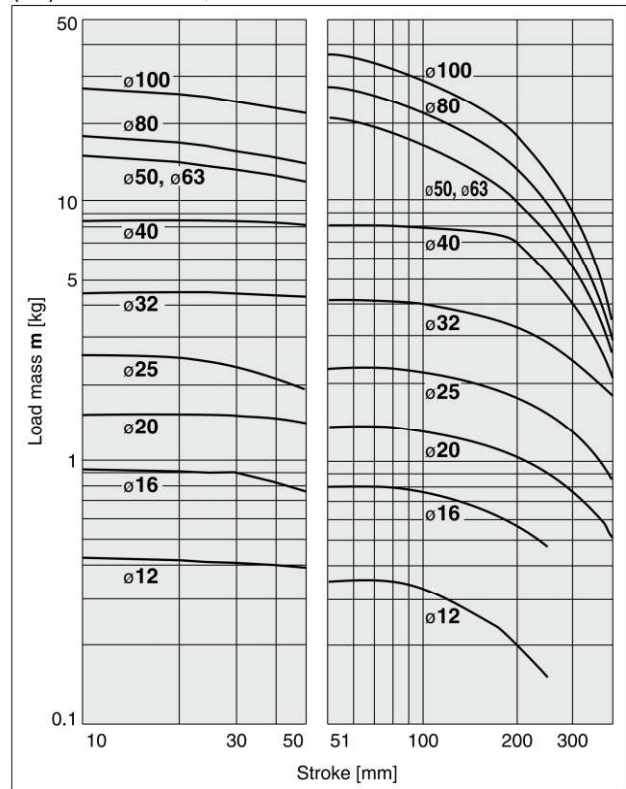
(14) L = 100 mm, V = 200 mm/s or less



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



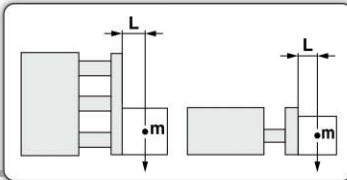
(16) L = 100 mm, V = 400 mm/s



- MGJ
- JMGP
- MGP
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

- D-□
- X□

# MGP Series

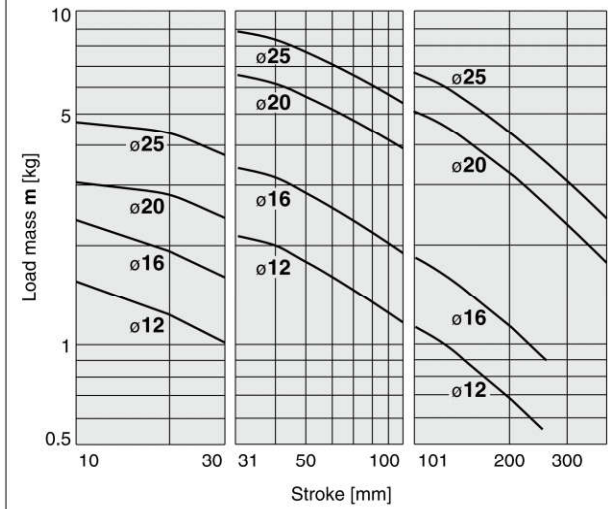


## Horizontal Mounting **Ball Bushing**

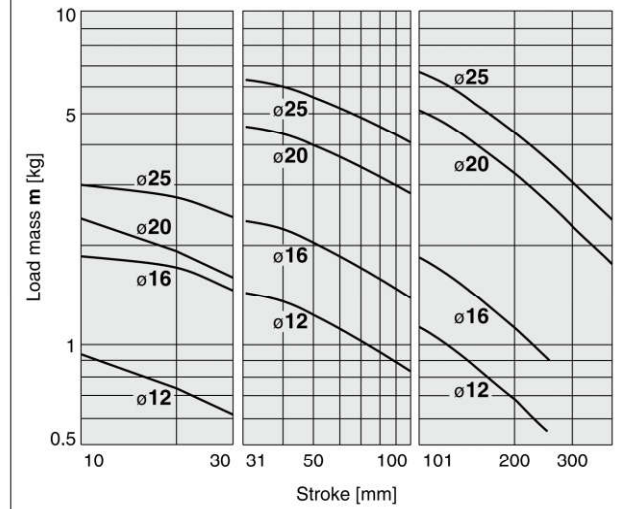
(17) L = 50 mm, V = 200 mm/s or less

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

