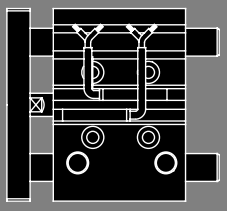
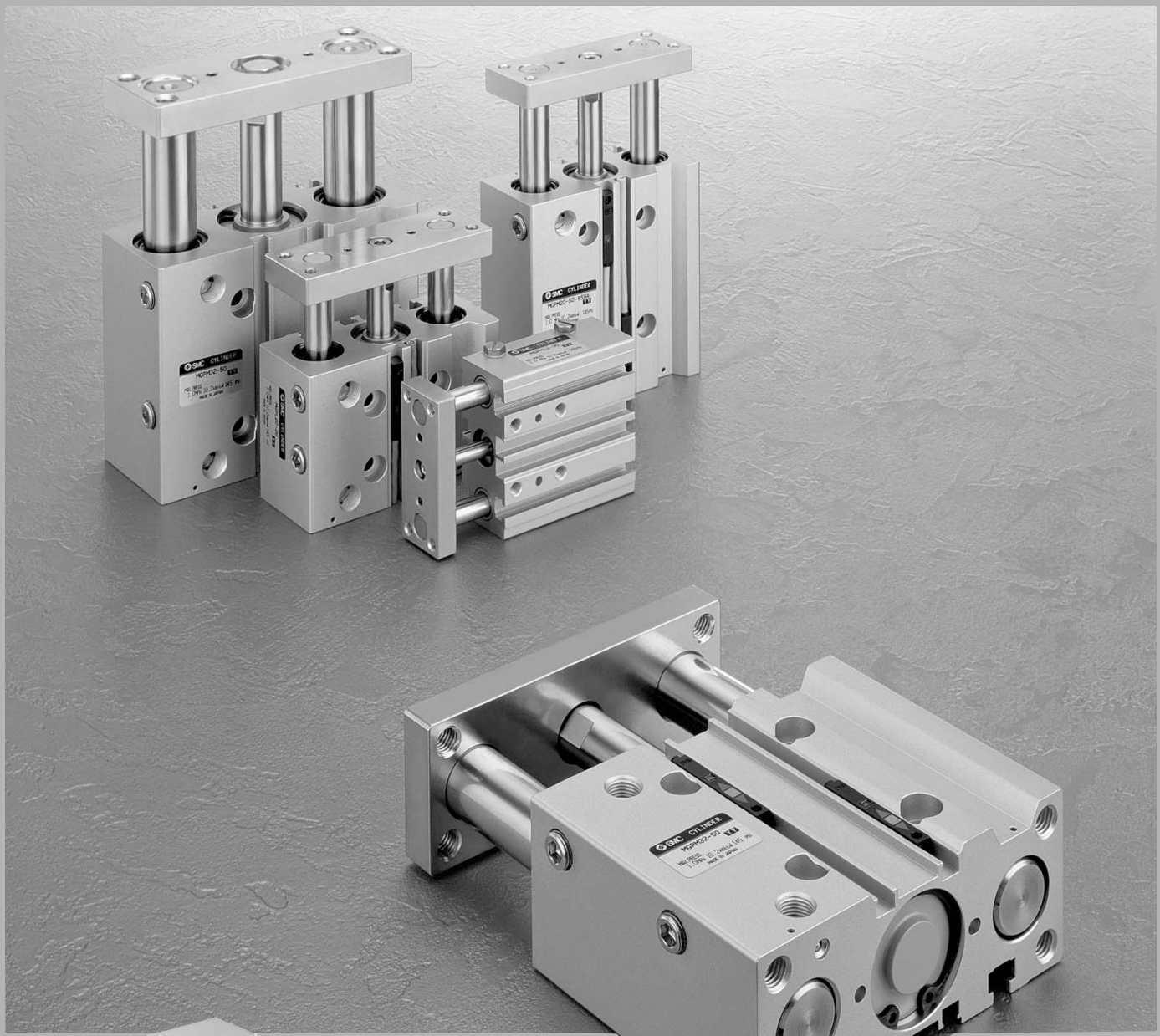
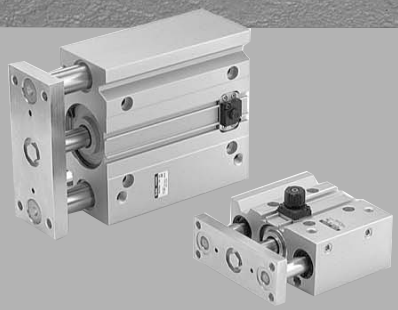


Compact Guide Cylinder

Series MGP

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





Compact Guide Cylinder

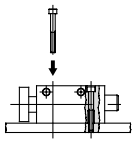
Series MGP

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

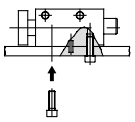
Four mounting styles provided

1. Top mounting

● Easy positioning
Knock pin holes provided on each mounting surface

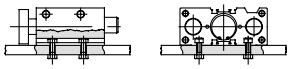


2. Side mounting

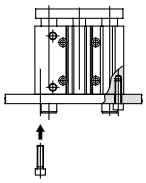


3. T-slot side mounting

Easy adjustment of workpiece and cylinder mounting

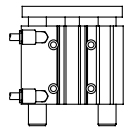


4. Bottom mounting

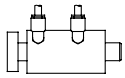


Piping is possible from two directions

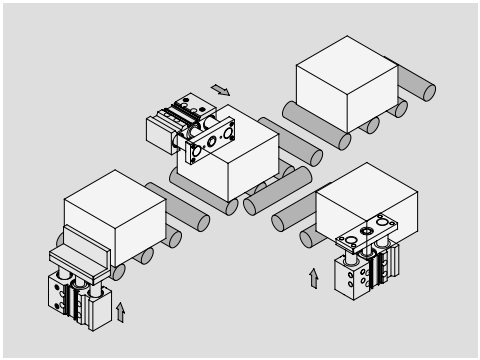
1. Top ported

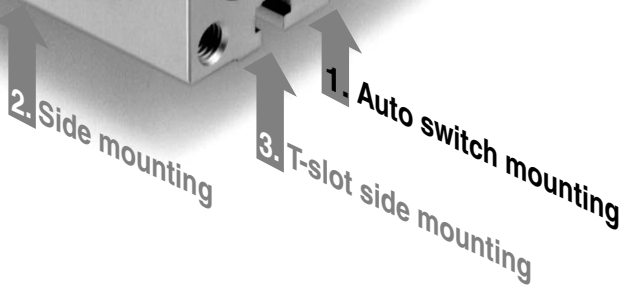


2. Side ported



Auto switches can be mounted on two sides.





● Two types of guide rod bearing to accommodate various applications

Slide bearing
The lateral withstand load is more than twice that of a conventional stopper cylinder (round bar type), and is suitable for use with lateral loads accompanied by impact, as in stoppers.

Ball bushing bearing
Suitable for use as a pusher and lifter.

● Long strokes up to 400 mm are standardized.

■ Stroke Variations

Bearing type	Bore size (mm)	Stroke (mm)	Intermediate stroke	Made to Order
MGPM Slide bearing	12	10 20 25 30 40 50 75 100 125 150 175 200 250 300 350 400	Spacer installation type Available by the 1 mm & 5 mm interval. Exclusive body (-XB10) in stroke increments of 1 mm	1. Intermediate stroke (Using exclusive body) 2. With air cushion/Intermediate stroke (Spacer type) 3. Heat resistant cylinder 4. Low speed cylinder 5. Fluoro rubber seals 6. With heavy duty scraper 7. With coil scraper 8. Adjustable stroke cylinder/Adjustable extension type 9. Adjustable stroke cylinder/Adjustable retraction type 10. Stainless steel piston rod & plate, etc.
	16			
	20			
	25			
	32			
MGPL Ball bushing bearing	40			
	50			
	63			
	80			
	100			

SMC

With end lock type added

- Holds the cylinder's home position even if the air supply is cut off.
- Compact body ø20 to ø63 ·····Body length for standard + 25 mm
  ø80, ø100 ·····Standard + 50 mm body length

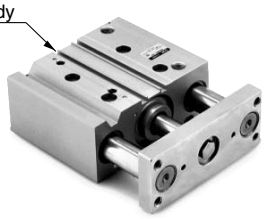
Stroke Variations

Bearing type	Bore size (mm)	Stroke (mm)	Intermediate stroke	Lock direction	Manual release
MGPM Slide bearing	20, 25, 32, 40, 50, 63, 80, 100	25 50 75 100 125 150 175 200 250 300 350 400	Spacer type available by the 5 mm stroke interval.	Rod end lock / Head end lock	Non-lock type / Lock type
MGPL Ball bushing bearing					

With air cushion type standardized

- An air cushion has been added to the compact guide cylinder to suppress vibration and noise at the stroke end. It can absorb nearly three times as much kinetic energy as a rubber bumper.

Cushion valve is built into the body



Stroke Variations

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

Heavy duty guide rod type with improved load resistance

- Anti-lateral load: △10% increase
- Eccentric load resistance: △25% increase
- Impact load resistance: △140% increase

(Compared with MGPM50 compact guide cylinder)

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

Stroke Variations

Bearing type	Bore size (mm)	Stroke (mm)
MGPS Slide bearing	50, 80	25 50 75 100 125 150 175 200

Series Variations

Series	Bearing type	Cushion	Bore size (mm) 12 16 20 25 32 40 50 63 80 100
Standard type **MGP**	Slide bearing / Ball bushing bearing	Rubber bumper	• Clean series: ø12 to ø63 • Water resistant: ø20 to ø100 Note) • Copper-free: ø12 to ø100
With air cushion **MGP**		Air cushion	• Copper-free (20-)
With end lock **MGP**		Rubber bumper	
Heavy duty guide rod type **MGPS**	Slide bearing	Rubber bumper	
High precision ball bushing bearing type **MGPA**	Ball bushing bearing	Rubber bumper	

Note) Available with ø20 to ø100 slide bearing type only

Specific Product Precautions

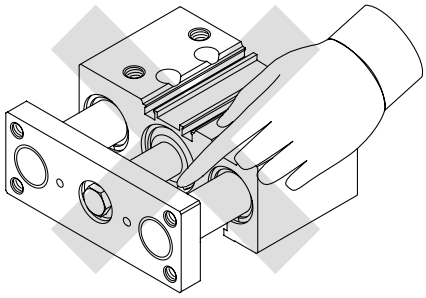
Be sure to read before handling.

Mounting

⚠ Warning

1. Never place your hands or fingers between the plate and the body.

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



⚠ Caution

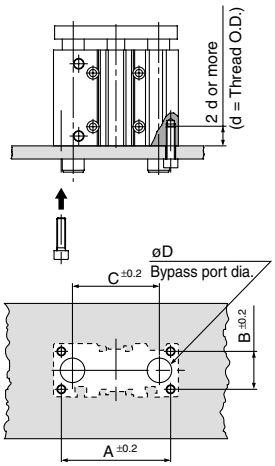
1. Do not scratch or gouge the sliding portion of the piston rod and the guide rod.

Damaged seals, etc. will result in leakage or malfunction.

2. Bottom of cylinder

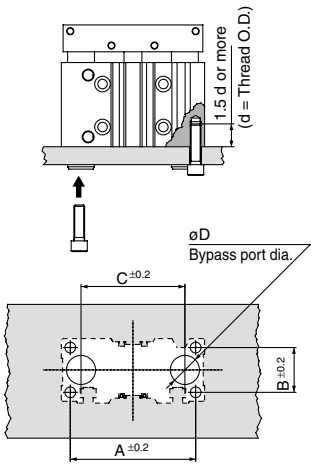
The guide rods protrude from the bottom of the cylinder at the end of the retracting stroke, and therefore, in cases where the cylinder is to be bottom mounted, it is necessary to provide bypass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head screws which are used for mounting.
Moreover, in applications where impact occurs from a stopper, etc., the mounting bolts should be inserted to a depth of 2 d or more (1.5 d or more for MGPS).

Series MGP



Bore size (mm)	A (mm)	B (mm)	C (mm)	D (mm) MGPM	D (mm) MGPL	Hexagon socket head cap screw
12	50	18	41	10	8	M4 x 0.7
16	56	22	46	12	10	M5 x 0.8
20	72	24	54	14	12	M5 x 0.8
25	82	30	64	18	15	M6 x 1.0
32	98	34	78	22	18	M8 x 1.25
40	106	40	86	22	18	M8 x 1.25
50	130	46	110	27	22	M10 x 1.5
63	142	58	124	27	22	M10 x 1.5
80	180	54	156	33	28	M12 x 1.75
100	210	62	188	39	33	M14 x 2.0

Series MGPS



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

Cushion

With air cushion

⚠ Caution

1. Keep the adjusting range of the cushion valve within 3 rotations of the completely closed position.

When adjusting the cushion valve, use the following screwdriver or hexagon wrenches. Keep the adjusting range of the cushion valve within 3 rotations of the completely closed position. Air leakage will occur if operated after opening by 4 rotations or more. Furthermore, a stopper mechanism is provided for the cushion valve, and it should not be forced open beyond that position.

Bore size (mm)	Applicable tool
16	Flat head watchmakers' screwdriver 3 mm
20, 25, 32, 40	JIS B 4648 hexagon wrench key 1.5
50, 63	JIS B 4648 hexagon wrench key 2.5
80, 100	JIS B 4648 hexagon wrench key 4

2. Be sure to activate the air cushion at the cylinder stroke end.

Be sure to activate the air cushion at the end of the cylinder stroke. When it is intended to operate with the cushion valve fully opened, select a cylinder equipped with rubber bumper. If operated without confirming this point, the piston rod assembly, etc., may be damaged.

3. Be sure to operate a cylinder equipped with air cushion to the end of the stroke.

If it is not operated to the end of the stroke, the effect of the air cushion will not be fully exhibited. Consequently, in cases where the stroke is regulated by an external stopper, etc., caution must be exercised, as the air cushion may become completely ineffective.

Piping

⚠ Caution

Depending on the operating conditions, piping port positions can be changed by using a plug.

1. For M5

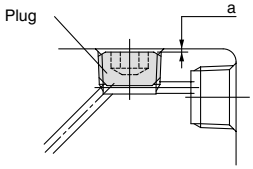
After tightening by hand, tighten additional 1/6 to 1/4 rotation with a tightening tool.

2. For taper thread

Use the correct tightening torques listed below. Before tightening the plug, wrap pipe tape around it. Also, with regard to the sunk dimension of a plug (a dimension in the drawing), use the stipulated figures as a guide and confirm the air leakage before operation.

∗ If tightening plugs on the top mounting port with more than the proper tightening torque, plugs will be screwed much deeply and air passage will be squeezed. Consequently, the cylinder speed will be restricted.

Connection thread size	Proper tightening torque (N·m)	**a dimension**
1/8	7 to 9	0.5 mm or less
1/4	12 to 14	1 mm or less
3/8	22 to 24	1 mm or less



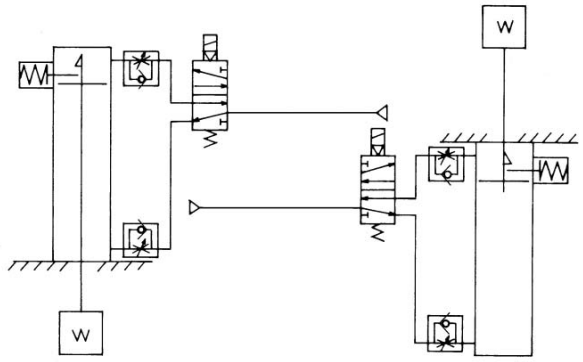
Specific Product Precautions

Be sure to read before handling.

Use the Recommended Pneumatic Circuit

⚠ Caution

● **This is necessary for the correct locking and unlocking actions.**



Head end lock **Rod end lock**

Operating Precautions

⚠ Caution

1. **Do not use 3 position solenoid valves.**
   Avoid use in combination with 3 position solenoid valves (especially closed center metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked. Furthermore, even after being locked, the lock may be released after some time, due to air leaking from the solenoid valve and entering the cylinder.
2. **Back pressure is required when releasing the lock.**
   Before starting operation, be sure to control the system so that air is supplied to the side without the lock mechanism as shown in the figure above. There is a possibility that the lock may not be released. (Refer to the section on releasing the lock.)
3. **Release the lock when mounting or adjusting the cylinder.**
   If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.
4. **Operate with a load ratio of 50% or less.**
   If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit.
5. **Do not operate multiple cylinders in synchronization.**
   Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.
6. **Use a speed controller with meter-out control.**
   Lock cannot be released occasionally by meter-in control.
7. **Be sure to operate completely to the cylinder stroke end on the side with the lock.**
   If the cylinder piston does not reach the end of the stroke, locking and unlocking may not be possible.
8. **Do not use an air cylinder as an air-hydro cylinder. This will cause leakage of hydraulic fluid.**
9. **Adjust an auto switch's position so that it operates for movement to both the stroke and backlash (2 mm) positions.**
   When a 2-color indication switch is adjusted for green indication at the stroke end, it may change to red for the backlash return, but this is not abnormal.

Operating Pressure

⚠ Caution

1. Supply air pressure of 0.15 MPa or higher to the port on the side that has the lock mechanism, as it is necessary for disengaging the lock.

Exhaust Speed

⚠ Caution

1. When the pressure on the side with the lock mechanism drops to 0.05 MPa or below, the lock engages automatically. If the piping on the side with the lock mechanism is thin and long, or if the speed controller is away from the cylinder port, the lock engagement may take some due to decline of the exhaust speed. The same result will be caused by clogging of the silencer installed at the EXH port of the solenoid valve.

Releasing the Lock

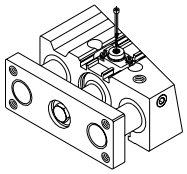
⚠ Warning

1. Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. If the lock is released when the port on the other side is in an exhaust state, and with a load applied to the lock unit, the lock unit may be subjected to an excessive force and be damaged. Also, it is very dangerous because the piston rod will be rushed to move.

Manual Release

⚠ Caution

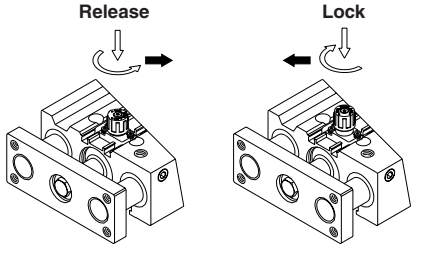
1. **Manual release (Non-lock type)**
   Insert the accessory bolt from the top of the rubber cap (it is not necessary to remove the rubber cap), and after screwing it into the lock piston, pull it to release the lock. If you stop pulling the bolt, the lock will return to an operational state.
   Thread sizes, pulling forces and strokes are as shown below.



Bore size (mm)	Thread size	Pulling force	Stroke (mm)
20, 25, 32	M2.5 x 0.45 x 25ℓ or more	4.9 N	2
40, 50, 63	M3 x 0.5 x 30ℓ or more	10 N	3
80, 100	M5 x 0.8 x 40ℓ or more	24.5 N	3

Remove the bolt for normal operation.
It can cause lock malfunction or faulty release.

2. **Manual release, Lock type**
   While pushing the M/O knob, turn it 90° counterclockwise. The lock is released (and remains in a released state) by aligning the ▲ mark on the cap with the ▼ OFF mark on the M/O knob.
   When locking is desired, turn M/O button clockwise 90° while pushing fully, correspond ▲ on cap and ▼ ON mark on M/O button. The correct position is confirmed by a click sound “click”. If not confirmed, locking is not done.



Locked condition **Released condition**

Compact Guide Cylinder

Series MGP

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

How to Order

MGP [M] [25] [ ] — [30] — [Y7BW] [ ]

Number of auto switches

Nil	2 pcs.
S	1 pc.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.
∗ Auto switches are shipped together, (but not assembled). (Except D-P5DW)

Bearing type

M	Slide bearing
L	Ball bushing bearing

Bore size

12	12 mm	**40**	40 mm
16	16 mm	**50**	50 mm
20	20 mm	**63**	63 mm
25	25 mm	**80**	80 mm
32	32 mm	**100**	100 mm

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 8-19-9.

Thread type

Nil	M5 x 0.8
	Rc
N	NPT
TF	G

∗ For bore sizes 12 and 16, M5 x 0.8 is only available.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	Pre-wire connector	Applicable load	
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		12 V		**Y69B**	**Y59B**	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		**Y7NWV**	**Y7NW**	●	●	○	○	IC circuit	
				3-wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○	○		
				2-wire		12 V		**Y7BWV**	**Y7BW**	●	●	○	○		
	Water resistant (2-color indication)							—	**Y7BA**	—	●	○	○	—	
	Magnetic field resistant (2-color indication)					—		—	**P5DW**	—	●	●	○		

∗ Lead wire length symbols: 0.5 m·····Nil (Example) Y59A
3 m····· L (Example) Y59AL
5 m····· Z (Example) Y59AZ

∗ Solid state switches marked with "○" are produced upon receipt of order.

∗ D-P5DW type can be mounted only on bore sizes 40 to 100.

• Since there are other applicable auto switches than listed, refer to page 8-19-20 for details.
• For details about auto switches with pre-wire connector, refer to page 8-30-52.

Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	ø12, ø16	0.12 MPa
	ø20 to ø100	0.1 MPa
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Piston speed Note)	ø12 to ø63	50 to 500 mm/s
	ø80, ø100	50 to 400 mm/s
Cushion	Rubber bumper on both ends	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_{0}$ mm	

Note) Maximum speed with no load.
Make a model selection, considering a load according to the graph on page 8-19-11.

Standard Stroke

Bore size (mm)	Standard stroke (mm)
12, 16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250
20, 25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400
32 to 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Stroke

Description	Spacer installation type Spacers are installed in the standard stroke cylinder. • ø12 to 32: Available by the 1 mm stroke interval. • ø40 to 100: Available by the 5 mm stroke interval.		Exclusive body (-XB10) Dealing with the stroke by making an exclusive body. • All bore sizes are available by the 1 mm interval.	
Part no.	Refer to "How to Order" for the standard model numbers.		Suffix "-XB10" to the end of standard part number. Note)	
Applicable stroke (mm)	ø12, ø16	1 to 249	ø12, ø16	11 to 249
	ø20, ø25, ø32	1 to 399	ø20, ø25	21 to 399
	ø40 to ø100	5 to 395	ø32 to ø100	26 to 399
Example	Part no.: MGPM20-39 A spacer 1 mm in width is installed in a MGPM20-40. C dimension is 77 mm.		Part no.: MGPM20-39-XB10 Special body manufactured for 39 stroke. C dimension is 76 mm.	

Note) For details, refer to "Made to Order Specifications".

Theoretical Output

OUT IN (N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
12	6	OUT	113	23	34	45	57	68	79	90	102	113
		IN	85	17	26	34	43	51	60	68	77	85
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	OUT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

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

Made to Order Specification (For details, refer to page 8-31-1.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (150°C)
-XB10	Intermediate stroke (Using exclusive body)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC4	With heavy duty scraper
-XC6	Piston rod and rod end nut made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable extension type
-XC22	Fluoro rubber seals
-XC35	With coil scraper
-XC69	With shock absorber
-XC79	Machining tapped hole, drilled hole and pin hole additionally.
-X867	Lateral piping type (Change of plug position)

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 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (Nominal size 3)

Weight

Slide Bearing: MGPM12 to 100

(kg)

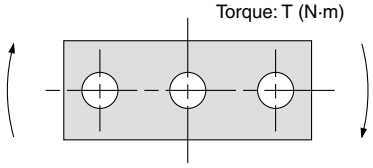
Bore size (mm)	Model	Standard stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPM12	0.24	0.28	—	0.31	0.35	0.39	0.50	0.59	0.70	0.79	0.89	0.98	1.17	—	—	—
16	MGPM16	0.33	0.38	—	0.43	0.48	0.53	0.68	0.80	0.97	1.09	1.22	1.35	1.60	—	—	—
20	MGPM20	—	0.67	—	0.75	0.83	0.91	1.17	1.37	1.57	1.76	1.96	2.16	2.63	3.03	3.42	3.82
25	MGPM25	—	0.95	—	1.05	1.16	1.27	1.65	1.92	2.19	2.47	2.74	3.01	3.67	4.21	4.76	5.30
32	MGPM32	—	—	1.69	—	—	2.07	2.47	2.85	3.24	3.62	4.00	4.38	5.33	6.09	6.86	7.62
40	MGPM40	—	—	1.95	—	—	2.37	2.83	3.25	3.68	4.10	4.53	4.95	5.99	6.85	7.70	8.55
50	MGPM50	—	—	3.36	—	—	4.00	4.73	5.37	6.01	6.65	7.29	7.93	9.54	10.8	12.1	13.4
63	MGPM63	—	—	4.18	—	—	4.94	5.78	6.54	7.29	8.05	8.80	9.56	11.4	12.9	14.4	15.9
80	MGPM80	—	—	6.49	—	—	7.43	8.67	9.61	10.5	11.5	12.4	13.4	15.8	17.7	19.5	21.4
100	MGPM100	—	—	10.5	—	—	11.9	13.6	14.9	16.3	17.6	18.9	20.2	23.6	26.2	28.9	31.5

Ball Bushing Bearing: MGPL12 to 100

(kg)

Bore size (mm)	Model	Standard stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPL12	0.24	0.27	—	0.30	0.35	0.39	0.47	0.56	0.66	0.74	0.83	0.91	1.08	—	—	—
16	MGPL16	0.34	0.39	—	0.43	0.51	0.56	0.67	0.79	0.93	1.04	1.16	1.28	1.50	—	—	—
20	MGPL20	—	0.70	—	0.77	0.89	0.97	1.14	1.31	1.52	1.69	1.87	2.04	2.42	2.77	3.12	3.47
25	MGPL25	—	0.98	—	1.07	1.25	1.34	1.57	1.81	2.08	2.31	2.54	2.77	3.27	3.74	4.20	4.66
32	MGPL32	—	—	1.54	—	—	1.85	2.30	2.62	2.99	3.31	3.62	3.94	4.63	5.26	5.89	6.52
40	MGPL40	—	—	1.79	—	—	2.15	2.64	3.00	3.42	3.78	4.14	4.50	5.28	6.00	6.72	7.44
50	MGPL50	—	—	3.11	—	—	3.66	4.41	4.96	5.60	6.15	6.70	7.25	8.48	9.57	10.7	11.8
63	MGPL63	—	—	3.93	—	—	4.59	5.46	6.12	6.88	7.54	8.21	8.87	10.3	11.7	13.0	14.3
80	MGPL80	—	—	6.25	—	—	7.39	8.69	9.51	10.3	11.1	12.0	12.8	14.7	16.3	18.0	19.6
100	MGPL100	—	—	9.89	—	—	11.6	13.4	14.5	15.7	16.9	18.1	19.3	21.9	24.2	26.6	28.9

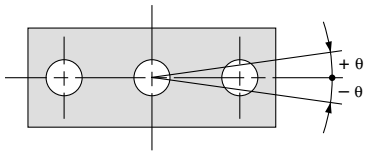
Allowable Rotational Torque of Plate



T (N·m)

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

Non-rotating Accuracy of Plate

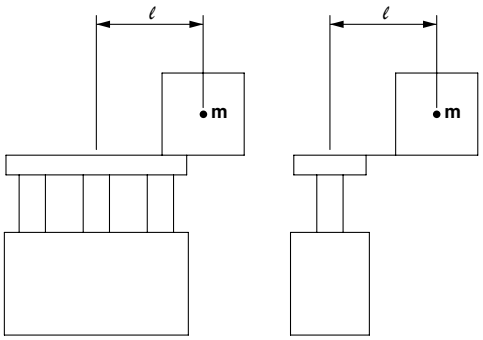
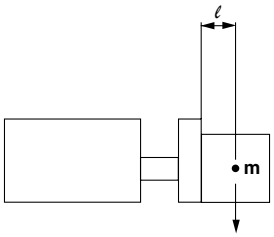


For non-rotating accuracy without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGPM	MGPL
12	±0.08°	±0.10°
16		
20	±0.07°	±0.09°
25		
32	±0.06°	±0.08°
40		
50	±0.05°	±0.06°
63		
80	±0.04°	±0.05°
100		

Model Selection

Selection Conditions

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

Selection Example 1 (Vertical mounting)

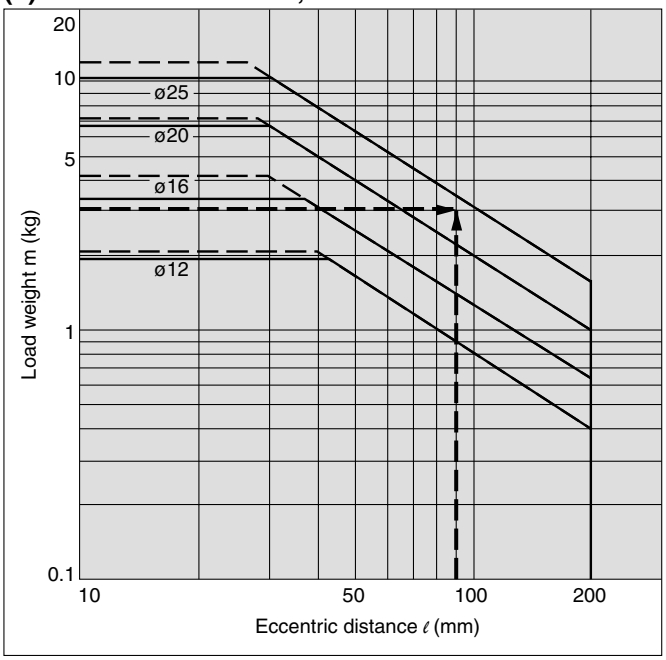
Selection conditions

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

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

→ MGPL25-30 is selected.

(5) Less than 40 stroke, V = 200 mm/s



Selection Example 2 (Horizontal mounting)

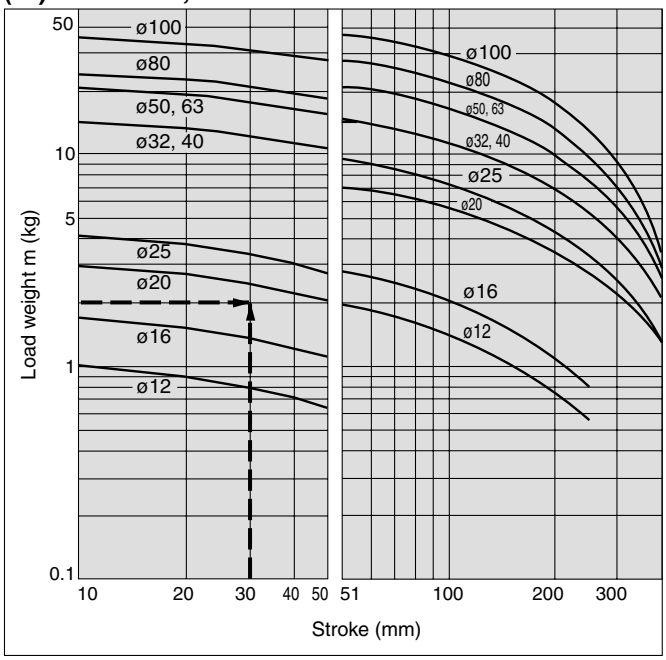
Selection conditions

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

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

→ MGPM20-30 is selected.

