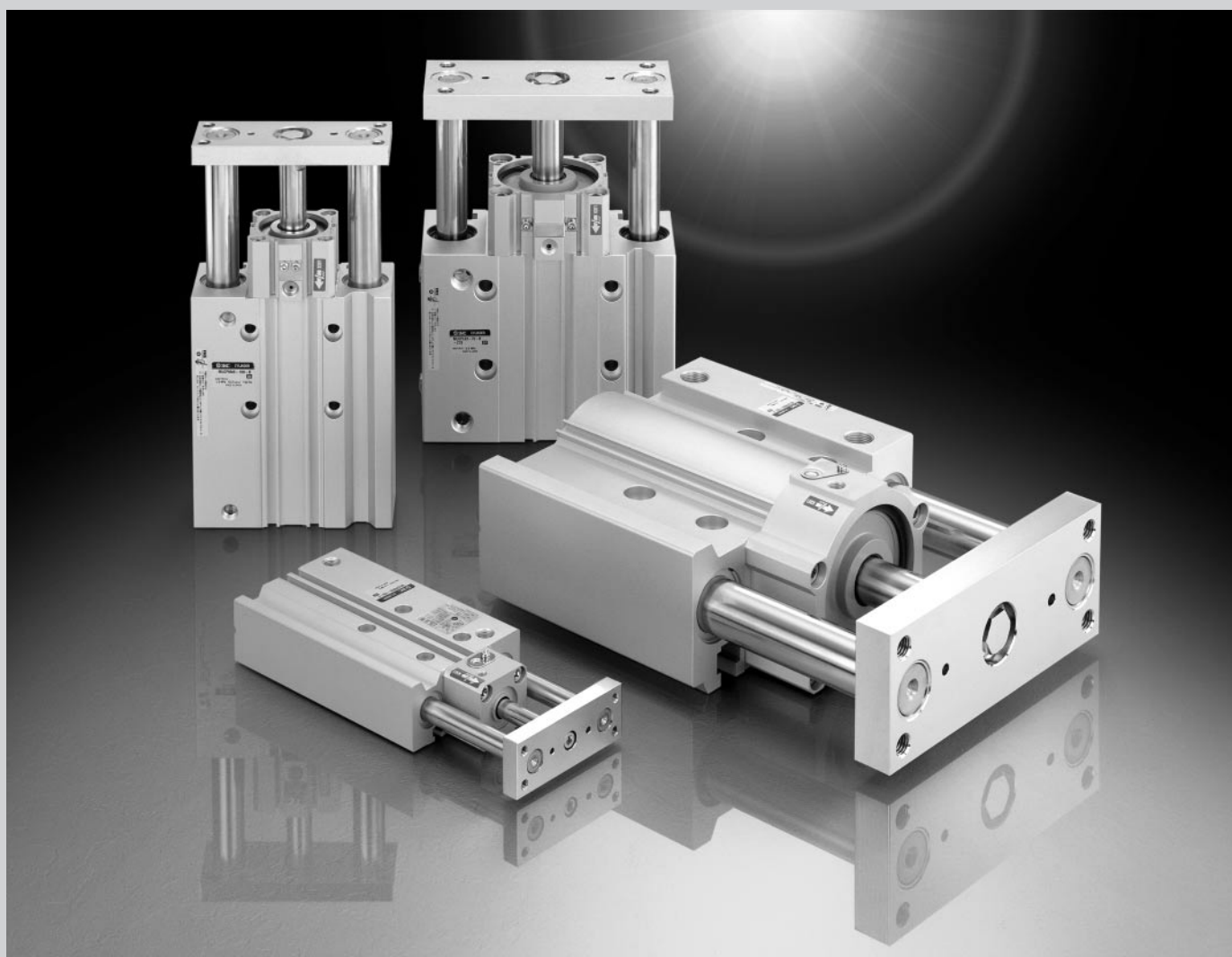


Low Profile Guide Cylinder with Lock

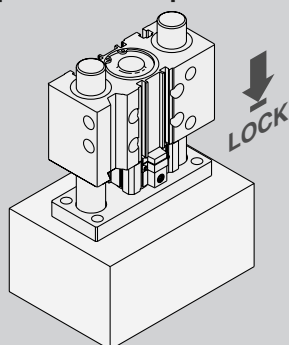
Series *MLGP*

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

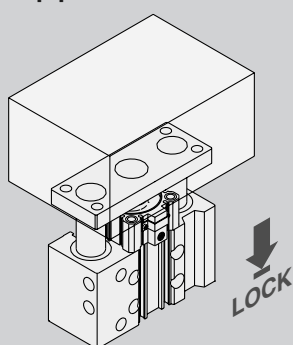


Drop prevention when supply pressure falls or residual pressure is released

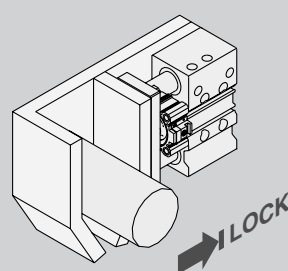
Drop prevention for press fitting jig



Drop prevention for lifter



Holding a clamped condition



CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY1
MY1

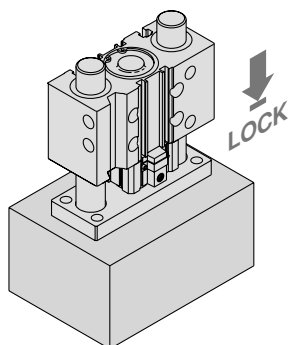
Locking is possible at any

Can be locked at any desired position

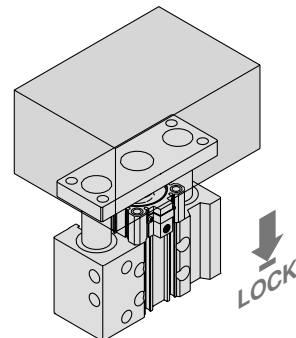
- Drop prevention for mid-stroke emergency stops
- Locking position can be changed to accommodate external stopper positions and thickness of clamped work pieces



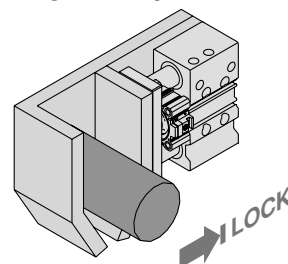
Drop prevention for press fitting jig



Drop prevention for lifter



Holding a clamped condition



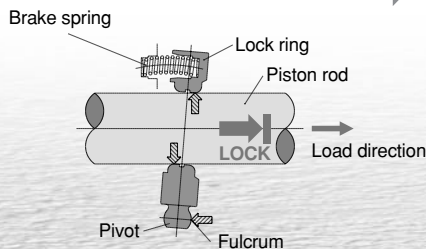
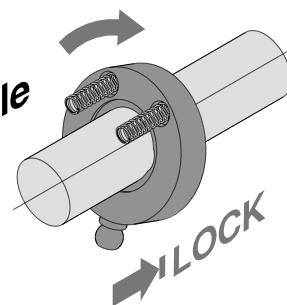
Low Profile Guide Cylinder with Lock

Series MLGP

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

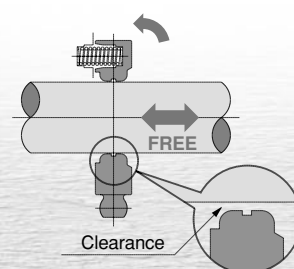
Simple construction

Simple and reliable locking system



Unlocking port: Air exhausted

1. The lock ring is tilted by the spring force.
2. The tilting is increased by the load and the piston rod is securely locked.



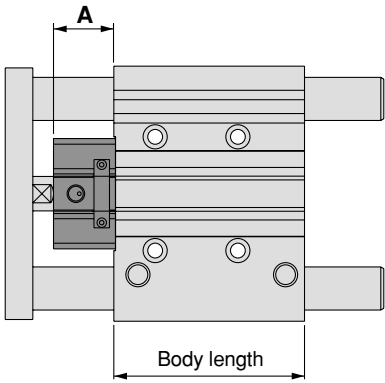
Unlocking port: Air supplied

1. The lock ring becomes perpendicular to the piston rod, creating clearance between the piston rod and lock ring, which allows the piston rod to move freely.

position within the entire stroke

Low profile with compact lock unit

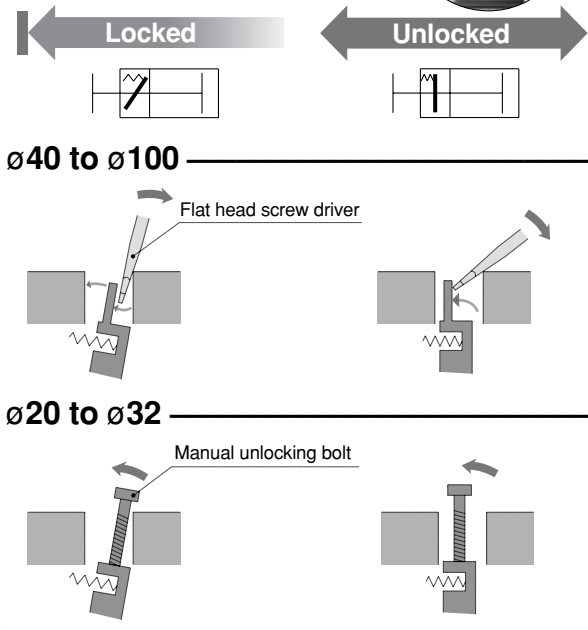
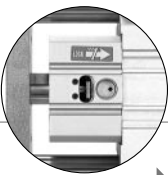
Lock unit length: A/26.5mm to 51.5mm



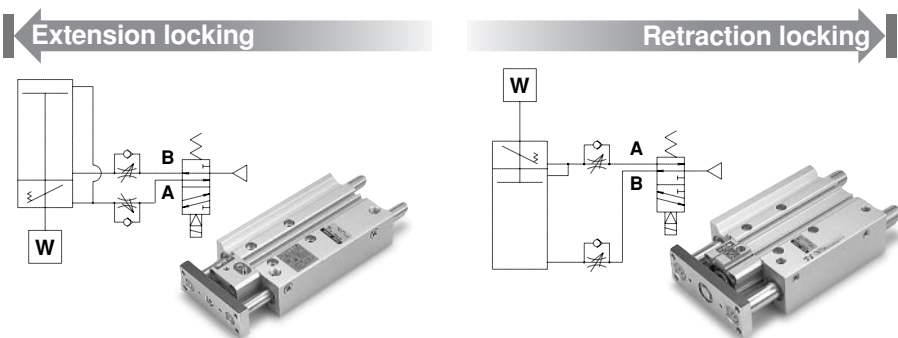
Bore size (mm)	A (mm)
20	26.5
25	30.5
32	31.5
40	34
50	35
63	38
80	43
100	51.5

Body length is the same as the standard MGP

Easy manual unlocking



Locking direction is selectable



Two types of guide rod bearing for different applications

Slide bearing	Ball bushing
Excellent wear resistance allows use with high loads.	Provides high precision and smooth operation.

Four types of mounting

- Easy positioning
 - Knock pin holes provided on each mounting surface
- Top mount Side mount
Side mount using T-slot
Bottom mount

Wide variations from $\phi 20$ to $\phi 100$

Series	Bearing	Locking direction	Bore size (mm)	Standard stroke (mm)													
				20	25	30	40	50	75	100	125	150	175	200	250	300	350
MLGP	Slide bearing	Extension locking	20	●													
			25	●													
			32		●	●											
	Ball bushing	Retraction locking	40		●												
			50		●												
			63		●												
			80		●												
			100														



- CL
- MLG
- CNA
- CNG
- MNB
- CNS
- CLS
- CB
- CV/MVG
- CXW
- CXS
- CXT
- MX
- MXU
- MXH
- MXS
- MXQ
- MXF
- MXW
- MXP
- MG
- MGP
- MGQ
- MGG
- MGC
- MGF
- MGZ
- CY1
- MY1

Series MLGP Model Selections

Model Selection Precautions

⚠ Caution

1. To prevent exceeding the maximum speed during the selection, be sure to adjust the speed controller so that moving the entire load transfer distance takes no less than the transfer time.
2. For an intermediate stroke product with spacers installed, select using the base model stroke.

Step 1

Find the maximum load speed V.

Find the maximum load speed V[mm/s] with formula (1) below.

The maximum load speed V[mm/s] is approximately equal to $V_1 \times 1.4$ (1)

V_1 : Average load speed [mm/s]

$V_1 = st/t$

st: Load transfer distance [mm]

t: Load transfer time [s]

Step 2

Find the cylinder bore size.

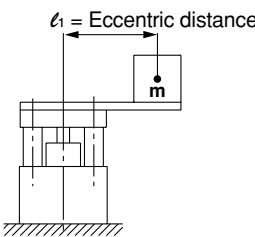
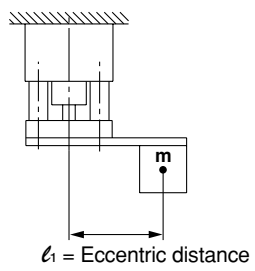
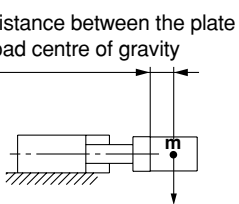
1. For vertical mounting

- (1) From Table 1, find applicable selection graphs based on the maximum load speed "V", mounting orientation, and bearing type.
- (2) From the graphs chosen in (1), select the appropriate graph based on the stroke, and then find the intersecting point of the load weight "m" and eccentric distance " ℓ_1 ".
- (3) Compare the intersecting point with the line chart for the operating pressure "P". Select the bore size from the line chart above the intersecting point.

2. For horizontal mounting

- (1) From Table 1, find applicable selection graphs based on the maximum load speed "V" and bearing type.
- (2) From the graphs chosen in (1), select the appropriate graph based on the distance " ℓ_2 " between the plate and load center of gravity, then find the intersecting point of the load weight "m" and stroke.
- (3) Compare the intersecting point with the line chart. Select the bore size from the line chart above the intersecting point.

Selecting Conditions/Table 1

Mounting orientation	Vertical				Horizontal	
	Upward facing		Downward facing			
						
Maximum load speed V	50 to 200mm/s	201 to 400mm/s	50 to 200mm/s	201 to 400mm/s	50 to 200mm/s	201 to 400mm/s
Graph (Slide bearing type)	1, 2	3, 4	13, 14	15, 16	25, 26	27, 28
Graph (Ball bushing type)	5 to 8	9 to 12	17 to 20	21 to 24	29, 30	31, 32

Selection Example 1 (Vertical Upward Mounting)

Selecting conditions

Mounting: Vertical upward facing

Bearing type: Ball bushing

Stroke: 50mm

Load transfer time t: 0.5s

Load weight m: 15kg

Eccentric distance ℓ_1 : 50mm

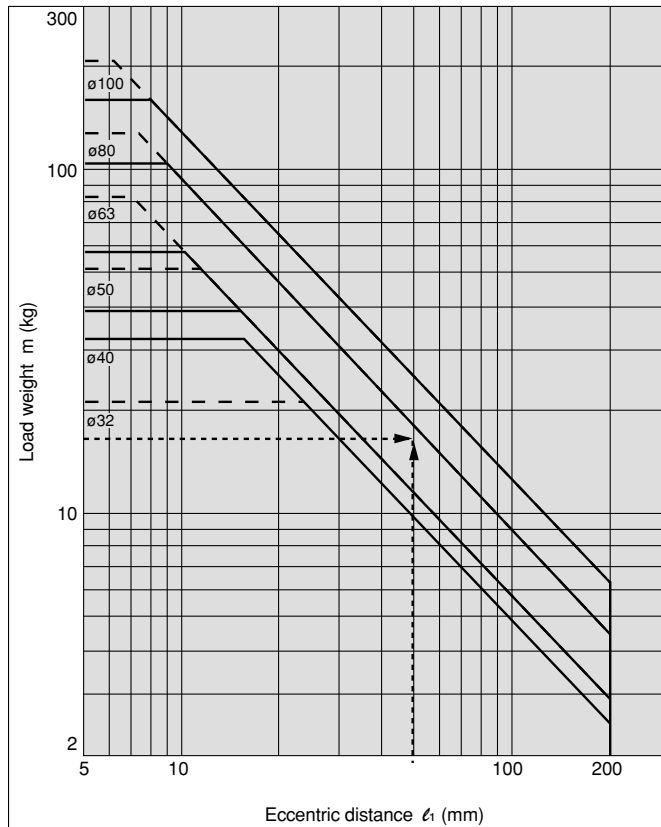
Operating pressure P: 0.5MPa

Step 1: Find the maximum load speed "V" from formula (1).

Based on the stroke (load transfer distance) of 50mm and load transfer time of 0.5s, the maximum load speed is approximately equal to $50/0.5 \times 1.4$, which is approximately 140mm/s.

Step 2: Based on the maximum load speed found in Step 1, mounting orientation, and guide type, graphs 5 to 8 are selected. Then, based on the 50mm stroke, graph 7 is selected from the group. Find the intersecting point of the load weight of 15kg and the eccentric distance of 50mm. Since the operating pressure is 0.5MPa, the bore size of $\phi 80$ mm, model MLGPL80-50-B, is selected.

7 50mm stroke or less V = 200mm/s — 0.4MPa
----- 0.5MPa or more



Selection Example 2 (Horizontal Mounting)

Selecting conditions

Mounting: Horizontal

Bearing type: Slide bearing

Stroke: 100mm

Load transfer time t: 0.5s

Load weight m: 6kg

Eccentric distance between the plate and load centre of gravity ℓ_2 : 50mm

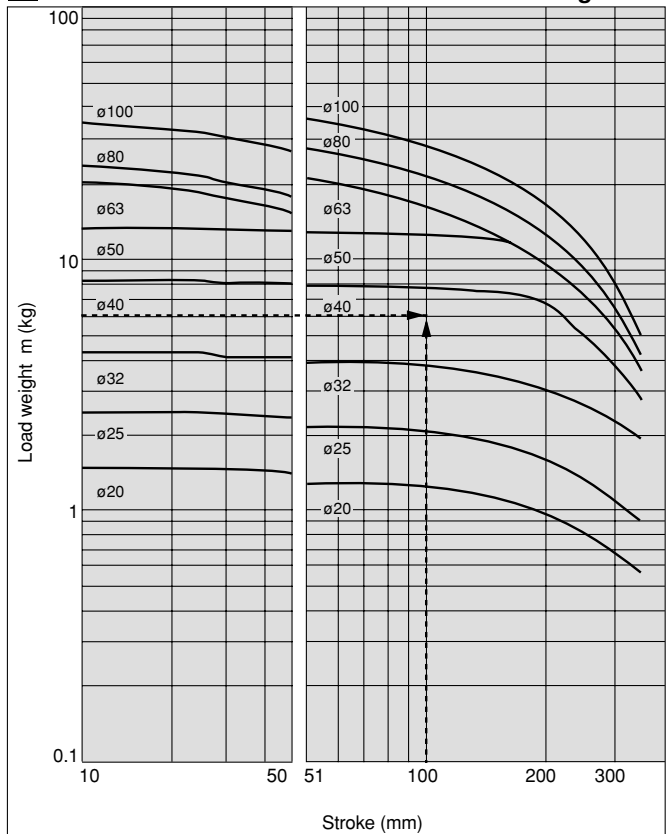
Operating pressure P: 0.4MPa

Step 1: Find the maximum load speed "V" from formula (1).

