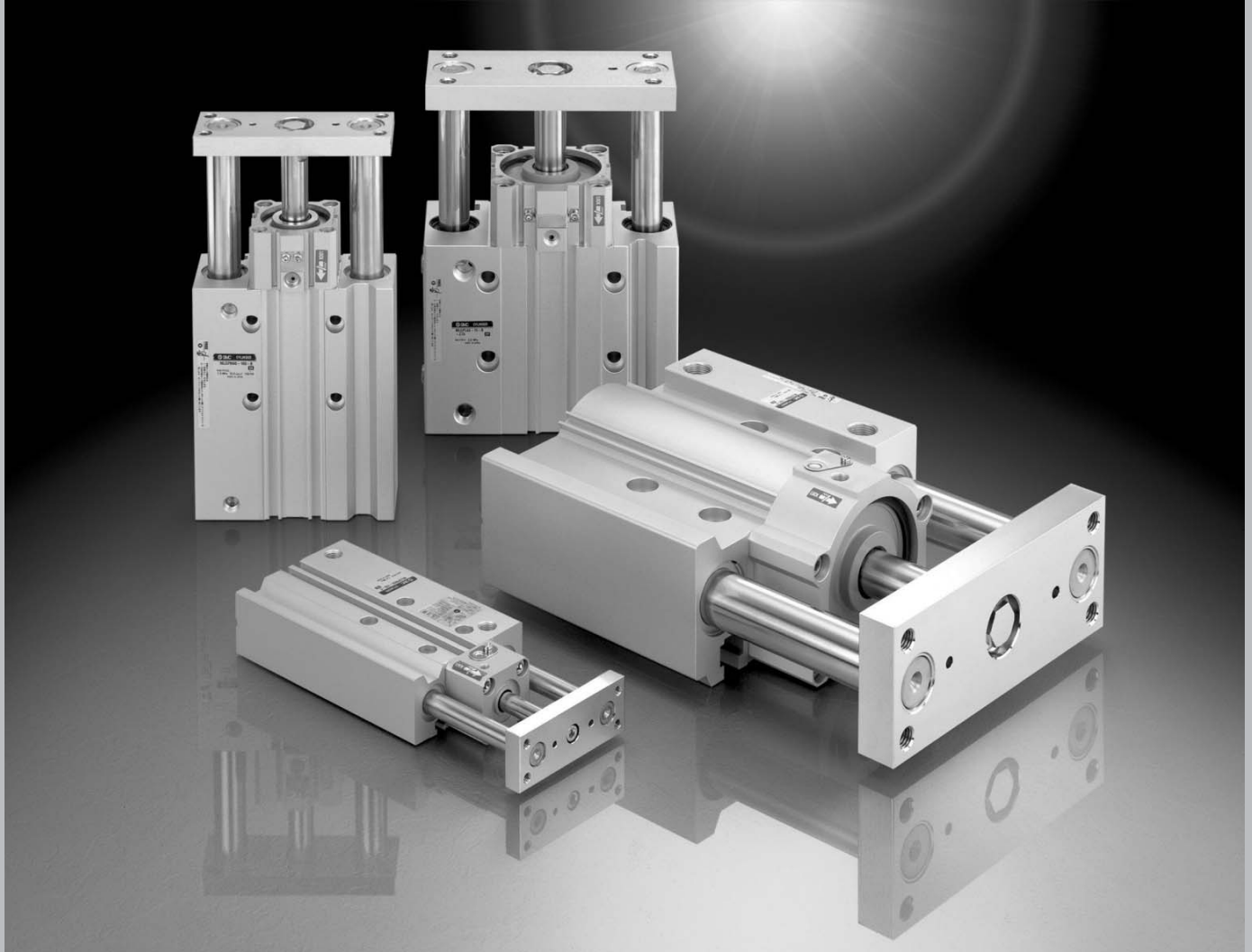


# Compact Guide Cylinder with Lock

## Series *MLGP*

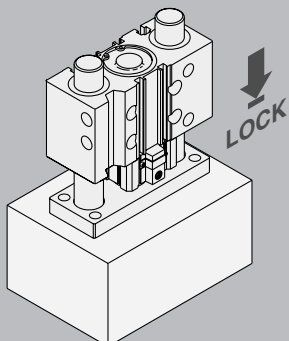
ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100



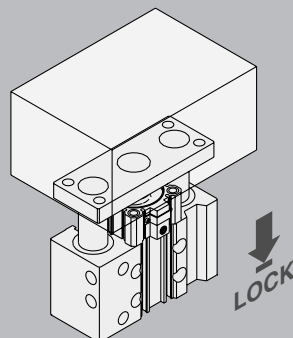
CL
CL1
MLGC
CNG
MNB
CNA
CNS
CLS
CLQ
<b>MLGP</b>
RLQ
MLU
ML1C
D-
-X
20-
Data

Drop prevention when the pressure of air source is decreased or the residual pressure is released.

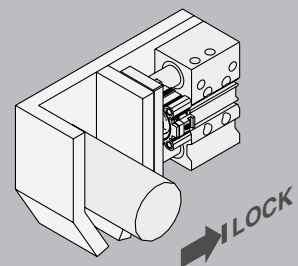
Drop prevention for press fitting jig



Drop prevention for lifter



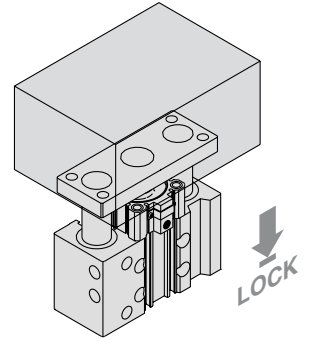
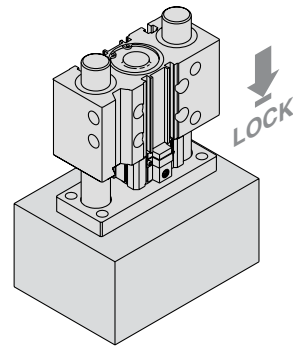
Holding a clamped condition



# Drop prevention is possible within the entire stroke at any position

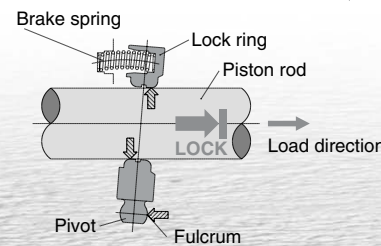
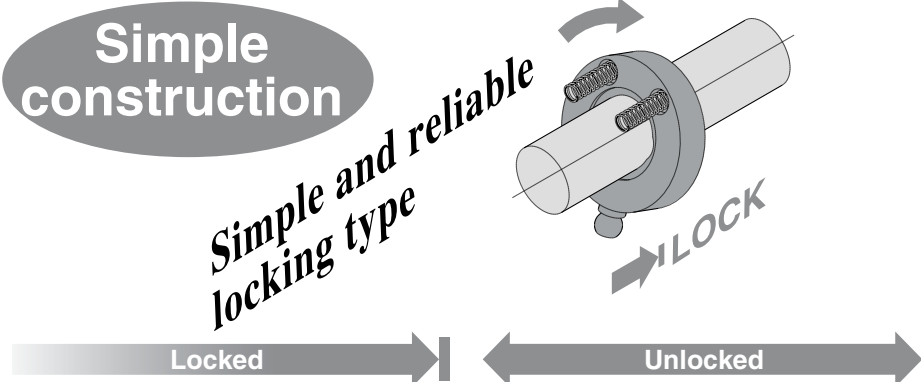
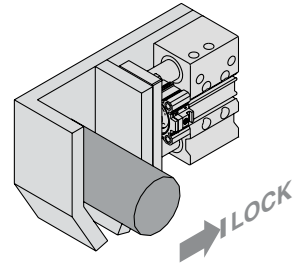
## Can be locked at any desired position

- Drop prevention for mid-stroke emergency stops
- Locking position can be changed in accordance with the external stopper position and thickness of clamped workpieces.



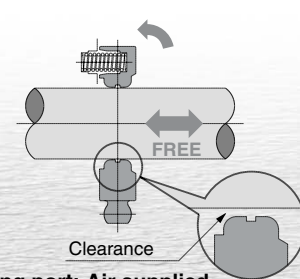
Holding a clamped condition

Compact Guide Cylinder with Lock  
**Series MLGP**  
 ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100



**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.

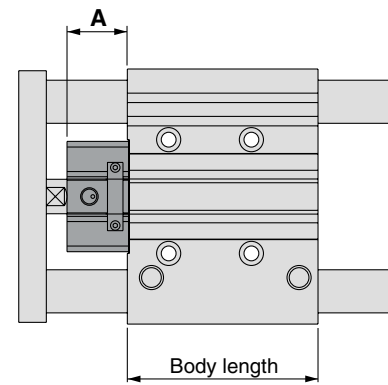


**Unlocking port: Air supplied**

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.

## Low profile with compact lock unit

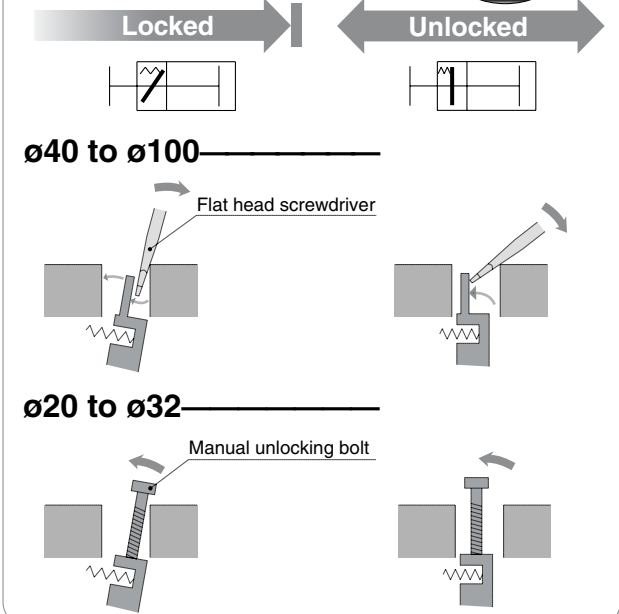
Lock unit length: A/26.5 mm to 51.5 mm



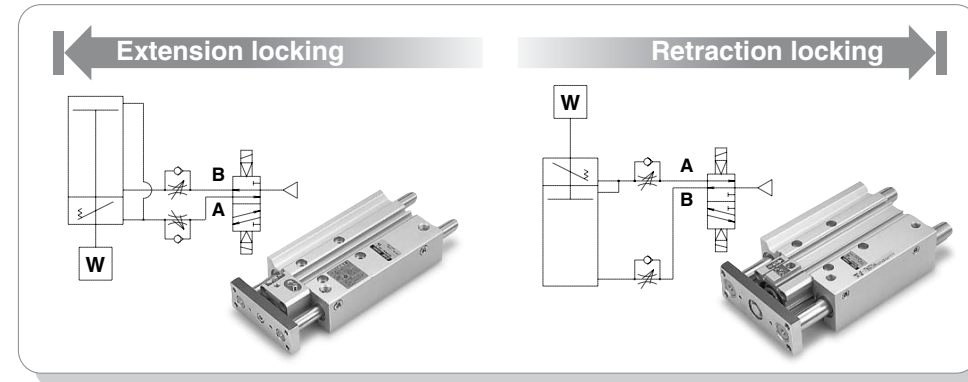
Bore size (mm)	A
20	26.5
25	30.5
32	31.5
40	34
50	35
63	38
80	43
100	51.5

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 bearing
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 mounting      Side mounting
- T-slot side mounting
- Bottom mounting

## Wide Variations from ø20 to ø100

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		●															
			40		●															
			50		●															
	Ball bushing bearing	Retraction Locking	50		●															
			63		●															
			80		●															
			100		●															
			100		●															

- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data





## Series MLGP

# Specific Product Precautions 1

Be sure to read before handling.

### Selection

#### Warning

**1. 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.

**2. Select the correct locking direction, as this cylinder does not generate holding force opposite to the locking direction.**

The extension locking 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).

**3. Even when locked, there may be stroke movement of about 1.0 mm in the locking direction due to external forces such as the weight of the workpiece.**

Even when locked, if air pressure drops, stroke movement of about 1.0 mm may be generated in the locking direction of the lock mechanism due to external forces such as the workpiece weight.

**4. When in the locked state, do not apply a load accompanied by an impact shock, strong vibration or turning force, etc.**

When used as a stopper, be careful that the workpiece does not collide with the cylinder in a locked condition.

**5. Operate so that load weight, cylinder speed and eccentric distance are within the limiting ranges in the specifications and model selection graphs.**

If the products are used beyond the limiting range, it may lead to a reduced service life or cause damage to the machinery. (Refer to pages 9-11-21 and 9-11-22 and "How to Select" for specifications.)

### Pneumatic Circuit

#### Warning

**1. Do not use 3 position valves.**

The lock may be released due to inflow of the unlocking pressure.

**2. Install speed controllers for meter-out control.**

If it is used in meter-in control, it may result in malfunction.

**3. Be careful of reverse exhaust pressure flow from a common exhaust type valve manifold.**

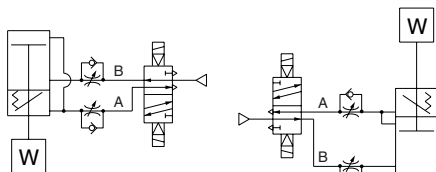
Since the lock may be released due to reverse exhaust pressure flow, use an individual exhaust type manifold or single type valve.

**4. 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.

**5. 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.



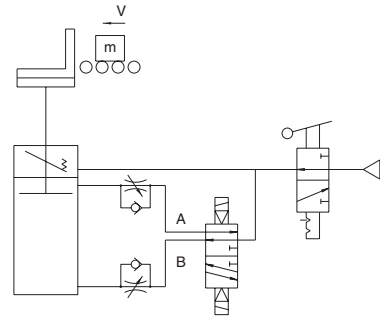
F: Extension locking

B: Retraction locking

### Pneumatic Circuit

**6. When used as a stopper, be careful that the workpiece does not collide with the cylinder in a locked condition.**

If the workpiece were bumped into the cylinder in the locked state, it could be unlocked by shock or the locking mechanism and the piston rod could be damaged, that could shorten its service life substantially or result in breakage.



MLGP□-□-B: When used as stopper

Series **MLGP**

# Specific Product Precautions 2

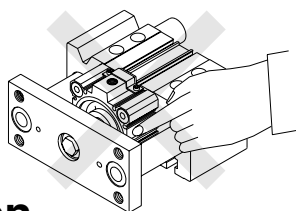
Be sure to read before handling.

## Mounting

### Warning

1. Take precautions to prevent your fingers or hands from getting caught between the plate and the cylinder body or the lock body.

Be very careful to prevent your hands or fingers from getting caught in the gap between the cylinder body and the lock body when air is applied.



### Caution

1. Be sure to connect the load to the plate section with the lock in an unlocked condition.

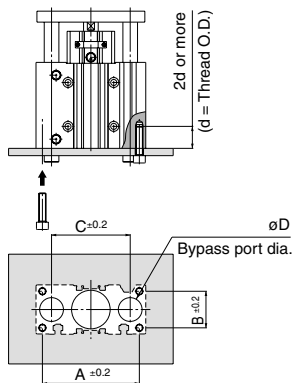
If this is done in the locked state, it may cause damage to the lock mechanism.

Sizes  $\phi 20$  through  $\phi 32$  have a built-in holding function for the unlocked state, 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 0.2 MPa or more.

2. When performing mounting adjustment, supply air pressure only to the unlocking port.

### 3. Cylinder bottom

Since the guide rods project from the bottom of the cylinder at the end of the retraction stroke, provide bypass 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 cap screw
				MLGPM	MLGPL	
20	72	24	54	14	12	M5 x 0.8
25	82	30	64	18	15	M6 x 1.0
32	98	34	78	22	18	M8 x 1.25
40	106	40	86	22	18	M8 x 1.25
50	130	46	110	27	22	M10 x 1.5
63	142	58	124	27	22	M10 x 1.5
80	180	54	156	33	28	M12 x 1.75
100	210	62	188	39	33	M14 x 2.0

## 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 thread

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

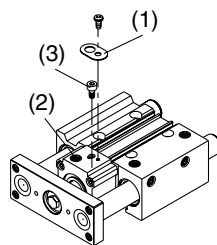
### Warning

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 size  $\phi 20$  through  $\phi 32$  are shipped in an unlocked condition maintained by the unlocking bolt, be sure to remove the unlocking bolt following the steps below. If the cylinder is used without removing the unlocking bolt, the lock mechanism will not function. Since a holding function for the unlocked state is not available for sizes  $\phi 40$  through  $\phi 100$ , 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 0.2 MPa or more to unlocking port (2) shown in the drawing on the left.
- 3) Remove the unlocking bolt (3) with a hexagon wrench (width across flats 2.5).

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

-X

20-

Data



# Specific Product Precautions 3

Be sure to read before handling.

## Manually Unlocking

### ⚠ Warning

1. Do not perform unlocking while 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.

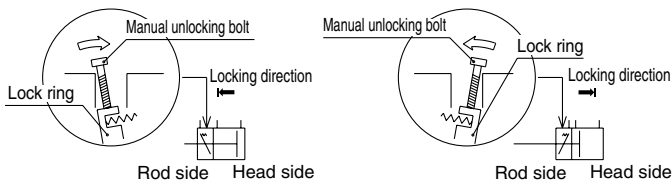
- 1) Release the lock after restoring the air pressure in the B line of the pneumatic circuit to operating pressure, and then reduce the pressure gradually.
- 2) In the case air pressure cannot be used, release the lock after preventing cylinder movement with a lifting device such as a jack.

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.

### Manually unlocking

For  $\varnothing 20$  to  $\varnothing 32$



#### Extension locking

- 1) Remove the dust cover.
- 2) Screw a manual unlocking bolt (a bolt of M3 x 0.5 x 15 $\ell$  or more commercially available) into the lock ring threads as shown above, and lightly push the bolt in the direction of the arrow (head side) to unlock.