(13) ℓ = 50 mm, V = 200 mm/s

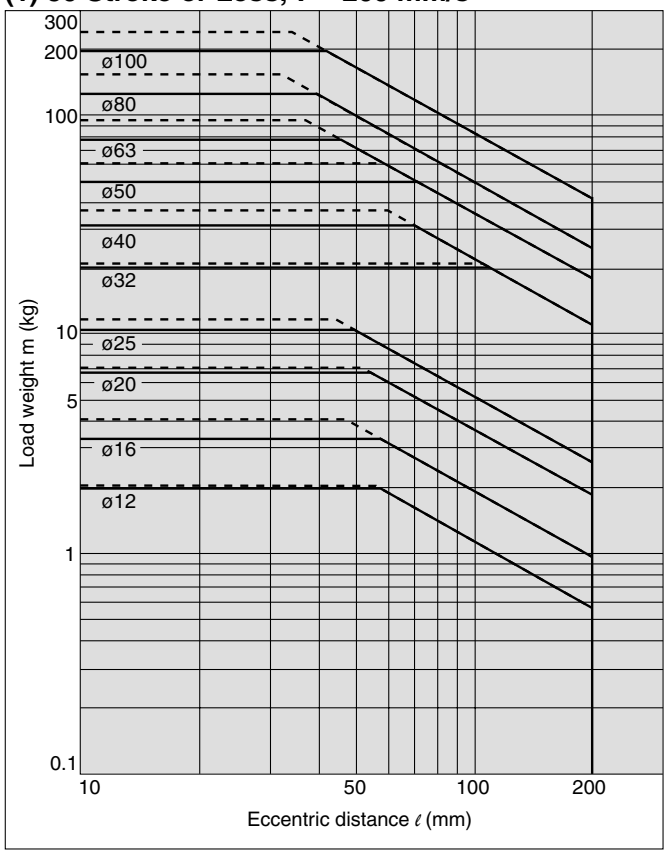


Vertical Mounting (Slide bearing)

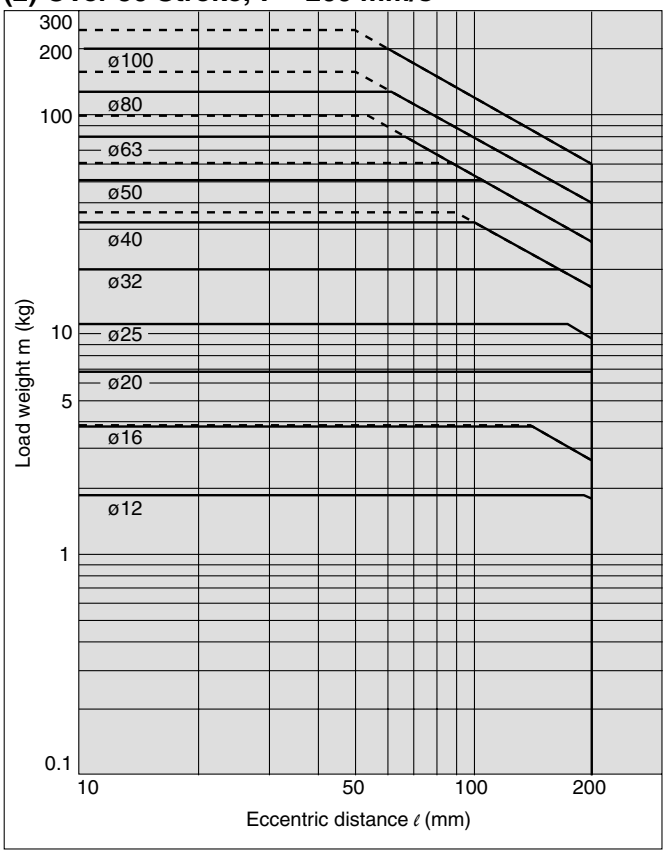
——— Operating pressure 0.4 MPa
- - - - Operating pressure 0.5 MPa or more

MGPM12 to 100

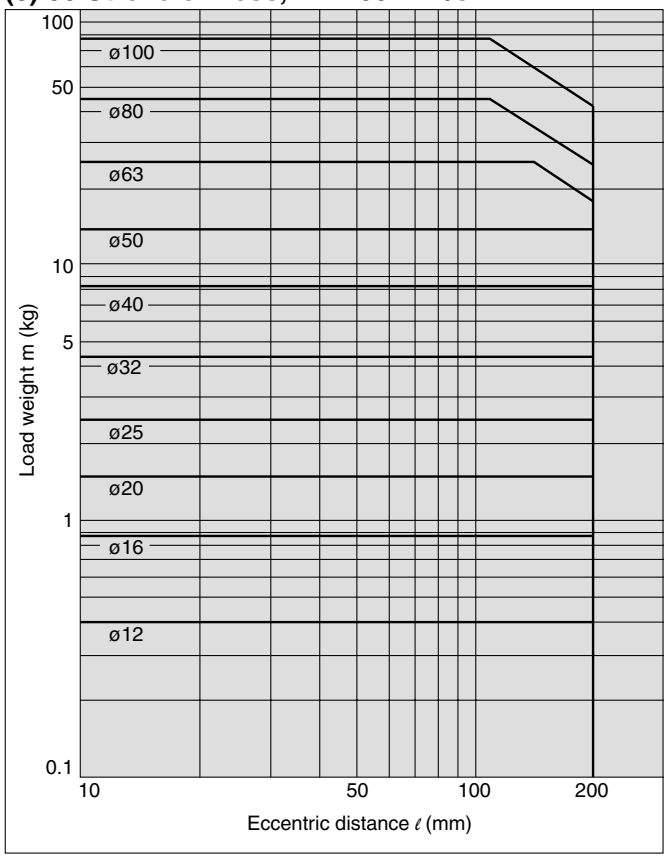
(1) 50 Stroke or Less, V = 200 mm/s



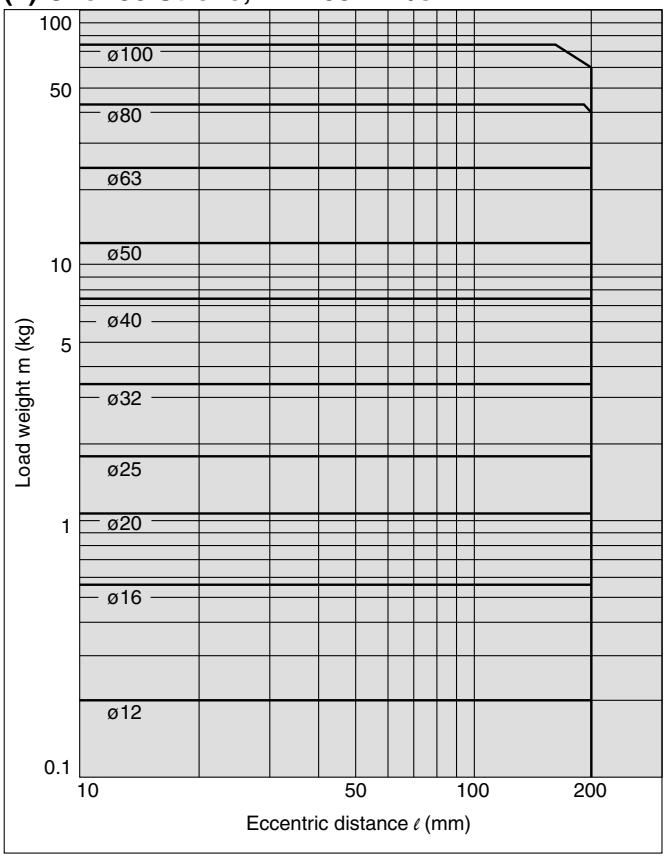
(2) Over 50 Stroke, V = 200 mm/s



(3) 50 Stroke or Less, V = 400 mm/s



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

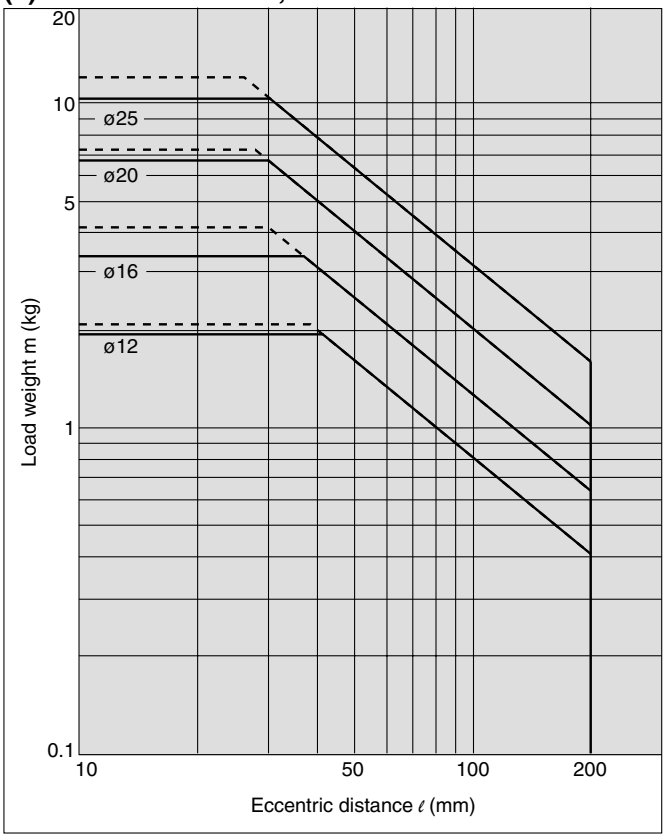


Vertical Mounting (Ball bushing bearing)

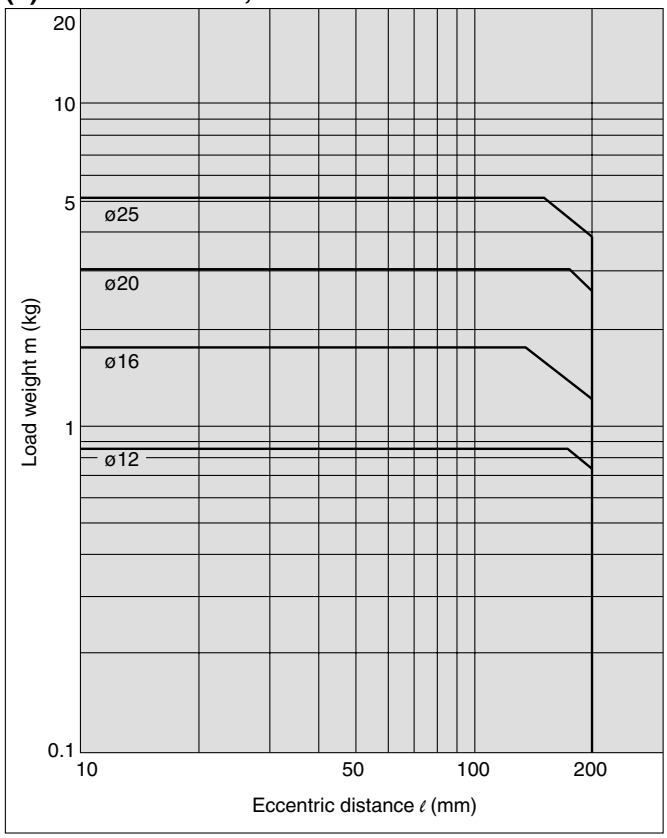
——— Operating pressure 0.4 MPa
- - - - - Operating pressure 0.5 MPa or more

MGPL12 to 25

(5) 30 Stroke or Less, V = 200 mm/s

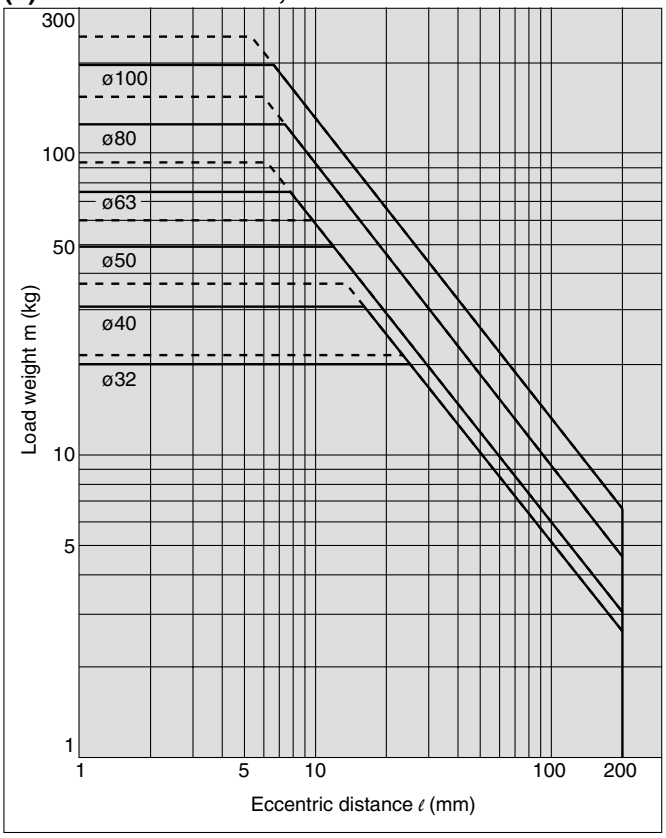


(6) Over 30 Stroke, V = 200 mm/s

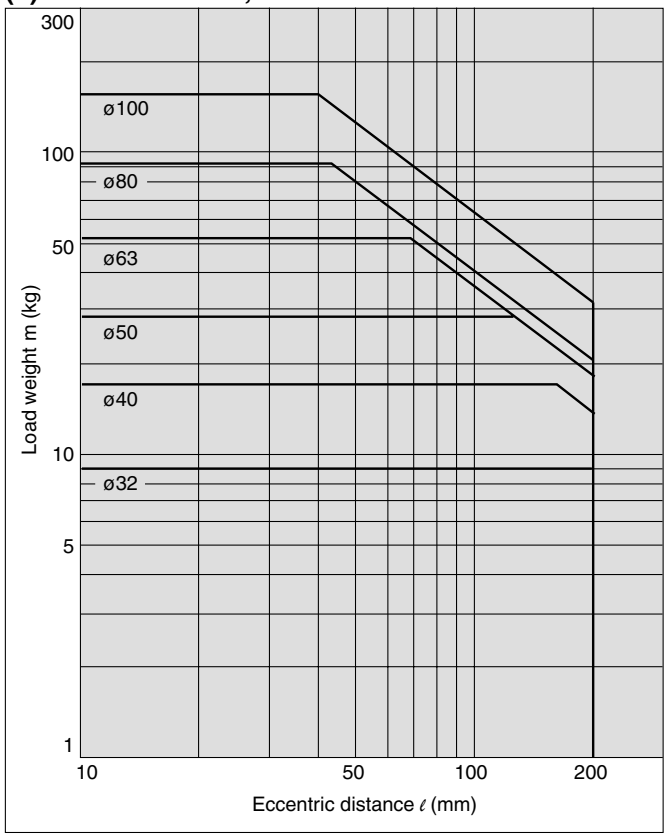


MGPL32 to 100

(7) 50 Stroke or Less, V = 200 mm/s



(8) Over 50 Stroke, V = 200 mm/s

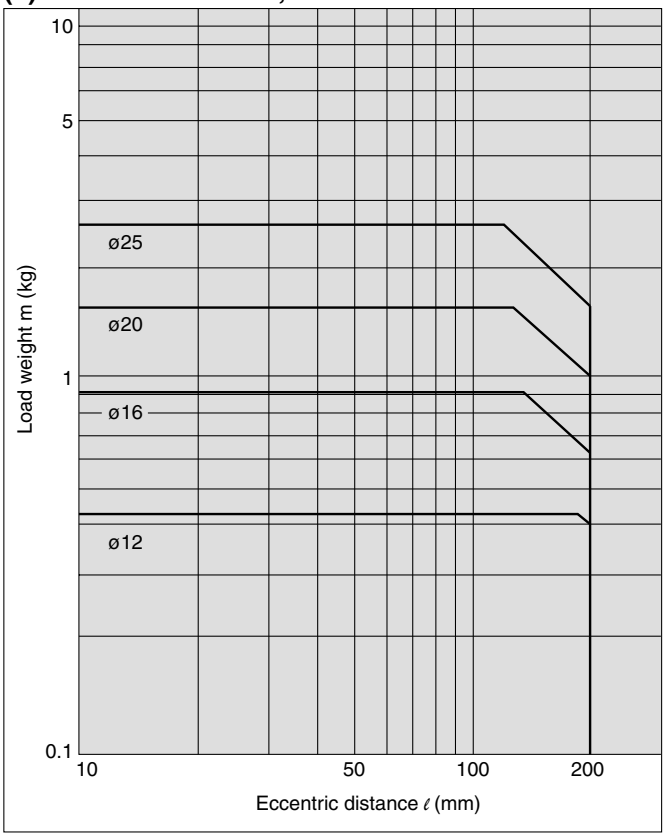


Vertical Mounting (Ball bushing bearing)

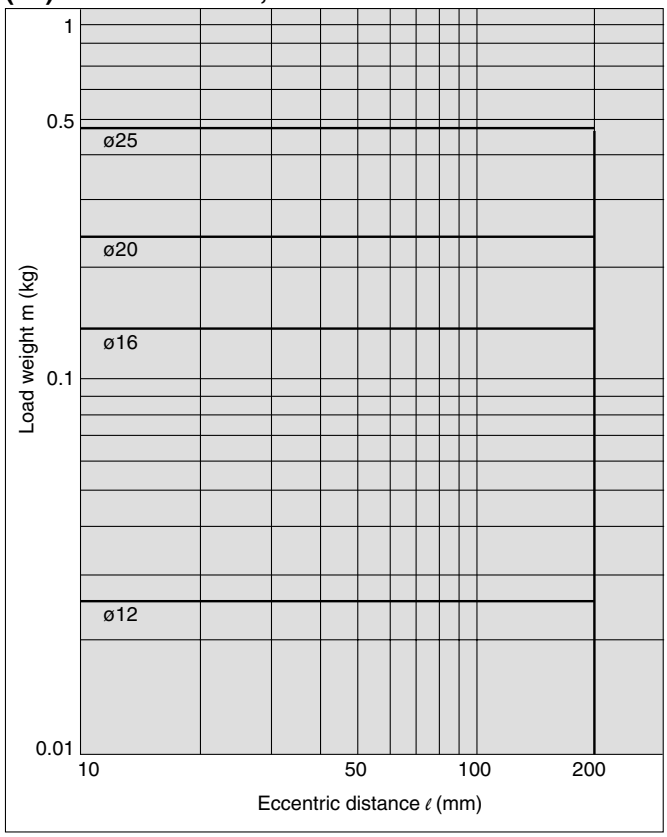
——— Operating pressure 0.4 MPa

MGPL12 to 25

(9) 30 Stroke or Less, V = 400 mm/s

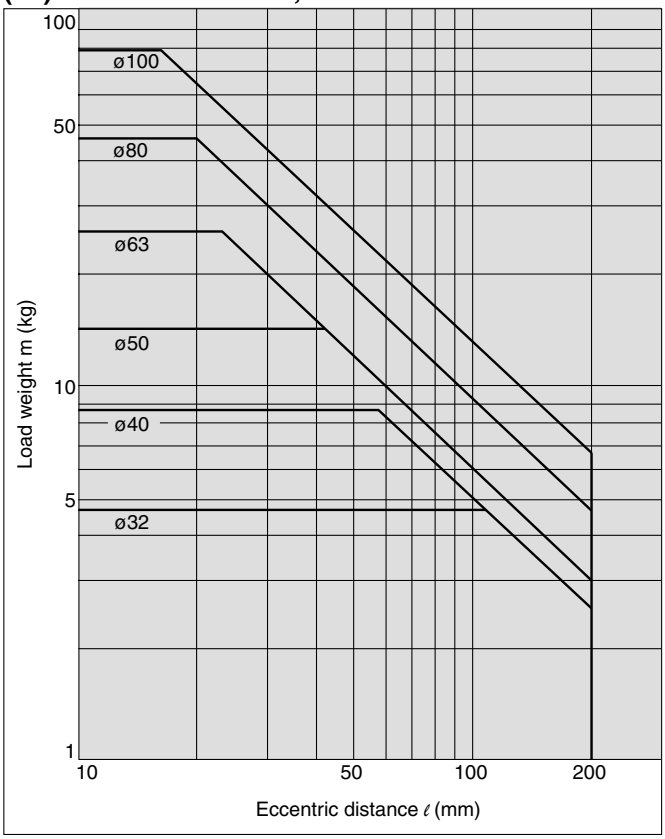


(10) Over 30 Stroke, V = 400 mm/s

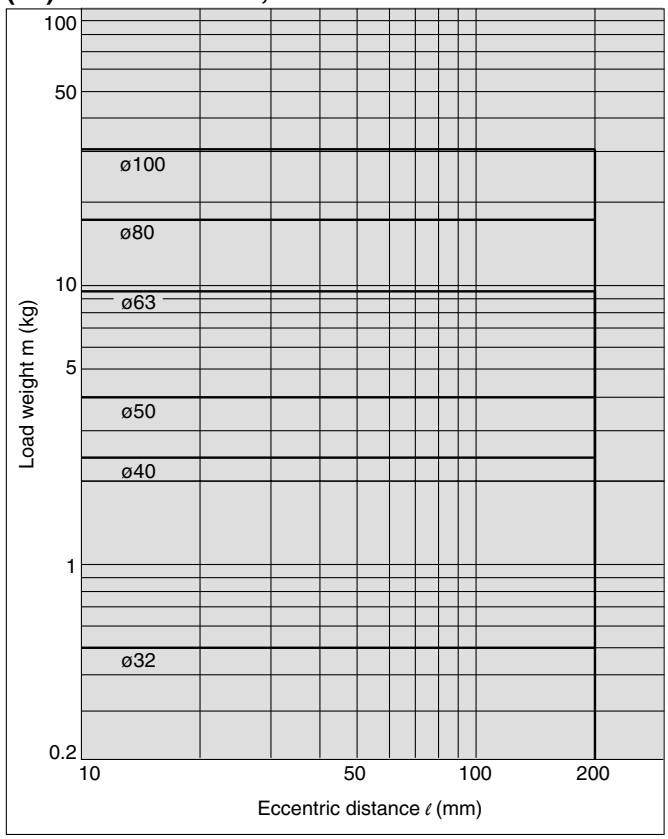


MGPL32 to 100

(11) 50 Stroke or Less, V = 400 mm/s



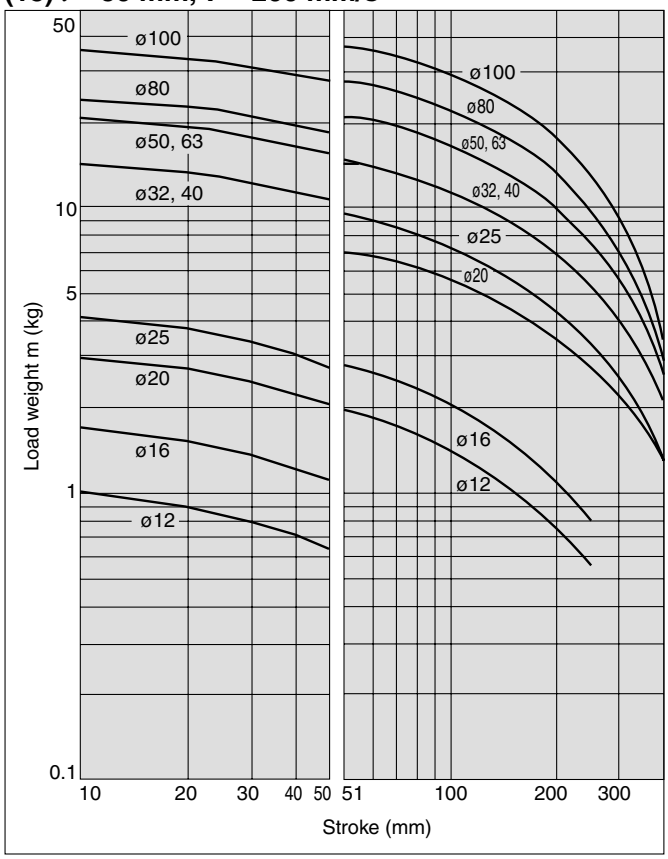
(12) Over 50 Stroke, V = 400 mm/s



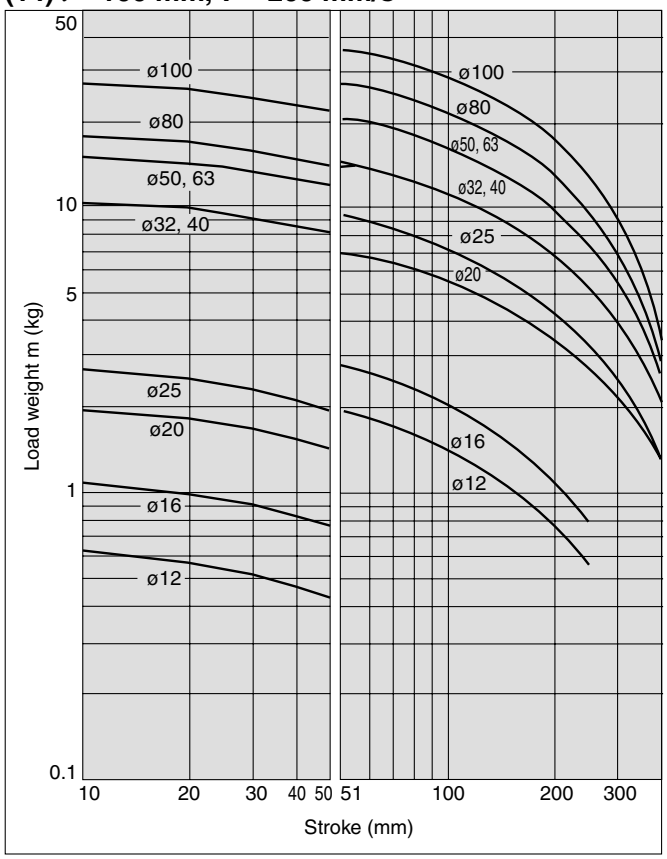
Horizontal Mounting (Slide bearing)

MGPM12 to 100

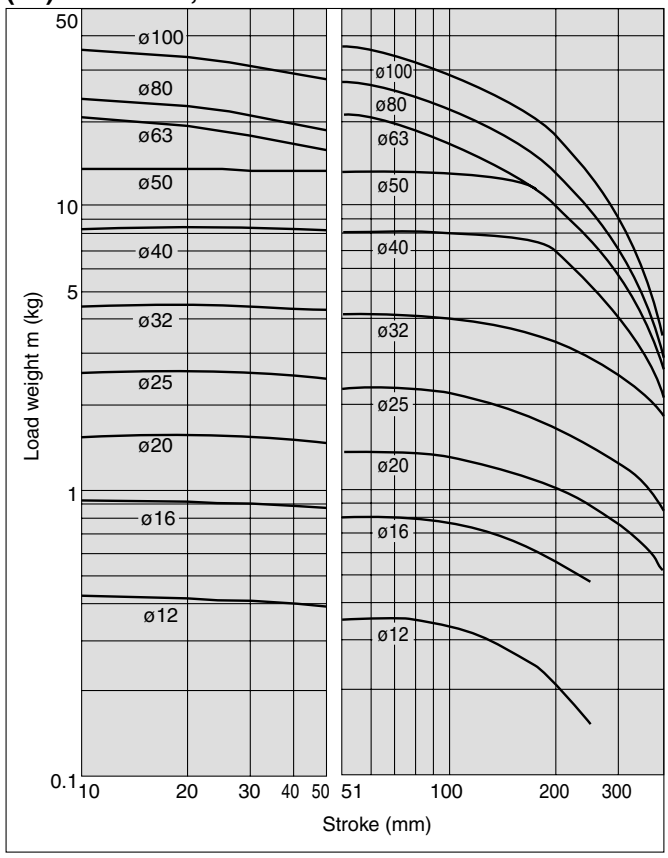
(13) ℓ = 50 mm, V = 200 mm/s



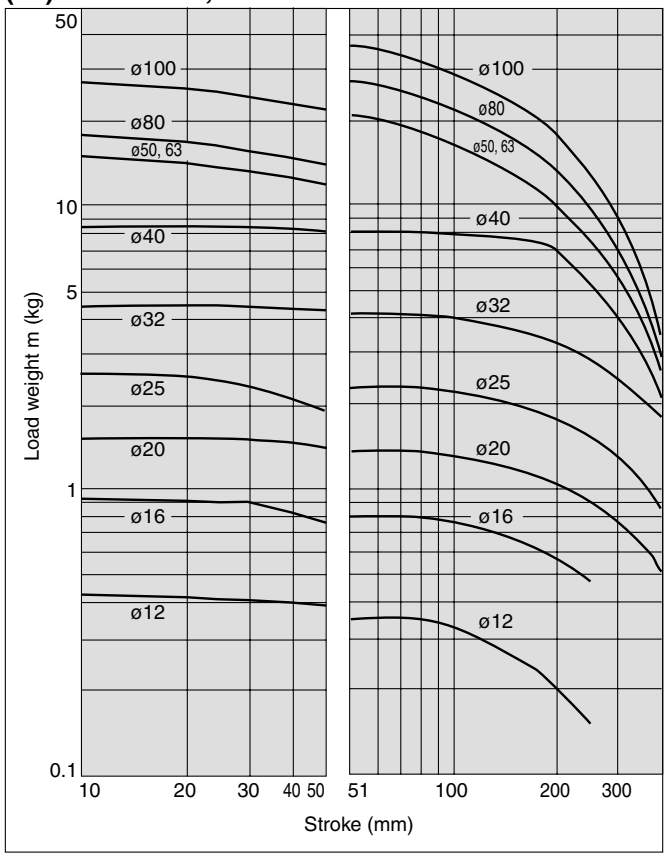
(14) ℓ = 100 mm, V = 200 mm/s



(15) ℓ = 50 mm, V = 400 mm/s



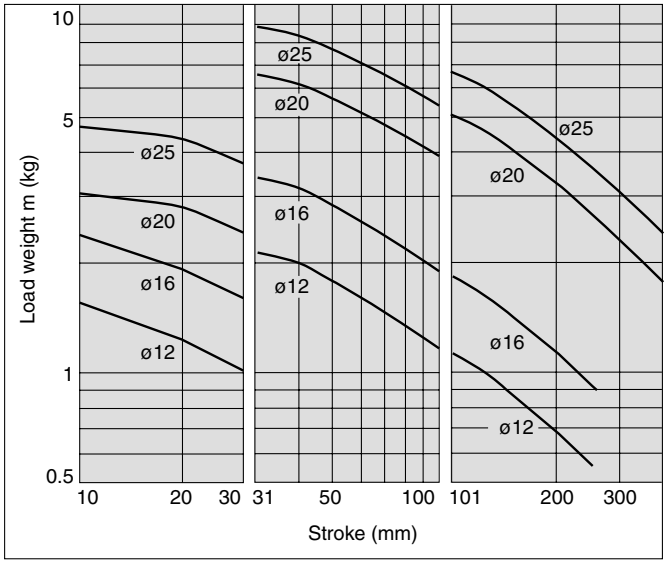
(16) ℓ = 100 mm, V = 400 mm/s



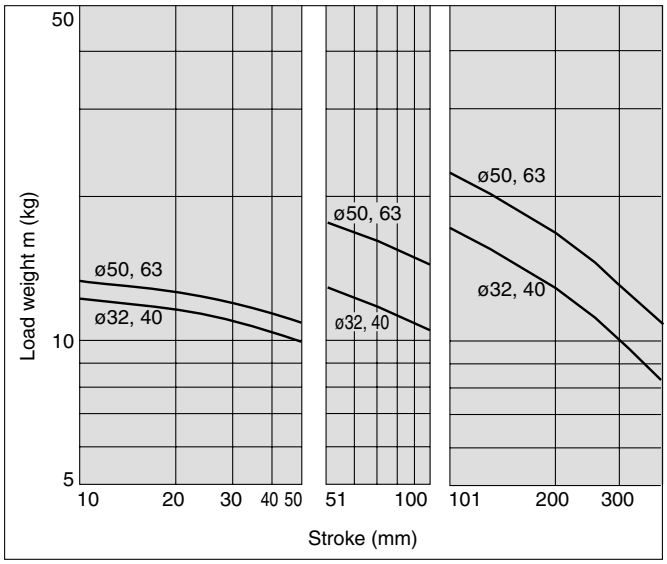
Horizontal Mounting (Ball bushing bearing)

(17) ℓ = 50 mm, V = 200 m/s

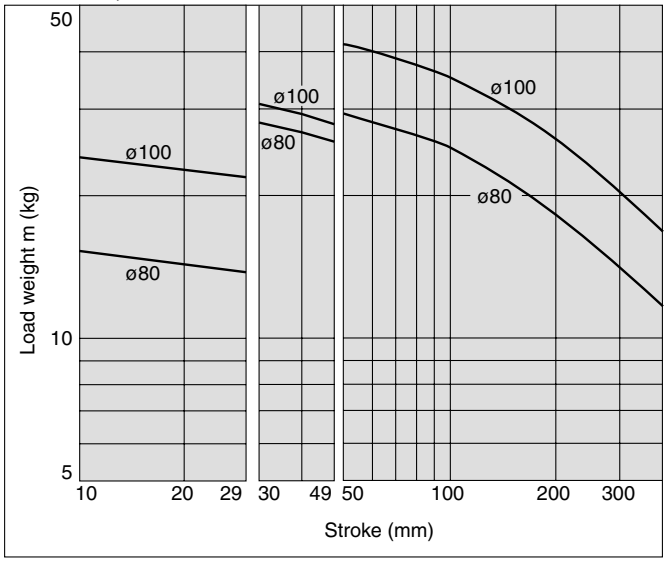
MGPL12 to 25



MGPL32 to 63

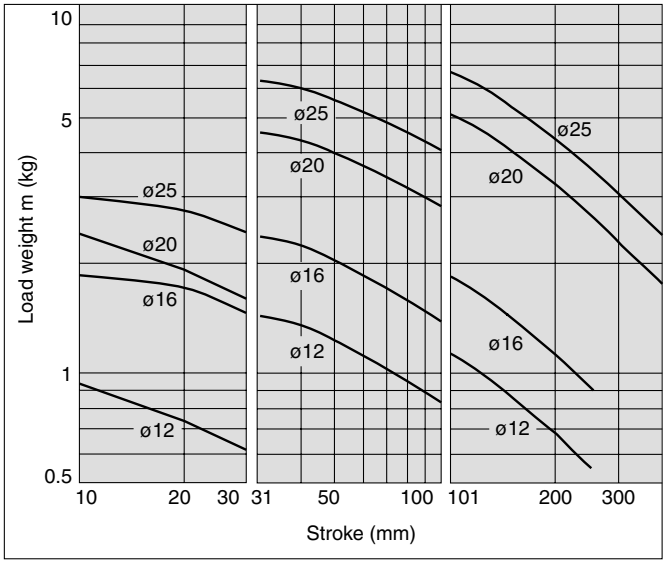


MGPL80, 100

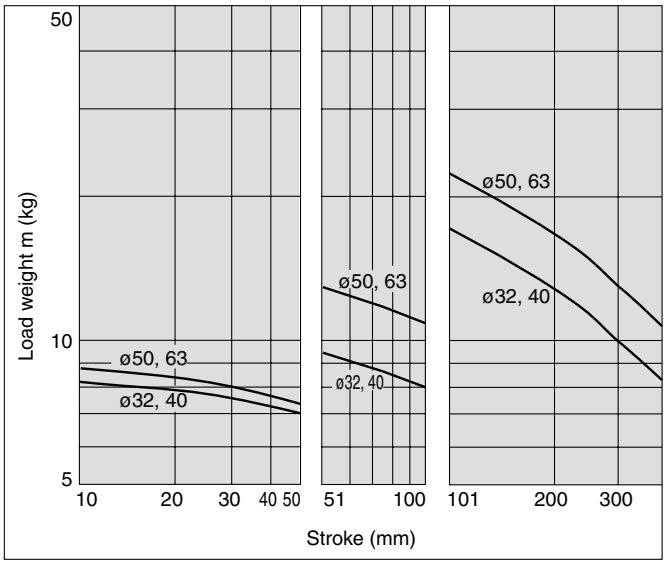


(18) ℓ = 100 mm, V = 200 m/s

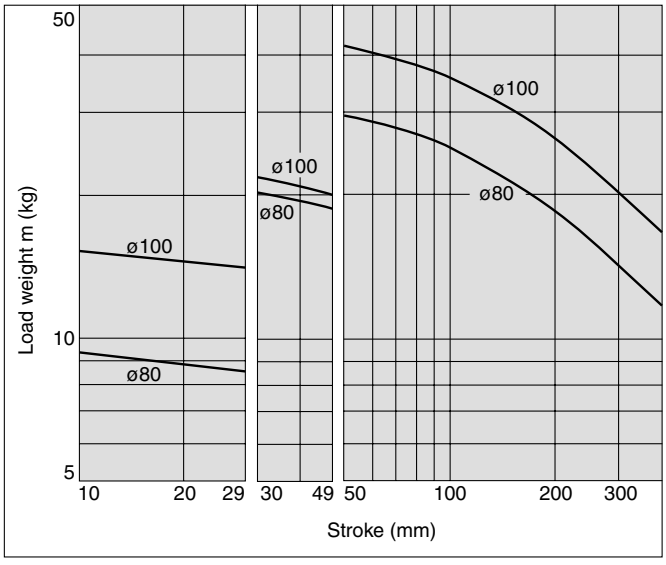
MGPL12 to 25



MGPL32 to 63



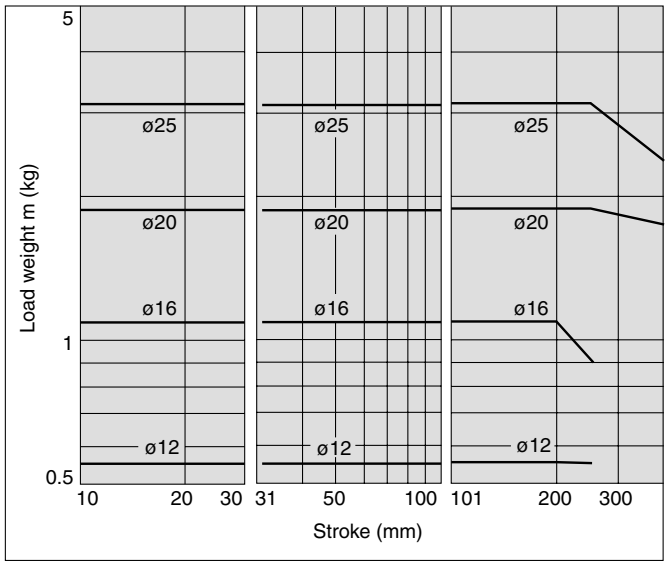
MGPL80, 100



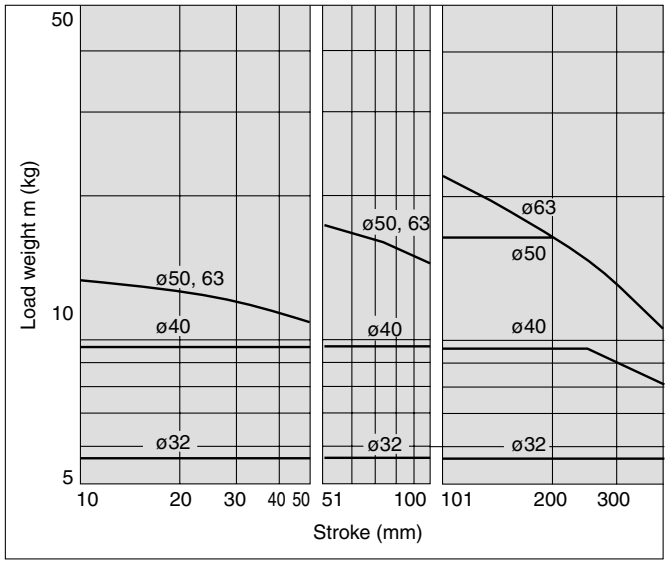
Horizontal Mounting (Ball bushing bearing)

