

Compact Guide Cylinder/With Air Cushion

Series *MGP*

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



Stroke Variations

Bearing type	Bore size (mm)	Stroke (mm)												Intermediate stroke	
		25	50	75	100	125	150	175	200	250	300	350	400		
MGPM Slide bearing	16	●	●	●	●	●	●	●	●	●	●	●	●	●	Strokes available by the 1 mm interval by changing the collar.
	20	●	●	●	●	●	●	●	●	●	●	●	●	●	
	25	●	●	●	●	●	●	●	●	●	●	●	●	●	
	32	●	●	●	●	●	●	●	●	●	●	●	●	●	
MGPL Ball bushing bearing	40	●	●	●	●	●	●	●	●	●	●	●	●	●	
	50	●	●	●	●	●	●	●	●	●	●	●	●	●	
	63	●	●	●	●	●	●	●	●	●	●	●	●	●	
	80	●	●	●	●	●	●	●	●	●	●	●	●	●	
	100	●	●	●	●	●	●	●	●	●	●	●	●	●	

Gentle Automatic Solution Sdn Bhd

Tel :603-80237743 Fax :603-80239743 Email :sales@gentle.com.my <http://www.gentle.com.my>

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Series MGP

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

How to Order

Compact Guide Cylinder **MGP** **M** **32** **50** **A** **M9BW** **2**

Compact Guide Cylinder

Bearing type

M	Slide bearing
L	Ball bushing bearing

Bore size

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

Thread type

Nil	M5 x 0.8
	Rc
N	NPT
TF	G

* For bore sizes 16, M5 x 0.8 is only available.

Auto switch

Nil	Without auto switch (Built-in magnet)
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* For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Made to Order Specification
For details, refer to page 291.

With air cushion

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 291.

Applicable Auto Switch/Refer to pages 1719 to 1827 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)				
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire	M9BV	M9B	●	●	●	○	○	—				
				3-wire (NPN)	M9NWV	M9NW	●	●	●	○	○	IC circuit				
	3-wire (PNP)			M9PWV	M9PW	●	●	●	○	○	IC circuit					
	2-wire			M9BWV	M9BW	●	●	●	○	○	—					
	3-wire (NPN)			M9NAV	M9NA	○	○	●	○	○	IC circuit					
	3-wire (PNP)			M9PAV	M9PA	○	○	●	○	○	IC circuit					
	2-wire			M9BAV	M9BA	○	○	●	○	○	—					
	2-wire (Non-polar)			—	P3DW**	●	—	●	●	○	—					
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	24V	5V	—	A96V	A96	●	—	●	—	—	IC circuit	—
				2-wire				A93V	A93	●	—	●	—	—	—	
				No	2-wire	100V or less	A90V	A90	●	—	●	—	—	IC circuit	Relay, PLC	
						—	—	—	—	—	—	—	—	—	—	

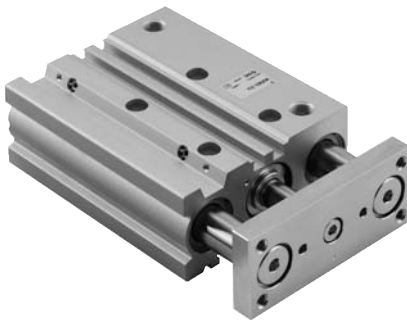
* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

* Solid state auto switches marked with "○" are produced upon receipt of order.
* Bore sizes 32 to 100 are available for D-P4DW.
** Bore sizes 25 to 100 are available for D-P3DW.

* Since there are other applicable auto switches than listed, refer to page 336 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785. For D-P3DW□, refer to pages 1773-1 and 1773-2.
* Auto switches are shipped together (not assembled).

Compact Guide Cylinder **Series MGP** With Air Cushion

Specifications



Bore size	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Action	Double acting								
Fluid	Air								
Proof pressure	1.5 MPa								
Maximum operating pressure	1.0 MPa								
Minimum operating pressure	0.15 MPa	0.12 MPa							
Ambient and fluid temperature	-10 to 60°C (No freezing)								
Piston speed	50 to 500 mm/s								50 to 400 mm/s
Cushion	Air cushion on both ends (Without bumper)								
Lubrication	Not required (Non-lube)								
Stroke length tolerance	$\begin{matrix} +1.5 \\ 0 \end{matrix}$ (mm)								

Standard Stroke

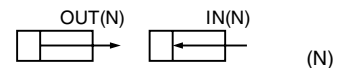
Bore size (mm)	Standard stroke (mm)
16	25, 50, 75, 100, 125, 150, 175, 200, 250
20 to 63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400
80, 100	50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Stroke

Description	Intermediate strokes by the 1 mm interval are available by replacing collars of a standard stroke cylinder. Minimum manufacturable stroke ø16 to ø63: 15 mm ø80, ø100: 20 mm Select a rubber bumper type, because the cushion effect is not obtainable for less than this stroke.		
Part no.	Suffix "-XC19" to the end of standard part number.		
Applicable stroke (mm)	ø16	15 to 249	
	ø20 to ø63	15 to 399	
	ø80, ø100	20 to 399	
Example	Model: MGPM20-35A-XC19 A collar 15 mm in width is installed in a MGPM20-50A C dimension is 112 mm.		

Note) Intermediate stroke (by the 1 mm interval) based on an exclusive body will be available upon request for special.

Theoretical Output



Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	OUT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

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



Made to Order Specifications (For details, refer to pages 1829 to 2021.)

Symbol	Specifications
-XC19	Intermediate stroke (Spacer type)
-XC79	Machining tapped hole, drilled hole and pin hole additionally.
-X144	Symmetrical port position
-X867	Lateral piping type (Change of plug position)

Refer to pages 334 to 336 for cylinders with auto switches.

- Minimum auto switch mounting stroke
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Auto switch mounting bracket: Part no.

Series MGP

Mass

Slide bearing: MGPM16 to 100

(kg)

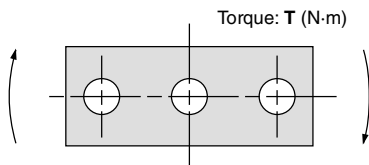
Bore size (mm)	Model	Standard stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
16	MGPM16	0.51	0.69	0.78	0.91	1.07	1.20	1.32	1.45	1.70	—	—	—
20	MGPM20	0.89	1.14	1.34	1.54	1.74	1.94	2.13	2.33	2.80	3.20	3.59	3.99
25	MGPM25	1.23	1.60	1.87	2.14	2.41	2.68	2.95	3.23	3.89	4.43	4.97	5.51
32	MGPM32	1.98	2.51	2.77	3.15	3.53	3.91	4.29	4.68	5.63	6.39	7.15	7.92
40	MGPM40	2.34	2.91	3.21	3.64	4.06	4.49	4.92	5.34	6.38	7.23	8.09	8.94
50	MGPM50	3.92	4.75	5.29	5.93	6.57	7.21	7.85	8.49	10.1	11.4	12.7	13.9
63	MGPM63	4.94	5.89	6.54	7.29	8.05	8.81	9.56	10.3	12.2	13.7	15.2	16.7
80	MGPM80	—	8.98	9.64	10.6	11.5	12.5	13.4	14.3	16.8	18.7	20.5	22.4
100	MGPM100	—	14.2	15.1	16.5	17.8	19.1	20.5	21.8	25.1	27.8	30.4	33.1

Ball bushing bearing: MGPL16 to 100

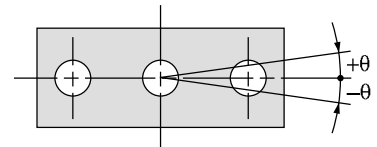
(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
16	MGPL16	0.56	0.66	0.78	0.89	1.03	1.15	1.26	1.38	1.61	—	—	—
20	MGPL20	0.97	1.12	1.30	1.47	1.68	1.85	2.03	2.20	2.57	2.92	3.27	3.62
25	MGPL25	1.34	1.54	1.78	1.96	2.19	2.46	2.69	2.92	3.33	3.83	4.30	4.76
32	MGPL32	1.81	2.34	2.57	2.88	3.26	3.58	3.89	4.21	4.91	5.54	6.17	6.80
40	MGPL40	2.15	2.73	3.01	3.36	3.78	4.14	4.50	4.86	5.65	6.37	7.08	7.80
50	MGPL50	3.65	4.47	4.95	5.49	6.14	6.69	7.24	7.79	9.02	10.1	11.2	12.3
63	MGPL63	4.66	5.60	6.20	6.85	7.61	8.28	8.95	9.61	11.1	12.4	13.7	15.1
80	MGPL80	—	8.88	9.63	10.5	11.3	12.1	12.9	13.7	15.6	17.3	18.9	20.5
100	MGPL100	—	13.7	14.9	16.1	17.2	18.4	19.6	20.8	23.4	25.7	28.1	30.4

Allowable Rotational Torque of Plate (Air Cushion)



Non-rotating Accuracy of Plate



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

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

Bore size (mm)	Bearing type	Stroke											
		25	50	75	100	125	150	175	200	250	300	350	400
16	MGPM	0.53	0.84	0.69	0.58	0.50	0.44	0.40	0.36	0.30	—	—	—
	MGPL	1.27	0.86	0.65	0.52	0.43	0.37	0.32	0.28	0.23	—	—	—
20	MGPM	0.99	2.23	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	1.57	1.34	1.17	1.03	0.93	0.76	0.65	0.56	0.49
25	MGPM	1.64	3.51	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	2.41	2.05	1.78	1.58	1.41	1.16	0.98	0.85	0.74
32	MGPM	6.35	6.64	5.69	4.97	4.42	3.98	3.61	3.31	2.84	2.48	2.20	1.98
	MGPL	5.95	5.89	5.11	6.99	6.34	5.79	5.33	4.93	4.29	3.78	3.38	3.04
40	MGPM	7.00	7.32	6.27	5.48	4.87	4.38	3.98	3.65	3.13	2.74	2.43	2.19
	MGPL	6.55	6.49	5.62	7.70	6.98	6.38	5.87	5.43	4.72	4.16	3.71	3.35
50	MGPM	13.0	13.8	12.0	10.6	9.50	8.60	7.86	7.24	6.24	5.49	4.90	4.43
	MGPL	9.17	11.2	9.80	12.8	11.6	10.7	9.80	9.10	7.95	7.02	6.26	5.63
63	MGPM	14.7	15.6	13.5	11.9	10.7	9.69	8.86	8.16	7.04	6.19	5.52	4.99
	MGPL	10.2	12.5	11.0	14.3	13.0	11.9	11.0	10.2	8.84	7.80	6.64	6.24
80	MGPM	—	26.0	22.9	20.5	18.6	17.0	15.6	14.5	12.6	11.2	10.0	9.11
	MGPL	—	25.2	22.7	20.6	18.9	17.3	16.0	14.8	12.9	11.3	10.0	8.94
100	MGPM	—	41.9	37.5	33.8	30.9	28.4	26.2	24.4	21.4	19.1	17.2	15.7
	MGPL	—	41.7	37.9	34.6	31.8	29.3	27.2	25.3	22.1	19.5	17.3	15.5

Compact Guide Cylinder/With Air Cushion Series MGP Model Selection

Selection Conditions

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

Selection Example 1 (Vertical Mounting)

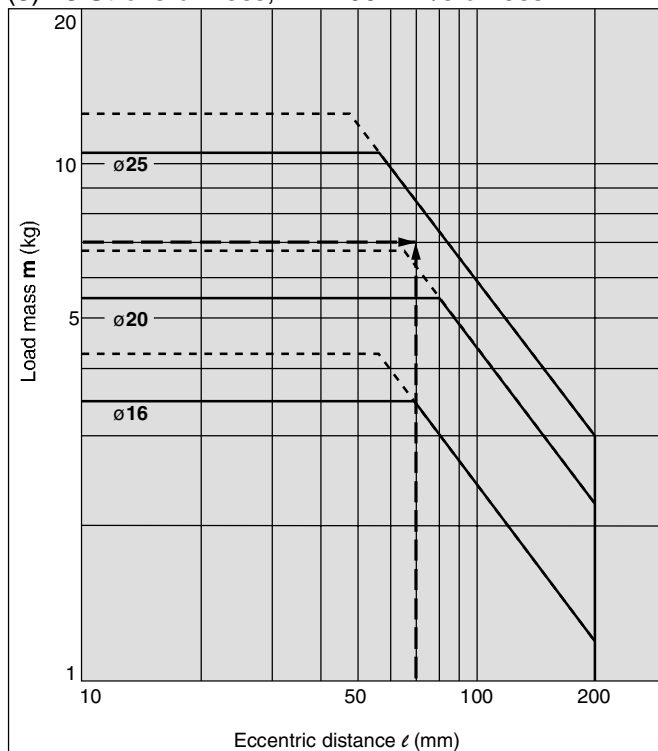
Selection conditions

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

Find the point of intersection for the load mass of 7 kg and the eccentric distance of 70 mm on graph (5), based on vertical mounting, ball bushing, 75 mm stroke, and the speed of 200 mm/s.