Based on the stroke (load transfer distance) of 100mm and load transfer time of 0.5s, the maximum load speed is approximately equal to $100/0.5 \times 1.4$, which is approximately 280mm/s.

Step 2: Based on the maximum load speed found in Step 1, mounting orientation, and guide type, graphs 27 and 28 are selected. Then, based on the distance of 50mm between the plate and load centre of gravity, graph 27 is selected from the two graphs. Find the intersecting point of the load weight of 6kg and the 100mm stroke. The bore size of $\phi 40$ mm, model MLGPM40-50-□, is selected.

27 $\ell_2 = 50$ mm V = 400mm/s Horizontal mounting



CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

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MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

MGZ

CY1

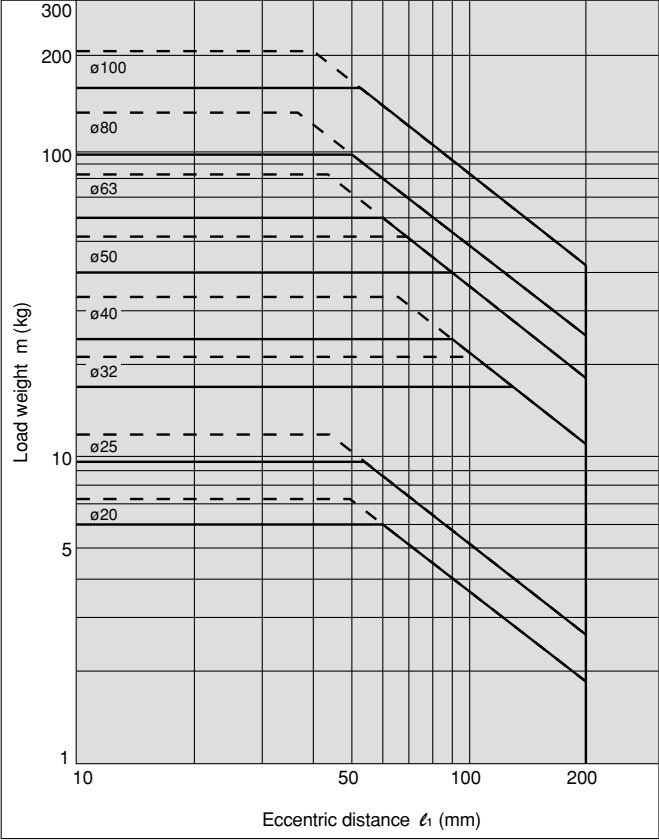
MY1

Vertical Upward Mounting **Slide Bearing**

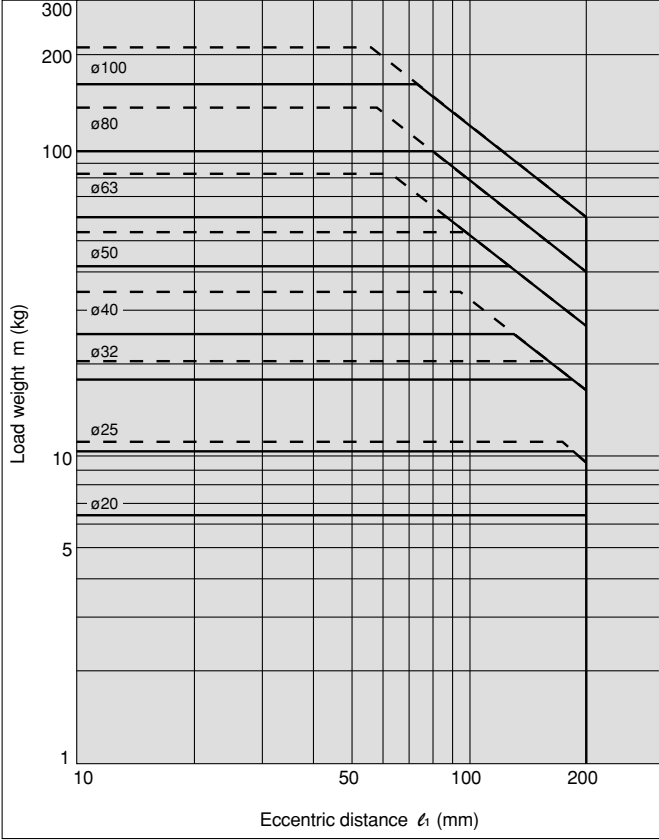
———— Operating pressure: 0.4MPa
----- Operating pressure: 0.5MPa or more

MLGPM20 to 100

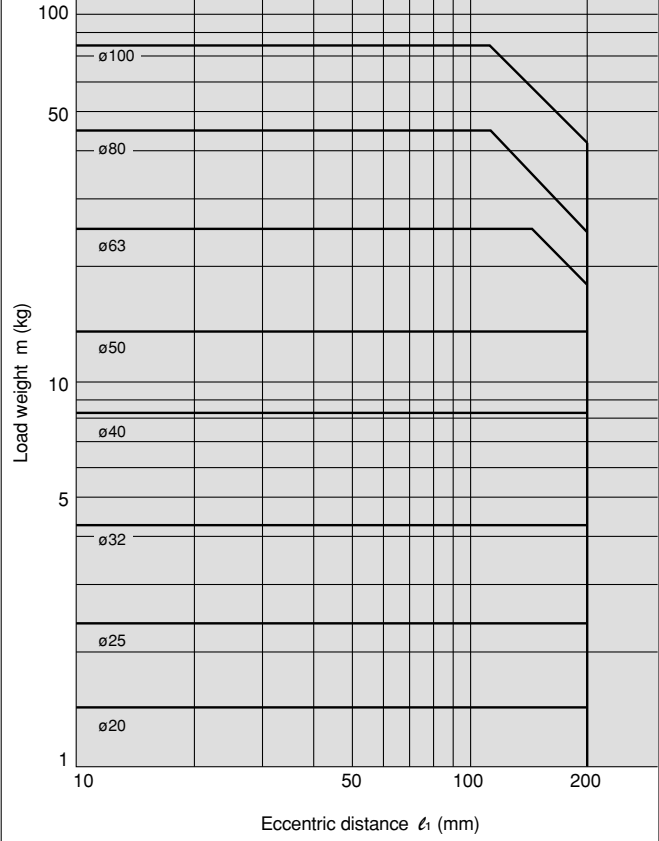
1 50mm stroke or less $V = 200\text{mm/s}$



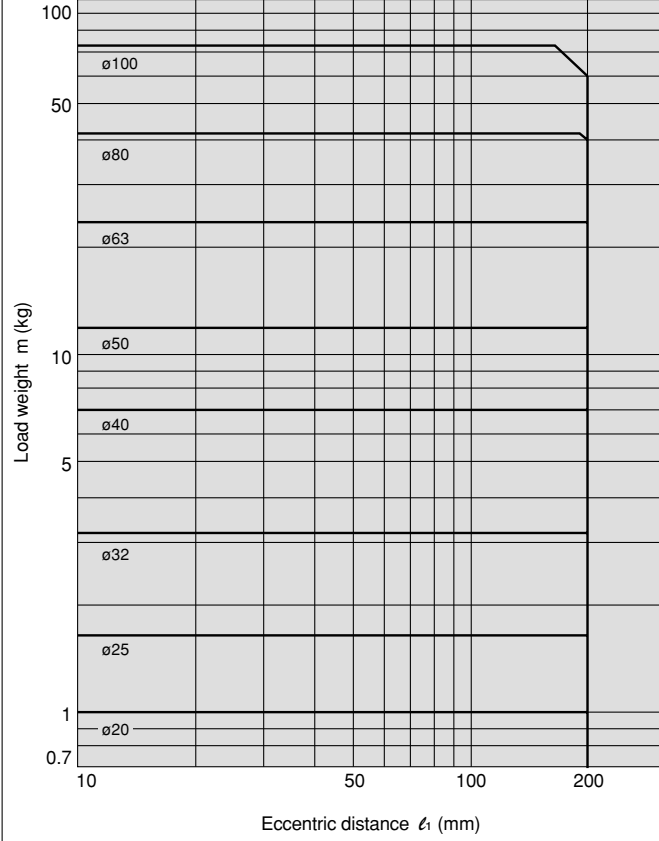
2 Over 50mm stroke $V = 200\text{mm/s}$



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



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

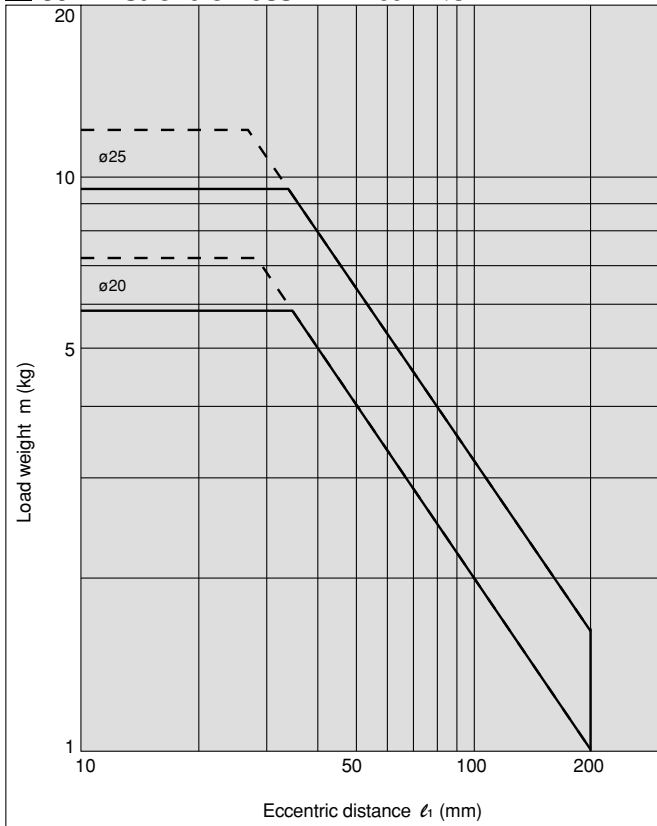


Vertical Upward Mounting **Ball Bushing**

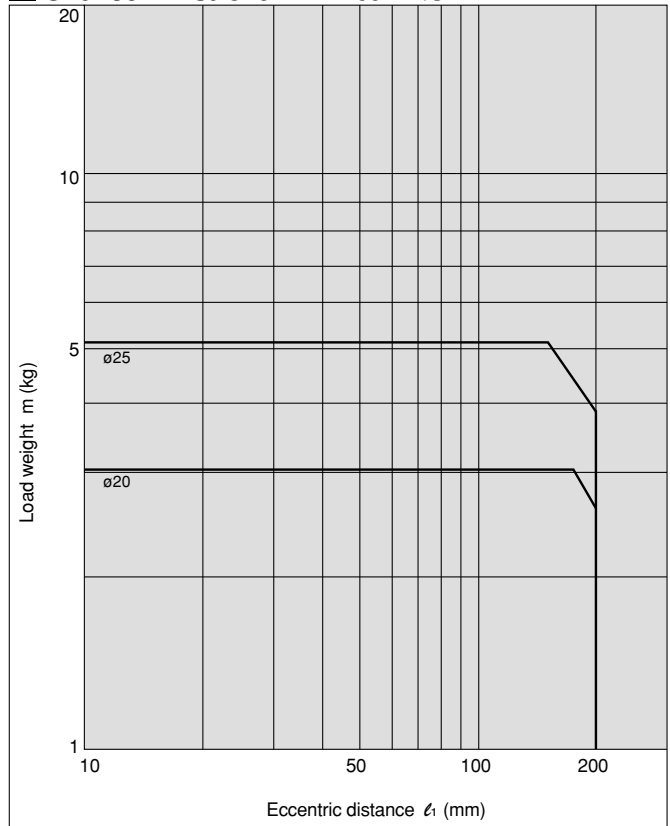
— Operating pressure: 0.4MPa
 - - - - - Operating pressure: 0.5MPa or more

MLGPL20, 25

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

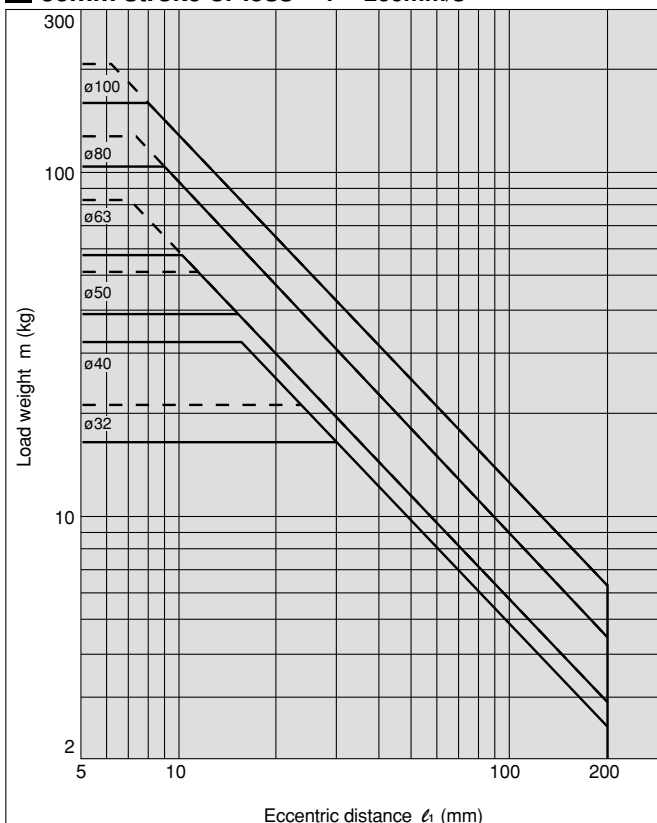


6 Over 30mm stroke V = 200mm/s

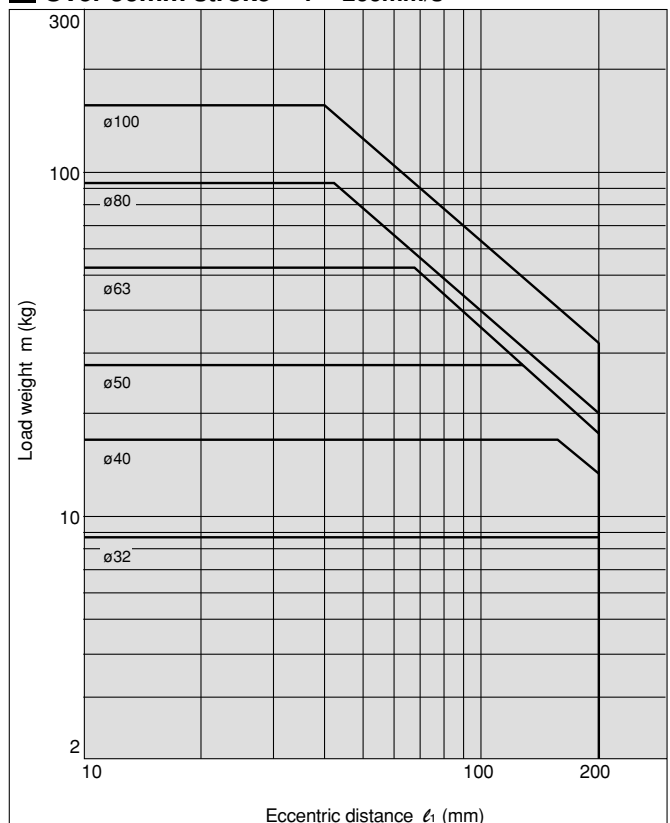


MLGPL32 to 100

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



8 Over 50mm stroke V = 200mm/s



CL
MLG
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CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
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MXU
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MGZ
CY1
MY1