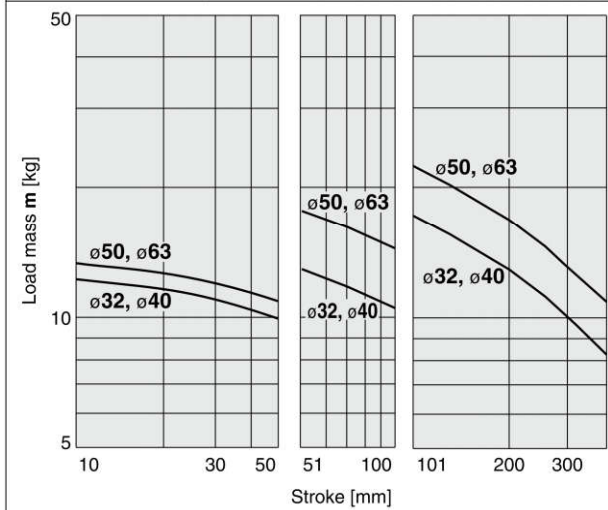
### MGPL12 to 25, MGPA12 to 25



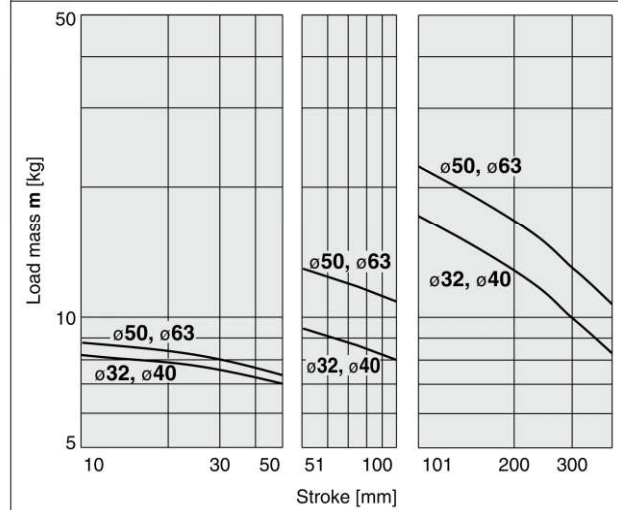
### MGPL12 to 25, MGPA12 to 25



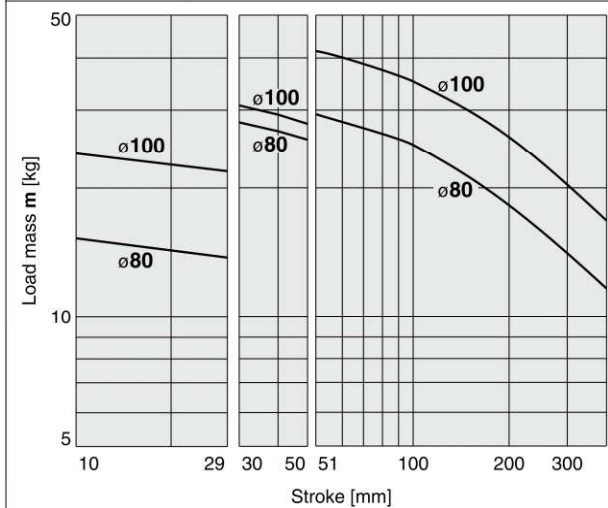
### MGPL32 to 63, MGPA32 to 63



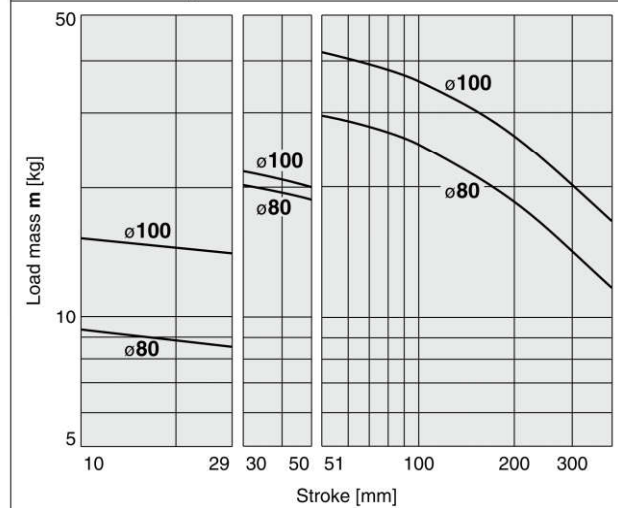
### MGPL32 to 63, MGPA32 to 63



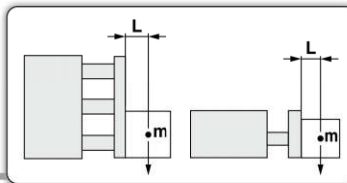
### MGPL80/100, MGPA80/100



### MGPL80/100, MGPA80/100





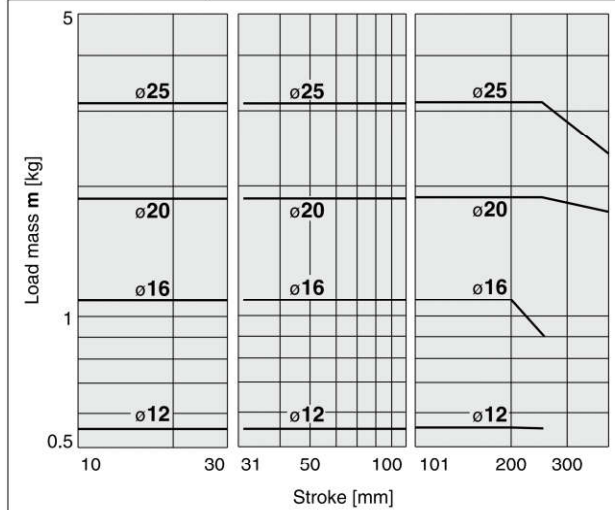


**Horizontal Mounting Ball Bushing**

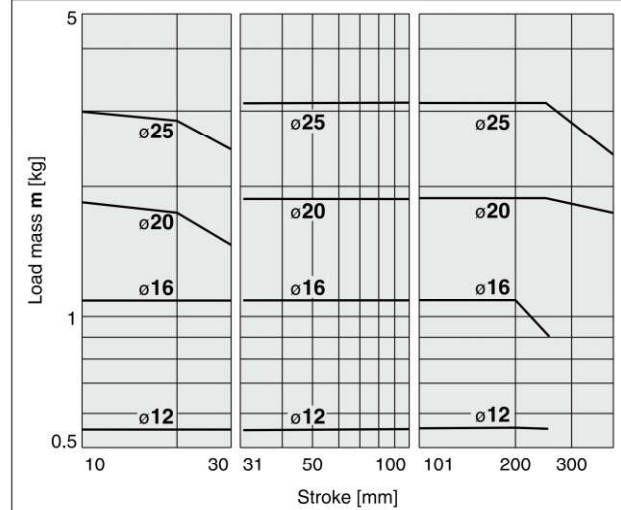
(19) L = 50 mm, V = 400 mm/s