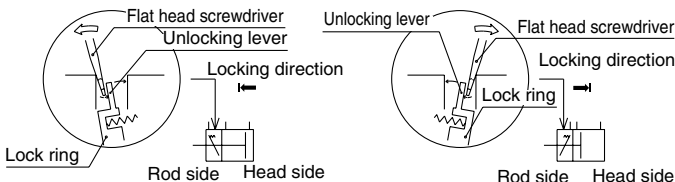
#### Retraction locking

- 1) Remove the dust cover.
- 2) Screw a manual unlocking bolt (a bolt of M3 x 0.5 x 15 $\ell$  or more commercially available) into the lock ring threads as shown above, and lightly push the bolt in the direction of the arrow (rod side) to unlock.

### For normal operation, remove the manual unlocking bolt.

It will cause lock malfunction.

For  $\varnothing 40$  to  $\varnothing 100$



#### Extension locking

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

#### Retraction locking

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

## Holding the Unlocked State ( $\varnothing 20$ through $\varnothing 32$ )

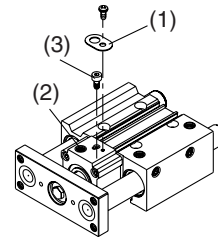
### ⚠ Caution

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

- 1) Remove the dust cover (1).
- 2) Supply air pressure of 0.2 MPa or more to the unlocking port (2) shown below and unlock.
- 3) Screw the attached hexagon socket head cap bolt (3) ( $\varnothing 20$ ,  $\varnothing 25$ : M3 x 0.5 x 5 $\ell$ ,  $\varnothing 32$ : M3 x 0.5 x 10 $\ell$ ), into the lock ring to 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 does not function. Remove the unlocking bolt according to the steps prescribed in the section of "Preparing for Operation".



## Maintenance

### ⚠ Caution

1. In order to maintain good performance, operate with clean un lubricated 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.  $\varnothing 20$  to  $\varnothing 32$ , a  $\varnothing 12$  silver seal is labeled on the one surface of the lock body (on the surface opposite from the unlocking port). The seal is meant for dust prevention, but even if it is peeled off, there would be no problem functionally.

4. Never disassemble the lock unit.

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

# Series MLGP

## Model Selection

### Precautions on Model Selection

#### ⚠ Caution

1. In order that the originally selected maximum speed shall be not exceeded, be certain to use a speed controller to adjust the total movement distance of the load so that movement takes place in no less than the applicable movement 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 following formula (1) below.

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

$V_1$ : Average load speed [mm/s]

$$V_1 = st/t$$

st: Load transfer distance [mm]

t: Load transfer time [s]

#### Step (2) Find the bore size.

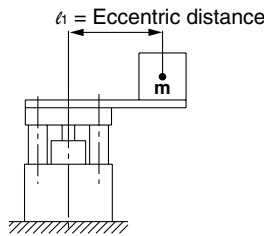
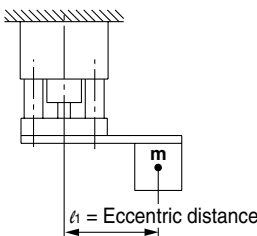
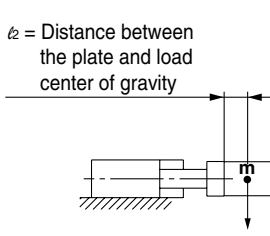
##### 1. For vertical mounting

- 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 " $\ell_1$ ".
- 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 " $\ell_2$ " 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.

### Selection Conditions/Table (1)

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

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

-X

20-

Data

# Series MLGP

## Selection Example 1 (Vertical upward mounting)

### Selection conditions

Mounting: Vertical upward facing  
 Bearing type: Ball bushing  
 Stroke: 50 mm  
 Load transfer time  $t$ : 0.5 s  
 Load weight  $m$ : 15 kg  
 Eccentric distance  $l_1$ : 50 mm  
 Operating pressure  $P$ : 0.5 MPa

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

Based on the stroke (load transfer distance) of 50 mm and load transfer time of 0.5 s, the maximum load speed is approximately equal to  $50/0.5 \times 1.4$ , which is approximately 140 mm/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 50 mm stroke, graph (7) is selected from the group. Find the intersecting point of the load weight of 15 kg and the eccentric distance of 50 mm. Since the operating pressure is 0.5 MPa, the bore size of $\phi 80$ mm, model MLGPL80-50-B, is selected.

## Selection Example 2 (Horizontal mounting)

### Selection conditions

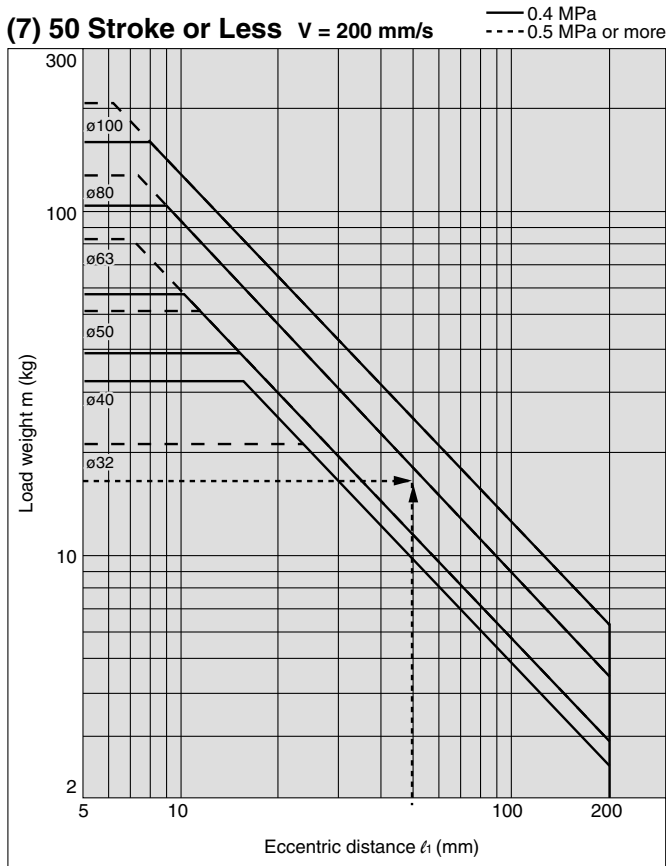
Mounting: Horizontal  
 Bearing type: Slide bearing  
 Stroke: 100 mm  
 Load transfer time  $t$ : 0.5 s  
 Load weight  $m$ : 6 kg  
 Eccentric distance between the plate and load center of gravity  $l_2$ : 50 mm  
 Operating pressure  $P$ : 0.4 MPa

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

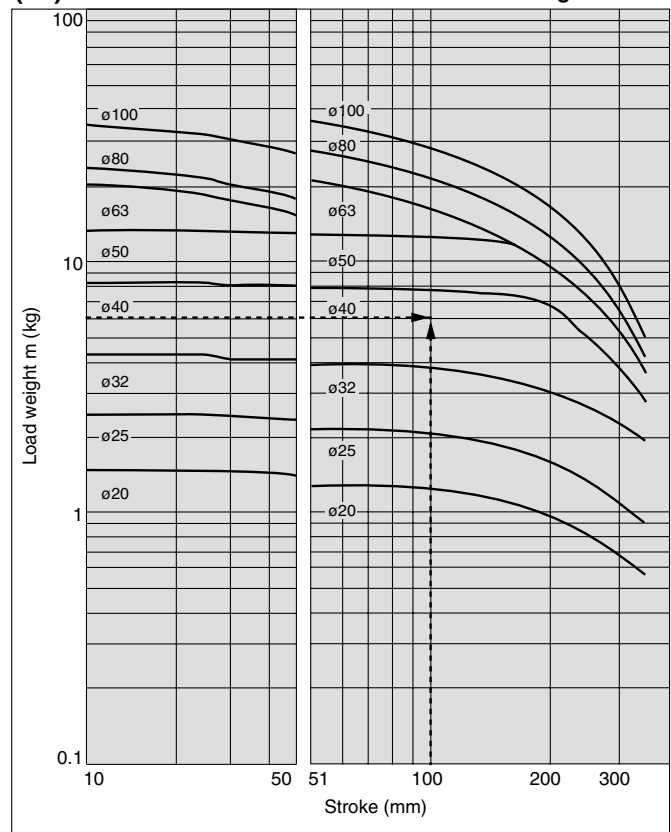
Based on the stroke (load transfer distance) of 100 mm and load transfer time of 0.5 s, the maximum load speed is approximately equal to  $100/0.5 \times 1.4$ , which is approximately 280 mm/s.

### 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 50 mm between the plate and load center of gravity, graph (27) is selected from the two graphs. Find the intersecting point of the load weight of 6 kg and the 100 mm stroke. The bore size of $\phi 40$ mm, model MLGPM40-50-□, is selected.

(7) 50 Stroke or Less  $v = 200$  mm/s



(27)  $l_2 = 50$  mm  $v = 400$  mm/s Horizontal Mounting



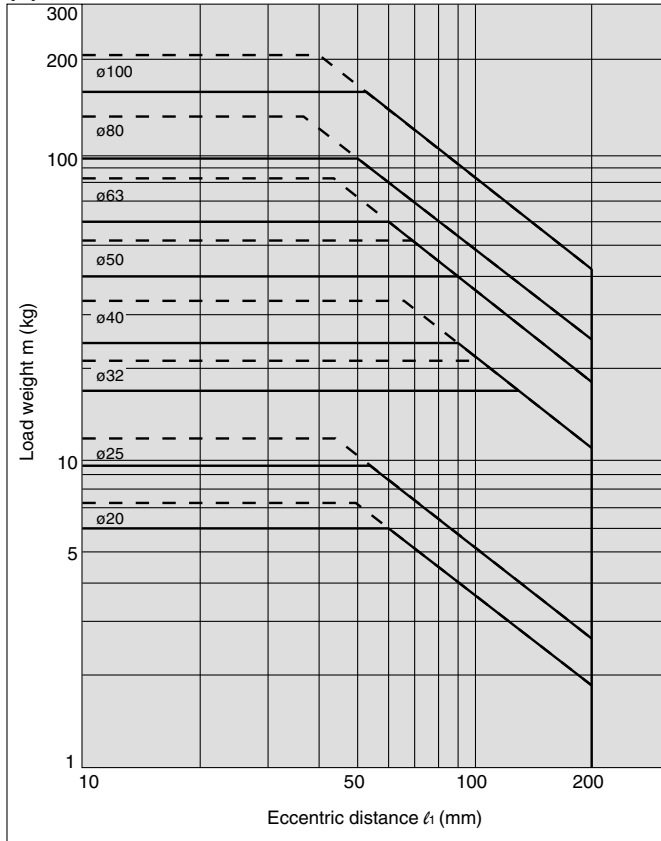
# Compact Guide Cylinder with Lock Series **MLGP**

## Vertical Upward Mounting (Slide bearing)

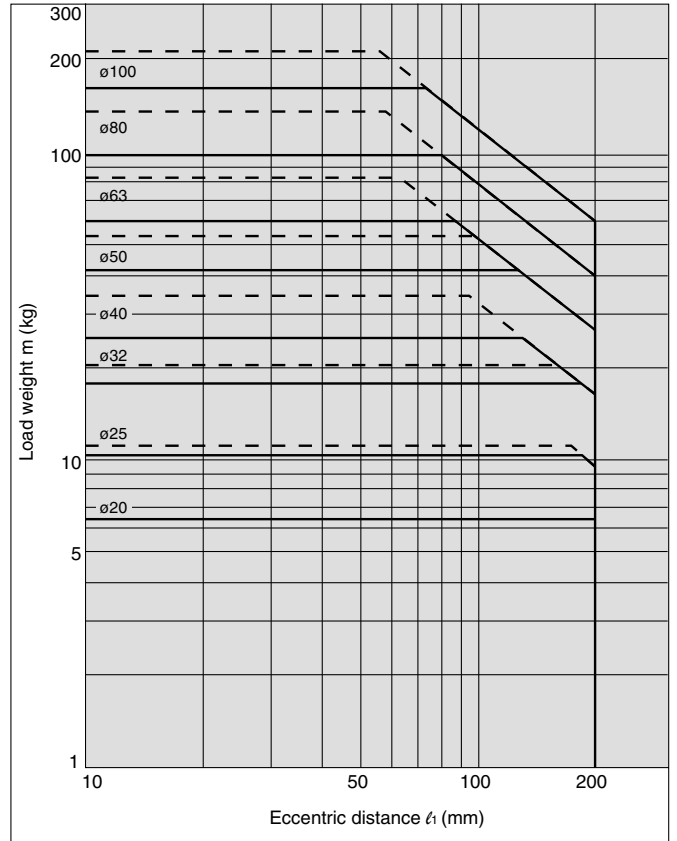
— Operating pressure 0.4 MPa  
 - - - - - Operating pressure 0.5 MPa or more

### MLGPM20 to 100

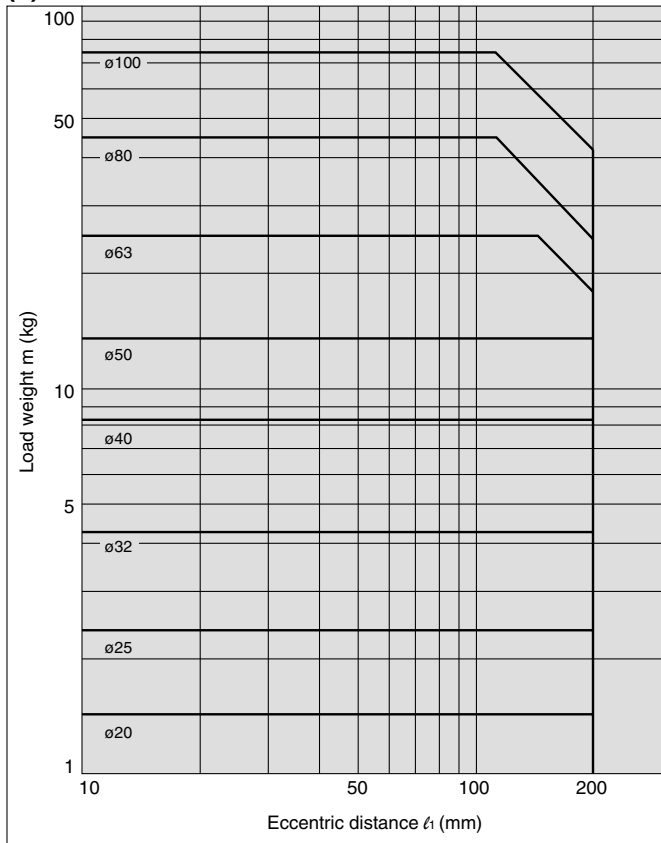
**(1) 50 Stroke or Less  $v = 200$  mm/s**



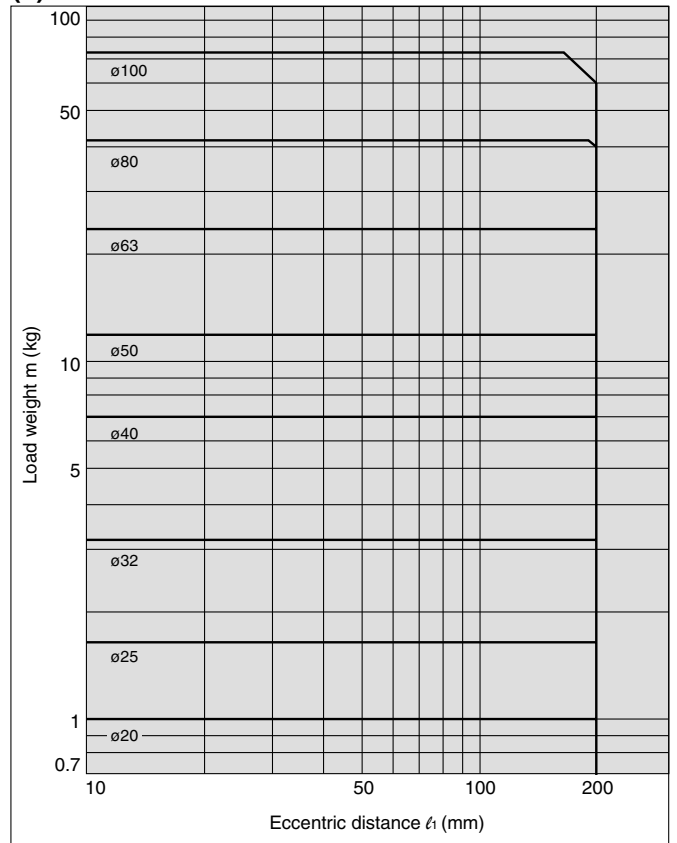
**(2) Over 50 Stroke  $v = 200$  mm/s**



**(3) 50 Stroke or Less  $v = 400$  mm/s**



**(4) Over 50 Stroke  $v = 400$  mm/s**



- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data



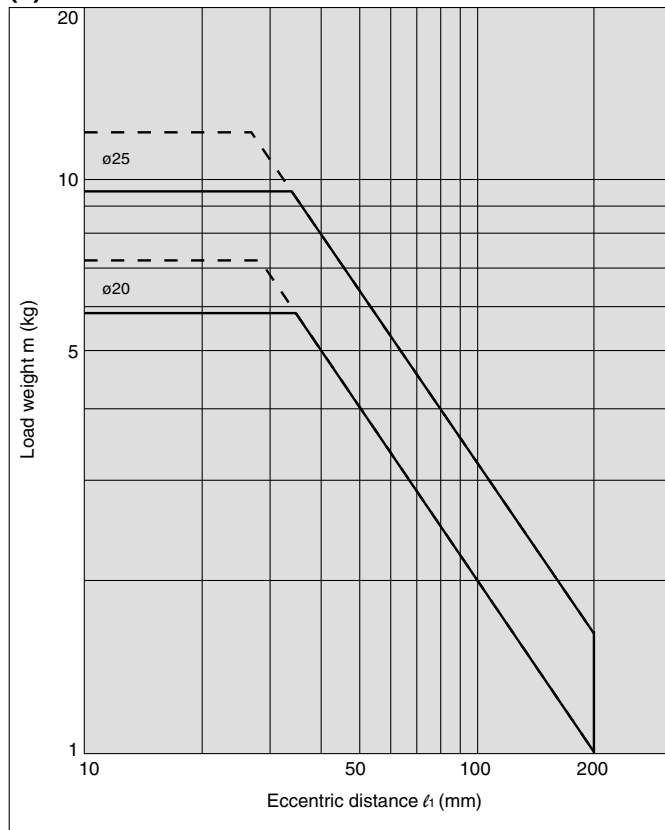
# Series MLGP

## Vertical Upward Mounting (Ball bushing bearing)

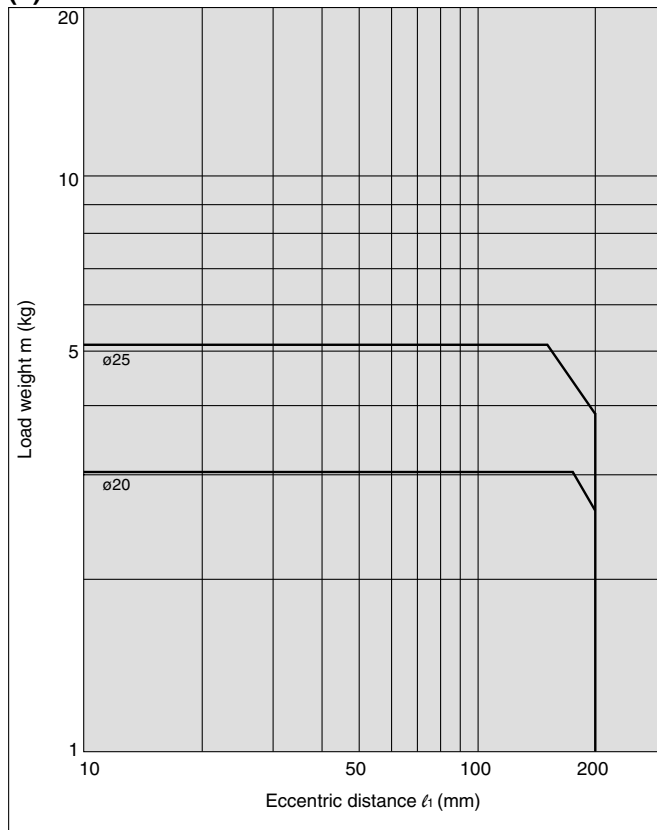
— Operating pressure 0.4 MPa  
 - - - - Operating pressure 0.5 MPa or more