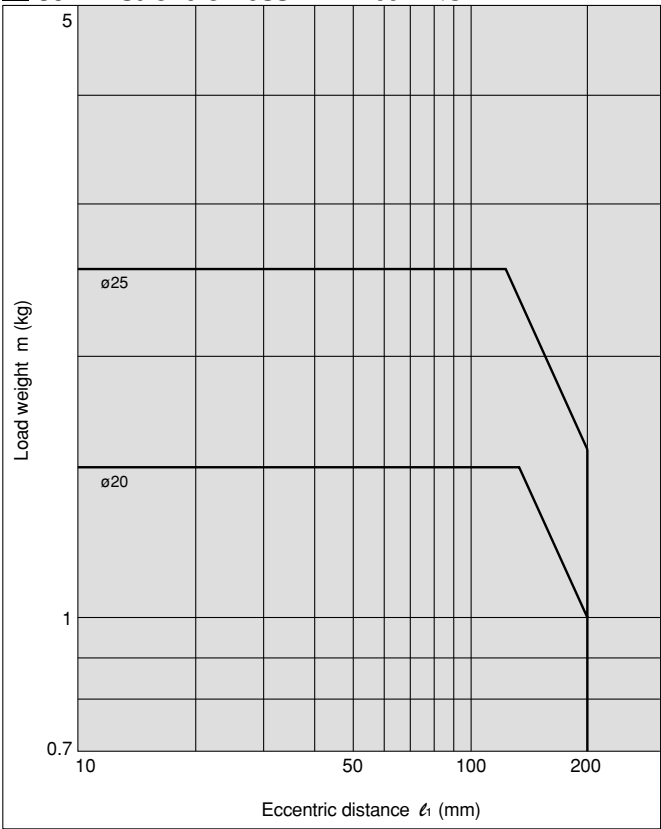
Series MLGP

Vertical Upward Mounting **Ball Bushing**

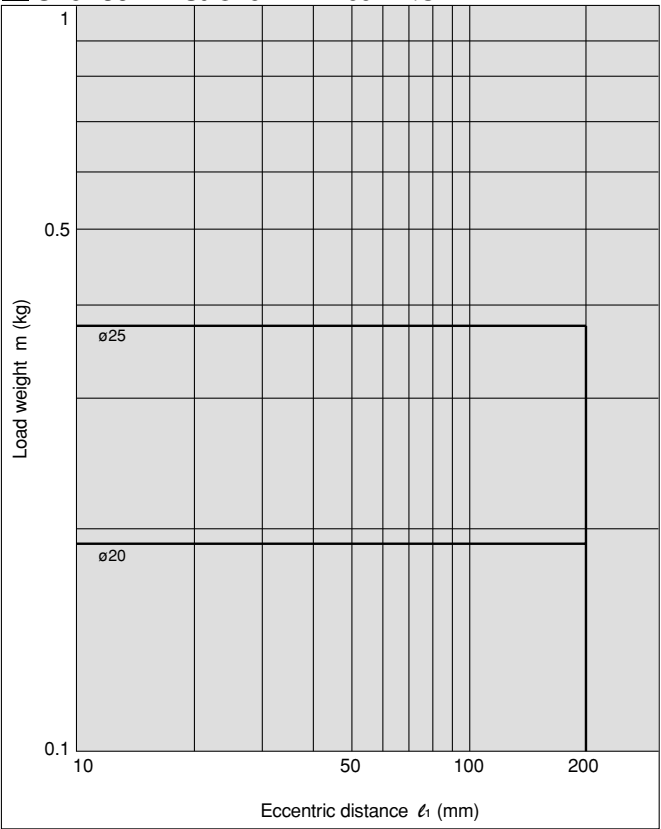
Operating pressure: 0.4MPa

MLGPL20, 25

9 30mm stroke or less V = 400mm/s

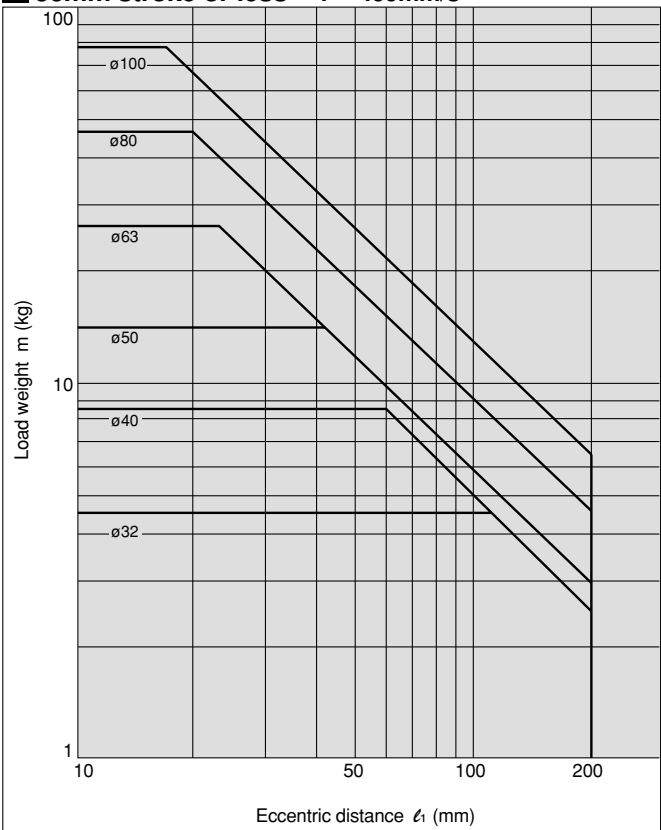


10 Over 30mm stroke V = 400mm/s

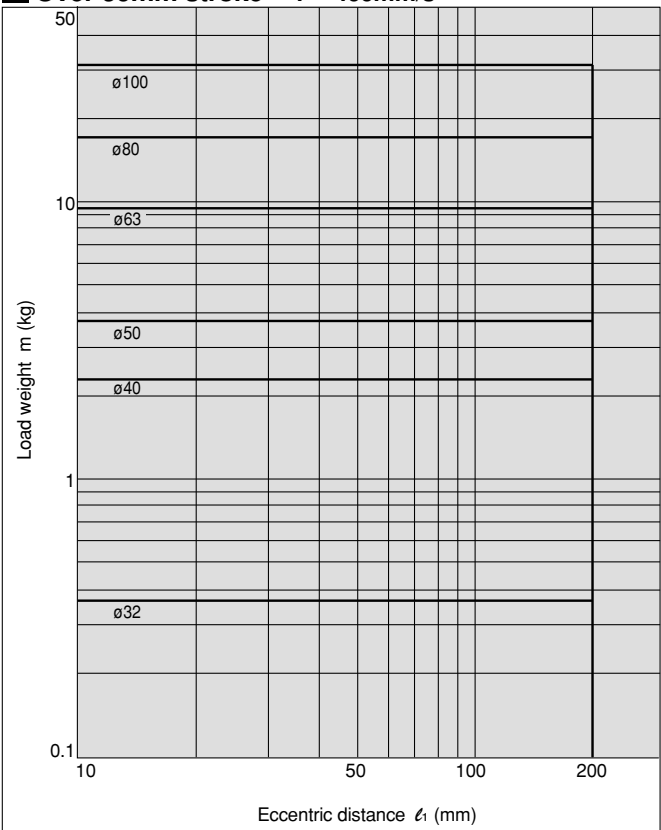


MLGPL32 to 100

11 50mm stroke or less V = 400mm/s



12 Over 50mm stroke V = 400mm/s

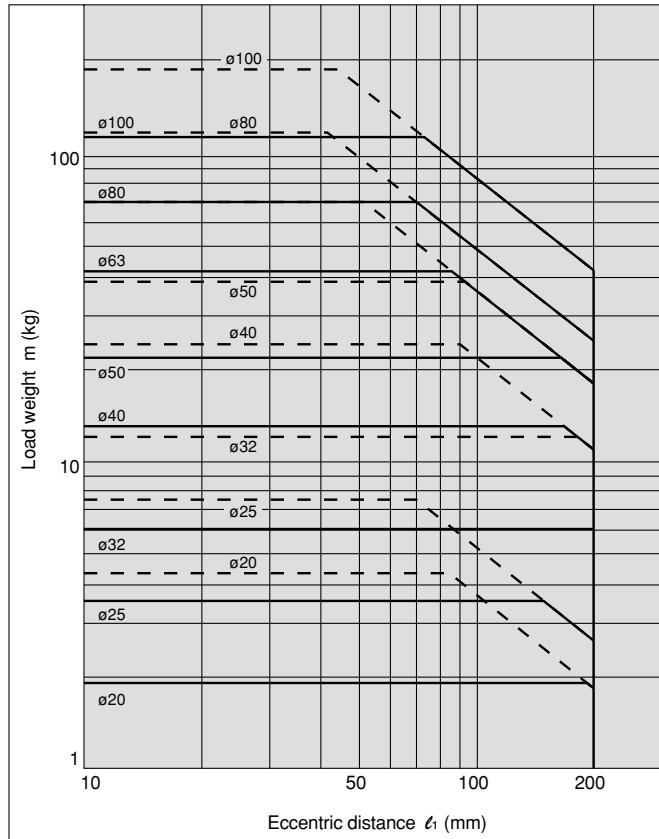


Vertical Downward Mounting **Slide Bearing**

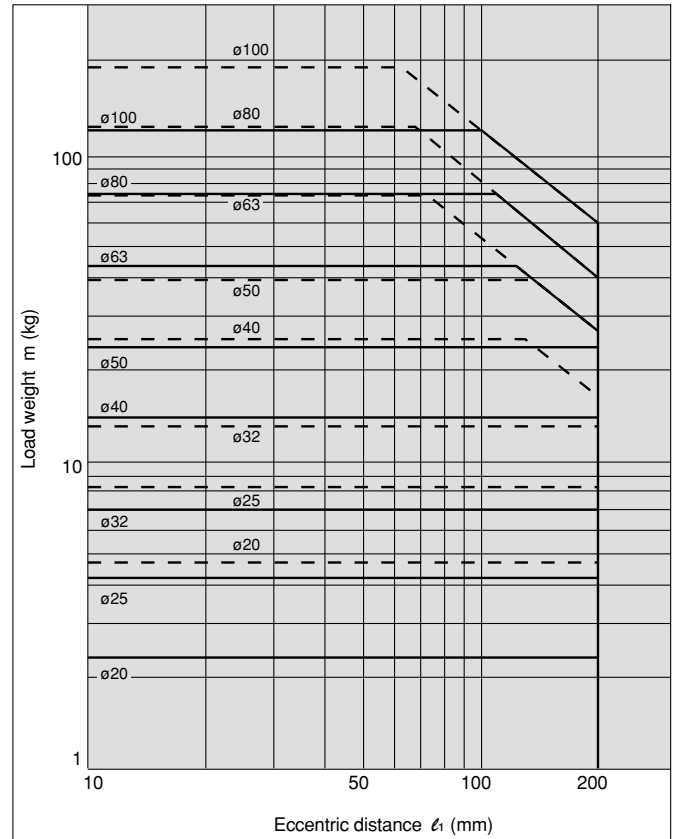
— Operating pressure: 0.4MPa
 - - - - - Operating pressure: 0.5MPa or more

MLGPM20 to 100

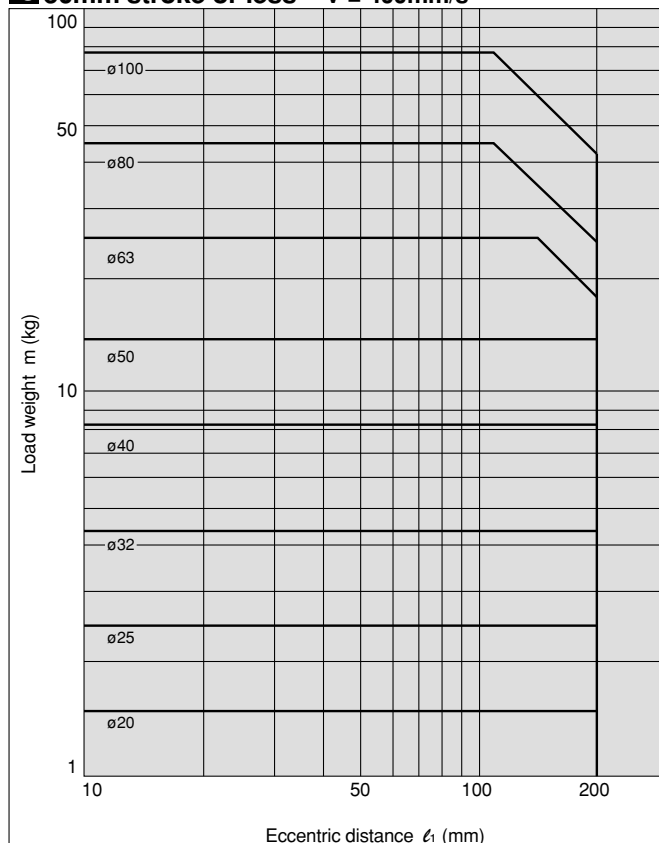
13 50mm stroke or less $V = 200\text{mm/s}$



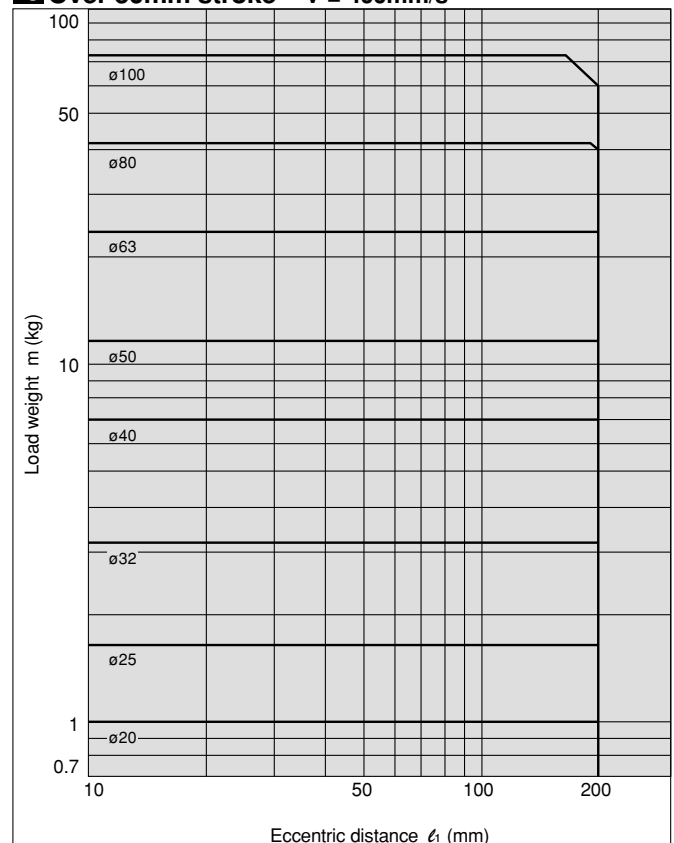
14 Over 50mm stroke $V = 200\text{mm/s}$



15 50mm stroke or less $V = 400\text{mm/s}$



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



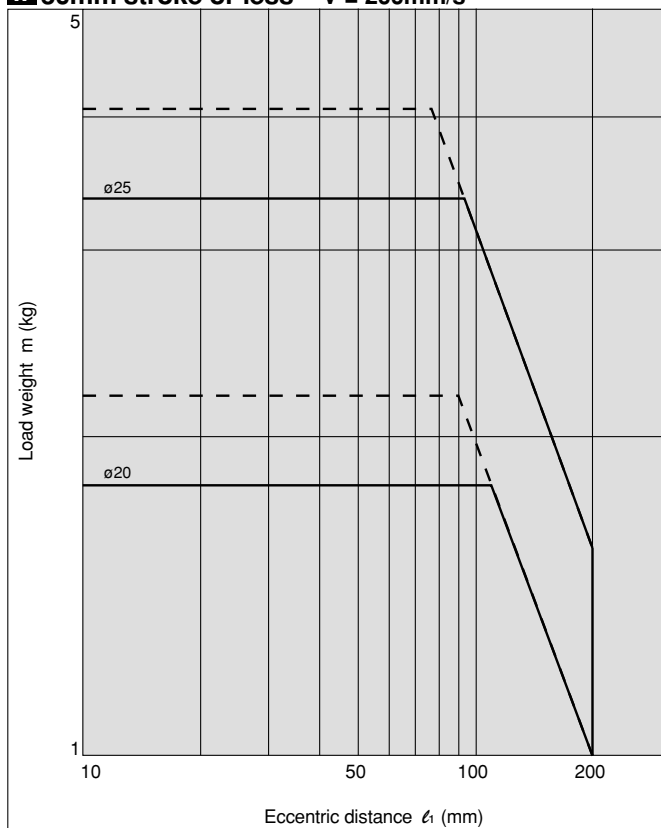
CL
MLG
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MXS
MXQ
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MGP
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MGZ
CY1
MY1

Vertical Downward Mounting **Ball Bushing**

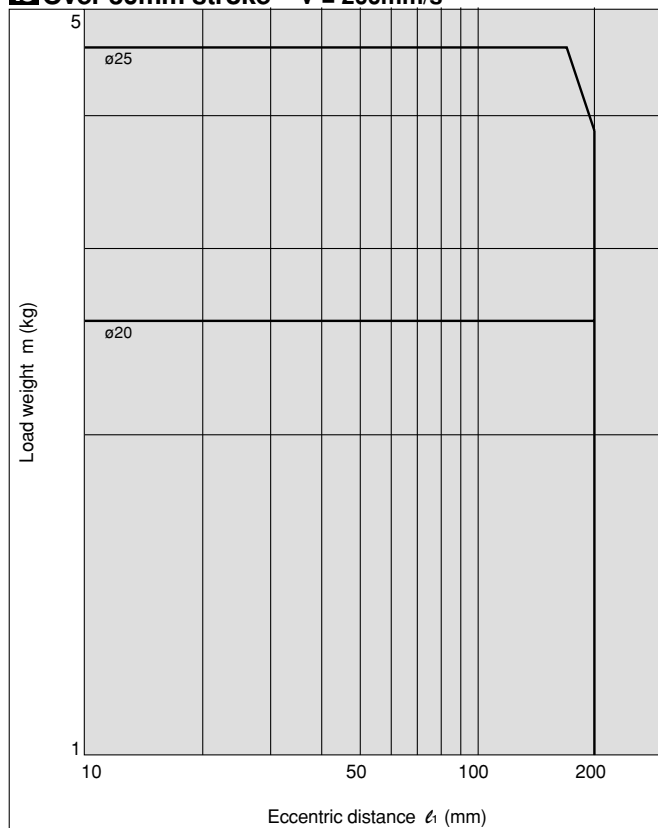
— Operating pressure: 0.4MPa
 - - - - - Operating pressure: 0.5MPa or more

