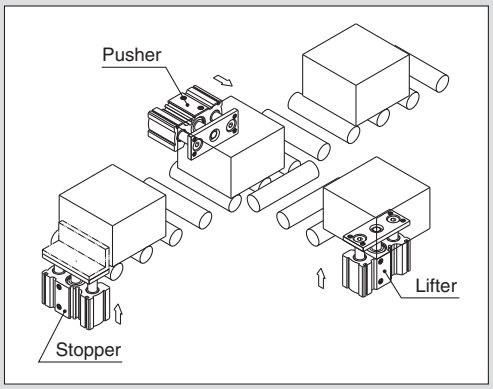
Compact Guide Cylinder

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.



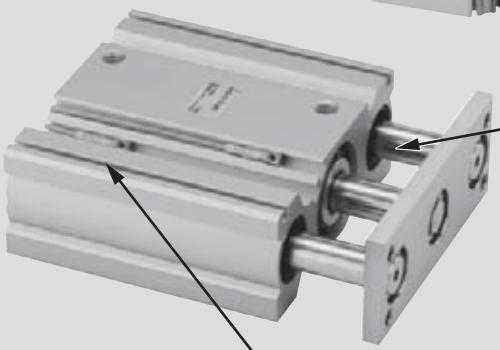
Two types of guide rod bearing for different applications

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.

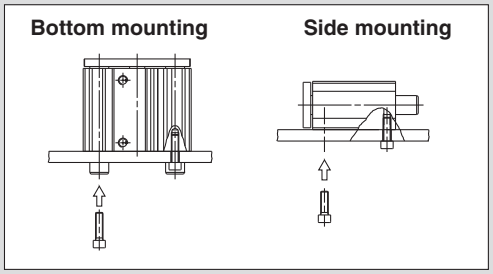
All models have built-in magnets for auto switches.



Non-rotating accuracy

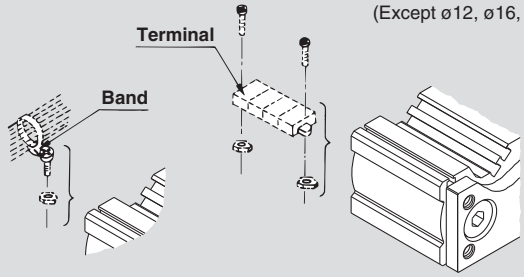
Bore size (mm)	Non-rotating accuracy θ	
	MGQM	MGQL
12	±0.08°	±0.10°
16		
20	±0.07°	±0.09°
25		
32	±0.06°	±0.08°
40		
50	±0.05°	±0.06°
63		
80	±0.04°	±0.05°
100		

Can be mounted from two directions



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

(Except ø12, ø16, ø20, ø25)



Compact Guide Cylinder

Series MGQ

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

How to Order

MGQ M 25 □ – 30 – M9BW □ – □

Made to Order
(Refer to page 3 for details.)

Compact Guide Cylinder

Number of auto switches

—	2 pcs.
S	1 pc.
n	n pcs.

Bearing type

M	Slide bearing
L	Ball bushing bearing

Auto switch

—	Without auto switch (Built-in magnet)

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

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 3.

Thread type

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

Applicable Auto Switches/Refer to the auto switch guide for further information.

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 (—)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○	IC circuit	
				2-wire		12 V		M9BV	M9B	●	●	●	○	○	—	
	Diagnostic indication (2-colour indication)			3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○	IC circuit	
				2-wire		12 V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-colour indication)			3-wire (NPN)		5 V, 12 V		M9NAV∗1	M9NA∗1	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV∗1	M9PA∗1	○	○	●	○	○	IC circuit	
				2-wire		12 V		M9BAV∗1	M9BA∗1	○	○	●	○	○	—	
Reed auto switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93V∗2	A93	●	—	●	●	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

∗1 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.
∗2 1 m type lead wire is only applicable to D-A93.

∗ Lead wire length symbols: 0.5 m ····· — (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

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

∗ Since there are other applicable auto switches than listed, refer to page 15 for details.
∗ For details about auto switches with pre-wired connector, refer to the auto switch guide.
∗ 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

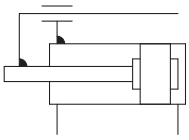
Suitable as stoppers or lifters in conveyor line

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

Slide bearing/Ball bushing bearing

Symbol

Rubberbumper



Made to Order

Made to Order: Individual Specifications
(For details, refer to pages 16 and 17.)

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

Theoretical Output

(N)

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	0UT	113	23	34	45	57	68	79	90	102	113
		IN	85	17	26	34	43	51	60	68	77	85
16	8	0UT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	0UT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	0UT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	0UT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	0UT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	0UT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	0UT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	0UT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	0UT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm^2)

Weight/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

Weight/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

Series MGQ
Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions.

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.

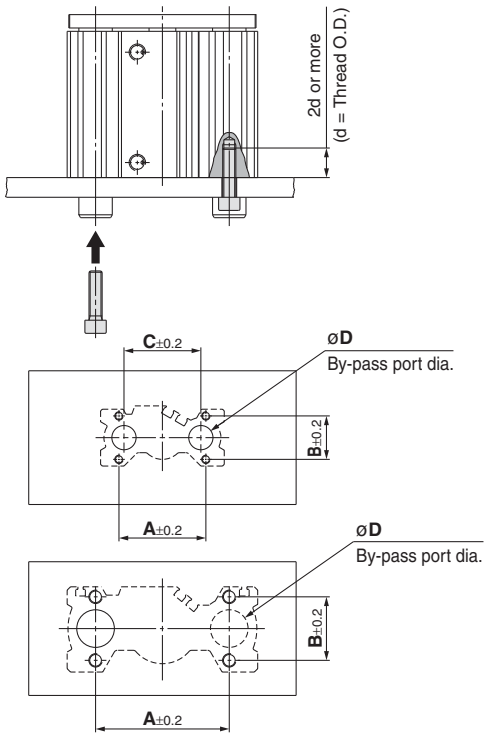
2. Do not dent or scratch the mounting surface of a body and a plate.

• 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 2 d or more.