(19) ℓ = 50 mm, V = 400 m/s

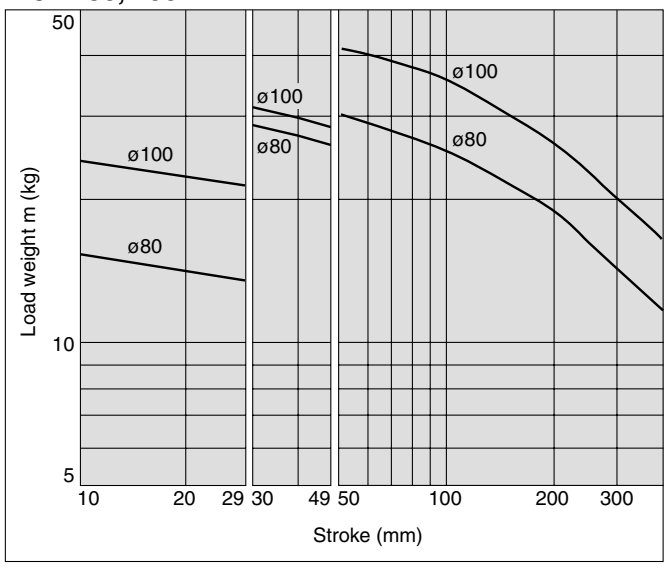
MGPL12 to 25



MGPL32 to 63

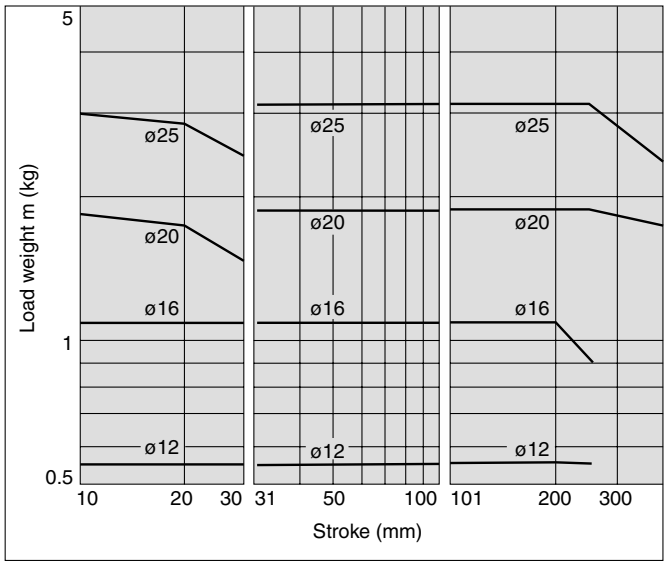


MGPL80, 100

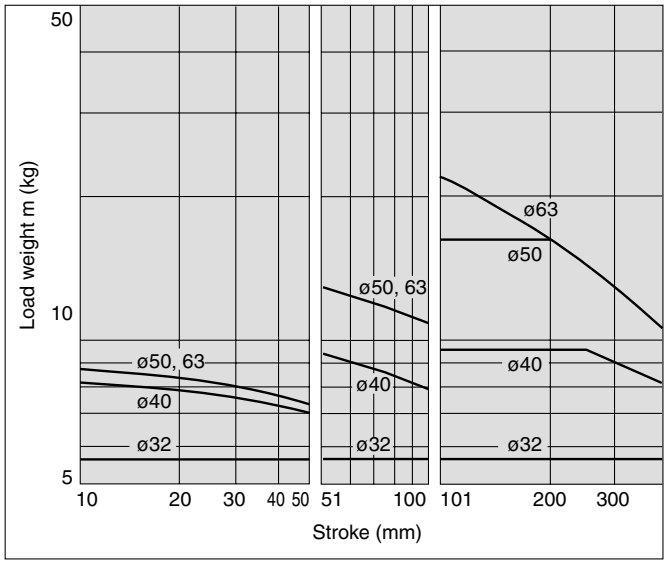


(20) ℓ = 100 mm, V = 400 m/s

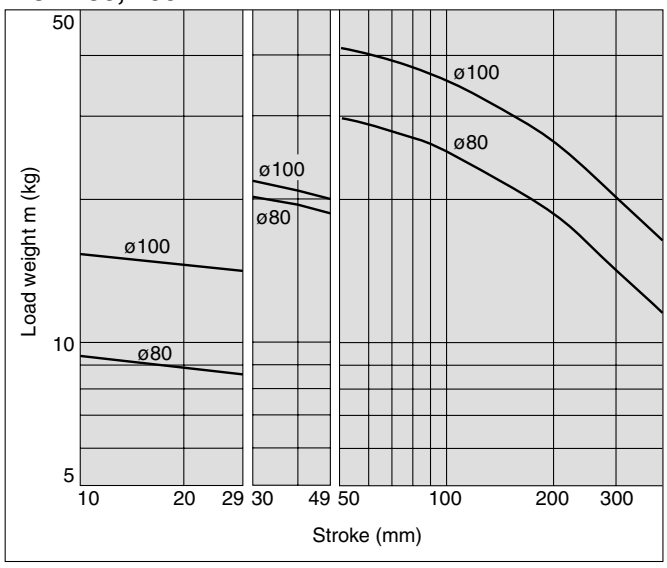
MGPL12 to 25



MGPL32 to 63

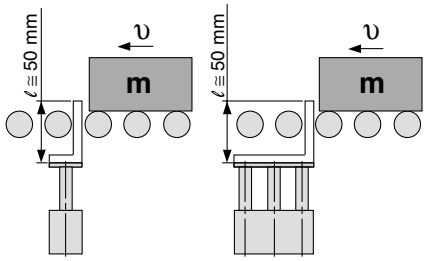


MGPL80, 100



Operating Range when Used as Stopper

Bore Size: 12 to 25/MGPM12 to 25 (Slide bearing)



∗ When selecting a model with a longer ℓ dimension, be sure to choose a bore size which is sufficiently large.

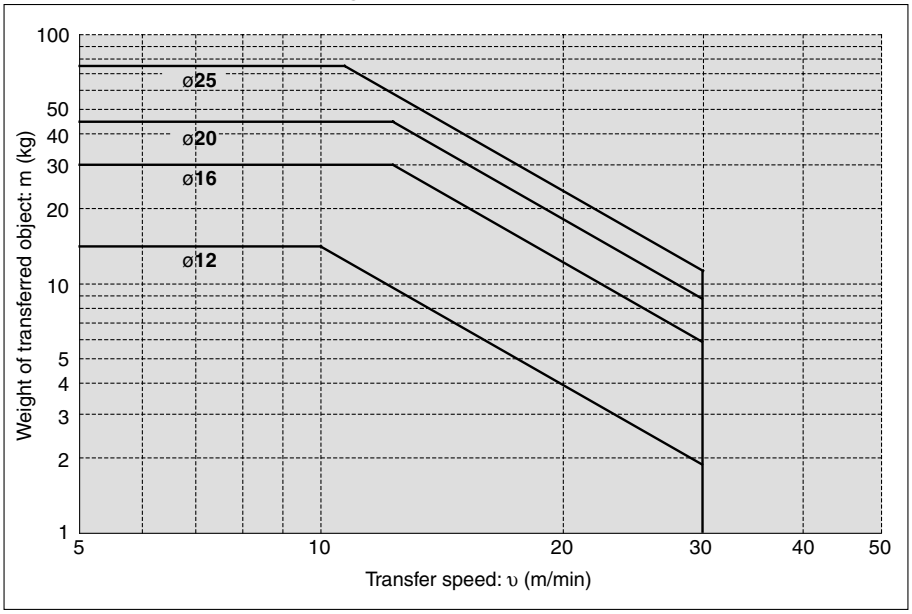
⚠ Caution

Caution on handling

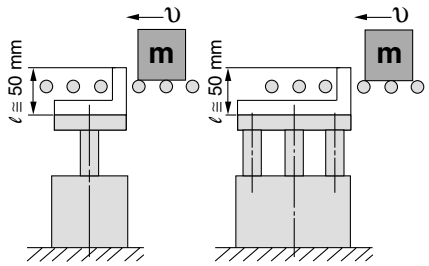
Note 1) When using as a stopper, select a model with 30 stroke or less.

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

MGPM12 to 25 (Slide bearing)



Bore Size: 32 to 100/MGPM32 to 100 (Slide bearing)



∗ When selecting a model with a longer ℓ dimension, be sure to choose a bore size which is sufficiently large.

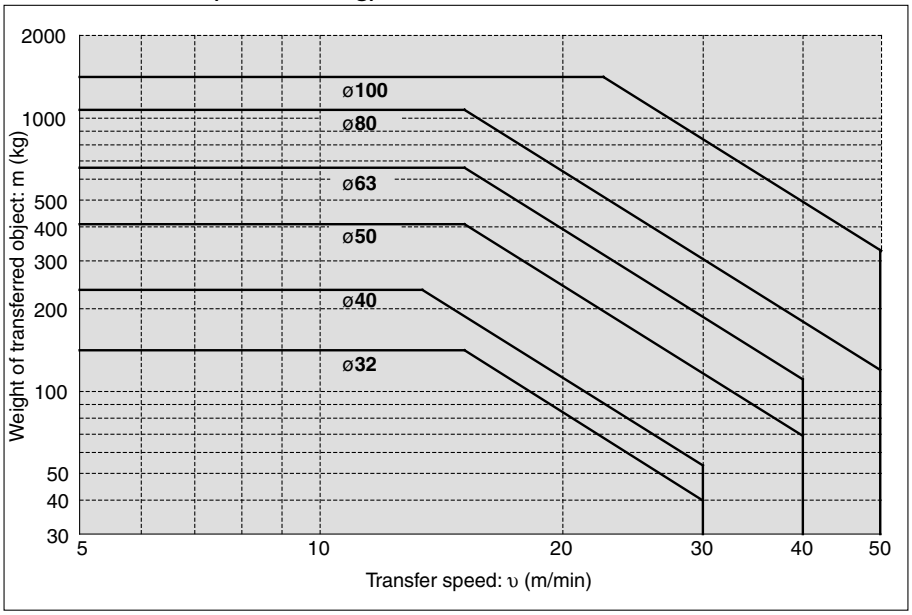
⚠ Caution

Caution on handling

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

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

MGPM32 to 100 (Slide bearing)



1. Water Resistant

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

Specifications

Applicable series		MGPM
Bearing type		Slide bearing
Bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Cushion	MGPM□□R	Rubber bumper
	MGPM□□V	Without cushion

∗ Specifications other than above are the same as standard, basic style.

How to Order

MGPM [Bore size] [ ] **R** — [Stroke] — **Y7BAL**

- **Y7BAL**: Water resistant 2-color indication solid state switch
- **Thread type**

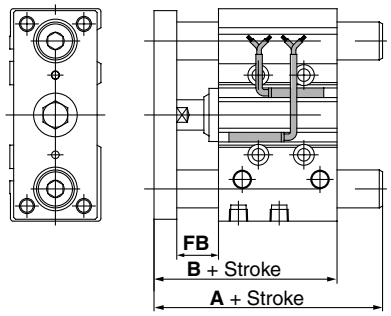
Nil	Rc
N	NPT
TF	G

- **Water resistant cylinder**

R	NBR seals (Nitrile rubber)
V	FKM seals (Fluoro rubber)

∗ Stainless steel parts are available as made-to-order products.
∗ Piston rod and guide rod are made of stainless steel.

Dimensions



Bore size (mm)	A		B	FB
	50 stroke or less	51 stroke or more		
20	66	97.5	66	19
25	67.5	99	67.5	20
32	109	114	71.5	22
40	109	114	78	22
50	117.5	129	83	23
63	117.5	129	88	23
80	121	148	102.5	24
100	141	166	120	29

∗ Other dimensions are the same as standard type.

2. Copper-free (For CRT manufacturing process)

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

Specifications

Applicable series	MGPM	MGPL
Bearing type	Slide bearing	Ball bushing bearing
Bore size (mm)	12, 16, 20, 25, 32 40, 50, 63, 80, 100	

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

How to Order

20 — **MGP** [M] [Bore size] [ ] — [Stroke]

- **Copper-free**
- **Bearing type**

M	Slide bearing
L	Ball bushing bearing

- **Thread type**

Nil	M5 x 0.8
	Rc
N	NPT
TF	G

∗ For bore sizes 12 and 16, M5 x 0.8 is only available.

3. Clean Series

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

Specifications

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

∗ Specifications other than above are the same as standard, basic style.

How to Order

12 — **MGPL** [Bore size] [ ] — [Stroke]

- **Clean room specifications**

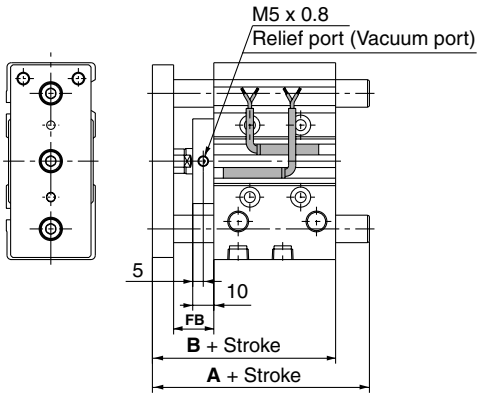
12	Relief port type
13	Vacuum type

- **Thread type**

Nil	M5 x 0.8
	Rc
N	NPT
TF	G

∗ For bore sizes 12 and 16, M5 x 0.8 is only available.

Dimensions

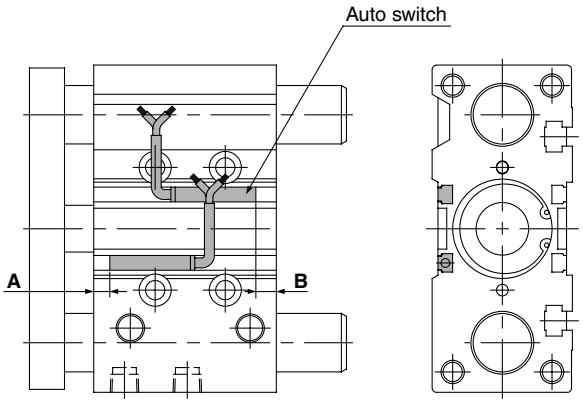


Bore size (mm)	A			B	FB
	30 st or less	Over 30 st to 100 st	Over 100 st		
12	56	68	—	55	18
16	62	78	—	59	18
20	76	93	117	66	19
25	82.5	98.5	117.5	66.5	19

Bore size (mm)	A			B	FB
	50 st or less	Over 50 st to 100 st	Over 100 st		
32	93	110	130	71.5	22
40	93	110	130	78	22
50	104	125	145	83	23
63	104	125	145	88	23

∗ Other dimensions are the same as standard products.

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



Proper Mounting Position

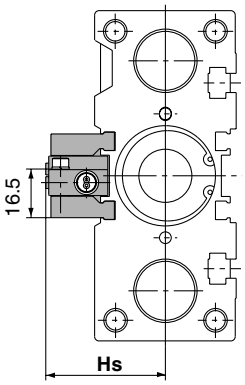
Bore size (mm)	A	B
12	1.5	3
16	4.5	4
20	4	8
25	4.5	8
32	5.5	7

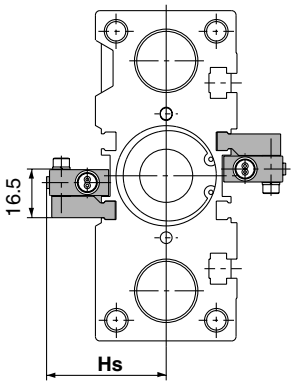
Bore size (mm)	A	B
40	9.5	9.5
50	7.5	11.5
63	10	14
80	13	18.5
100	17.5	23.5

Note 1) Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.
Note 2) D-P5DW type can be mounted only on bore sizes 40 through 100.

For D-P5DW (∗ Cannot be mounted on bore sizes ø32 or less.)

ø40 to ø63

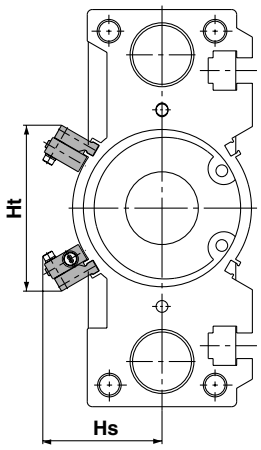




For 25 stroke

∗ For bore sizes 40 through 63 with two switches, one switch is mounted on each side.

ø80, ø100



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

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

Operating Range

Auto switch model	Applicable bore size (mm)									
	12	**16**	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-Z7□/Z80	7.5	10	10	10	10.5	10.5	10.5	11.5	11.5	12
D-Y59□/Y69□/Y7P/Y7PV D-Y7□W/Y7□WV	5.5	7.5	7.5	7	6.5	6	7	8	9.5	10
D-Y7BAL	3.5	5	5	5	6	6	6	6	6	6.5
D-P5DWL	—	—	—	—	—	4	4	5	4	4

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted.
For detailed specifications, refer to page 8-30-1.

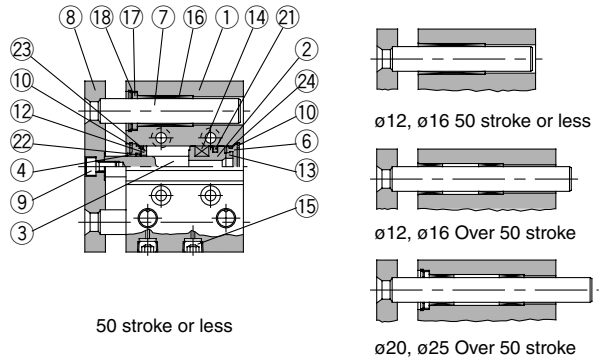
Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-Z80	Grommet (In-line)	Without indicator light

∗ Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available. For details, refer to page 8-30-32.

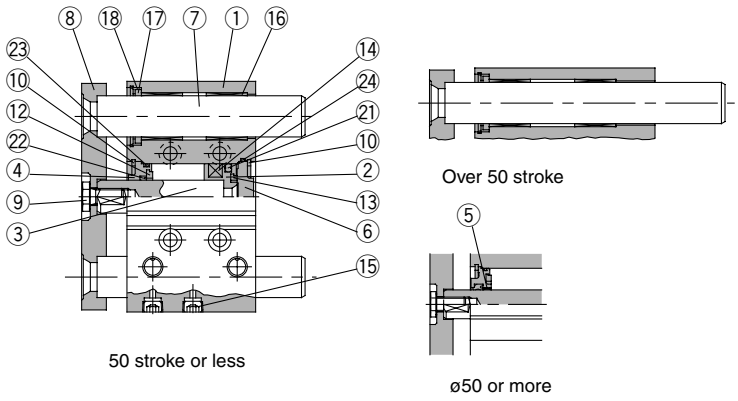
Construction

Series MGPM

MGPM12 to 25

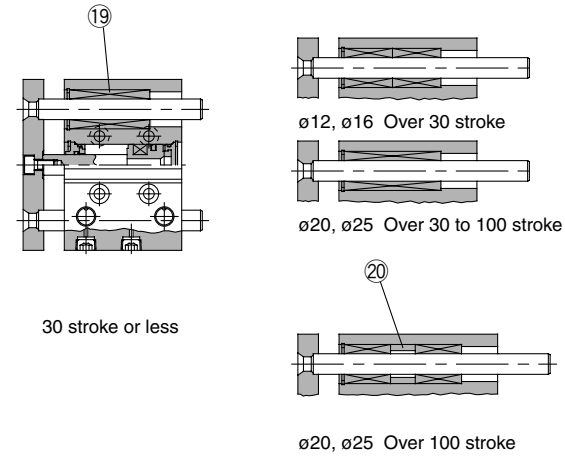


MGPM32 to 100

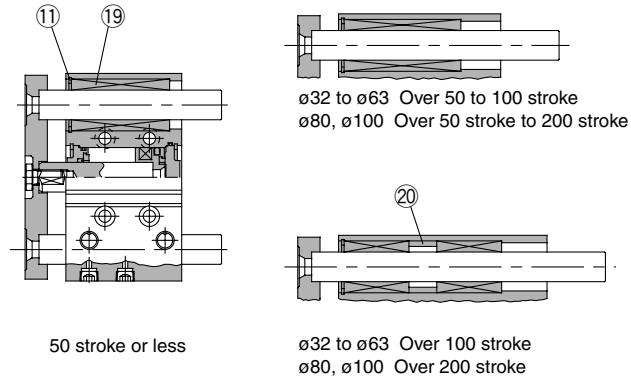


Series MGPL

MGPL12 to 25



MGPL32 to 100



Component Parts

No.	Description	Material	Note	
①	Body	Aluminum alloy	Hard anodized	
②	Piston	Aluminum alloy	Chromated	
③	Piston rod	Stainless steel	ø12 to ø25	
		Carbon steel	ø32 to ø100	Hard chrome plated
④	Collar	Aluminum alloy	ø12 to ø40	Clear anodized
		Aluminum alloy casted	ø50 to ø100	Painted
⑤	Bushing	Lead bronze casting	ø50 to ø100	
⑥	Head cover	Aluminum alloy	ø12 to ø63	Colorless chromated
			ø80 to ø100	Painted
⑦	Guide rod	Carbon steel	Hard chrome plated	
⑧	Plate	Carbon steel	Nickel plated	
⑨	Plate mounting bolt	Carbon steel	Nickel plated	
⑩	Snap ring	Carbon tool steel	Phosphate coated	
⑪	Snap ring	Carbon tool steel	Phosphate coated	

No.	Description	Material	Note	
⑫	Bumper A	Urethane		
⑬	Bumper B	Urethane		
⑭	Magnet	Magnetic material		
⑮	Plug (M-5P)	Brass	ø12, ø16	Nickel plated
	Hexagon socket head taper plug	Carbon steel	ø20 to ø100	Nickel plated
⑯	Slide Bearing	Lead-bronze casted		
⑰	Felt	Felt	Except ø12, ø16	
⑱	Holder	Resin	Except ø12, ø16	
⑲	Ball bushing			
⑳	Spacer	Aluminum alloy		
㉑*	Piston seal	NBR		
㉒*	Rod seal	NBR		
㉓*	Gasket A	NBR		
㉔*	Gasket B	NBR		

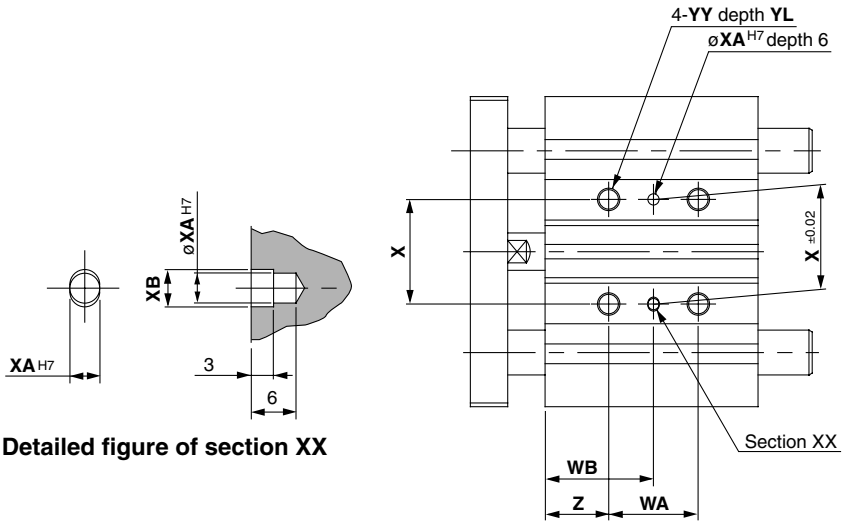
Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
12	MGP12-PS	Set of nos. above ㉑, ㉒, ㉓, ㉔
16	MGP16-PS	
20	MGP20-PS	
25	MGP25-PS	
32	MGP32-PS	

Bore size (mm)	Kit no.	Contents
40	MGP40-PS	Set of nos. above ㉑, ㉒, ㉓, ㉔
50	MGP50-PS	
63	MGP63-PS	
80	MGP80-PS	
100	MGP100-PS	

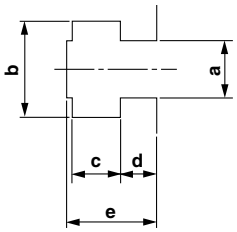
∗ Seal kit includes ㉑ to ㉔. Order the seal kit, based on each bore size.

MGPM, MGPL: ø12 to ø25

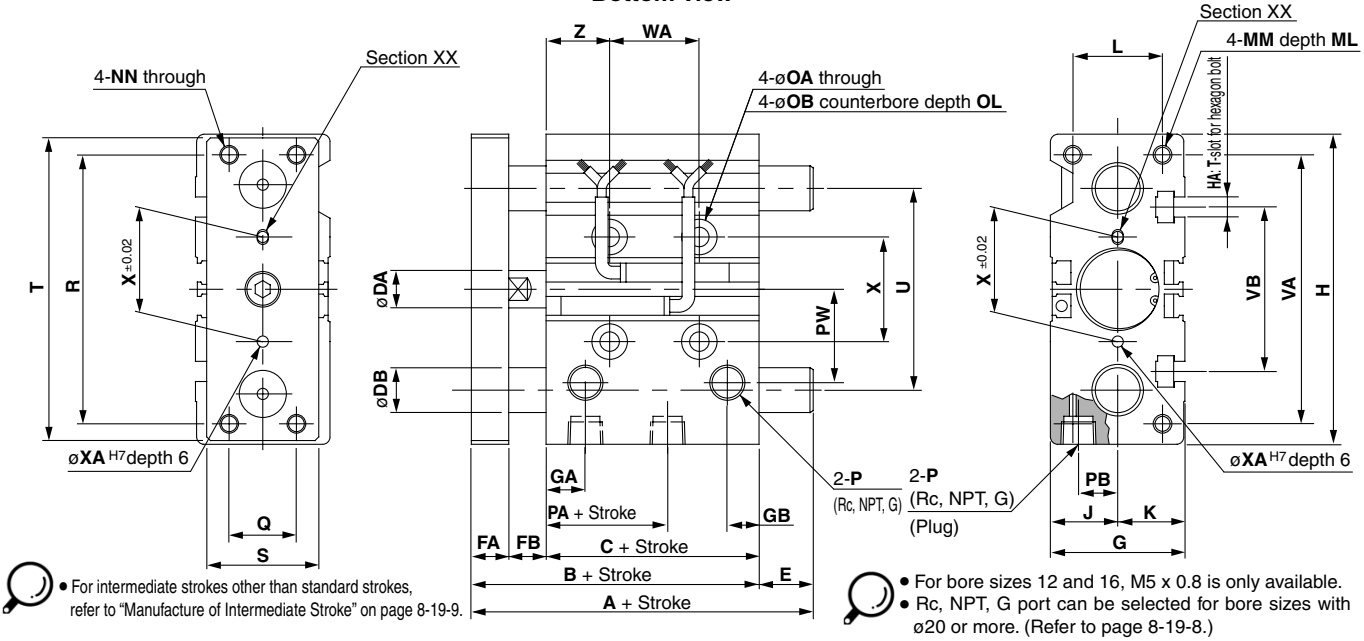


Detailed figure of section XX

T-slot dimensions



Bore size (mm)	a	b	c	d	e
12	4.4	7.4	3.7	2	6.2
16	4.4	7.4	3.7	2.5	6.7
20	5.4	8.4	4.5	2.8	7.8
25	5.4	8.4	4.5	3	8.2



- For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Stroke" on page 8-19-9.

- For bore sizes 12 and 16, M5 x 0.8 is only available.
- Rc, NPT, G port can be selected for bore sizes with ø20 or more. (Refer to page 8-19-8.)

MGPM, MGPL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW
12	10, 20, 30, 40, 50, 75, 100	42	29	6	8	5	26	11	7.5	58	M4	13	13	18	M4 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	13	8	18
16	125, 150, 175, 200, 250	46	33	8	8	5	30	11	8	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	15	10	19
20	20, 30, 40, 50, 75, 100 125, 150, 175, 200	53	37	10	10	6	36	10.5	8.5	83	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	1/8	12.5	10.5	25
25	250, 300, 350, 400	53.5	37.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.6	9.5	5.5	1/8	12.5	13.5	28.5

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

MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	50 st or less	Over 50 st to 100 st	Over 100 st		50 st or less	Over 50 st to 100 st	Over 100 st
12	42	60.5	85	8	0	18.5	43
16	46	64.5	95	10	0	18.5	49

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

Bore size (mm)	A			DB	E		
	30 st or less	Over 30 st to 100 st	Over 100 st		30 st or less	Over 30 st to 100 st	Over 100 st
12	43	55	85	6	1	13	43
16	49	65	95	8	3	19	49

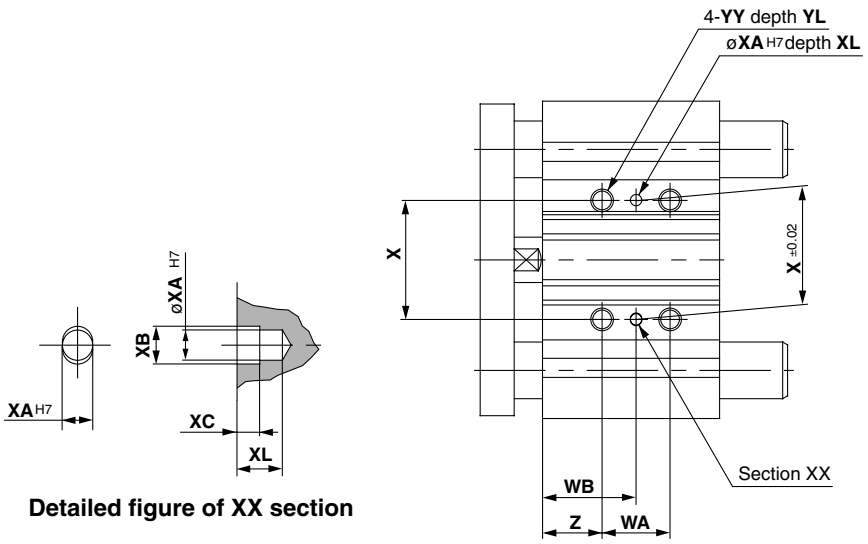
MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	50 st or less	Over 50 st to 200 st	Over 200 st		50 st or less	Over 50 st to 200 st	Over 200 st
20	53	84.5	122	12	0	31.5	69
25	53.5	85	122	16	0	31.5	68.5

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

Bore size (mm)	A				DB	E			
	30 st or less	Over 30 st to 100 st	Over 100 st to 200 st	Over 200 st		30 st or less	Over 30 st to 100 st	Over 100 st to 200 st	Over 200 st
20	63	80	104	122	10	10	27	51	69
25	69.5	85.5	104.5	122	13	16	32	51	68.5

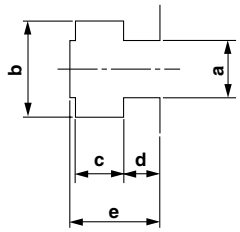
MGPM, MGPL: ø32 to ø63



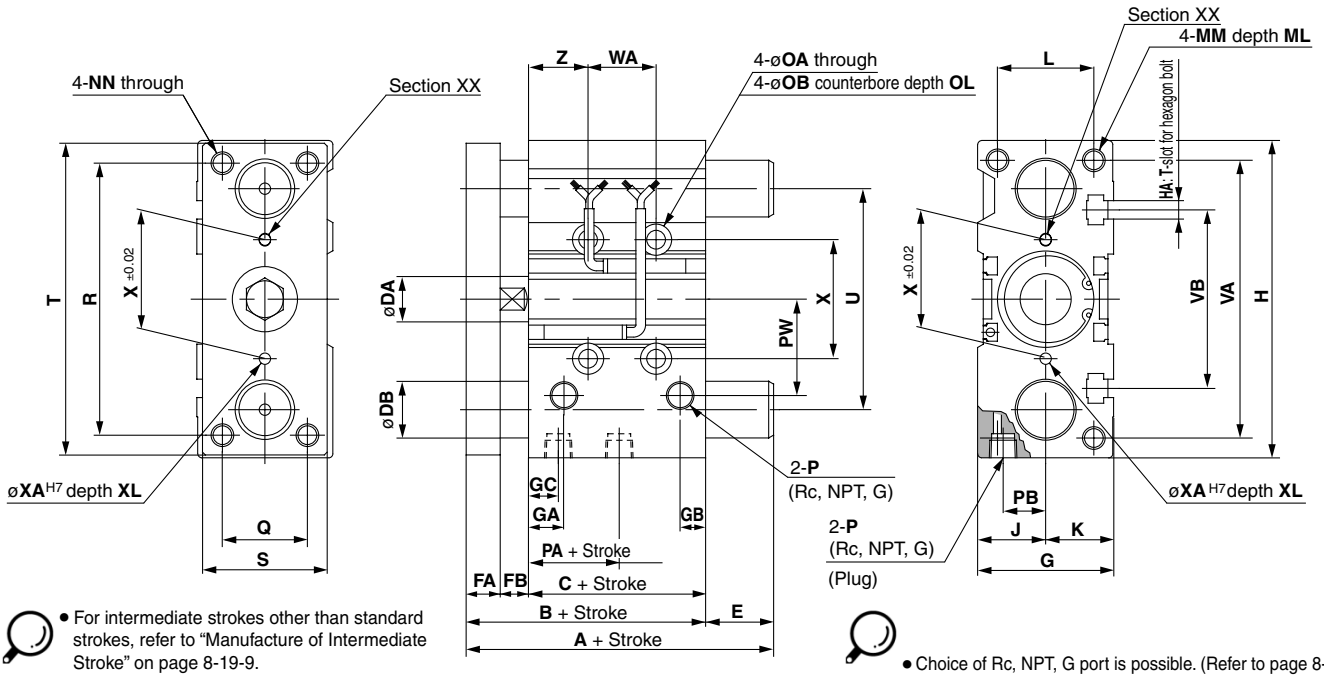
Detailed figure of XX section

Bottom view

T-slot dimensions



Bore size (mm)	a	b	c	d	e
32	6.5	10.5	5.5	3.5	9.5
40	6.5	10.5	5.5	4	11
50	8.5	13.5	7.5	4.5	13.5
63	11	17.8	10	7	18.5



● For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Stroke" on page 8-19-9.

