

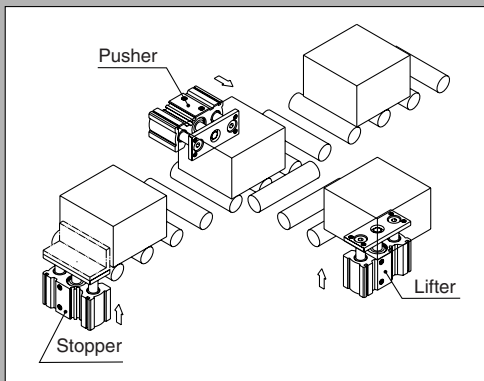
Compact Guide Cylinder

Series *MGQ*

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

Air cylinder with guide integrated that has achieved anti-lateral load and high non-rotating accuracy.

Space-saving cylinder.
Suitable as stoppers or lifters in conveyor line.



Two types of guide rod bearing for different applications

Slide bearing

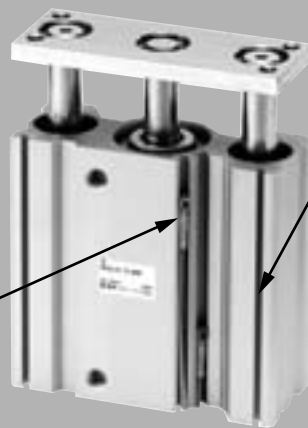
Slide bearing Strength against side load is more than 2 times as compared conventional stopper cylinder (Compared to SMC Series RSQ, round bar type).

Ball bushing bearing

Smooth operation is suitable for pushing, lifter and applications where high precision is required.

Cylinder position can be detected.

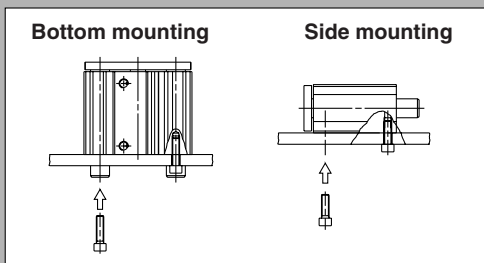
All models have built-in magnets for auto switches.



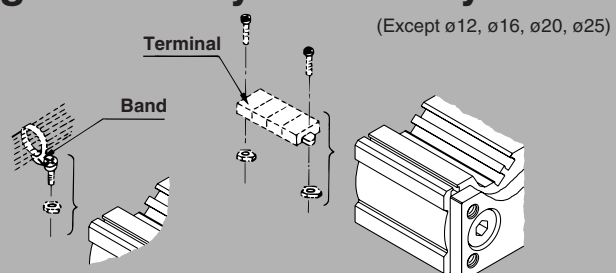
Non-rotating accuracy

Bore size (mm)	Non-rotating accuracy θ	
	MGQM	MGQL
12	$\pm 0.08^\circ$	$\pm 0.10^\circ$
16		
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25		
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40		
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63		
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100		

Can be mounted from two directions



Auto switches, lead wires and terminals can be fixed in the groove of cylinder body.



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual
-X□

Compact Guide Cylinder

Series *MGQ*

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

How to Order

Compact Guide Cylinder

MGQ M 25 — **30** — **M9BW** —

• **Made to Order**
(Refer to page 339 for details.)

Compact Guide Cylinder •

• **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

• **Number of auto switches**

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

• **Auto switch**

Nil	Without auto switch (Built-in magnet)
------------	--

* For the applicable auto switch model, refer to the table below.

• **Cylinder stroke (mm)**

Refer to "Standard Stroke" on page 339.

• **Thread type**

Nil	M5 x 0.8	ø12, ø16
TN	Rc	
TF	NPT	ø20 to ø100
	G	

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)				Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)					
Solid state switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	——	M9NV	M9N	●	●	●	○	○	Relay, PLC		
	3-wire (PNP)			12 V		M9PV		M9P	●	●	●	○	○	IC circuit			
	2-wire			12 V		M9BV		M9B	●	●	●	○	○	——			
	3-wire (NPN)			5 V, 12 V		M9NWV		M9NW	●	●	●	○	○	IC circuit			
	3-wire (PNP)			5 V, 12 V		M9PWV		M9PW	●	●	●	○	○	IC circuit			
	2-wire			12 V		M9BWV		M9BW	●	●	●	○	○	——			
	3-wire (NPN)			5 V, 12 V		M9NAV **		M9NA **	○	○	●	○	○	IC circuit			
	3-wire (PNP)			5 V, 12 V		M9PAV **		M9PA **	○	○	●	○	○	IC circuit			
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	——	5 V	——	A96V	A96	●	——	●	——	——	IC circuit	——	
				2-wire	24 V	12 V	100 V	A93V	A93	●	——	●	——	——	——	——	Relay,
							100 V or less	A90V	A90	●	——	●	——	——	——	IC circuit	PLC
				2-wire	24 V	12 V	100 V or less	A93V	A93	●	——	●	——	——	——	——	——
				2-wire	24 V	12 V	100 V or less	A93V	A93	●	——	●	——	——	——	——	——
				2-wire	24 V	12 V	100 V or less	A93V	A93	●	——	●	——	——	——	——	——
A90V	A90	●	——														

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWX

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

* Since there are other applicable auto switches than listed, refer to page 351 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
* Auto switches are shipped together (not assembled).

Air cylinder integrated with guide has achieved anti-lateral load and high non-rotating accuracy.

Space-saving and compact design

Suitable as stoppers or lifters in conveyor line

2 types of guide rod bearing are available depending upon the application

Slide bearing/Ball bushing bearing



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

Symbol	Specifications
—XA□	Change of rod end shape
—XB6	Heat resistant cylinder (−10 to 150°C)
—XB9	Low speed cylinder (10 to 50 mm/s)
—XB10	Intermediate stroke (Using exclusive body)
—XC22	Fluororubber seals
—XC56	With knock pin holes
—XC79	Machining tapped hole, drilled hole, and pin hole additionally
—X168	Helical insert thread
—X367	Bottom mounting style
—X399	Long bushing type
—X563	With anti-strong magnetic field switch (D-P4DW)

Specifications

Bearing type	Slide bearing		Ball bushing bearing
Model	MGQM		MGQL
Bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63, 80, 100		
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 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		

Standard Stroke

Model	Standard stroke (mm)	Intermediate stroke (mm)
MGQ ^M 12, 16	10, 20, 30, 40, 50, 75, 100	As for the intermediate strokes other than the standard strokes at left are manufactured by means of installing a spacer. ø12 to ø32 Stroke available by the 1 stroke interval ø40 to ø100 Stroke available by the 5 stroke interval (Example) 1. For MGQM20-21 st, MGQM20-30 st is provided with a 5 mm + 4 mm ≤ 9 mm width spacer. 2. For MGQM50-40 st, MGQM50-50 st is provided with a 10 mm width spacer.
MGQ ^M 20, 25	20, 30, 40, 50, 75, 100 125, 150, 175, 200	
MGQ ^M 32, 40 50, 63 80, 100	25, 50, 75, 100, 125 150, 175, 200	

Theoretical Output

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
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)