MLGPL20, 25

17 30mm stroke or less V = 200mm/s

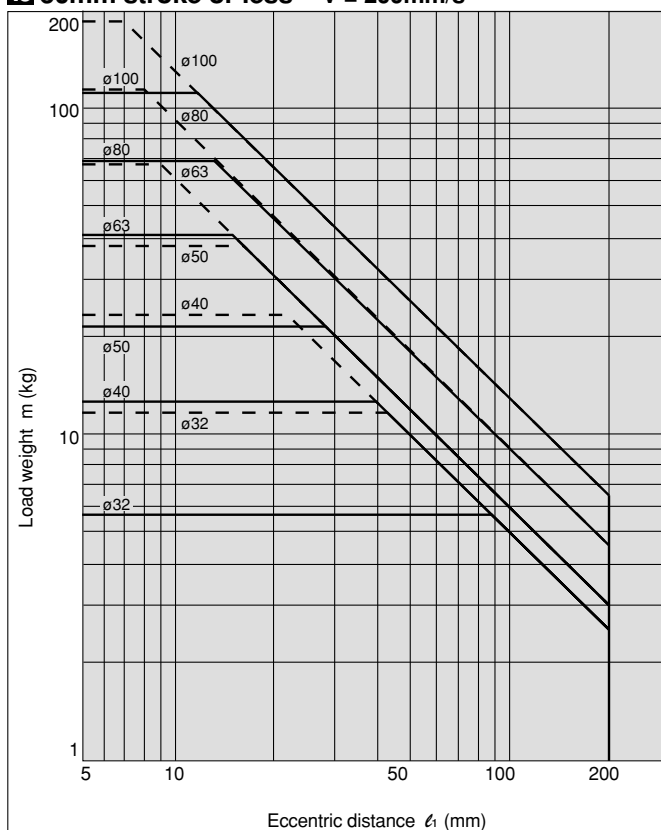


18 Over 30mm stroke V = 200mm/s

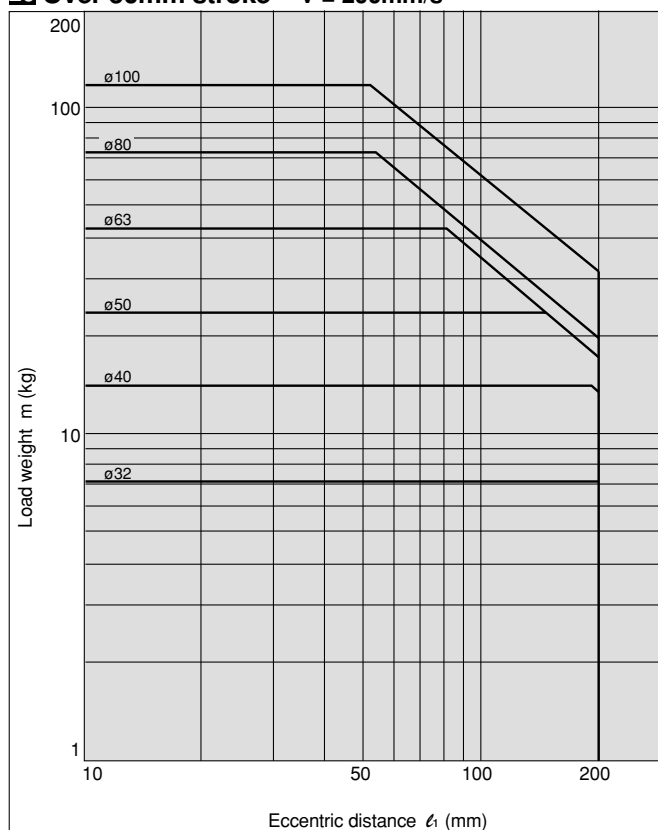


MLGPL32 to 100

19 50mm stroke or less V = 200mm/s



20 Over 50mm stroke V = 200mm/s

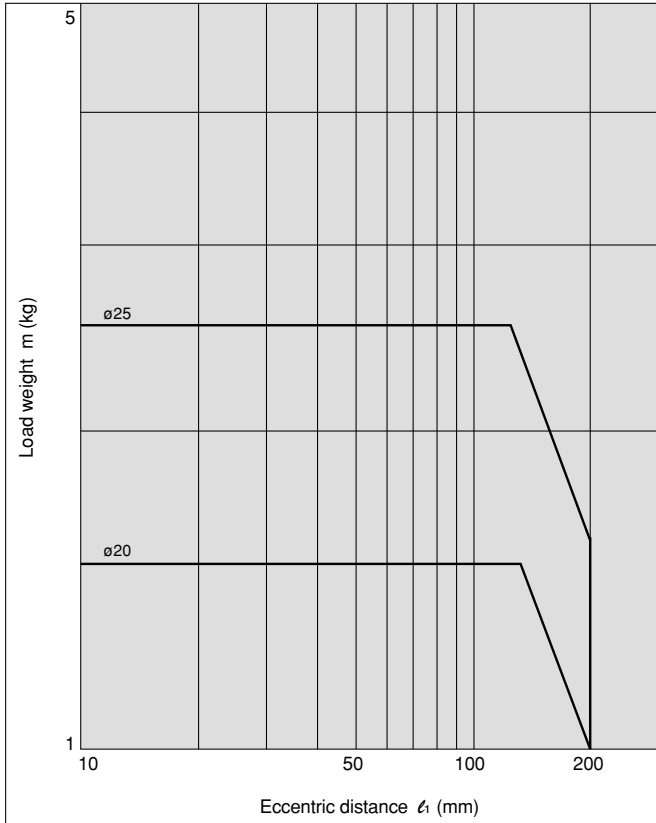


Vertical Downward Mounting **Ball Bushing**

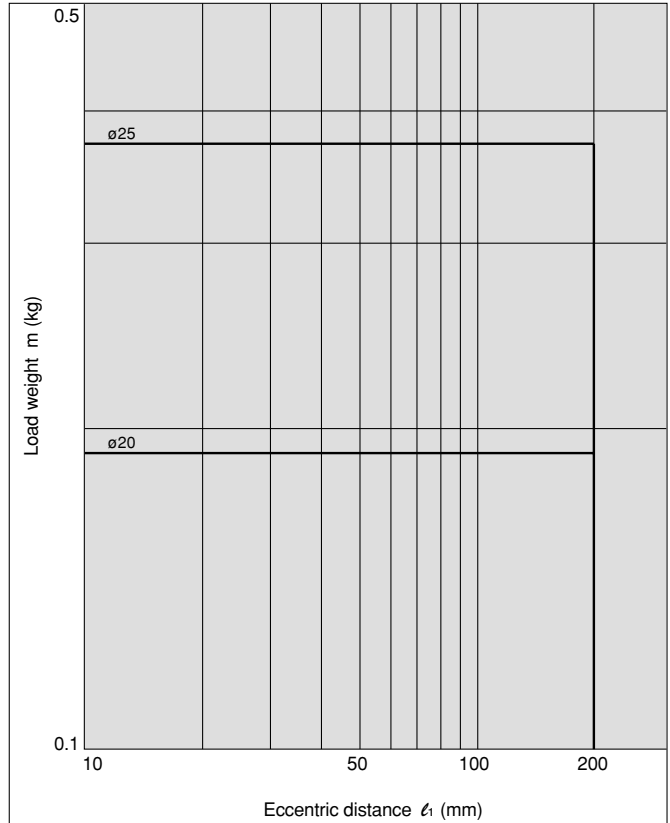
Operating pressure: 0.4MPa

MLGPL20, 25

21 30mm stroke or less V = 400mm/s

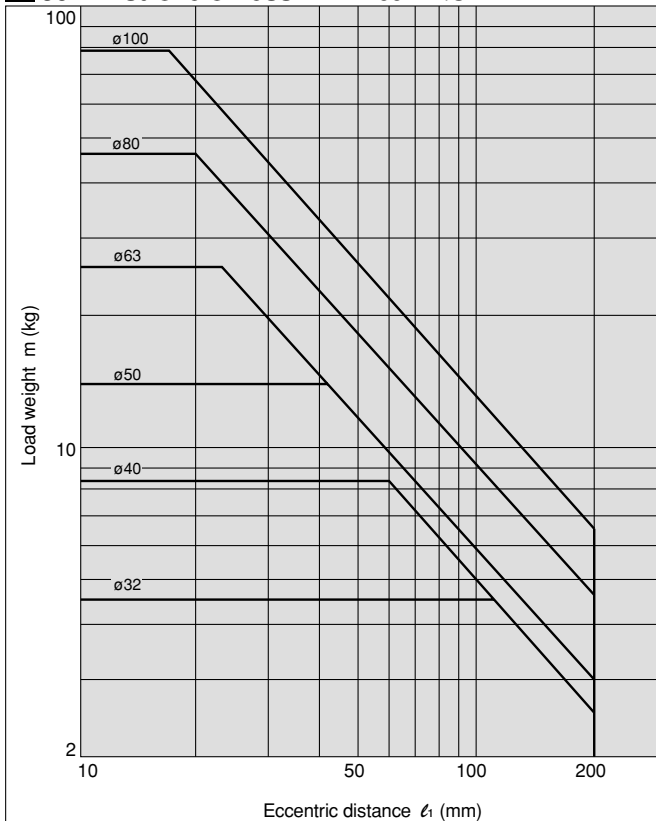


22 Over 30mm stroke V = 400mm/s

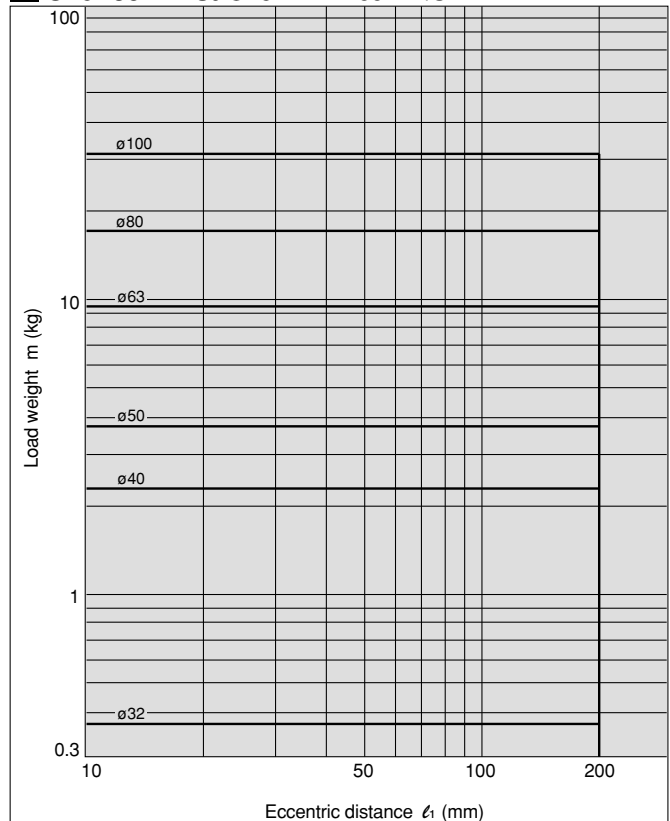


MLGPL32 to 100

23 50mm stroke or less V = 400mm/s



24 Over 50mm stroke V = 400mm/s

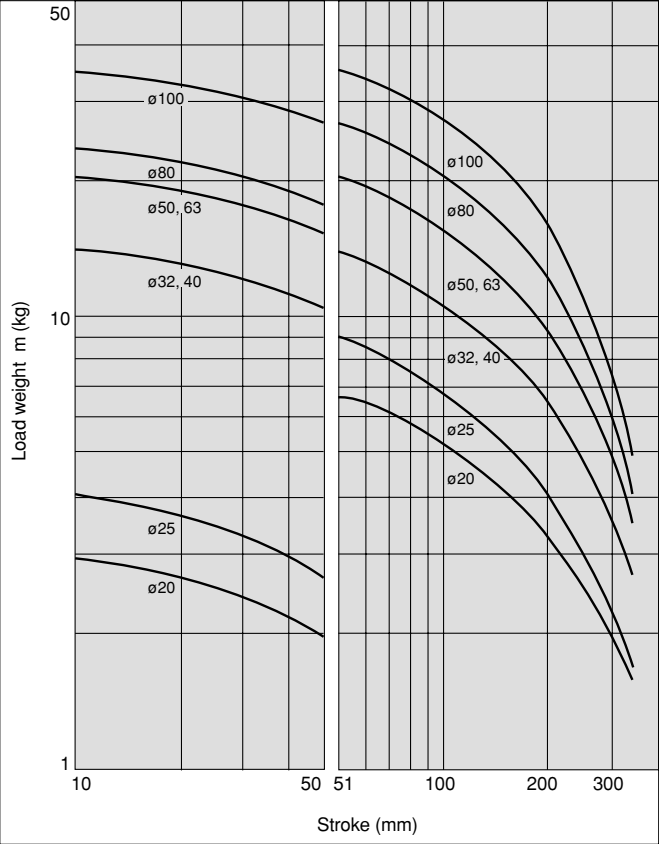


CL
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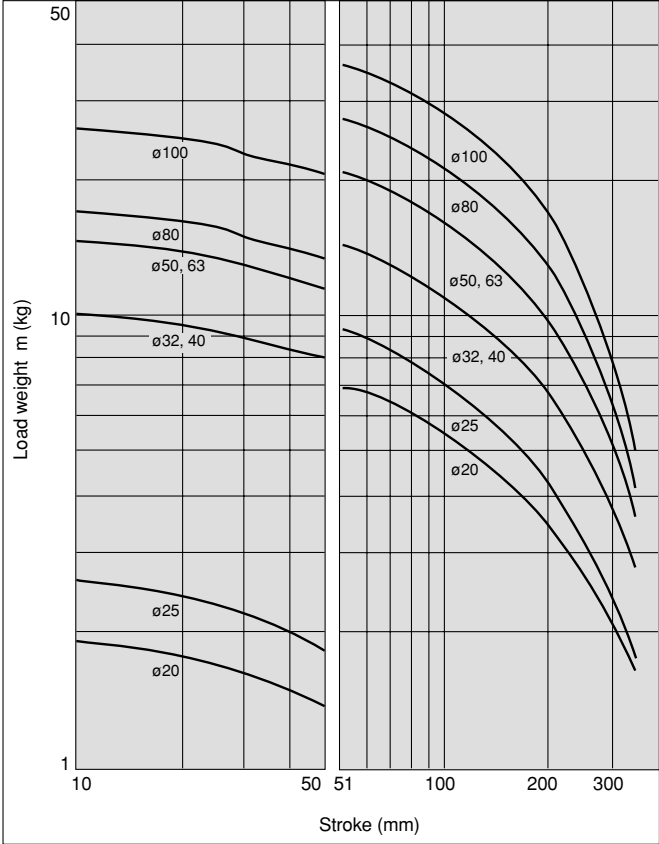
Horizontal Mounting **Slide Bearing**

MLGPM20 to 100

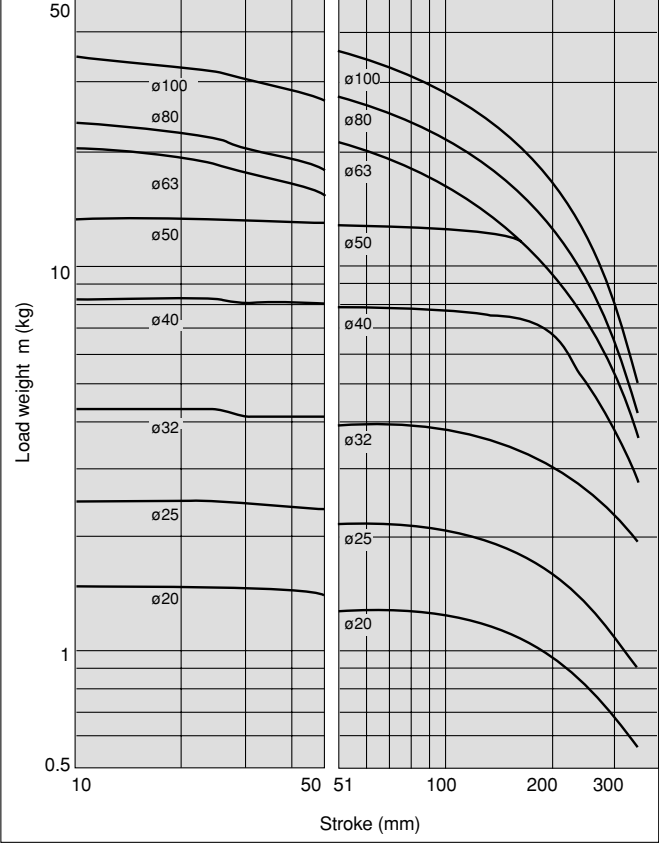
25 $l_2 = 50\text{mm}$ $V = 200\text{mm/s}$



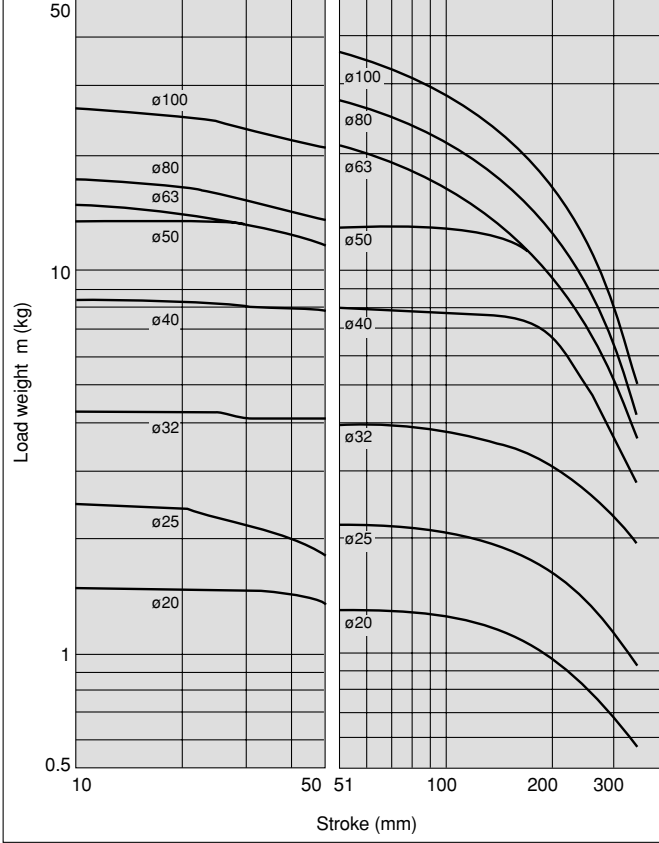
26 $l_2 = 100\text{mm}$ $V = 200\text{mm/s}$



27 $l_2 = 50\text{mm}$ $V = 400\text{mm/s}$

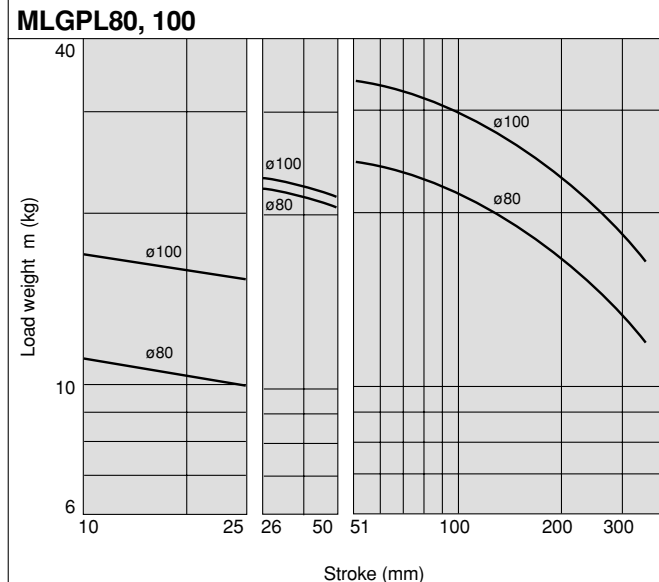
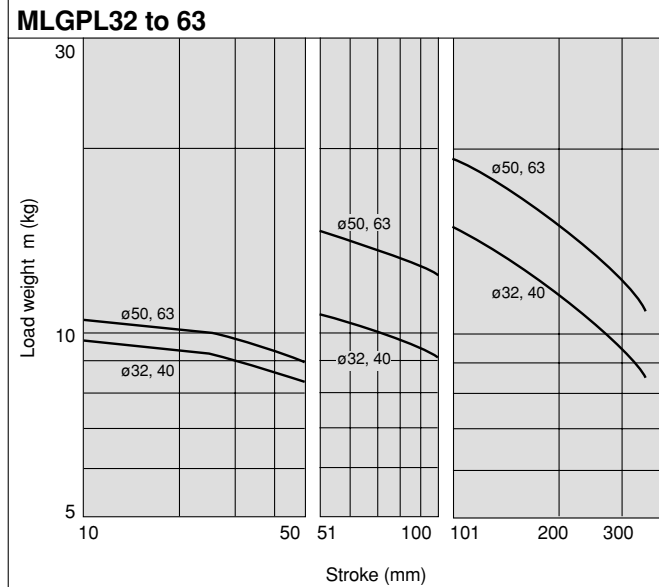
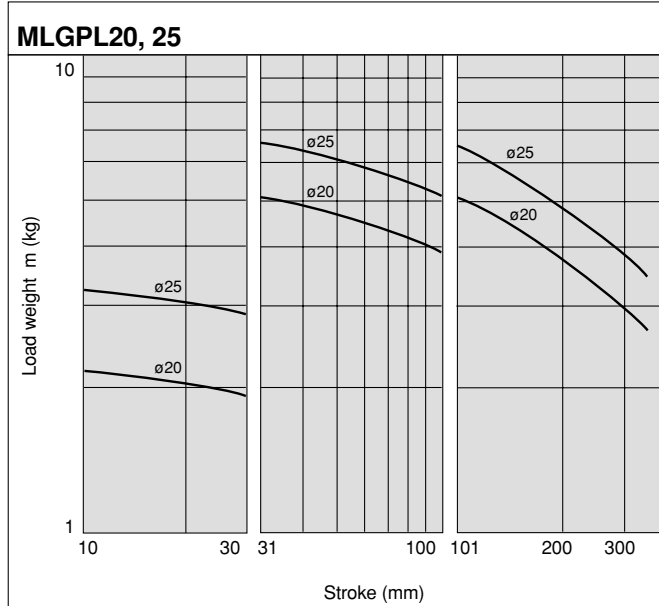