● Choice of Rc, NPT, G port is possible. (Refer to page 8-19-8.)

MGPM, MGPL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
32	25, 50, 75, 100, 125, 150, 175, 200 250, 300, 350, 400	59.5	37.5	16	12	10	48	12.5	9	12.5	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	7	15	34	30
40		66	44	16	12	10	54	14	10	14	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	13	18	38	30
50		72	44	20	16	12	64	14	11	12	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	9	21.5	47	40
63		77	49	20	16	12	78	16.5	13.5	16.5	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	14	28	55	50

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

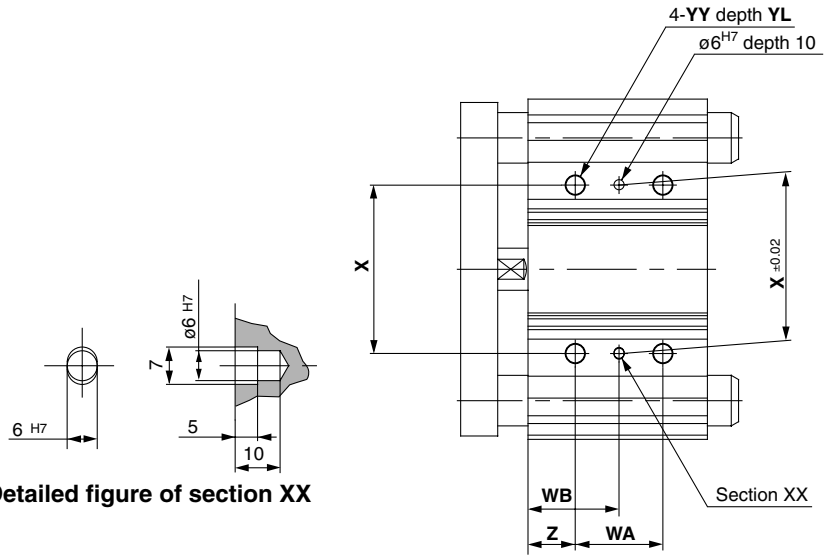
MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	50 st or less	Over 50 st to 200 st	Over 200 st		50 st or less	Over 50 st to 200 st	Over 200 st
32	97	102	140	20	37.5	42.5	80.5
40	97	102	140	20	31	36	74
50	106.5	118	161	25	34.5	46	89
63	106.5	118	161	25	29.5	41	84

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

Bore size (mm)	A				DB	E			
	50 st or less	Over 50 st to 100 st	Over 100 st to 200 st	Over 200 st		50 st or less	Over 50 st to 100 st	Over 100 st to 200 st	Over 200 st
32	81	98	118	140	16	21.5	38.5	58.5	80.5
40	81	98	118	140	16	15	32	52	74
50	93	114	134	161	20	21	42	62	89
63	93	114	134	161	20	16	37	57	84

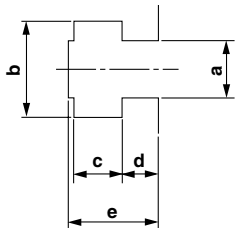
MGPM, MGPL: ø80, ø100



Detailed figure of section XX

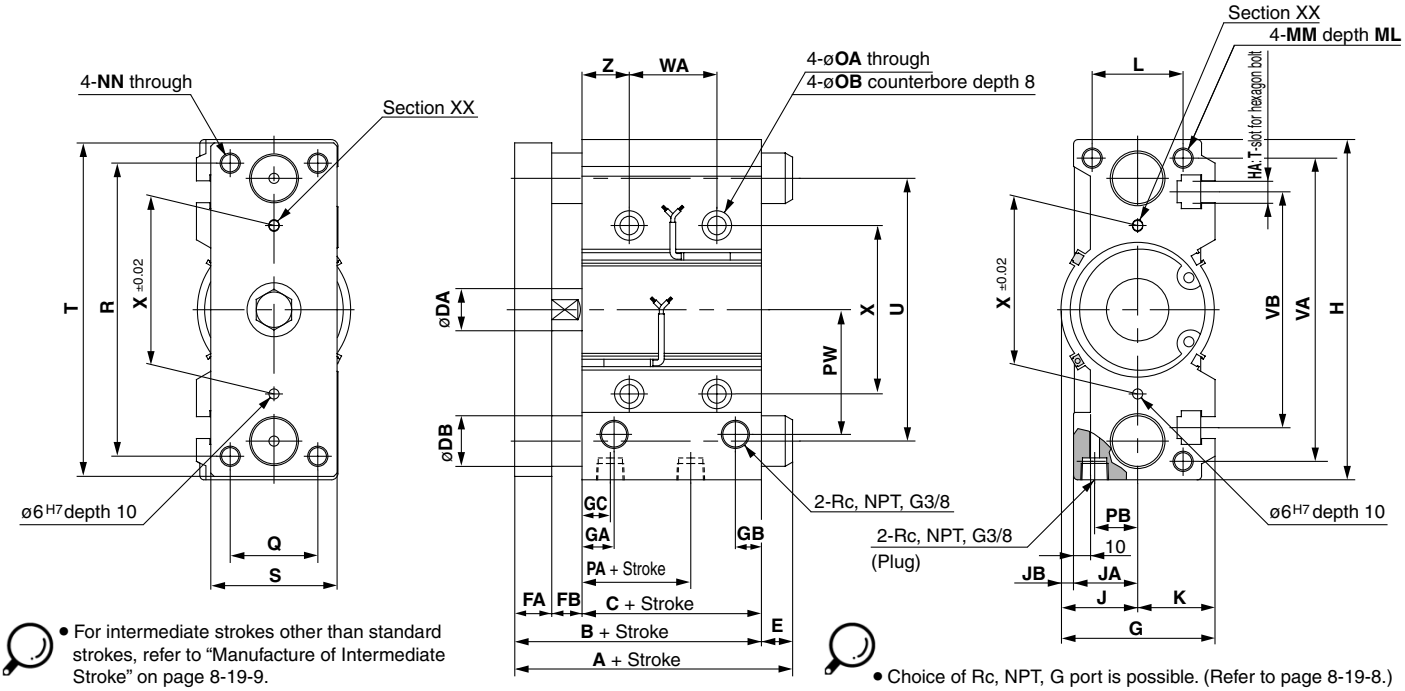
Bottom view

T-slot dimensions



(mm)

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



• For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Stroke" on page 8-19-9.

• Choice of Rc, NPT, G port is possible. (Refer to page 8-19-8.)

MGPM, MGPL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L	MM	ML	NN	OA	OB	PA	PB	PW	Q	R
80	25, 50, 75, 100, 125, 150, 175, 200 250, 300, 350, 400	96.5	56.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54	M12 x 1.75	25	M12 x 1.75	10.6	17.5	14.5	25.5	74	52	174
100		116	66	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62	M14 x 2.0	31	M14 x 2.0	12.5	20	17.5	32.5	89	64	210

Bore size (mm)	S	T	U	VA	VB	WA					WB					X	YY	YL	Z
						25 st or less	Over 25 st to 100 st	Over 100 st to 200 st	Over 200 st to 300 st	Over 300 st	25 st or less	Over 25 st to 100 st	Over 100 st to 200 st	Over 200 st to 300 st	Over 300 st				
80	75	198	156	180	140	28	52	128	200	300	42	54	92	128	178	100	M12 x 1.75	24	28
100	90	236	188	210	166	48	72	148	220	320	35	47	85	121	171	124	M14 x 2.0	28	11

MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	50 st or less	Over 50 st to 200 st	Over 200 st		50 st or less	Over 50 st to 200 st	Over 200 st
80	115	142	193	30	18.5	45.5	96.5
100	137	162	203	36	21	46	87

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

Bore size (mm)	A				DB	E			
	25 st or less	Over 25 st to 50 st	Over 50 st to 200 st	Over 200 st		25 st or less	Over 25 st to 50 st	Over 50 st to 200 st	Over 200 st
80	109.5	130	160	193	25	13	33.5	63.5	96.5
100	121	147	180	203	30	5	31	64	87

Compact Guide Cylinder With Air Cushion

Series MGP

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

How to Order

MGP **M** **32** **□** — **50** **A** — **Y7BW** **□**

Bearing type

M	Slide bearing
L	Ball bushing bearing

Bore size

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

Thread type

Nil	M5 x 0.8
	Rc
N	NPT
TF	G

∗ For bore size 16, M5 x 0.8 is only available.

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 8-19-26.

With air cushion

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.
∗ Auto switches are shipped together, (but not assembled). (Except D-P5DW)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	Pre-wire connector	Applicable load	
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		12 V		**Y69B**	**Y59B**	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		**Y7NWV**	**Y7NW**	●	●	○	○	IC circuit	
				3-wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○	○		
				2-wire		12 V		**Y7BWV**	**Y7BW**	●	●	○	○	—	
	Water resistant (2-color indication)							—	**Y7BA**	—	●	○	○		
	Magnetic field resistant (2-color indication)					—		—	**P5DW**	—	●	●	○		

∗ Lead wire length symbols: 0.5 m·····Nil (Example) Y59A
3 m····· L (Example) Y59AL
5 m····· Z (Example) Y59AZ

∗ Solid state switches marked with "○" are produced upon receipt of order.

∗ D-P5DW type can be mounted only on bore sizes 40 to 100.

• Since there are other applicable auto switches than listed, refer to page 8-19-36 for details.
• For details about auto switches with pre-wire connector, refer to page 8-30-52.

Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	ø16	0.15 MPa
	ø20 to ø100	0.12 MPa
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Piston speed	ø16 to ø63	50 to 500 mm/s
	ø80, ø100	50 to 400 mm/s
Cushion	Air cushion on both ends (Without bumper)	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_{0}$ (mm)	

Standard Stroke

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

Manufacture of Intermediate Stroke

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

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

Made to Order Specifications (For details, refer to page 8-31-1.)

Symbol	Specifications
-XC19	Intermediate stroke (with spacer installed)
-XC79	Machining tapped hole, drilled hole and pin hole additionally.

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 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (Nominal size 3)

Theoretical Output

OUT (N) IN (N)

(N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	OUT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

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

Weight

Slide bearing: MGPM16 to 100

(kg)

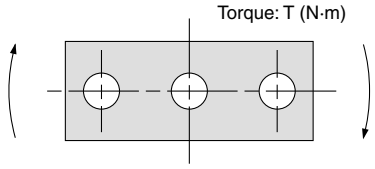
Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
16	**MGPM16**	0.51	0.69	0.78	0.91	—	—	—	—
20	**MGPM20**	0.89	1.14	1.34	1.54	1.74	1.94	2.13	2.33
25	**MGPM25**	1.23	1.60	1.87	2.14	2.41	2.68	2.95	3.23
32	**MGPM32**	1.98	2.51	2.77	3.15	3.53	3.91	4.29	4.68
40	**MGPM40**	2.34	2.91	3.21	3.64	4.06	4.49	4.92	5.34
50	**MGPM50**	3.92	4.75	5.29	5.93	6.57	7.21	7.85	8.49
63	**MGPM63**	4.94	5.89	6.54	7.29	8.05	8.81	9.56	10.32
80	**MGPM80**	—	8.98	9.64	10.6	11.5	12.5	13.4	14.3
100	**MGPM100**	—	14.2	15.1	16.5	17.8	19.1	20.5	21.8

Ball bushing bearing: MGPL16 to 100

(kg)

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
16	**MGPL16**	0.56	0.66	0.78	0.89	—	—	—	—
20	**MGPL20**	0.97	1.12	1.30	1.50	1.68	1.85	2.03	2.20
25	**MGPL25**	1.34	1.54	1.78	2.05	2.28	2.51	2.74	2.97
32	**MGPL32**	1.81	2.34	2.57	2.94	3.26	3.58	3.89	4.21
40	**MGPL40**	2.15	2.73	3.01	3.42	3.78	4.14	4.50	4.86
50	**MGPL50**	3.65	4.47	4.95	5.71	6.14	6.69	7.24	7.79
63	**MGPL63**	4.66	5.60	6.20	7.07	7.61	8.28	8.95	9.61
80	**MGPL80**	—	8.88	9.63	10.5	11.3	12.1	12.9	13.7
100	**MGPL100**	—	13.7	14.9	16.0	17.2	18.4	19.6	20.8

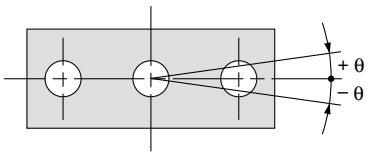
Allowable Rotational Torque of Plate (Air cushion)



T (N·m)

Bore size (mm)	Bearing type	Stroke							
		25	50	75	100	125	150	175	200
16	**MGPM**	0.53	0.84	0.69	0.58	—	—	—	—
	MGPL	1.27	0.86	0.65	0.52	—	—	—	—
20	**MGPM**	0.99	2.23	1.88	1.63	1.44	1.28	1.16	1.06
	MGPL	2.66	1.94	1.52	1.57	1.34	1.17	1.03	0.93
25	**MGPM**	1.64	3.51	2.96	2.57	2.26	2.02	1.83	1.67
	MGPL	4.08	3.02	2.38	2.41	2.05	1.78	1.58	1.41
32	**MGPM**	6.35	6.64	5.69	4.97	4.42	3.98	3.61	3.31
	MGPL	5.95	5.89	5.11	6.99	6.34	5.79	5.33	4.93
40	**MGPM**	7.00	7.32	6.27	5.48	4.87	4.38	3.98	3.65
	MGPL	6.55	6.49	5.62	7.70	6.98	6.38	5.87	5.43
50	**MGPM**	13.0	13.8	12.0	10.6	9.50	8.60	7.86	7.24
	MGPL	9.17	11.2	9.8	12.8	11.6	10.7	9.80	9.10
63	**MGPM**	14.7	15.6	13.5	11.9	10.7	9.69	8.86	8.16
	MGPL	10.2	12.5	11.0	14.3	13.0	11.9	11.0	10.2
80	**MGPM**	—	26.0	22.9	20.5	18.6	17.0	15.6	14.5
	MGPL	—	25.2	22.7	20.6	18.9	17.3	16.0	14.8
100	**MGPM**	—	41.9	37.5	33.8	30.9	28.4	26.2	24.4
	MGPL	—	41.7	37.9	34.6	31.8	29.3	27.2	25.3

Non-rotating Accuracy of Plate

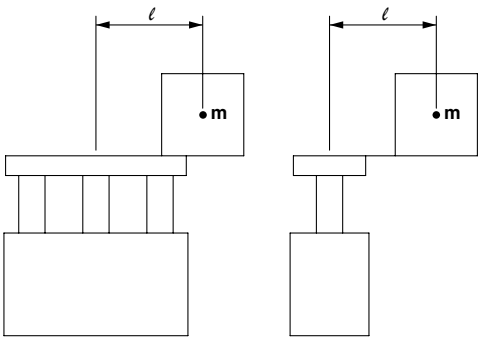
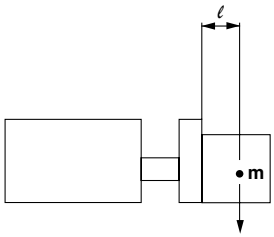


For non-rotating accuracy without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGPM	**MGPL**
16	±0.08°	±0.10°
20	±0.07°	±0.09°
25		
32	±0.06°	±0.08°
40		
50	±0.05°	±0.06°
63		
80	±0.04°	±0.05°
100		

Series MGP (With air cushion)
Model Selection

Selection Conditions

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

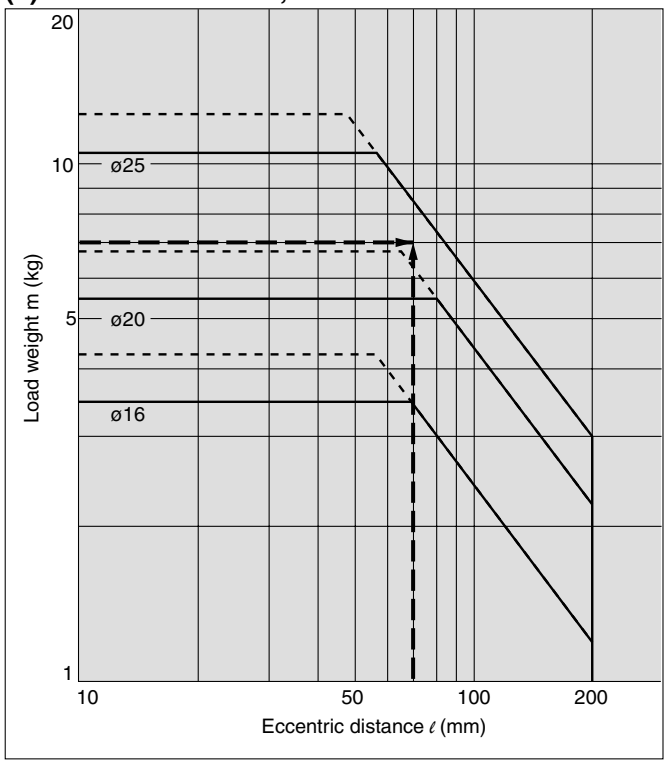
Selection Example 1 (Vertical mounting)

Selection conditions
- **Mounting: Vertical**
- **Bearing type: Ball bushing**
- **Stroke: 75 stroke**
- **Maximum speed: 200 mm/s**
- **Load weight: 7 kg**
- **Eccentric distance: 70 mm**

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

→ MGPL25-75A is selected.

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



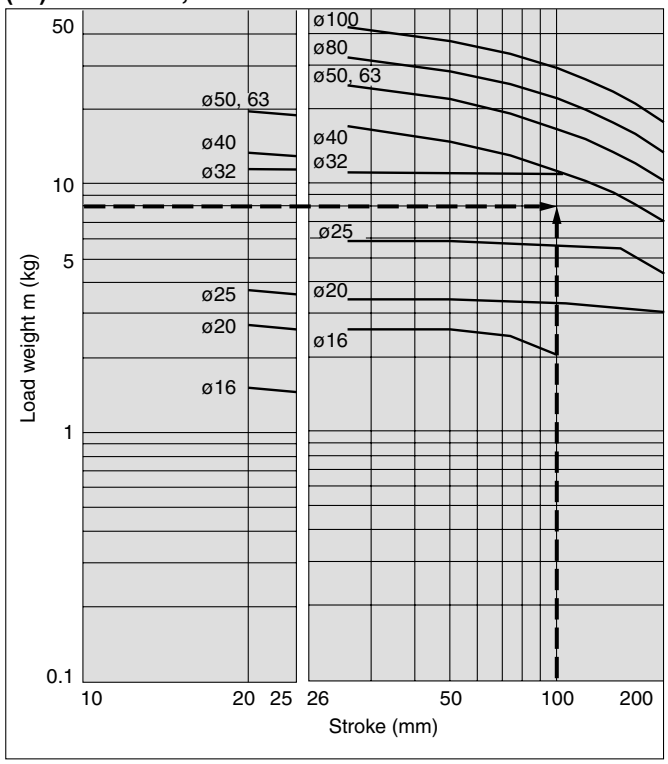
Selection Example 2 (Horizontal mounting)

Selection conditions
- **Mounting: Horizontal**
- **Bearing type: Slide bearing**
- **Distance between plate and load center of gravity: 40 mm**
- **Maximum speed: 300 mm/s**
- **Load weight: 8 kg**
- **Stroke: 100 stroke**

Find the point of intersection for the load weight of 8 kg and 100 stroke on graph (17), based on horizontal mounting, slide bearing, the distance of 40 mm between the plate and load center of gravity, and the speed of 300 mm/s.

→ MGPM32-100A is selected.

(17) ℓ = 50 mm, V = 400 mm/s

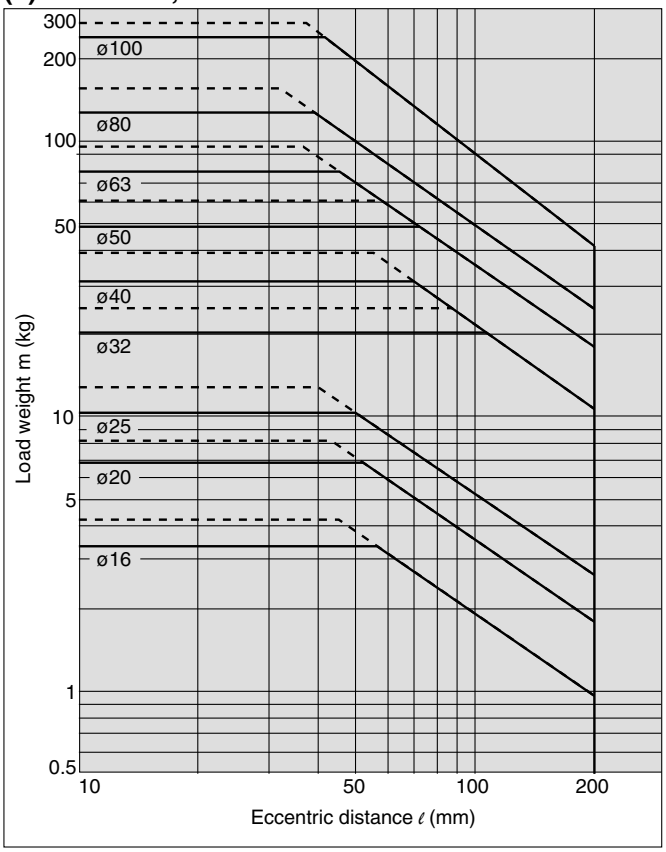


Vertical Mounting (Slide bearing)

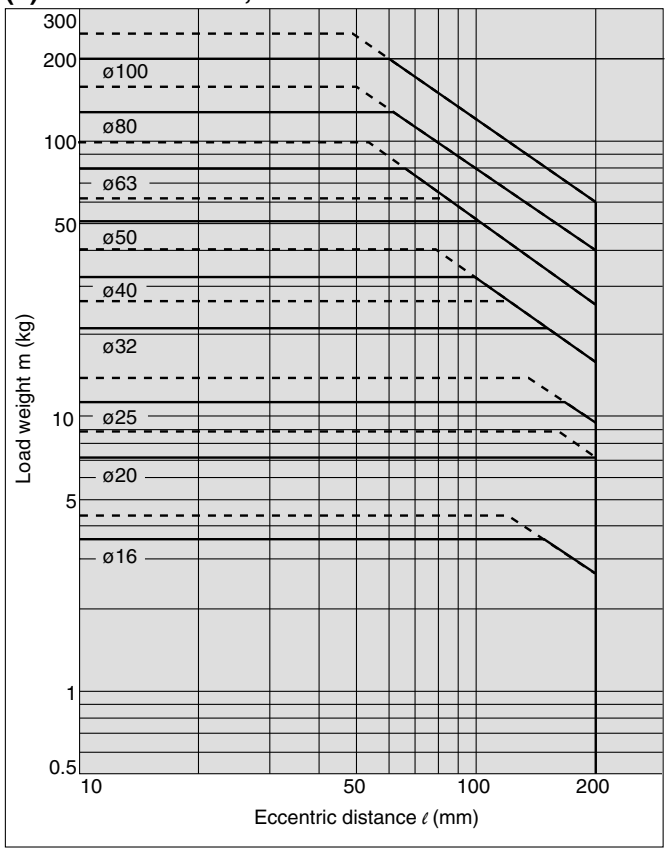
——— Operating pressure 0.4 MPa
- - - - Operating pressure 0.5 MPa or more

MGPM16 to 100

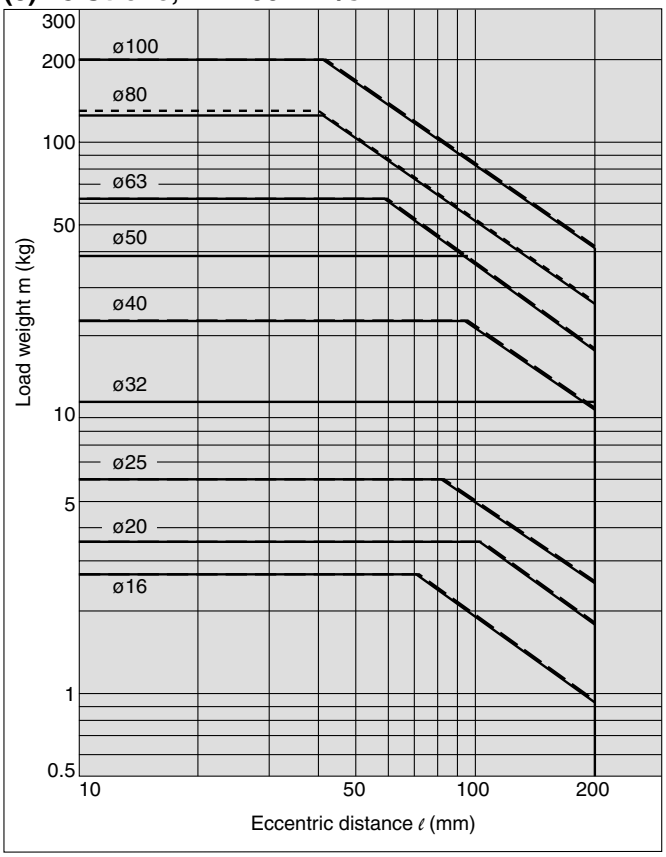
(1) 25 Stroke, V = 200 mm/s



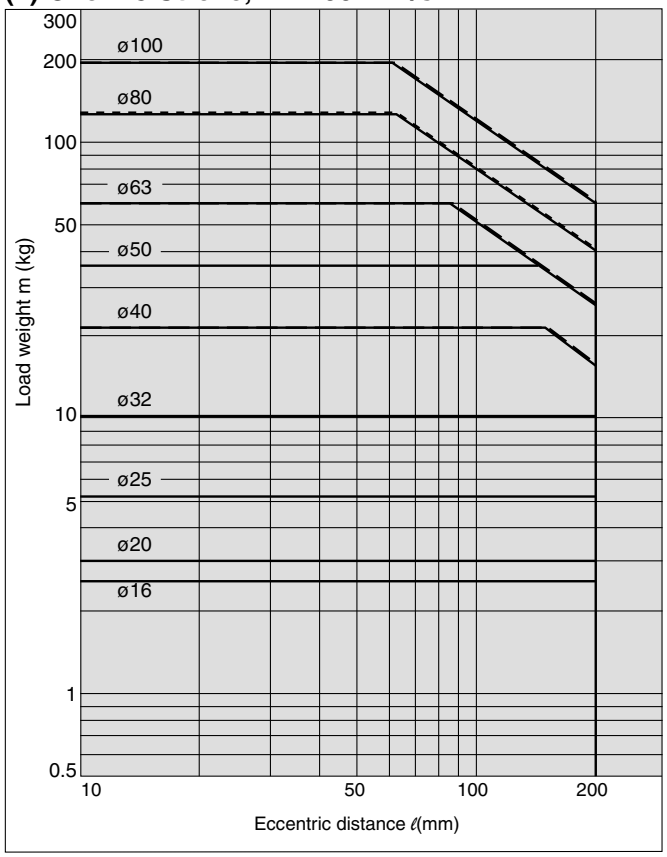
(2) Over 25 Stroke, V = 200 mm/s



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



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

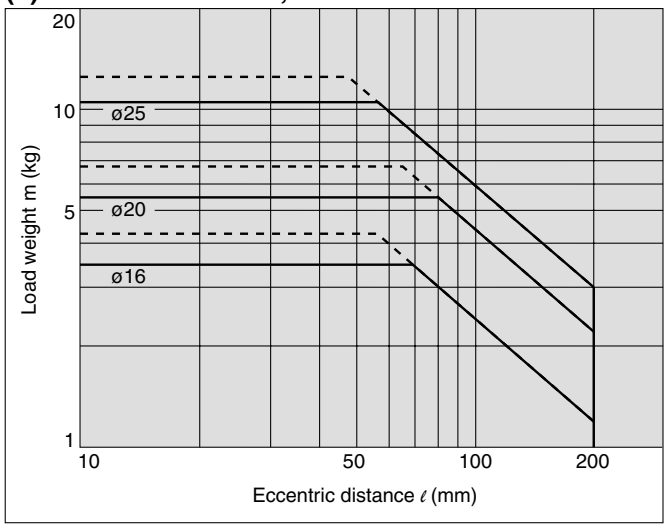


Vertical Mounting (Ball bushing bearing)

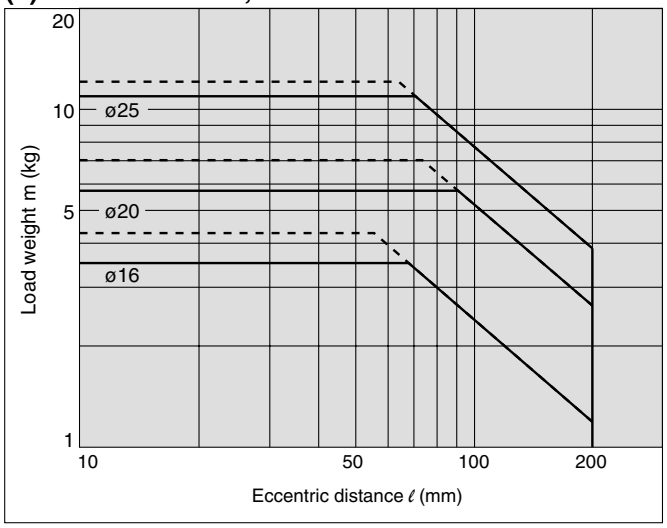
Operating pressure 0.4 MPa
Operating pressure 0.5 MPa or more

MGPL16 to 25

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

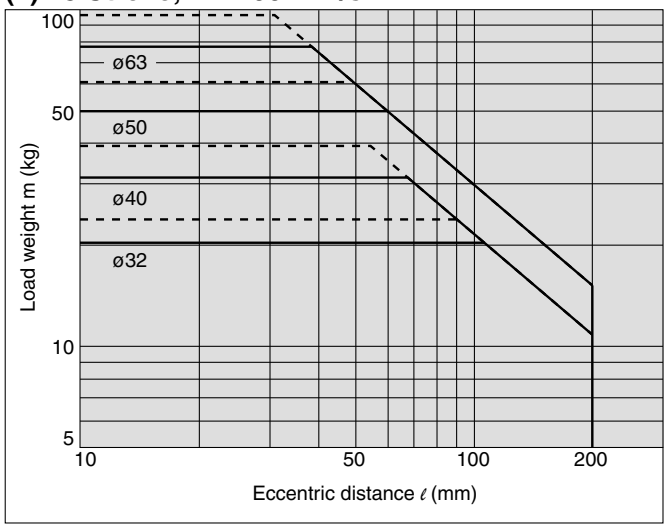


(6) Over 75 Stroke, V = 200 mm/s

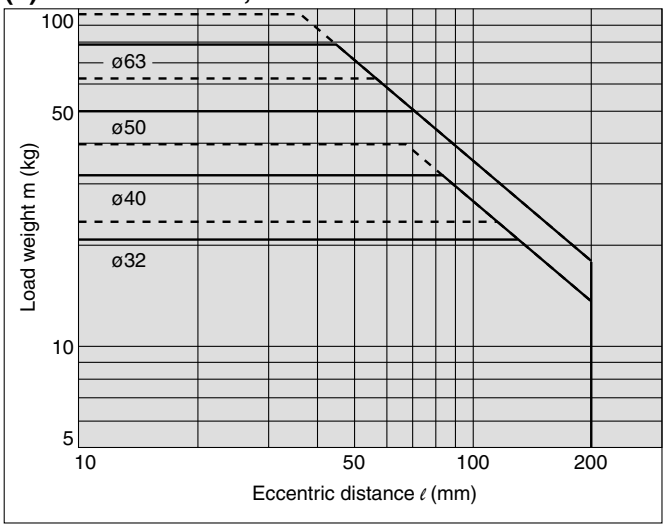


MGPL32 to 63

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

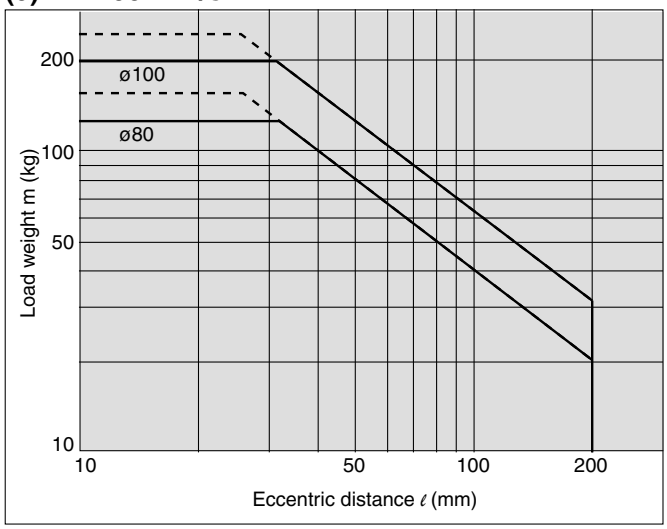


(8) Over 25 Stroke, V = 200 mm/s



MGPL80, 100

(9) V = 200 mm/s

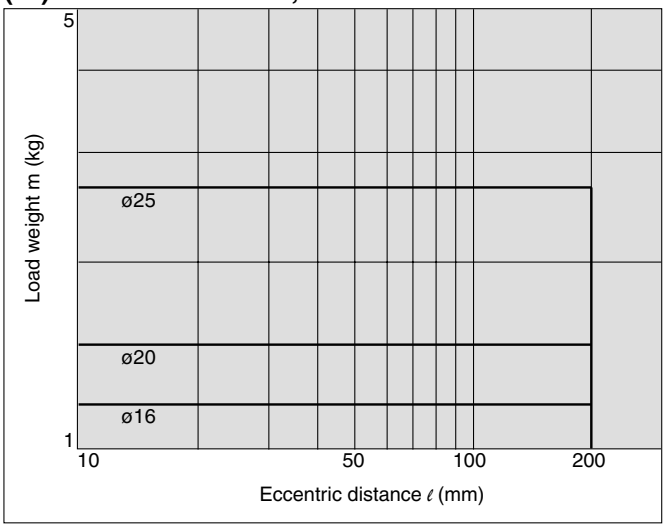


Vertical Mounting (Ball bushing bearing)