### MLGPL20, 25

(5) 30 Stroke or Less  $v = 200 \text{ mm/s}$

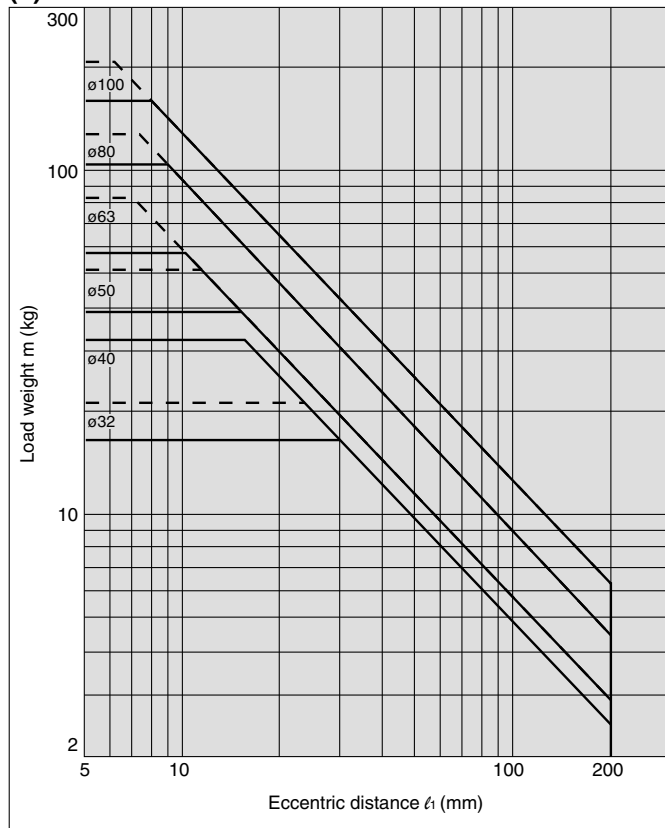


(6) Over 30 stroke  $v = 200 \text{ mm/s}$

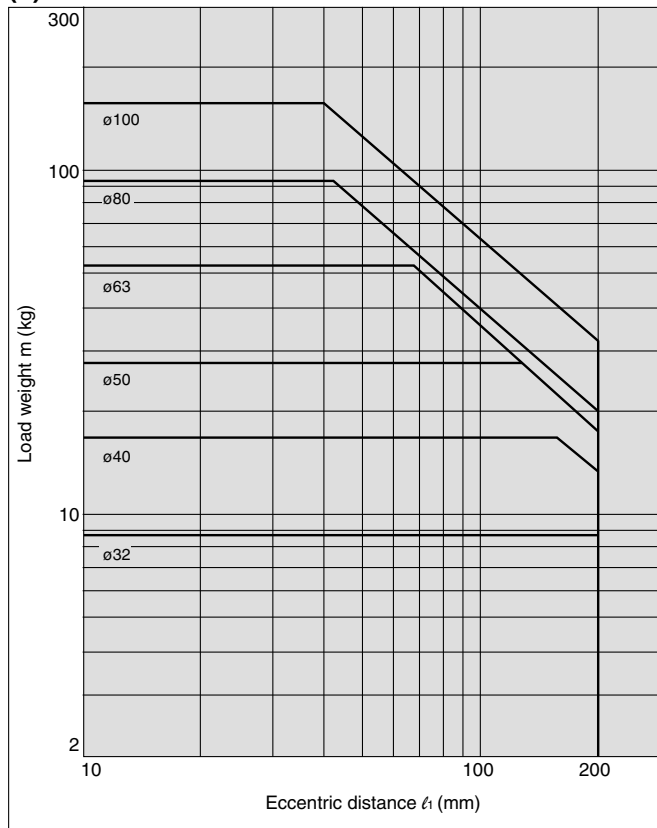


### MLGPL32 to 100

(7) 50 Stroke or Less  $v = 200 \text{ mm/s}$



(8) Over 50 Stroke  $v = 200 \text{ mm/s}$



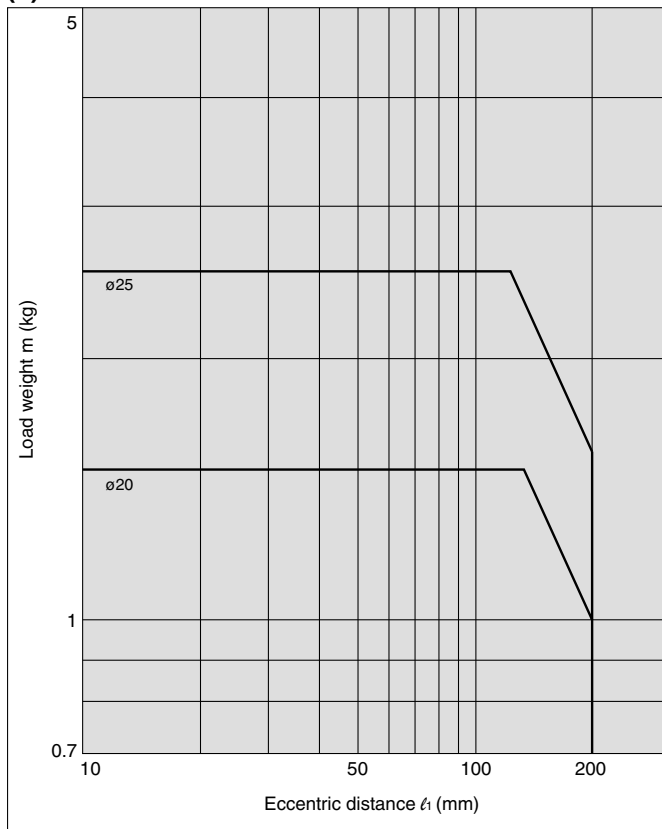
# Compact Guide Cylinder with Lock Series **MLGP**

## Vertical Upward Mounting (Ball bushing bearing)

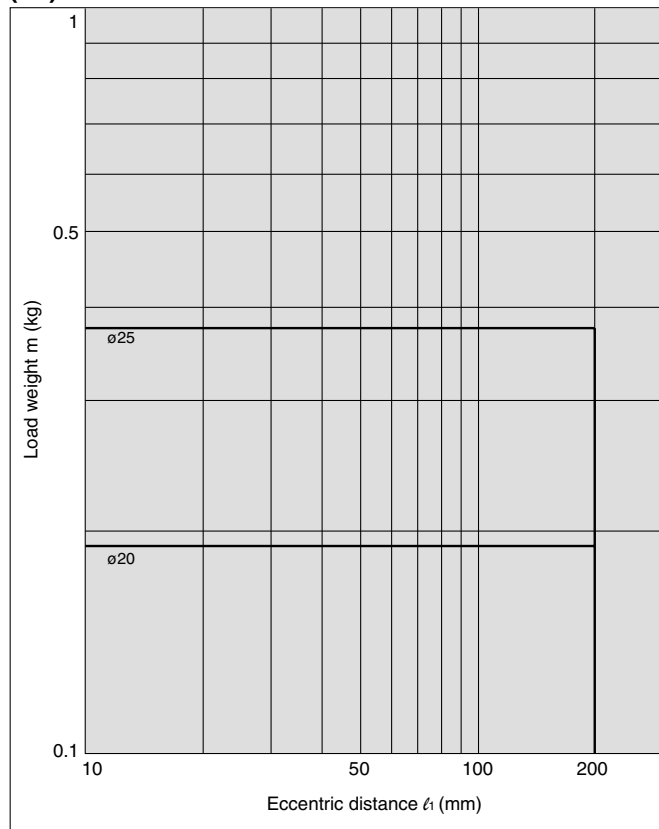
Operating pressure: 0.4 MPa

### MLGPL20, 25

(9) 30 Stroke or Less  $v = 400 \text{ mm/s}$

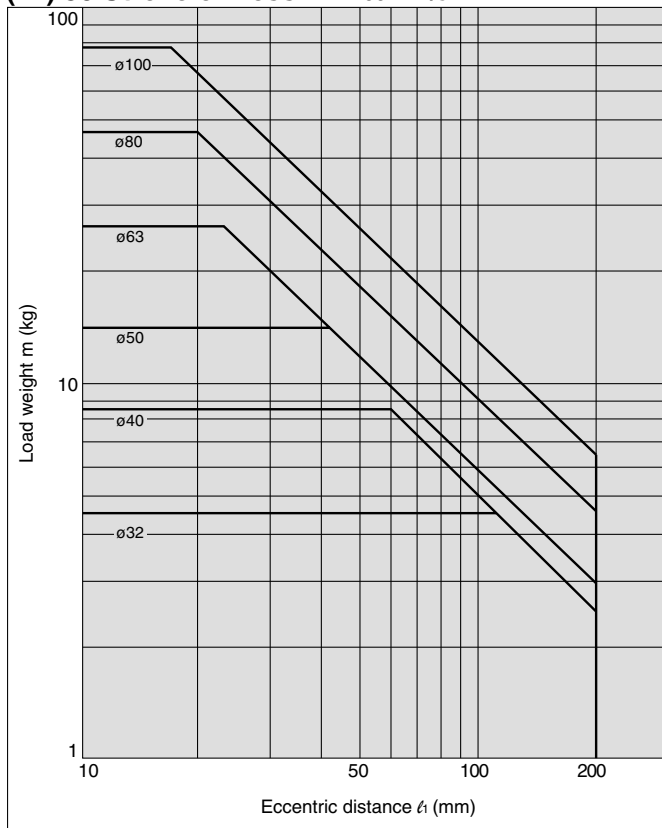


(10) Over 30 Stroke  $v = 400 \text{ mm/s}$

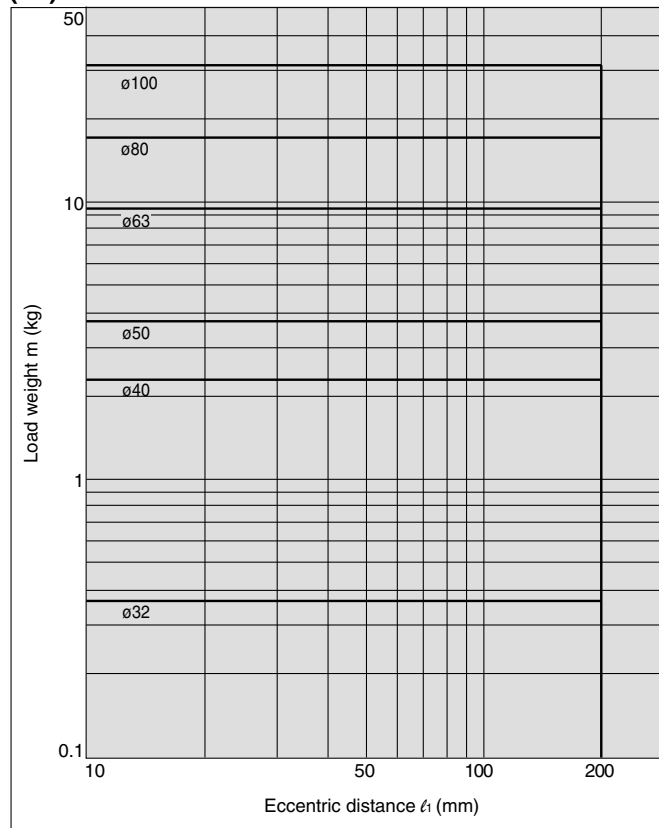


### MLGPL32 to 100

(11) 50 Stroke or Less  $v = 400 \text{ mm/s}$



(12) Over 50 Stroke  $v = 400 \text{ mm/s}$



- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data

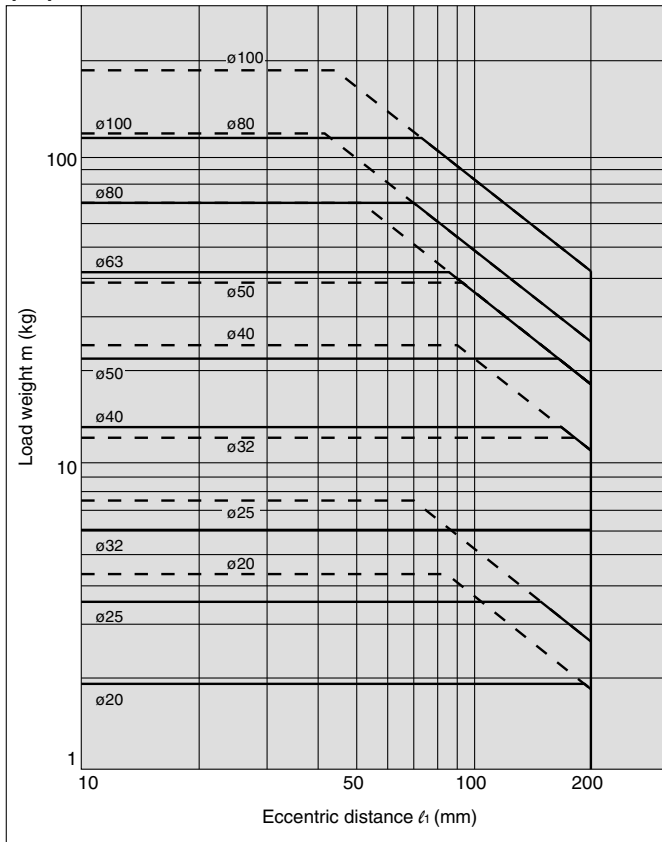
# Series MLGP

## Vertical Downward Mounting (Slide bearing)

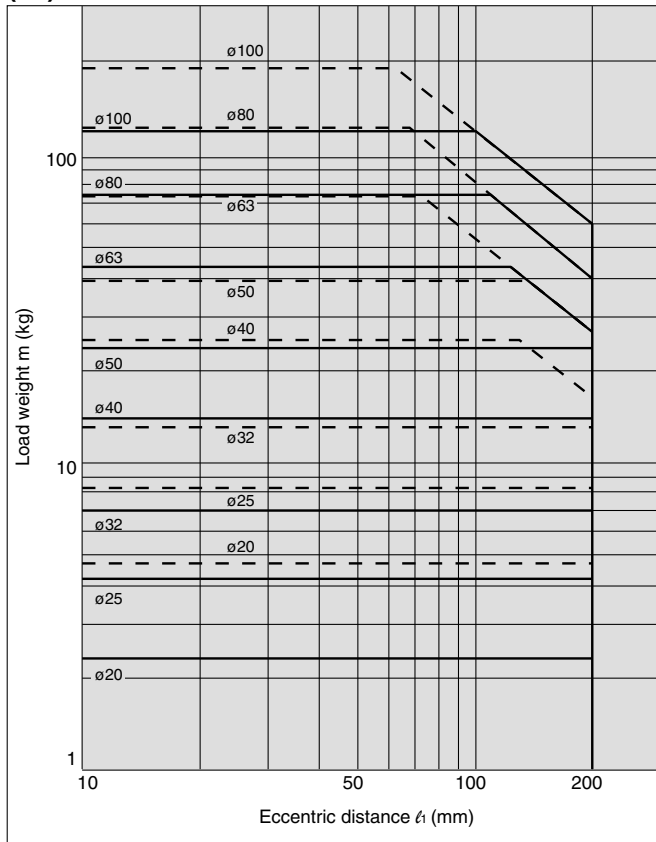
—— Operating pressure 0.4 MPa  
 - - - - Operating pressure 0.5 MPa or more