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

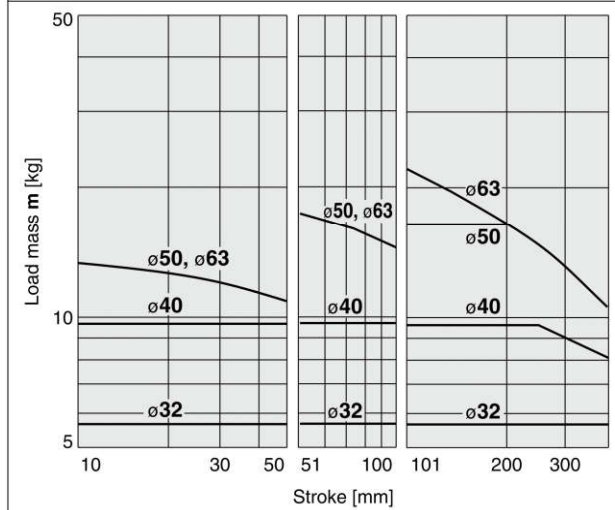
**MGPL12 to 25, MGPA12 to 25**



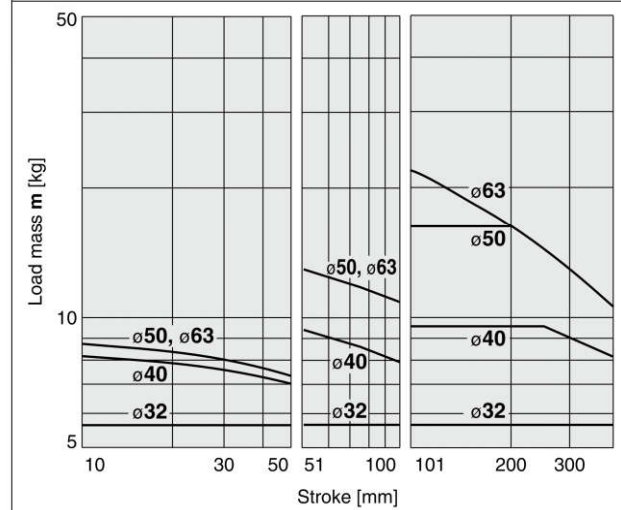
**MGPL12 to 25, MGPA12 to 25**



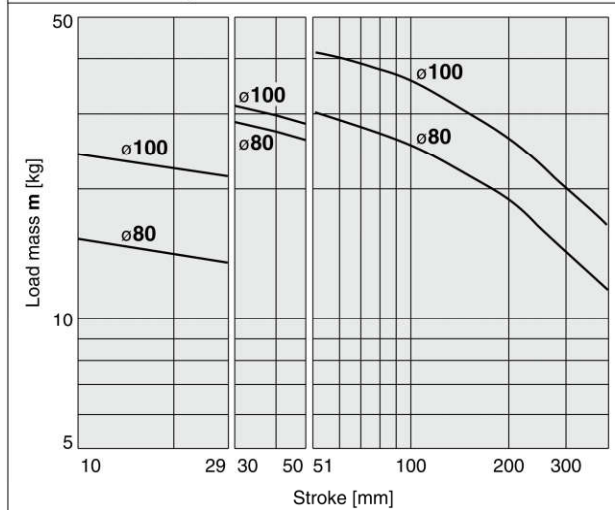
**MGPL32 to 63, MGPA32 to 63**



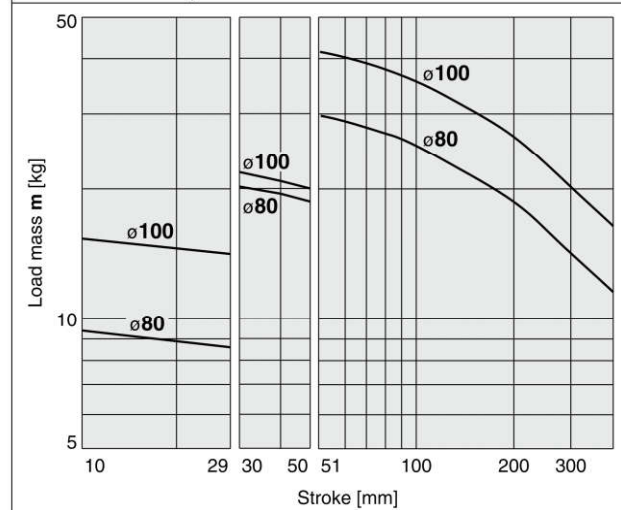
**MGPL32 to 63, MGPA32 to 63**



**MGPL80/100, MGPA80/100**



**MGPL80/100, MGPA80/100**



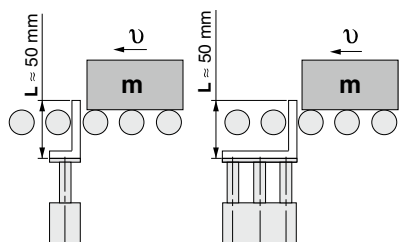
- MGJ
- JMGP
- MGP
- MGPW
- MGQ
- MGG
- MGC
- MGf
- MGZ
- MGT

- D-
- X