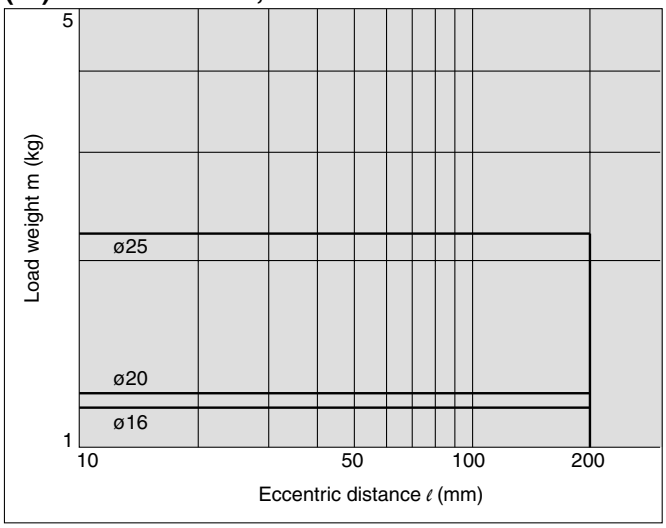
Operating pressure: 0.4 MPa

MGPL16 to 25

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

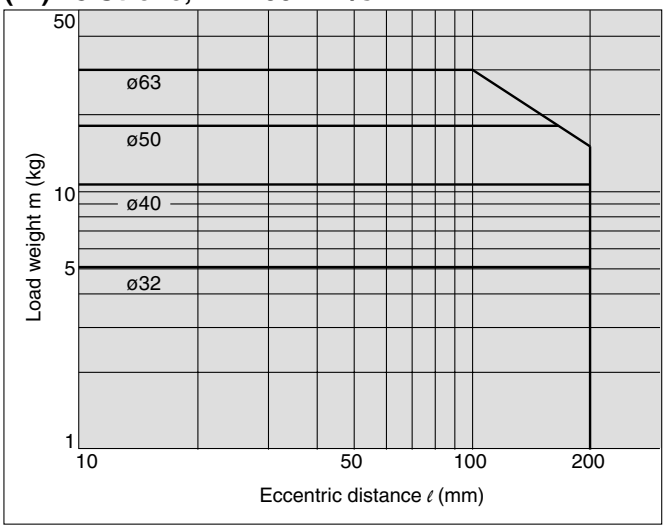


(11) Over 75 Stroke, V = 400 mm/s

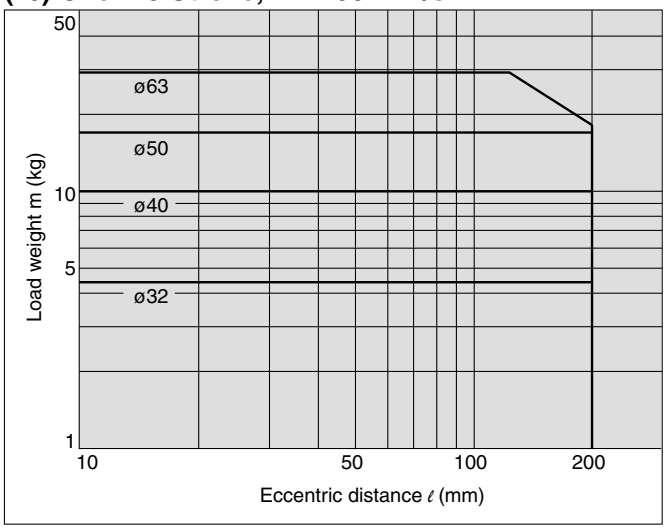


MGPL32 to 63

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

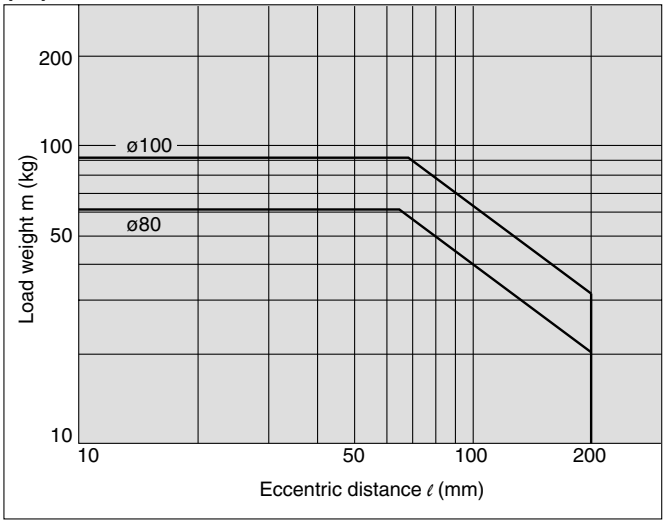


(13) Over 25 Stroke, V = 400 mm/s



MGPL80, 100

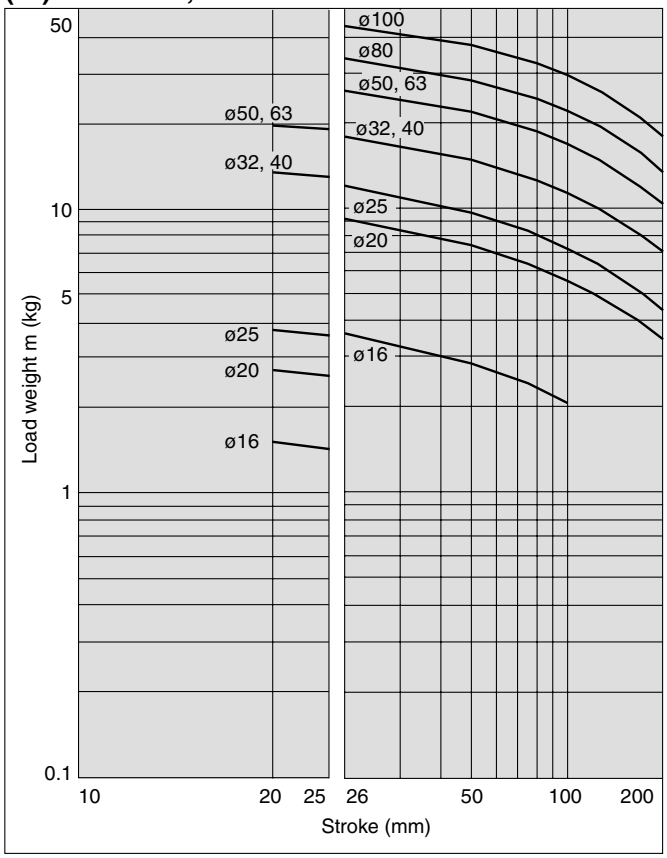
(14) V = 400 mm/s



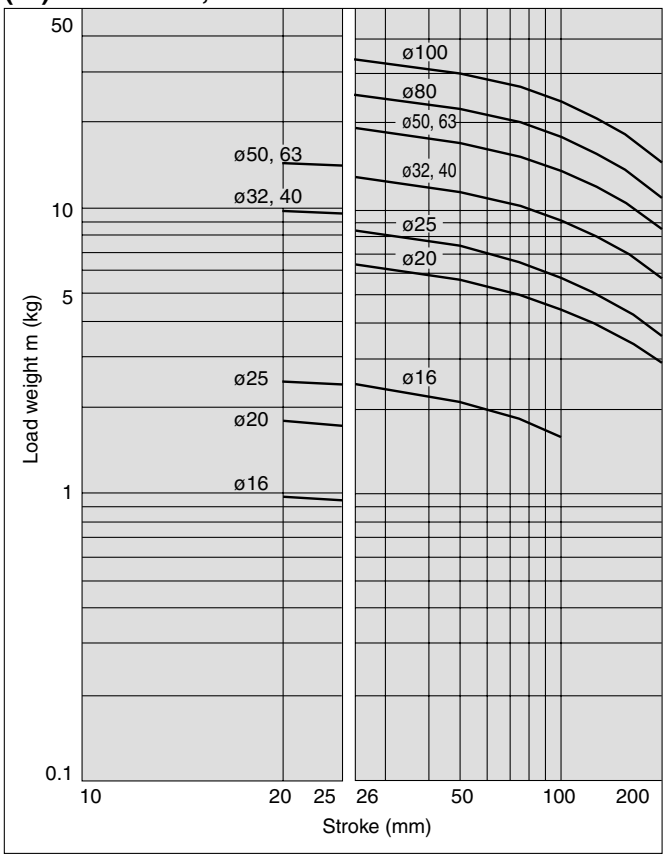
Horizontal Mounting (Slide bearing)

MGPM16 to 100

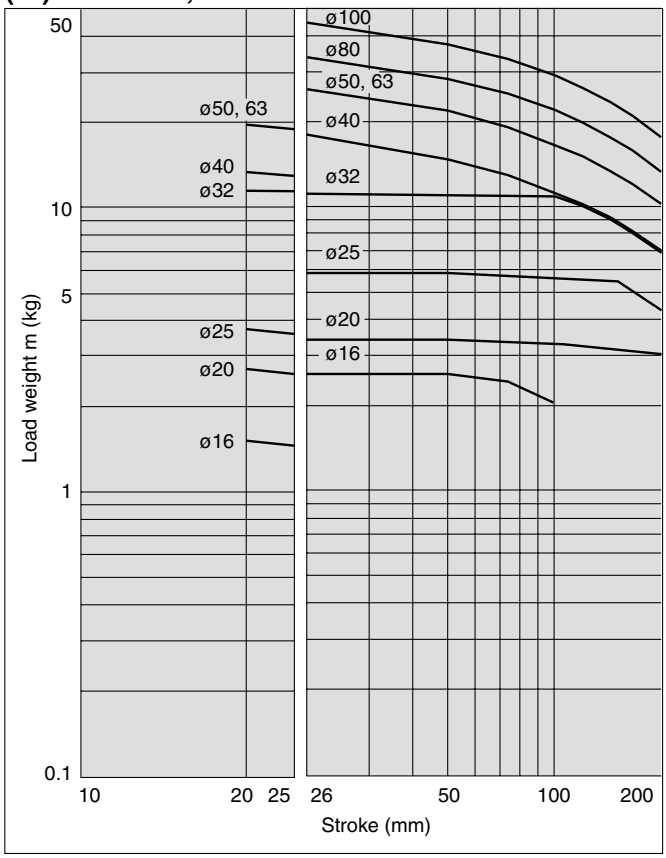
(15) ℓ = 50 mm, V = 200 mm/s



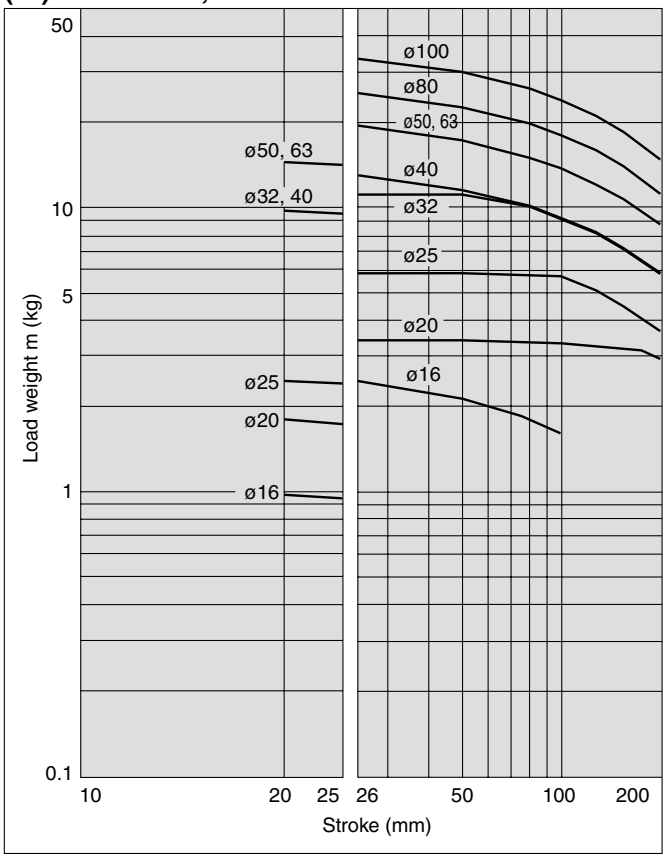
(16) ℓ = 100 mm, V = 200 mm/s



(17) ℓ = 50 mm, V = 400 mm/s



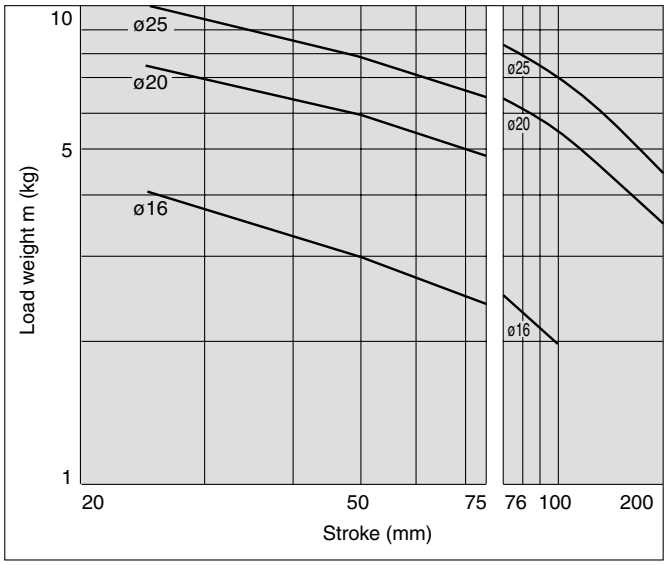
(18) ℓ = 100 mm, V = 400 mm/s



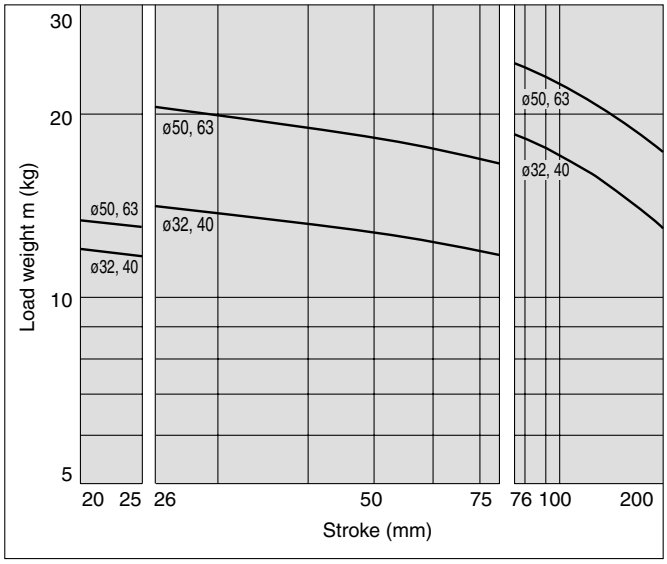
Horizontal Mounting (Ball bushing bearing)

(19) ℓ = 50 mm, V = 200 m/s

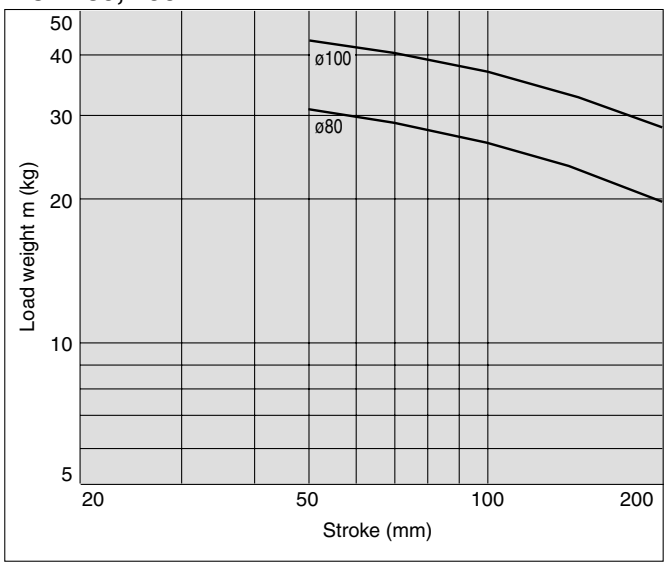
MGPL16 to 25



MGPL32 to 63

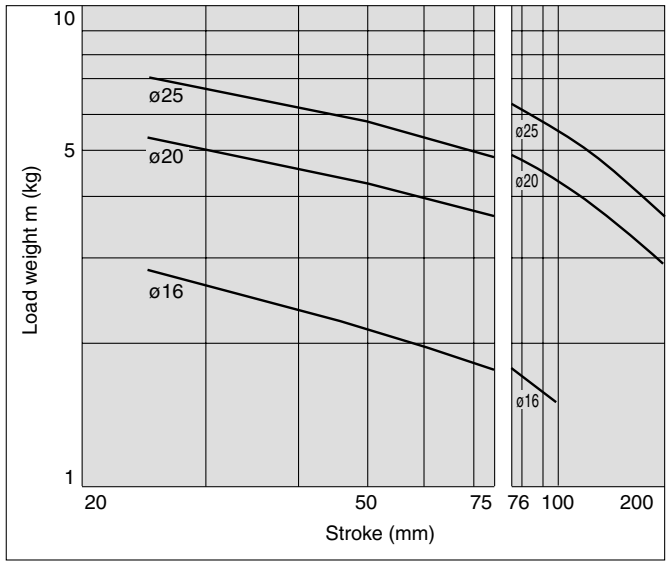


MGPL80, 100

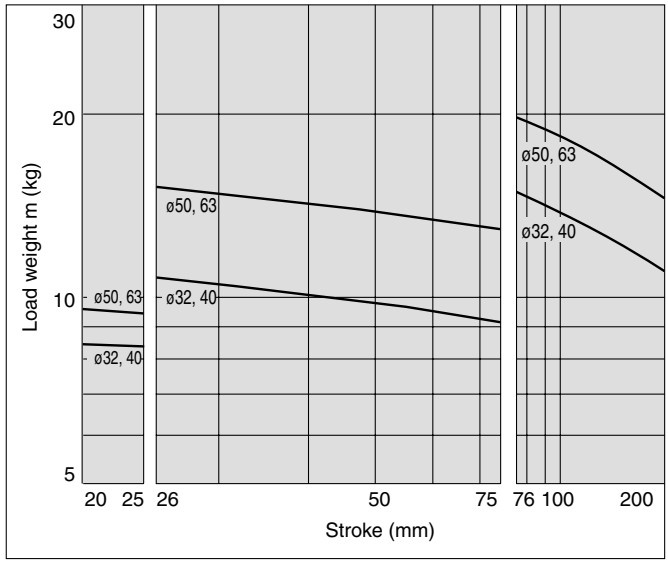


(20) ℓ = 100 mm, V = 200 m/s

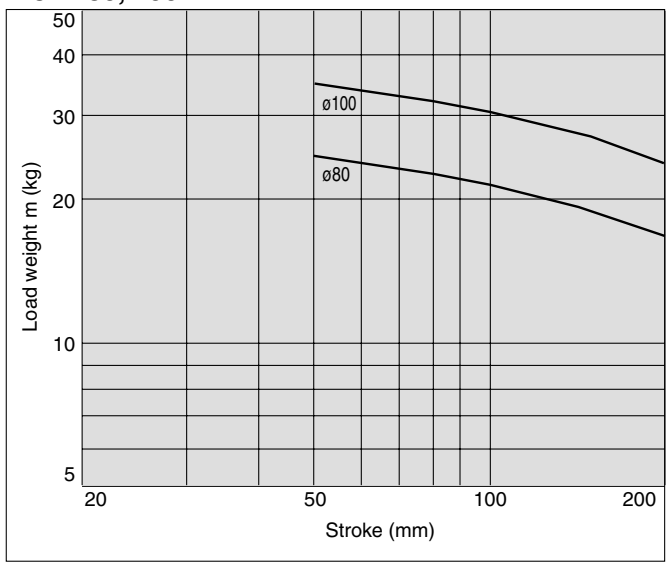
MGPL16 to 25



MGPL32 to 63



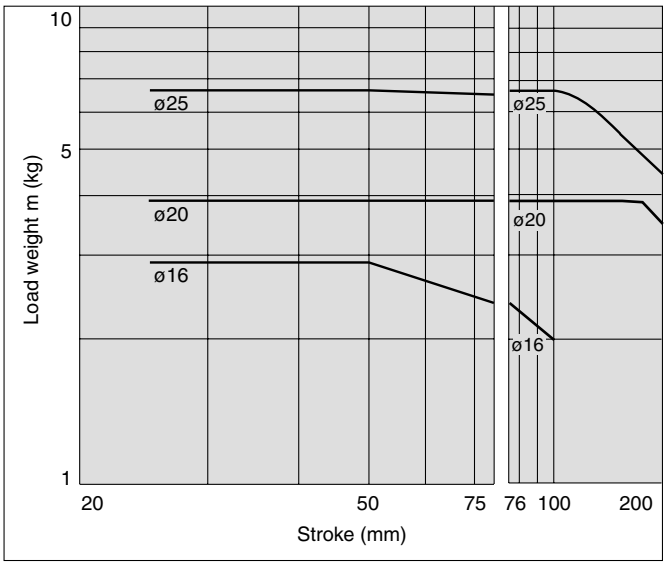
MGPL80, 100



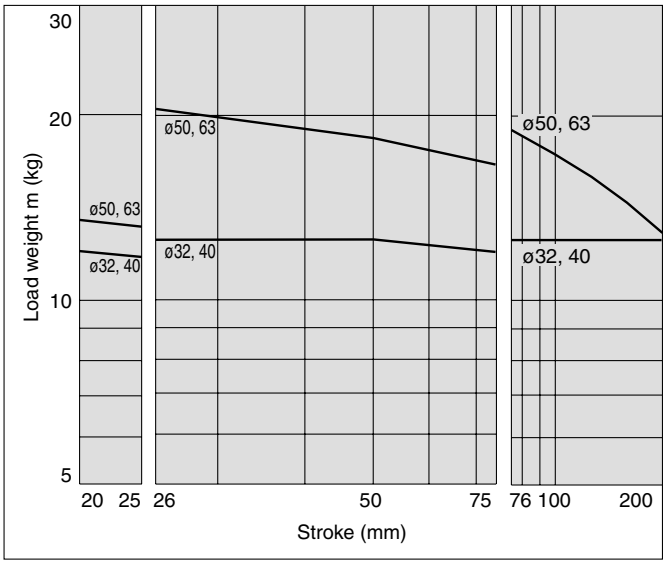
Horizontal Mounting (Ball bushing bearing)

(21) ℓ = 50 mm, V = 400 m/s

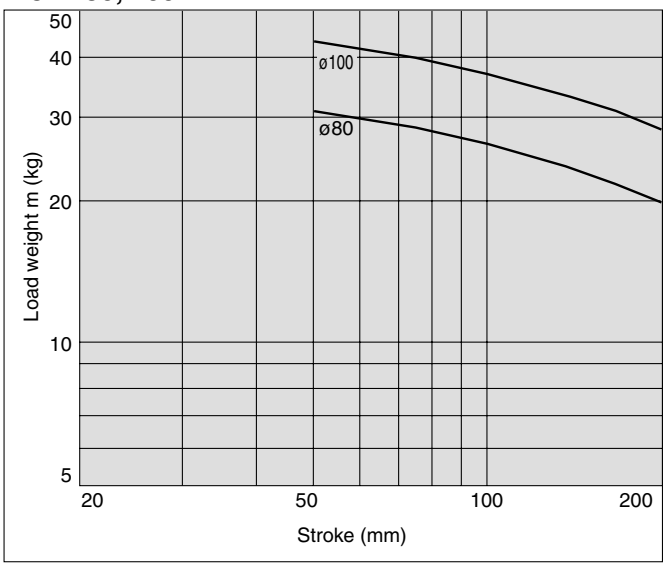
MGPL16 to 25



MGPL32 to 63

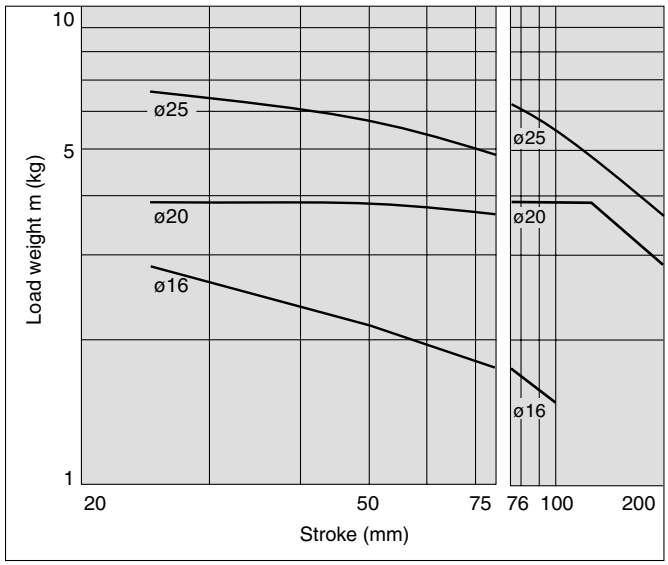


MGPL80, 100

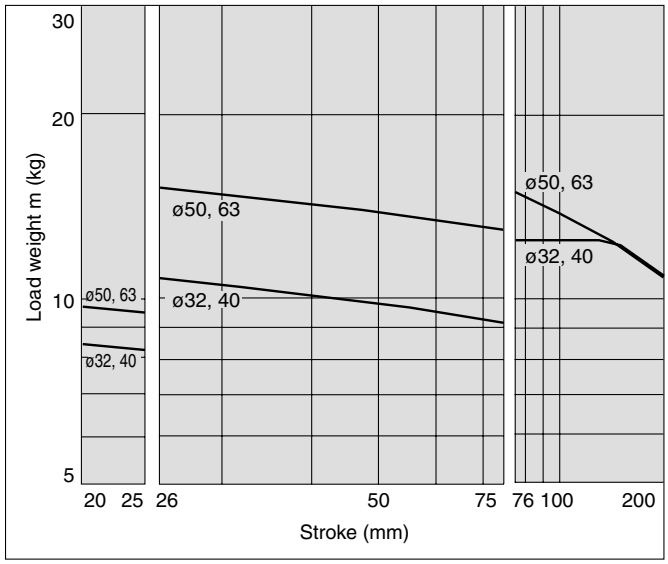


(22) ℓ = 100 mm, V = 400 m/s

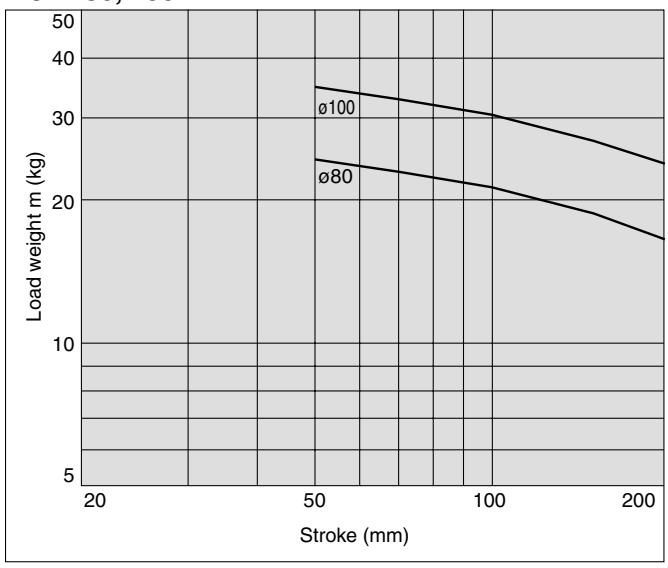
MGPL16 to 25



MGPL32 to 63

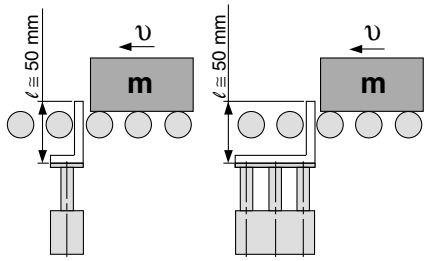


MGPL80, 100



Operating Range when Used as Stopper

Bore size 16 to 25/MGPM16 to 25 (Slide bearing)



∗ When selecting a model with a longer ℓ dimension, be sure to choose a bore size which is sufficiently large.

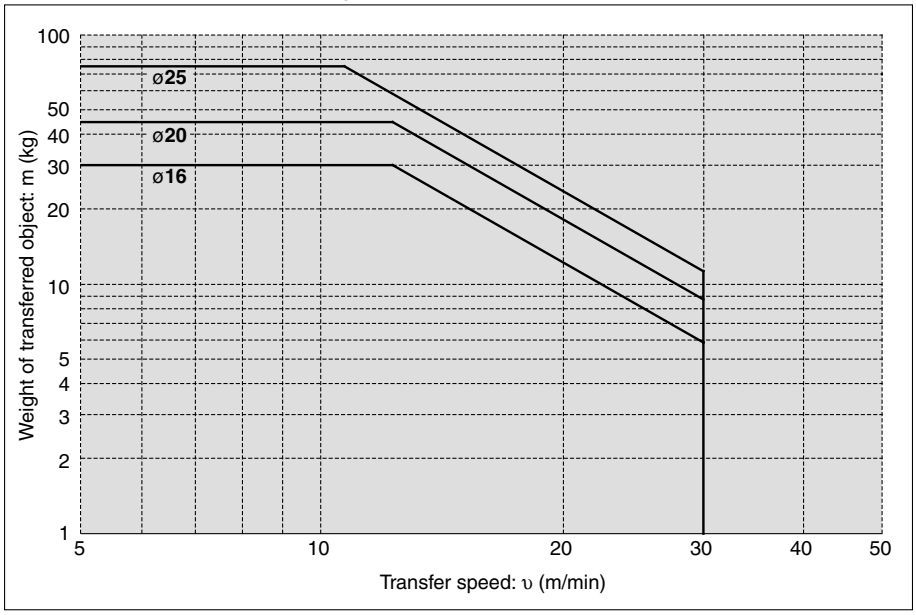
⚠ Caution

Caution on handling

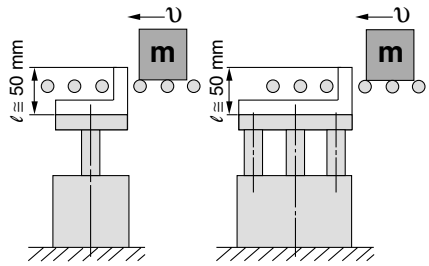
Note 1) When using as a stopper, select a model with 25 stroke or less.

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

MGPM16 to 25 (Slide bearing)



Bore Size 32 to 100/MGPM32 to 100 (Slide bearing)



∗ When selecting a model with a longer ℓ dimension, be sure to choose a bore size which is sufficiently large.

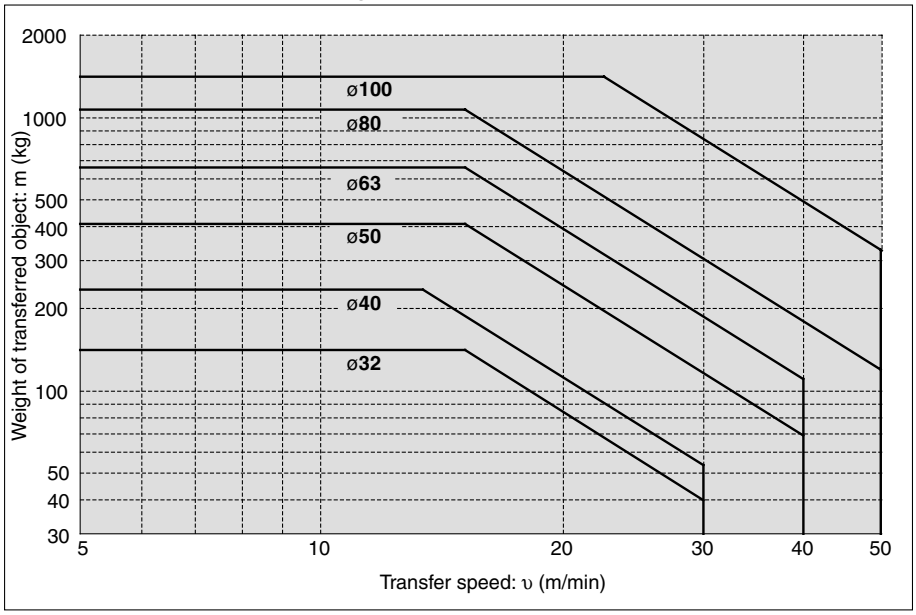
⚠ Caution

Caution on handling

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

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

MGPM32 to 100 (Slide bearing)



Copper-free (For CRT manufacturing process)

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

Specifications

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

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

How to Order

20 — MGP [M] [Bore size] [ ] — [Stroke] [A]

- [A] With air cushion
- [ ] Thread type

Nil	M5 x 0.8
	Rc
N	NPT
TF	G

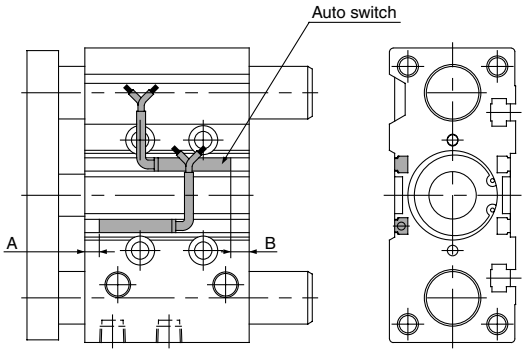
- [M] Bearing type

M	Slide bearing
L	Ball bushing bearing

- **20** Copper-free

∗ For bore size 16, M5 x 0.8 is only available.

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



Proper Mounting Position

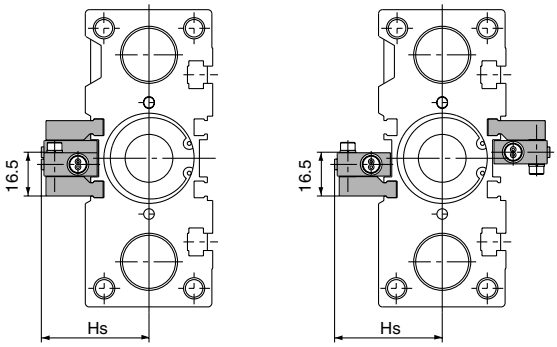
Bore size (mm)	A	B
16	17.5	15.5
20	26	11
25	23	14.5
32	16	21.5

Bore size (mm)	A	B
40	26	18
50	27.5	16.5
63	28	21
80	25	31.5
100	28.5	37.5

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

For D-P5DW (∗ Cannot be mounted on bore sizes ø32 or less.)

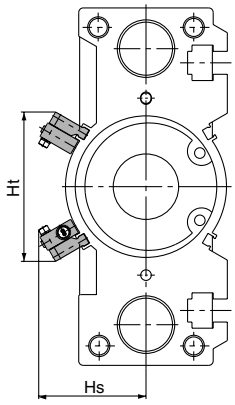
ø40 to ø63



For 25 stroke

∗ For bore sizes ø40 to 63 with two switches, one switch is mounted on each side.

ø80, ø100



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

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

Operating Range

Auto switch model	Applicable bore size (mm)								
	16	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-Z7□/Z80	10	10	10	10.5	10.5	10.5	11.5	11.5	12
D-Y59□/Y69□/Y7P/Y7PV D-Y7□W/Y7□WV	7.5	7.5	7	6.5	6	7	8	9.5	10
D-Y7BAL	5	5	5	6	6	6	6	6	6.5
D-P5DWL	–	–	–	–	4	4	5	4	4

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted.
For detailed specifications, refer to page 8-30-1.