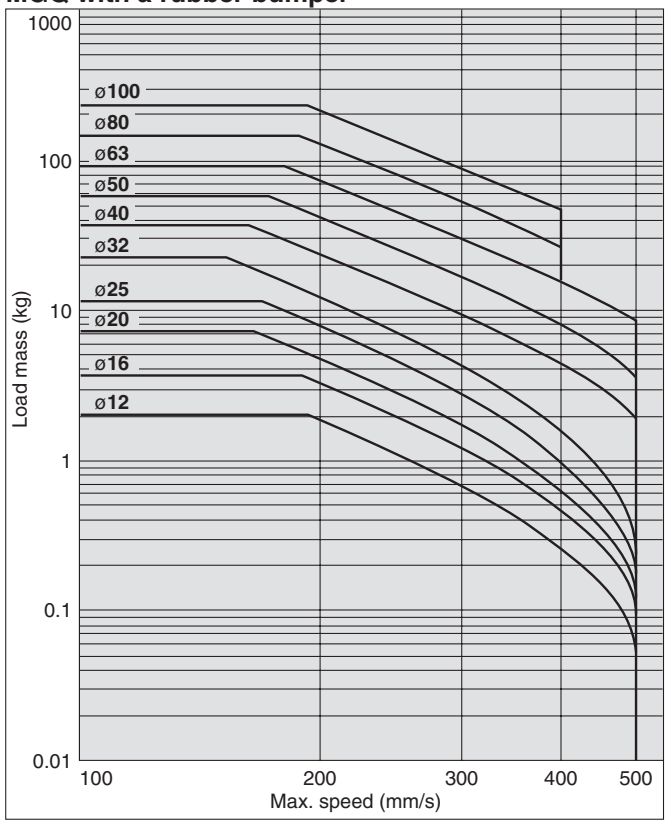
Bore size (mm)	A (mm)	B (mm)	C (mm)	øD(mm) MGQM	øD(mm) MGQL	Hexagon socket head cap screw
12	40	18	36	10	8	M4 x 0.7
16	42	22	38	12	10	M5 x 0.8
20	52	26	46	14	12	M5 x 0.8
25	62	32	56	18	15	M6 x 1
32	80	38	—	22	18	M8 x 1.25
40	90	38	—	22	18	M8 x 1.25
50	100	44	—	27	22	M10 x 1.5
63	110	44	—	27	22	M10 x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

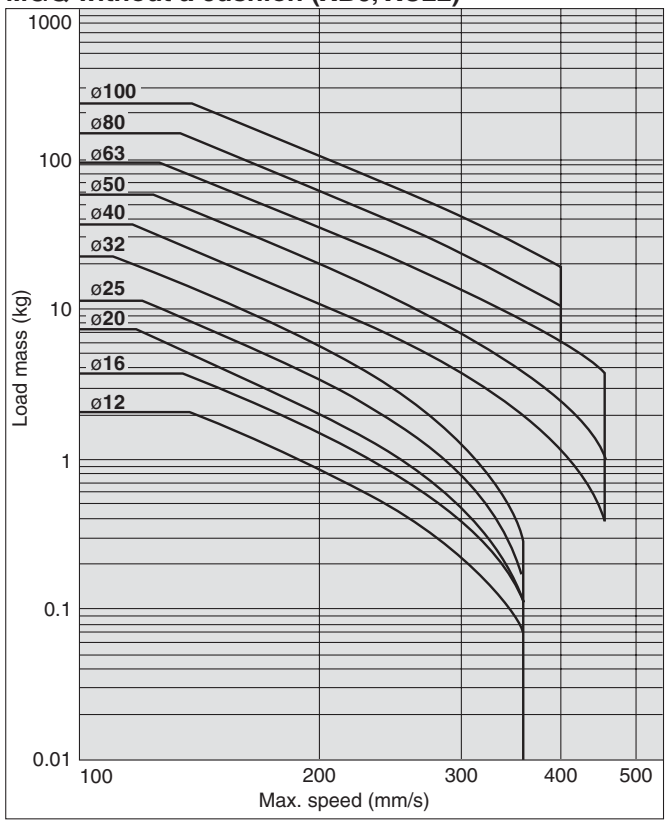
Allowable Kinetic Energy

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

MGQ with a rubber bumper

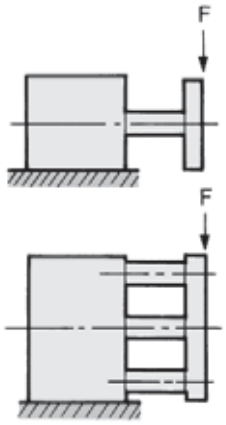


MGQ without a cushion (XB6, XC22)



Operating Conditions

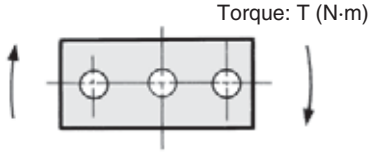
Allowable Lateral Load (Ordinary load)



F(N)

Bore size (mm)	Bearing type	Stroke (mm)											
		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

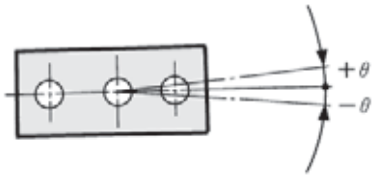
Allowable Rotational Torque of Plate



T (N·m)

Bore size (mm)	Bearing type	Stroke (mm)											
		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

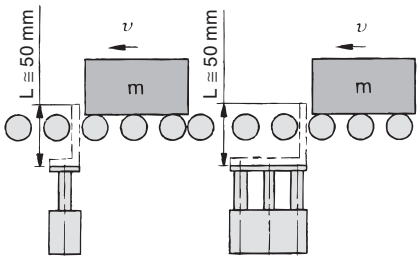


For non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy θ	
	MGQM	MGQL
12	±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		

Operating Range when Used as Stopper

Bore Size ø12 to ø25/MGQM12 to 25 (Slide Bearing)