→ MGPL25-75A is selected.

(5) 75 Stroke or Less, $V = 200$ mm/s or less



Selection Example 2 (Horizontal Mounting)

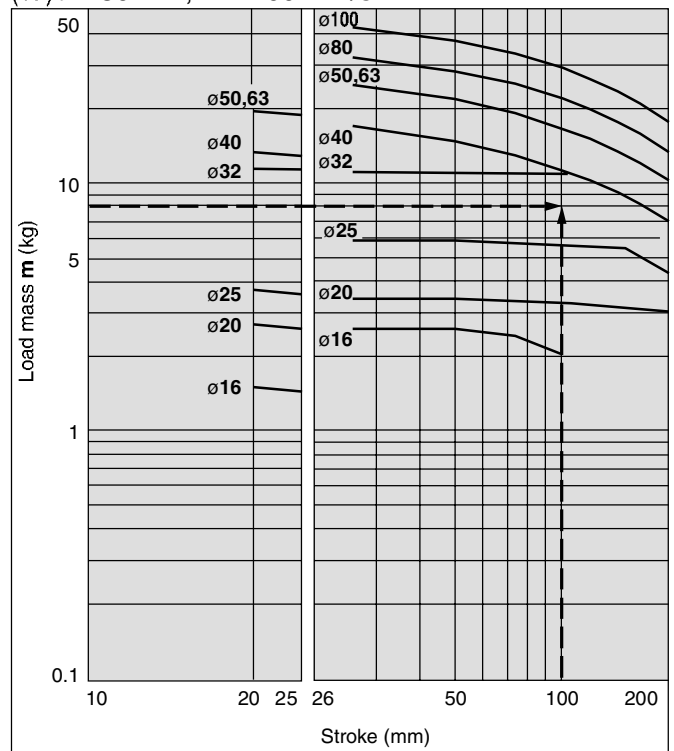
Selection conditions

Mounting: Horizontal
Bearing type: Slide bearing
Distance between plate and load center of gravity: 40 mm
Maximum speed: 400 mm/s
Load mass: 8 kg
Stroke: 100 stroke

Find the point of intersection for the load mass of 8 kg and 100 stroke on graph (17), based on horizontal mounting, slide bearing, the distance of 40 mm between the plate and load center of gravity, and the speed of 400 mm/s.

→ MGPM32-100A is selected.

(17) $l = 50$ mm, $V = 400$ mm/s



· 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.

Maximum	Up to 300 mm/s	Up to 400 mm/s	Up to 500 mm/s
Coefficient	1.7	1	0.6

Gentle Automatic Solution Sdn Bhd

Tel :603-80237743 Fax :603-80239743 Email :sales@gentle.com.my <http://www.gentle.com.my>

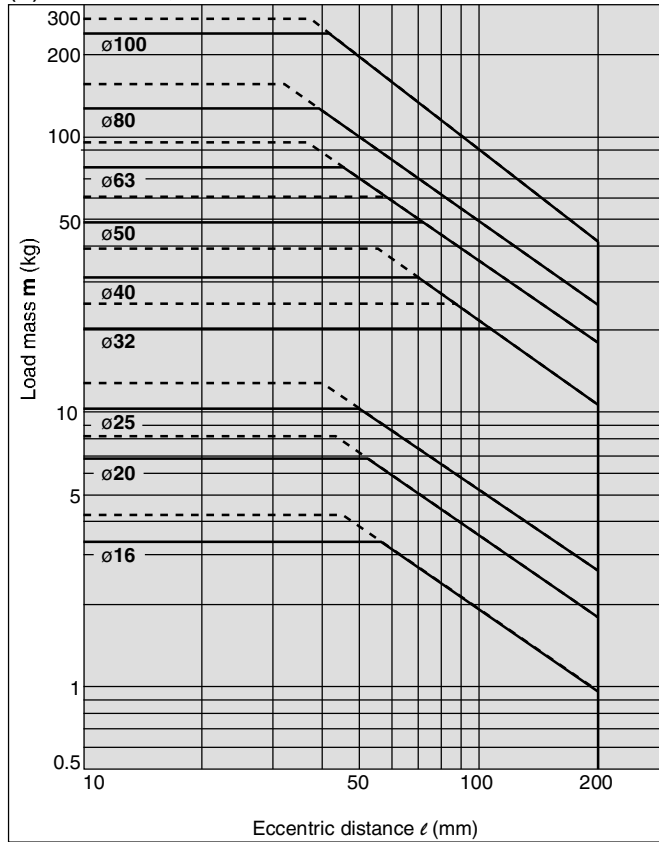
Series MGP

Vertical Mounting (Slide Bearing)

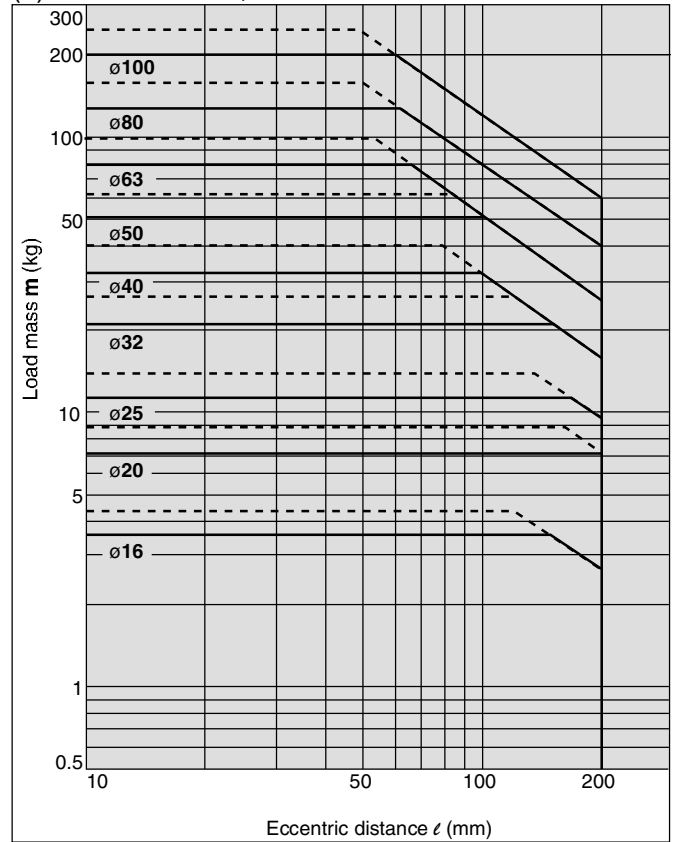
— Operating pressure 0.4 MPa
 - - - Operating pressure 0.5 MPa or more

MGPM16 to 100

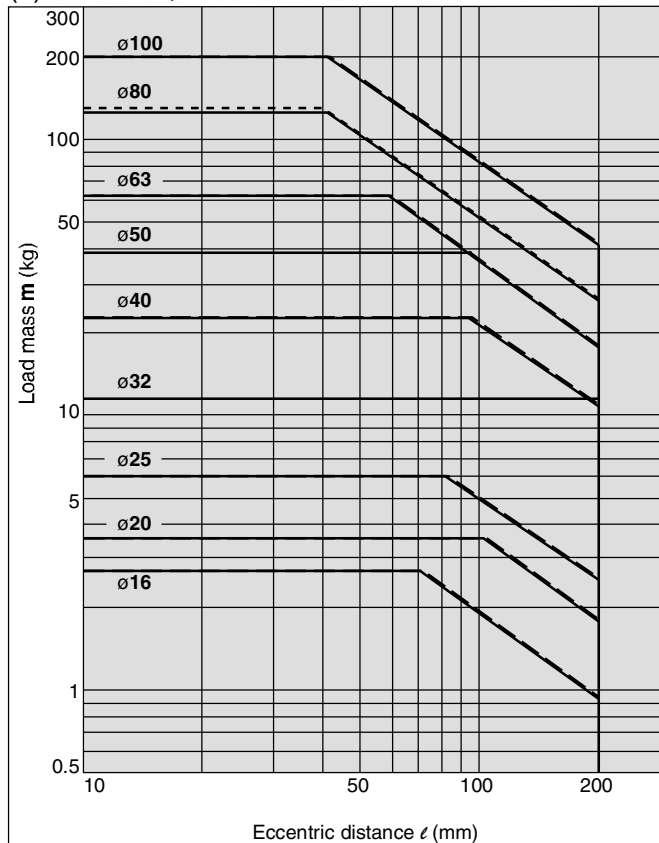
(1) 25 Stroke, V = 200 mm/s or less



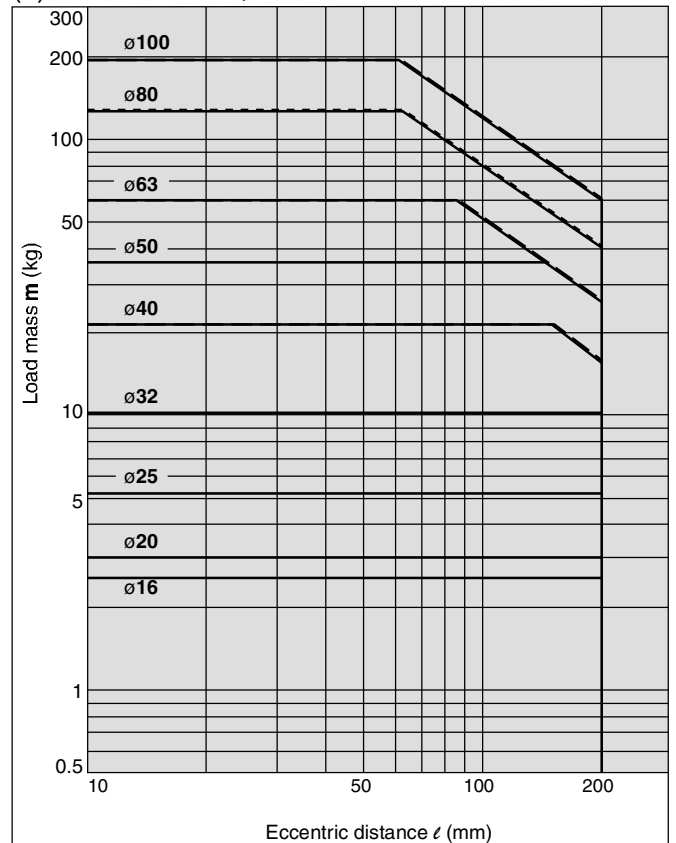
(2) Over 25 Stroke, V = 200 mm/s or less