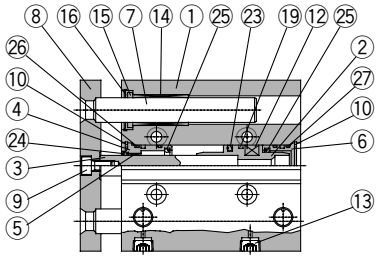
Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-Z80	Grommet (In-line)	Without indicator light

∗ Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available. For details, refer to page 8-30-32.

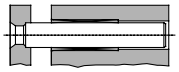
Construction (With air cushion)

Series MGPM

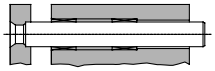
MGPM16 to 25



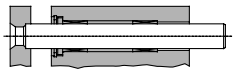
25 stroke



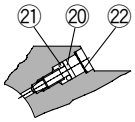
ø16: 25 stroke



ø16: 50 stroke or more

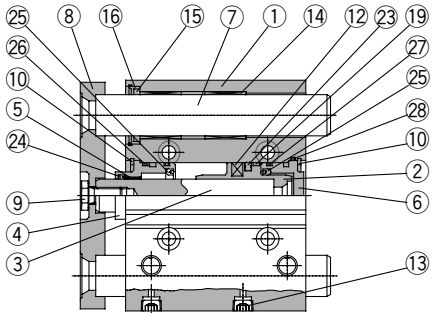


ø20, ø25: 50 stroke or more

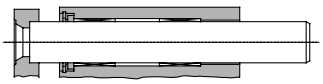


Cushion valve section

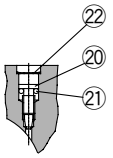
MGPM32 to 100



25 stroke



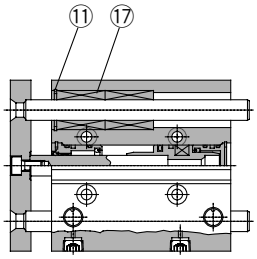
50 stroke or more

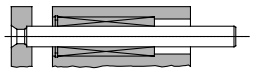


Cushion valve section

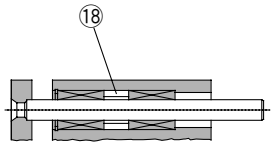
Series MGPL

MGPL16 to 25



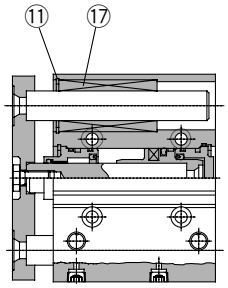


ø20, ø25: 75 stroke or less

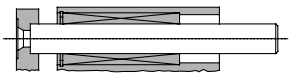


ø20, ø25: 100 stroke or more

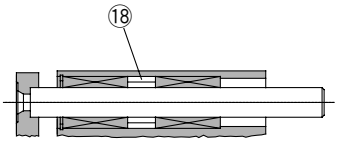
MGPL32 to 100



25 stroke



ø32 to ø63: 50, 75 stroke
ø80, ø100: 50 stroke or more



ø32 to ø63: 100 stroke or more

Component Parts

No.	Description	Material	Note	
①	Body	Aluminum alloy	Hard anodized	
②	Piston	Aluminum alloy	Chromated	
③	Piston rod	Stainless steel	ø16 to ø25	
		Carbon steel	ø32 to ø100	Hard chrome plated
④	Collar	Aluminum alloy	ø16 to ø63	Clear anodized
			ø80, ø100	Painted
⑤	Bushing	Lead bronze casting		
⑥	Head cover	Aluminum alloy	ø16 to ø25	Clear anodized
			ø32 to ø100	Painted
⑦	Guide rod	Carbon steel	Hard chrome plated	
⑧	Plate	Carbon steel	Nickel plated	
⑨	Plate mounting bolt	Carbon steel	Nickel plated	
⑩	Snap ring	Carbon tool steel	Phosphate coated	
⑪	Snap ring	Carbon tool steel	Phosphate coated	
⑫	Magnet	Magnetic material		
⑬	Plug (M-5P)	Brass	ø16	Nickel plated
	Hexagon socket head taper plug	Carbon steel	ø20 to ø100	Nickel plated
⑭	Slide Bearing	Lead-bronze casted		
⑮	Felt	Felt	Except ø16	
⑯	Holder	Resin	Except ø16	
⑰	Ball bushing			

Component Parts

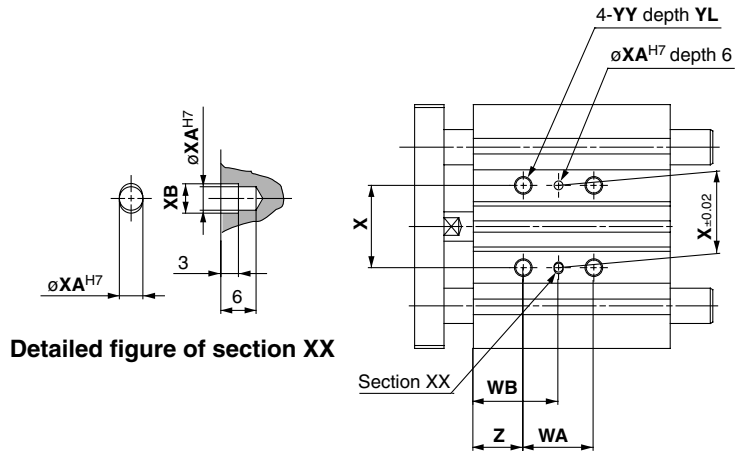
No.	Description	Material	Note
⑱	Spacer	Aluminum alloy	
⑲	Wear ring	Resin	
⑳	Cushion valve	Steel	
㉑	Gasket	NBR	
㉒	Snap ring	Carbon tool steel	Except ø16
㉓*	Piston seal	NBR	
㉔*	Rod seal	NBR	
㉕*	Cushion seal	Urethane	
㉖*	Gasket A	NBR	
㉗*	Gasket B	NBR	
㉘*	Gasket C	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents	Bore size (mm)	Kit no.	Contents
16	MGP16-A-PS	Set of nos. above ㉓, ㉔, ㉕ / ㉖, ㉗, ㉘	50	MGP50-A-PS	Set of nos. above ㉓, ㉔, ㉕ / ㉖, ㉗, ㉘
20	MGP20-A-PS		63	MGP63-A-PS	
25	MGP25-A-PS		80	MGP80-A-PS	
32	MGP32-A-PS		100	MGP100-A-PS	
40	MGP40-A-PS				

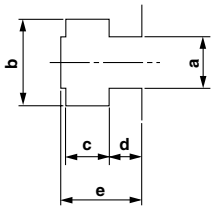
∗ Seal kit includes ㉓ to ㉘. Order the seal kit, based on each bore size.

MGPM, MGPL (With air cushion): ø16 to ø25

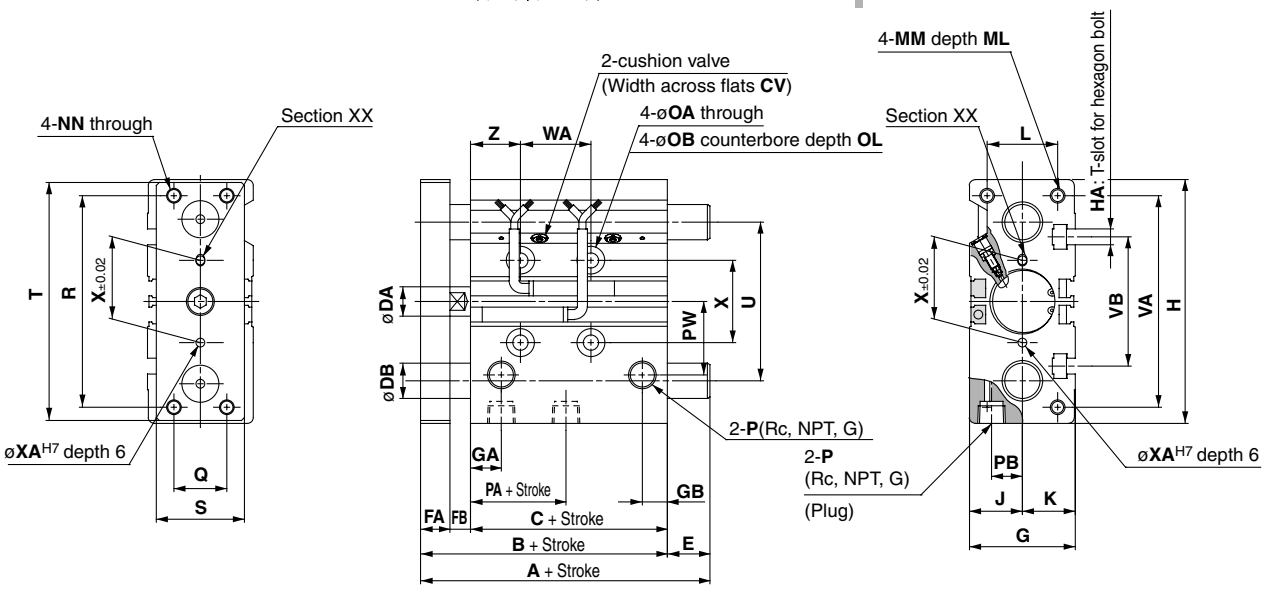


Detailed figure of section XX

T-slot dimensions



Bore size (mm)	a	b	c	d	e
16	4.4	7.4	3.7	2.5	6.7
20	5.4	8.4	4.5	2.8	7.8
25	5.4	8.4	4.5	3	8.2



Note 1) For the intermediate strokes, refer to "Manufacture of Intermediate Stroke" on page 8-19-26.
Note 2) When adjusting the ø16 cushion valve, use a 3 mm flat head watchmakers' screwdriver.

- For bore size 16, M5 x 0.8 is only available.
- Rc, NPT, G port can be selected for bore sizes with ø20 or more. (Refer to page 8-19-26.)

MGPM, MGPL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	CV	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
16	25, 50, 75, 100, 125, 150, 175, 200, 250	71	58	—	8	8	5	30	11	8	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	40	10	19	16
20	25, 50, 75, 100, 125, 150, 175, 200	78	62	1.5	10	10	6	36	10.5	8.5	83	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	1/8	37.5	10.5	25	18
25	250, 300, 350, 400	78.5	62.5	1.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.6	9.5	5.5	1/8	37.5	13.5	28.5	26

Bore size (mm)	Standard stroke (mm)	R	S	T	U	VA	VB	WA				WB				X	XA	XB	YY	YL	Z
								75 st or less	100 to 175 st	200 to 250 st	300 to 400 st	75 st or less	100 to 175 st	200 to 250 st	300 to 400 st						
16	25, 50, 75, 100, 125, 150, 175, 200, 250	54	25	62	46	56	38	44	110	200	—	27	60	105	—	24	3	3.5	M5 x 0.8	10	5
20	25, 50, 75, 100, 125, 150, 175, 200	70	30	81	54	72	44	44	120	200	300	39	77	117	167	28	3	3.5	M6 x 1.0	12	17
25	250, 300, 350, 400	78	38	91	64	82	50	44	120	200	300	39	77	117	167	34	4	4.5	M6 x 1.0	12	17

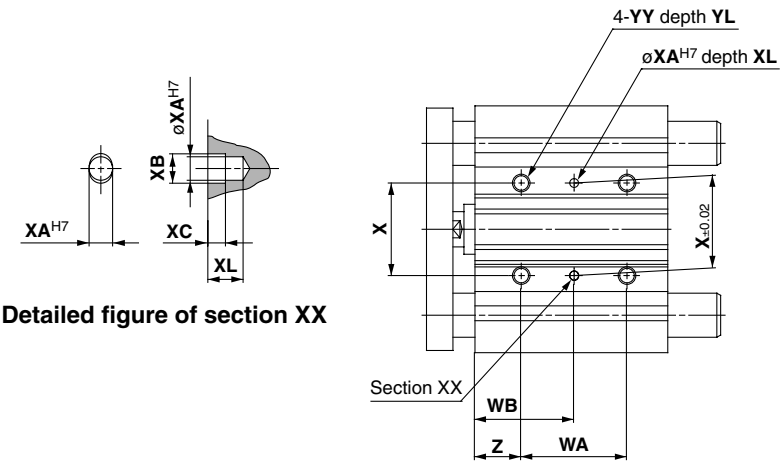
MGPM (Slide bearing) A, DB, E Dimensions

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

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

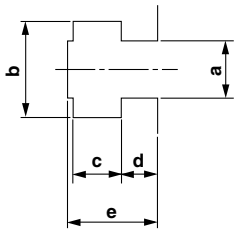
Bore size (mm)	A					DB	E				
	25 st	50, 75 st	100 st	125 to 200 st	250 st or more		25 st	50, 75 st	100 st	125 to 200 st	250 st or more
16	80	71	71	95	95	8	9	0	0	24	24
20	95	80	99	104	122	10	17	2	21	26	44
25	100.5	85.5	104.5	104.5	122	13	22	7	26	26	43.5

MGPM, MGPL (With air cushion): ø32 to ø63

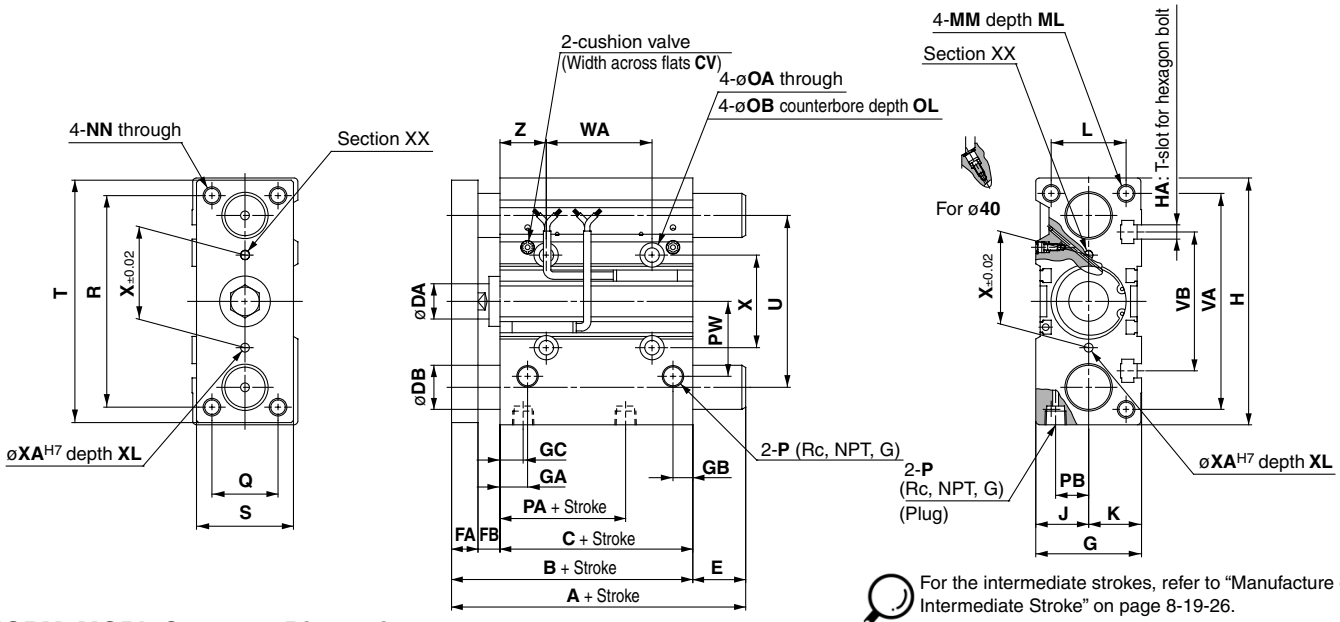


Detailed figure of section XX

T-slot dimensions



Bore size (mm)	a	b	c	d	e
32	6.5	10.5	5.5	3.5	9.5
40	6.5	10.5	5.5	4	11
50	8.5	13.5	7.5	4.5	13.5
63	11	17.8	10	7	18.5



For the intermediate strokes, refer to "Manufacture of Intermediate Stroke" on page 8-19-26.

MGPM, MGPL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	CV	DA	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	84.5	62.5	1.5	16	12	10	48	12.5	9	12.5	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	32	15	34	30
40		91	69	1.5	16	12	10	54	14	10	14	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	38	18	38	30
50		97	69	2.5	20	16	12	64	14	11	12	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	34	21.5	47	40
63		102	74	2.5	20	16	12	78	16.5	13.5	16.5	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	39	28	55	50

Bore size (mm)	Standard stroke (mm)	R	S	T	U	VA	VB	WA				WB				X	XA	XB	XC	XL	YY	YL	Z
								25, 50, 75 st	100 to 175 st	200 to 250 st	300 to 400 st	25, 50, 75 st	100 to 175 st	200 to 250 st	300 to 400 st								
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	96	44	110	78	98	63	48	124	200	300	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40		104	44	118	86	106	72	48	124	200	300	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50		130	60	146	110	130	92	48	124	200	300	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63		130	70	158	124	142	110	52	128	200	300	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

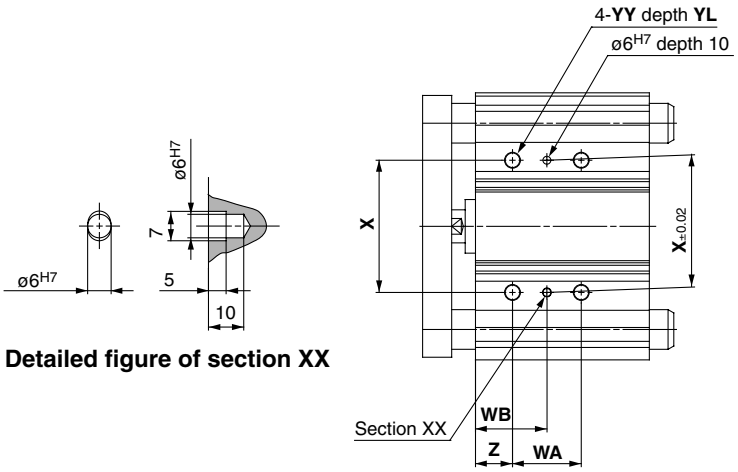
MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A				DB	E			
	25 st	50 st	75 to 200 st	250 to 400 st		25 st	50 st	75 to 200 st	250 to 400 st
32	97	127	102	140	20	12.5	42.5	17.5	55.5
40	97	127	102	140	20	6	36	11	49
50	106.5	131.5	118	161	25	9.5	34.5	21	64
63	106.5	131.5	118	161	25	4.5	29.5	16	59

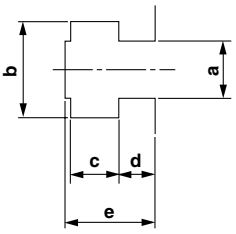
MGPL (Ball bushing bearing) A, DB, E Dimensions

Bore size (mm)	A						DB	E					
	25 st	50 st	75 st	100 st	125 to 200 st	250 to 400 st		25 st	50 st	75 st	100 st	125 to 200 st	250 to 400 st
32	84.5	123	98	115.5	118	140	16	0	38.5	13.5	31	33.5	55.5
40	91	123	98	115.5	118	140	16	0	32	7	24.5	27	49
50	97	127.5	114	159	134	161	20	0	30.5	17	62	37	64
63	102	127.5	114	159	134	161	20	0	25.5	12	57	32	59

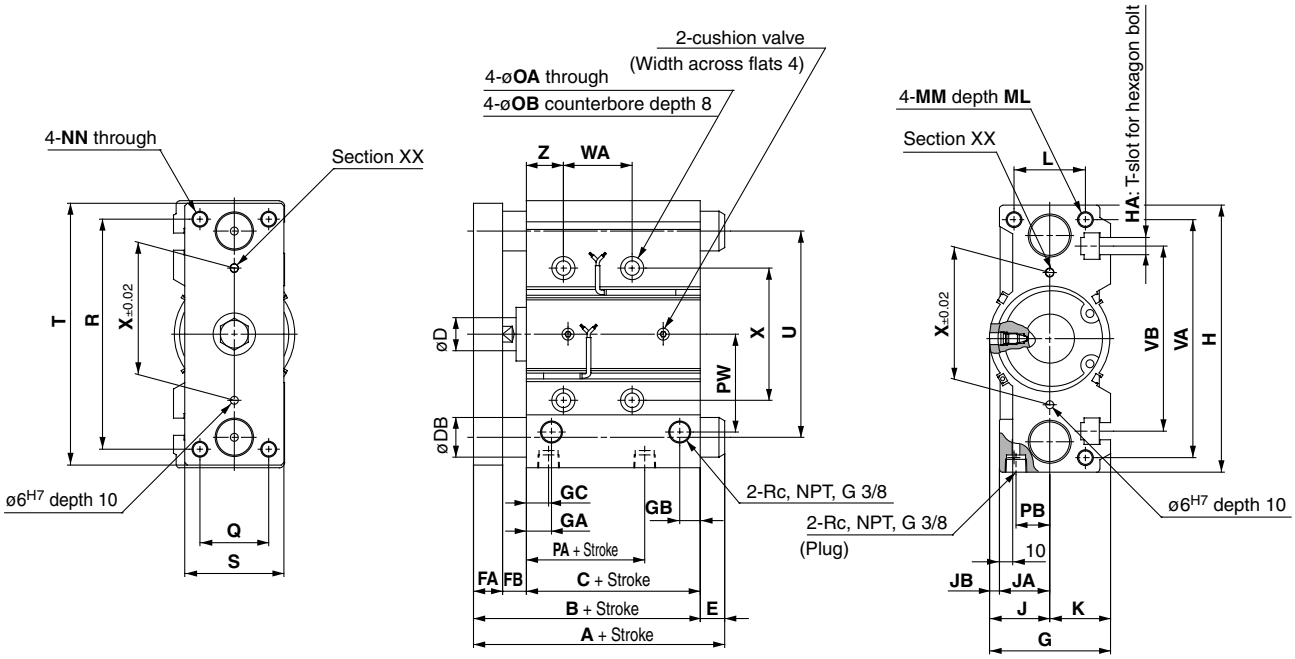
MGPM, MGPL (With air cushion): ø80, ø100



T-slot dimensions



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



For the intermediate strokes, refer to “Manufacture of Intermediate Stroke” on page 8-19-26.

MGPM, MGPL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L	MM	ML	NN	OA	OB	PA	PB	PW
80	50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	121.5	81.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54	M12 x 1.75	25	M12 x 1.75	10.6	17.5	39.5	25.5	74
100		141	91	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62	M14 x 2.0	31	M14 x 2.0	12.5	20	42.5	32.5	89

Bore size (mm)	Standard stroke (mm)	Q	R	S	T	U	VA	VB	WA				WB				X	YY	YL	Z
									50, 75 st	100 to 175 st	200 to 250 st	300 to 400 st	50, 75 st	100 to 175 st	200 to 250 st	300 to 400 st				
80	50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	52	174	75	198	156	180	140	52	128	200	300	54	92	128	178	100	M12 x 1.75	24	28
100		64	210	90	236	188	210	166	72	148	220	320	47	85	121	171	124	M14 x 2.0	28	11

MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	50 st	75 to 200 st	250 to 400 st		50 st	75 to 200 st	250 to 400 st
80	167	142	193	30	45.5	20.5	71.5
100	187	162	203	36	46	21	62

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

Bore size (mm)	A			DB	E		
	50 st	75 to 200 st	250 to 400 st		50 st	75 to 200 st	250 to 400 st
80	168.5	160	193	25	47	38.5	71.5
100	178.5	180	203	30	37.5	39	62

Compact Guide Cylinder
With End Lock
Series MGP
ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

MGP **M** **32** **□** — **100** — **H** **N** — **Y7BW** **□**

Bearing type

M	Slide bearing
L	Ball bushing bearing

Bore size

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

Thread type

Nil	Rc
N	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 8-19-42.

Lock position

H	Head end lock
R	Rod end lock

Manual release type

N	Non-lock type
L	Lock type

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.
∗ Auto switches are shipped together, (but not assembled). (Except D-P5DW)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	Pre-wire connector	Applicable load	
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		12 V		**Y69B**	**Y59B**	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		**Y7NWV**	**Y7NW**	●	●	○	○	IC circuit	
				3-wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○	○		
				2-wire		12 V		**Y7BWV**	**Y7BW**	●	●	○	○	—	
	Water resistant (2-color indication)							—	**Y7BA**	—	●	○	○		
	Magnetic field resistant (2-color indication)					—		—	**P5DW**	—	●	●	○		

∗ Lead wire length symbols: 0.5 m·····Nil (Example) Y59A
3 m····· L (Example) Y59AL
5 m····· Z (Example) Y59AZ

∗ Solid state switches marked with "○" are produced upon receipt of order.

∗ D-P5DW type can be mounted only on bore sizes 40 to 100.

• Since there are other applicable auto switches than listed, refer to page 8-19-44 for details.
• For details about auto switches with pre-wire connector, refer to page 8-30-52.

Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	0.15 MPa *	
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Piston speed	ø20 to ø63	50 to 500 mm/s
	ø80, ø100	50 to 400 mm/s
Cushion	Rubber bumper on both ends	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_{0}$ mm	

* 0.1 MPa except the lock unit.

Lock Specifications

Lock position	Head end, Rod end							
Holding force (Max.) N	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
	215	330	550	860	1340	2140	3450	5390
Backlash	2 mm or less							
Manual release	Non-lock type, Lock type							

Adjust switch positions for operation at both the stroke end and backlash (2 mm) movement positions.

Standard Stroke

Bore size (mm)	Standard stroke (mm)
20, 25, 32, 40, 50, 63, 80, 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Stroke

Description	Spacer installation type Dealing with the stroke by the 5 mm interval is available by installing spacer with standard stroke cylinder.
Part no.	Refer to “How to Order” for the standard model numbers on page 8-19-41.
Applicable stroke (mm)	5 to 395
Example	Part no.: MGPM50-35-HN A spacer 15 mm in width is installed in a MGPM50-50-HN. C dimension is 119 mm.

Note 1) The minimum stroke for mounting auto switches is 10 stroke or more for two switches, and 5 stroke or more for one switch.
Note 2) Intermediate stroke (by the 1 mm interval) based on an exclusive body will be available upon request for special.

Theoretical Output

OUT IN

(N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	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)

Made to Order Specifications (For details, refer to page 8-31-1.)

Symbol	Specifications
-XC79	Machining tapped hole, drilled hole and pin hole additionally.

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 8ℓ) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16ℓ) 2 pcs. Spring washer (Nominal size 3)

Weight

Slide Bearing: MGPM20 to 100 (Basic weight)

(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
20	**MGPM20**	0.86	1.12	1.32	1.52	1.71	1.91	2.11	2.31	2.78	3.18	3.57	3.97
25	**MGPM25**	1.18	1.56	1.83	2.10	2.38	2.65	2.92	3.19	3.85	4.39	4.94	5.48
32	**MGPM32**	1.92	2.32	2.70	3.09	3.47	3.85	4.23	4.61	5.56	6.32	7.09	7.85
40	**MGPM40**	2.20	2.66	3.08	3.51	3.93	4.36	4.78	5.20	6.24	7.10	7.95	8.80
50	**MGPM50**	3.73	4.46	5.10	5.74	6.38	7.02	7.66	8.30	9.91	11.2	12.5	13.8
63	**MGPM63**	4.61	5.45	6.21	6.96	7.72	8.47	9.23	9.99	11.8	13.3	14.8	16.3
80	**MGPM80**	7.88	8.70	9.49	10.3	11.2	12.0	12.8	13.9	15.5	17.2	18.8	20.5
100	**MGPM100**	12.1	13.2	14.4	15.6	16.8	18.0	19.1	20.6	22.9	25.3	27.6	30.0

Ball Bushing Bearing: MGPL20 to 100

(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
20	**MGPL20**	0.93	1.10	1.27	1.48	1.65	1.83	2.00	2.17	2.55	2.90	3.25	3.60
25	**MGPL25**	1.27	1.50	1.74	2.01	2.24	2.47	2.70	2.94	3.44	3.91	4.37	4.83
32	**MGPL32**	1.74	2.19	2.51	2.88	3.20	3.51	3.83	4.15	4.84	5.47	6.10	6.73
40	**MGPL40**	2.02	2.51	2.87	3.29	3.65	4.01	4.37	4.73	5.51	6.23	6.95	7.67
50	**MGPL50**	3.46	4.21	4.76	5.40	5.95	6.50	7.05	7.60	8.83	9.92	11.1	12.2
63	**MGPL63**	4.33	5.20	5.86	6.62	7.28	7.95	8.61	9.27	10.7	12.1	13.4	14.7
80	**MGPL80**	8.05	8.87	9.66	10.5	11.4	12.2	13.0	14.1	15.7	17.4	19.0	20.7
100	**MGPL100**	12.4	13.5	14.7	15.9	17.1	18.3	19.4	20.9	23.2	25.6	27.9	30.3

Lock Unit Additional Weight

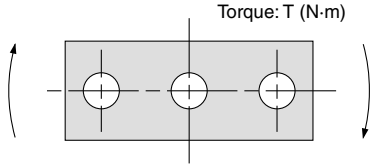
(kg)

Bore size (mm)	Head end lock		Rod end lock	
	HN	**HL**	**RN**	**RL**
20	0.05	0.07	0.05	0.06
25	0.06	0.07	0.05	0.07
32	0.09	0.10	0.09	0.10
40	0.15	0.18	0.14	0.18
50	0.24	0.27	0.23	0.27

Bore size (mm)	Head end lock		Rod end lock	
	HN	**HL**	**RN**	**RL**
63	0.36	0.40	0.35	0.39
80	0.90	0.97	1.03	1.10
100	1.52	1.60	1.60	1.68

Calculation: (Example) MGPM50-100-HN
- Basic weight + Lock unit additional weight
- 5.74 + 0.24 = 5.98 kg

Allowable Rotational Torque of Plate

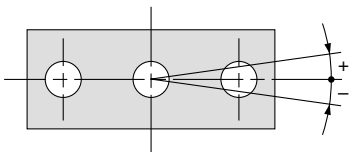


T (N·m)

Bore size (mm)	Bearing type	Stroke (mm)											
		25	50	75	100	125	150	175	200	250	300	350	400
20	**MGPM**	0.99	0.75	1.88	1.63	1.44	1.28	1.16	1.06	0.90	0.78	0.69	0.62
	MGPL	2.66	1.94	1.52	1.25	1.34	1.17	1.03	0.93	0.76	0.65	0.56	0.49
25	**MGPM**	1.64	1.25	2.96	2.57	2.26	2.02	1.83	1.67	1.42	1.24	1.09	0.98
	MGPL	4.08	3.02	2.38	1.97	2.05	1.78	1.58	1.41	1.16	0.98	0.85	0.74
32	**MGPM**	6.35	5.13	5.69	4.97	4.42	3.98	3.61	3.31	2.84	2.48	2.20	1.98
	MGPL	5.95	4.89	5.11	4.51	6.34	5.79	5.33	4.93	4.29	3.78	3.38	3.04
40	**MGPM**	7.00	5.66	6.27	5.48	4.87	4.38	5.98	3.65	3.13	2.74	2.43	2.19
	MGPL	6.55	5.39	5.62	4.96	6.98	6.38	5.87	5.43	4.72	4.16	3.71	3.35
50	**MGPM**	13.0	10.8	12.0	10.6	9.50	8.60	7.86	7.24	6.24	5.49	4.90	4.43
	MGPL	9.17	7.62	9.83	8.74	11.6	10.7	9.83	9.12	7.95	7.02	6.26	5.63
63	**MGPM**	14.7	12.1	13.5	11.9	10.7	9.69	8.86	8.16	7.04	6.19	5.52	4.99
	MGPL	10.2	8.48	11.0	9.74	13.0	11.9	11.0	10.2	8.84	7.80	6.94	6.24
80	**MGPM**	21.9	18.6	22.9	20.5	18.6	17.0	15.6	14.5	12.6	11.2	10.0	9.11
	MGPL	15.1	23.3	22.7	20.6	18.9	17.3	16.0	14.8	12.9	11.3	10.0	8.94
100	**MGPM**	38.8	33.5	37.5	33.8	30.9	28.4	26.2	24.4	21.4	19.1	17.2	15.7
	MGPL	27.1	30.6	37.9	34.6	31.8	29.3	27.2	25.3	22.1	19.5	17.3	15.5

Model selection is the same as MGP/standard type.
Refer to page 8-19-11.

Non-rotating Accuracy of Plate

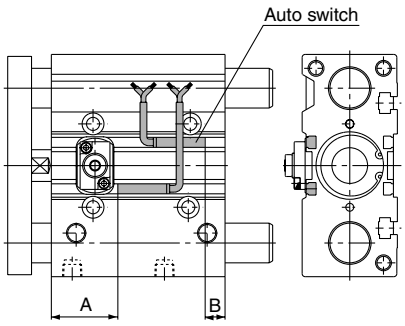


For non-rotating accuracy without load, use a value no more than the values in the table as a guide.

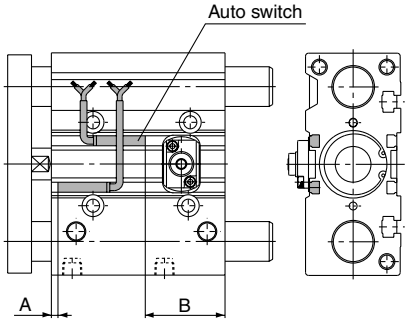
Bore size (mm)	Non-rotating accuracy θ	
	MGPM	**MGPL**
20	±0.07°	±0.09°
25		
32	±0.06°	±0.08°
40		
50	±0.05°	±0.06°
63		
80	±0.04°	±0.05°
100		

Proper Auto Switch Mounting Position (Detection at stroke end)

With rod end lock

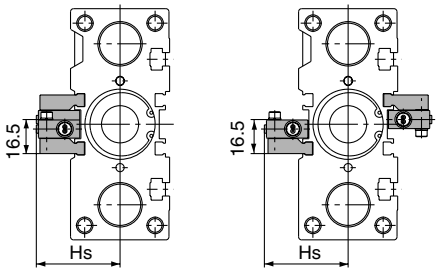


With head end lock



For D-P5DW (∗ Cannot be mounted on bore sizes ø32 or less.)

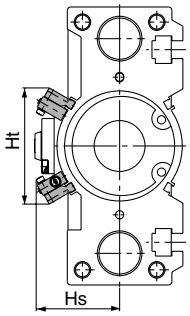
ø40 to ø63



For 25 stroke

∗ For bore sizes ø40 to 63 with two switches, one switch is mounted on each side.

ø80, ø100



Proper Mounting Position

Bore size (mm)	A	B
20	29	8
25	29.5	8
32	30.5	7
40	34.5	9.5
50	32.5	11.5
63	35	14
80	63	18.5
100	67.5	23.5

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

Bore size (mm)	A	B
20	4	33
25	4.5	33
32	5.5	32
40	9.5	34.5
50	7.5	36.5
63	10	39
80	13	68.5
100	17.5	73.5

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

Mounting of Auto Switch

⚠ Caution

In the case of 25 st or less with head side end lock type, it might not insert auto switch from the rod side.
In this case, install it after removing the plate temporarily.
Regarding the plate removal and the way of assembly, please consult with SMC.