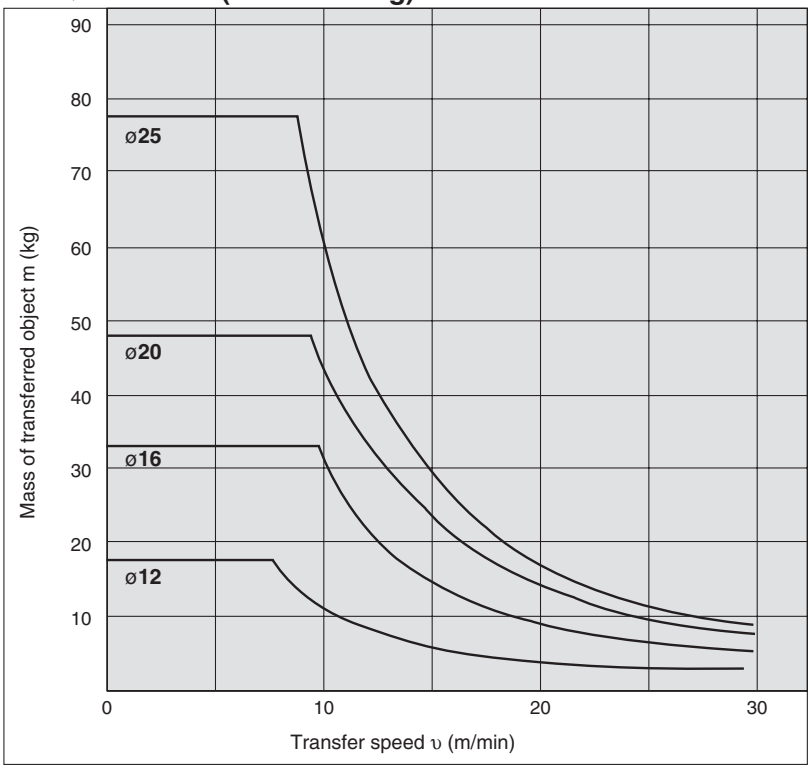
∗ When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

Caution on handling

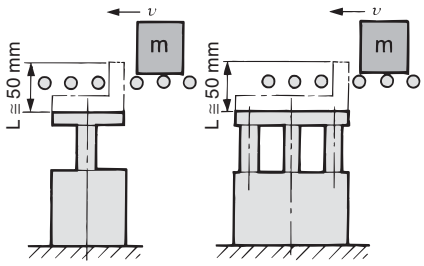
Note 1) When using as a stopper, select a model with 30 stroke or less.

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

MGQM12 to 25 (Slide bearing)



Bore Size ø32 to ø100/MGQM32 to 100 (Slide Bearing)



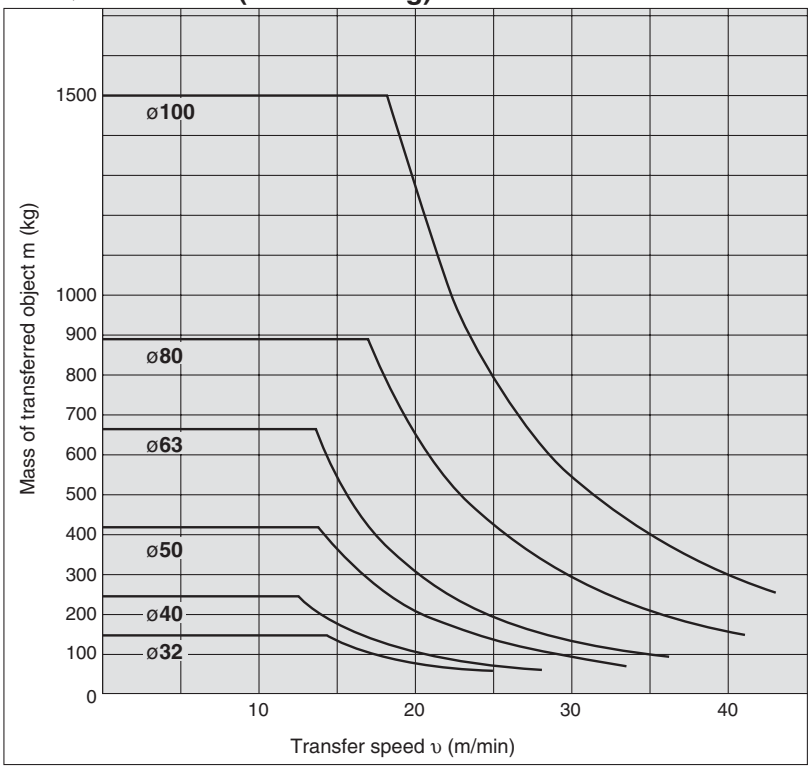
∗ When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

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.

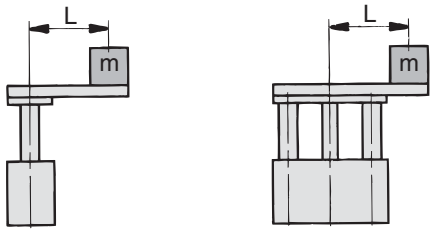
MGQM32 to 100 (Slide bearing)



Operating Range when Used as Lifter

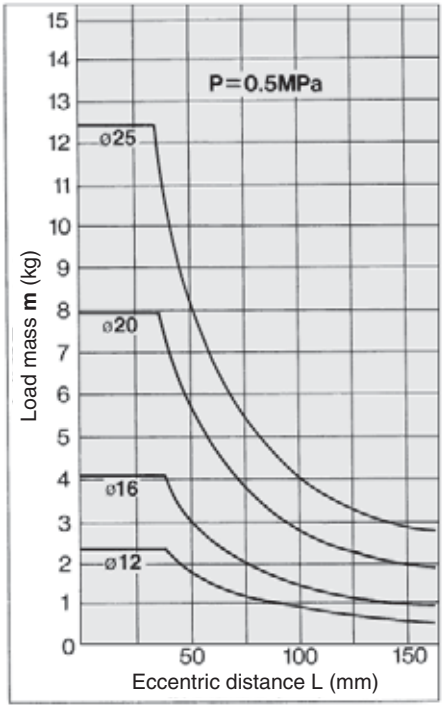
- Select the bore size so that the total load mass is bellow the theoretical output (see the table below).