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual

-X□

Series MGQ

Mass/Slide Bearing: MGQM12 to 100

(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		10	20	25	30	40	50	75	100	125	150	175	200
12	MGQM12	0.23	0.27	—	0.31	0.34	0.38	0.48	0.58	—	—	—	—
16	MGQM16	0.34	0.39	—	0.45	0.50	0.55	0.68	0.80	—	—	—	—
20	MGQM20	—	0.54	—	0.61	0.69	0.76	0.94	1.09	1.24	1.39	1.54	1.69
25	MGQM25	—	0.83	—	0.93	1.04	1.13	1.44	1.68	1.92	2.16	2.40	2.64
32	MGQM32	—	—	1.51	—	—	1.91	2.29	2.69	3.09	3.49	3.89	4.29
40	MGQM40	—	—	1.65	—	—	2.24	2.46	2.87	3.28	3.69	4.10	4.51
50	MGQM50	—	—	2.54	—	—	3.09	3.65	4.21	4.77	5.33	5.89	6.45
63	MGQM63	—	—	3.01	—	—	3.63	4.23	4.85	5.47	6.09	6.71	7.33
80	MGQM80	—	—	5.66	—	—	6.59	7.49	8.41	9.33	10.25	11.17	12.09
100	MGQM100	—	—	8.96	—	—	10.27	11.57	12.90	14.23	15.56	16.89	18.22

Mass/Ball Bushing Bearing: MGQL12 to 100

(kg)

Bore size (mm)	Model	Standard stroke (mm)											
		10	20	25	30	40	50	75	100	125	150	175	200
12	MGQL12	0.23	0.26	—	0.29	0.35	0.38	0.46	0.53	—	—	—	—
16	MGQL16	0.35	0.39	—	0.44	0.52	0.57	0.70	0.82	—	—	—	—
20	MGQL20	—	0.54	—	0.60	0.70	0.75	0.90	1.04	1.18	1.32	1.46	1.60
25	MGQL25	—	0.84	—	0.93	1.08	1.17	1.37	1.58	1.79	2.00	2.21	2.42
32	MGQL32	—	—	1.32	—	—	1.67	2.09	2.45	2.81	3.17	3.53	3.89
40	MGQL40	—	—	1.46	—	—	1.82	2.27	2.63	2.99	3.35	3.71	4.07
50	MGQL50	—	—	2.11	—	—	2.59	3.19	3.68	4.17	4.66	5.15	5.64
63	MGQL63	—	—	2.65	—	—	3.19	3.85	4.39	4.93	5.47	6.01	6.55
80	MGQL80	—	—	5.49	—	—	6.38	7.95	8.79	9.63	10.47	11.31	12.15
100	MGQL100	—	—	8.34	—	—	9.53	11.78	12.96	14.14	15.32	16.50	17.68

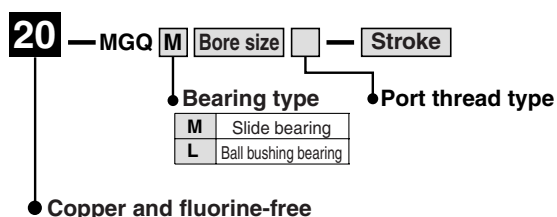
Copper and Fluorine-free Series (For CRT manufacturing process)

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

Specifications

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

How to Order





Series MGQ

Specific Product Precautions

Be sure to read before handling. Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Mounting

⚠ Warning

1. Avoid placing 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. Do not dent or scratch the mounting surface of a body and a plate.

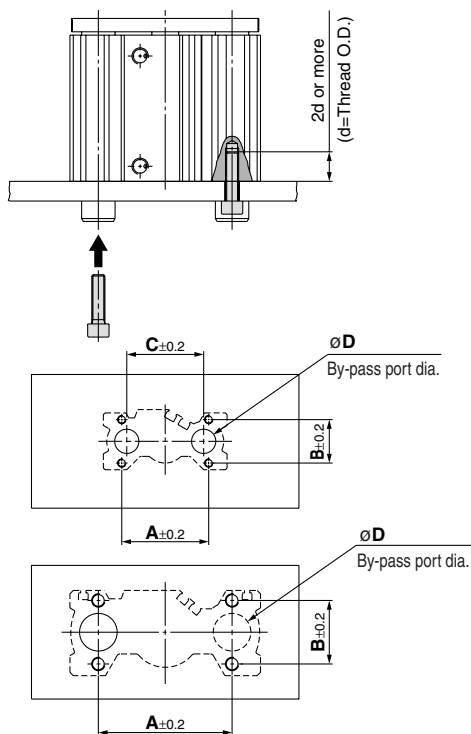
- The flatness of the mounting surface may not be maintained, which would cause the sliding resistance to increase.

3. Make sure that the cylinder mounting surface has a flatness of 0.05 mm or less.

- If the flatness of the workpieces and brackets mounted on the plate is not appropriate, sliding resistance may increase.

4. When mounting on the bottom of the cylinder, the guide rod protrudes from the bottom at the retraction stroke end. Therefore, drill holes for the hexagon socket bolts used for mounting purposes, and relief holes for the guide rods.

Moreover, in applications where impact occurs from a stopper, etc., the mounting bolts should be inserted to a depth of 2d or more.



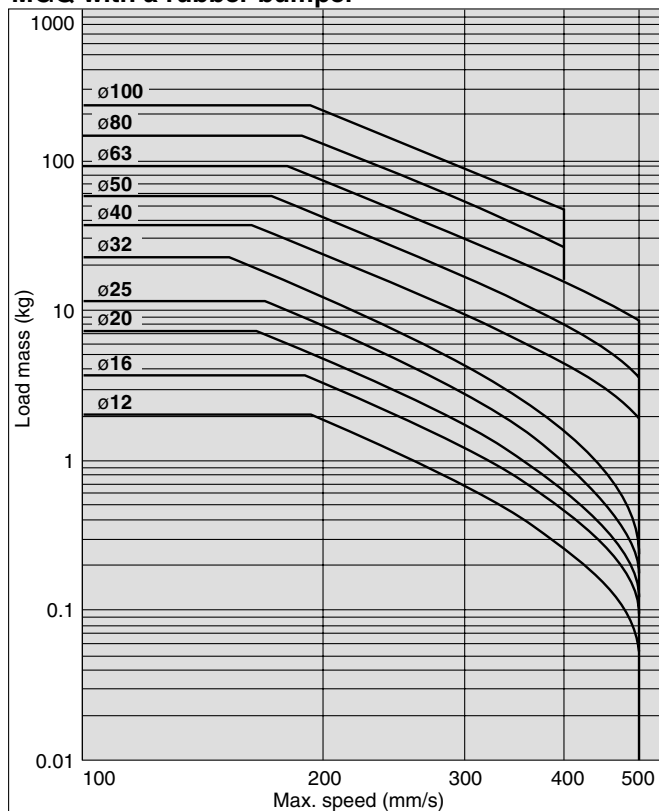
Bore size (mm)	A (mm)	B (mm)	C (mm)	ØD(mm)		Hexagon socket head cap screw
				MGQM	MGQL	
12	40	18	36	10	8	M4 x 0.7
16	42	22	38	12	10	M5 x 0.8
20	52	26	46	14	12	M5 x 0.8
25	62	32	56	18	15	M6 x 1
32	80	38	—	22	18	M8 x 1.25
40	90	38	—	22	18	M8 x 1.25
50	100	44	—	27	22	M10 x 1.5
63	110	44	—	27	22	M10 x 1.5
80	140	56	—	31	28	M12 x 1.75
100	170	62	—	39	33	M14 x 2

C dimension for a bore size of 32 to 100 is identical to the A dimension.