# MGP Series

## Operating Range when Used as Stopper

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



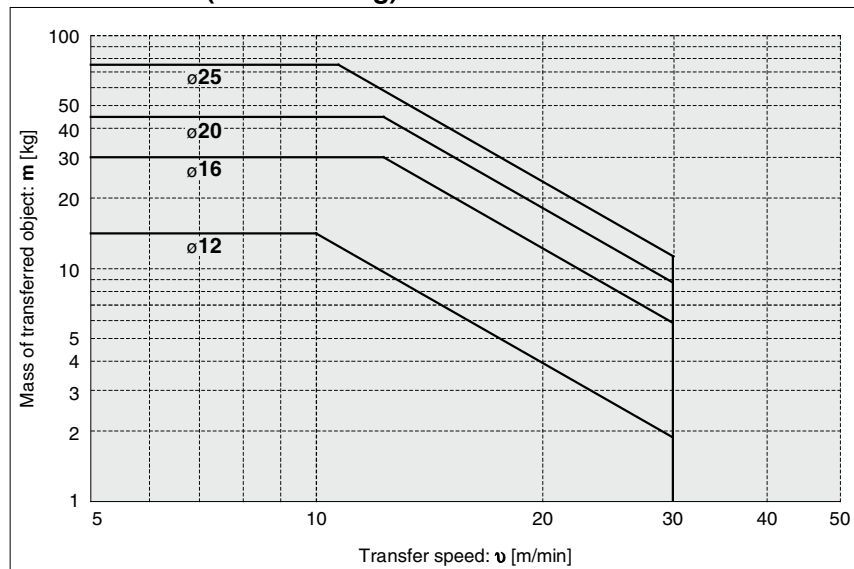
\*: When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

### ⚠ Caution

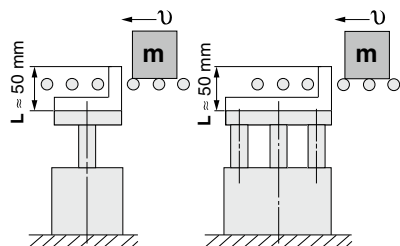
#### Caution on handling

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

### MGPM12 to 25 (Slide Bearing)



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



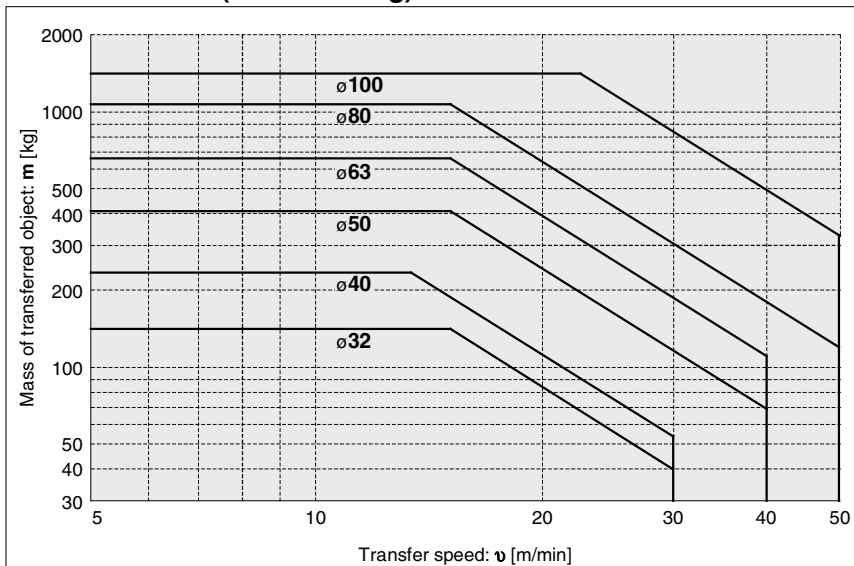
\*: When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