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

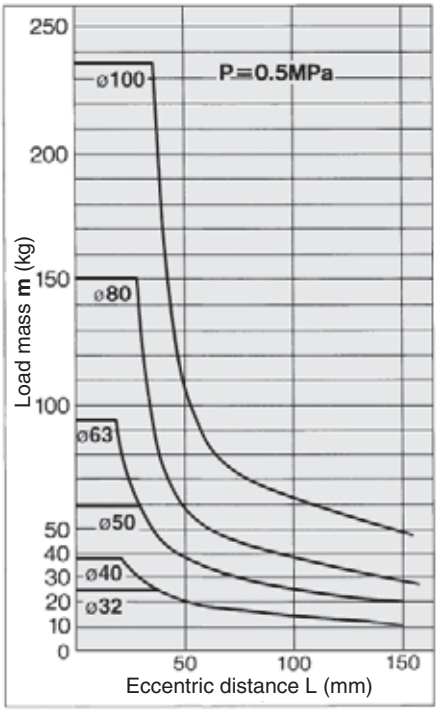


MGQM/Slide bearing

MGQM12 to 25-□

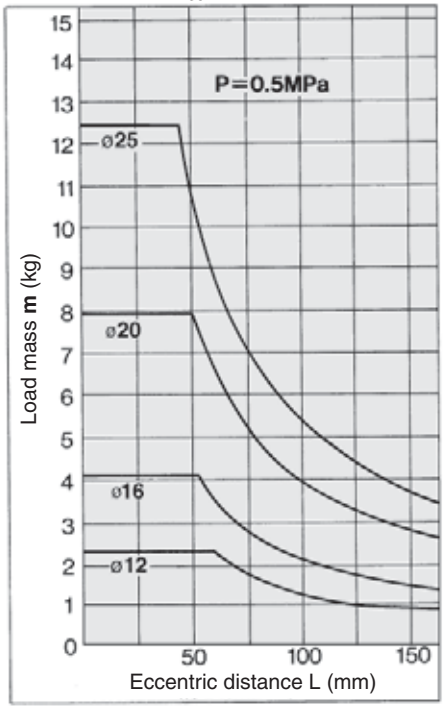


MGQM32 to 100 (Slide bearing)

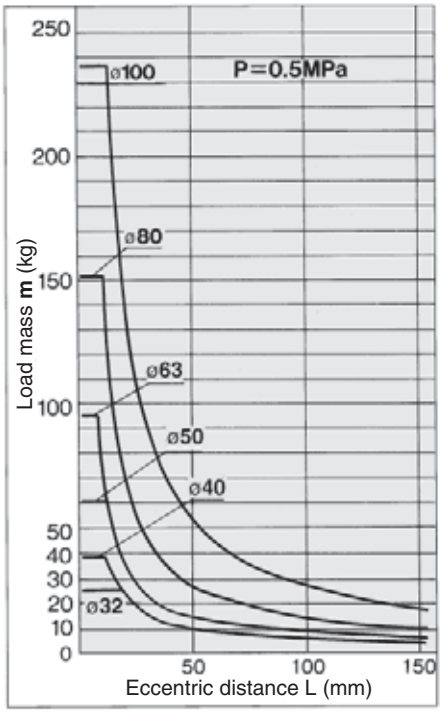


MGQL/Ball bushing bearing

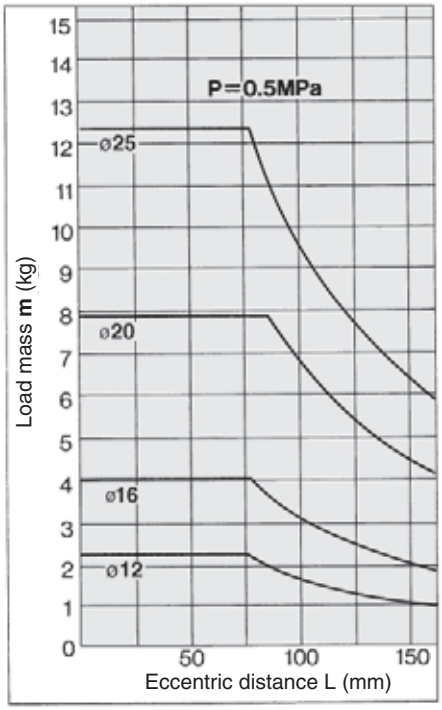
MGQL12 to 25-$^{10}_{20}_{30}$ (10, 20, 30 Stroke)



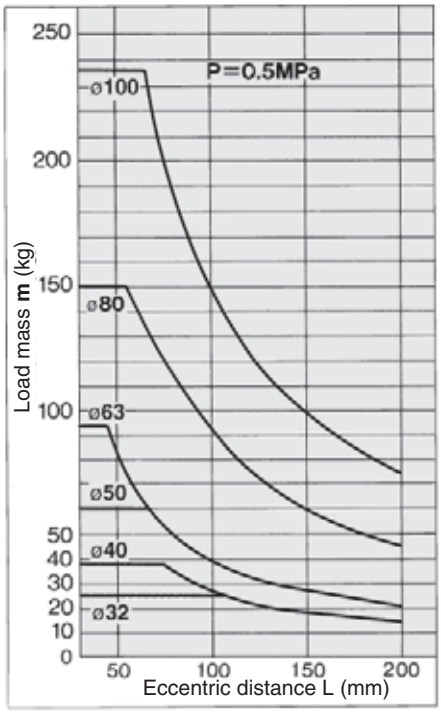
MGQL32 to 100-$^{25}_{50}$ (25, 50 stroke)