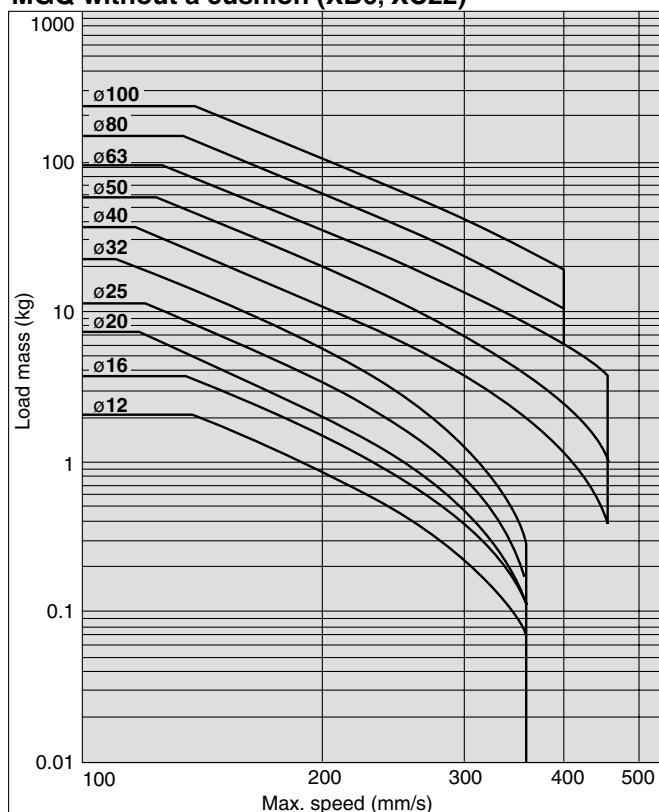
Allowable Kinetic Energy

Load mass and cylinder speed should be observed within the range given in the graph below.

MGQ with a rubber bumper



MGQ without a cushion (XB6, XC22)



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

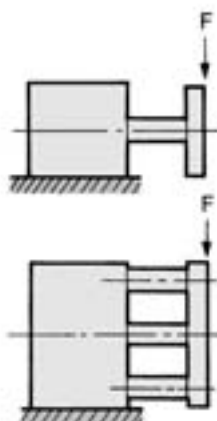
-X□

Individual

-X□

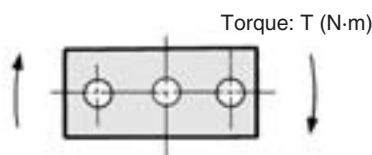
Operating Conditions

Allowable Lateral Load (Ordinary load)



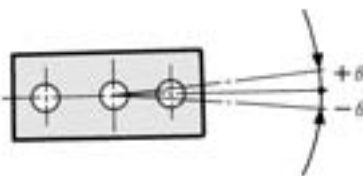
Bore size (mm)	Bearing type	Stroke (mm)												F(N)
		10	20	25	30	40	50	75	100	125	150	175	200	
12	MGQM	21	18	—	15	13	12	9	8	—	—	—	—	
	MGQL	27	22	—	17	21	19	15	13	—	—	—	—	
16	MGQM	34	28	—	25	22	19	15	13	—	—	—	—	
	MGQL	38	30	—	26	37	33	28	23	—	—	—	—	
20	MGQM	—	51	—	44	38	34	57	49	42	37	33	30	
	MGQL	—	55	—	47	78	69	53	44	30	26	23	21	
25	MGQM	—	70	—	60	53	47	77	65	56	49	44	40	
	MGQL	—	71	—	61	77	72	59	51	42	36	32	29	
32	MGQM	—	—	196	—	—	167	137	108	87	77	69	63	
	MGQL	—	—	88	—	—	59	275	216	156	136	121	109	
40	MGQM	—	—	196	—	—	167	137	108	87	77	69	63	
	MGQL	—	—	88	—	—	59	275	216	156	136	121	109	
50	MGQM	—	—	294	—	—	255	215	176	138	123	111	101	
	MGQL	—	—	137	—	—	88	392	313	207	182	162	146	
63	MGQM	—	—	294	—	—	255	215	176	138	123	111	101	
	MGQL	—	—	137	—	—	88	392	313	207	182	162	146	
80	MGQM	—	—	353	—	—	304	255	206	168	151	137	126	
	MGQL	—	—	235	—	—	157	863	686	465	411	368	333	
100	MGQM	—	—	539	—	—	470	412	343	278	252	230	211	
	MGQL	—	—	470	—	—	313	1370	1070	708	627	562	509	

Allowable Rotational Torque of Plate



Bore size (mm)	Bearing type	Stroke (mm)												T (N·m)
		10	20	25	30	40	50	75	100	125	150	175	200	
12	MGQM	0.29	0.24	—	0.21	0.18	0.16	0.13	0.10	—	—	—	—	
	MGQL	0.48	0.39	—	0.31	0.37	0.33	0.27	0.23	—	—	—	—	
16	MGQM	0.51	0.43	—	0.35	0.31	0.27	0.23	0.19	—	—	—	—	
	MGQL	0.73	0.58	—	0.48	0.71	0.64	0.53	0.44	—	—	—	—	
20	MGQM	—	0.91	—	0.78	0.71	0.63	1.04	0.88	0.77	0.68	0.60	0.55	
	MGQL	—	1.26	—	1.06	1.77	1.58	1.22	1.01	0.69	0.60	0.53	0.48	
25	MGQM	—	1.53	—	1.31	1.16	1.03	1.68	1.42	1.24	1.09	0.98	0.88	
	MGQL	—	1.96	—	1.69	2.16	2.00	1.65	1.41	1.18	1.01	0.90	0.81	
32	MGQM	—	—	3.92	—	—	2.94	2.45	3.46	1.72	1.53	1.37	1.24	
	MGQL	—	—	1.96	—	—	0.98	5.88	4.41	3.12	2.72	2.42	2.18	
40	MGQM	—	—	4.41	—	—	3.43	2.94	2.45	1.94	1.72	1.54	1.40	
	MGQL	—	—	2.45	—	—	1.47	6.37	5.39	3.51	3.06	2.72	2.45	
50	MGQM	—	—	7.35	—	—	5.88	4.90	4.41	3.43	3.06	2.77	2.52	
	MGQL	—	—	3.43	—	—	2.20	10.78	8.33	5.18	4.55	4.05	3.65	
63	MGQM	—	—	7.84	—	—	6.37	5.39	4.90	3.77	3.37	3.04	2.77	
	MGQL	—	—	3.92	—	—	2.45	11.76	9.31	5.69	5.01	4.46	4.02	
80	MGQM	—	—	11.76	—	—	9.80	7.84	6.86	5.88	5.28	4.79	4.39	
	MGQL	—	—	9.31	—	—	5.88	31.36	24.50	16.28	14.39	12.88	11.66	
100	MGQM	—	—	22.54	—	—	19.60	16.66	14.70	11.81	10.67	9.74	8.96	
	MGQL	—	—	21.56	—	—	13.72	63.70	49.00	30.09	26.65	23.89	21.63	

Non-rotating Accuracy of Plate

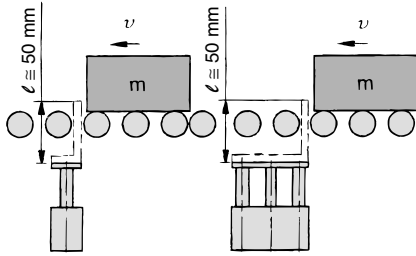


For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGQM	MGQL
12	$\pm 0.08^\circ$	$\pm 0.10^\circ$
16		
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25		
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40		
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63		
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100		