### MLGPM20 to 100

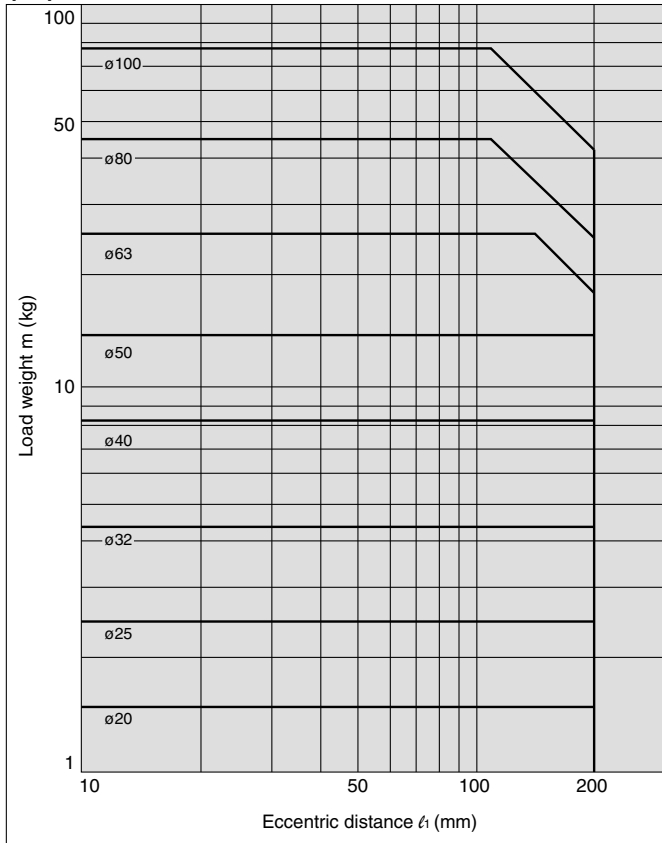
(13) 50 Stroke or Less  $v = 200 \text{ mm/s}$



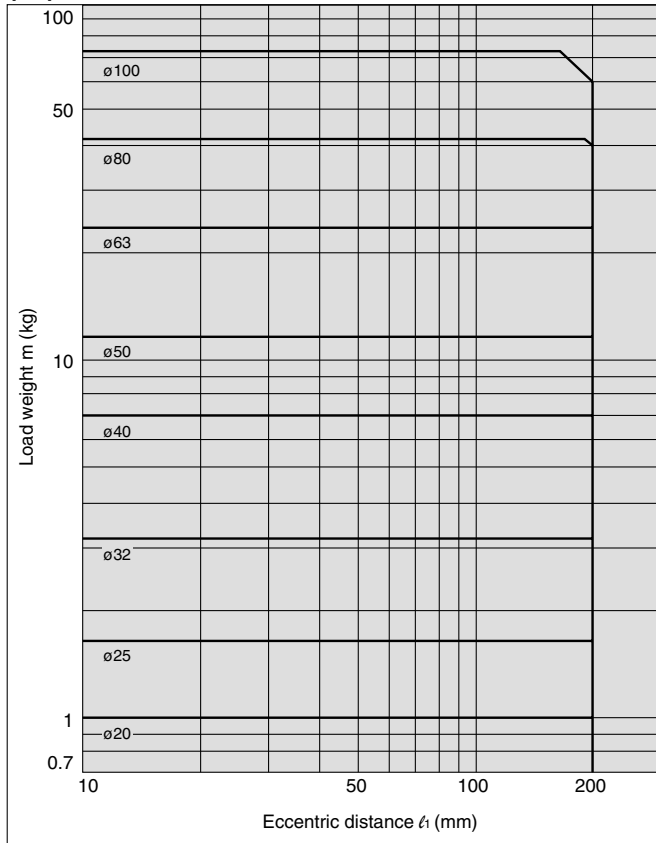
(14) Over 50 Stroke  $v = 200 \text{ mm/s}$



(15) 50 Stroke or Less  $v = 400 \text{ mm/s}$



(16) Over 50 Stroke  $v = 400 \text{ mm/s}$



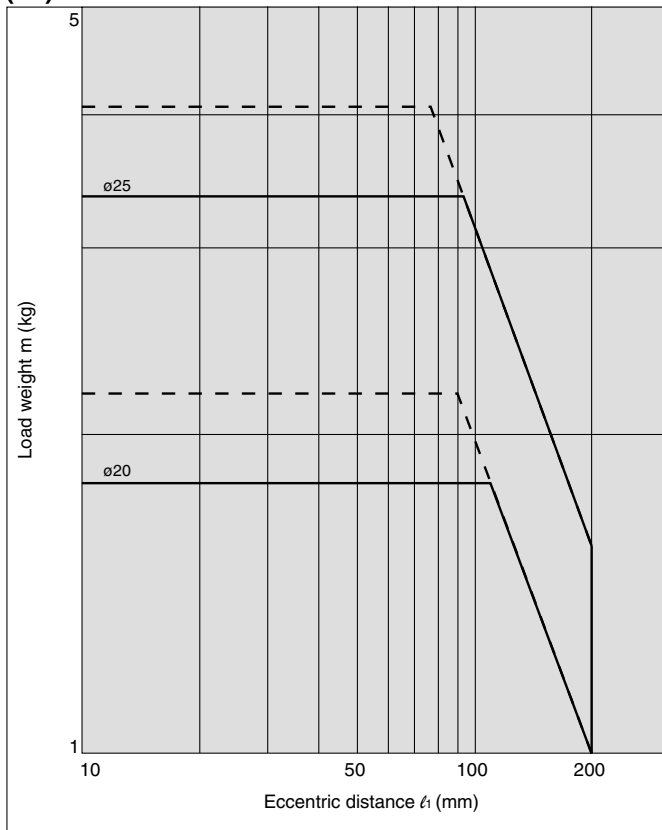
# Compact Guide Cylinder with Lock **Series MLGP**

## Vertical Downward Mounting (Ball bushing bearing)

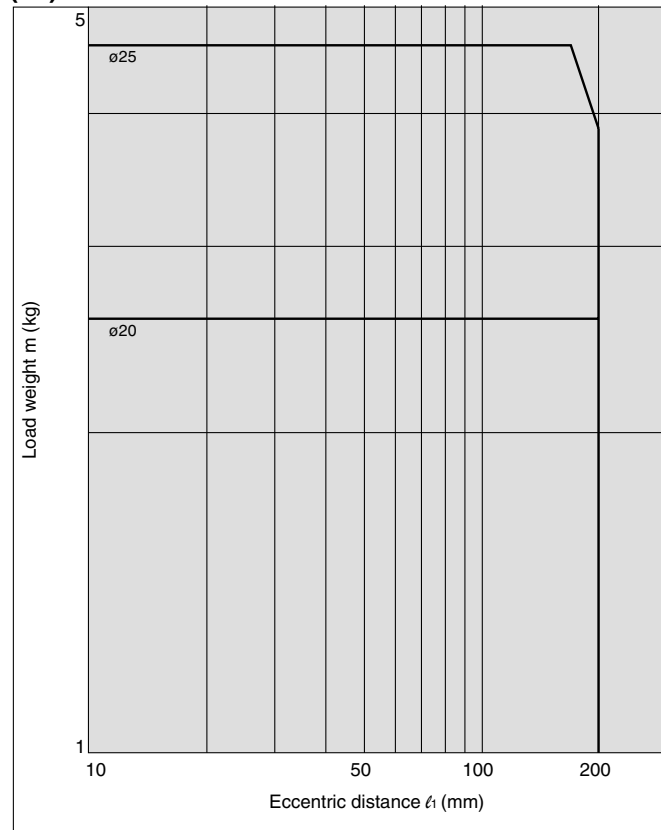
— Operating pressure 0.4 MPa  
 - - - - - Operating pressure 0.5 MPa or more