MGQL12 to 25-Over 30 stroke

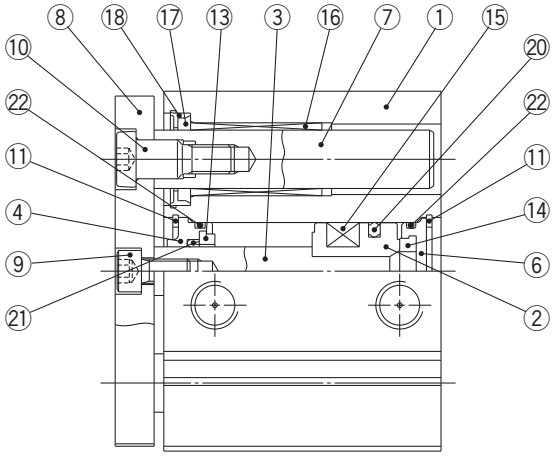


MGQL32 to 100-Over 50 stroke

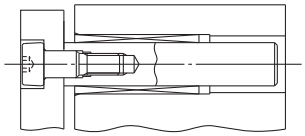


Construction/Series MGQM

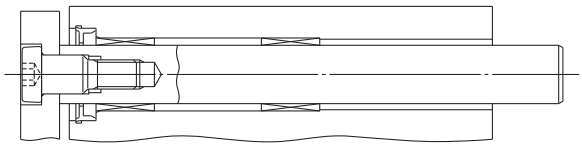
MGQM12 to 25



50 stroke or less

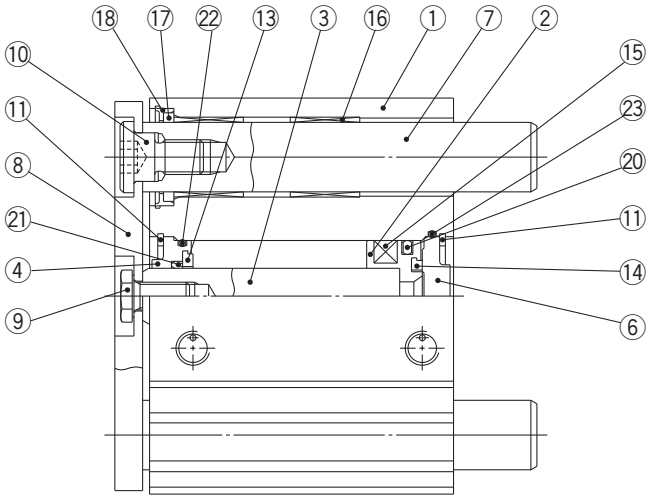


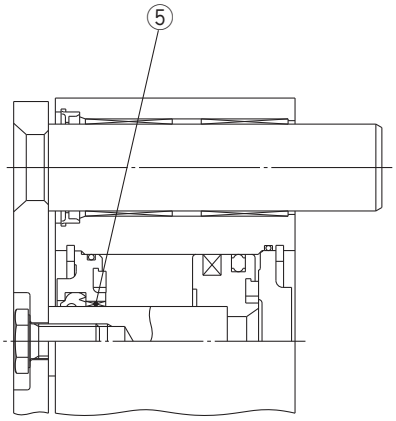
ø12, ø16



ø20, ø25 Over 50 stroke

MGQM32 to 100





Over 50 stroke

Component Parts

No.	Description	Material	Note	
1	**Body**	Aluminum alloy	Hard anodised	
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 anodised
		Aluminum alloy casted	ø50 to ø100	Painted
5	**Bushing**	Bearing alloy	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**	Bearing alloy	
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	

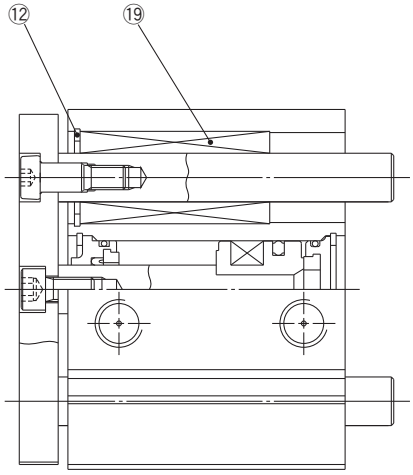
∗ Seal kit includes ⑳ to ㉓. Order the seal kit, based on each bore size.

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	

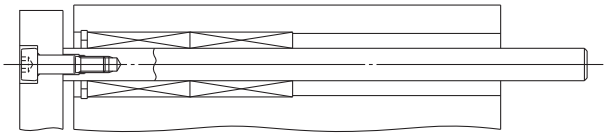
∗ Since the seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Construction/Series MGQL