Operating Range when Used as Stopper

Bore Size $\phi 12$ to $\phi 25$ /MGQM12 to 25 (Slide Bearing)



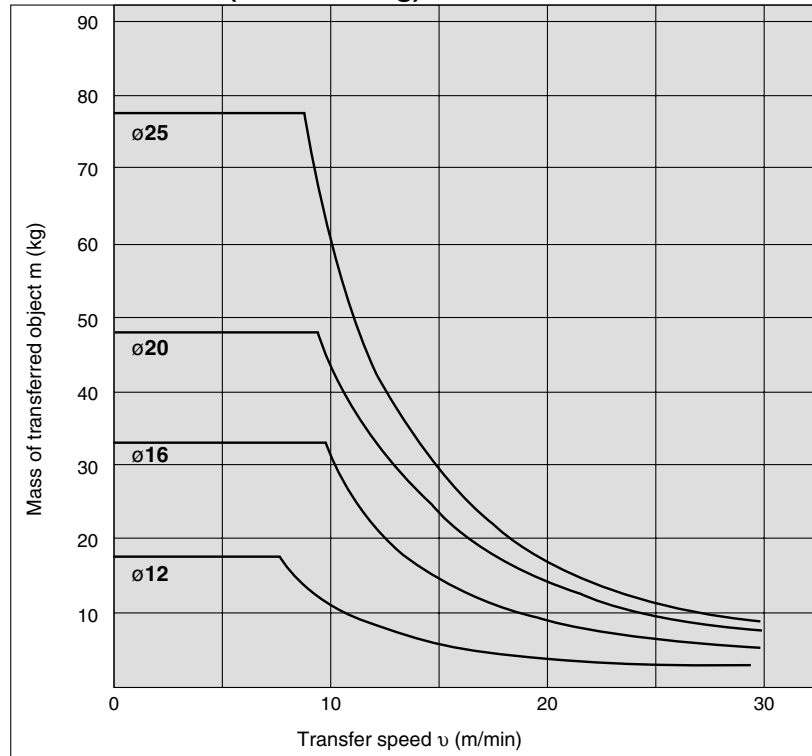
* When selecting a model with a longer l dimension, be sure to choose a bore size which is sufficiently large.

Caution on handling

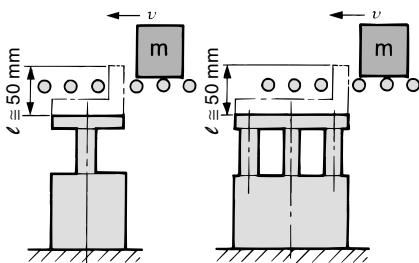
Note 1) When using as a stopper, select a model with 30 stroke or less.

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

MGQM12 to 25 (Slide bearing)



Bore Size $\phi 32$ to $\phi 100$ /MGQM32 to 100 (Slide Bearing)



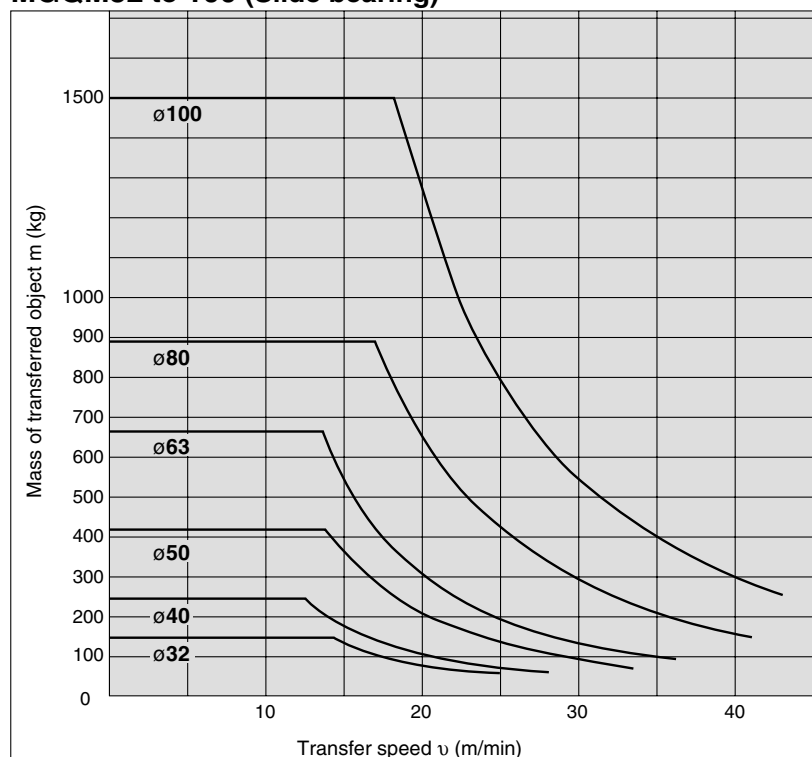
* When selecting a model with a longer l dimension, be sure to choose a bore size which is sufficiently large.

Caution on handling

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

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

MGQM32 to 100 (Slide bearing)



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-☐

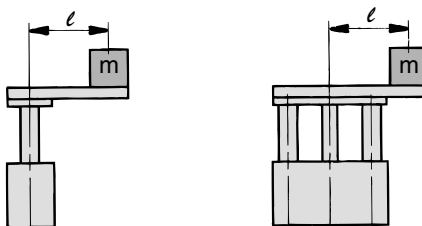
-X☐

Individual
-X☐

Operating Range when Used as Lifter

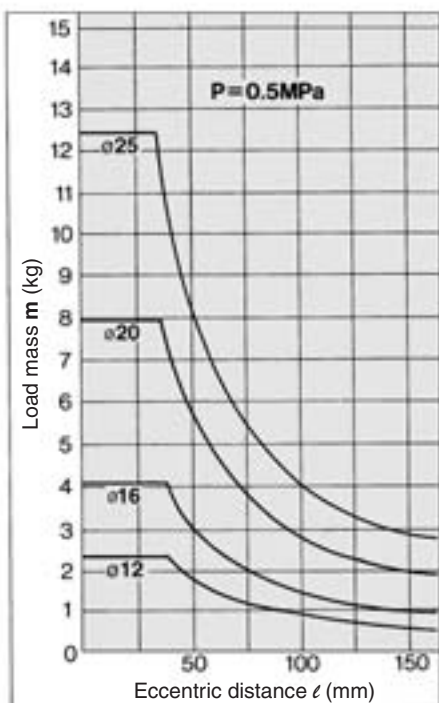
- Select the bore size so that the total load mass is below the theoretical output (see the table below).