28 $l_2 = 100\text{mm}$ $V = 400\text{mm/s}$

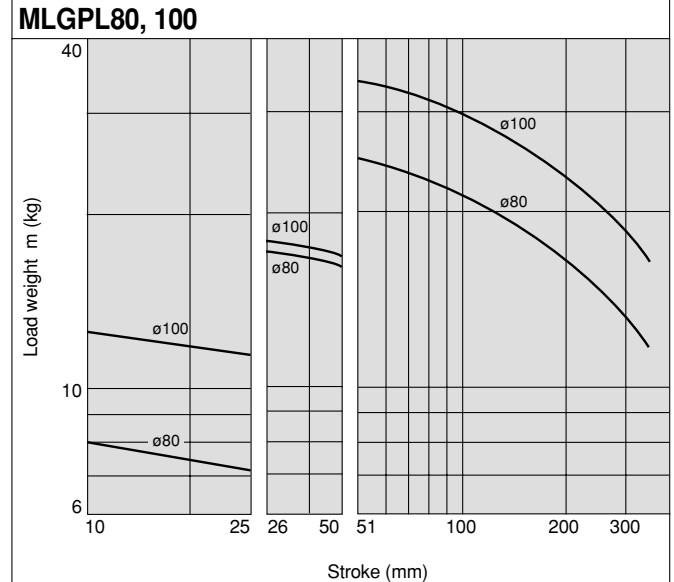
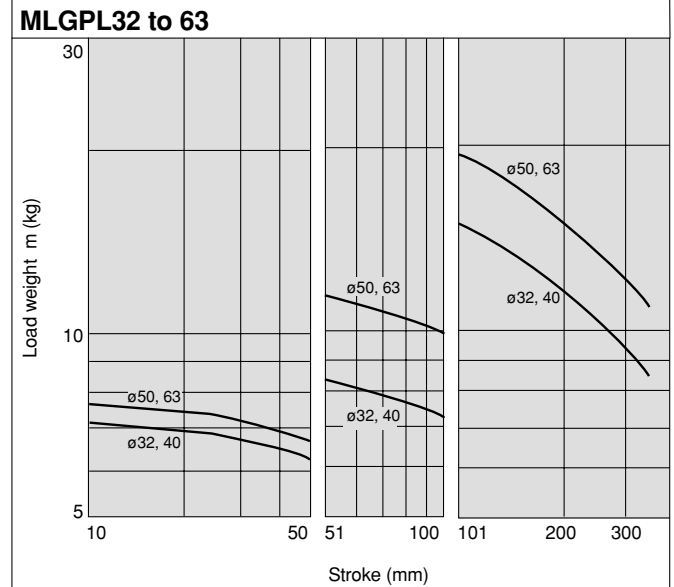
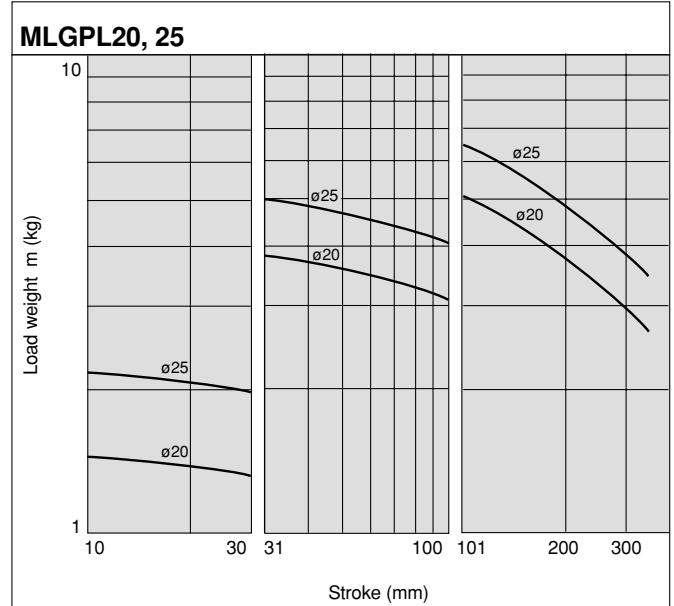


Horizontal Mounting **Ball Bushing**

29 $l_2 = 50\text{mm}$, $V = 200\text{m/s}$



30 $l_2 = 100\text{mm}$, $V = 200\text{m/s}$

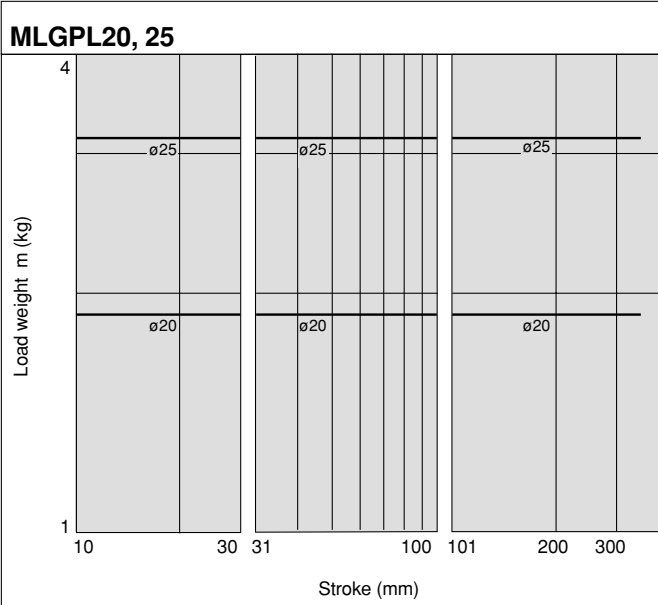


CL
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MXP
MG
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MGQ
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MGC
MGF
MGZ
CY1
MY1

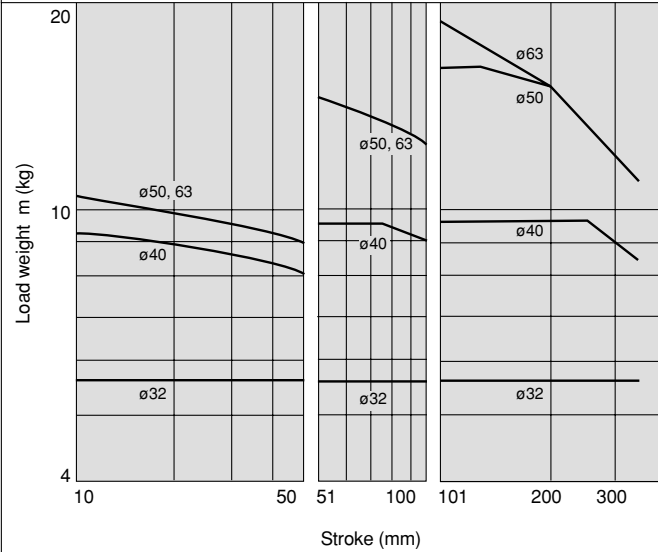
Series MLGP

Horizontal Mounting **Ball Bushing**

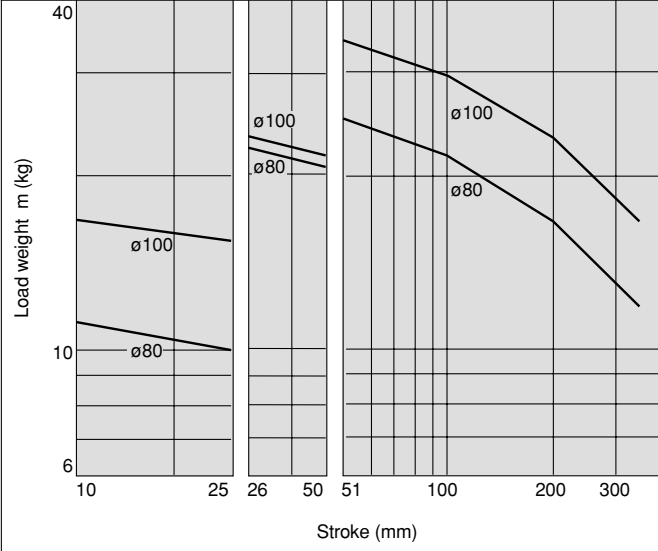
31 $l_2 = 50\text{mm}$, $V = 400\text{m/s}$



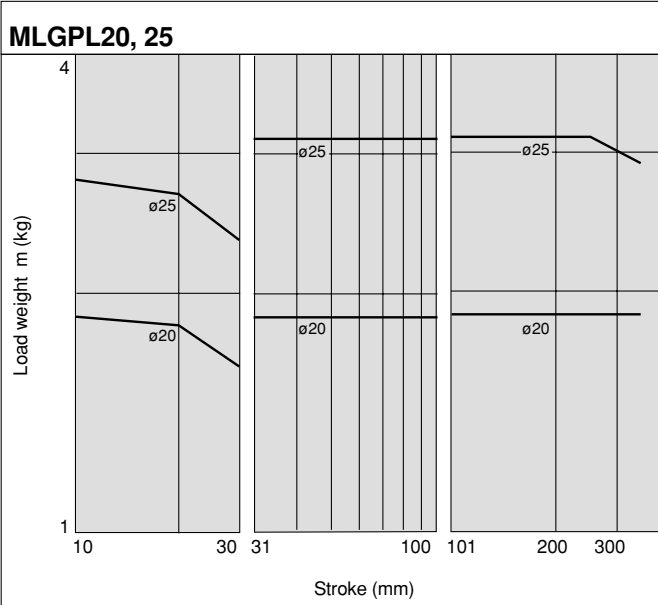
MLGPL32 to 63



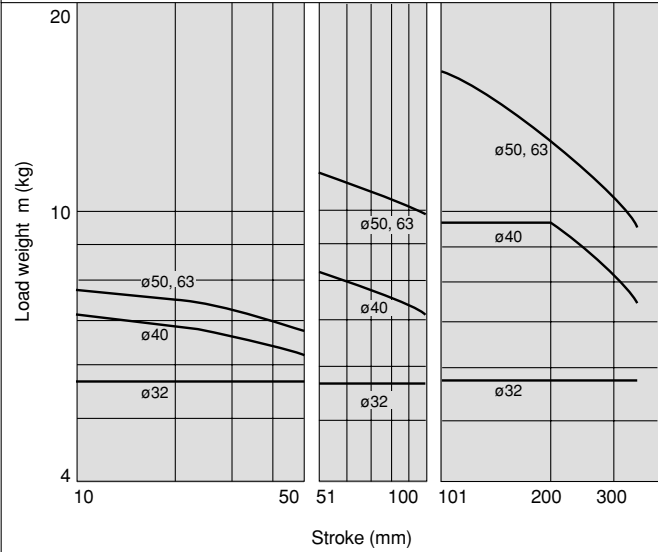
MLGPL80, 100



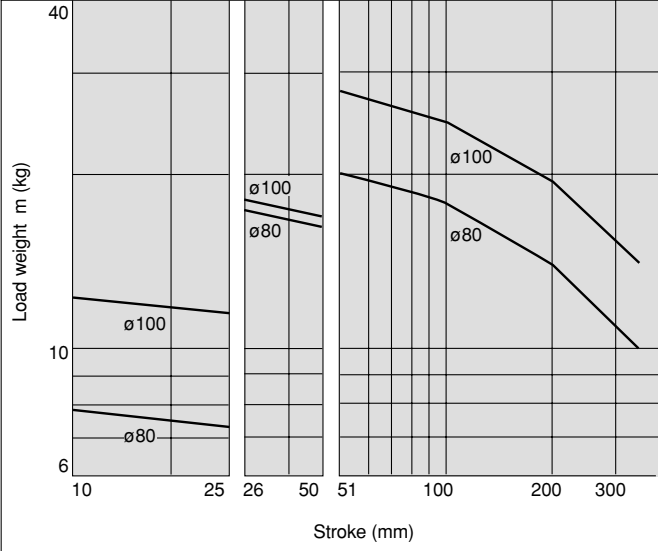
32 $l_2 = 100\text{mm}$, $V = 400\text{m/s}$



MLGPL32 to 63



MLGPL80, 100



Operating Range when Used as Stopper

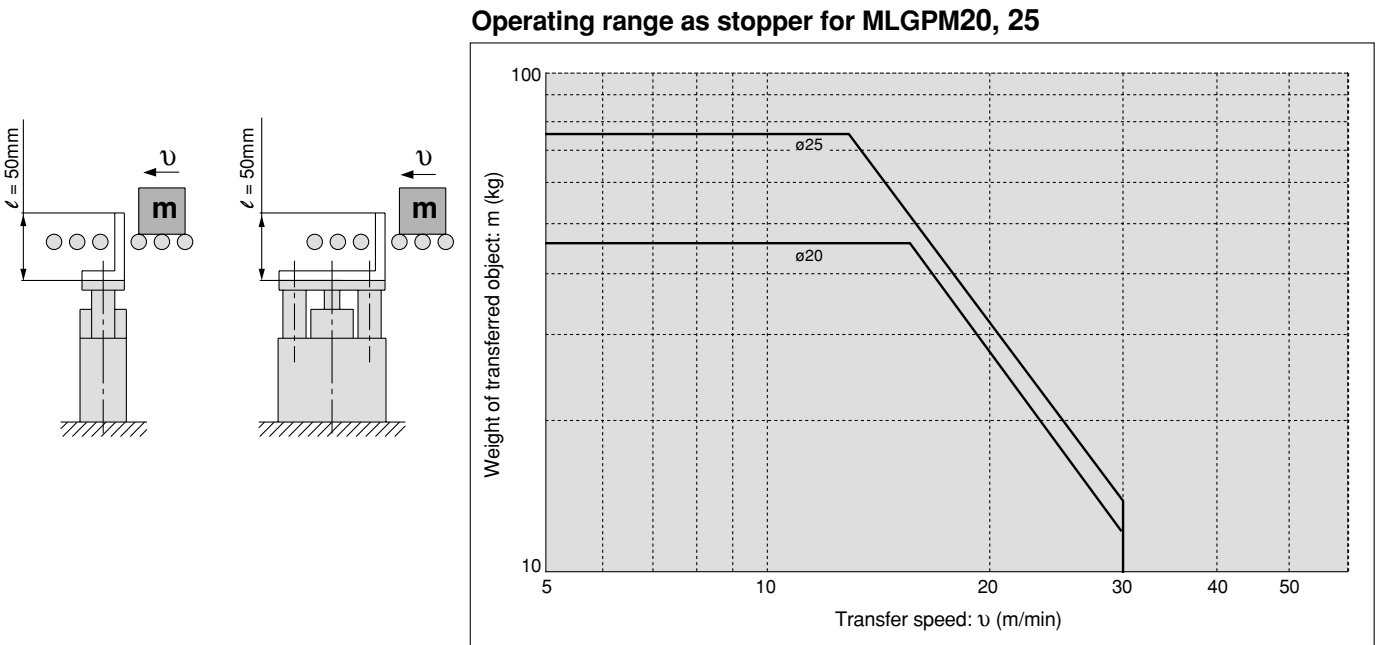
⚠ Warning

- When using the cylinder as a stopper, do not allow work pieces to collide in the locked condition. If work pieces collide in the locked condition, the lock may disengage due to the shock, or the lock mechanism and piston rod may be damaged, causing a dramatic decrease of the product life and/ or further damage.
- Model MLGPL (ball bushing) cannot be used as a stopper. When MLGPL (ball bushing) is used as a stopper, the impact will cause damage to the bearing unit and guide rod.

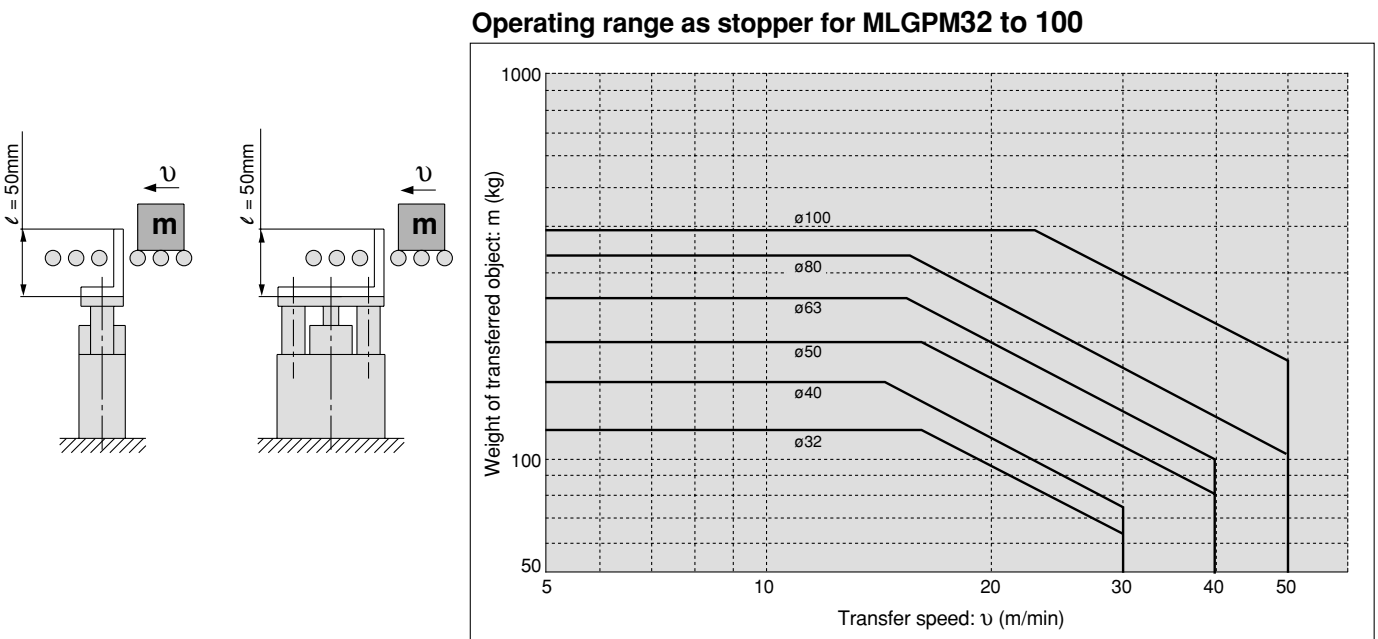
⚠ Caution

- When using as a stopper, select a model with a stroke of 30mm or less for bore sizes $\phi 20$ and $\phi 25$, and 50mm or less for bore sizes $\phi 32$ to $\phi 100$.
- When selecting a model with a longer ℓ dimension, be sure to choose a bore size which is sufficiently large.