### MLGPL20, 25

(17) 30 Stroke or Less  $v = 200 \text{ mm/s}$

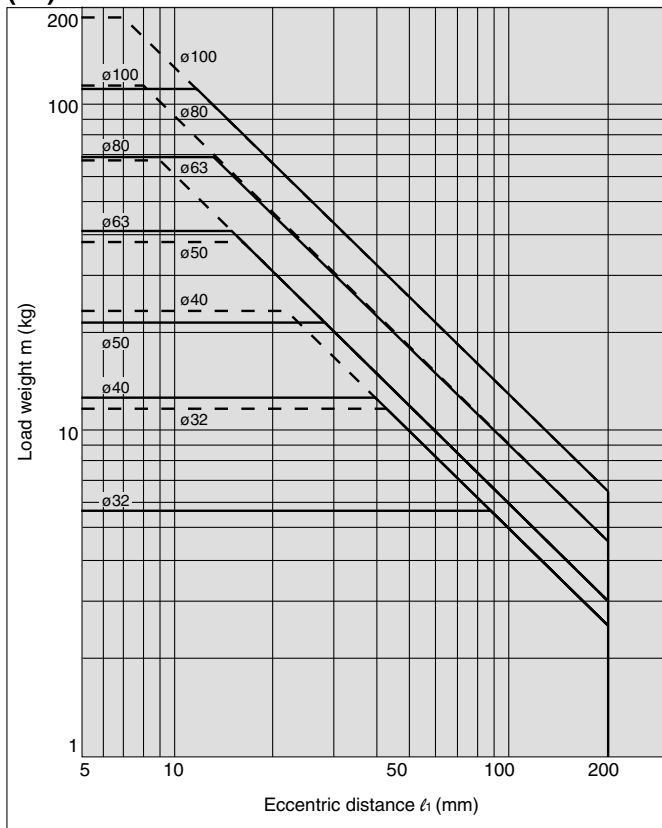


(18) Over 30 Stroke  $v = 200 \text{ mm/s}$

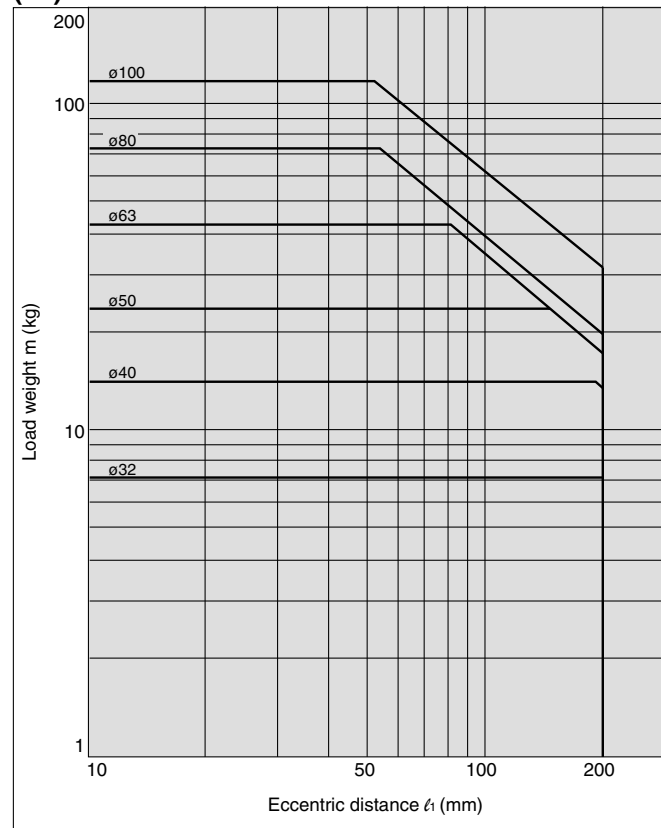


### MLGPL32 to 100

(19) 50 Stroke or Less  $v = 200 \text{ mm/s}$



(20) Over 50 Stroke  $v = 200 \text{ mm/s}$



- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data

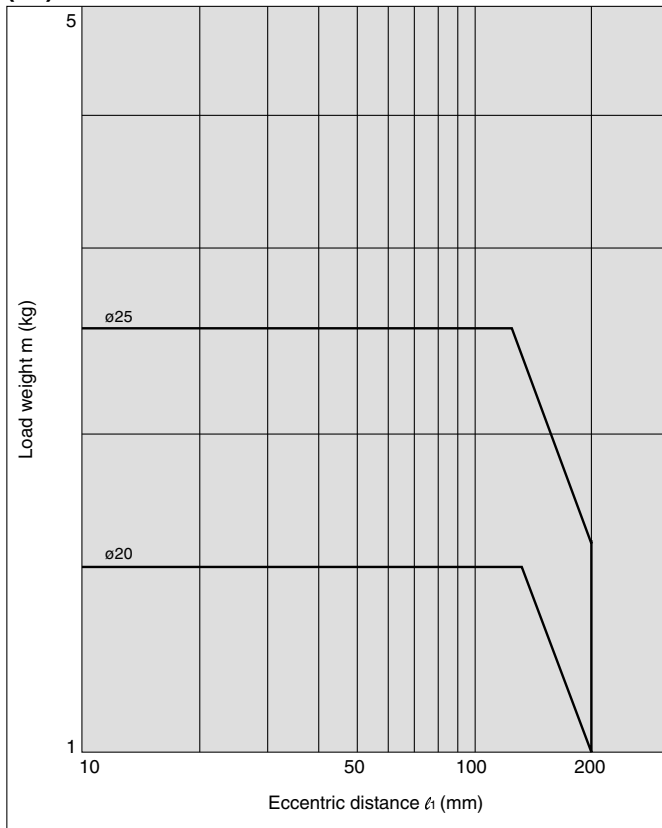
# Series MLGP

## Vertical Downward Mounting (Ball bushing bearing)

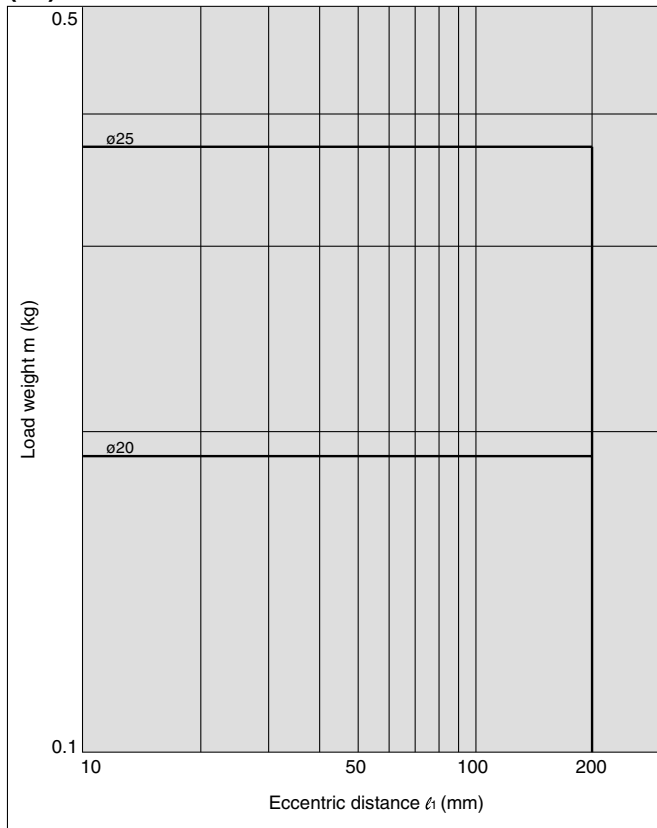
Operating pressure: 0.4 MPa

### MLGPL20/25

(21) 30 Stroke or Less v = 400 mm/s

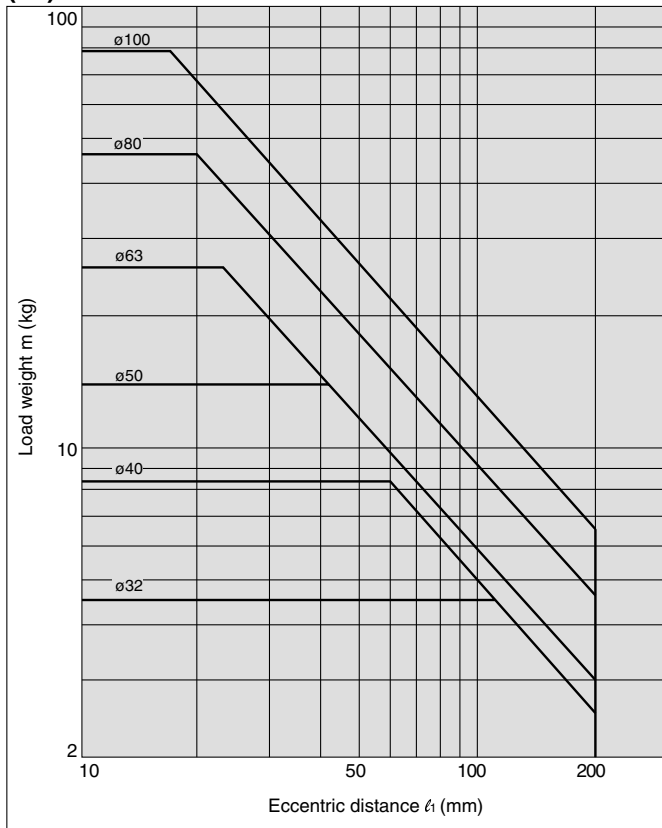


(22) Over 30 Stroke v = 400 mm/s

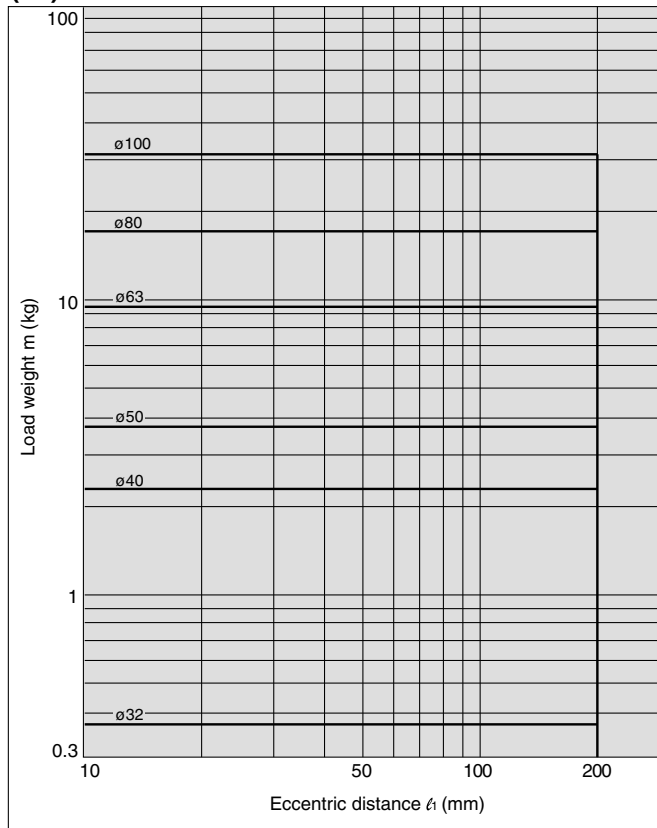


### MLGPL32 to 100

(23) 50 Stroke or Less v = 400 mm/s



(24) Over 50 Stroke v = 400 mm/s

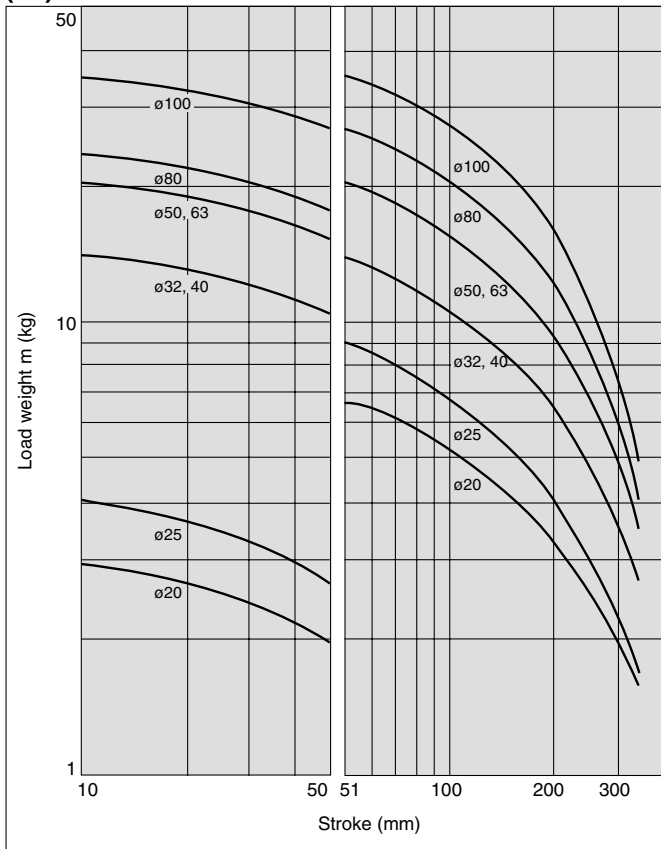


# Compact Guide Cylinder with Lock Series **MLGP**

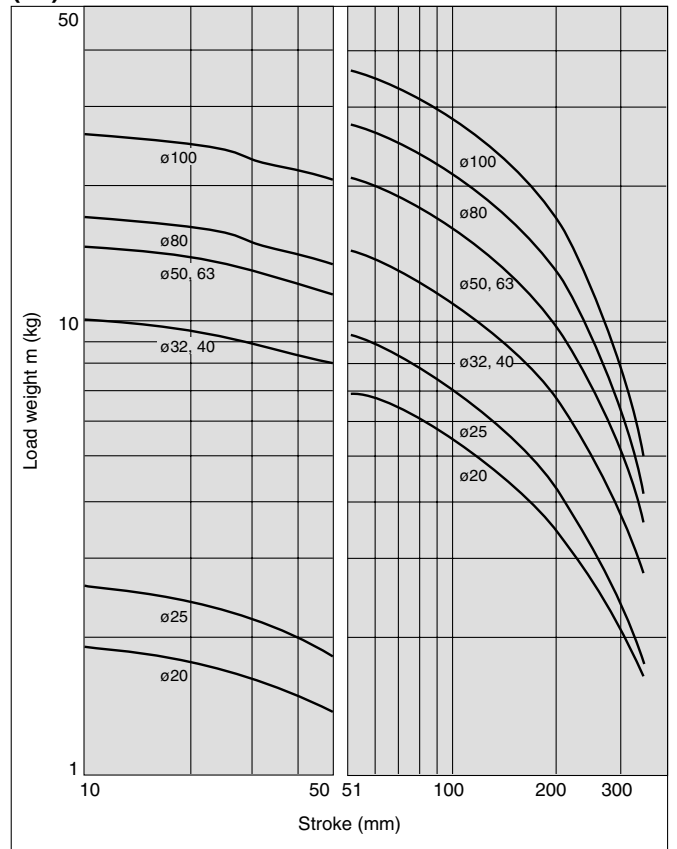
## Horizontal Mounting (Slide bearing)

### MLGPM20 to 100

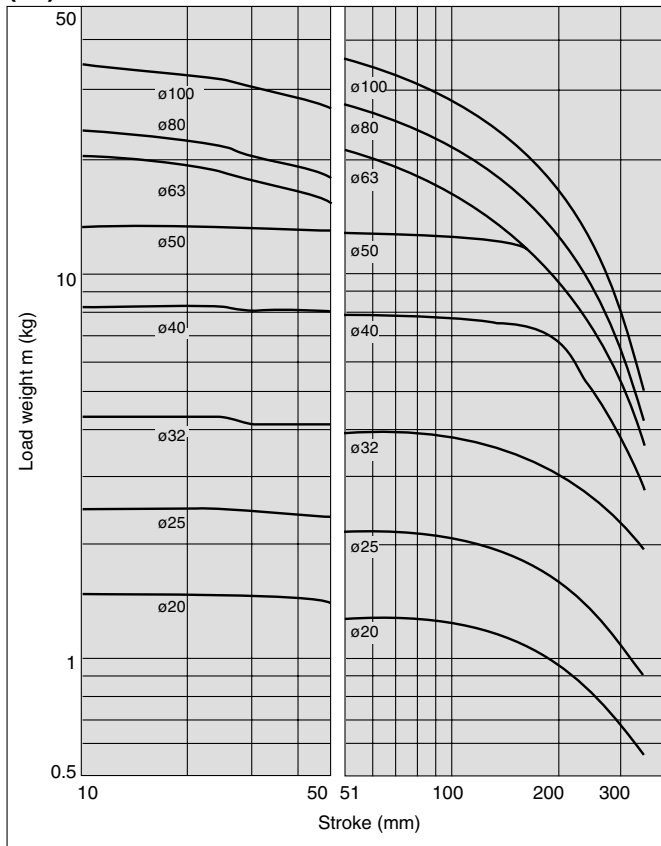
(25)  $l_2 = 50 \text{ mm}$   $v = 200 \text{ mm/s}$



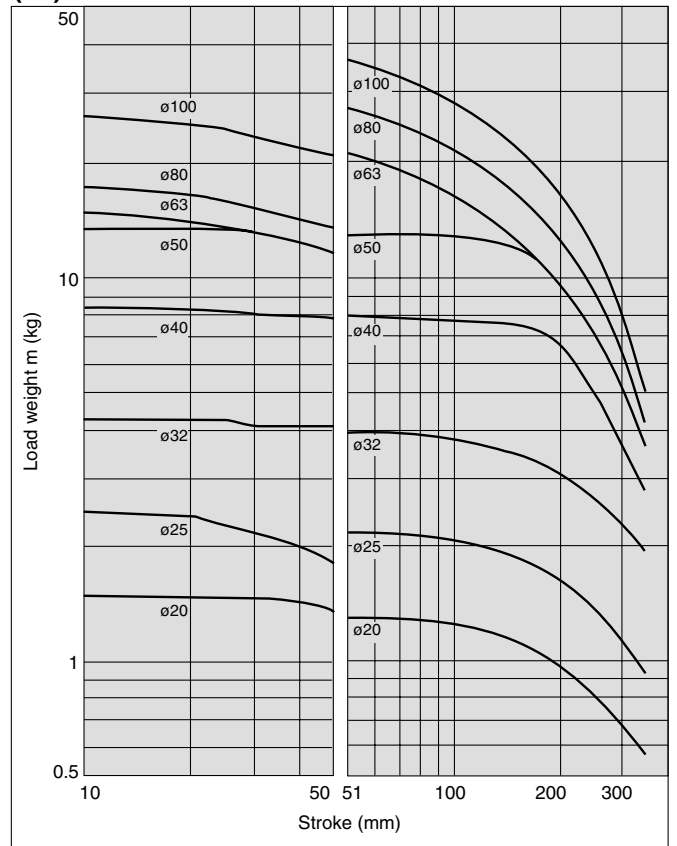
(26)  $l_2 = 100 \text{ mm}$   $v = 200 \text{ mm/s}$



(27)  $l_2 = 50 \text{ mm}$   $v = 400 \text{ mm/s}$



(28)  $l_2 = 100 \text{ mm}$   $v = 400 \text{ mm/s}$



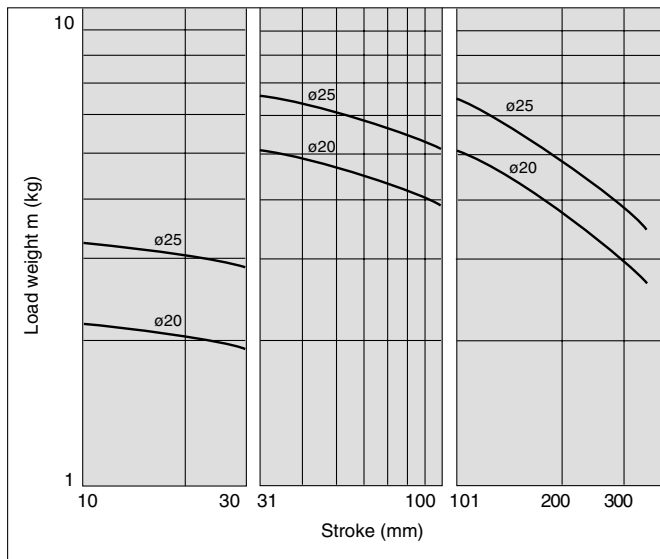
- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data

# Series MLGP

## Horizontal Mounting (Ball bushing bearing)

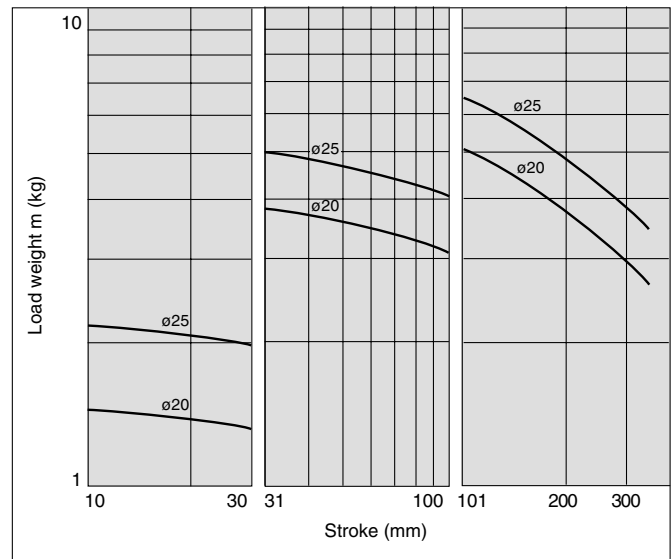
(29)  $l_2 = 50 \text{ mm}$   $V = 200 \text{ mm/s}$

### MLGPL20/25

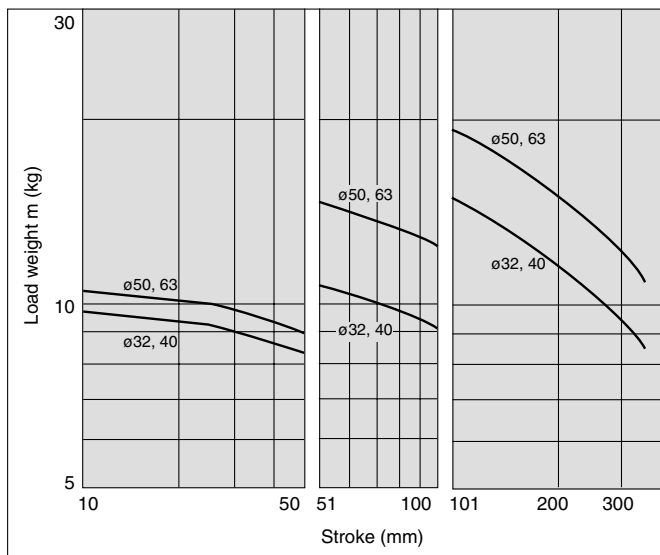


(30)  $l_2 = 100 \text{ mm}$   $V = 200 \text{ mm/s}$

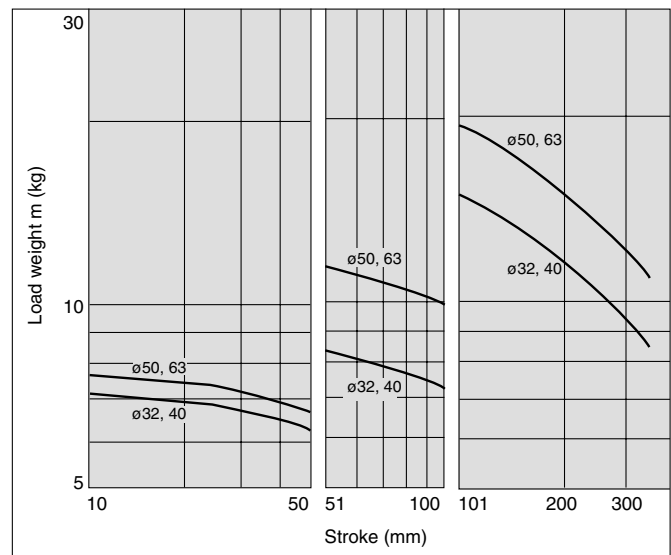
### MLGPL20/25



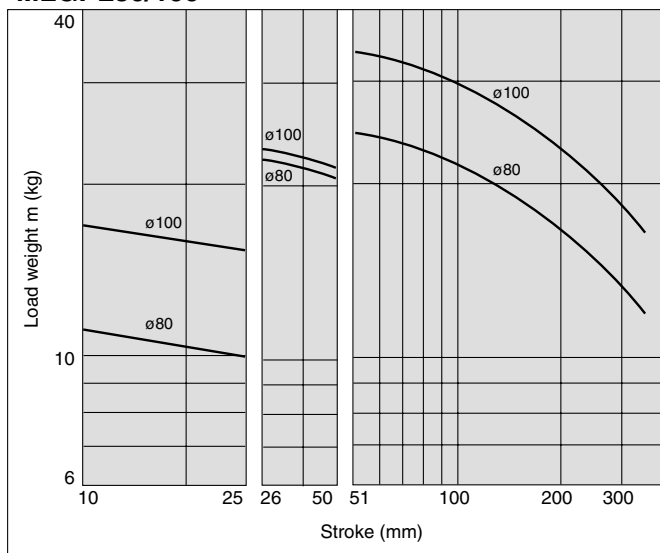
### MLGPL32 to 63



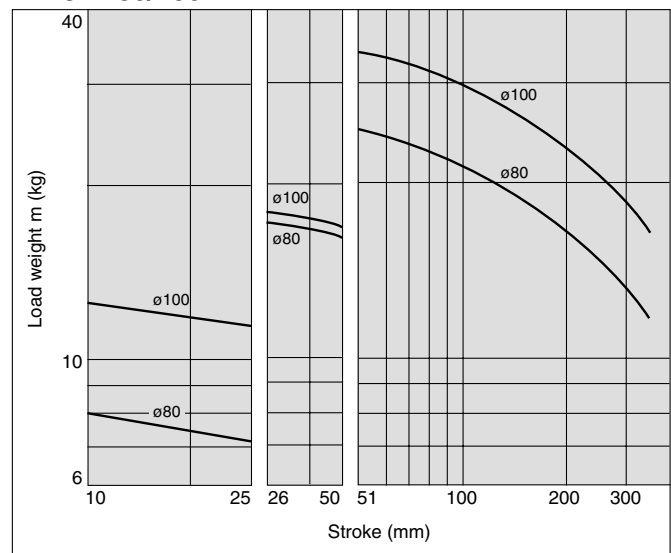
### MLGPL32 to 63



### MLGPL80/100



### MLGPL80/100

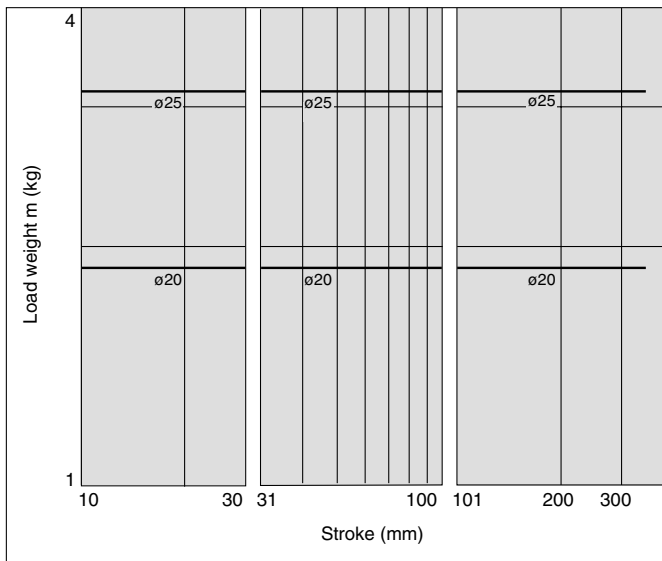


# Compact Guide Cylinder with Lock Series **MLGP**

## Horizontal Mounting (Ball bushing bearing)

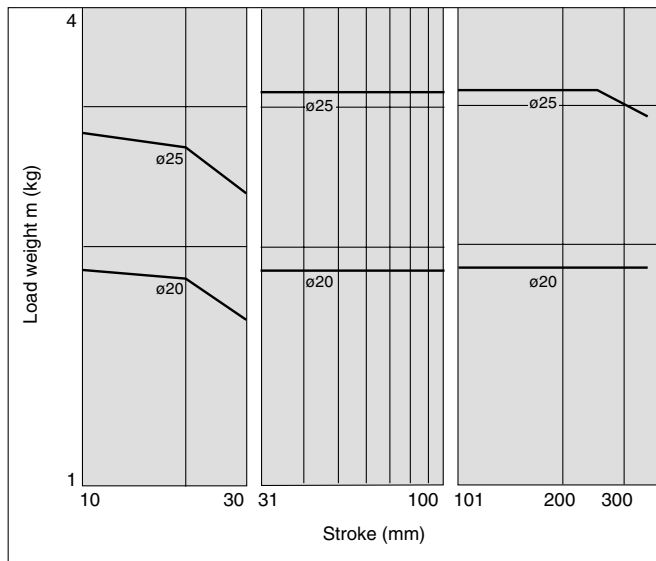
**(31)  $l_2 = 50 \text{ mm}$   $V = 400 \text{ mm/s}$**