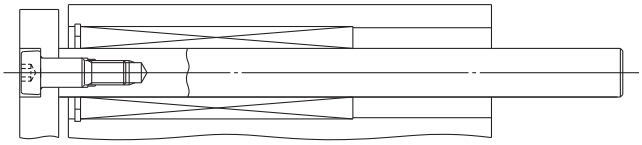
MGQL12 to 25



30 stroke or less

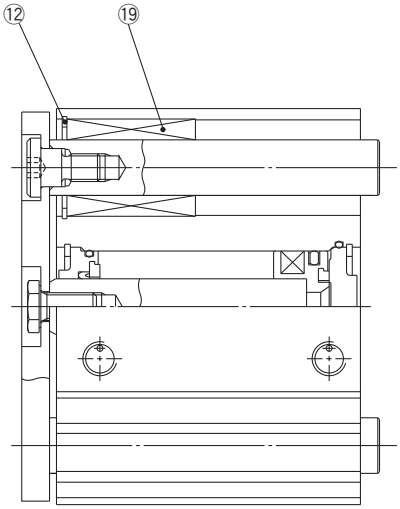


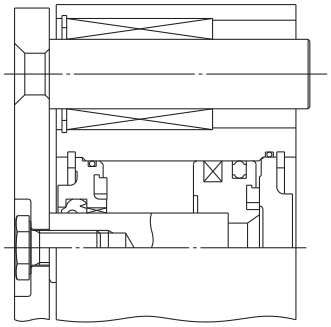
ø12, ø16 Over 30 stroke



ø20, ø25 Over 30 stroke

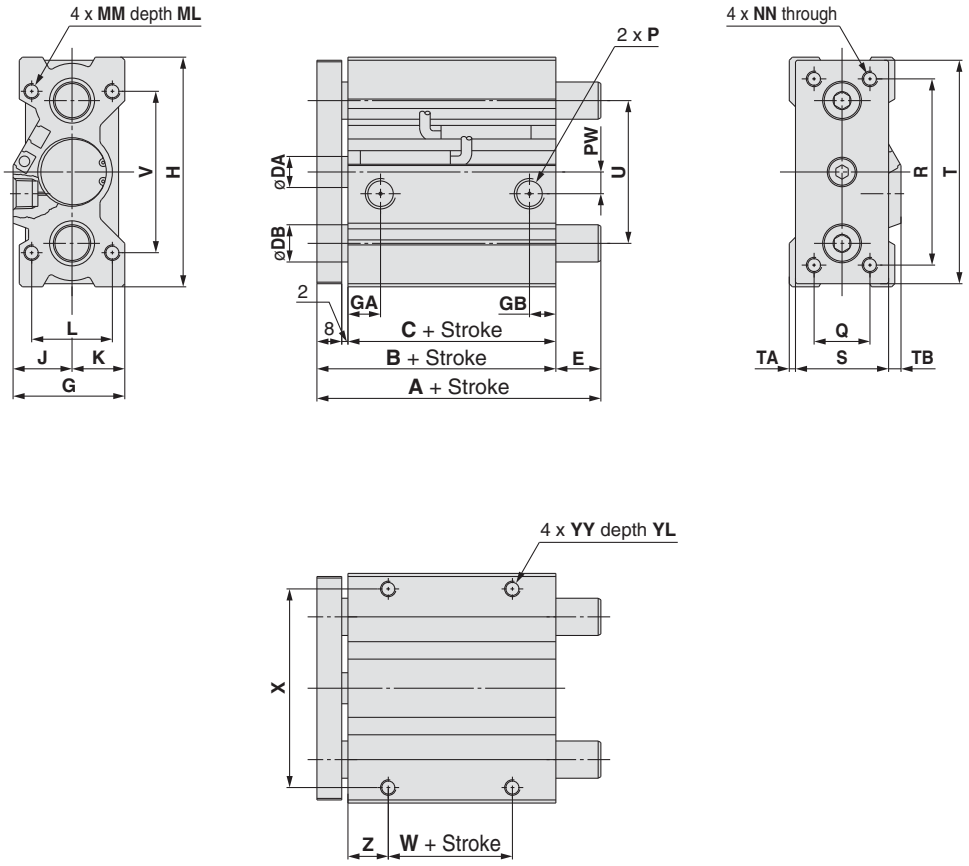
MGQL32 to 100





ø50 or more

Bore Size ø12 to ø25: MGQM, MGQL



MGQM, MGQL Common Dimensions

(mm)

Bore size (mm)	Standard stroke (mm)	B	C	DA	G	GA	GB	H	J	K	L	MM	ML	NN	P			PW	Q	R
															—	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, 100 125, 150, 175, 200	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		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)

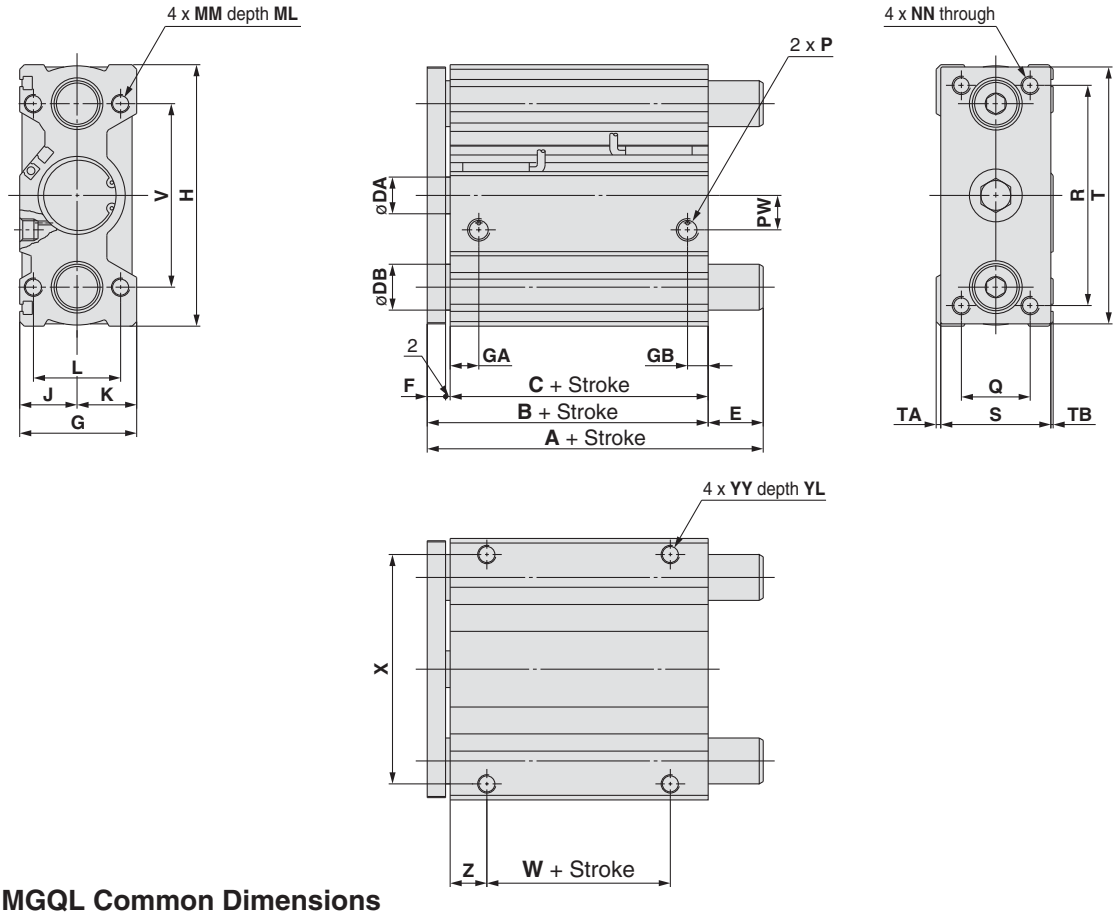
Bore size (mm)	A		DB	E	
	50 st or less	Over 50 st		50 st or less	Over 50 st
12	39		8	0	
16	43		10	0	
20	47	61.5	12	0	14.5
25	47.5	62	16	0	14.5

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 3.
- 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 2.)

