

Compact Guide Cylinder: With Air Cushion

Series *MGP*

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

How to Order

Compact Guide Cylinder

MGP **M** **32** **50** **A** **Z73**

• **Compact guide cylinder**

• **Bearing type**

M	Slide bearing
L	Ball bushing

• **Bore size**

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

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.

• **Auto switch type**

Nil	Without auto switch (built-in magnet cylinder)
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* Refer to the table below for auto switch model numbers.

• **With air cushion**

• **Cylinder stroke (mm)**
Refer to the standard stroke table on page 19.

Applicable auto switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note 1)}			Applicable load		Detailed specifications	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)				
							Perpendicular	In-line							
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	—	P. 59
				2 wire	24V	12V	100V	—	Z73	●	●	●	—		
			No			5V 12V	100V or less	—	Z80	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay, PLC	P. 60
				3 wire (PNP)		12V		Y7PV	Y7P	●	●	○	—		
				2 wire		5V 12V		Y7NWV	Y7NW	●	●	○			
	3 wire (NPN)			12V		Y7PWV		Y7PW	●	●	○	—	P. 61		
	3 wire (PNP)			—		Y7BWV		Y7BW	●	●	○				P. 62
	2 wire			—		—		Y7BA	—	●	○				
		2 wire	—	—	—	—	—	—	—	—					
											2 wire	—	—	—	—

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

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

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

Specifications



Action	Double acting	
Fluid	Air	
Proof pressure	1.5MPa	
Maximum operating pressure	1.0MPa	
Minimum operating pressure	ø16	0.15MPa
	ø20 to ø100	0.12MPa
Ambient and fluid temperature	-10 to 60°C (with no freezing)	
Piston speed	ø16 to ø63	50 to 500mm/s
	ø80, ø100	50 to 400mm/s
Cushion	Air cushion at both ends (without bumper)	
Lubrication	Non-lube	
Stroke length tolerance	$^{+1.5}_0$ mm	

Standard Strokes

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

Manufacture of Intermediate Strokes

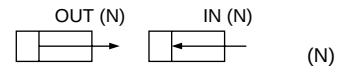
Modification method	Strokes provided in 1mm increments by changing the collar on a standard stroke cylinder.	
Part number	Indicate -XC19 at the end of the standard part number.	
Applicable stroke (mm)	ø16	26 to 99
	ø20 to ø63	26 to 199
	ø80, ø100	51 to 199
Example	Part no.: MGPM20-35A-XC19 A collar 15mm in width is installed in a MGPM20-50A . C dimension is 112mm.	

Note 1) Intermediate strokes (in 1mm increments) with a special body are available by special order.

Auto switch mounting bracket part no. for D-P5DW

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

Theoretical Output



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)

Series MGP

Weights

Slide bearing: MGPM16 to 100

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

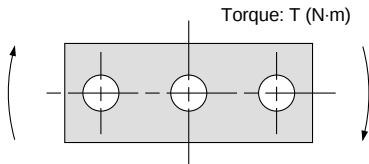
(kg)

Ball bushing: MGPL16 to 100

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

(kg)

Allowable Rotational Torque of Plate (Air Cushion)

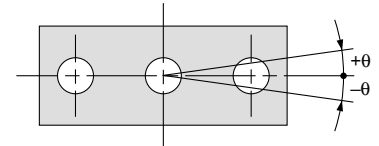


Torque: T (N·m)

Bore size (mm)	Bearing type	Stroke (mm)							
		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

T (N·m)

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.

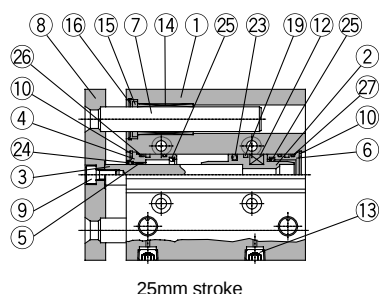
Bore size (mm)	Non-rotating accuracy θ	
	MGPM	MGPL
16	$\pm 0.08^\circ$	$\pm 0.10^\circ$
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25		
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40		
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63		
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100		

Series MGP

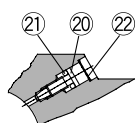
Construction (With Air Cushion)