**MLGPL20/25**

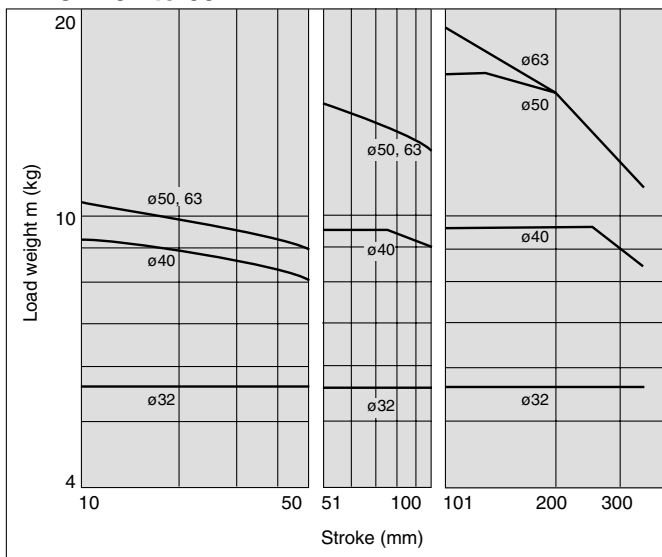


**(32)  $l_2 = 100 \text{ mm}$   $V = 400 \text{ mm/s}$**

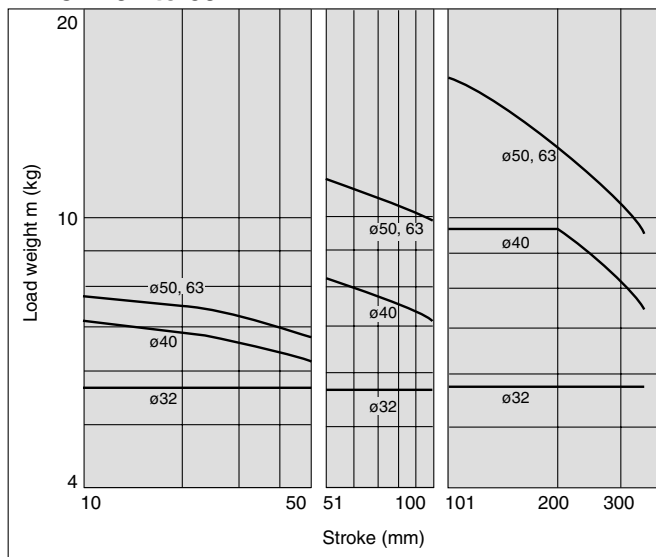
**MLGPL20/25**



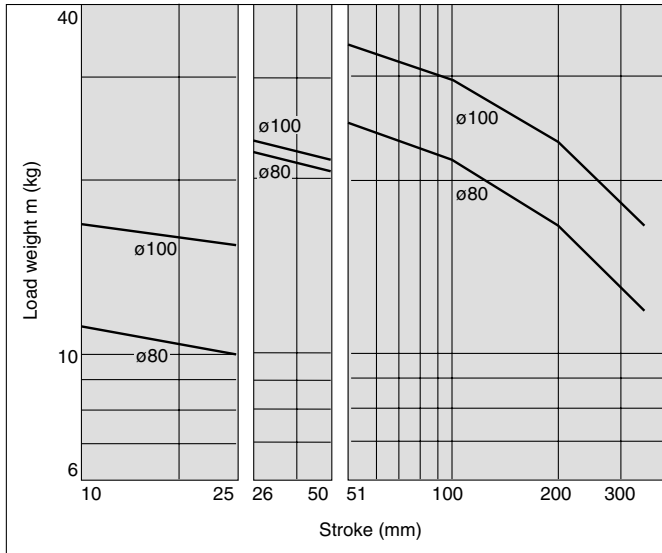
**MLGPL32 to 63**



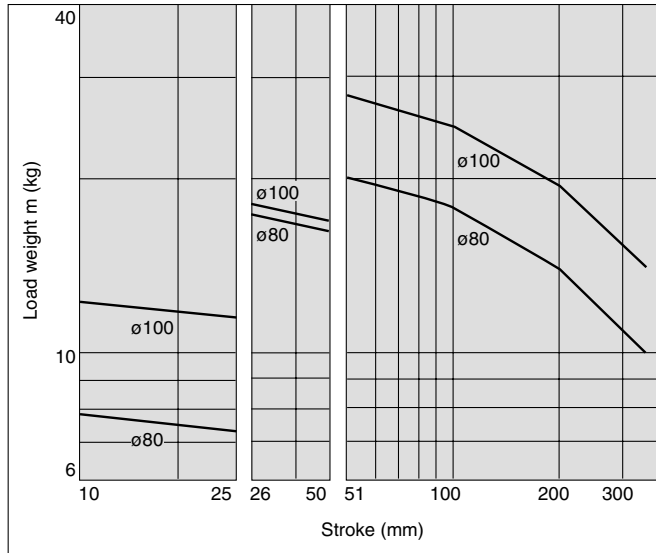
**MLGPL32 to 63**



**MLGPL80/100**



**MLGPL80/100**



- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data



# Series MLGP

## Operating Range when Used as Stopper

### ⚠ Warning

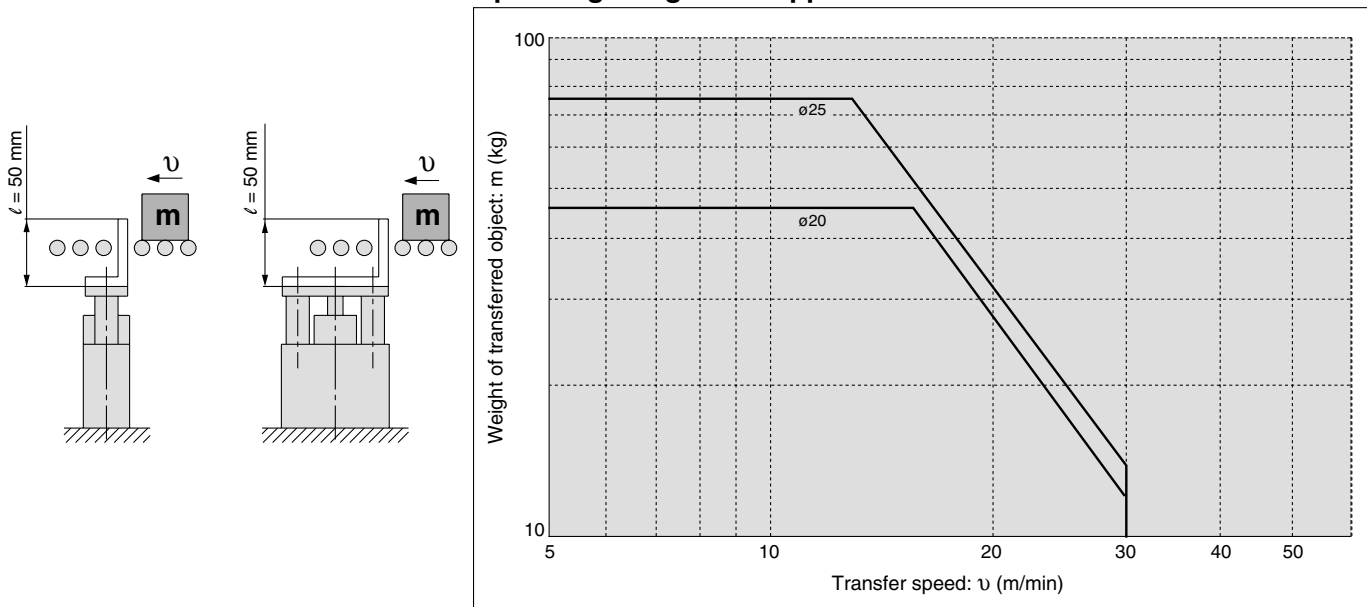
- When using the cylinder as a stopper, do not allow workpieces to collide in the locked condition. If workpieces collide in the locked condition, the lock may disengage due to the shock, or the lock mechanism and piston rod may be damaged, causing a dramatic decrease of the product life and/ or further damage.
- Model MLGPL (Ball bushing bearing) cannot be used as a stopper.  
When MLGPL (Ball bushing bearing) is used as a stopper, the impact will cause damage to the bearing unit and guide rod.
- Adopt the pneumatic circuit on page 9-11-4 when it's used as a stopper, so that workpiece does not collide in a lock state.

### ⚠ Caution

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

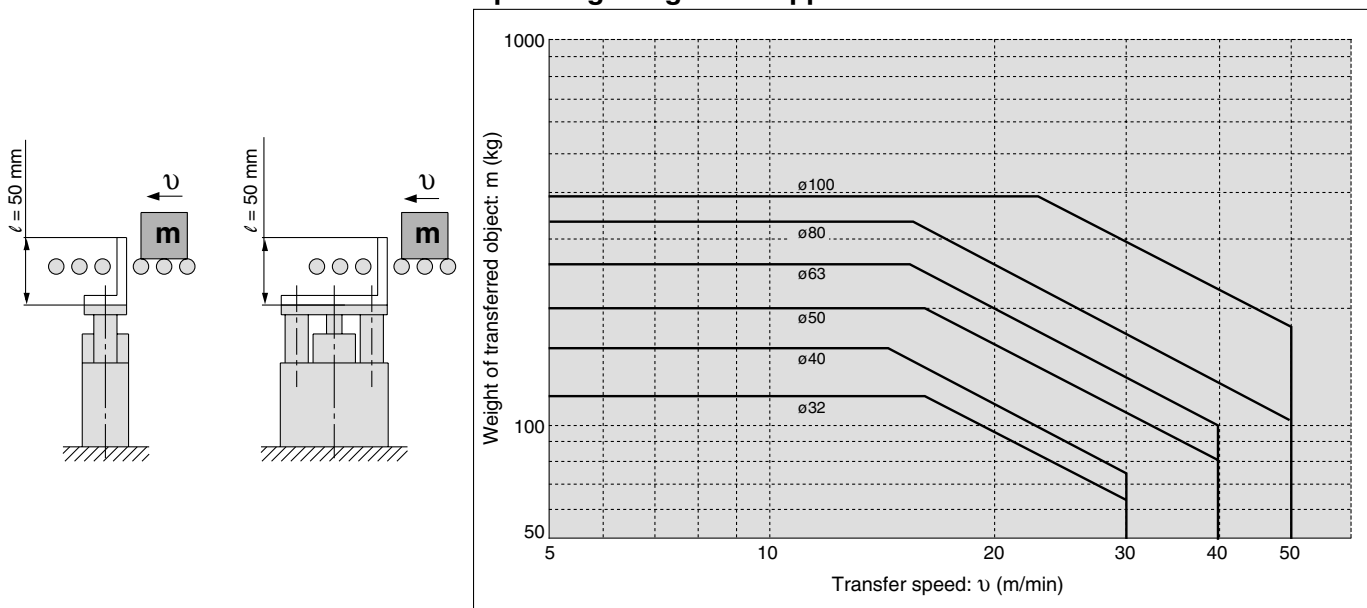
### Bore size $\phi 20$ , $\phi 25$ /MLGPM20/25 (Slide bearing)

#### Operating Range as Stopper for MLGPM20/25



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

#### Operating Range as Stopper for MLGPM32 to 100



# Compact Guide Cylinder with Lock **Series MLGP**

CL
----

CL1
-----

MLGC
------

CNG
-----

MNB
-----

CNA
-----

CNS
-----

CLS
-----

CLQ
-----

<b>MLGP</b>
-------------

RLQ
-----

MLU
-----

ML1C
------

D-
----

-X
----

20-
-----

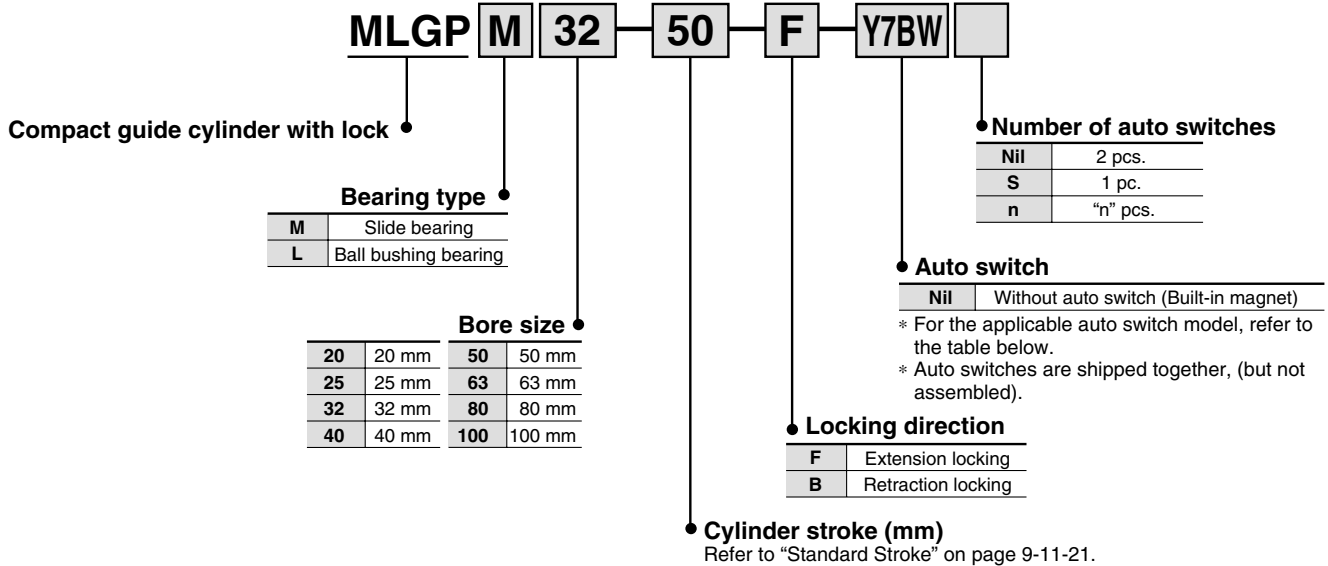
Data
------

# Compact Guide Cylinder with Lock

## Series *MLGP*

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

### How to Order



### Applicable Auto Switch/Refer to page 9-15-1 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-wire connector	Applicable load													
					DC	AC		Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)															
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	—	Z76	●	●	—	—	IC circuit	—												
				2-wire	24 V	12 V	100 V	—	Z73	●	●	●	—	—	Relay, PLC												
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V 12 V	—	Y69A	Y59A	●	●	○	○	IC circuit	Relay, PLC												
				3-wire (PNP)				Y7PV	Y7P	●	●	○	○														
				2-wire				Y69B	Y59B	●	●	○	○														
	Diagnostic indication (2-color indication)			Grommet				Yes	3-wire (NPN)	24 V	5 V 12 V	—	Y7NWV	Y7NW		●	●	○	○	IC circuit							
									3-wire (PNP)				Y7PWV	Y7PW		●	●	○	○								
									Water resistant (2-color indication)				Grommet	Yes		2-wire	12 V	—	—	—	Y7BWV	Y7BW	●	●	○	○	—
																				Magnetic field resistant (2-color indication)	—	P5DW	—	●	●	○	

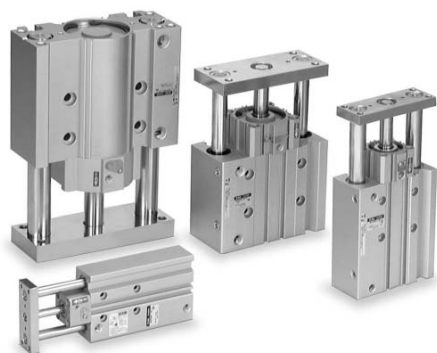
\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y69A  
3 m ..... L (Example) Y69AL  
5 m ..... Z (Example) Y69AZ

\* Solid state switches marked with "○" are produced upon receipt of order.  
\* P5DW type can only be mounted only on bore sizes ø40 through ø100.

- Since there are applicable auto switches other than the listed above, refer to page 9-11-29.
- For details about auto switches with pre-wire connector, refer to page 9-15-68.

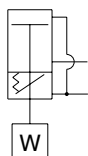
# Compact Guide Cylinder with Lock Series **MLGP**

## Cylinder Specifications

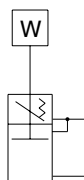


### JIS Symbol

Extension locking



Retraction locking



Action	Double acting
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.2 MPa <sup>Note)</sup>
Ambient and fluid temperature	-10 to 60°C (No freezing)
Piston speed	50 to 400 mm/s
Cushion	Rubber bumper on 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 0.15 MPa. (The minimum operating pressure for the cylinder alone is 0.15 MPa.)

## Lock Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Lock operation	Spring locking (Exhaust locking)							
Unlocking pressure	0.2 MPa or more							
Lock starting pressure	0.05 MPa or less							
Locking direction	One direction (Extension locking, Retraction locking)							
Maximum operating pressure	1.0 MPa							
Unlocking port size	M5 x 0.8			Rc 1/8				Rc 1/4
Holding force (Maximum static load) (N)	157	245	402	629	982	1559	2513	3927

## Standard Stroke

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 Stroke

Description	Spacer installation type Spacers are installed in the standard stroke cylinders. ø20 to 32: Stroke can be modified by the 1 mm interval. ø40 to 100: Stroke can be modified by the 5 mm interval.	
Part no.	Refer to "How to Order" for the standard model numbers.	
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 1 mm spacer is installed in MLGPM20-40-F. Dimension C is 77 mm.	