Bore size (mm)	Theoretical output
12, 16	40% or below
20, 25	50% or below
32 to 100	60% or below



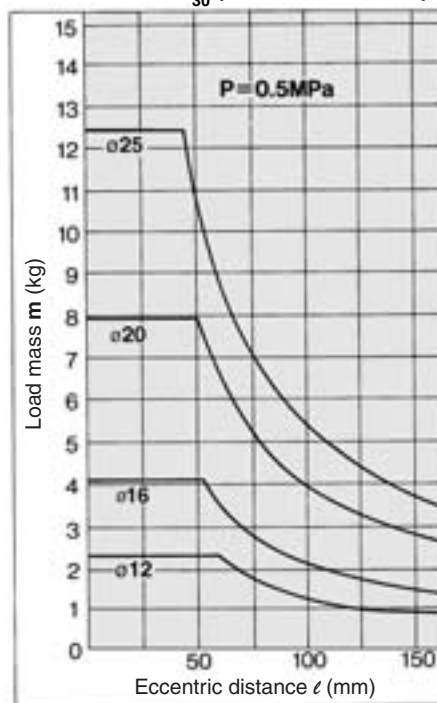
MGQM/Slide bearing

MGQM12 to 25-□

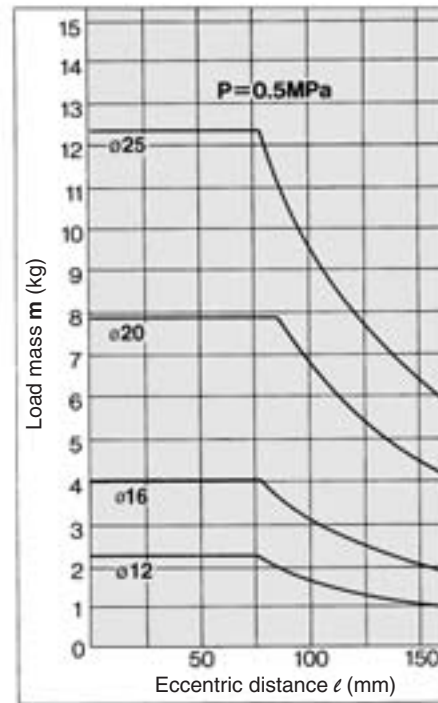


MGQM/Ball bushing bearing

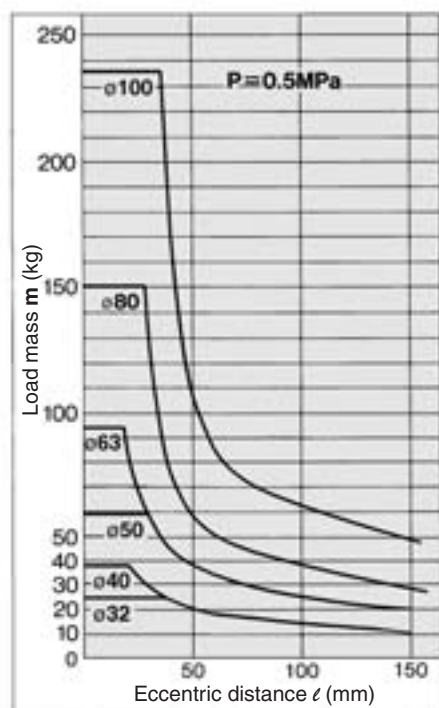
MGQL12 to 25-¹⁰/₂₀ (10, 20, 30 Stroke)



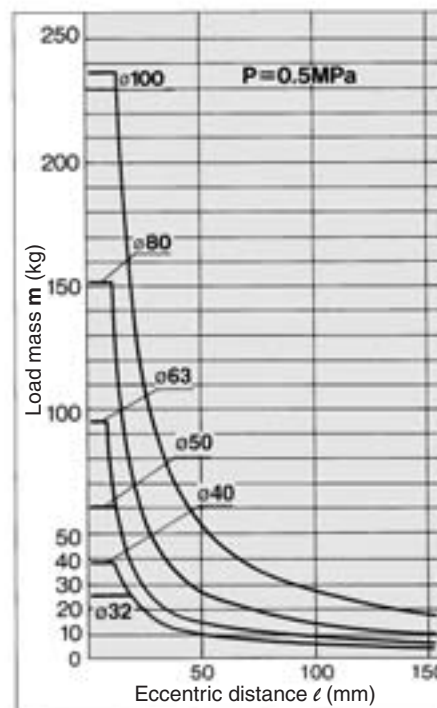
MGQL12 to 25-Over 30 stroke



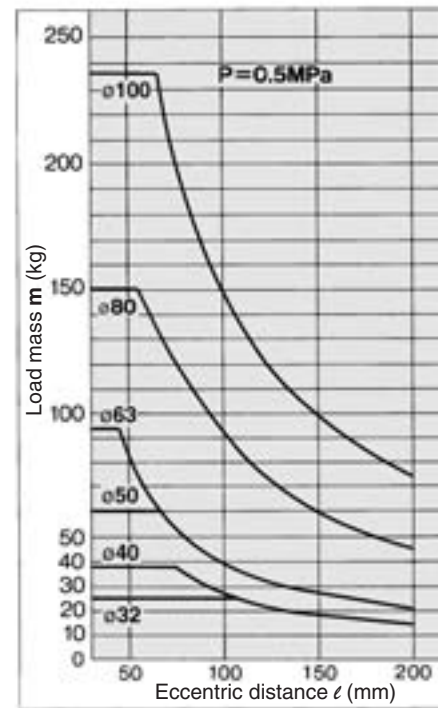
MGQM32 to 100 (Slide bearing)



MGQL32 to 100-²⁵/₅₀ (25, 50 stroke)



MGQL32 to 100-Over 50 stroke



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

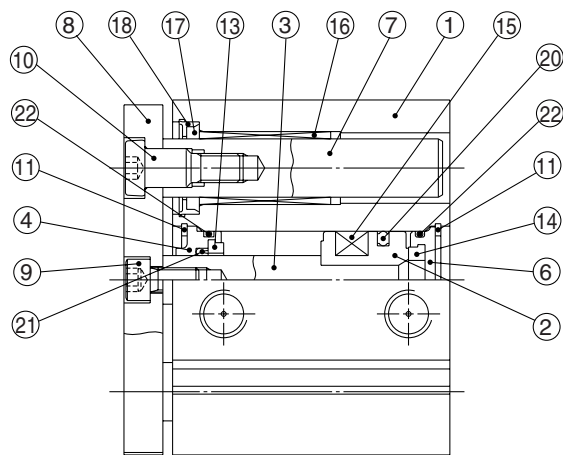
-X□

Individual
-X□

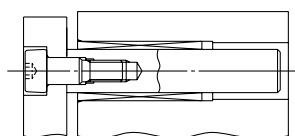
Series MGQ

Construction/Series MGQM

MGQM12 to 25



50 stroke or less

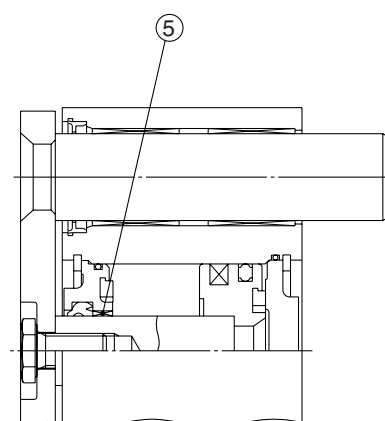
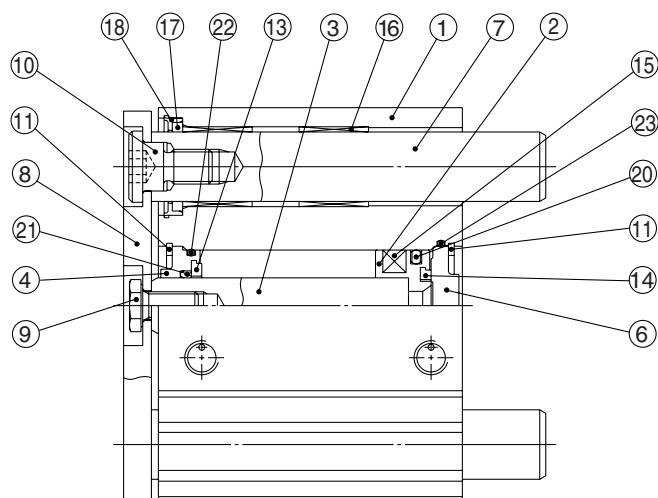