### ⚠ Caution

#### Caution on handling

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

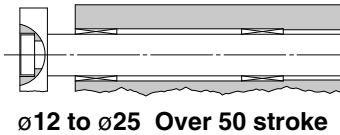
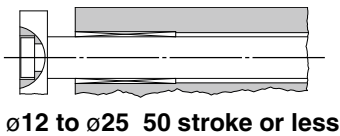
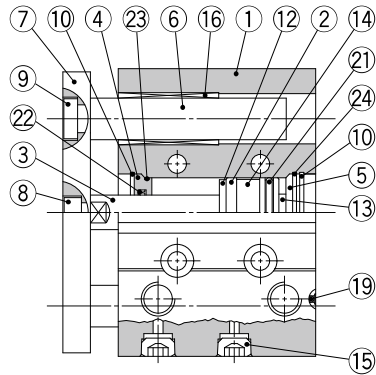
### MGPM32 to 100 (Slide Bearing)



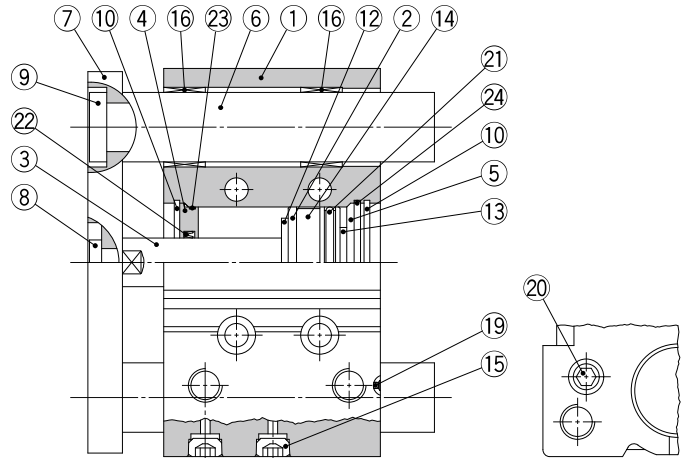
\*: Refer to graphs (13) and (15) if line pressure is applied by a roller conveyor after the workpiece is stopped.

**Construction/MGPM Series**

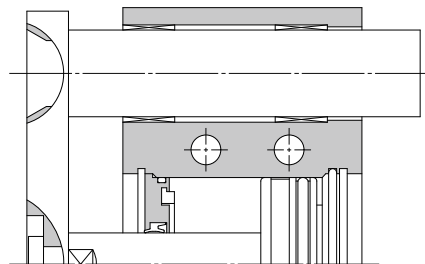
**MGPM12 to 25**



**MGPM32 to 100**



ø63 or more



ø50 or more

**Component Parts**

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

※: A felt is not installed on the slide bearing.

**Component Parts**

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

**Replacement Parts/Seal Kit**

Bore size [mm]	Kit no.	Contents	Bore size [mm]	Kit no.	Contents
12	MGP12-Z-PS	Set of nos.	40	MGP40-Z-PS	Set of nos.
16	MGP16-Z-PS	nos.	50	MGP50-Z-PS	nos.
20	MGP20-Z-PS	above	63	MGP63-Z-PS	above
25	MGP25-Z-PS	①, ②,	80	MGP80-Z-PS	①, ②,
32	MGP32-Z-PS	③, ④	100	MGP100-Z-PS	③, ④

※: Seal kit includes ① to ④. Order the seal kit, based on each bore size.

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

Grease pack part number: GR-S-010 (10 g)

- MGJ
- JMGP
- MGP**
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

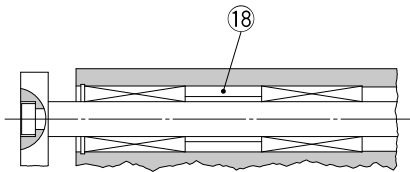
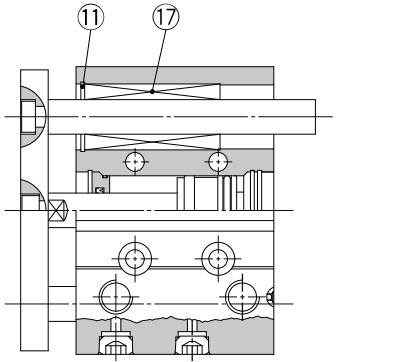
- D-
- X