(3) 25 Stroke, V = 400 mm/s



(4) Over 25 Stroke, V = 400 mm/s

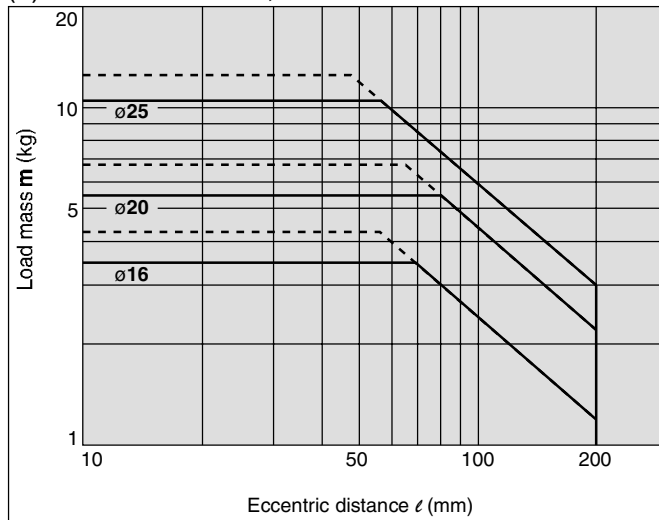


— Operating pressure 0.4 MPa
- - - Operating pressure 0.5 MPa or more

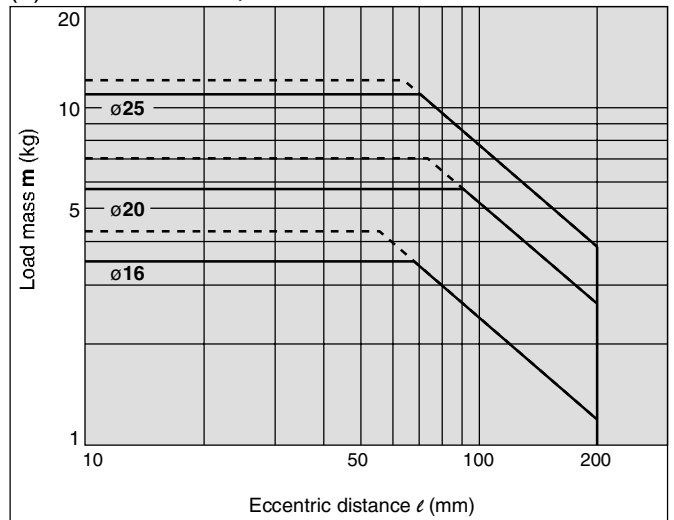
Vertical Mounting (Ball Bushing)

MGPL16 to 25

(5) 75 Stroke or Less, V = 200 mm/s or less

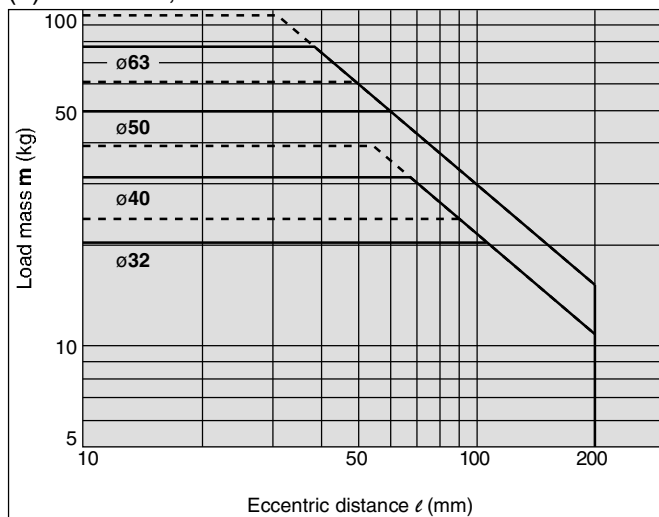


(6) Over 75 Stroke, V = 200 mm/s or less

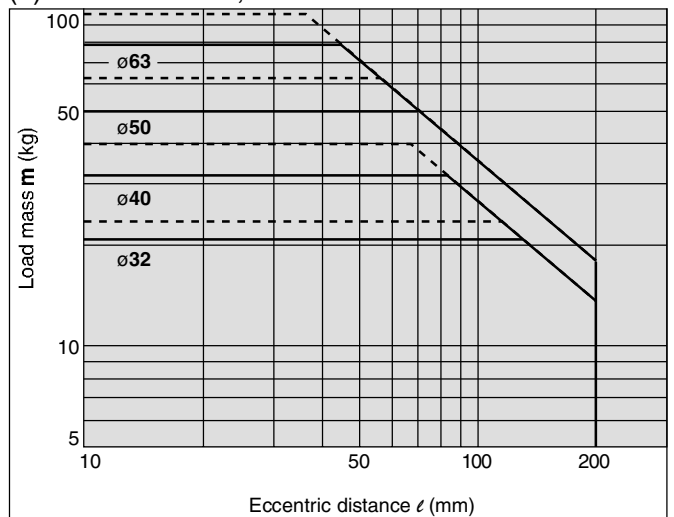


MGPL32 to 63

(7) 25 Stroke, V = 200 mm/s or less

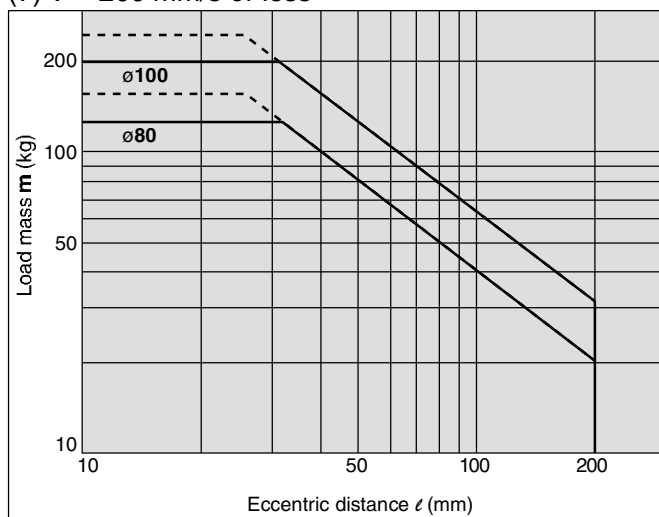


(8) Over 25 Stroke, V = 200 mm/s or less



MGPL80, 100

(7) V = 200 mm/s or less



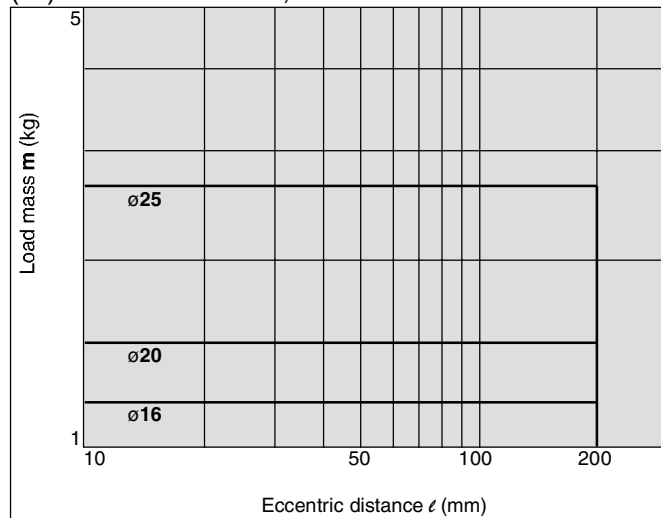
Series MGP

Vertical Mounting (Ball Bushing)