Series MGPM

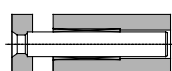
MGPM16 to 25



25mm stroke



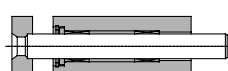
Cushion valve section



ø16: 25mm stroke

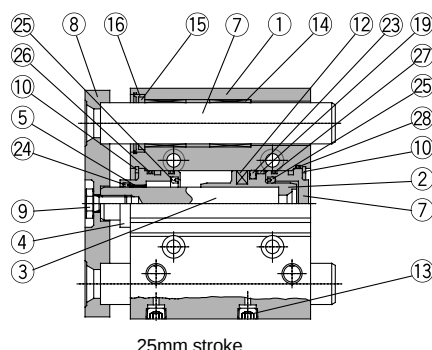


ø16: 50mm stroke or larger

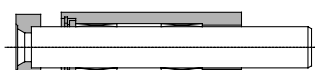


ø20, ø25: 50mm stroke or larger

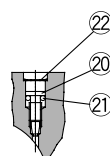
MGPM32 to 100



25mm stroke



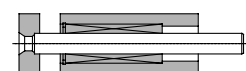
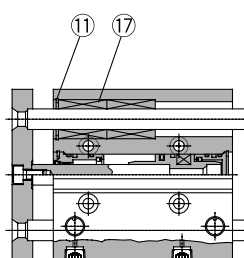
50mm stroke or larger



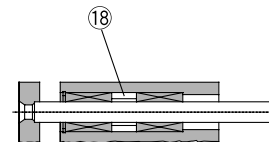
Cushion valve section

Series MGPL

MGPL16 to 25

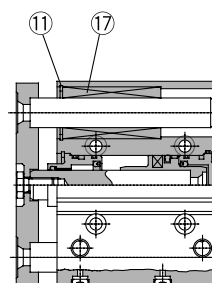


ø20, ø25: 75mm stroke or less



ø20, ø25: 100mm stroke or larger

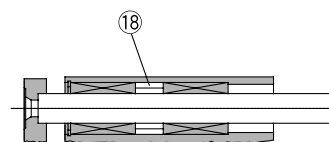
MGPL32 to 100



25mm stroke



ø32 to ø63: 50, 75mm stroke
ø80, ø100: 50mm stroke or larger



ø32 to ø63: 100mm stroke or larger

Parts list

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 Coated
5	Bushing	Lead bronze casting	
6	Head cover	Aluminum alloy	ø16 to ø25 Clear anodized
			ø32 to ø100 Coated
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	Synthetic rubber	
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 casting	
15	Felt	Felt	
16	Holder	Resin	
17	Ball bushing		

Parts list

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 kits

Bore size (mm)	Kit no.	Contents	Bore size (mm)	Kit no.	Contents
16	MGP16-A-PS	Kits include items 23, 24, 25, 26, 27, 28 from the table above.	50	MGP50-A-PS	Kits include items 23, 24, 25, 26, 27, 28 from the table above.
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 kits are sets consisting of items 23 through 28 above, and can be ordered using the kit number for each bore size.

ø16 to ø25/MGPM, MGPL (With Air Cushion)