Bore Sizes $\phi 20$ and $\phi 25$ /MLGPM20, 25 (Slide bearing)



Bore Sizes $\phi 32$ to $\phi 100$ /MLGPM32 to 100 (Slide bearing)

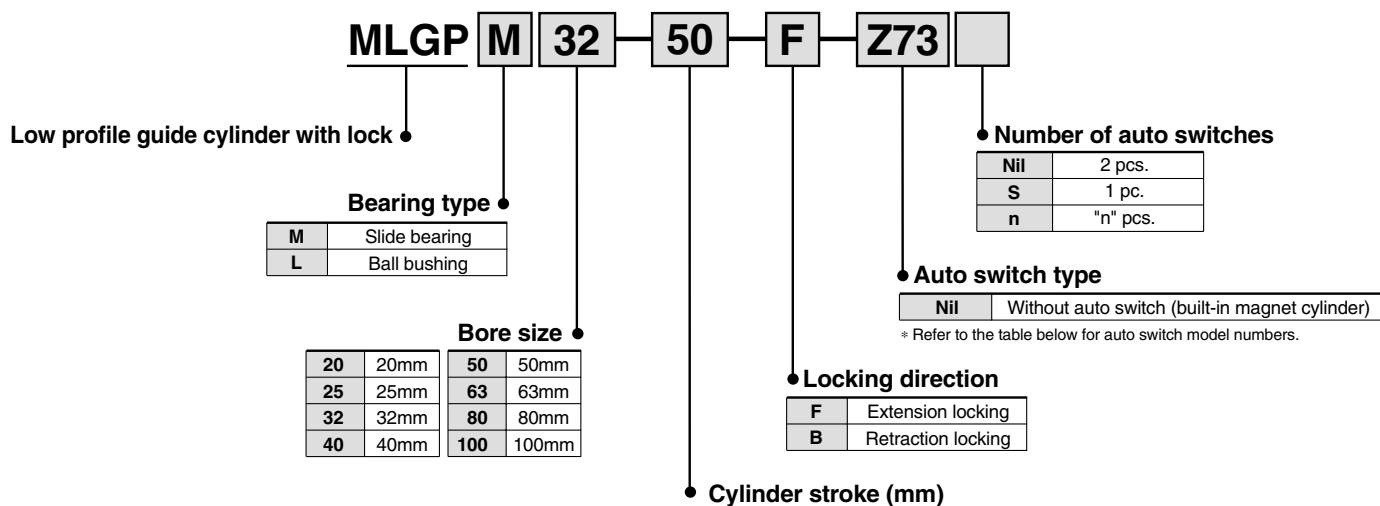


Low Profile Guide Cylinder with Lock

Series *MLGP*

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

How to Order



Applicable auto switches

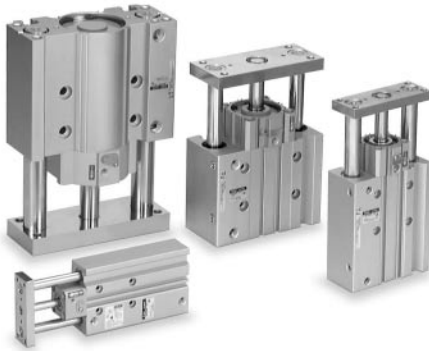
Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch model		Lead wire length (m) ^{Note 1)}			Applicable load		
					DC		AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
								Perpendicular	In-line						
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76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

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

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

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

Cylinder Specifications



Action	Double acting
Fluid	Air
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.2MPa ^{Note)}
Ambient and fluid temperature	-10 to 60°C (with no freezing)
Piston speed	50 to 400mm/s
Cushion	Rubber bumper at both ends
Lubrication	Non-lube
Stroke length tolerance	$^{+1.5}_0$ mm

Note) When the unlocking air and cylinder operating air are not common, the minimum operating pressure is 0.15MPa. (The minimum operating pressure for the cylinder alone is 0.15MPa.)

Lock Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Locking action	Spring locking (exhaust locking)							
Unlocking pressure	0.2MPa or more							
Locking pressure	0.05MPa or less							
Locking direction	One direction (extension locking, retraction locking)							
Maximum operating pressure	1.0MPa							
Unlocking port size	M5		Rc 1/8				Rc 1/4	
Holding force (maximum static load) N	157	245	402	629	982	1559	2513	3927

Standard Strokes

Bore size (mm)	Standard stroke (mm)
20, 25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350
32 to 80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350
100	50, 75, 100, 125, 150, 175, 200, 250, 300, 350

Manufacture of Intermediate Strokes

Modification method	Spacers installed Spacers are installed in standard stroke cylinders. ø20 to 32: Stroke can be modified in 1mm increments. ø40 to 100: Stroke can be modified in 5mm increments.	
Part number	Refer to standard part numbers and ordering.	
Applicable stroke (mm)	ø20, ø25, ø32	1 to 349
	ø40 to ø80	5 to 345
	ø100	25 to 345
Example	Part no.: MLGPM20-39-F A 1mm spacer is installed in MLGPM20-40-F . Dimension C is 77mm.	

Theoretical Output



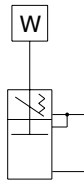
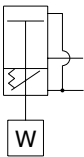
Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)									
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
20	10	OUT	314	63	94	126	157	188	220	251	283	314	
		IN	236	47	71	94	118	142	165	189	212	236	
25	12	OUT	491	98	147	196	246	295	344	393	442	491	
		IN	378	76	113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

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

Symbols

Extension locking

Retraction locking



Minimum Auto Switch Mounting Stroke (mm)

Number of auto switches	D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7□W	D-Y69□ D-Y7PV	D-Y7□WV	D-Y7BAL	D-P5DWL
1 pc.	15	5	10	20	25
2 pcs.	15	5	15	20	25

Note) Model D-P5DW can only be mounted with bore sizes ø40 to ø100.

Auto switch mounting bracket part number for D-P5DW

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

Series MLGP

Weights

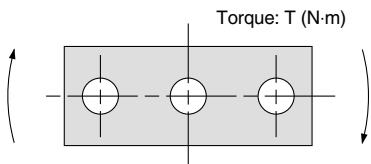
Slide bearing: MLGPM20 to 100

Bore size (mm)	Standard stroke (mm)														(kg)
	20	25	30	40	50	75	100	125	150	175	200	250	300	350	
20	0.84	—	0.92	1.00	1.08	1.34	1.54	1.74	1.93	2.13	2.33	2.80	3.20	3.59	
25	1.22	—	1.32	1.43	1.54	1.92	2.19	2.46	2.74	3.01	3.28	3.94	4.48	5.03	
32	—	2.09	—	—	2.47	2.87	3.25	3.64	4.02	4.40	4.78	5.73	6.49	7.26	
40	—	2.44	—	—	2.86	3.32	3.74	4.17	4.59	5.02	5.44	6.48	7.34	8.19	
50	—	4.13	—	—	4.77	5.50	6.14	6.78	7.42	8.06	8.70	10.4	11.6	12.9	
63	—	5.23	—	—	5.99	6.83	7.59	8.34	9.10	9.85	10.7	12.5	14.0	15.5	
80	—	8.50	—	—	9.44	10.7	11.7	12.6	13.6	14.5	15.5	17.9	19.8	21.6	
100	—	—	—	—	15.3	17.0	18.3	19.7	21.0	22.3	23.6	27.0	29.6	32.3	

Ball bushing: MLGPL20 to 100

Bore size (mm)	Standard stroke (mm)														(kg)
	20	25	30	40	50	75	100	125	150	175	200	250	300	350	
20	0.86	—	0.93	1.05	1.13	1.30	1.47	1.68	1.85	2.03	2.20	2.58	2.93	3.28	
25	1.22	—	1.31	1.49	1.58	1.81	2.05	2.32	2.55	2.78	3.01	3.51	3.98	4.44	
32	—	1.89	—	—	2.20	2.65	2.97	3.34	3.66	3.97	4.29	4.98	5.61	6.24	
40	—	2.16	—	—	2.58	3.07	3.43	3.85	4.21	4.57	4.93	5.71	6.43	7.15	
50	—	3.69	—	—	4.33	5.08	5.63	6.27	6.82	7.37	7.92	9.15	10.3	11.4	
63	—	4.77	—	—	5.53	6.40	7.06	7.82	8.48	9.15	9.81	11.3	12.7	14.0	
80	—	8.11	—	—	9.25	10.6	11.4	12.2	13.0	13.9	14.7	16.6	18.2	19.9	
100	—	—	—	—	14.7	16.5	17.6	18.8	20.0	21.2	22.4	25.0	27.3	29.7	

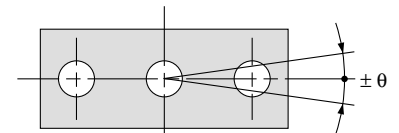
Allowable Rotational Torque of Plate



Bore size (mm)	Bearing type	Stroke (mm)														T (N·m)
		20	25	30	40	50	75	100	125	150	175	200	250	300	350	
20	MLGPM	0.77	—	0.70	0.64	0.59	1.62	1.42	1.27	1.15	1.05	0.97	0.83	0.73	0.65	
	MLGPL	0.75	—	0.68	1.49	1.41	1.24	1.11	1.29	1.18	1.08	1.00	0.86	0.76	0.67	
25	MLGPM	1.24	—	1.13	1.04	0.97	2.49	2.20	1.98	1.79	1.64	1.51	1.30	1.15	1.02	
	MLGPL	1.23	—	1.14	2.26	2.14	1.90	1.71	1.96	1.79	1.65	1.53	1.33	1.17	1.04	
32	MLGPM	—	4.89	—	—	4.13	4.82	4.29	3.87	3.53	3.24	2.99	2.60	2.30	2.06	
	MLGPL	—	4.22	—	—	3.64	4.07	3.67	5.37	4.97	4.62	4.31	3.80	3.39	3.06	
40	MLGPM	—	5.29	—	—	4.49	5.25	4.68	4.23	3.86	3.54	3.28	2.85	2.52	2.26	
	MLGPL	—	4.53	—	—	3.93	4.41	3.98	5.84	5.41	5.03	4.70	4.15	3.70	3.34	
50	MLGPM	—	10.06	—	—	8.66	10.13	9.12	8.29	7.60	7.01	6.51	5.70	5.06	4.56	
	MLGPL	—	6.40	—	—	5.57	7.76	7.04	9.75	9.05	8.43	7.88	6.96	6.22	5.60	
63	MLGPM	—	11.13	—	—	9.60	11.27	10.15	9.24	8.48	7.83	7.28	6.37	5.67	5.11	
	MLGPL	—	6.91	—	—	6.02	8.48	7.69	10.73	9.95	9.27	8.67	7.65	6.83	6.14	
80	MLGPM	—	16.70	—	—	14.67	19.10	17.41	15.99	14.79	13.75	12.85	11.36	10.18	9.23	
	MLGPL	—	9.44	—	—	16.88	17.92	16.51	15.28	14.20	13.24	12.37	10.89	9.66	8.62	
100	MLGPM	—	—	—	—	26.17	30.70	28.23	26.12	24.31	22.73	21.35	19.03	17.17	15.64	
	MLGPL	—	—	—	—	21.11	29.10	26.98	25.10	23.43	21.93	20.57	18.21	16.22	14.53	

Note) Do not apply rotational force in a locked condition, as this will cause damage to the lock mechanism or decrease of the product life.

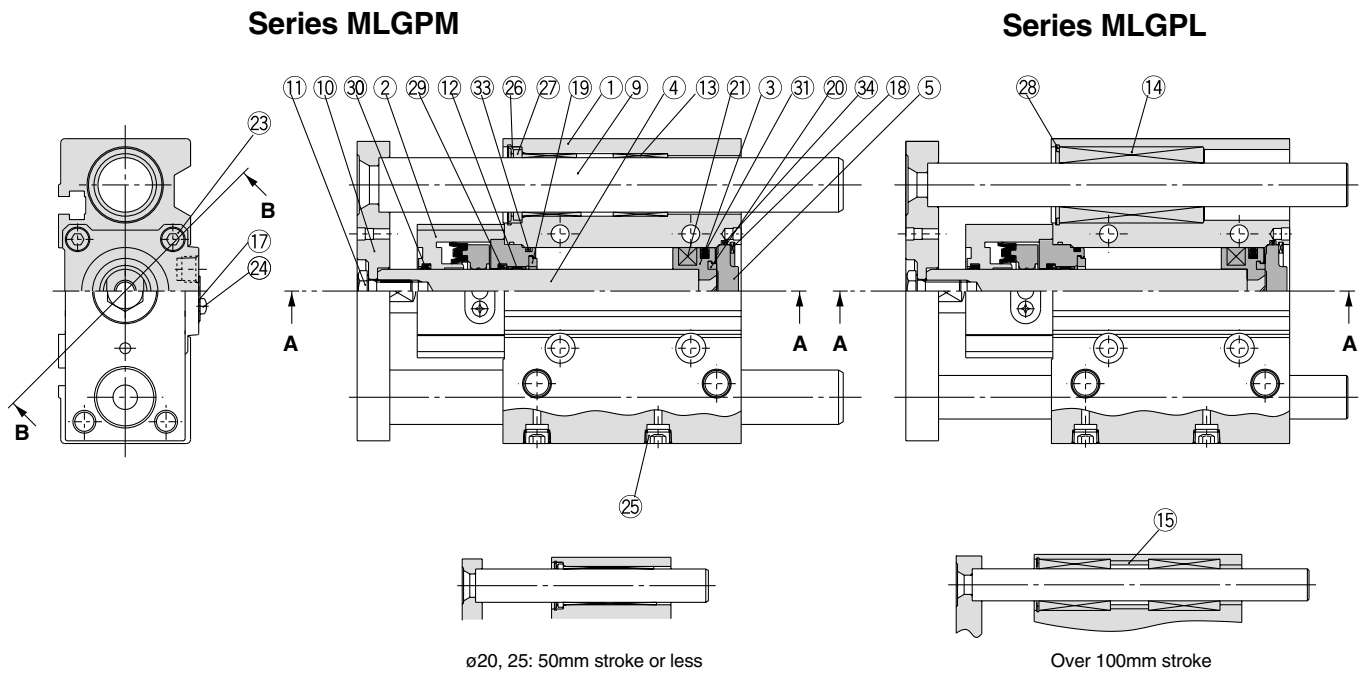
Non-rotating Accuracy of Plate



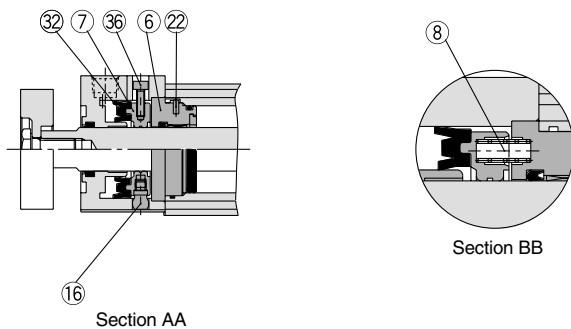
Note) For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

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

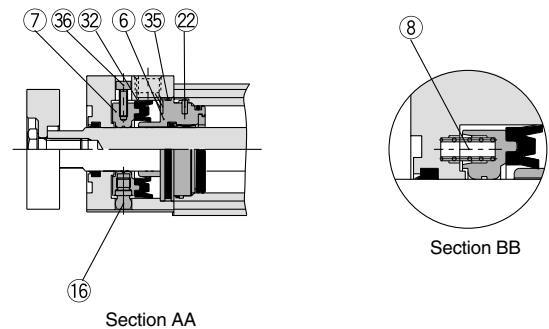
Construction/ø20, ø25, ø32



Extension locking (Type F)



Retraction locking (Type B)



Parts list

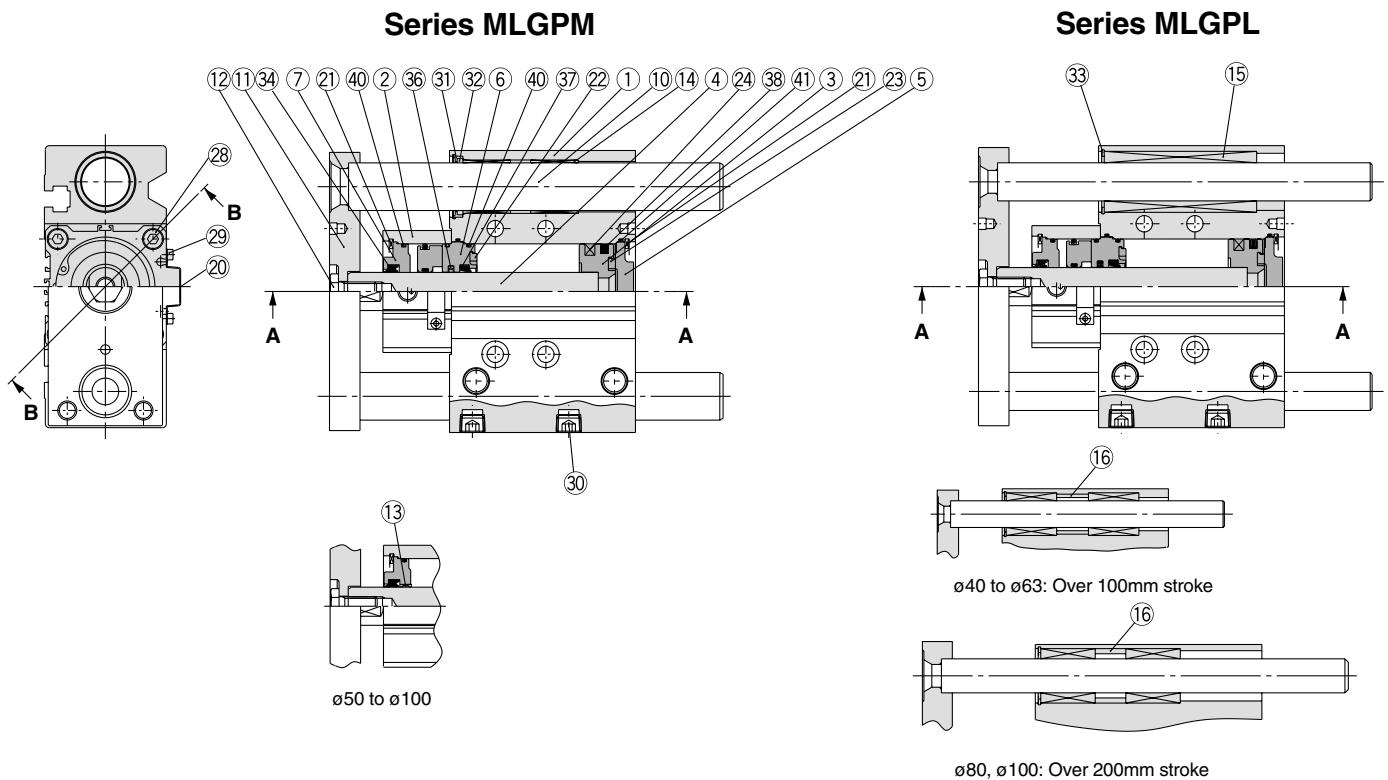
No.	Description	Material	Note
1	Body	Aluminium alloy	Hard anodized
2	Lock body	Aluminium alloy	Hard anodized
3	Piston	Aluminium alloy	Chromated
4	Piston rod	ø20, 25: Stainless steel ø32: Carbon steel	Hard chrome plated
5	Head cover	Aluminium alloy	Coated
6	Intermediate collar	Type F: Aluminium alloy Type B: —	Chromated Hard anodized
7	Lock ring	Carbon steel	Heat treated
8	Brake spring	Steel wire	Zinc chromated
9	Guide rod	Type M: Carbon steel Type L: High carbon chromium bearing steel	Hard chrome plated Heat treated/Hard chrome plated
10	Plate	Rolled steel	Nickel plated
11	Plate mounting bolt	Chrome molybdenum steel	Nickel plated
12	Bushing	ø20, 25: Oil-impregnated sintered alloy ø32: Lead bronze casting	
13	Slide bearing	Lead bronze casting	
14	Ball bushing	—	
15	Spacer	Aluminium alloy	Chromated
16	Pivot	Chrome molybdenum steel	Heat treated/Electroless nickel plated