# MGP Series

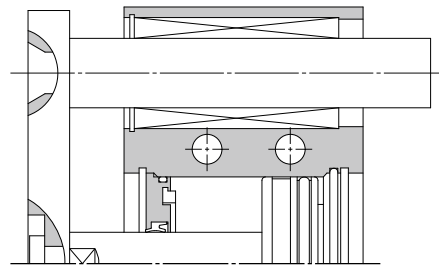
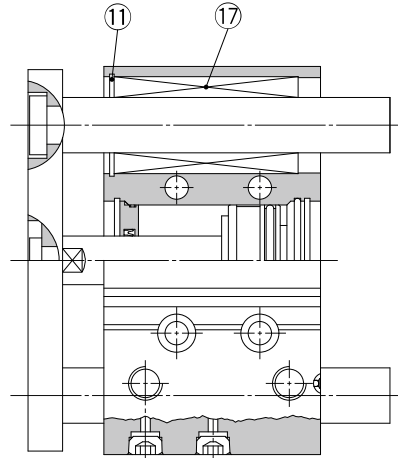
## Construction/MGPL Series, MGPA Series

MGPL12 to 25  
MGPA12 to 25

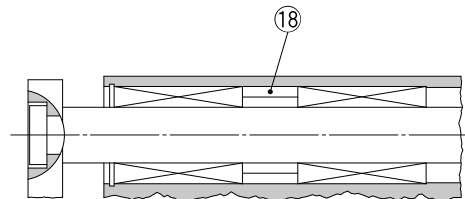


$\phi 12$  to  $\phi 25$  Over 100 stroke

MGPL32 to 100  
MGPA32 to 100

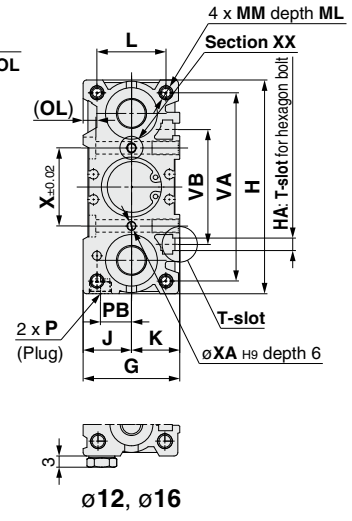
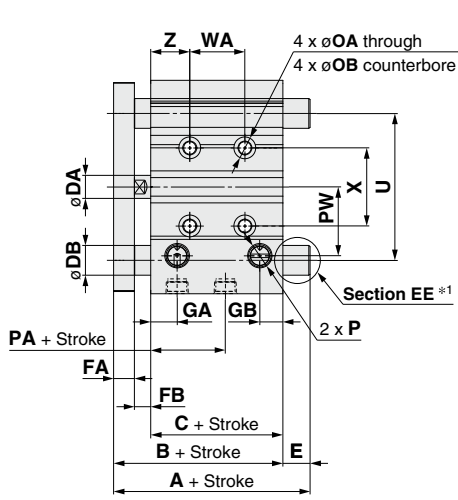
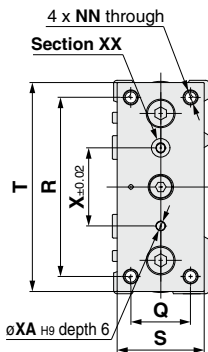
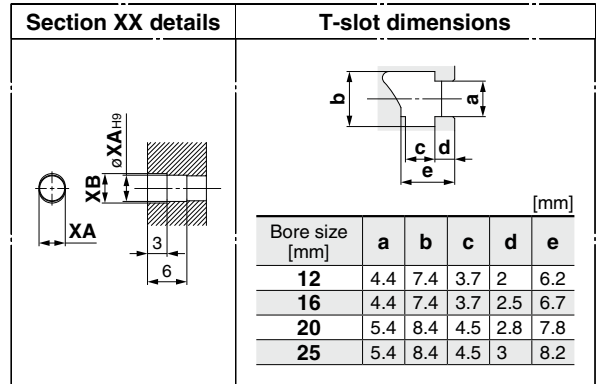
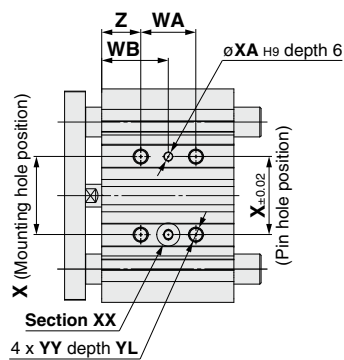
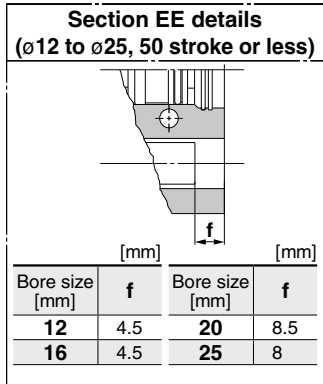


$\phi 50$  or more



$\phi 32$  to  $\phi 63$  Over 100 stroke  
 $\phi 80$ ,  $\phi 100$  Over 200 stroke

# Ø12 to Ø25/MGPM, MGPL, MGPA



- \*1: Refer to Section EE details for the shape of Ø12 to Ø25 with stroke of 50 or less.
- \*: The use of a slot (width XA, length XB, depth 3) allows for a relaxed pin pitch tolerance, with the pin hole (ØXA<sub>H9</sub>, depth 6) as the reference, without affecting mounting accuracy.
- \*: For intermediate strokes other than standard strokes, refer to Manufacture of Intermediate Strokes on page 433.
- \*: For bore size Ø12 and Ø16, only M5 x 0.8 port is available.
- \*: For bore size Ø20 or more, choice of Rc, NPT, G port is available. (Refer to page 432.)