ø12, ø16



ø20, ø25 Over 50 stroke

MGQM32 to 100



Over 50 stroke

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 bearing alloy	ø12 to ø40 White anodized
		Aluminum alloy casted	ø50 to ø100 Painted
5	Bushing	Babbitt	ø50 to ø100
6	Head cover	Aluminum alloy	ø12 to ø63 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	Guide bolt	Carbon steel	Nickel plated

No.	Description	Material	Note
11	Retaining ring	Carbon tool steel	Phosphate coated
12	Retaining ring	Carbon tool steel	Phosphate coated
13	Bumper A	Urethane	
14	Bumper B	Urethane	
15	Magnet	—	
16	Slide Bearing	Babbitt	
17	Felt	Felt	
18	Holder	Resin	
19	Ball bushing		
20*	Piston seal	NBR	
21*	Rod seal	NBR	
22*	Gasket A	NBR	
23*	Gasket B	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Description
12	MGQ12-PS	A set of 20, 21, 22 and 23 listed above
16	MGQ16-PS	
20	MGQ20-PS	
25	MGQ25-PS	
32	MGQ32-PS	

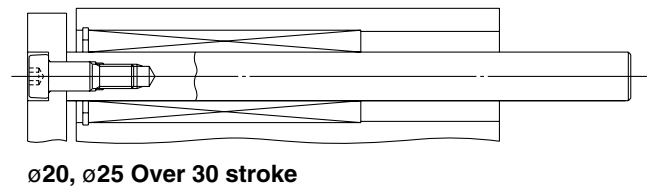
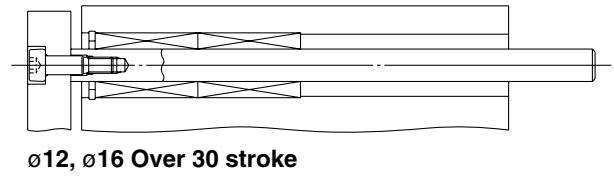
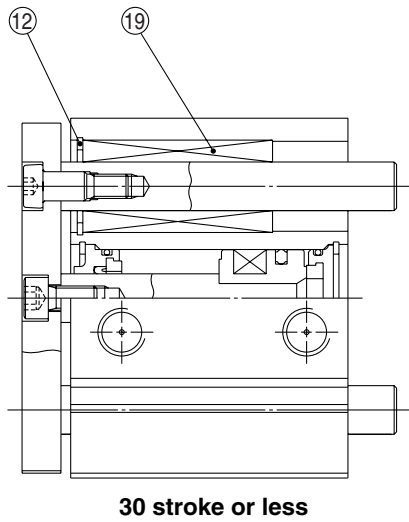
* Seal kit includes 20 to 23. Order the seal kit, based on each bore size.

Bore size (mm)	Kit no.	Description
40	MGQ40-PS	A set of 20, 21, 22 and 23 listed above
50	MGQ50-PS	
63	MGQ63-PS	
80	MGQ80-PS	
100	MGQ100-PS	

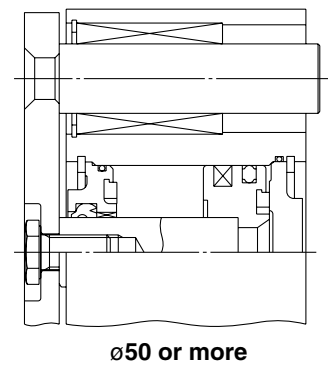
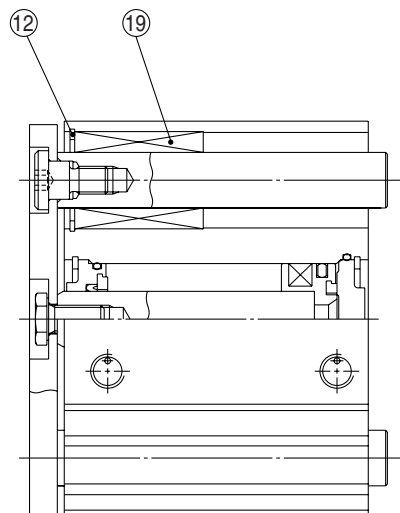
* Since the seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Construction/Series MGQL

MGQL12 to 25



MGQL32 to 100

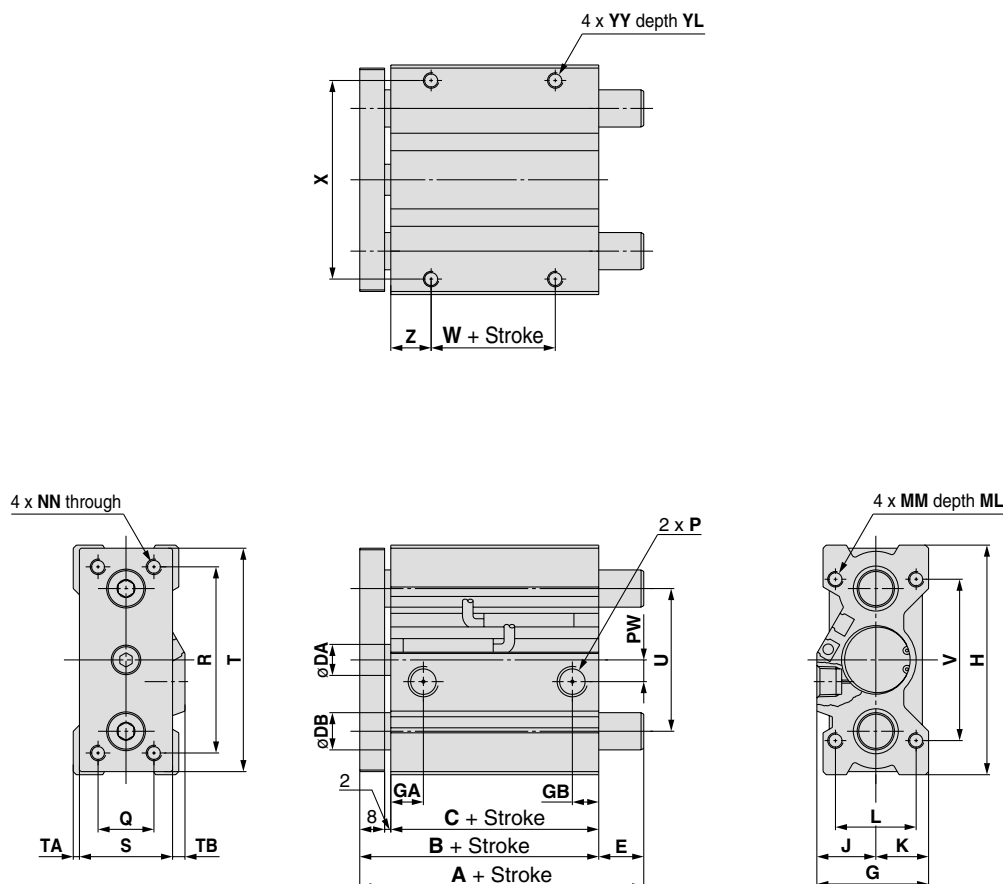


MGJ
MGP
MGQ
MGG
MGC
MGF
MGZ
MGT

D-□
-X□
Individual -X□

Series MGQ

Bore Size ø12 to ø25: MGQM, MGQL



MGQM, MGQL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	G	GA	GB	H	J	K	L	MM	ML	NN	P			PW	Q	R
															Nil	TN	TF			
12	10, 20, 30, 40, 50, 75, 100	39	29	6	29	11	7.5	58	16	13	18	M4 x 0.7	10	M4 x 0.7	M5 x 0.8	—	—	7	14	48
16		43	33	8	33	11	8	64	18	15	22	M5 x 0.8	13	M5 x 0.8	M5 x 0.8	—	—	5	16	52
20	20, 30, 40, 50, 75, 100	47	37	10	36	10.5	8.5	74	19	17	26	M5 x 0.8	13	M5 x 0.8	Rc1/8	NPT1/8	G1/8	7	18	60
25	125, 150, 175, 200	47.5	37.5	12	42	11.5	9	88	21	21	32	M6 x 1.0	15	M6 x 1.0	Rc1/8	NPT1/8	G1/8	8	26	70

