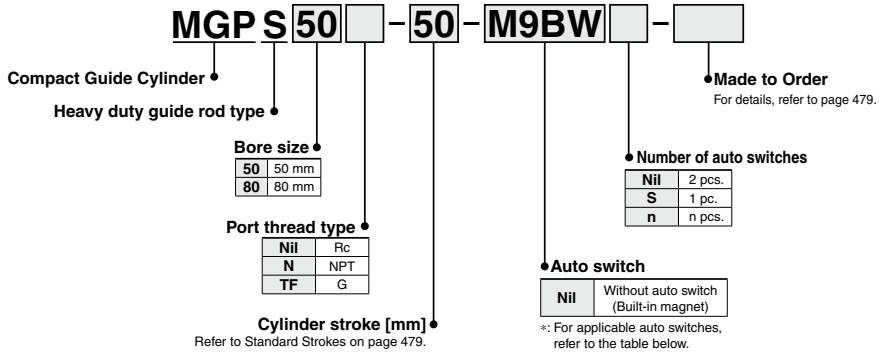


Compact Guide Cylinder/ Heavy Duty Guide Rod Type

MGPS Series

ø50, ø80

How to Order



Applicable Auto Switches/Refer to pages 1119 to 1245 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 auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC		
				3-wire (PNP)			M9PV	M9P	●	●	●	○	○	IC circuit			
	2-wire			M9BV	M9B		●	●	●	○	○	—					
	3-wire (NPN)			M9NWV	M9NW		●	●	●	○	○	IC circuit					
	3-wire (PNP)			M9PWV	M9PW		●	●	●	○	○	IC circuit					
	2-wire			M9BWV	M9BW		●	●	●	○	○	—					
	3-wire (NPN)			M9NAV ^{*1}	M9NA ^{*1}		○	○	●	○	○	IC circuit					
	3-wire (PNP)			M9PAV ^{*1}	M9PA ^{*1}		○	○	●	○	○	IC circuit					
Water resistant (2-color indicator)	Magnetic field resistant (2-color indicator)	2-wire (Non-polar)	—	—	—	—	P3DWA	●	—	●	●	○	—	—			
		—	—	—	—	—	—	—	—	—	—	—	—	—			
Reed/auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—	
				2-wire	24 V	12 V	100 V	A93V ^{*2}	A93	●	●	●	●	—	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	—	—	—

*1: Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please consult with SMC regarding water resistant types with the above model numbers.

*2: 1 m type lead wire is only applicable to the D-A93.

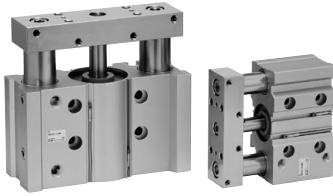
*: Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWWZ

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

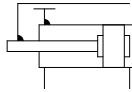
*: Since there are other applicable auto switches than listed above, refer to page 489 for details.

*: For details about auto switches with pre-wired connector, refer to pages 1192 and 1193.

*: Auto switches are shipped together, (but not assembled).



Symbol
Rubber bumper



Made to Order: Individual Specifications
(For details, refer to page 491.)

Symbol	Specifications
-X867	Side porting type (Plug location changed) *1

*1: The shape is the same as the current product.



Made to Order
(For details, refer to pages 1247 to 1440.)

Symbol	Specifications
-XC85	Grease for food processing equipment

Refer to pages 486 to 490 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Operating range
- Auto switch mounting brackets/Part no.
- Auto switch mounting

Specifications

Bore size [mm]	50	80
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 *1	50 to 400 mm/s	
Cushion	Rubber bumper on both ends	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.5 -0 mm	

*1: Maximum speed with no load. Depending on the operating conditions, the piston speed may not be satisfied. Make a model selection, considering a load according to the graph on pages 480 to 482.

Standard Strokes

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 in 5 mm stroke increments.
Part no.	Refer to "How to Order" for the standard model numbers on page 478.
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.