## Minimum Stroke for Auto Switch Mounting

No. of auto switches mounted	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) D-P5DWL can only be mounted on bore sizes ø40 through ø100.

## Auto Switch Mounting Bracket Part No. for D-P5DW

Bore size (mm)	Mounting bracket part no.	Note
40, 50, 63, 80, 100	BMG1-040	Switch mounting bracket Hexagon socket head cap screw (M2.5 x 0.45 x 8) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16) 2 pcs. Spring washer (Nominal size 3)

## Theoretical Output

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

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

# Series MLGP

## Weight

### Slide Bearing: MLGPM20 to 100

(kg)

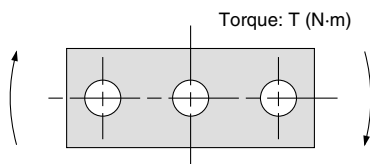
Bore size (mm)	Standard stroke (mm)													
	20	25	30	40	50	75	100	125	150	175	200	250	300	350
20	0.84	—	0.92	1.00	1.08	1.34	1.54	1.74	1.93	2.13	2.33	2.80	3.20	3.59
25	1.22	—	1.32	1.43	1.54	1.92	2.19	2.46	2.74	3.01	3.28	3.94	4.48	5.03
32	—	2.09	—	—	2.47	2.87	3.25	3.64	4.02	4.40	4.78	5.73	6.49	7.26
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 Bearing: MLGPL20 to 100

(kg)

Bore size (mm)	Standard stroke (mm)													
	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

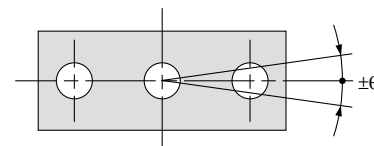


T (N-m)

Bore size (mm)	Bearing type	Stroke													
		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

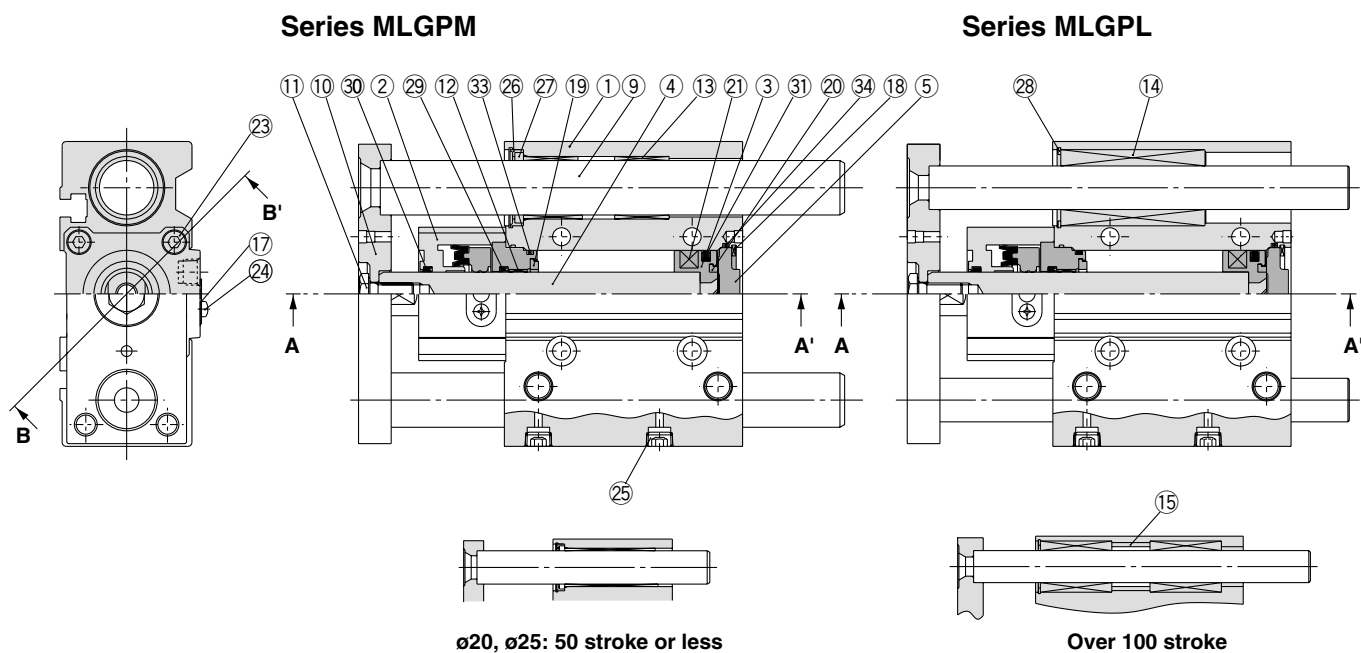


Note) For non-rotating accuracy  $\theta$  without load, use a value no more than the values in the table as a guide.

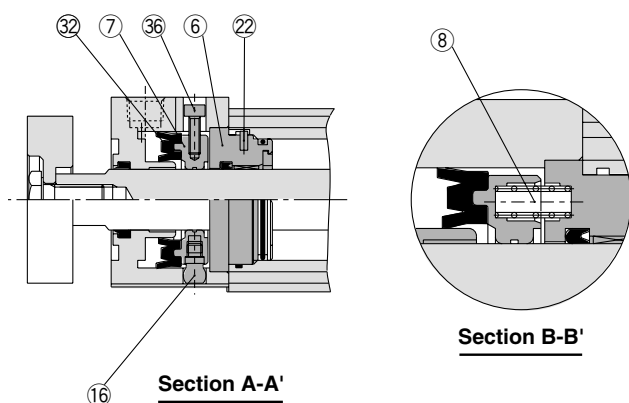
Bore size (mm)	Non-rotating accuracy $\theta$	
	MLGPM	MLGPL
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25	$\pm 0.07^\circ$	$\pm 0.09^\circ$
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40	$\pm 0.06^\circ$	$\pm 0.08^\circ$
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63	$\pm 0.05^\circ$	$\pm 0.06^\circ$
80	$\pm 0.04^\circ$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

# Compact Guide Cylinder with Lock Series **MLGP**

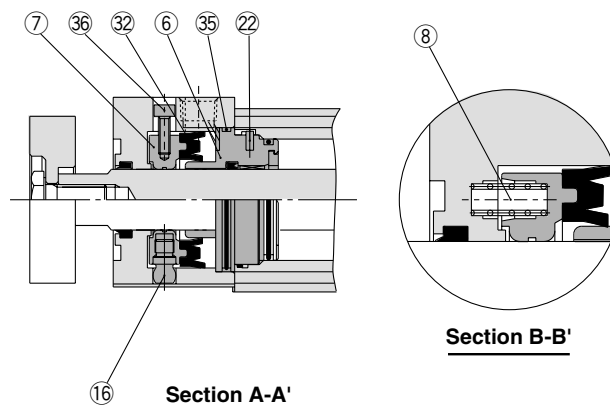
Construction:  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



## Extension locking (Type F)



## Retraction locking (Type B)



## Component Parts

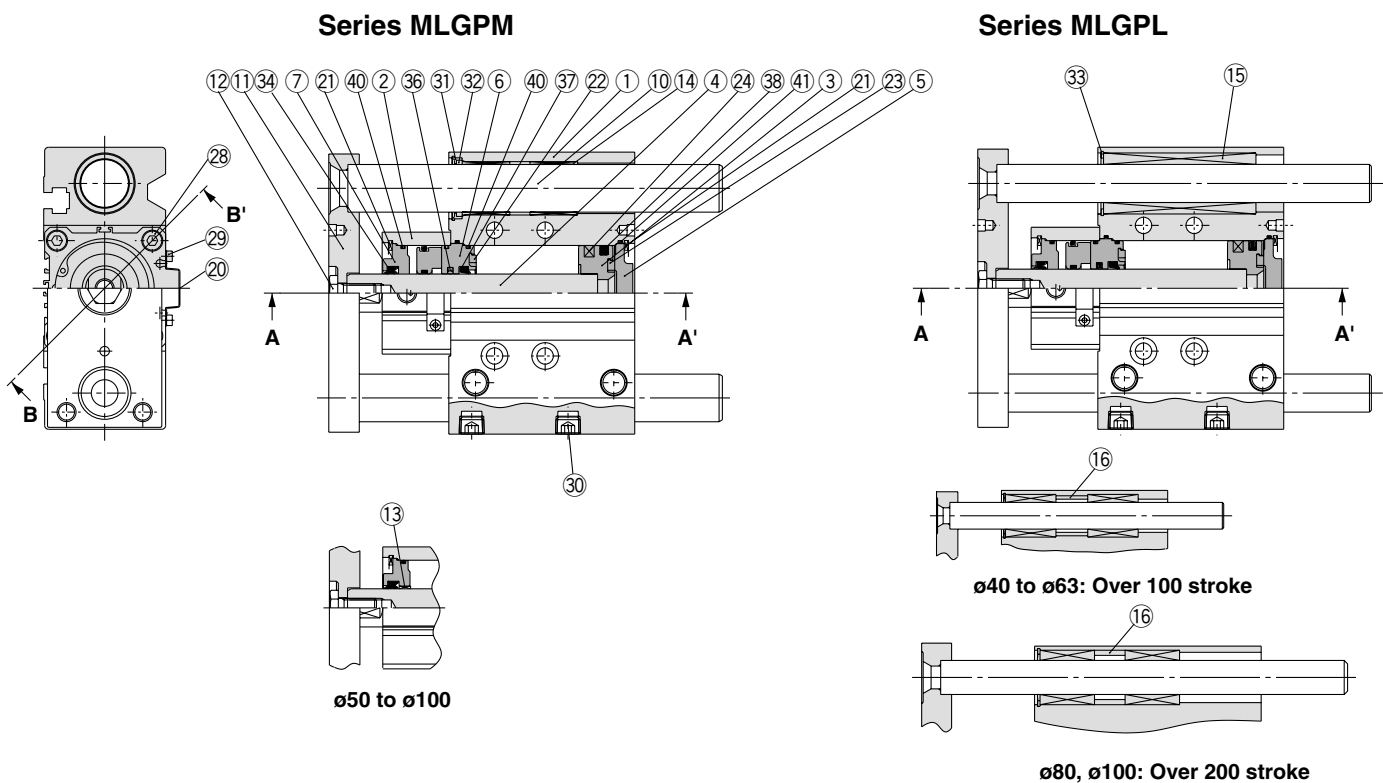
No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Lock body	Aluminum alloy	Hard anodized
③	Piston	Aluminum alloy	Chromated
④	Piston rod	$\varnothing 20, 25$ $\varnothing 32$	Stainless steel Carbon steel
⑤	Head cover	Aluminum alloy	Painted
⑥	Intermediate collar	Type F Type B	Aluminum alloy
⑦	Lock ring	Carbon steel	Heat treated
⑧	Brake spring	Steel wire	Zinc chromated
⑨	Guide rod	Type M Type L	Carbon steel High carbon chrome bearing steel
⑩	Plate	Rolled steel	Nickel plated
⑪	Plate mounting bolt	Chromium molybdenum steel	Nickel plated
⑫	Bushing	$\varnothing 20, 25$ $\varnothing 32$	Oil-impregnated sintered alloy Lead-bronze casted
⑬	Slide bearing	Lead-bronze casted	
⑭	Ball bushing	—	
⑮	Spacer	Aluminum alloy	Chromated
⑯	Pivot	Chromium molybdenum steel	Heat treated/Electroless nickel plated

No.	Description	Material	Note
⑰	Dust cover	Stainless steel	
⑱	Type C 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	Chromium 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	Type C 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	Chromium molybdenum steel	Nickel plated

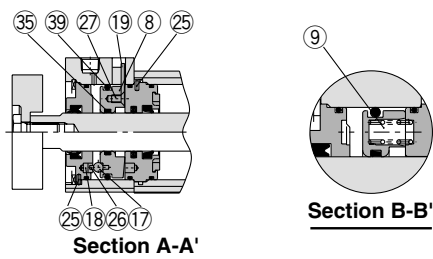
CL  
CL1  
MLGC  
CNG  
MNB  
CNA  
CNS  
CLS  
CLQ  
MLGP  
RLQ  
MLU  
ML1C  
D-  
-X  
20-  
Data

# Series MLGP

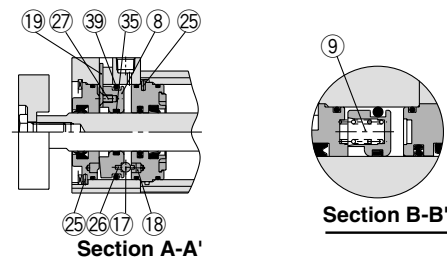
Construction:  $\phi 40$  to  $\phi 100$



## Extension locking (Type F)



## Retraction locking (Type B)



## Component Parts

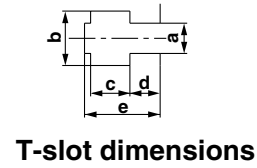
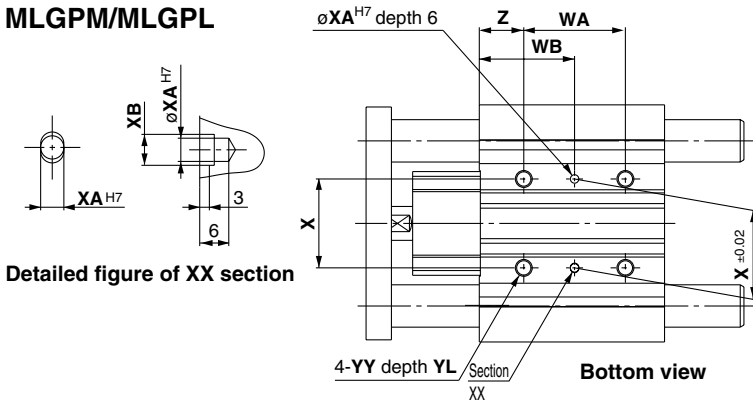
No.	Description	Material	Note	
①	Body	Aluminum alloy	Hard anodized	
②	Lock body	Aluminum alloy	Hard anodized	
③	Piston	Aluminum alloy	Chromated	
④	Piston rod	Carbon steel	Hard chrome plated	
⑤	Head cover	$\phi 40$ to $63$ $\phi 80, 100$	Aluminum alloy Aluminum alloy casted	Painted Chromated/Painted
⑥	Intermediate collar	Aluminum alloy	Chromated	
⑦	Collar	$\phi 40$ $\phi 50$ to $100$	Aluminum alloy Aluminum alloy casted	Hard anodized Chromated/Painted
⑧	Lock ring	Carbon steel	Heat treated	
⑨	Brake spring	Steel wire	Zinc chromated	
⑩	Guide rod	Type M Type L	Carbon steel High carbon chrome bearing steel	Hard chrome plated Heat treated/Hard chrome plated
⑪	Plate	Rolled steel	Nickel plated	
⑫	Plate mounting bolt	Chromium molybdenum steel	Nickel plated	
⑬	Bushing	Lead-bronze casted	$\phi 50$ to $100$	
⑭	Slide bearing	Lead-bronze casted		
⑮	Ball bushing	—		
⑯	Spacer	Aluminum 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	$\phi 40$ to $63$ $\phi 80, 100$	Rolled steel Stainless steel	Nickel plated

No.	Description	Material	Note	
⑳	Type C snap ring for hole	Carbon tool steel	Phosphate coated	
㉑	Bumper A	Urethane		
㉒	Bumper B	Urethane		
㉓	Plastic magnet	—		
㉔	Parallel pin	Carbon steel		
㉕	Spring pin	Carbon steel		
㉖	Hexagon socket countersunk head screw	Chromium molybdenum steel	Nickel plated	
㉗	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated	
㉘	Dust cover holding bolt	$\phi 40$ to $63$ $\phi 80, 100$	Chromium molybdenum steel Carbon steel	Nickel plated Nickel plated
㉙	Hexagon socket head taper screw plug	Carbon steel	Nickel plated	
㉚	Holder	Resin		
㉛	Felt	Felt		
㉜	Type C snap ring for hole	Carbon tool steel	Phosphate coated	
㉝	Rod seal A	NBR		
㉞	Rod seal B	NBR		
㉟	Rod seal C	NBR		
㊱	Scraper	NBR		
㊲	Piston seal	NBR		
㊳	Brake piston seal	NBR		
㊴	Gasket A	NBR		
㊵	Gasket B	NBR		

# Compact Guide Cylinder with Lock Series **MLGP**

**Dimensions: ø20, ø25, ø32**

**MLGPM/MLGPL**

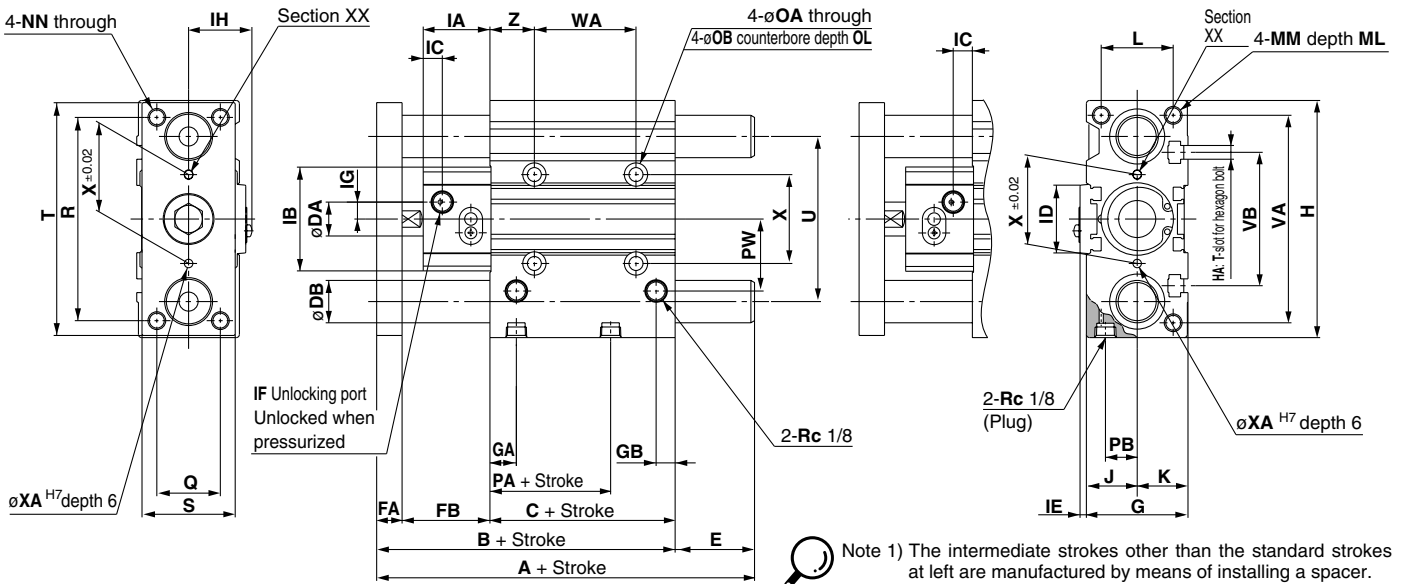


Bore size (mm)	a	b	c	d	e
20	5.4	8.4	4.5	2.8	7.8
25	5.4	8.4	4.5	3	8.2
32	6.5	10.5	5.5	3.5	9.5

**Extension locking**



**Retraction locking**



Note 1) The intermediate strokes other than the standard strokes at left are manufactured by means of installing a spacer. Intermediate strokes for ø20 to ø32 are available by the 1 mm interval.