Standard Type
MGP

With Air Cushion
MGP

With End Lock
MGP

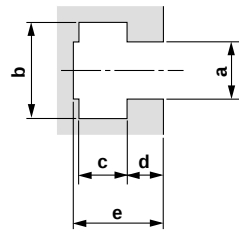
Heavy Duty
Guide Rod Type
MGPS

Order Made
Specifications

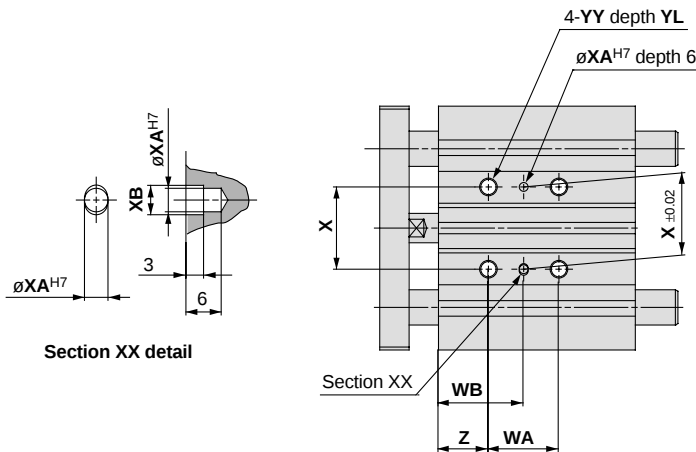
Auto Switches

Precautions

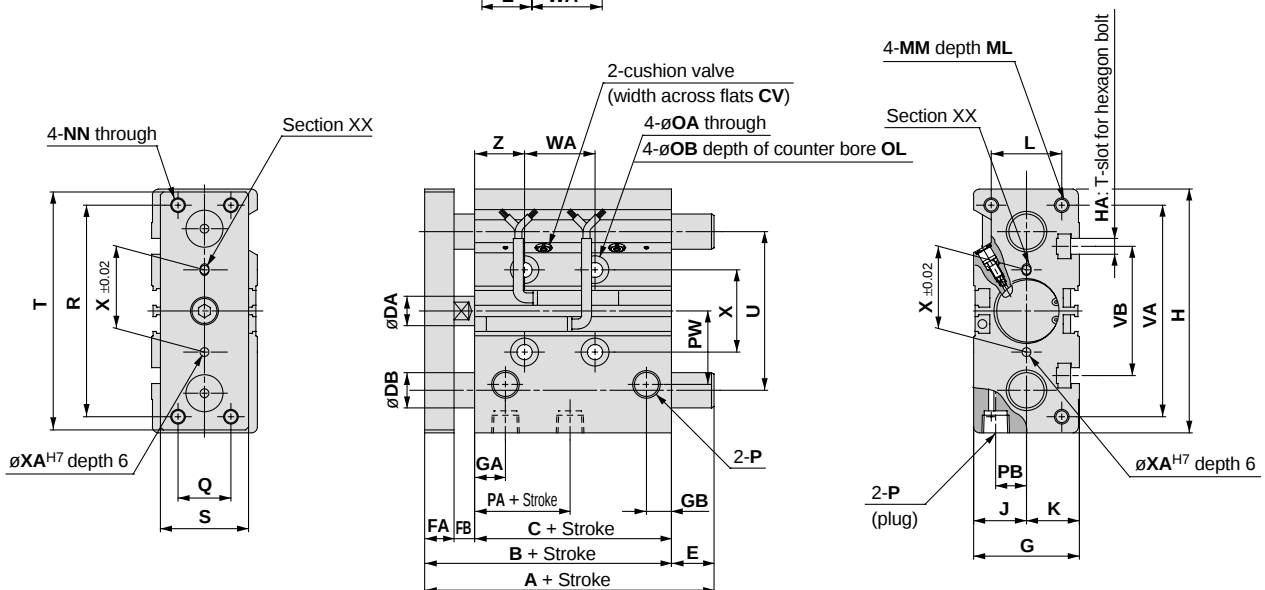
T-slot dimensions



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



Section XX detail



Note 1) Refer to "Manufacture of Intermediate Strokes" on page 19 for intermediate strokes.
Note 2) When adjusting the ø16 cushion valve, use a 3mm flat head watchmakers screw driver.

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	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,	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	Rc 1/8	37.5	10.5	25	18
25	125, 150, 175, 200	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	Rc 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
								75st or less	100 to 175st	200st	75st or less	100 to 175st	200st						
16	25, 50, 75, 100	54	25	62	46	56	38	44	110	—	27	60	—	24	3	3.5	M5 x 0.8	10	5
20	25, 50, 75, 100,	70	30	81	54	72	44	44	120	200	39	77	117	28	3	3.5	M6 x 1.0	12	17
25	125, 150, 175, 200	78	38	91	64	82	50	44	120	200	39	77	117	34	4	4.5	M6 x 1.0	12	17

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

Bore size (mm)	A			DB	E		
	25st	50st	75st or more		25st	50st	75st or more
16	71	89.5	71	10	0	18.5	0
20	78	86.5	84.5	12	0	8.5	6.5
25	78.5	87	85	16	0	8.5	6.5

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

Bore size (mm)	A				DB	E			
	25st	50, 75st	100st	125st or more		25st	50, 75st	100st	125st or more
16	80	71	71	—	8	9	0	0	—
20	95	80	99	104	10	17	2	21	26
25	100.5	85.5	99.5	104.5	13	22	7	26	26