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

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

Operating Range

Auto switch model	Applicable bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-Z7□/Z80	10	10	10.5	10.5	10.5	11.5	11.5	12
D-Y59□/Y69□/Y7P/Y7PV D-Y7□W/Y7□WV	7.5	7	6.5	6	7	8	9.5	10
D-Y7BAL	5	5	6	6	6	6	6	6.5
D-P5DWL	—	—	—	4	4	5	4	4

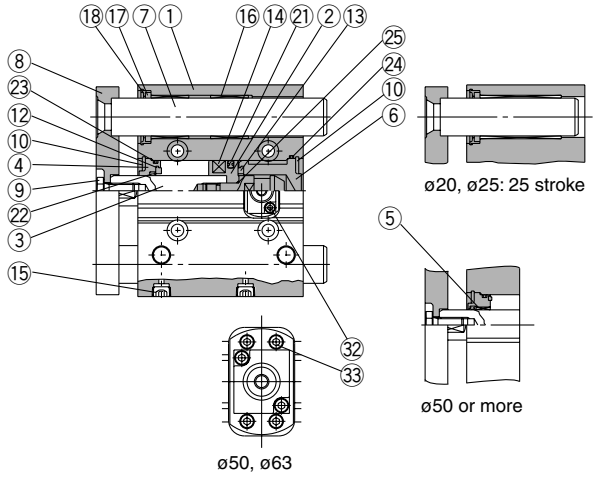
Other than the applicable auto switches listed in “How to Order”, following auto switches can be mounted.
For detailed specifications, refer to page 8-30-1.

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

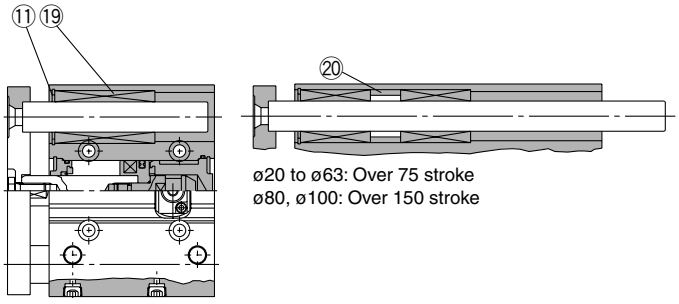
∗ Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available. For details, refer to page 8-30-32.

Construction

Series MGPM

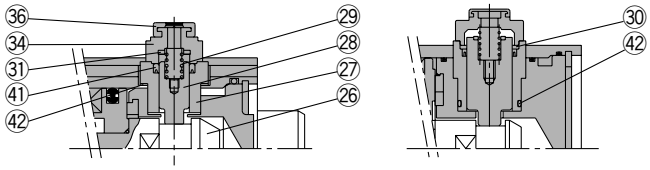


Series MGPL

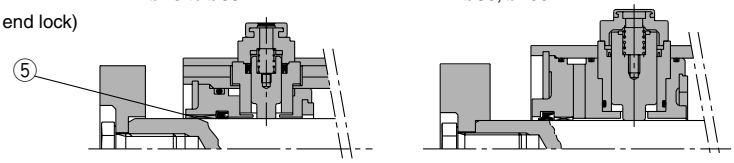


Non-locking type

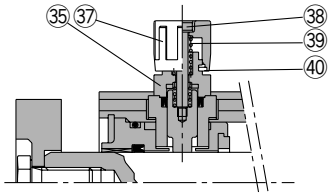
(Head end lock)



(Rod end lock)



Lock type



Component Parts

No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Piston	Aluminum alloy	Chromated
③	Piston rod	Stainless steel ø20, ø25	Hard chrome plated with rod end lock only
		Carbon steel ø32 to ø100	Hard chrome plated
④	Collar	Aluminum alloy	Clear anodized
			Painted only for ø50 to ø100 with head end lock
⑤	Bushing	Lead-bronze casting	
⑥	Head cover	Aluminum alloy	Colorless chromated
⑦	Guide rod	Carbon steel	Hard chrome plated
⑧	Plate	Carbon steel	Nickel plated
⑨	Plate mounting bolt	Carbon steel	Nickel plated
⑩	Snap ring	Carbon tool steel	Phosphate coated
⑪	Snap ring	Carbon tool steel	Phosphate coated
⑫	Bumper A	Urethane	
⑬	Bumper B	Urethane	
⑭	Magnet	Magnetic material	
⑮	Hexagon socket head taper plug	Carbon steel	Nickel plated
⑯	Slide Bearing	Lead-bronze casted	
⑰	Felt	Felt	
⑱	Holder	Resin	
⑲	Ball bushing		
⑳*	Spacer	Aluminum alloy	

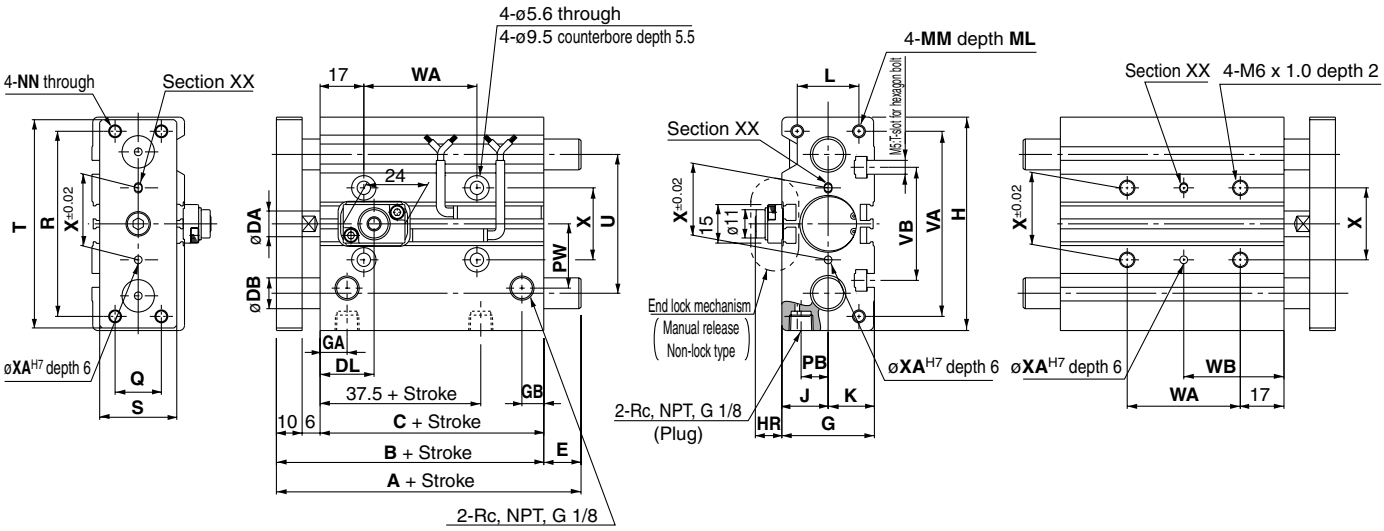
No.	Description	Material	Note
㉑*	Piston seal	NBR	
㉒*	Rod seal	NBR	
㉓*	Gasket A	NBR	
㉔*	Gasket B	NBR	
㉕	Piston gasket	NBR	ø32 to ø100 only
㉖	Lock bolt	Carbon steel	Electroless nickel plated
㉗	Lock holder	Brass	Electroless nickel plated
㉘	Lock piston	Carbon steel	Nickel plated after quenched
㉙	Lock spring	Stainless steel	
㉚	Seal retainer	Carbon steel	Zinc chromated (ø80, ø100 only)
㉛	Bumper	Urethane	
㉜*	Hexagon socket head cap screw	Carbon steel	Black zinc chromated
㉝*	Hexagon socket head cap screw	Carbon steel	Zinc chromated (ø50, ø63 only)
㉞	Cap A	Aluminum die-casted	Black painted
㉟	Cap B	Carbon steel	Oxide film treated
㊱	Rubber cap	Synthetic rubber	
㊲	M/O knob	Zinc die-casted	Black painted
㊳	M/O bolt	Alloy steel	Black zinc chromated
㊴	M/O spring	Steel wire	Zinc chromated
㊵	Stopper ring	Carbon steel	Zinc chromated
㊶*	Lock piston seal	NBR	
㊷*	Lock holder gasket	NBR	

Replacement Parts: Seal Kit

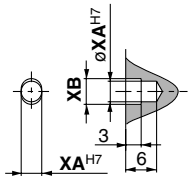
Bore size (mm)	Kit no.	Contents
20	MGP20-B-PS	Set of nos. above ㉑, ㉒, ㉓, ㉔, ㉜, ㉝, ㊶, ㊷
25	MGP25-B-PS	
32	MGP32-B-PS	
40	MGP40-B-PS	
50	MGP50-B-PS	

∗ Seal kit includes ㉑ to ㉔, ㉜, ㉝, ㊶, ㊷. Order the seal kit, based on each bore size.

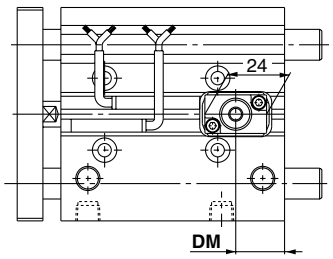
Dimensions: ø20, ø25



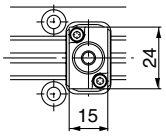
With rod end lock



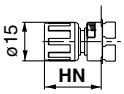
Detailed figure of section XX



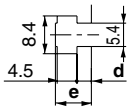
With head end lock



ø25



End lock mechanism (Manual release lock type)



T-slot dimensions

Bore size (mm)	d	e
20	2.8	7.8
25	3	8.2

For intermediate strokes, refer to “Manufacture of Intermediate Stroke” on page 8-19-42.

Bore size (mm)	Standard stroke (mm)	B	C	DA	G	GA	GB	H	J	K	L	MM	ML	NN	PB	PW	Q	R
20	25, 50, 75, 100, 125, 150, 175 200, 250, 300, 350, 400	78	62	10	36	10.5	8.5	83	18	18	24	M5 x 0.8	13	M5 x 0.8	10.5	25	18	70
25		78.5	62.5	12	42	11.5	9	93	21	21	30	M6 x 1.0	15	M6 x 1.0	13.5	28.5	26	78

Bore size (mm)	S	T	U	VA	VB	WA				WB				X	XA	XB
						75 st or less	Over 75 st to 175 st	Over 175 st to 250 st	Over 250 st	75 st or less	Over 75 st to 175 st	Over 175 st to 275 st	Over 275 st			
20	30	81	54	72	44	44	120	200	300	39	77	117	167	28	3	3.5
25	38	91	64	82	50	44	120	200	300	39	77	117	167	34	4	4.5

End Lock Mechanism Dimensions

Bore size (mm)	DL	DM	HR	HN
20	21	19	10.5	22
25	26.5	16	8	19.5

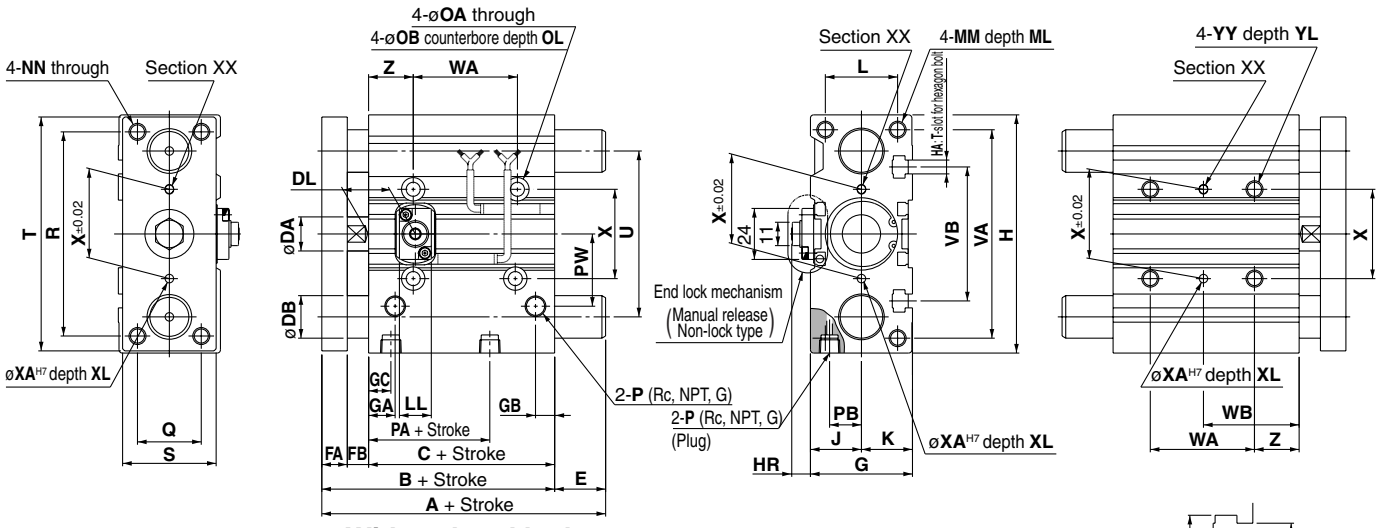
MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	25 st or less	Over 25 st to 175 st	Over 175 st 250 st		25 st or less	Over 25 st to 175 st	Over 175 st 250 st
20	78	84.5	122	12	0	6.5	44
25	78.5	85	122	16	0	6.5	43.5

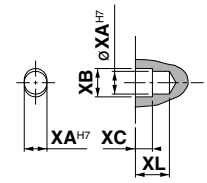
MGPL (Ball bushing bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	75 st or less	Over 75 st to 175 st	Over 175 st 250 st		75 st or less	Over 75 st to 175 st	Over 175 st 250 st
20	80	104	122	10	2	26	44
25	85.5	104.5	122	13	7	26	43.5

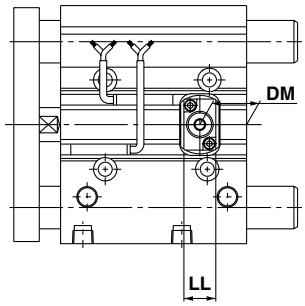
Dimensions: ø32, ø63



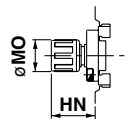
With rod end lock



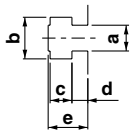
Detailed figure of section XX



With head end lock



End lock mechanism (Manual release lock type)



T-slot dimensions

Bore size (mm)	a	b	c	d	e
32	6.5	10.5	5.5	3.5	9.5
40	6.5	10.5	5.5	4	11
50	8.5	13.5	7.5	4.5	13.5
63	11	17.8	10	7	18.5

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

Bore size (mm)	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB	WA				WB			
														75 st or	Over 75 st to 175 st	Over 175 st to 275 st	Over 250 st	75 st or	Over 75 st to 175 st	Over 175 st to 275 st	Over 275 st
32	11	7.5	1/8	32	15	34	30	96	44	110	78	98	63	48	124	200	300	45	83	121	171
40	11	7.5	1/8	38	18	38	30	104	44	118	86	106	72	48	124	200	300	46	84	122	172
50	14	9	1/4	34	21.5	47	40	130	60	146	110	130	92	48	124	200	300	48	86	124	174
63	14	9	1/4	39	28	55	50	130	70	158	124	142	110	52	128	200	300	50	88	124	174

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

MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A			DB	E		
	25 st or	Over 25 st to 175 st	Over 175 st 250 st		25 st or	Over 25 st to 175 st	Over 175 st 250 st
32	97	102	140	20	12.5	17.5	55.5
40	97	102	140	20	6	11	49
50	106.5	118	161	25	9.5	21	64
63	106.5	118	161	25	4.5	16	59

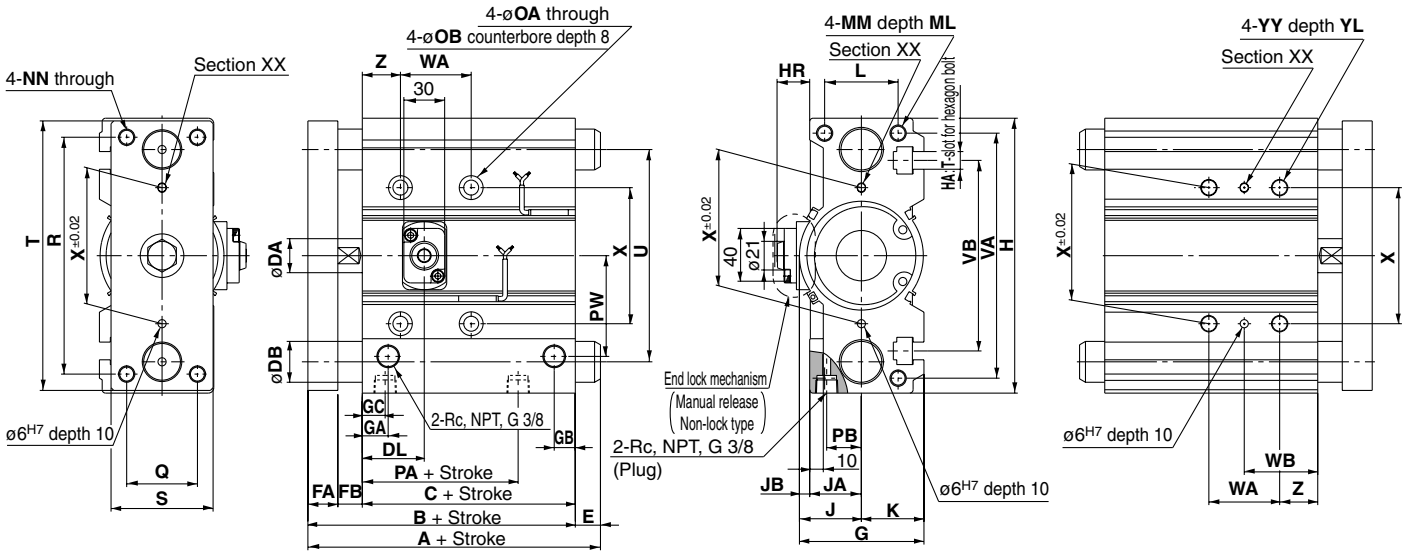
End Lock Mechanism Dimensions

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

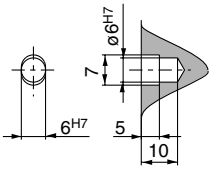
MGPL (Ball bushing bearing) A, DB, E Dimensions

Bore size (mm)	A				DB	E			
	25 st or	Over 25 st to 75 st	Over 75 st to 175 st	Over 175 st 250 st		25 st or less	Over 25 st to 75 st	Over 75 st to 175 st	Over 175 st 250 st
32	84.5	98	118	140	16	0	13.5	33.5	55.5
40	91	98	118	140	16	0	7	27	49
50	97	114	134	161	20	0	17	37	64
63	102	114	134	161	20	0	12	32	59

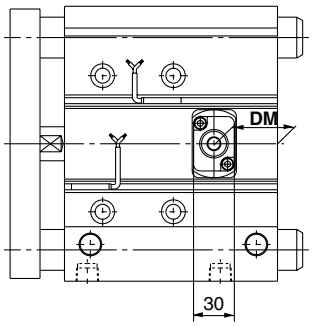
Dimensions: ø80, ø100



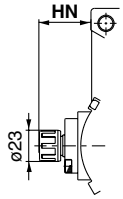
With head end lock



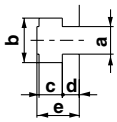
Detailed figure of section XX



With rod end lock



End lock mechanism (Manual release lock type)



T-slot dimensions

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

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L
80	25, 50, 75, 100, 125, 150, 175	146.5	106.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54
100	200, 250, 300, 350, 400	166	116	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62

Bore size (mm)	MM	ML	NN	OA	OB	PA	PB	PW	Q	R	S	T	U	VA	VB	WA			
																50 st or less	Over 50 st to 150 st	Over 150 st to 250 st	Over 250 st
80	M12 x 1.75	25	M12 x 1.75	10.6	17.5	64.5	25.5	74	52	174	75	198	156	180	140	52	128	200	300
100	M14 x 2.0	31	M14 x 2.0	12.5	20	67.5	32.5	89	64	210	90	236	188	210	166	72	148	220	320

Bore size (mm)	WB				X	YY	YL	Z
	50 st or less	Over 50 st to 150 st	Over 150 st to 250 st	Over 250 st				
80	54	92	128	178	100	M12 x 1.75	24	28
100	47	85	121	171	124	M14 x 2.0	28	11

End Lock Mechanism Dimensions

Bore size (mm)	DL	DM	HR	HN
80	45.5	40.5	24	38.5
100	49	43.5	26.5	41

MGPM (Slide bearing) A, DB, E Dimensions

Bore size (mm)	A		DB	E	
	150 st or less	Over 150 st		150 st or less	Over 150 st
80	146.5	193	30	0	46.5
100	166	203	36	0	37

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

Bore size (mm)	A		DB	E	
	150 st or less	Over 150 st		150 st or less	Over 150 st
80	160	193	25	13.5	46.5
100	180	203	30	14	37

Compact Guide Cylinder
Heavy Duty Guide Rod Type
Series MGPS
ø50, ø80

How to Order

MGP S 50 [ ] — 50 — Y7BW [ ]

Heavy duty guide rod type

Bore size

50	50 mm
80	80 mm

Thread type

Nil	Rc
N	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 8-19-50.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.
∗ Auto switches are shipped together, (but not assembled). (Except D-P5DW)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	Pre-wire connector	Applicable load	
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		12 V		**Y69B**	**Y59B**	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		**Y7NWV**	**Y7NW**	●	●	○	○	IC circuit	
				3-wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○	○		
				2-wire		12 V		**Y7BWV**	**Y7BW**	●	●	○	○	—	
	Water resistant (2-color indication)							—	**Y7BA**	—	●	○	○		
	Magnetic field resistant (2-color indication)					—		—	**P5DW**	—	●	●	○		

∗ Lead wire length symbols: 0.5 m·····Nil (Example) Y59A
3 m····· L (Example) Y59AL
5 m····· Z (Example) Y59AZ

∗ Solid state switches marked with "○" are produced upon receipt of order.

• Since there are other applicable auto switches than listed, refer to page 8-19-55 for details.
• For details about auto switches with pre-wire connector, refer to page 8-30-52.

Specifications

Action	Double acting
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.1 MPa
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

Standard Stroke

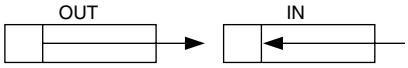
Bore size (mm)	Standard stroke (mm)
50, 80	25, 50, 75, 100, 125, 150, 175, 200

Manufacture of Intermediate Stroke

Description	Spacer installation type Spacers are installed in the standard stroke cylinder. Available by the 5 stroke interval.
Part no.	Refer to "How to Order" for the standard model numbers on page 8-19-49.
Applicable stroke (mm)	5 to 195
Example	Part no.: **MGPS50-35** A spacer 15 mm in width is installed in a **MGPS50-50**. C dimension is 94 mm.

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

Theoretical Output



(N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
50	20	OUT	1963	393	589	785	982	1178	1374	1571	1767	1963
		IN	1649	330	495	660	825	990	1155	1319	1484	1649
80	25	OUT	5027	1005	1508	2011	2513	3016	3519	4021	4524	5027
		IN	4536	907	1361	1814	2268	2721	3175	3629	4082	4536

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

Weight

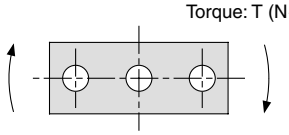
(kg)

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
50	**MGPS50**	3.90	4.68	5.74	6.52	7.30	8.08	8.86	9.64
80	**MGPS80**	9.21	10.7	13.0	14.5	15.9	17.9	18.9	20.3

Auto Switch Mounting Bracket Part No. for D-P5DW

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

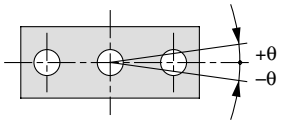
Allowable Rotational Torque of Plate



T (N·m)

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
50	**MGPS50**	15	12	16	15	13	12	11	9.8
80	**MGPS80**	49	41	51	45	41	38	35	32

Non-rotating Accuracy of Plate

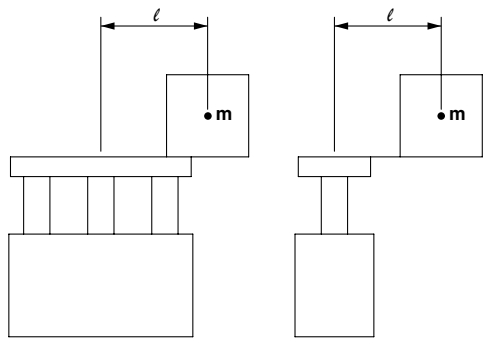
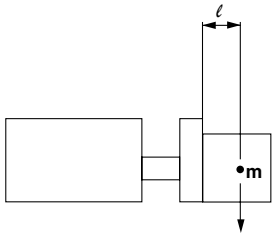


For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Model	Non-rotating accuracy θ
50	**MGPS50**	±0.05°
80	**MGPS80**	±0.04°

Model Selection

Selection Conditions

	Vertical		Horizontal	
Mounting orientation				
Maximum speed (mm/s)	200	400	200	400
Graph (Slide bearing type)	(1), (2)	(3), (4)	(5), (6)	(7), (8)

Selection Example 1 (Vertical mounting)

Selection conditions
- **Mounting: Vertical**
- **Stroke: 50 mm**
- **Maximum speed: 200 mm/s**
- **Load weight: 100 kg**
- **Eccentric distance: 100 mm**

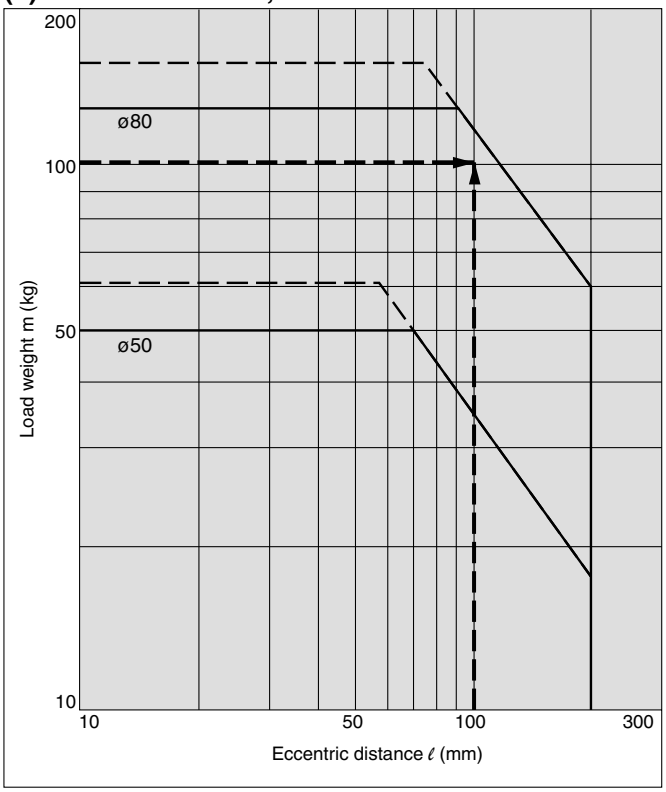
Find the point of intersection for the load weight of 100 kg and the eccentric distance of 100 mm on graph 1, based on vertical mounting, 50 mm stroke, and the speed of 200 mm/s.
→ MGPS80-50 is selected.

Selection Example 2 (Horizontal mounting)

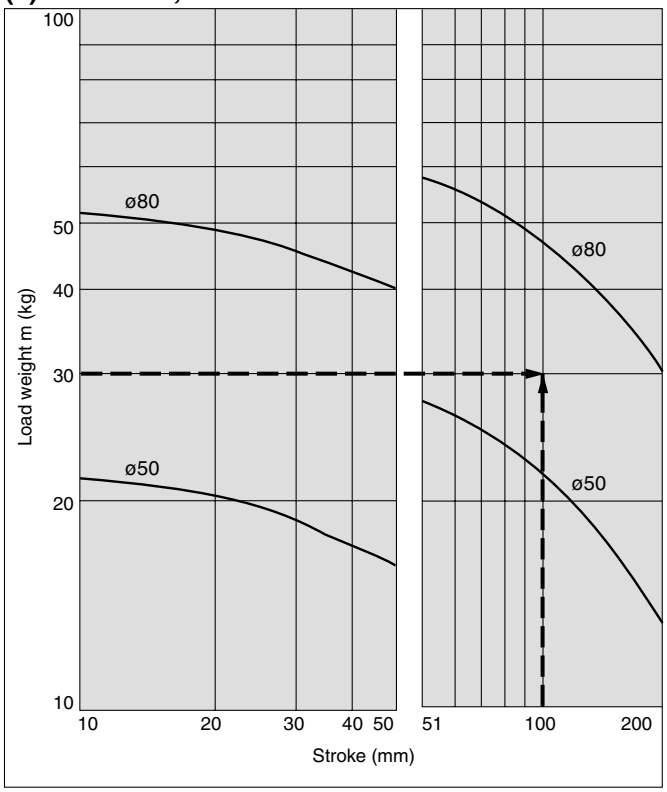
Selection conditions
- **Mounting: Horizontal**
- **Distance between plate and load center of gravity: 50 mm**
- **Maximum speed: 200 mm/s**
- **Load weight: 30 kg**
- **Stroke: 100 mm**

Find the point of intersection for the load weight of 30 kg and 100 stroke on graph 5, based on horizontal mounting, the distance of 50 mm between the plate and load center of gravity, and the speed of 200 mm/s.
→ MGPS80-100 is selected.

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



(5) ℓ = 50 mm, V = 200 mm/s

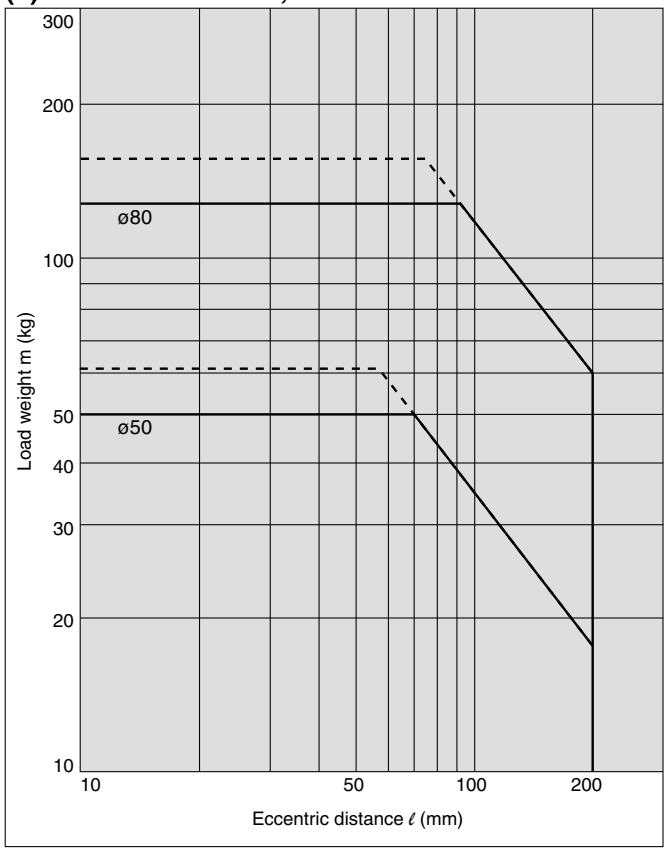


Vertical Mounting (Slide bearing)

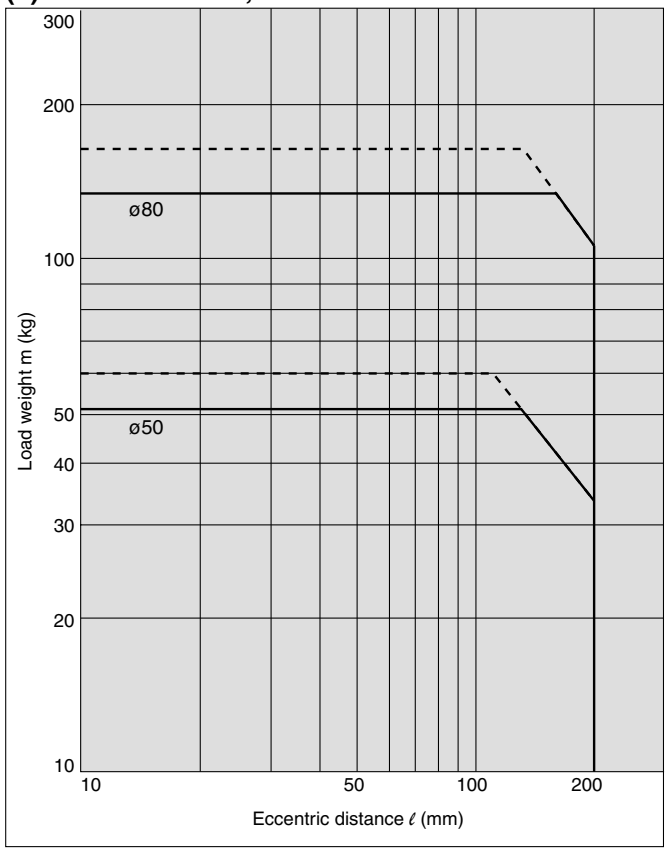
——— Operating pressure 0.4 MPa
- - - - - Operating pressure 0.5 MPa or more