Note 2) For intermediate strokes, dimensions **A, B, C, E, PA, WA,** and **WB** will be the same as the standard stroke with a longer one.

**Common Dimensions: MVGPM/MVGPL**

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 x 0.8	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 x 0.8	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 x 0.8	13	M5 x 0.8	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 x 1.0	15	M6 x 1.0	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 x 1.25	20	M8 x 1.25	6.6	11	7.5	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 x 1.0	12	17
25	—	29	—	39	77	117	167	34	4	4.5	M6 x 1.0	12	17
32	33	—	45	—	83	121	171	42	4	4.5	M8 x 1.25	16	21

**A, DB, E Dimensions: MLGPM (Slide bearing)**

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

**A, DB, E Dimensions: MLGPL (Ball bushing bearing)**

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

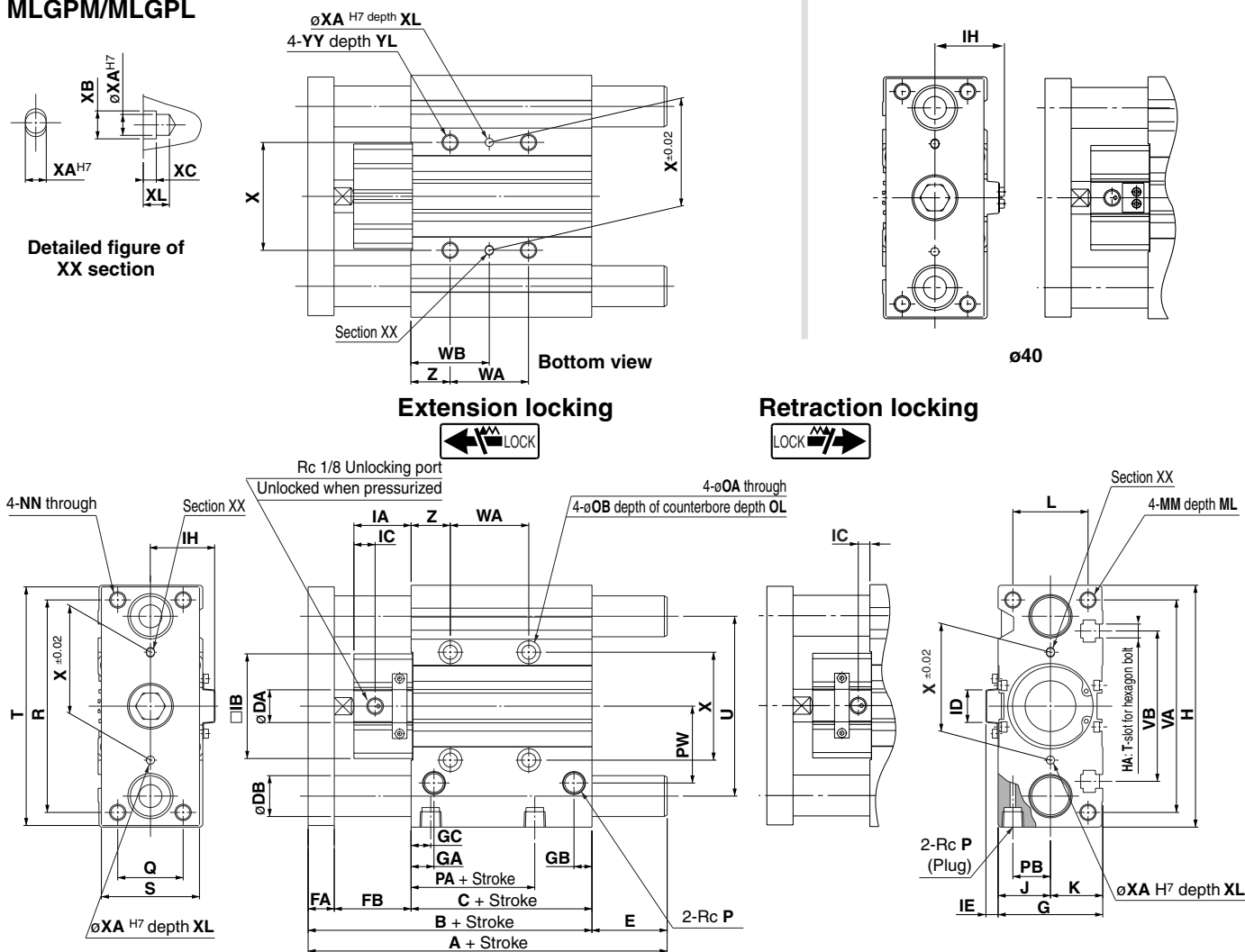
- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data



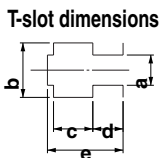
# Series MLGP

Dimensions:  $\phi 40$ ,  $\phi 50$ ,  $\phi 63$

## MLGPM/MLGPL



- Note 1) The intermediate strokes other than the standard strokes at left are manufactured by means of installing a spacer.  
Intermediate strokes for  $\phi 40$  to  $\phi 63$  are available by the 5 mm interval.
- Note 2) For intermediate strokes, dimensions **A**, **B**, **C**, **E**, **PA**, **WA**, and **WB** will be the same as the standard stroke with a longer one.



Bore size (mm)	a	b	c	d	e
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

## Common Dimensions: MVGPM/MVGPL

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 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	13	18	38	30	104	44	118	86	106	72	24	48	124	200	300
50	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	9	21.5	47	40	130	60	146	110	130	92	24	48	124	200	300
63	M10 x 1.5	22	M10 x 1.5	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 x 1.25	16	22
50	36	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	38	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

## Dimensions A, DB, E: MLGPM (Slide bearing)

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

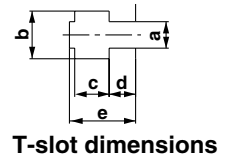
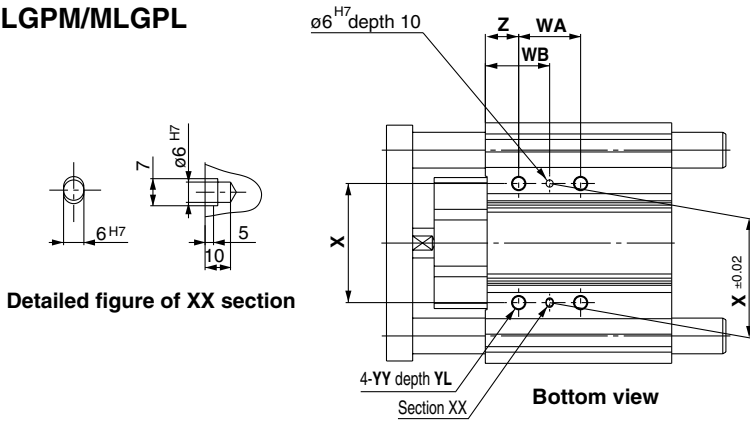
## Dimensions A, DB, E: MLGPL (Ball bushing bearing)

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

# Compact Guide Cylinder with Lock Series **MLGP**

**Dimensions: ø80, ø100**

**MLGPM/MLGPL**

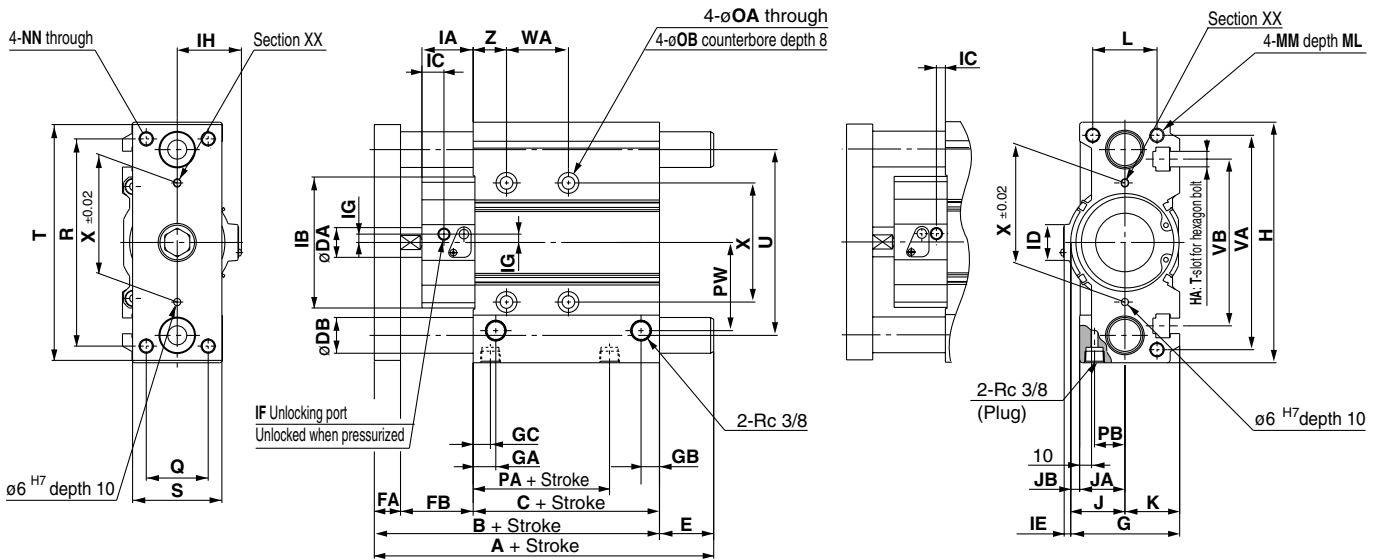


Bore size (mm)	a	b	c	d	e
80	13.3	20.3	12	8	22.5
100	15.3	23.3	13.5	10	30

**Extension locking**



**Retraction locking**



Note 1) The intermediate strokes other than the standard strokes at left are manufactured by means of installing a spacer. Intermediate strokes for ø80 and ø100 are available by the 5 mm interval.

Note 2) For intermediate strokes, dimensions **A, B, C, E, PA, WA,** and **WB** will be the same as the standard stroke with a longer one.

**Common Dimensions: MLGPM/MLGPL**

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	1.5	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 x 1.75	25	M12 x 1.75	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 x 2.0	31	M14 x 2.0	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 x 1.75	24	28
100	—	60	—	71	97	135	185	124	M14 x 2.0	28	35

**Dimensions A, DB, E: MLGPM (Slide bearing)**

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

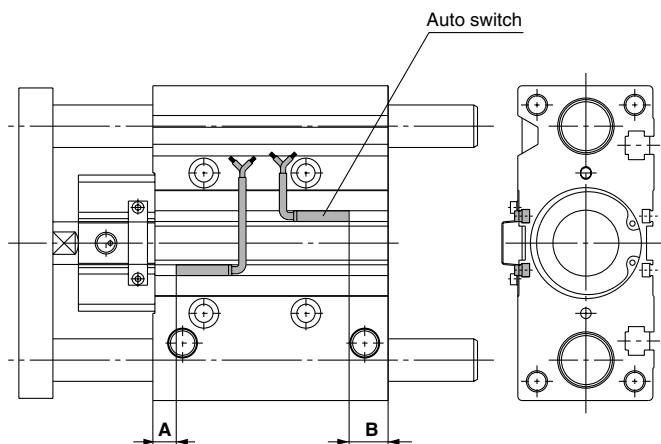
**Dimensions A, DB, E: MLGPL (Ball bushing bearing)**

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

- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP**
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data

# Series MLGP

## Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height



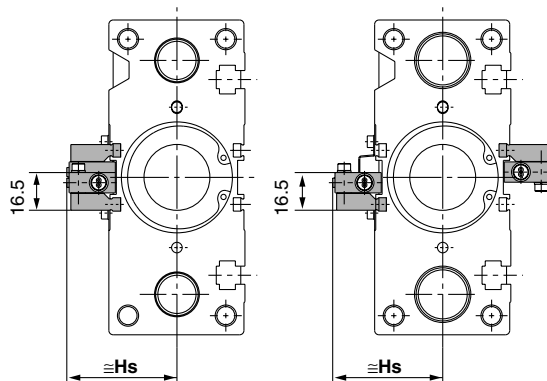
### Proper Auto Switch Mounting Position

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

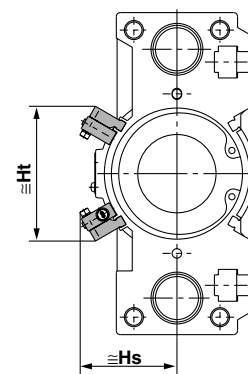
Bore size (mm)	A	B
50	7.5 (7)	11.5 (11)
63	10 (9.5)	14 (13.5)
80	13 (12.5)	18.5 (18)
100	17.5 (17)	23.5 (23)

Note) Values inside ( ) are for D-P5DWL, which can only be mounted on bores sizes  $\phi 40$  through  $\phi 100$ .

### For D-P5DWL (\* Cannot be mounted on bore size $\phi 32$ or less.) $\phi 40$ to $\phi 63$



### $\phi 80, \phi 100$



### For 25 stroke

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

### Auto Switch Mounting Height

Bore size (mm)	Hs	Ht
40	44.5	—
50	50	—
63	57	—
80	61	84.5
100	71	96.5

## Mounting of Auto Switch

### ⚠ Caution

#### Auto Switch Mounting Tool

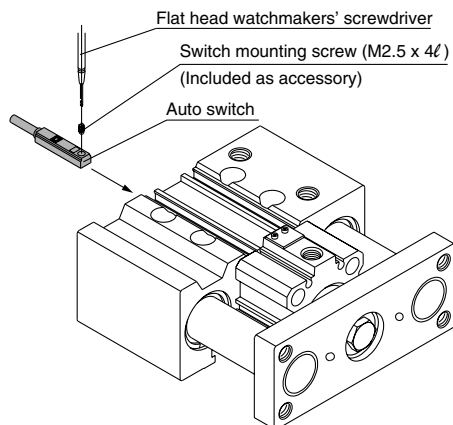
- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers' screwdriver with a handle about 5 to 6 mm in diameter.

#### Tightening Torque

- Tighten with a torque of about 0.05 to 0.10 N·m. As a guide, it should be turned about 90° past the point at which tightening

#### Inserting Direction for Mounting

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



### For D-P5DWL

### ⚠ Caution

#### Auto Switch Mounting Tool

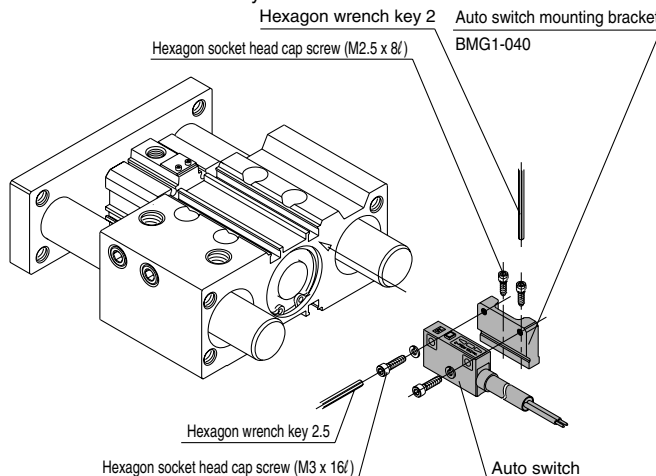
- When tightening the hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 and 2.5 with the appropriate screws.

#### Tightening Torque

- Tighten M2.5 screws with a torque of about 0.5 to 0.7 N·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 head side.



## Compact Guide Cylinder with Lock Series **MLGP**

### Operating Range

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
<b>D-Z7□/Z80</b>	10	10	10.5	10.5	10.5	11.5	11.5	12
<b>D-Y5□/Y6□ D-Y7P/Y7PV D-Y7□W/Y7□WV</b>	7.5	7	6.5	6	7	8	9.5	10
<b>D-Y7BAL</b>	5	5	6	6	6	6	6	6.5
<b>D-P5DWL</b>	—	—	—	4	4	5	4	4

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately  $\pm 30\%$  dispersion) There may be the case it will vary substantially depending on an ambient environment.

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to page 9-15-1.

Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-Z80	Grommet (In-line)	Without indicator light

\* Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available.

CL

CL1

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**MLGP**

RLQ

MLU

ML1C

D-

-X

20-

Data