**MGPM, MGPL, MGPA Common Dimensions**

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

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

**MGPM (Slide bearing) A, DB, E Dimensions**

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

**MGPL (Ball bushing)**

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

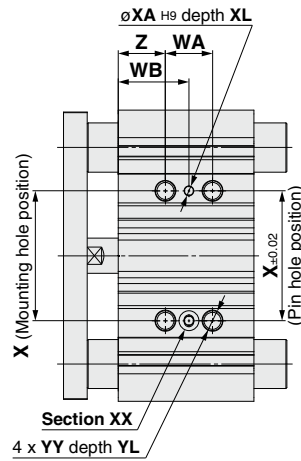
Bore size [mm]	A				DB	E			
	30 st or less	Over 30 st 100 st or less	Over 100 st 200 st or less	Over 200 st		30 st or less	Over 30 st 100 st or less	Over 100 st 200 st or less	Over 200 st
12	43	55	84.5	84.5	6	1	13	42.5	42.5
16	49	65	94.5	94.5	8	3	19	48.5	48.5
20	59	76	100	117.5	10	6	23	47	64.5
25	65.5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

- MGJ
- JMGP
- MGP**
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

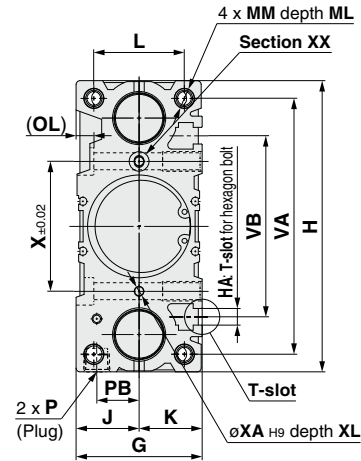
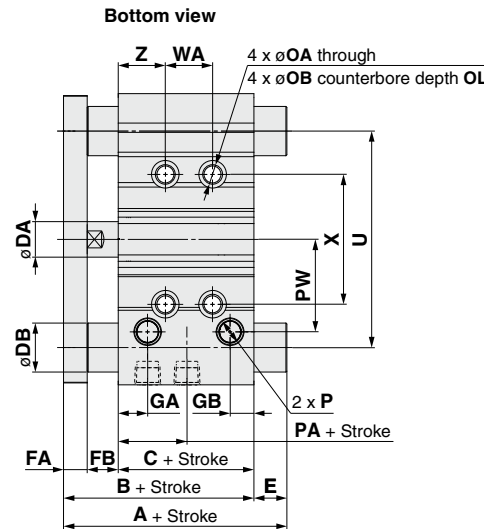
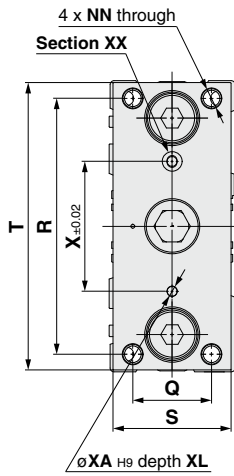
- D-□
- X-□

# MGP Series

## Ø32 to Ø63/MGPM, MGPL, MGPA



Section XX details		T-slot dimensions				
[mm]						
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	



- \*: The use of a slot (width XA, length XB, depth XC) allows for a relaxed pin pitch tolerance, with the pin hole (ØXA<sub>H9</sub>, depth XL) as the reference, without affecting mounting accuracy.
- \*: For intermediate strokes other than standard strokes, refer to Manufacture of Intermediate Strokes on page 433.
- \*: Choice of Rc, NPT, G port is available. (Refer to page 432.)