Parts list

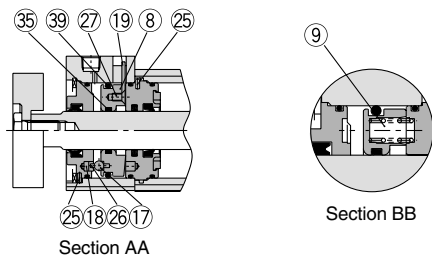
No.	Description	Material	Note
17	Dust cover	Stainless steel	
18	C type snap ring for hole	Carbon tool steel	Phosphate coated
19	Bumper A	Urethane	
20	Bumper B	Urethane	
21	Plastic magnet	—	
22	Parallel pin	Carbon steel	
23	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
24	Dust cover holding bolt	Carbon steel	Nickel plated
25	Hexagon socket head taper screw plug	Carbon steel	Nickel plated
26	Holder	Resin	
27	Felt	Felt	
28	C type snap ring for hole	Carbon tool steel	Phosphate coated
29	Rod seal	NBR	
30	Scraper	NBR	
31	Piston seal	NBR	
32	Lock ring seal	NBR	
33	Gasket A	NBR	
34	Gasket B	NBR	
35	Lock body gasket	NBR	
36	Unlocking bolt	Chrome molybdenum steel	Nickel plated

Series MLGPM

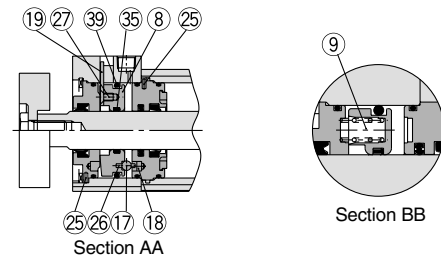
Construction/ø40 to ø100



Extension locking (Type F)



Retraction locking (Type B)



Parts list

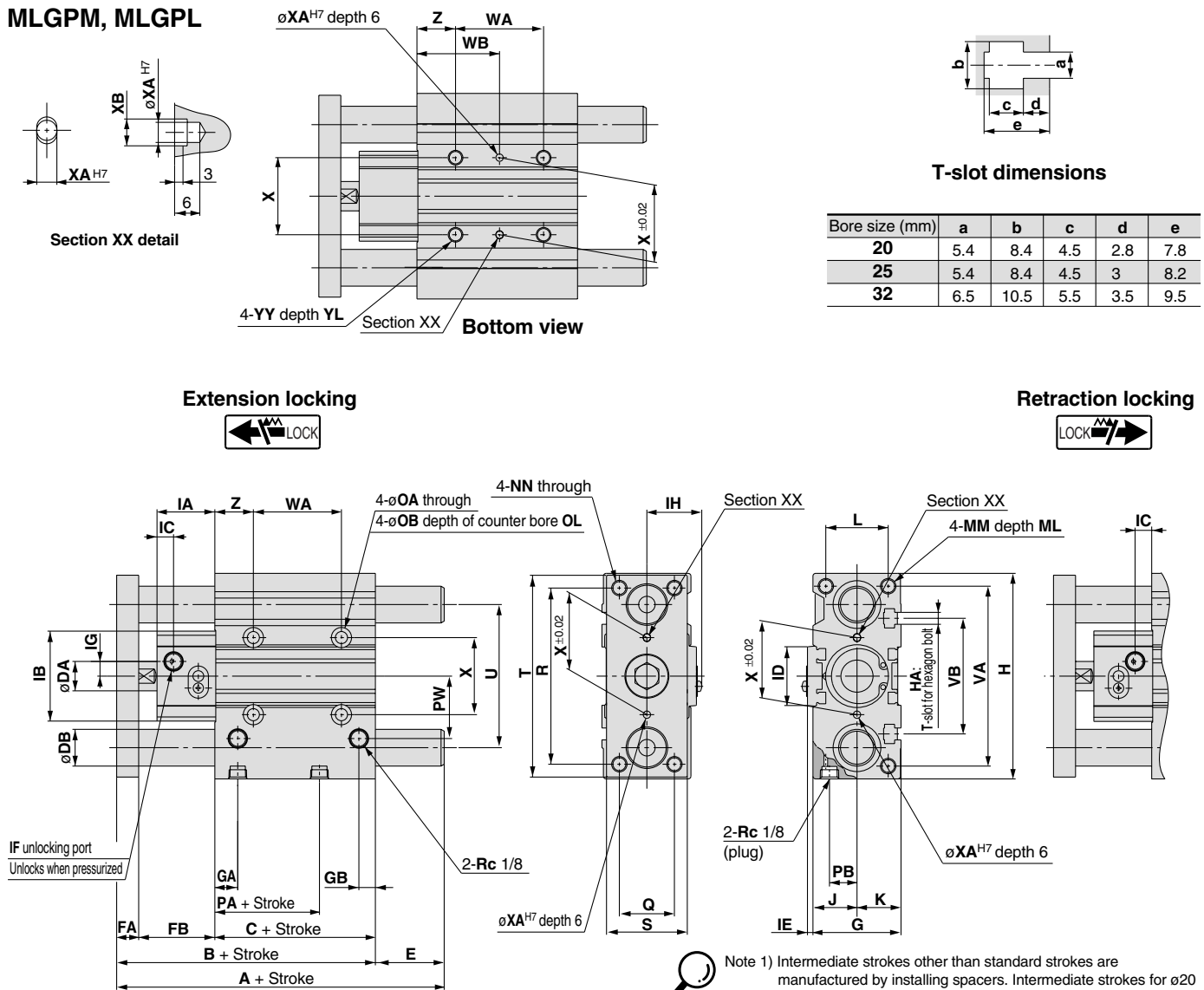
No.	Description	Material	Note
1	Body	Aluminium alloy	Hard anodized
2	Lock body	Aluminium alloy	Hard anodized
3	Piston	Aluminium alloy	Chromated
4	Piston rod	Carbon steel	Hard chrome plated
5	Head cover	Aluminium alloy	Coated
	ø40 to 63	Aluminium alloy casting	Chromated/Coated
6	Intermediate collar	Aluminium alloy	Chromated
7	Collar	Aluminium alloy	Hard anodized
	ø50 to 100	Aluminium alloy casting	Chromated/Coated
8	Lock ring	Carbon steel	Heat treated
9	Brake spring	Steel wire	Zinc chromated
10	Guide rod	Type M: Carbon steel Type L: High carbon chromium bearing steel	Hard chrome plated Heat treated/Hard chrome plated
11	Plate	Rolled steel	Nickel plated
12	Plate mounting bolt	Chrome molybdenum steel	Nickel plated
13	Bushing	Lead bronze casting	ø50 to 100
14	Slide bearing	Lead bronze casting	
15	Ball bushing	—	
16	Spacer	Aluminium alloy	Chromated
17	Pivot pin	Carbon steel	Heat treated/Zinc chromated
18	Pivot key	Carbon steel	Heat treated/Zinc chromated
19	Lever	Stainless steel	
20	Dust cover	ø40 to 63: Rolled steel ø80, 100: Stainless steel	Nickel plated

Parts list

No.	Description	Material	Note
21	C type snap ring for hole	Carbon tool steel	Phosphate coated
22	Bumper A	Urethane	
23	Bumper B	Urethane	
24	Plastic magnet	—	
25	Parallel pin	Carbon steel	
26	Spring pin	Carbon steel	
27	Hexagon socket countersunk head screw	Chrome molybdenum steel	Nickel plated
28	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
29	Dust cover holding bolt	ø40 to 63: Chrome molybdenum steel ø80, 100: Carbon steel	Nickel plated
30	Hexagon socket head taper screw plug	Carbon steel	Nickel plated
31	Holder	Resin	
32	Felt	Felt	
33	C type snap ring for hole	Carbon tool steel	Phosphate coated
34	Rod seal A	NBR	
35	Rod seal B	NBR	
36	Rod seal C	NBR	
37	Scraper	NBR	
38	Piston seal	NBR	
39	Brake piston seal	NBR	
40	Gasket A	NBR	
41	Gasket B	NBR	

Dimensions/ø20, ø25, ø32

MLGPM, MLGPL



MLGPM, MLGPL common dimensions

Bore size (mm)	Standard stroke (mm)		B	C	DA	FA	FB	G	GA	GB	H	HA	IA	IB	IC		ID	IE	IF	IG	IH	J	K	L
															Extension locking	Retraction locking								
20	20, 30, 40, 50, 75, 100, 125		79.5	37	10	10	32.5	36	10.5	8.5	83	M5	26.5	36	9.5	6	—	—	M5	6.5	21.2	18	18	24
25	150, 175, 200, 250, 300, 350		84	37.5	12	10	36.5	42	11.5	9	93	M5	30.5	40	10	7.5	—	—	M5	7	23.2	21	21	30
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350		91	37.5	16	12	41.5	48	12.5	9	112	M6	31.5	49	9	9	32	3	Rc 1/8	8	30.2	24	24	34

Bore size (mm)	MM	ML	NN	OA	OB	OL	PA	PB	PW	Q	R	S	T	U	VA	VB	WA						
																	st:25	st:30	25<st:100	30<st:100	100<st:200	200<st:300	300<st:350
20	M5	13	M5	5.6	9.5	5.5	12.5	10.5	25	18	70	30	81	54	72	44	—	24	—	44	120	200	300
25	M6	15	M6	5.6	9.5	5.5	12.5	13.5	28.5	26	78	38	91	64	82	50	—	24	—	44	120	200	300
32	M8	20	M8	6.6	11	7.5	7	15	34	30	96	44	110	78	98	63	24	—	48	—	124	200	300

Bore size (mm)	WB							X	XA	XB	YY	YL	Z
	st:25	st:30	25<st:100	30<st:100	100<st:200	200<st:300	300<st:350						
20	—	29	—	39	77	117	167	28	3	3.5	M6	12	17
25	—	29	—	39	77	117	167	34	4	4.5	M6	12	17
32	33	—	45	—	83	121	171	42	4	4.5	M8	16	21

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

Bore size (mm)	A			DB	E		
	st:50	50<st:200	200<st		st:50	50<st:200	200<st
20	79.5	111	148.5	12	0	31.5	69
25	84	115.5	152.5	16	0	31.5	68.5
32	128.5	133.5	171.5	20	37.5	42.5	80.5

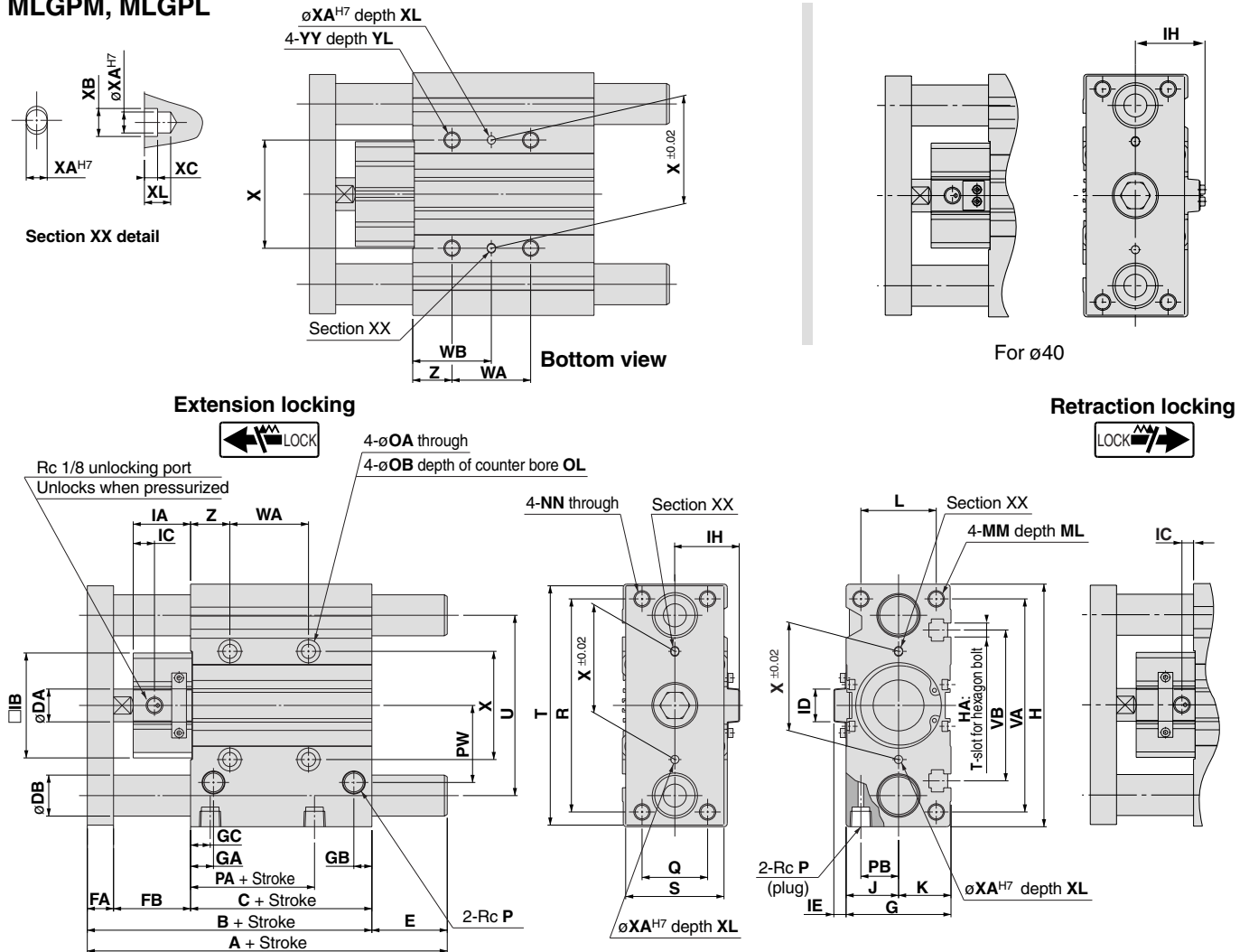
MLGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A						DB	E					
	st:30	st:50	30<st:100	50<st:100	100<st:200	200<st:350		st:30	st:50	30<st:100	50<st:100	100<st:200	200<st:350
20	89.5	—	106.5	—	130.5	148.5	10	10	—	27	—	51	69
25	100	—	116	—	135	152.5	13	16	—	32	—	51	68.5
32	—	112.5	—	129.5	149.5	171.5	16	—	21.5	—	38.5	58.5	80.5

Series MLGP

Dimensions/ø40, ø50, ø63

MLGPM, MLGPL



Note 1) Intermediate strokes other than standard strokes are manufactured by installing spacers. Intermediate strokes for ø40 to ø63 are available in 5mm increments.

Note 2) For intermediate strokes, dimensions A, B, C, E, WA, and WB will be the same as the longer of the standard strokes.

MLGPM, MLGPL common dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	IA	IB	IC		ID	IE	IH	J	K	L
															Extension locking	Retraction locking						
40	25, 50, 75, 100, 125, 150 175, 200, 250, 300, 350	100	44	16	12	44	54	14	10	14	120	M6	34	52	11	6.5	14	4	34.5	27	27	40
50		107	44	20	16	47	64	14	11	12	148	M8	35	64	13	6.8	19	7	39.5	32	32	46
63		115	49	20	16	50	78	16.5	13.5	16.5	162	M10	38	77	16.5	7.5	19	6.5	46	39	39	58

Bore size (mm)	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB	WA				
																		st<25	25<st<100	100<st<200	200<st<300	300<st<350
40	M8	20	M8	6.6	11	7.5	1/8	13	18	38	30	104	44	118	86	106	72	24	48	124	200	300
50	M10	22	M10	8.6	14	9	1/4	9	21.5	47	40	130	60	146	110	130	92	24	48	124	200	300
63	M10	22	M10	8.6	14	9	1/4	14	28	55	50	130	70	158	124	142	110	28	52	128	200	300

Bore size (mm)	WB					X	XA	XB	XC	XL	YY	YL	Z
	st≤25	25<st≤100	100<st≤200	200<st≤300	300<st≤350								
40	34	46	84	122	172	50	4	4.5	3	6	M8	16	22
50	36	48	86	124	174	66	5	6	4	8	M10	20	24
63	38	50	88	124	174	80	5	6	4	8	M10	20	24

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

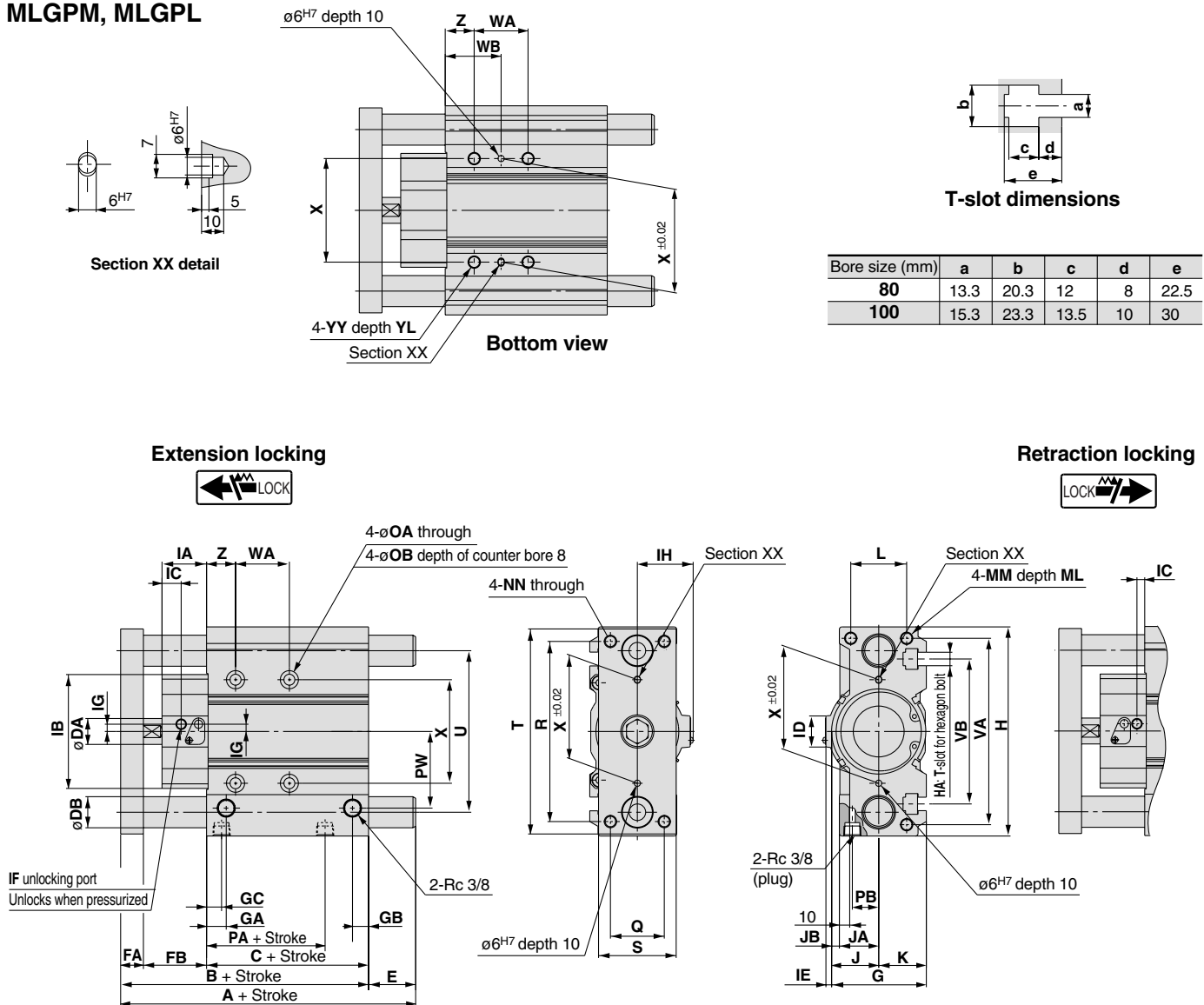
Bore size (mm)	A			DB	E		
	st≤50	50<st≤200	200<st≤350		st≤50	50<st≤200	200<st≤350
40	131	136	174	20	31	36	74
50	141.5	153	196	25	34.5	46	89
63	144.5	156	199	25	29.5	41	84

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

Bore size (mm)	A				DB	E			
	st≤50	50<st≤100	100<st≤200	200<st≤350		st≤50	50<st≤100	100<st≤200	200<st≤350
40	115	132	152	174	16	15	32	52	74
50	128	149	169	196	20	21	42	62	89
63	131	152	172	199	20	16	37	57	84

Dimensions/ø80, ø100

MLGPM, MLGPL



Note 1) Intermediate strokes other than standard strokes are manufactured by installing spacers. Intermediate strokes for ø80 and ø100 are available in 5mm increments.