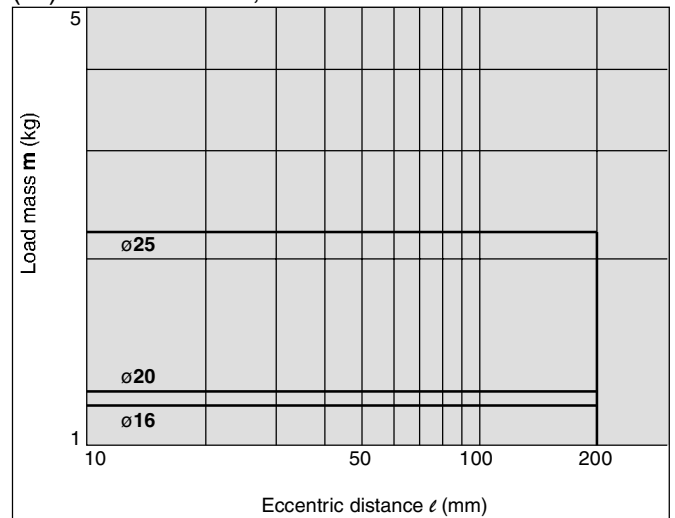
Operating pressure 0.4 MPa

MGPL16 to 25

(10) 75 Stroke or Less, V = 400 mm/s

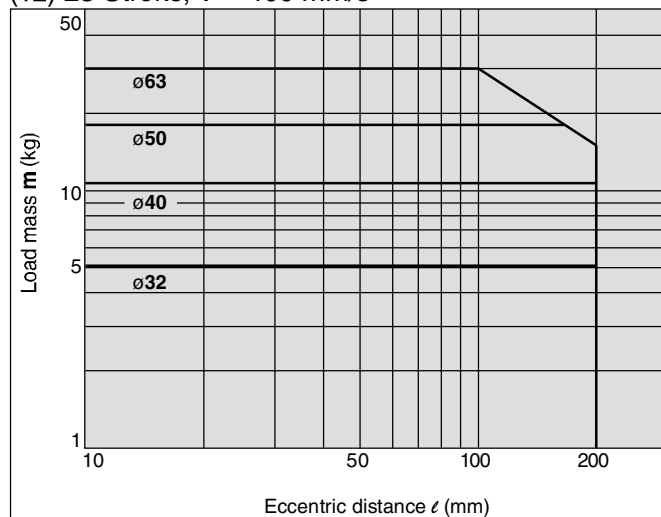


(11) Over 75 Stroke, V = 400 mm/s

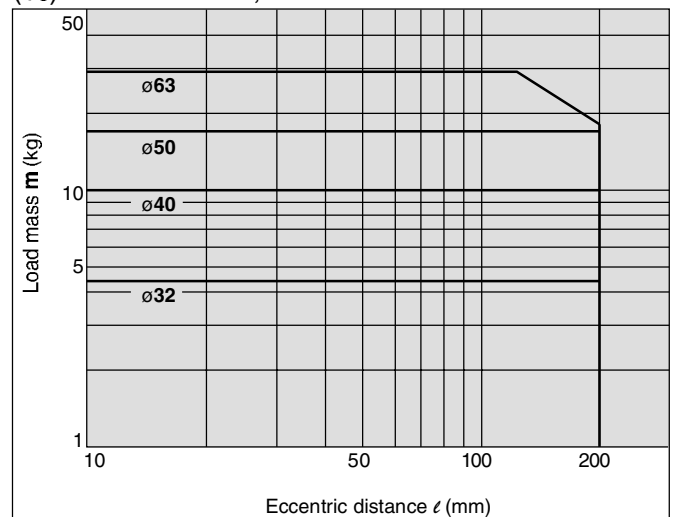


MGPL32 to 63

(12) 25 Stroke, V = 400 mm/s

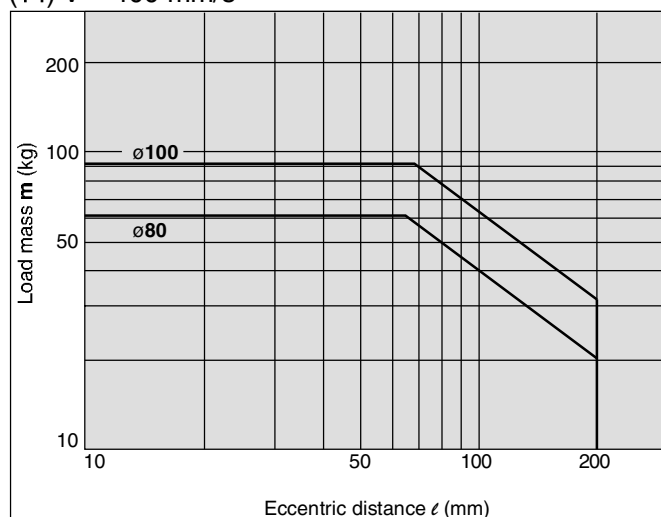


(13) Over 25 Stroke, V = 400 mm/s



MGPL80, 100

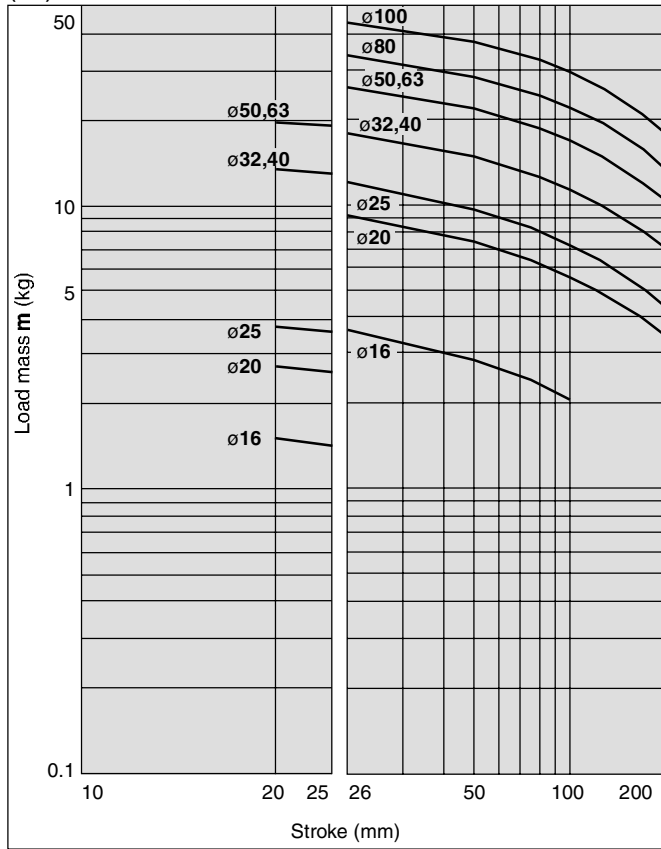
(14) V = 400 mm/s



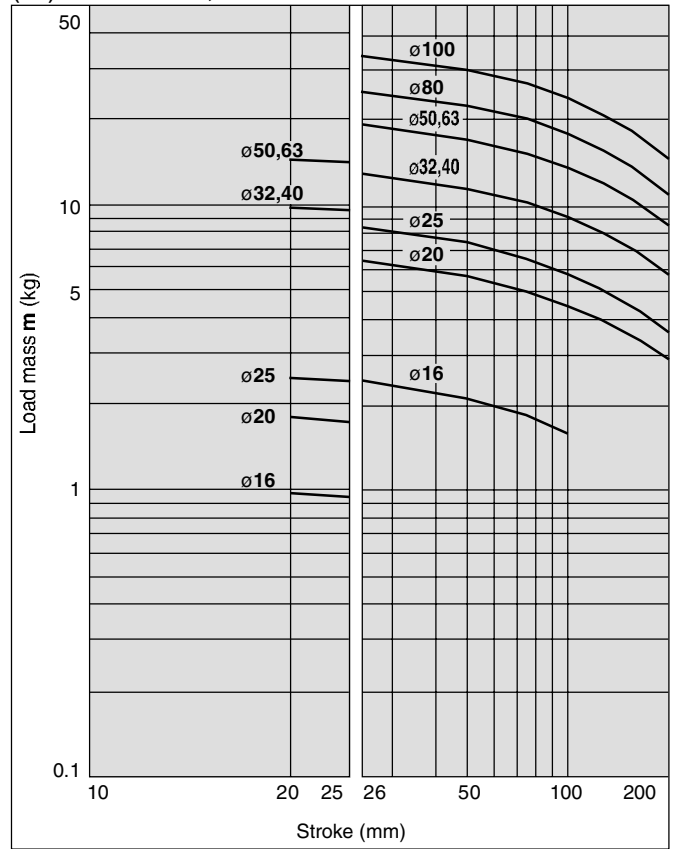
Horizontal Mounting (Slide Bearing)

MGPM16 to 100

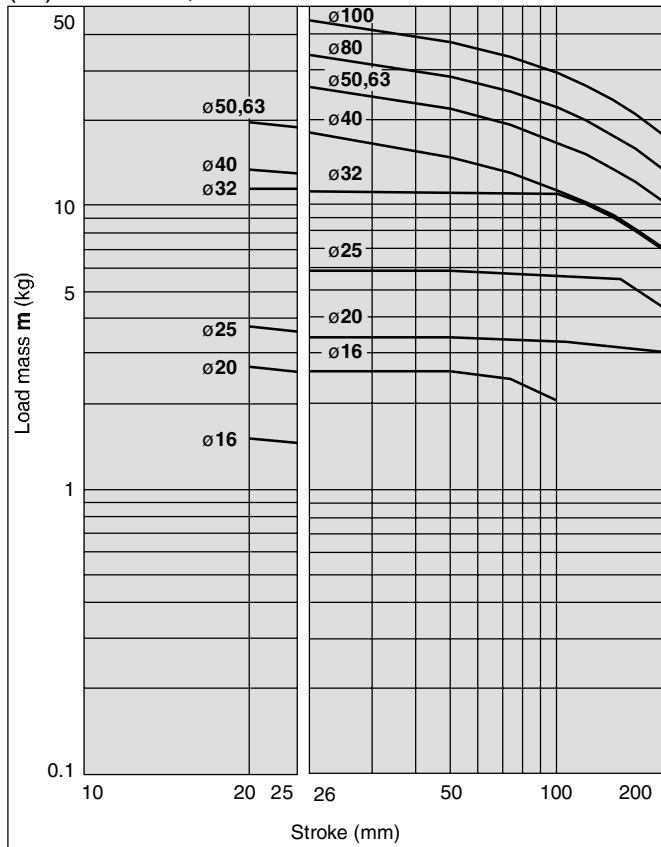
(15) $\ell = 50$ mm, $V = 200$ mm/s or less



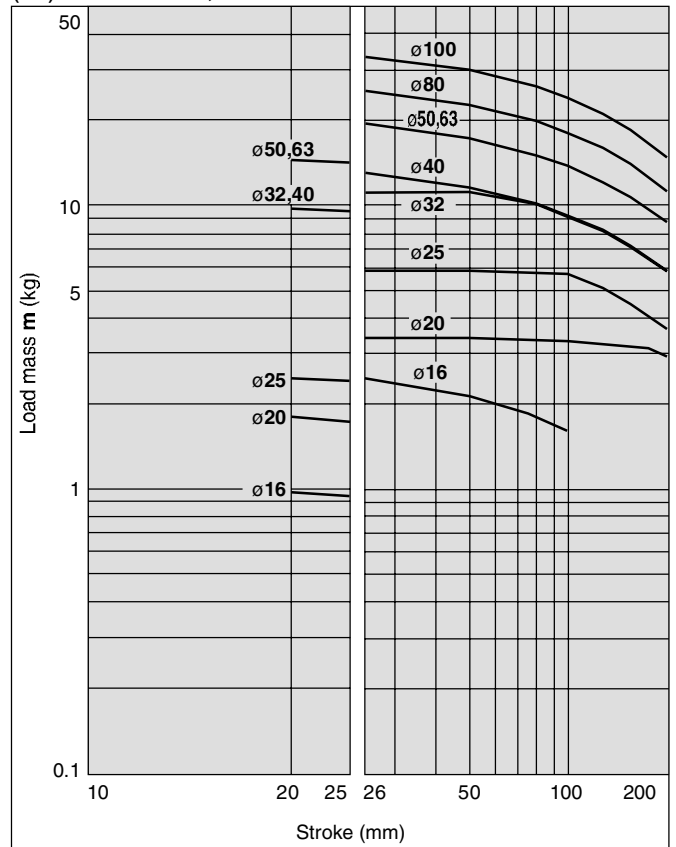
(16) $\ell = 100$ mm, $V = 200$ mm/s or less



(17) $\ell = 50$ mm, $V = 400$ mm/s



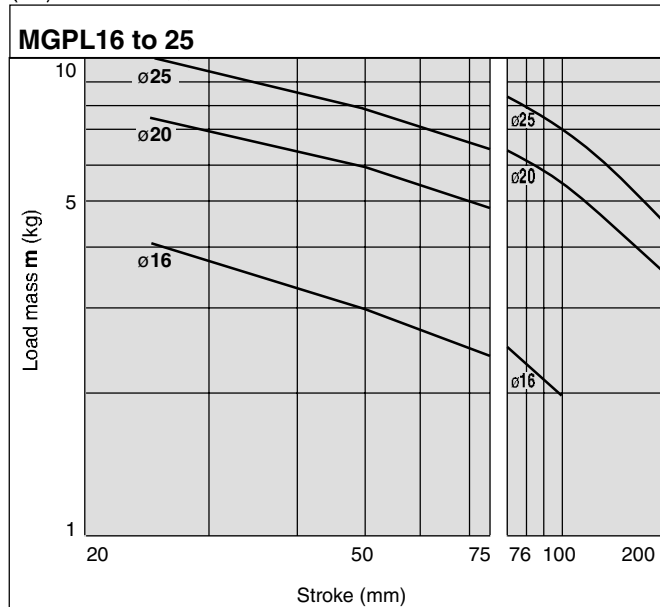
(18) $\ell = 100$ mm, $V = 400$ mm/s



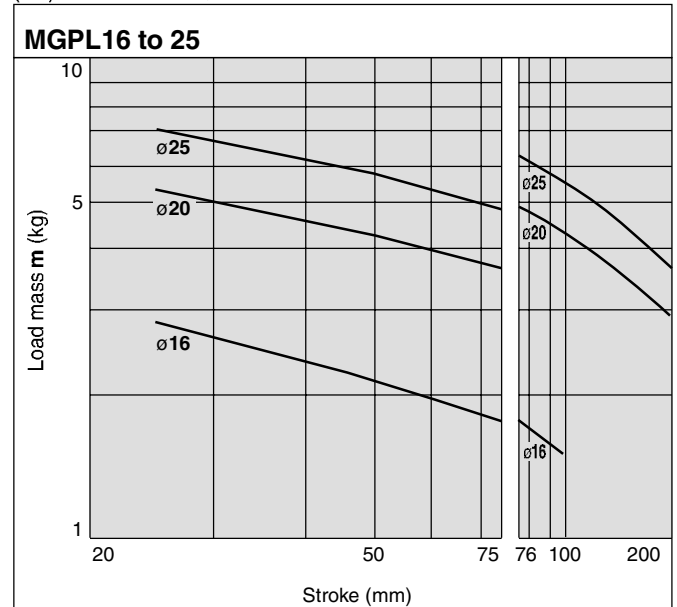
Series MGP

Horizontal Mounting (Ball Bushing)