Bore Size ø32 to ø100: 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
																—	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

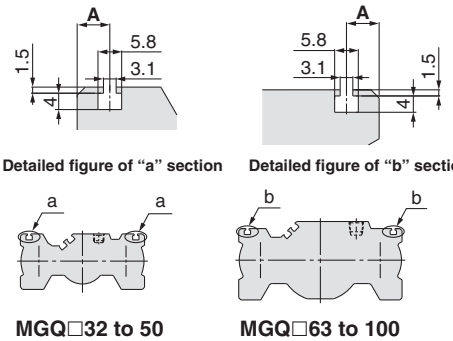
Bore size (mm)	A		DB	E	
	50 st or less	Over 50 st		50 st or less	Over 50 st
32	53	90	16	5.5	42.5
40	54	90	16	0	36
50	60	102	20	4	46
63	61	102	20	0	41
80	84	143	25	9.5	68.5
100	89	153	30	5	69

Note) For intermediate strokes other than standard strokes, refer to the Manufacture of Intermediate Stroke on page 3.
• Rc, NPT and G ports can be selected. (Refer to page 2.)

Grooves (Except ø12, ø16, ø20, ø25)

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.



(mm)

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

Auto Switch Mounting

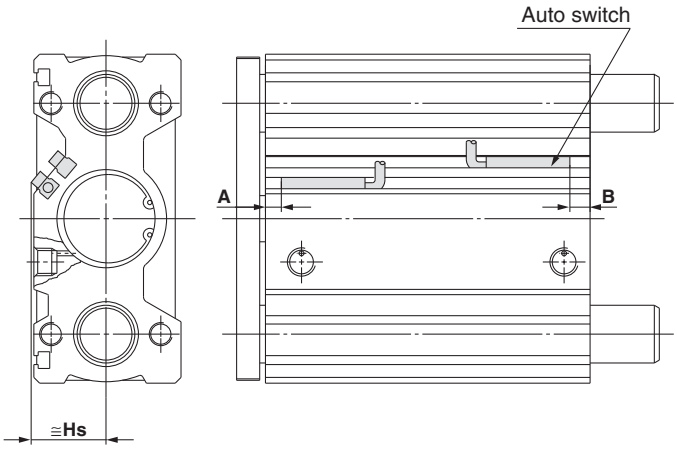
Minimum Stroke for Auto Switch

(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□AV**	1 pc.	5 Note 2)									
	2 pcs.	10									
D-M9□A	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** **D-Y7BA**	1 pc.	5 Note 2)									
	2 pcs.	10 Note 2)									

Note 1) Confirm that it is possible to secure the 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 Sroke End)



Auto Switch Proper Mounting Position

(mm)

Bore size (mm) \ Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-Z7□/Z80 D-Y59□/Y7P D-Y69□/Y7PV D-Y7□W D-Y7□WV D-Y7BA	
	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)

Bore size (mm) \ Auto switch model	D-A9□ D-M9□ D-M9□W D-M9□A D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7□W D-Y7BA	D-A9□V	D-M9□V D-M9□WV D-M9□AV	D-Y69□ D-Y7PV D-Y7□WV
	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

(mm)

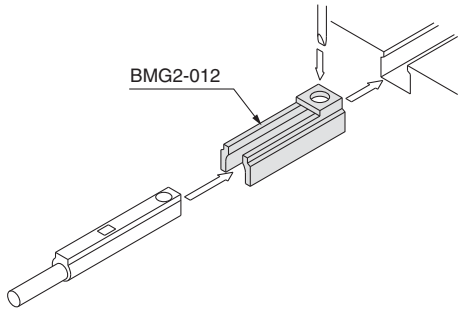
Auto switch model	Bore size (mm)									
	12	**16**	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-A9□/A9□V	7	9.5	9	9	9	9	9	10.5	10	10.5
D-M9□/M9□V **D-M9□W/M9□WV**	4	5.5	5	5	5.5	5	5.5	5.5	6.5	7
D-Z7□/Z80 **D-Y5□□/Y6□□/Y7□□**	5	6	6	6.5	8.5	8.5	9	10	10	11.5

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.

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-Y7NWV, Y7PWV, Y7BWV		Diagnostic indication (2-colour indication)
	D-Y59A, Y59B, Y7P	Grommet (In-line)	—
	D-Y7NW, Y7PW, Y7BW		Diagnostic indication (2-colour indication)
	D-Y7BA		Water resistant (2-colour indication)

∗ For solid state auto switches, auto switches with a pre-wired connector are also available.
∗ Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H/Y7G/Y7H type) are also available.

Series MGQ
Made to Order: Individual Specifications

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

1 Helical Insert Thread Specifications

Symbol **-X168**

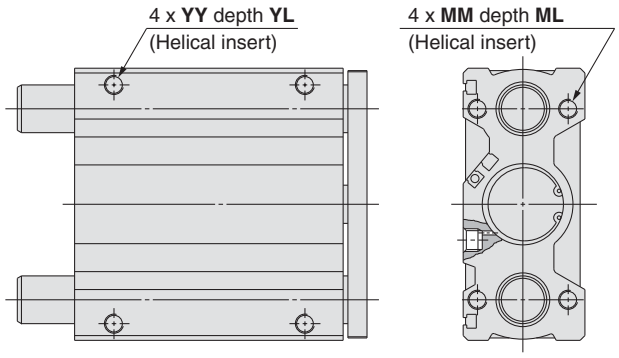
MGQ$^{M}_{L}$ | Bore size | — | Stroke | — | Auto switch type | Lead wire length | No. of auto switches | —X168

Helical insert thread specifications

Mounting thread type has been changed to the helical insert thread type.