Note 2) For intermediate strokes, dimensions A, B, C, E, WA, and WB will be the same as the longer of the standard strokes.

MLGPM, MLGPL common dimensions

Bore size (mm)	Standard stroke (mm)					B	C	DA	FA	FB	G	GA	GB	GC	H	HA	IA	IB	IC		ID	IE	IF	IG	IH	J	JA
																			Extension locking	Retraction locking							
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350					139.5	56.5	25	22	61	91.5	19	15.5	14.5	202	M12	43	110	18.5	7.5	30	5.5	Rc 1/8	7	54.2	45.5	38
100	50, 75, 100, 125, 150, 175, 200, 250, 300, 350					167.5	66	30	25	76.5	111.5	23	19	18	240	M14	51.5	137	23	11	50	5.5	Rc 1/4	15	64.2	55.5	45

Bore size (mm)	JB	K	L	MM	ML	NN	OA	OB	PA	PB	PW	Q	R	S	T	U	VA	VB	WA						
																			st≤25	st≤50	25<st≤100	50<st≤100	100<st≤200	200<st≤300	300<st≤350
80	7.5	46	54	M12	25	M12	10.6	17.5	14.5	25.5	74	52	174	75	198	156	180	140	28	—	52	—	128	200	300
100	10.5	56	62	M14	31	M14	12.5	20	17.5	32.5	89	64	210	90	236	188	210	166	—	50	—	72	124	200	300

Bore size (mm)	WB							X	YY	YL	Z
	st≤25	st≤50	25<st≤100	50<st≤100	100<st≤200	200<st≤300	300<st≤350				
80	42	—	54	—	92	128	178	100	M12	24	28
100	—	60	—	71	97	135	185	124	M14	28	35

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

Bore size (mm)	A			DB	E		
	st≤50	50<st≤200	200<st≤350		st≤50	50<st≤200	200<st≤350
80	158	185	236	30	18.5	45.5	96.5
100	188.5	213.5	254.5	36	21	46	87

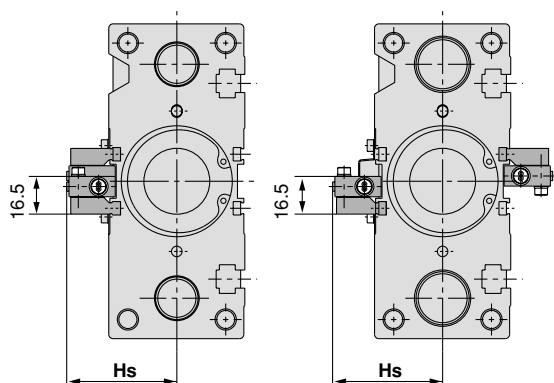
MLGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A				DB	E			
	st≤25	25<st≤50	50<st≤200	200<st≤350		st≤25	25<st≤50	50<st≤200	200<st≤350
80	152.5	173	203	236	25	13	33.5	63.5	96.5
100	—	198.5	231.5	254.5	30	—	31	64	87

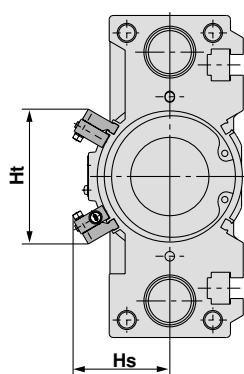
Auto Switches/Proper Mounting Position for Stroke End Detection

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

$\phi 40$ to $\phi 63$



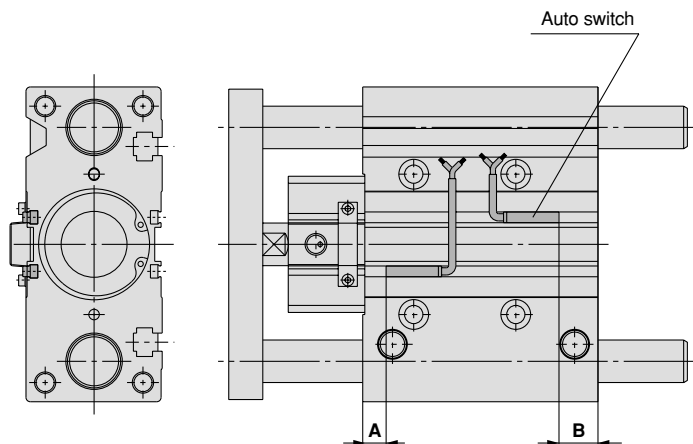
$\phi 80, \phi 100$



For 25mm stroke

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

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



Proper mounting position (mm)

Bore size (mm)	A	B
20	4	8
25	4.5	8
32	5.5	7
40	9.5 (9)	9.5 (9)

Note 1) Values inside () are for D-P5DW, which can only be mounted on bores sizes $\phi 40$ through $\phi 100$.

Auto Switch Mounting

⚠ Caution

Auto switch mounting tool

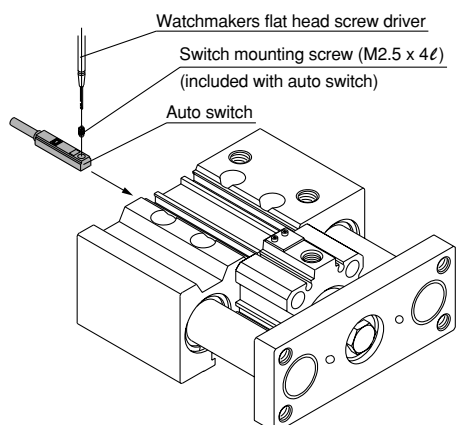
- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers screw driver with a handle about 5 to 6mm in diameter.

Tightening torque

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

Inserting direction for mounting

- Auto switches can only be inserted from the rear side.



For D-P5DW

⚠ Caution

Auto switch mounting tool

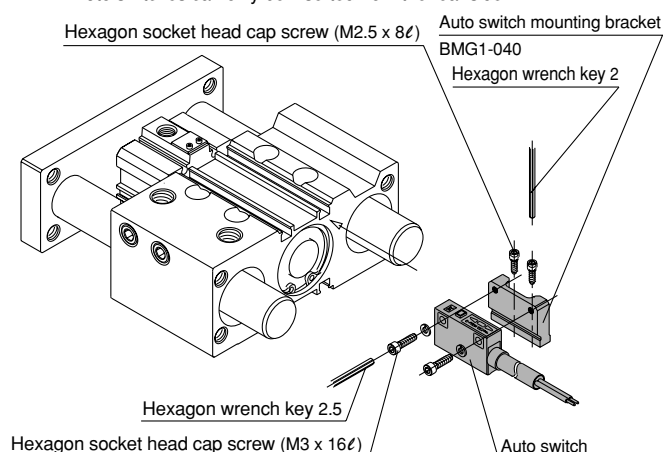
- When tightening the hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 and 2.5 with the appropriate screws.

Tightening torque

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

Inserting direction for mounting

- Auto switches can only be inserted from the rear side.





Series MLGP Specific Product Precautions

Be sure to read before handling.

Selection

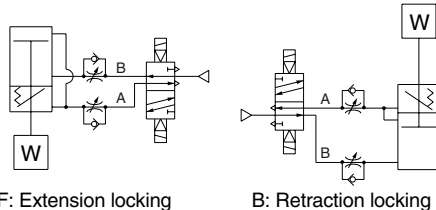
Warning

- Do not use this cylinder for intermediate stops.**
This cylinder is designed for locking against inadvertent movement from a stationary condition. Do not perform intermediate stops while the cylinder is operating, as this will shorten its service life.
- Select the correct locking direction, as this cylinder does not generate holding force opposite to the locking direction.**
The extension lock does not generate holding force in the cylinder's retracting direction, and the retraction lock does not generate holding force in the cylinder's extending direction (free).
- Even when locked, there may be stroke movement of about 1mm in the locking direction due to external forces such as the weight of the work piece.**
Even when locked, if air pressure drops, stroke movement of about 1mm may be generated in the locking direction of the lock mechanism due to external forces such as the work piece weight.
- When locked, do not apply impact loads, strong vibration or rotational force, etc.**
When used as a stopper, be careful that the work piece does not collide with the cylinder in a locked condition.
- Operate so that load weight, cylinder speed and eccentric distance are within the limiting ranges in the specifications and model selection graphs.**
Operation beyond the limiting range will lead to cylinder damage and reduced service life, etc. (Refer to pages 2 and 3 and "Model Selection" for specifications.)

Pneumatic Circuits

Warning

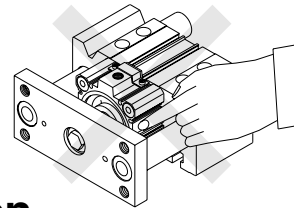
- Do not use 3 position valves.**
The lock may be released due to inflow of the unlocking pressure.
- Install speed controllers for meter-out control.**
Malfunction may occur if used with meter-in control.
- Be careful of reverse exhaust pressure flow from a common exhaust type valve manifold.**
Since the lock may be released due to reverse exhaust pressure flow, use an individual exhaust type manifold or single type valve.
- Branch off the compressed air piping for the lock unit between the cylinder and the speed controller.**
Note that branching off in another section can cause a reduction in service life.
- Perform piping so that the side going from the piping junction to the lock unit is short.**
If the lock unit side piping is longer than the cylinder port side, this may cause unlocking malfunction and reduce the life of the lock, etc.



Mounting

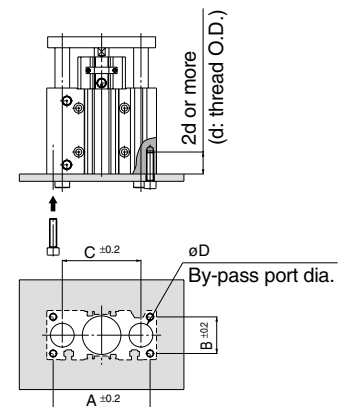
Warning

- Do not put hands or fingers, etc., in between the plate and the cylinder body or lock body.**
Be very careful that hands or fingers, etc., are not caught in the space between the plate and the cylinder body or lock body when air pressure is applied.



Caution

- Be sure to connect the load to the plate section with the lock in an unlocked condition.**
If this is done with the lock in a locked condition, the locking mechanism may be damaged.
Sizes $\phi 20$ through $\phi 32$ have a built-in holding function for the unlocked condition, allowing the unlocked condition to be maintained even without an air supply. For $\phi 40$ through $\phi 100$, simply connect piping to the unlocking port and supply air pressure of 0.2MPa or more.
- When performing mounting adjustment, supply air pressure only to the unlocking port.**
- Cylinder bottom**
Since the guide rods project from the bottom of the cylinder at the end of the retraction stroke, provide by-pass ports in the mounting surface, as well as holes for the hexagon socket head mounting screws, when the cylinder is mounted from the bottom. Furthermore, when subjected to impact in use as a stopper, etc., screw the mounting bolts in to a depth of 2d or more.



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

CL
MLG
CNA
CNG
MNB
CNS
CLS
CB
CV/MVG
CXW
CXS
CXT
MX
MXU
MXH
MXS
MXQ
MXF
MXW
MXP
MG
MGP
MGQ
MGG
MGC
MGF
MGZ
CY1
MY1



Series MLGP Specific Product Precautions

Be sure to read before handling.

Piping

Warning

Depending on the operating condition, change the position of plugs for the piping port.

1. For M5

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

2. For Rc threads

Tighten with proper tightening torques below. Also, use pipe tape on the plug.

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

Preparing for Operation

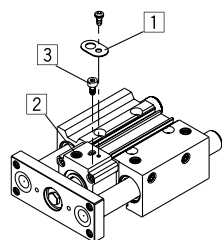
Warning

1. Before starting operation from the locked position, be sure to restore air pressure to the B port in the pneumatic circuit.

It is very dangerous to apply pressure to the A port with the B port in an unpressurized state, because the cylinder will move suddenly when unlocked.

2. Since sizes $\phi 20$ through $\phi 32$ are shipped in an unlocked condition maintained by the unlocking bolt, be sure to remove the unlocking bolt following the procedures below. If the cylinder is used without removing the unlocking bolt, the lock mechanism will not function. Sizes $\phi 40$ through $\phi 100$ do not have the holding function for the unlocked condition, and therefore, they can be used as shipped.

For $\phi 20$ through $\phi 32$ only



- 1) Confirm that there is no air pressure inside the cylinder, and remove the dust cover [1].
- 2) Supply air pressure of 0.2MPa or more into the unlocking port [2].
- 3) Remove the unlocking bolt [3] with a hexagon wrench (width across flats 2.5).

Manual Unlocking

Warning

1. Do not perform unlocking when an external force such as a load or spring force is being applied.

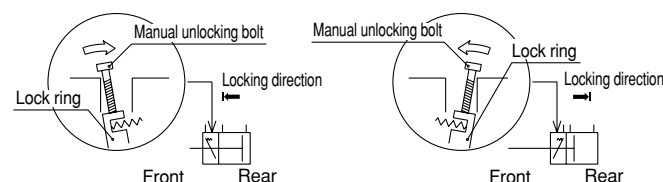
This is very dangerous because the cylinder will move suddenly. Take the following steps.

- 1) Release the lock after restoring the air pressure in the B line of the pneumatic circuit to operating pressure, and then reduce the pressure gradually.
- 2) In case air pressure cannot be used, release the lock after preventing cylinder movement with a lifting device such as a jack.

2. After confirming safety, operate the manual release following the steps shown below.

Carefully confirm that personnel are not inside the load movement range, etc., and that there is no danger even if the load moves suddenly.

Manual unlocking
For $\phi 20$ through $\phi 32$



Extension locking

- 1) Remove the dust cover.
- 2) Screw in the manual unlocking bolt (commercial bolt size M3 x 0.5 x 15 ϕ or more) into the lock ring threads, and lightly push it in the direction of the arrow (rear), as shown above, to unlock.

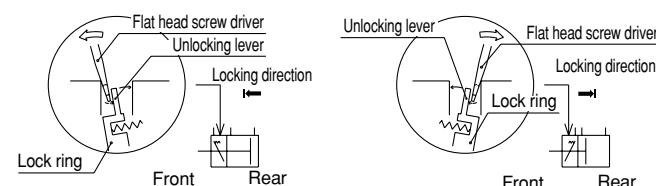
Retraction locking

- 1) Remove the dust cover.
- 2) Screw in the manual unlocking bolt (commercial bolt size M3 x 0.5 x 15 ϕ or more) into the lock ring threads, and lightly push it in the direction of the arrow (front), as shown above, to unlock.

For normal operation, remove the manual unlocking bolt.

It will cause lock malfunction.

For $\phi 40$ through $\phi 100$



Extension locking

- 1) Remove the dust cover.
- 2) Insert a flat head screw driver on the rod side of the manual unlocking lever as shown in the figure above, and lightly push down the screw driver in the direction of the arrow (front), as shown above, to unlock.

Retraction locking

- 1) Remove the dust cover.
- 2) Insert a flat head screw driver on the head side of the manual unlocking lever as shown in the figure above, and lightly push down the screw driver in the direction of the arrow (rear), as shown above, to unlock.



Series MLGP Specific Product Precautions

Be sure to read before handling.

Holding the Unlocked Condition (ø20 through ø32)

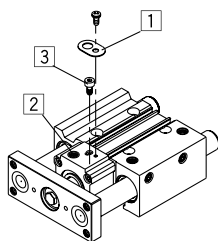
⚠ Caution

1. In order to hold the locked condition, be sure to follow the procedures below after confirming safety.

- 1) Remove the dust cover **1**.
- 2) Supply air pressure of 0.2MPa or more to the unlocking port **2** shown below and unlock.
- 3) Screw in the hexagon socket head cap bolt **3** (ø20, ø25: M3 x 0.5 x 5ℓ, ø32: M3 x 0.5 x 10ℓ), included, into the lock ring and hold the unlocked condition.

2. To use the lock mechanism again, be sure to remove the unlocking bolt.

When the unlocking bolt is screwed in, the lock mechanism will not function. Remove the unlocking bolt according to the procedures for the side prepared for operation.



Maintenance

⚠ Caution

1. In order to maintain good performance, operate with clean unlubricated air.

If lubricated air, compressor oil or drainage, etc., enter the cylinder, there is a danger of sharply reducing the locking performance.

2. Do not apply grease to the piston rod.

There is a danger of sharply reducing the locking performance.

3. For ø20 through ø32, a ø12 silver seal is placed on one side of the lock body (the side opposite the unlocking port). This seal is applied for dust protection; however, even if it is removed, there will be no functional problem.

4. Never disassemble the lock unit.

It contains a heavy duty spring which is dangerous, and there is also a danger of reducing locking performance.

CL

MLG

CNA

CNG

MNB

CNS

CLS

CB

CV/MVG

CXW

CXS

CXT

MX

MXU

MXH

MXS

MXQ

MXF

MXW

MXP

MG

MGP

MGQ

MGG

MGC

MGF

MGZ

CY1

MY1