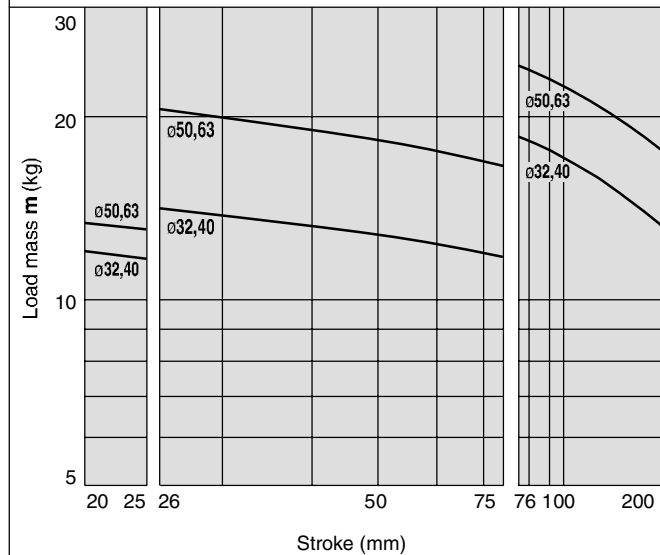
(19) $\ell = 50$ mm, $V = 200$ mm/s or less



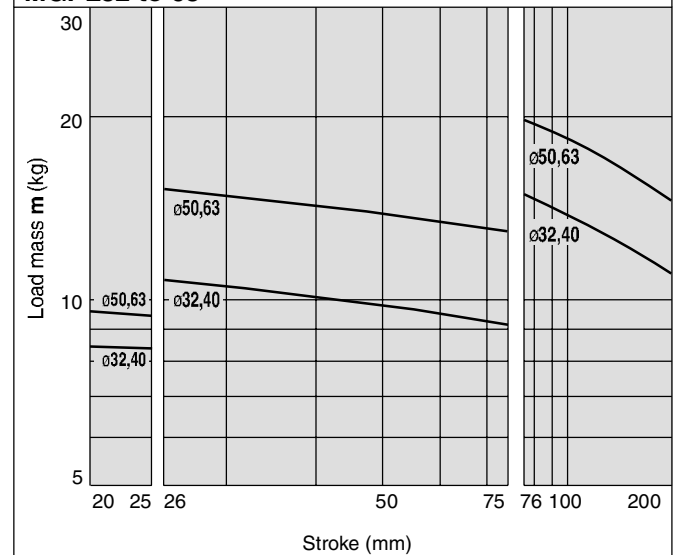
(20) $\ell = 100$ mm, $V = 200$ mm/s or less



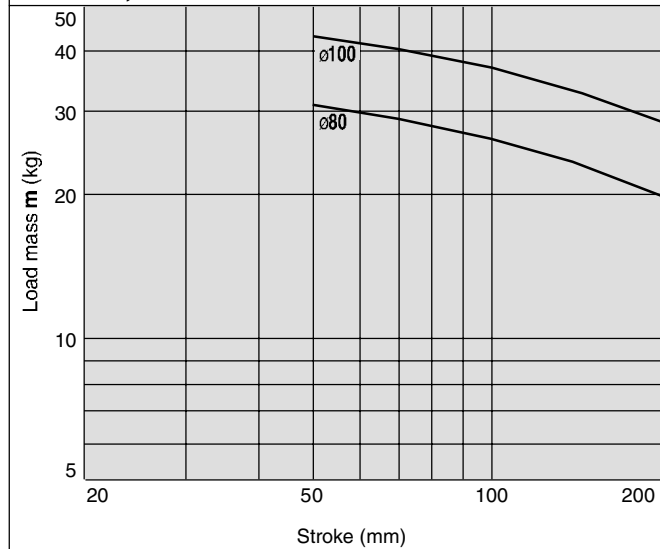
MGPL32 to 63



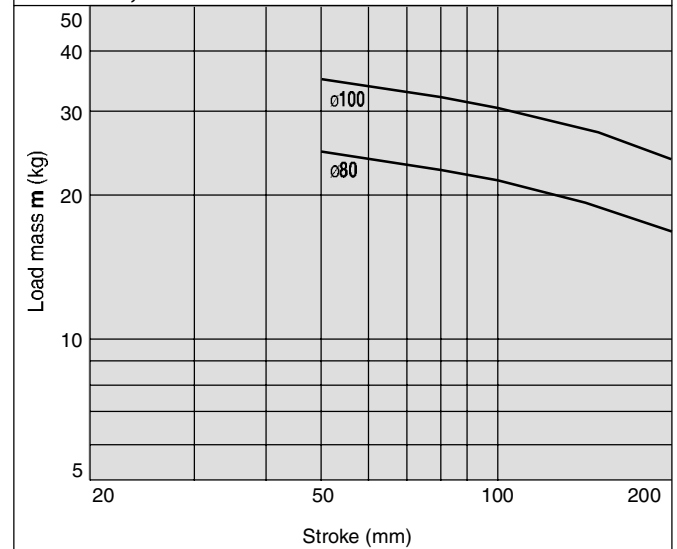
MGPL32 to 63



MGPL80, 100

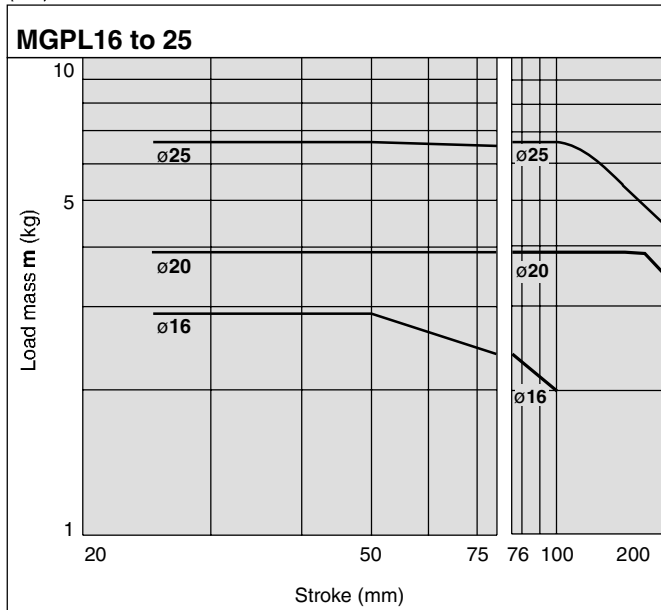


MGPL80, 100

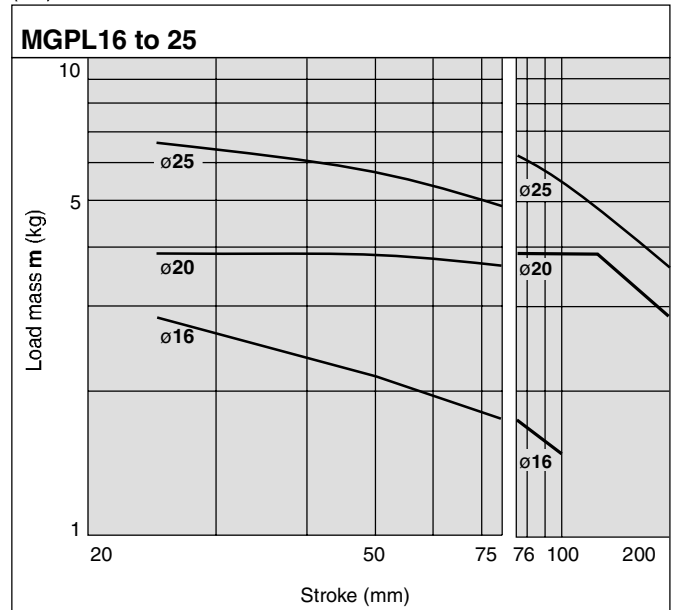


Horizontal Mounting (Ball Bushing)

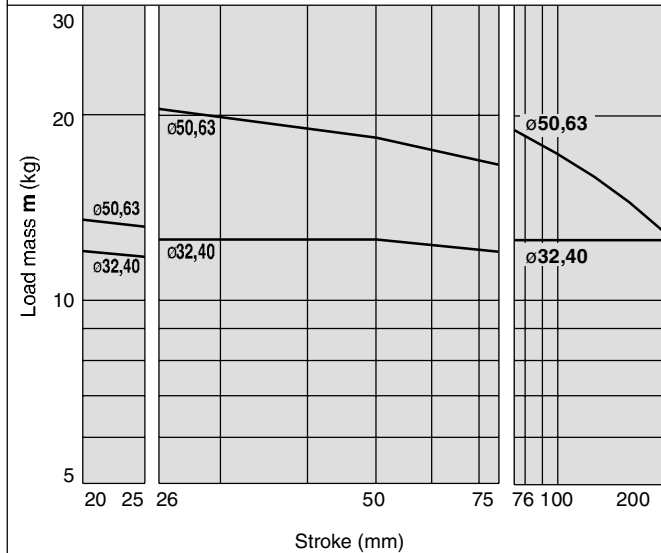
(21) $\ell = 50 \text{ mm}$, $V = 400 \text{ mm/s}$



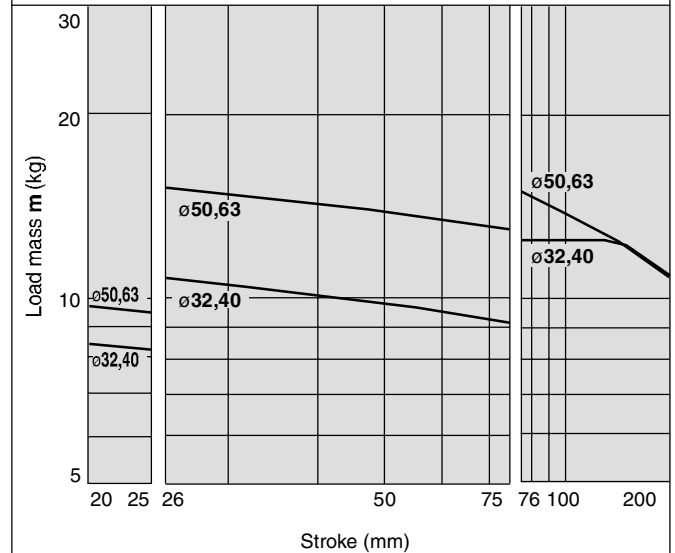
(22) $\ell = 100 \text{ mm}$, $V = 400 \text{ mm/s}$