MGPS50, 80

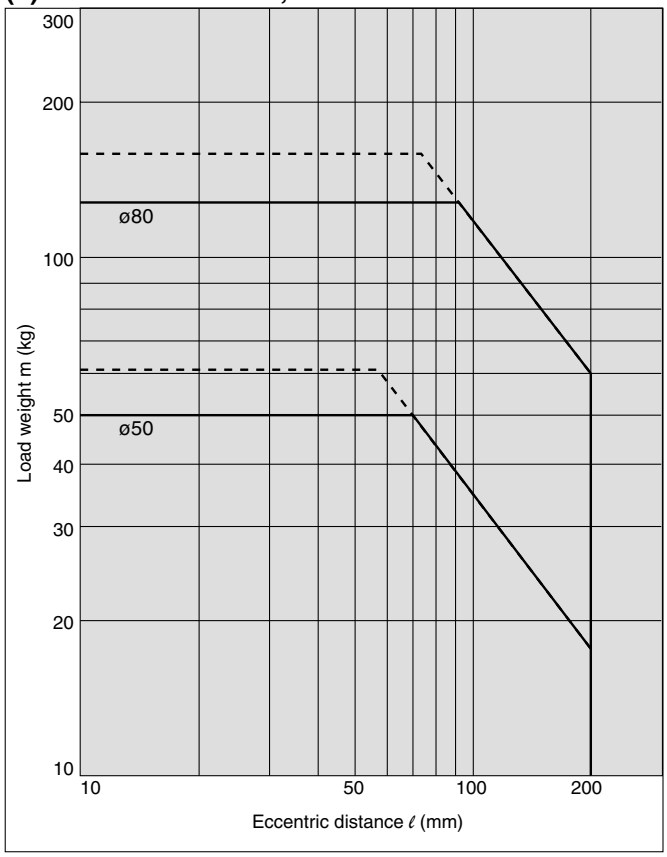
(1) 50 Stroke or Less, V = 200 mm/s



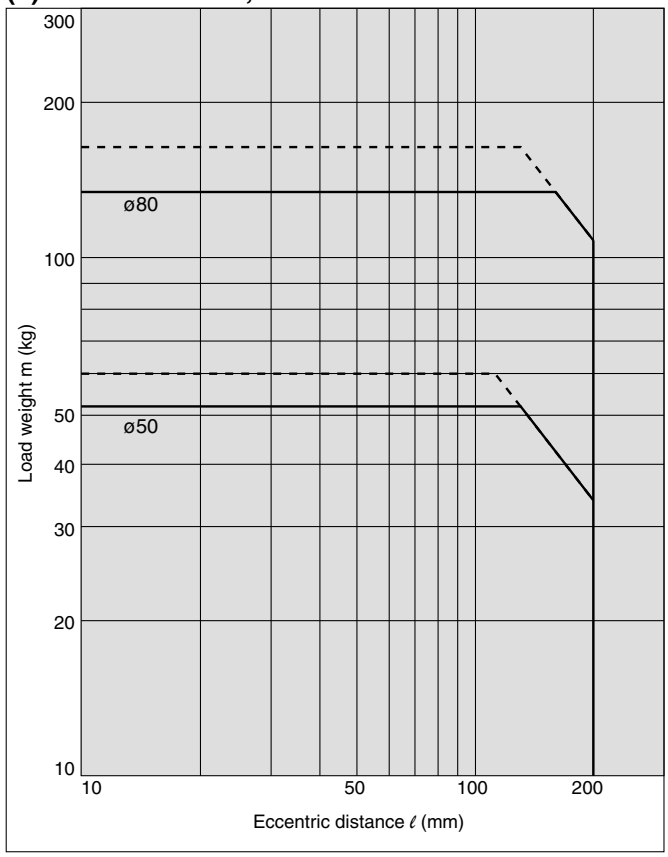
(2) Over 50 Stroke, V = 200 mm/s



(3) 50 Stroke or Less, V = 400 mm/s



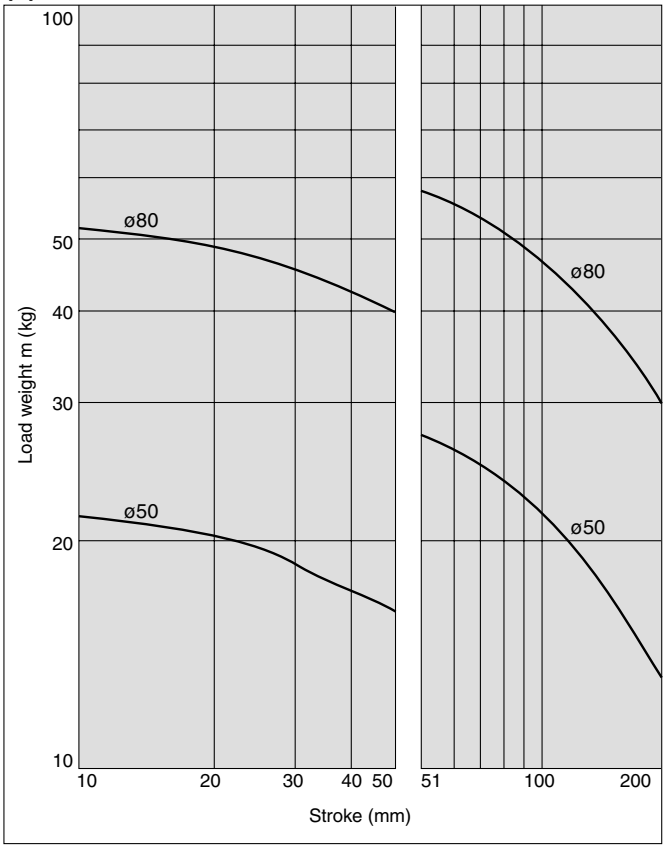
(4) Over 50 Stroke, V = 400 mm/s



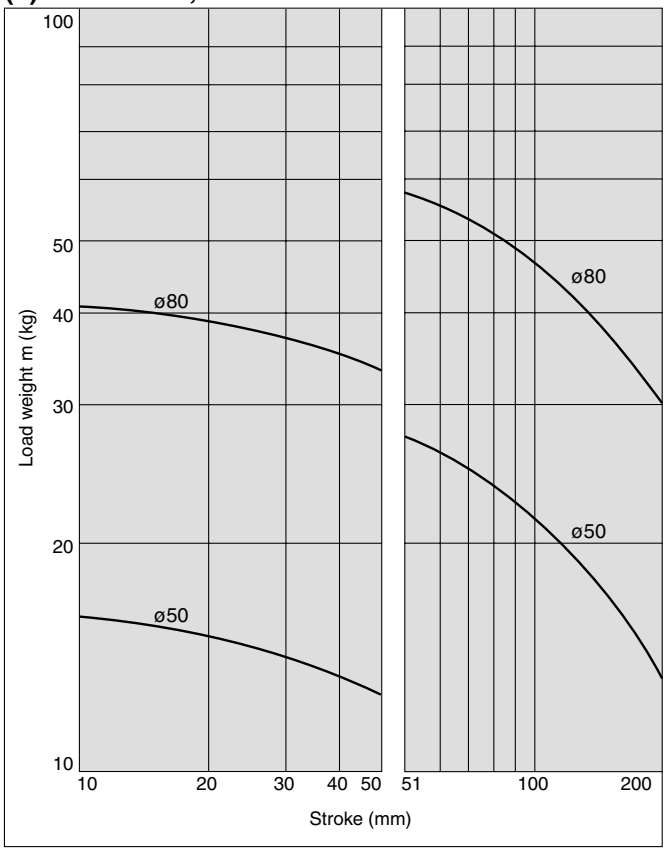
Horizontal Mounting (Slide bearing)

MGPS50/80

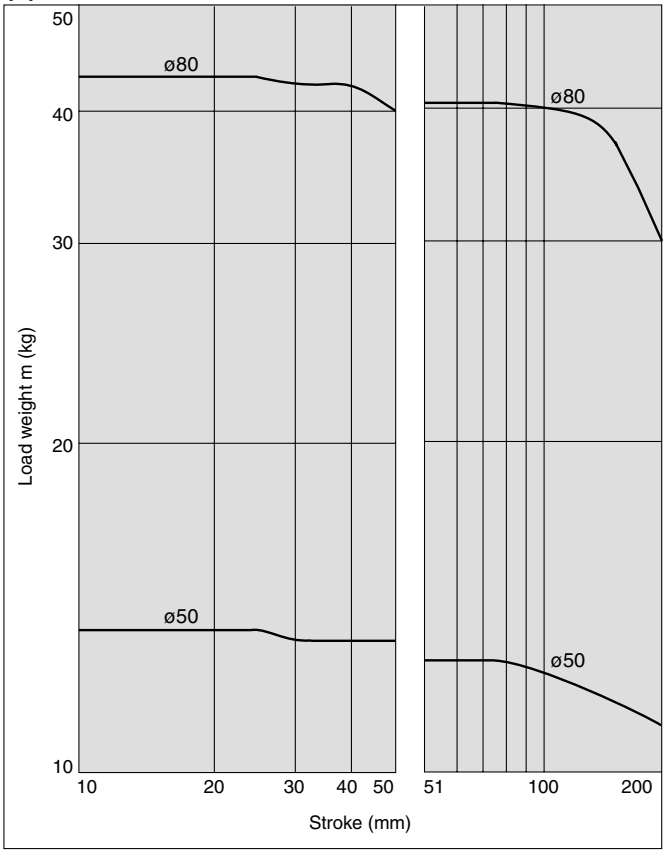
(5) ℓ = 50 mm, V = 200 mm/s



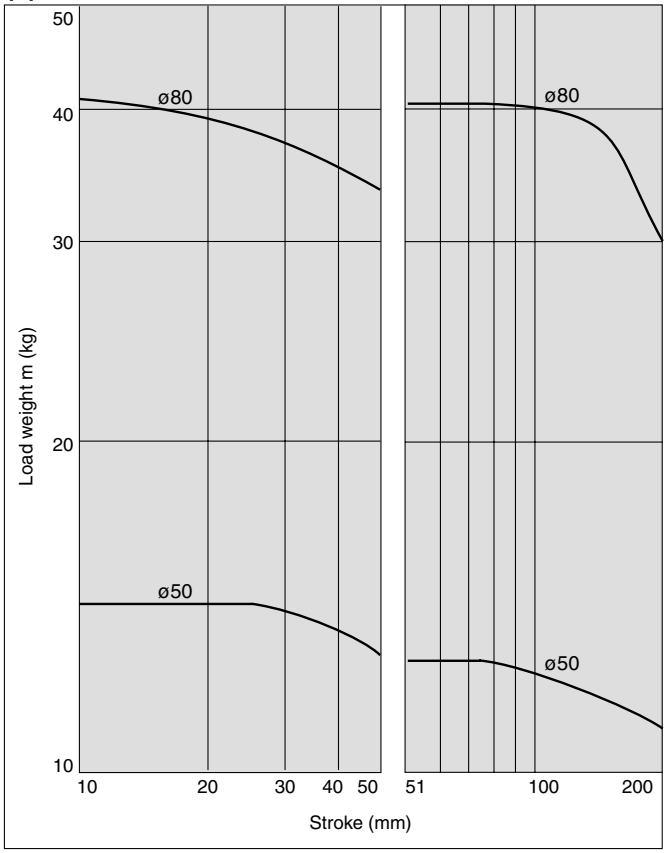
(6) ℓ = 100 mm, V = 200 mm/s



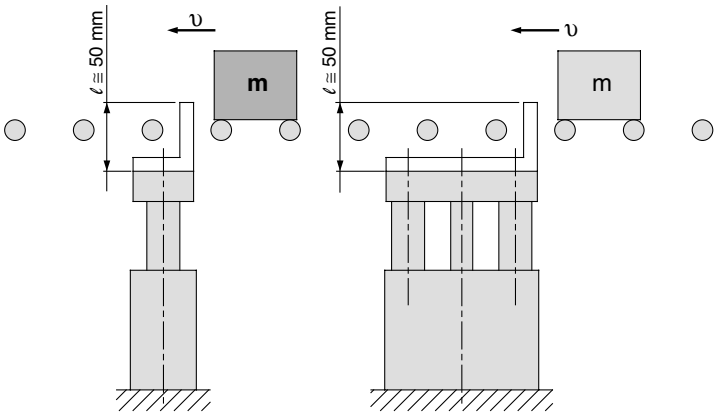
(7) ℓ = 50 mm, V = 400 mm/s



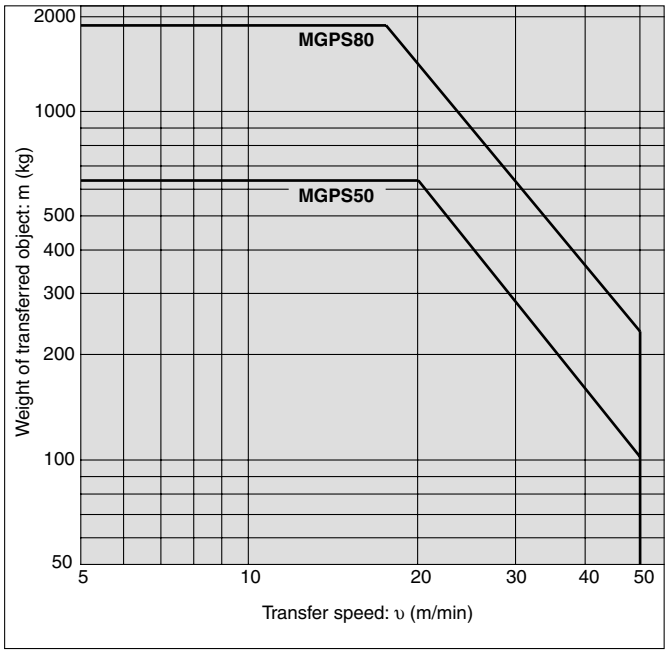
(8) ℓ = 100 mm, V = 400 mm/s



Operating Range when Used as Stopper



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

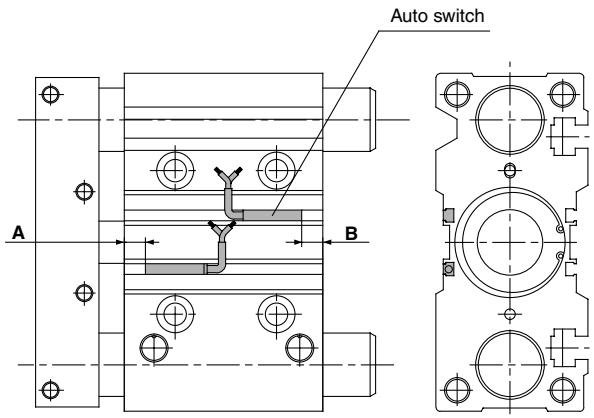


⚠ Caution

Caution on handling

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

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



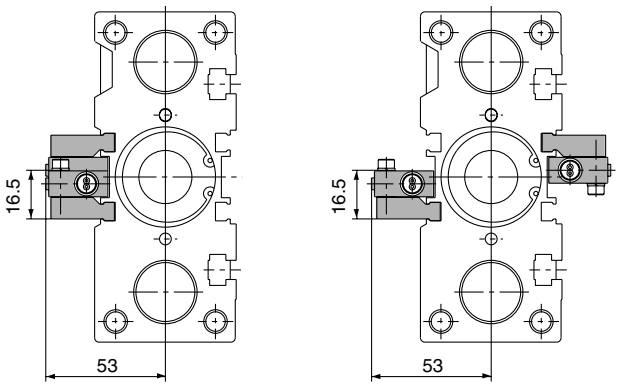
Proper Mounting Position

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

∗ Minimum mountable strokes for auto switch are 10 stroke or more for two switches, and 5 stroke or more for one switch.

For D-P5DW

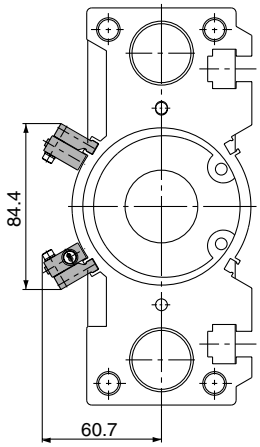
ø50



For 25 stroke

∗ For bore sizes ø40 to 63 with two switches, one switch is mounted on each side.

ø80



Operating Range

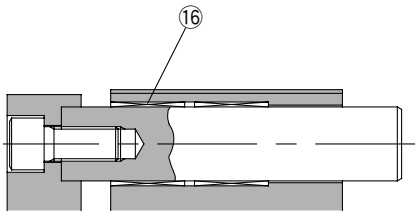
Auto switch model	Applicable bore size(mm)	
	50	**80**
D-Z7□/Z80	10.5	11.5
D-Y59□/Y69□/Y7P/Y7PV D-Y7□W/Y7□WV	7	9.5
D-Y7BAL	6	6
D-P5DWL	4	4

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to page 8-30-1.

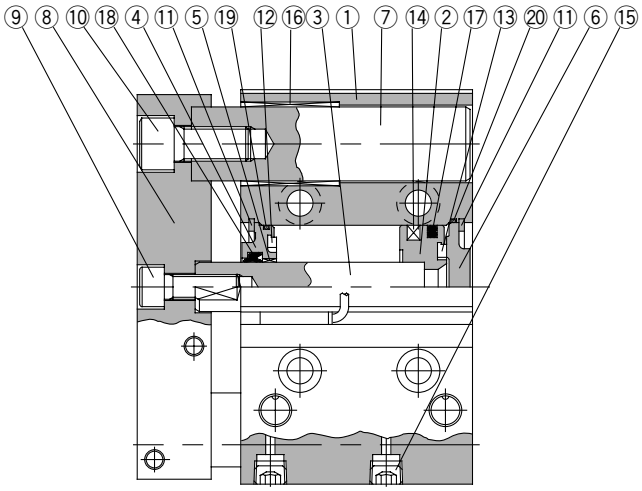
Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-Z80	Grommet (In-line)	Without indicator light

∗ Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available. For details, refer to page 8-30-32.

Construction



Over 50 stroke



50 stroke or less

Component Parts

No.	Description	Material	Note	
①	Body	Aluminum alloy	Hard anodized	
②	Piston	Aluminum alloy	Chromated	
③	Piston rod	Carbon steel	Hard chrome plated	
④	Collar	Aluminum alloy casted	Painted	
⑤	Bushing	Lead bronze casted		
⑥	Head cover	Aluminum alloy	ø50	Colorless chromated
			ø80	Painted
⑦	Guide rod	Carbon steel	Hard chrome plated	
⑧	Plate	Carbon steel	Nickel plated	
⑨	Plate mounting bolt A	Carbon steel	Nickel plated	For piston rod
⑩	Plate mounting bolt B	Carbon steel	Nickel plated	For guide rod

No.	Description	Material	Note
⑪	Snap ring	Carbon tool steel	Phosphate coated
⑫	Bumper A	Urethane	
⑬	Bumper B	Urethane	
⑭	Magnet	Magnetic material	
⑮	Hexagon socket head taper plug	Carbon steel	Nickel plated
⑯	Slide Bearing	Lead-bronze casted	
⑰*	Piston seal	NBR	
⑱*	Rod seal	NBR	
⑲*	Gasket A	NBR	
⑳*	Gasket B	NBR	

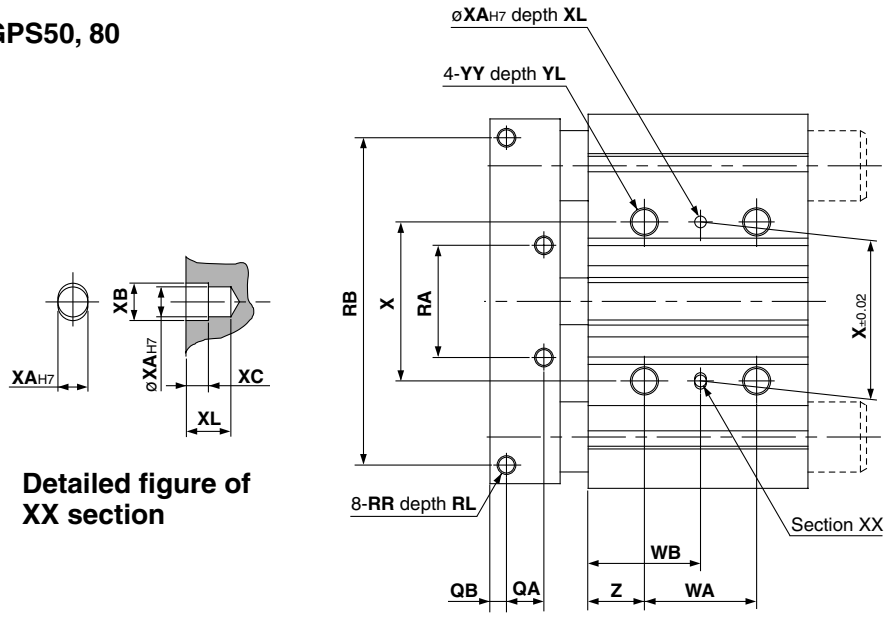
Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
50	MGP50-PS	Set of nos. above ⑰, ⑱, ⑲, ⑳.
80	MGP80-PS	

* Seal kit includes ⑰ to ⑳. Order the seal kit, based on each bore size.

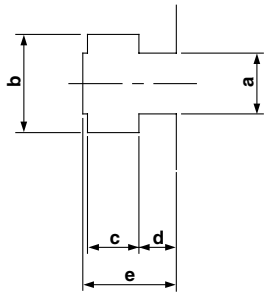
Dimensions

MGPS50, 80



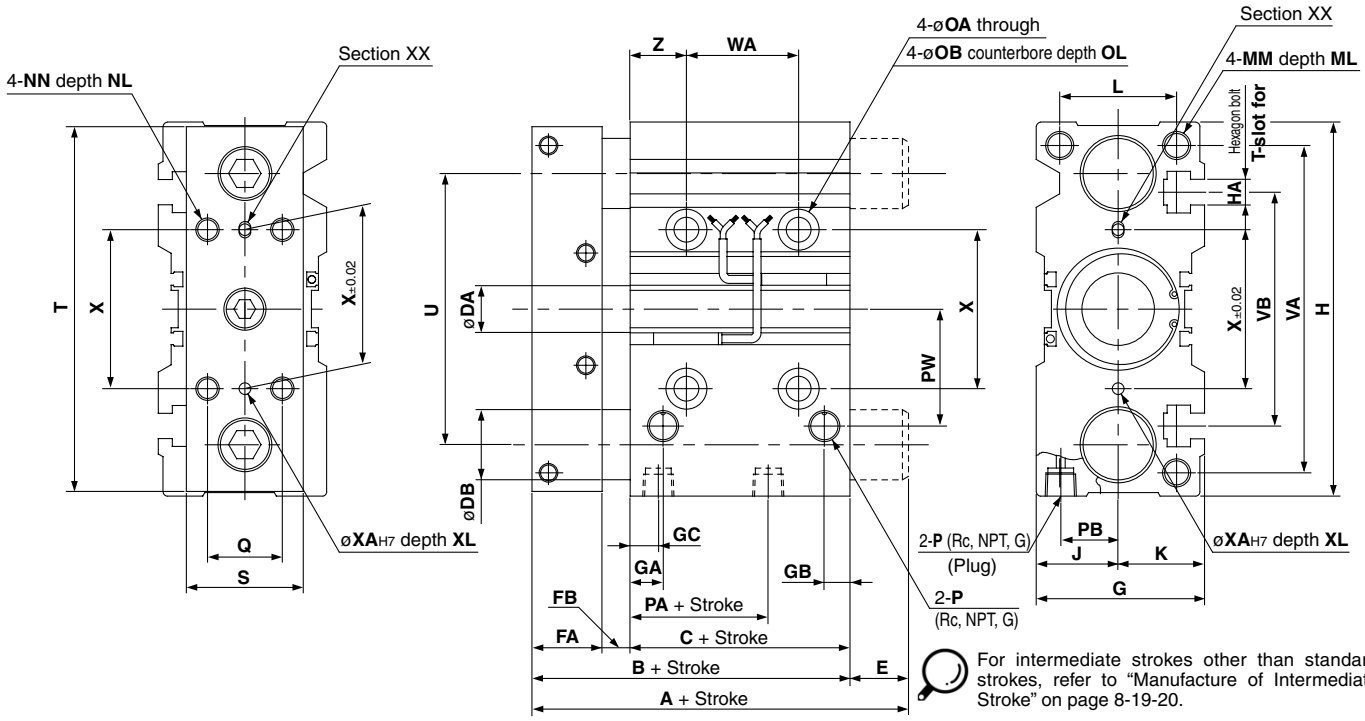
Detailed figure of XX section

T-slot dimensions



(mm)

Bore size (mm)	T-slot dimensions				
	a	b	c	d	e
50	11	17.8	10	6	17.5
80	13.3	20.3	12	8	22.5



For intermediate strokes other than standard strokes, refer to "Manufacture of Intermediate Stroke" on page 8-19-20.

Dimensions

(mm)

Bore size (mm)	Standard stroke (mm)	A		B	C	DA	DB	E		FA	FB	G	GA	GB	GC	H	HA	J	K	L
		25, 50 st	Over 50 st					25, 50 st	Over 50 st											
50	25, 50, 75, 100, 125, 150, 175, 200	86	110	86	44	20	30	0	24	30	12	72	14	11	12	160	M10	35	37	50
80		118	151	118	65	25	45	0	33	35	18	95	19	24	14.5	242	M12	47	48	66

Bore size (mm)	Standard stroke (mm)	MM	ML	NN	NL	OA	OB	OL	P	PA	PB	PW	Q	QA	QB	RA	RB	RR	RL
50	25, 50, 75, 100, 125, 150, 175, 200	M12 x 1.75	20	M10 x 1.5	20	10.6	17.5	13	1/4	9	24.5	50	32	16	7	48	140	M8 x 1.25	14
80		M16 x 2	32	M12 x 1.75	24	12.5	20	17.5	3/8	14.5	29	77	40	18	9	80	200	M10 x 1.5	20

Bore size (mm)	Standard stroke (mm)	S	T	U	VA	VB	WA			WB			X	XA	XB	XC	XL
							25 st	50, 75, 100 st	Over 100 st	25 st	50, 75, 100 st	Over 100 st					
50	25, 50, 75, 100, 125, 150, 175, 200	50	156	116	140	100	24	48	124	36	48	86	68	5	6	4	8
80		65	228	170	214	138	28	52	128	42	54	92	100	6	7	5	10

Bore size (mm)	Standard stroke (mm)	YY	YL	Z
50	25, 50, 75, 100, 125, 150, 175, 200	M12 x 1.75	24	24
80		M14 x 2	28	28

Compact Guide Cylinder
High Precision Ball Bushing Bearing Type
Series MGPA
ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

MGP A 50 — 50 Y7BW

High precision ball bushing bearing type

Bore size

12	12 mm	**40**	40 mm
16	16 mm	**50**	50 mm
20	20 mm	**63**	63 mm
25	25 mm	**80**	80 mm
32	32 mm	**100**	140 mm

Thread type

Nil	Rc
N	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 8-19-59.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.
∗ Auto switches are shipped together, (but not assembled). (Except D-P5DW)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	Pre-wire connector	Applicable load	
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		12 V		**Y69B**	**Y59B**	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		**Y7NWV**	**Y7NW**	●	●	○	○	IC circuit	
				3-wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○	○		
				2-wire		12 V		**Y7BWV**	**Y7BW**	●	●	○	○	—	
	Water resistant (2-color indication)							—	**Y7BA**	—	●	○	○		
	Magnetic field resistant (2-color indication)					—		—	**P5DW**	—	●	●	○		

∗ Lead wire length symbols: 0.5 m····· Nil (Example) Y59A
3 m····· L (Example) Y59AL
5 m····· Z (Example) Y59AZ

∗ Solid state switches marked with "○" are produced upon receipt of order.

∗ D-P5DW type can be mounted only on bore sizes 40 to 100.

• Since there are other applicable auto switches than listed, refer to page 8-19-20 for details.
• For details about auto switches with pre-wire connector, refer to page 8-30-52.

Non-rotating accuracy of plate: ± 0.01°
Plate displacement amount : 0.05 mm
(MGPA ø12-10 st, when Load weight is 1.7 kg.)

Made to Order Specifications (For details, refer to page 8-31-1.)

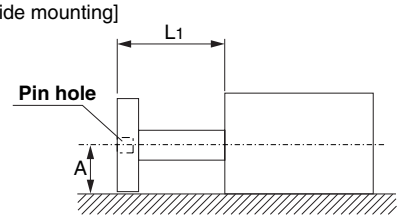
Symbol	Specifications
-XC4	With heavy duty scraper
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC35	With coil scraper
-XC79	Machining tapped hole, drilled hole, and pin hole additionally.

⚠ Caution

Positioning accuracy for pin hole on the plate

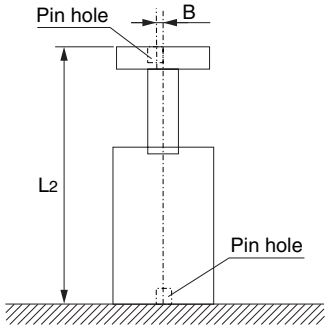
Dispersion of dimensions when machining each component will be accumulated in the plate pin hole positioning accuracy when mounting this cylinder. Below values are referred as a guide.

[Side mounting]



A = Catalog dimension ± (0.1* + L1 x 0.0008) [mm]
* : To be 0.15 for ø80, 100.
Note) Displacement by load and self-weight deflection by plate and guide rod are not included.

[Bottom mounting]



B = ± (0.045 + L2 x 0.0016) [mm]

Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5 MPa	
Max. operating pressure	1.0 MPa	
Min. operating pressure	ø12, ø16	0.12 MPa
	ø20 to ø100	0.1 MPa
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Piston speed	ø12 to ø63	50 to 500mm/s
	ø80, ø100	50 to 400mm/s
Cushion	Rubber bumper on both ends	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_{0}$ mm	
Bearing type	High precision ball bushing bearing	

Standard Stroke

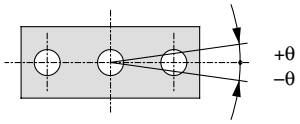
Bore size (mm)	Standard stroke (mm)
12, 16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250
20, 25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400
32 to 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Stroke

Description	Spacer installation type Spacers are installed in the standard stroke cylinder. ø12 to 32 : Available in 1 mm stroke increments ø40 to 100 : Available in 5 mm stroke increments	
Part no.	For standard part numbers and ordering procedures, refer to page 8-19-58.	
Applicable stroke (mm)	ø12, ø16	1 to 249
	ø20 to ø32	1 to 399
	ø40 to ø100	5 to 395
Example	Part no.: MGPA20-39 A spacer 1 mm in width is installed in a MGPA20-40. C dimension is 77 mm.	

Non-rotating Accuracy of Plate

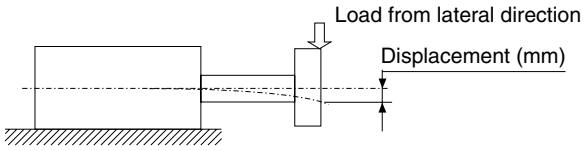
For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.



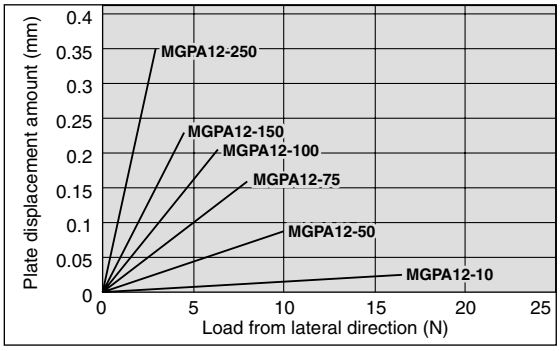
Bore size (mm)	Non-rotating accuracy θ
12	±0.01°
16	
20	
25	
32	
40	
50	
63	
80	
100	

Dimensions and the related things about auto switch are the same as standard type MGPL series. Refer to pages 8-19-8 to 8-19-24.

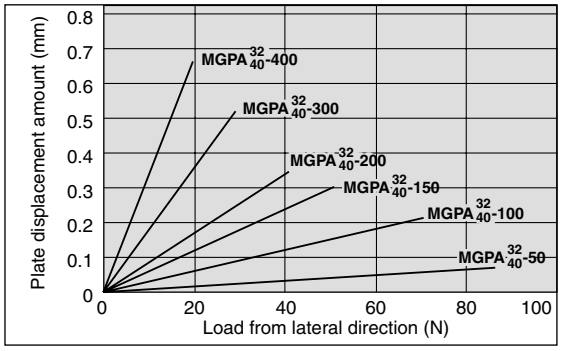
Plate Displacement Amount (Reference values)



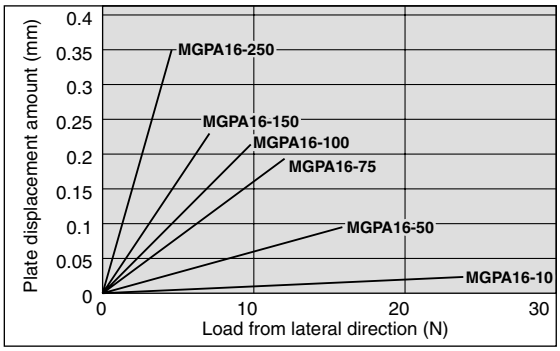
MGPA12



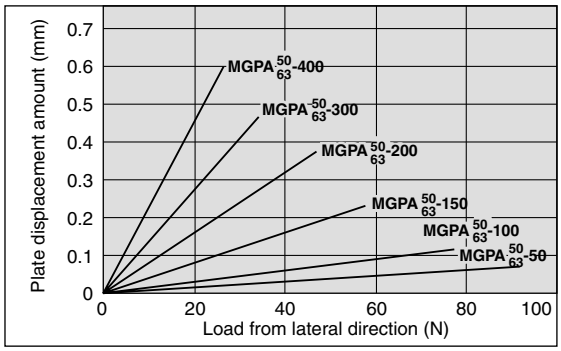
MGPA32/40



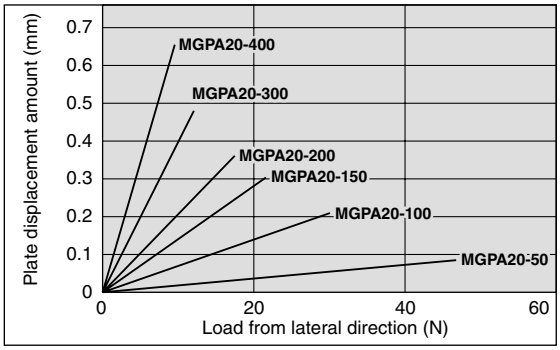
MGPA16



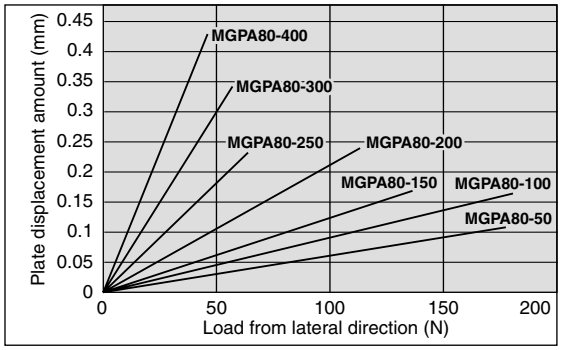
MGPA50/63



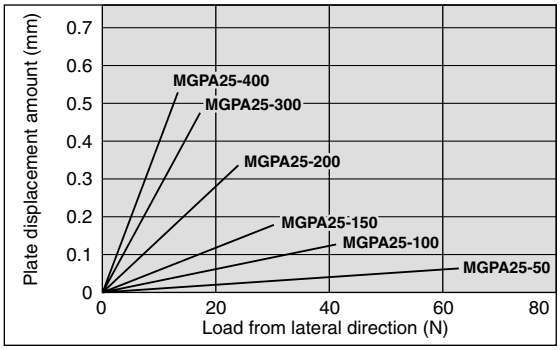
MGPA20



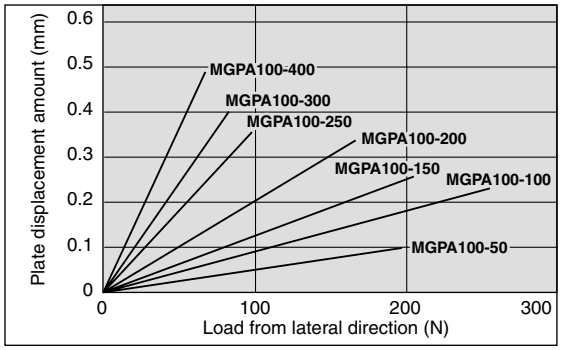
MGPA80



MGPA25



MGPA100



Note 1) The guide rod and self-weight for the plate are not included in the above displacement values.

Note 2) Regarding the allowable rotational torque and the operating range as a lifter, refer to pages 8-19-8 to 8-19-24 in the standard type of Series MGPL, since it is identical.