### MGPM, MGPL, MGPA Common Dimensions

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

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

### MGPM (Slide bearing) A, DB, E Dimensions

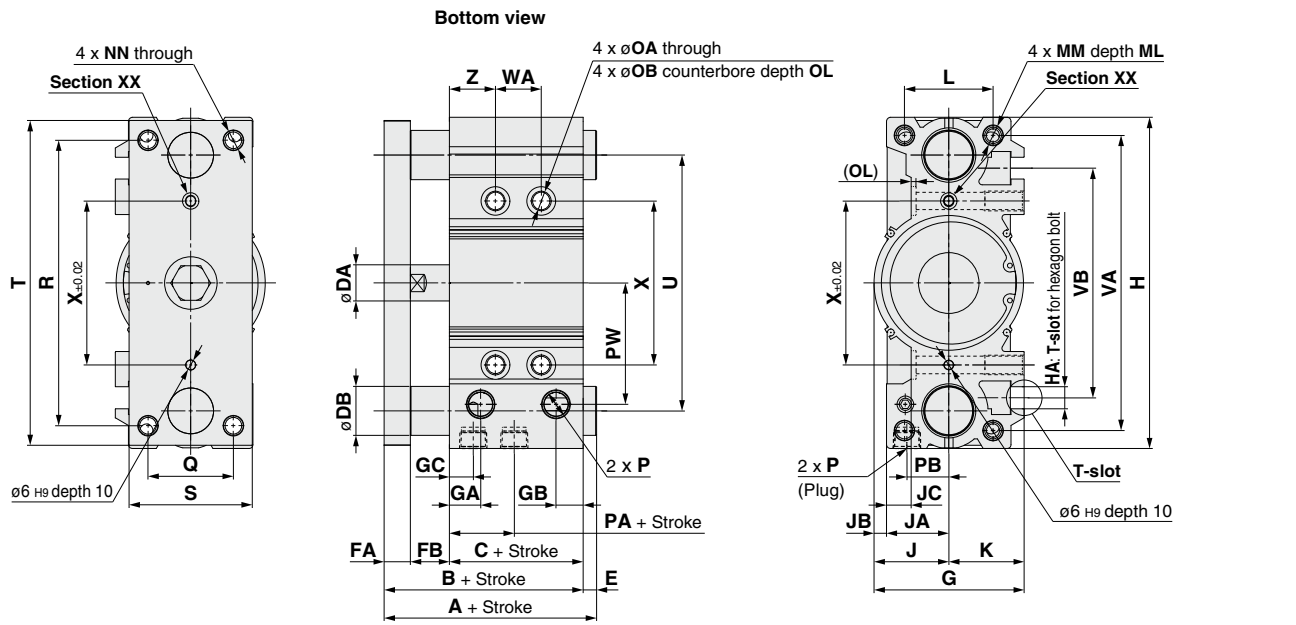
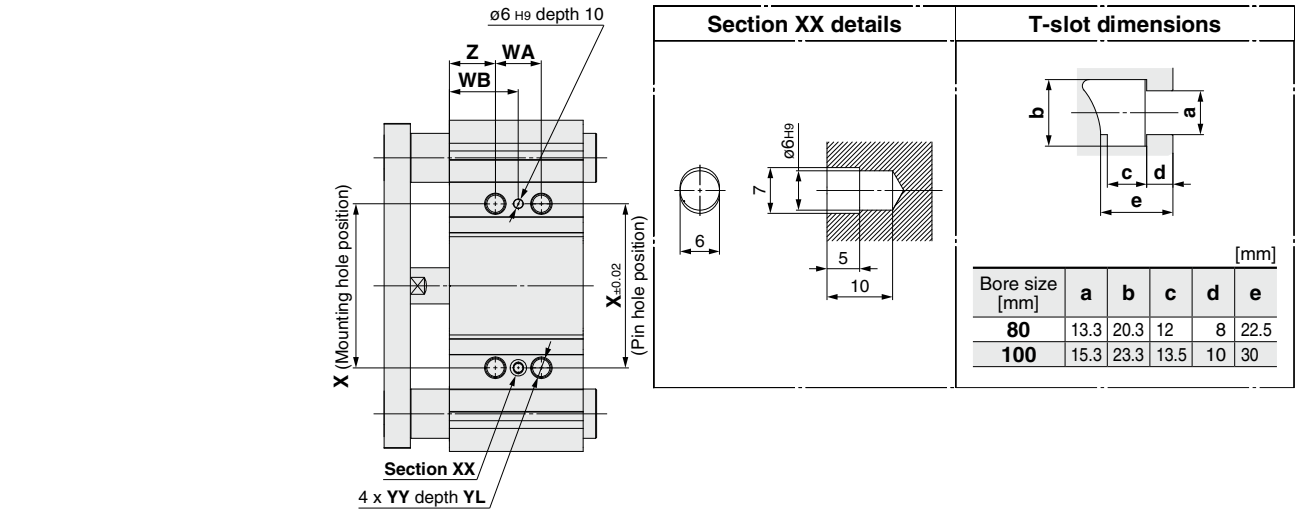
Bore size [mm]	A			DB	E		
	50 st or less	Over 50 st 200 st or less	Over 200 st		50 st or less	Over 50 st 200 st or less	Over 200 st
32	75	93.5	129.5	20	15.5	34	70
40	75	93.5	129.5	20	9	27.5	63.5
50	88.5	109.5	150.5	25	16.5	37.5	78.5
63	88.5	109.5	150.5	25	11.5	32.5	73.5

### MGPL (Ball bushing)

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

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

**Ø80, Ø100/MGPM, MGPL, MGPA**



※: The use of a slot (width X6, length 7, depth 5) allows for a relaxed pin pitch tolerance, with the pin hole (Ø6H9, depth 10) as the reference, without affecting mounting accuracy.  
 ※: For intermediate strokes other than standard strokes, refer to Manufacture of Intermediate Strokes on page 433.  
 ※: Choice of Rc, NPT, G port is available. (Refer to page 432.)

- MGJ
- JMGP
- MGP**
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

**MGPM, MGPL, MGPA Common Dimensions**

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

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

**MGPM (Slide bearing) A, DB, E Dimensions**

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

**MGPL (Ball bushing)**

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

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

- D-□
- X-□