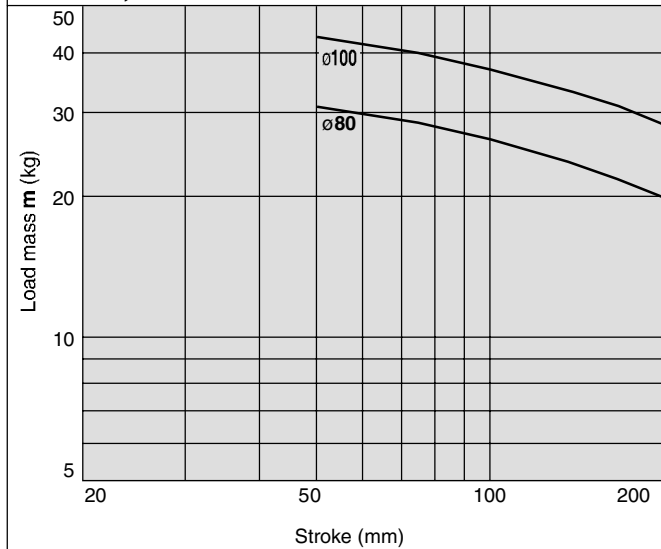
MGPL32 to 63



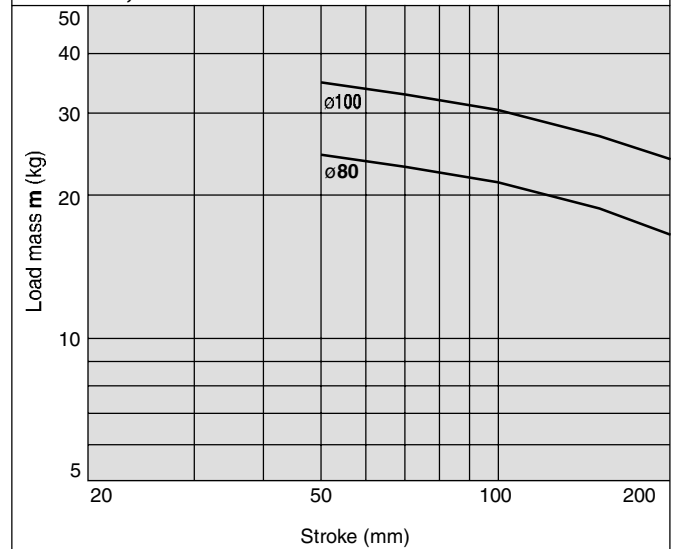
MGPL32 to 63



MGPL80, 100



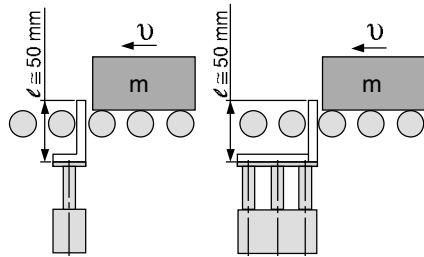
MGPL80, 100



Series MGP

Operating Range when Used as Stopper

Bore size $\phi 16$ 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.

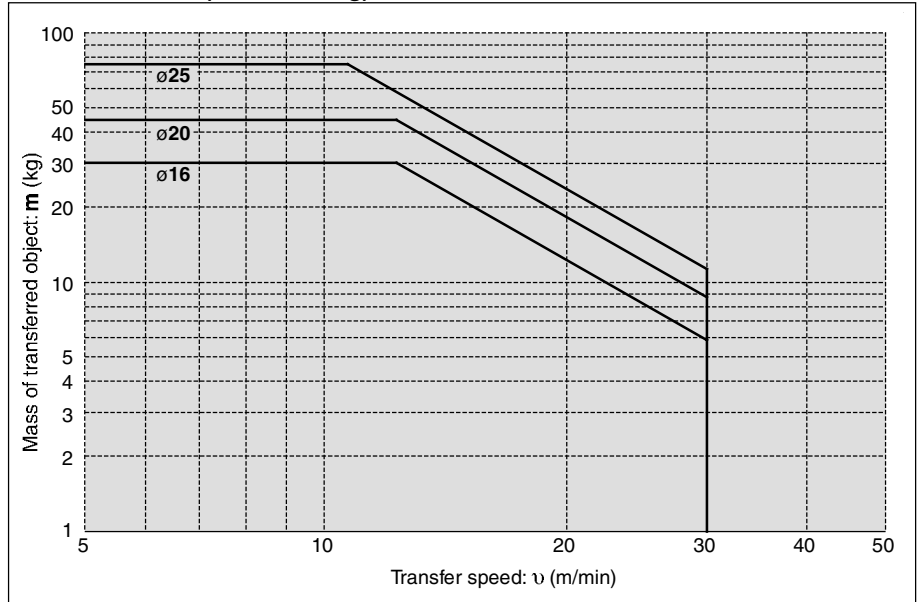
⚠ Caution

Caution on handling

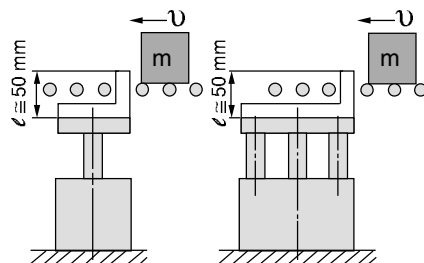
Note 1) When using as a stopper, select a model with 25 stroke or less.

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

MGPM16 to 25 (Slide bearing)



Bore Size $\phi 32$ 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.

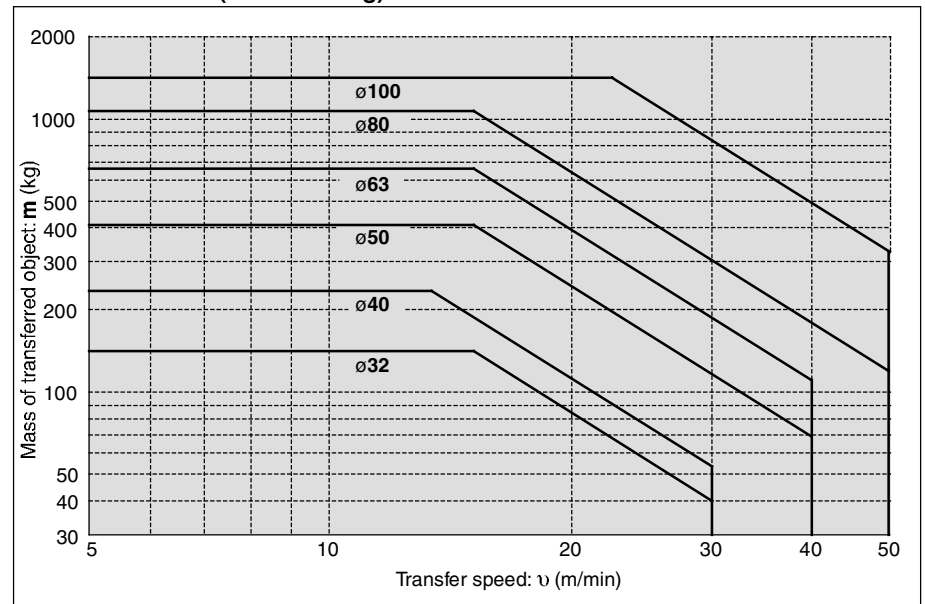
⚠ Caution

Caution on handling

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

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

MGPM32 to 100 (Slide bearing)



Copper and Fluorine-free Series (For CRT Manufacturing Process)

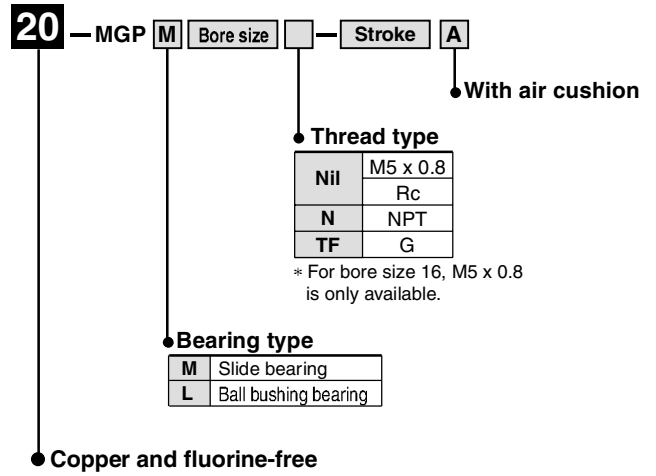
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

Specifications

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

* Specifications and dimensions other than above are the same as the standard basic style.

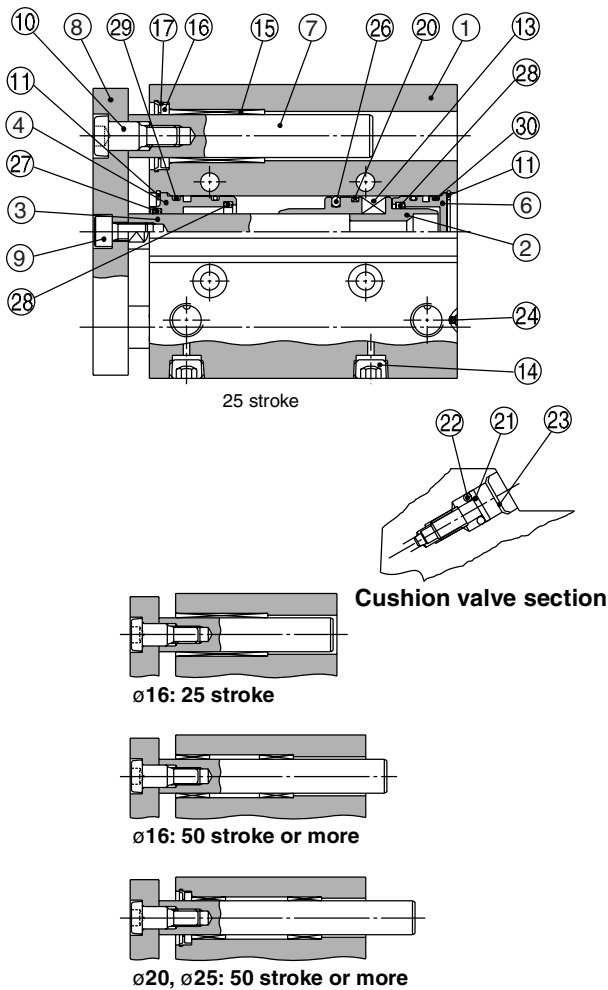
How to Order



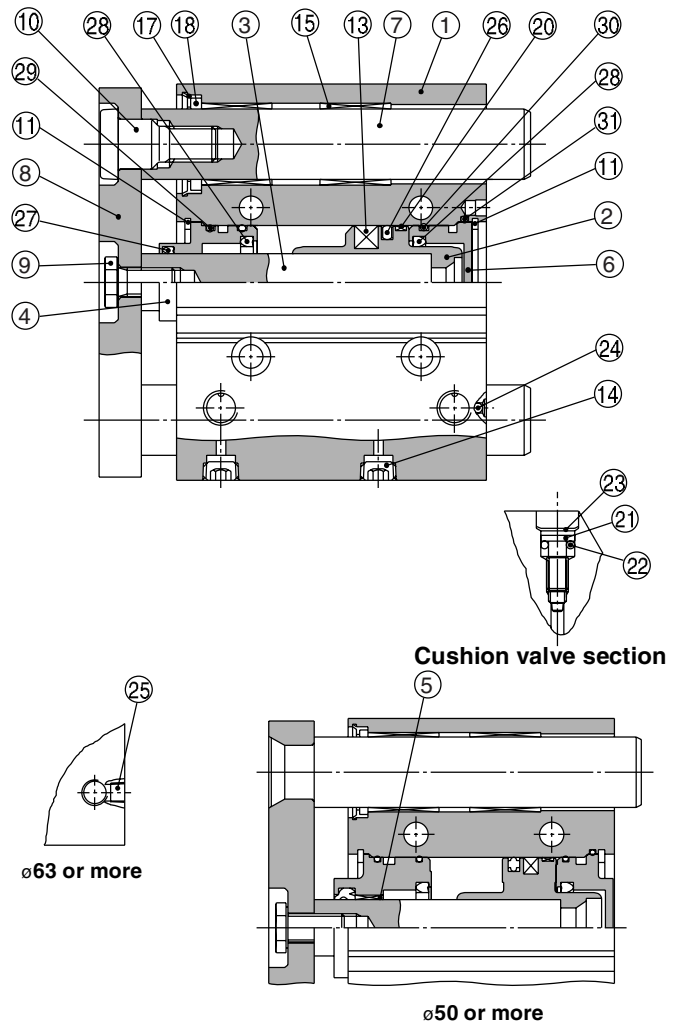
Series MGP

Series MGPM/Construction (With air cushion)