Specifications

Bearing type	Slide bearing	Ball bushing bearing
Series	**MGQM**	**MGQL**
Bore size (mm)	32, 40, 50, 63, 80, 100	
Lubrication	Non-lube	
Auto switch	Mountable	



Bore size (mm)	MM	ML	YY	YL
32	M6 x 1.0	12	M6 x 1.0	9
40	M6 x 1.0	12	M6 x 1.0	9
50	M8 x 1.25	16	M8 x 1.25	12
63	M8 x 1.25	16	M8 x 1.25	12
80	M10 x 1.5	20	M10 x 1.5	15
100	M12 x 1.75	24	M12 x 1.75	18

Note) Other dimensions are the same as standard type.

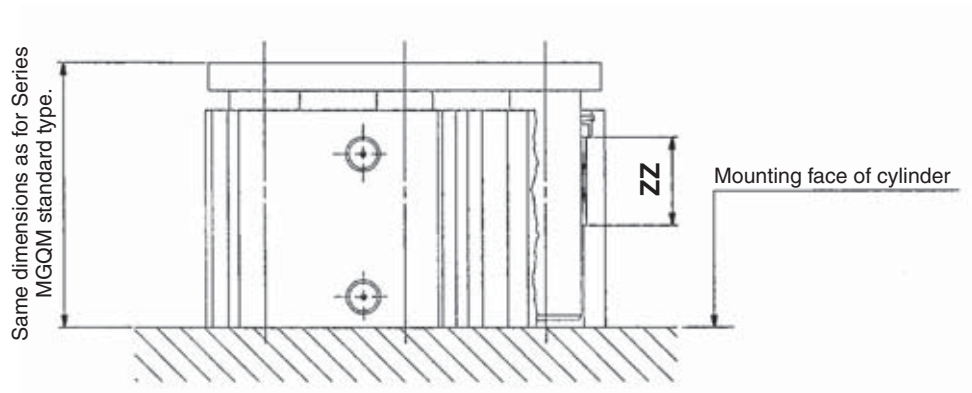
2 Bottom Mounting Style (MGQM type is only available.)

Symbol **-X367**

MGQM | Bore size | — | Stroke | — | Auto switch type | Lead wire length | No. of auto switches | —X367

Bottom mounting

Because the guide rods do not protrude from the bottom surface of the body, it is not necessary to machine relief holes for the guide rods.



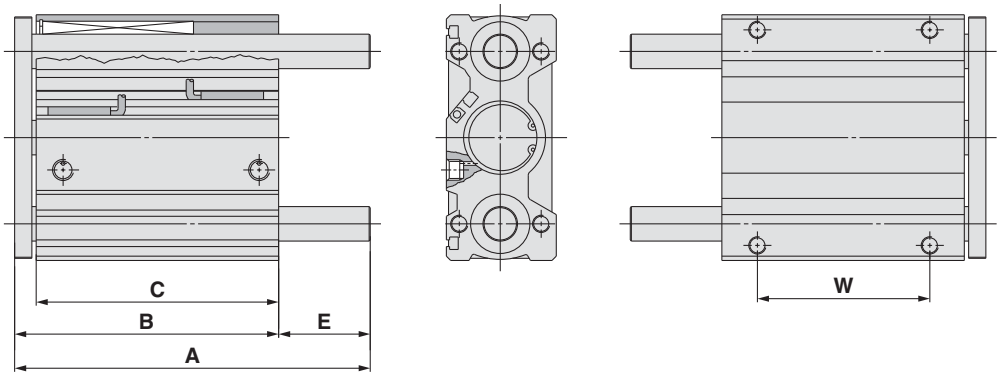
Note) Full length dimension of bushing for guide rod (ZZ) is shorter than the standard type.

Symbol
3 Long Bushing Type (MGQL type is only available.) -X399

MGQL | Bore size | — | Stroke | — | Auto switch type | Lead wire length | No. of auto switches | —X399

Long bushing type

ø32 to ø100/MGQL-X399: Long bushing type



(mm)

Bore (mm)	Applicable stroke	A	B	C	E	W
32	5, 10, 15, 20, 25, 30, 40, 50	165	122.5	112.5	42.5	80
40		165	129	119	36	85
50		177	131	119	46	85
63		177	136	124	41	85
80		218	149.5	131.5	68.5	90
100		228	159	141	69	90

Note 1) Dimensions are the same as for standard type of 75 stroke.
Note 2) Applicable stroke is available at 5 mm intervals and the spacer is installed inside.
Note 3) Ball bushing bearing type with 50 stroke or less is twice as long as the normal bearing length to strengthen the guide.

Symbol
4 Magnetic Field Resistant Auto Switch (D-P4DW) -X563

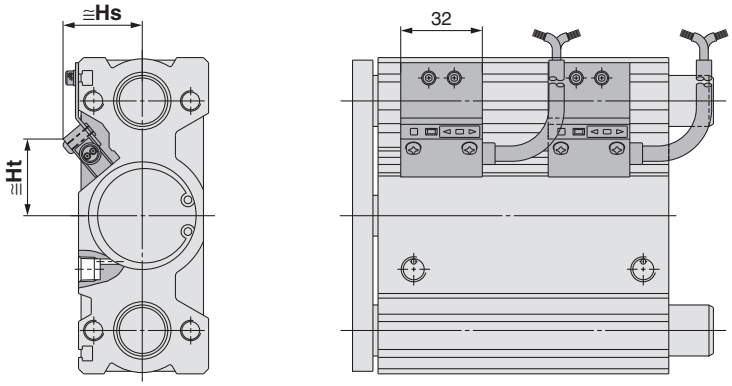
MGQ M/L | Bore size | — | Stroke | — P4DW | Lead wire length | No. of auto switches | — X563

Magnetic field resistant auto switch (D-P4DW)

Specifications

Bearing type	Slide bearing	Ball bushing bearing
Series	**MGQM**	**MGQL**
Bore size (mm)	40, 50, 63, 80, 100	
Lubrication	Non-lube	
Auto switch	Mountable	

Note) For 25, 50 stroke, the number of available auto switch is 1 pc.



(mm)

Bore size (mm)	Hs	Ht
40	31.5	30.1
50	35.0	34.7
63	42.5	36.1
80	53.5	38.7
100	60.5	45.1

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, wichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

⚠ Safety Instructions | Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

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