Bore size (mm)	S	T	TA	TB	U	V	W	X	YY	YL	Z
12	22	56	2	5	36	40	5	50	M4 x 0.7	7	12
16	25	62	2.5	5.5	38	42	7	54	M5 x 0.8	8	13
20	30	72	2	4	46	52	10	64	M5 x 0.8	8	13
25	38	86	2	2	56	62	10	76	M6 x 1.0	9	14

MGQM (Slide bearing)/A, DB, E Dimensions (mm)

Bore size (mm)	A		DB	E	
	50 st or less	Over 50 st		50 st or less	Over 50 st
12	39		8	0	
16	43		10	0	
20	47	61.5	12	0	14.5
25	47.5	62	16	0	14.5

MGQL (Ball bushing bearing)/A, DB, E Dimensions (mm)

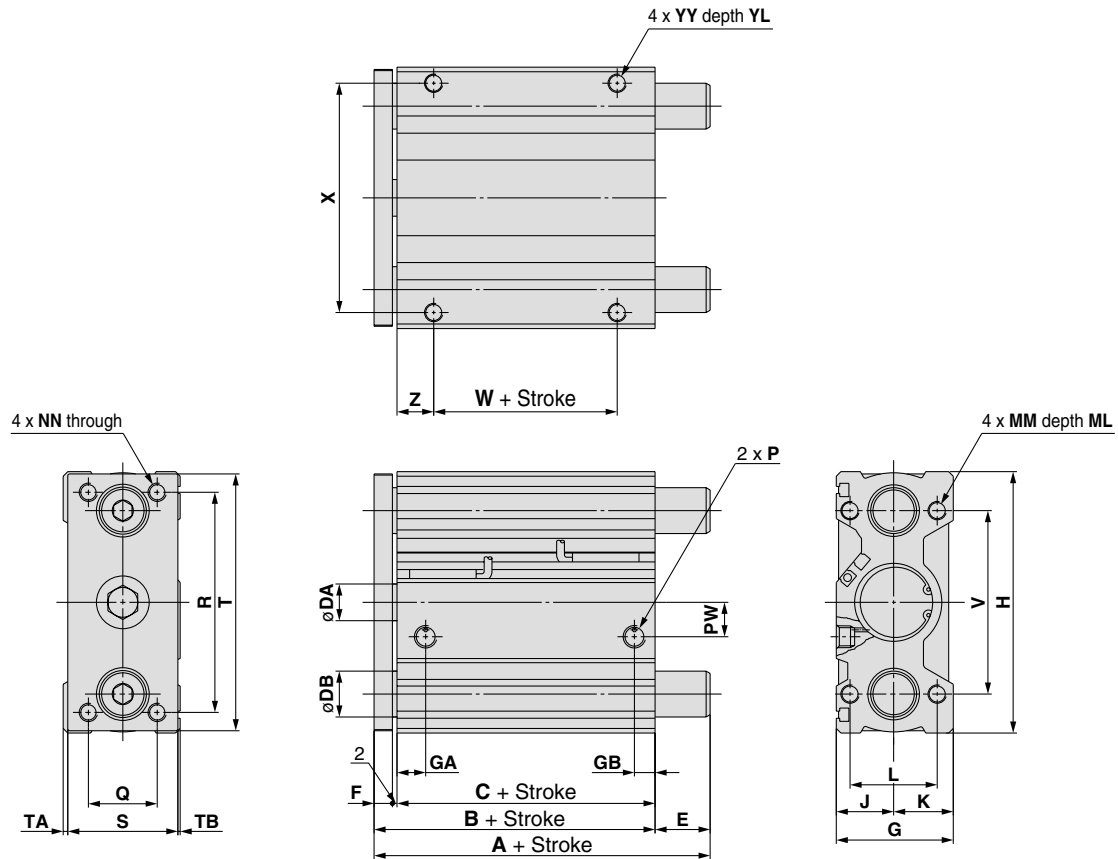
Bore size (mm)	A		DB	E	
	30 st or less	Over 30 st		30 st or less	Over 30 st
12	43	55	6	4	16
16	49	65	8	6	22
20	57	74	10	10	27
25	63.5	79.5	13	16	32

Note) For intermediate strokes other than standard strokes, refer to the Manufacture of Intermediate Stroke on page 339.

• Bore size 12 and 16 are only for the M5 x 0.8 port.

• For bore size 20 or more, Rc, NPT and G ports can be selected. (Refer to page 338.)

Bore Size $\phi 32$ to $\phi 100$: MGQM, MGQL



MGQM, MGQL Common Dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	F	G	GA	GB	H	J	K	L	MM	ML	NN	P			PW	Q	R	S
																Nil	TN	TF				
32	25, 50, 75, 100, 125, 150, 175, 200	47.5	37.5	16	8	51	12.5	9	114	25	26	38	M8 x 1.25	20	M8 x 1.25	Rc1/8	NPT1/8	G1/8	15	30	96	48
40		54	44	16	8	51	14	10	124	25	26	38	M8 x 1.25	20	M8 x 1.25	Rc1/8	NPT1/8	G1/8	21	30	106	48
50		56	44	20	10	59	14	11	140	29	30	44	M10 x 1.5	25	M10 x 1.5	Rc1/4	NPT1/4	G1/4	27	40	120	56
63		61	49	20	10	72	16.5	13.5	150	35.5	36.5	44	M10 x 1.5	25	M10 x 1.5	Rc1/4	NPT1/4	G1/4	33	50	130	69
80		74.5	56.5	25	16	92	19	15.5	188	45.5	46.5	56	M12 x 1.75	30	M12 x 1.75	Rc3/8	NPT3/8	G3/8	37	60	160	88
100		84	66	30	16	112	23	19	224	55.5	56.5	62	M14 x 2	35	M14 x 2	Rc3/8	NPT3/8	G3/8	40	80	190	108

Bore size (mm)	T	TA	TB	V	W	X	YY	YL	Z
32	112	2	1	80	5	100	M8 x 1.25	11	16
40	122	2	1	90	10	110	M8 x 1.25	11	17
50	138	2	1	100	10	124	M10 x 1.5	12.5	17
63	148	2	1	110	10	132	M10 x 1.5	15	19
80	185	2.5	1.5	140	15	166	M12 x 1.75	18	21
100	221	2.5	1.5	170	15	200	M14 x 2	21	25

MGQM (Slide bearing)/ A, DB, E Dimensions

Bore size (mm)	A	DB	E
32	71.5	20	24
40	71.5	20	17.5
50	81	25	25
63	81	25	20
80	93	28	18.5
100	105	36	21

MGQL (Ball bushing bearing)/ A, DB, E Dimensions

Bore size (mm)	A		DB	E	
	50 st or less	Over 50 st		50 st or less	Over 50 st
32	53	90	16	5.5	42.5
40	54	90	16	0	36
50	60	102	20	4	46
63	61	102	20	0	41
80	84	143	25	9.5	68.5
100	89	153	30	5	69

Note) For intermediate strokes other than standard strokes, refer to the Manufacture of Intermediate Stroke on page 339.