MGPM16 to 25



MGPM32 to 100



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel	ø16 to ø25
		Carbon steel	ø32 to ø100
4	Collar	Aluminum alloy	ø16 to ø63
			ø80, ø100
5	Bushing	Babbitt	Clear anodized
6	Head cover	Aluminum alloy	ø16 to ø25
			ø32 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	Guide bolt	Carbon steel	Nickel plated
11	Retaining ring	Carbon tool steel	Phosphate coated
12	Retaining ring	Carbon tool steel	Phosphate coated
13	Magnet	—	
14	Plug Hexagon socket head cap plug	Carbon steel	ø16
			ø20 to ø100
15	Slide Bearing	Babbitt	
16	Felt	Felt	
17	Holder	Resin	
18	Ball bushing		
19	Spacer	Aluminum alloy	

Component Parts

No.	Description	Material	Note
20	Wear ring	Resin	
21	Cushion valve	Steel	
22	Gasket	NBR	
23	Retaining ring	Carbon tool steel	Except ø16
24	Steel ball	Carbon steel	ø16 to ø50
25	Plug	Carbon steel	ø63 to ø100
26*	Piston seal	NBR	
27*	Rod seal	NBR	
28*	Cushion seal	Urethane	
29*	Gasket A	NBR	
30*	Gasket B	NBR	
31*	Gasket C	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents	Bore size (mm)	Kit no.	Contents
16	MGP16-A-PS	Set of nos. above 29, 27, 28, 29, 30, 31	50	MGP50-A-PS	Set of nos. above 29, 27, 28, 29, 30, 31
20	MGP20-A-PS		63	MGP63-A-PS	
25	MGP25-A-PS		80	MGP80-A-PS	
32	MGP32-A-PS		100	MGP100-A-PS	
40	MGP40-A-PS				

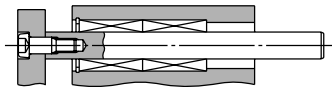
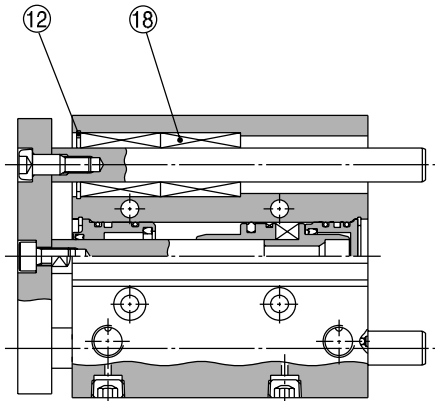
* Seal kit includes 29 to 31. Order the seal kit, based on each bore size.

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

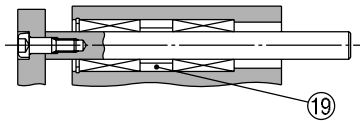
Grease pack part no.: GR-S-010 (10 g)

Series MGPL/Construction (With Air Cushion)

MGPL16 to 25

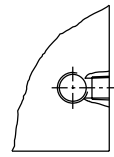
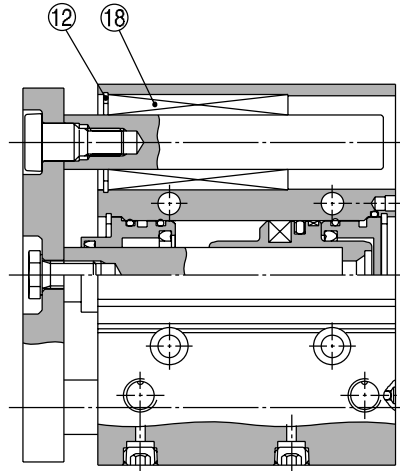


ø20,ø25: 75 stroke or less

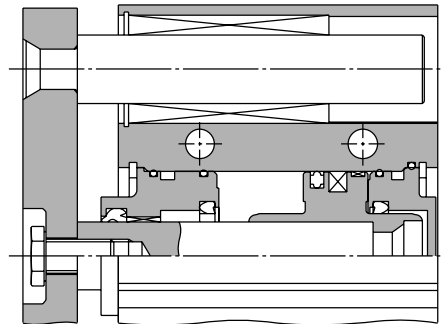


ø20,ø25: 100 stroke or more

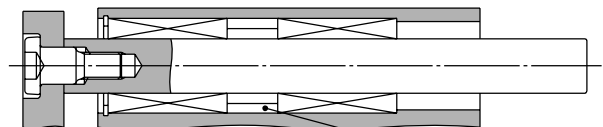
MGPL32 to 100



ø63 or more



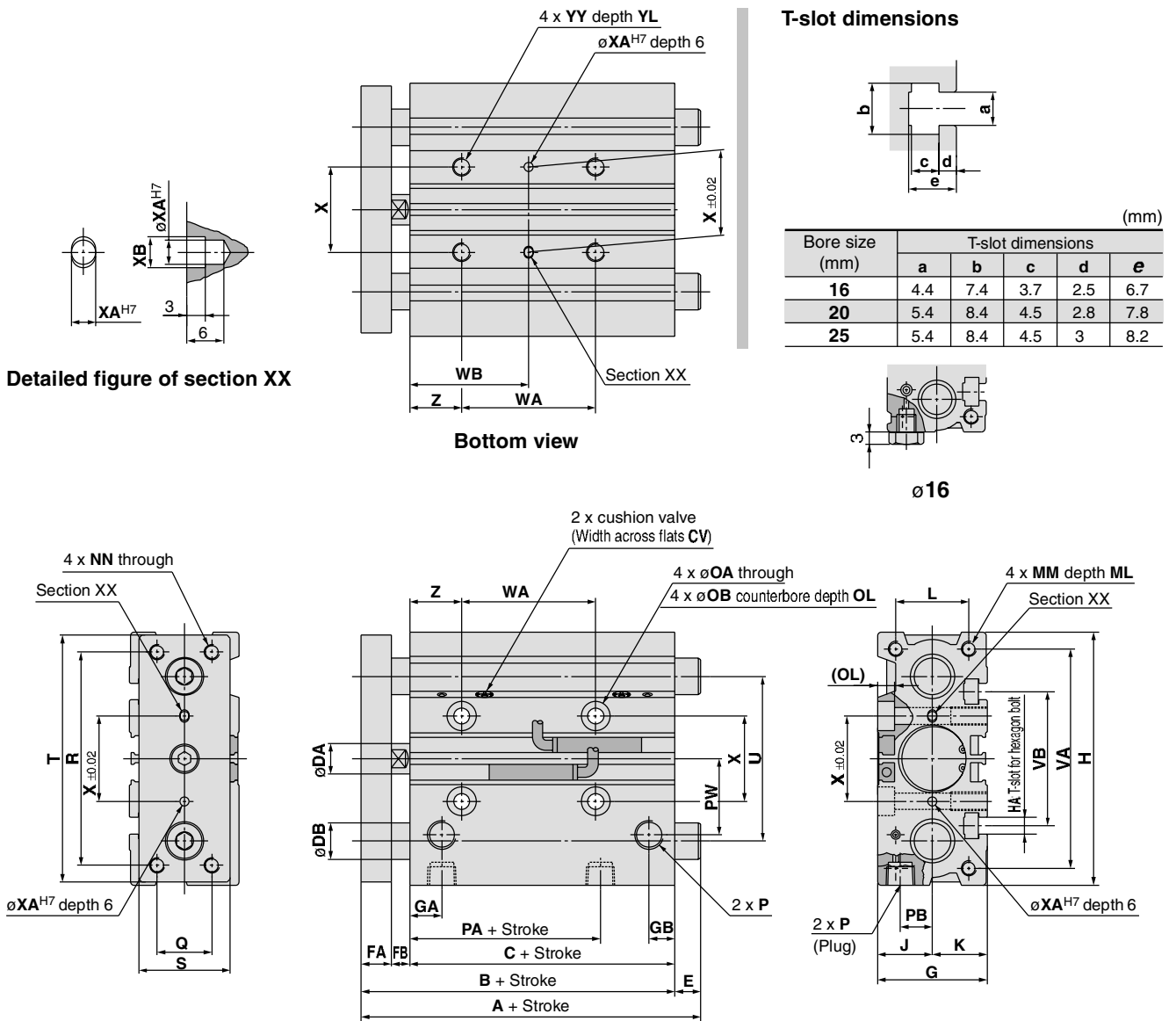
ø50 or more



ø32 to ø63: 100 stroke or more

Series MGP

MGPM, MGPL (With Air Cushion): $\phi 16$ to $\phi 25$



Note 1) For the intermediate strokes, refer to "Manufacture of Intermediate Stroke" on page 291.
 Note 2) When adjusting the $\phi 16$ cushion valve, use a 3 mm flat head watchmakers' screwdriver.

• For bore size with $\phi 16$, M5 x 0.8 is only available.
 • Rc, NPT, G port can be selected for bore sizes with $\phi 20$ or more. (Refer to page 290.)

MGPM, MGPL Common Dimensions (mm)

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		
																						Nil	N	TF
16	25, 50, 75, 100, 125, 150, 175, 200, 250	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	—	—
20	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	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	5.4	9.5	5.5	Rc 1/8	NPT 1/8	G 1/8
25	200, 250, 300, 350, 400	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	5.4	9.5	5.5	Rc 1/8	NPT 1/8	G 1/8

Bore size (mm)	PA	PB	PW	Q	R	S	T	U	VA	VB	WA				WB				X	XA	XB	YY	YL	Z
											75 st or less	100 to 175 st	200, 250 st	300 st or more	75 st or less	100 to 175 st	200, 250 st	300 st or more						
16	40	10	19	16	54	25	62	46	56	38	44	110	200	—	27	60	105	—	24	3	3.5	M5 x 0.8	10	5
20	37.5	10.5	25	18	70	30	81	54	72	44	44	120	200	300	39	77	117	167	28	3	3.5	M6 x 1.0	12	17
25	37.5	13.5	30	26	78	38	91	64	82	50	44	120	200	300	39	77	117	167	34	4	4.5	M6 x 1.0	12	17

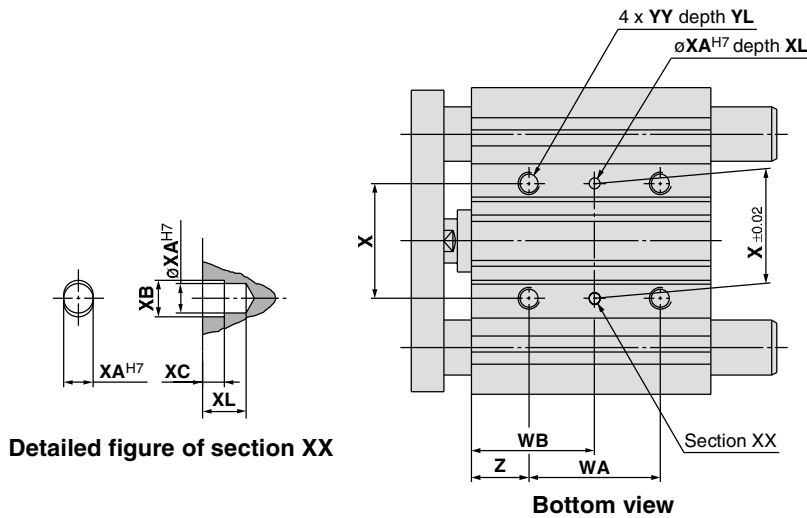
MGPM (Slide bearing) A, DB, E Dimensions (mm)

Bore size (mm)	A					DB	E				
	25 st	50 st	75, 100 st	125 to 200 st	250 st or more		25 st	50 st	75, 100 st	125 to 200 st	250 st or more
16	71	89.5	71	95	95	10	0	18.5	0	24	24
20	78	86.5	84.5	84.5	122	12	0	8.5	6.5	6.5	44
25	78.5	87	85	85	122	16	0	8.5	6.5	6.5	43.5

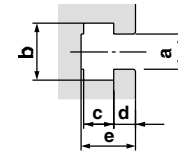
MGPL (Ball bushing bearing) A, DB, E Dimensions (mm)

Bore size (mm)	A					DB	E				
	25 st	50, 75 st	100 st	125 to 200 st	250 st or more		25 st	50, 75 st	100 st	125 to 200 st	250 st or more
16	80	71	71	95	95	8	9	0	0	24	24
20	95	80	99	104	122	10	17	2	21	26	44
25	100.5	85.5	104.5	104.5	122	13	22	7	26	26	43.5

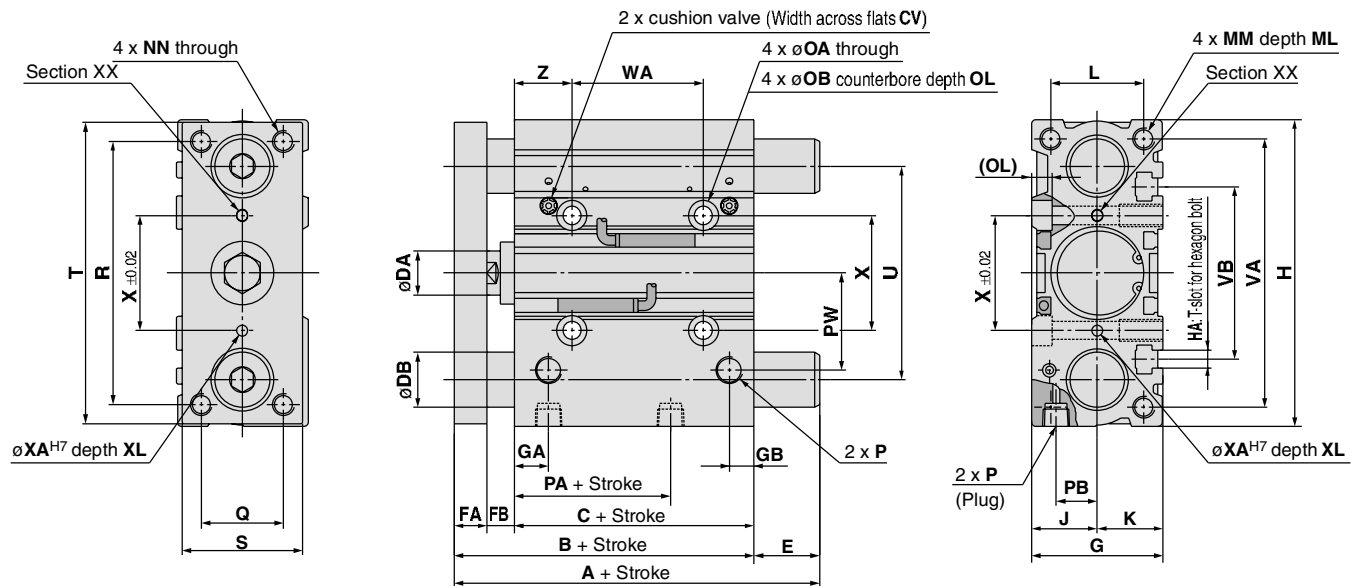
MGPM, MGPL (With Air Cushion): $\phi 32$ to $\phi 63$



T-slot dimensions



Bore size (mm)	T-slot dimensions				
	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



For the intermediate strokes, refer to "Manufacture of Intermediate Stroke" on page 291.

Rc, NPT and G ports can be selected. (Refer to page 290.)

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		
		Nil	N	TF																				
32	25, 50, 75, 100	84.5	62.5	1.5	16	12	10	48	12.5	9	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	Rc 1/8	NPT 1/8	G 1/8
40	125, 150, 175	91	69	1.5	16	12	10	54	14	10	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	Rc 1/8	NPT 1/8	G 1/8
50	200, 250, 300	97	69	2.5	20	16	12	64	14	11	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	Rc 1/4	NPT 1/4	G 1/4
63	350, 400	102	74	2.5	20	16	12	78	16.5	13.5	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	14	9	Rc 1/4	NPT 1/4	G 1/4

Bore size (mm)	PA	PB	PW	Q	R	S	T	U	VA	VB	WA			WB			X	XA	XB	XC	XL	YY	YL	Z		
	75 st or less	100 to 175 st	200, 250 st	300 st or more	75 st or less	100 to 175 st	200, 250 st	300 st or more																		
32	32	15	35.5	30	96	44	110	78	98	63	48	124	200	300	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40	38	18	39.5	30	104	44	118	86	106	72	48	124	200	300	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50	34	21.5	47	40	130	60	146	110	130	92	48	124	200	300	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	39	28	58	50	130	70	158	124	142	110	52	128	200	300	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

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

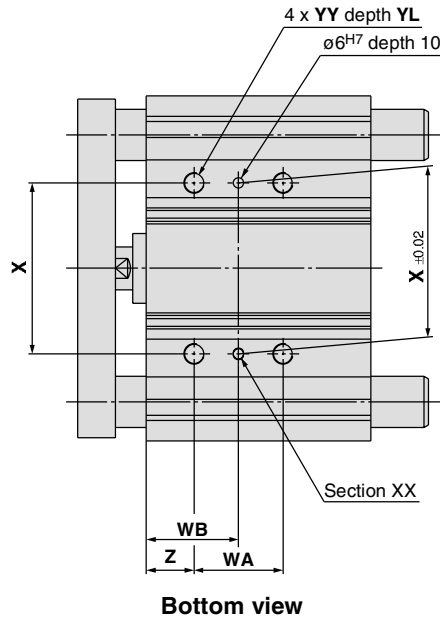
Bore size (mm)	A				DB	E			
	25st	50st	75 to 200 st	250 st or more		25st	50st	75 to 200 st	250 st or more
32	97	127	102	140	20	12.5	42.5	17.5	55.5
40	97	127	102	140	20	6	36	11	49
50	106.5	131.5	118	161	25	9.5	34.5	21	64
63	106.5	131.5	118	161	25	4.5	29.5	16	59

MGPL (Ball bushing bearing) A, DB, E Dimensions (mm)

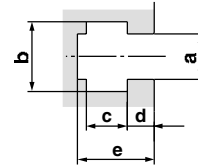
Bore size (mm)	A					DB	E						
	25st	50st	75st	100st	125 to 200 st		250 st or more	25st	50st	75st	100st	125 to 200 st	250 st or more
32	84.5	123	98	115.5	118	140	16	0	38.5	13.5	31	33.5	55.5
40	91	123	98	115.5	118	140	16	0	32	7	24.5	27	49
50	97	127.5	114	159	134	161	20	0	30.5	17	62	37	64
63	102	127.5	114	159	134	161	20	0	25.5	12	57	32	59

Series MGP

MGPM, MGPL (With Air Cushion): $\phi 80, \phi 100$

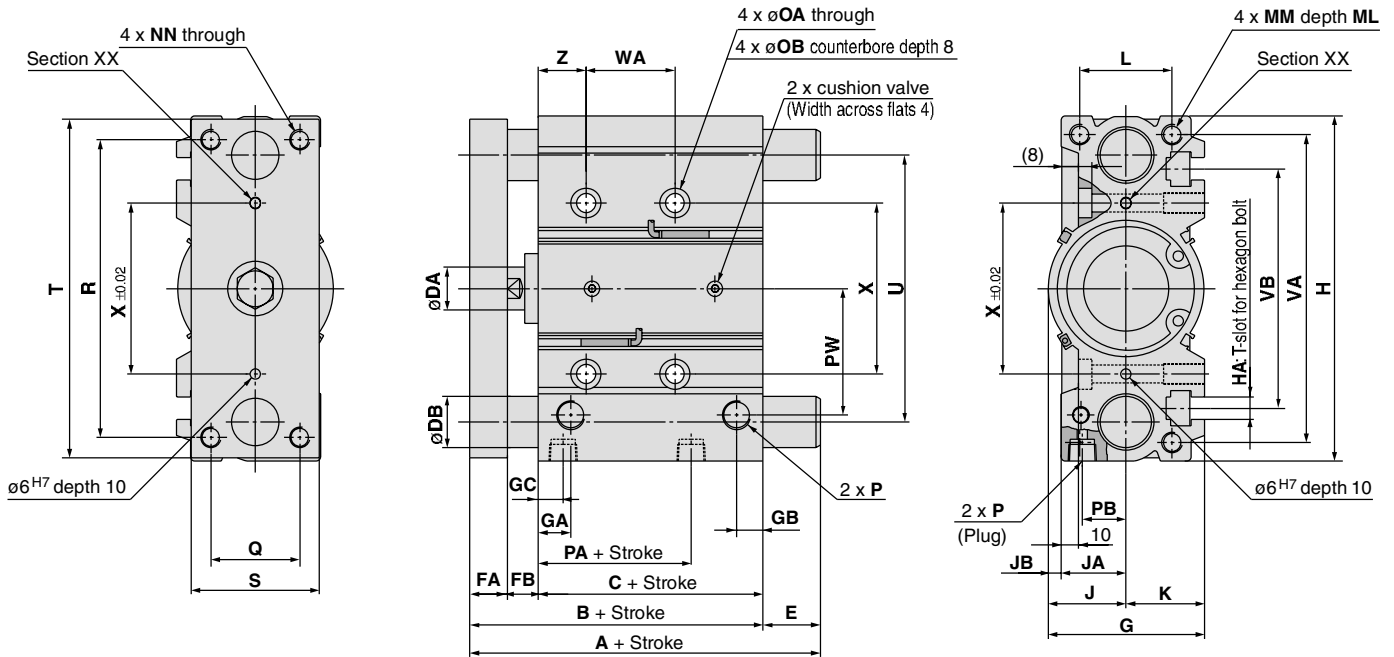
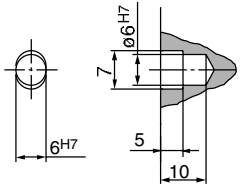


T-slot dimensions



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

Detailed figure of section XX



For the intermediate strokes, refer to "Manufacture of Intermediate Stroke" on page 291.

Rc, NPT and G ports can be selected. (Refer to page 290.)

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	P		
																							Nil	N	TF
80	50,75,100,125 150,175,200,250	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	Rc 3/8	NPT 3/8	G 3/8
100	300,350,400	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	Rc 3/8	NPT 3/8	G 3/8

Bore size (mm)	PA	PB	PW	Q	R	S	T	U	VA	VB	WA				WB				X	YY	YL	Z
											50, 75 st	100 to 175 st	200, 250 st	300st or more	50, 75 st	100 to 175 st	200, 250 st	300st or more				
80	39.5	25.5	74	52	174	75	198	156	180	140	52	128	200	300	54	92	128	178	100	M12 x 1.75	24	28
100	42.5	32.5	89	64	210	90	236	188	210	166	72	148	220	320	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	75 to 200 st	250st or more		50 st	75 to 200 st	250st or more
80	167	142	193	30	45.5	20.5	71.5
100	187	162	203	36	46	21	62

MGPL (Ball bushing bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	50 st	75 to 200 st	250st or more		50 st	75 to 200 st	250st or more
80	168.5	160	193	25	47	38.5	71.5
100	178.5	180	203	30	37.5	39	62