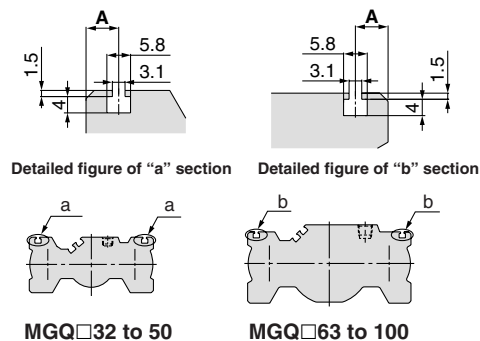
• Rc, NPT and G ports can be selected. (Refer to page 338.)

Grooves (Except $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$)

Use grooves section "a" and section "b" in the figure below of the cylinder body for firmly fixing in the following case. (Applicable bolt size is M3.)

• These grooves can be used for firmly fixing the tying bands of lead wires of the auto switch, etc., and also terminal boards, etc., to the main body of the cylinder.

• When the terminal block is fixed on a cylinder directly.



Model	A (mm)
MGQ□32	8
MGQ□40	8
MGQ□50	8
MGQ□63	8
MGQ□80	10
MGQ□100	10

MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual
-X□

Series MGQ

Minimum Stroke for Auto Switch

(mm)

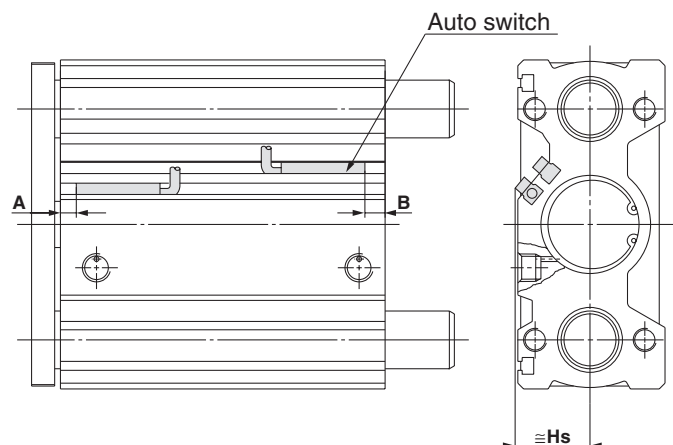
Auto switch model	No. of auto switches mounted	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
D-A9□	1 pc.	5 ^{Note 1)}			5						
	2 pcs.	10 ^{Note 1)}			10						
D-A9□V D-M9□V	1 pc.	5									
	2 pcs.	10									
D-M9□	1 pc.	5 ^{Note 1)}					5				
	2 pcs.	10 ^{Note 1)}	10								
D-M9□W	1 pc.	5 ^{Note 2)}									
	2 pcs.	10 ^{Note 2)}	10								
D-M9□WV D-M9□AVL	1 pc.	5 ^{Note 2)}									
	2 pcs.	10									
D-M9□AL	1 pc.	5 ^{Note 2)}									
	2 pcs.	10 ^{Note 2)}									
D-Z7□ D-Z80 D-Y59□ D-Y7P	1 pc.	5 ^{Note 1)}					5				
	2 pcs.	10 ^{Note 1)}			10						
D-Y69□ D-Y7PV	1 pc.	5									
	2 pcs.	5									
D-Y7□W D-Y7□WV	1 pc.	5 ^{Note 2)}									
	2 pcs.	10 ^{Note 2)}									

Note 1) Confirm that it is possible to secure the minimum bending radius of 10 mm of the auto switch lead wire before use.

Note 2) Confirm that it is possible to securely set the auto switch(es) within the range of indicator green light ON range before use.

For in-line entry type, please also consider Note 1) shown above.

Auto Switch Proper Mounting Position (Detection at Stroke End)



Auto Switch Proper Mounting Position (mm)

Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A9□ D-A9□V		D-Z7□/Z80 D-Y59□/Y7P D-Y69□/Y7PV D-Y7□W D-Y7□WV	
	A	B	A	B	A	B
12	6	8	2	4	1	3
16	9	9	5	5	4	4
20	9.5	12.5	5.5	8.5	4.5	7.5
25	9.5	13	5.5	9	4.5	8
32	10.5	12	6.5	8	5.5	7
40	14.5	14.5	10.5	10.5	9.5	9.5
50	12.5	16.5	8.5	12.5	7.5	11.5
63	15	19	11	15	10	14
80	18	23.5	14	19.5	13	18.5
100	22.5	28.5	18.5	24.5	17.5	23.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height (mm)

Auto switch model	D-A9□ D-M9□ D-M9□W D-M9□AL D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7□W		D-A9□V		D-M9□V D-M9□WV D-M9□AVL		D-Y69□ D-Y7PV D-Y7□WV	
	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs
12	16	18.5	20.5	17				
16	18.5	21	23	19.5				
20	19.5	22.5	24.5	20.5				
25	21	23.5	26	22				
32	24.5	27	28.5	25.5				
40	24	26	27.5	25				
50	28	30	31.5	29				
63	34.5	36.5	39.5	35.5				
80	44	46.5	48.5	45				
100	52	54	56	52.5				

Operating Range

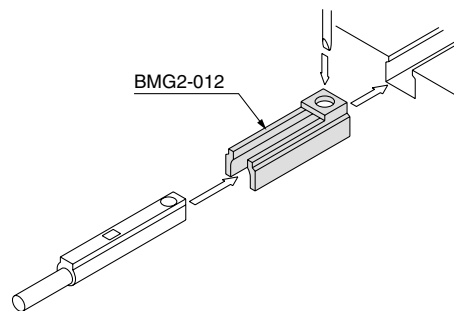
Auto switch model	Bore size (mm)									
	12	16	20	25	32	40	50	63	80	100
D-A9□/A9□V	7	9.5	9	9	9	9	9	10.5	10	10.5
D-M9□/M9□V D-M9□W/M9□WV	4	5.5	5	5	5.5	5	5.5	5.5	6.5	7
D-Z7□/Z80 D-Y5□□/Y6□□/Y7□□	5	6	6	6.5	8.5	8.5	9	10	10	11.5

Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may vary substantially depending on an ambient environment.

Auto Switch Mounting Bracket: Part No.

Auto switch model	Bore size (mm)
	ø12 to ø100
D-A9□/A9□V D-M9□/M9□V D-M9□W/M9□WV	BMG2-012

D-A9□(V)/M9□(V)/M9□W(V)



Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Fetching direction)	Features
Reed	D-Z73, Z76	Grommet (In-line)	—
	D-Z80		Without indicator light
Solid state	D-Y69A, Y69B, Y7PV	Grommet (Perpendicular)	—
	D-Y7NWW, Y7PWV, Y7BWV		Diagnostic indication (2-color indication)
	D-Y59A, Y59B, Y7P	Grommet (In-line)	—
	D-Y7NW, Y7PW, Y7BW		Diagnostic indication (2-color indication)

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.

* Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H/Y7G/Y7H type) are also available. For details, refer to pages 1746 and 1748.

MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual
-X□