*: Intermediate stroke (in 1 mm increments) based on an exclusive body will be available upon request for special.

Theoretical Output



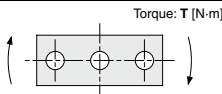
Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]										
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0		
50	20	OUT	1963	393	589	785	982	1178	1374	1571	1767	1963		
		IN	1649	330	495	660	825	990	1155	1319	1484	1649		
80	25	OUT	5027	1005	1508	2011	2513	3016	3519	4021	4524	5027		
		IN	4536	907	1361	1814	2268	2721	3175	3629	4082	4536		

*: Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

Weights

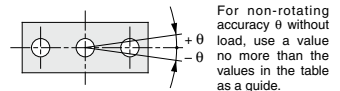
Bore size [mm]	Standard stroke [mm]							
	25	50	75	100	125	150	175	200
50	3.90	4.68	5.74	6.52	7.30	8.08	8.86	9.64
80	9.21	10.7	13.0	14.5	15.9	17.9	18.9	20.3

Allowable Rotational Torque of Plate



Bore size [mm]	Standard stroke [mm]							
	25	50	75	100	125	150	175	200
50	15	12	16	15	13	12	11	9.8
80	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]	Non-rotating accuracy θ
50	$\pm 0.05^\circ$
80	$\pm 0.04^\circ$

Selection Conditions

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

Selection Example 1 (Vertical Mounting)

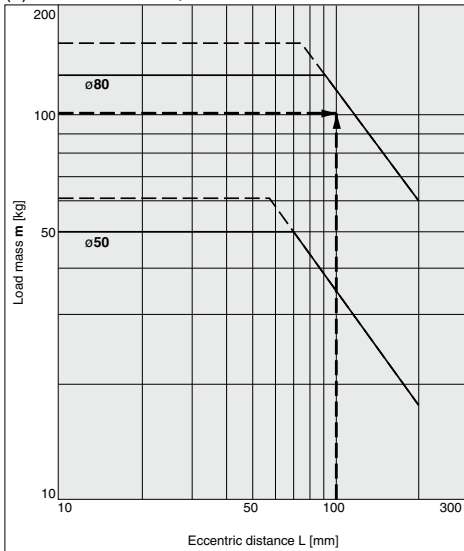
Selection conditions

Mounting: Vertical
 Stroke: 50 stroke
 Maximum speed: 200 mm/s
 Load mass: 100 kg
 Eccentric distance: 100 mm

Find the point of intersection for the load mass 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.

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



Selection Example 2 (Horizontal Mounting)

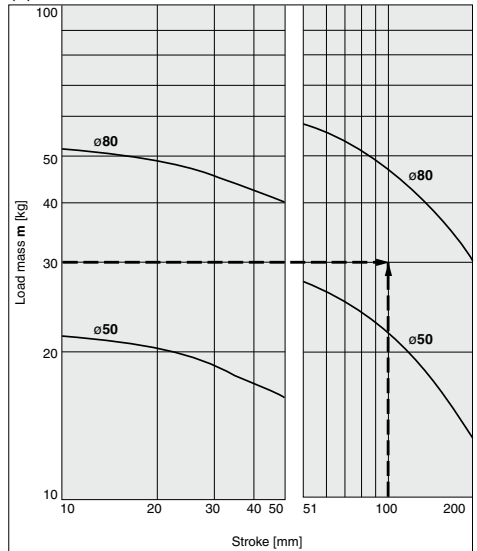
Selection conditions

Mounting: Horizontal
 Distance between plate and load center of gravity: 50 mm
 Maximum speed: 200 mm/s
 Load mass: 30 kg
 Stroke: 100 stroke

Find the point of intersection for the load mass 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.

(5) $L = 50$ mm, $V = 200$ mm/s or less



· When the maximum speed exceeds 200 mm/s, the allowable load mass is determined by multiplying the value shown in the graph at 400 mm/s by the coefficient listed in the table below.

Maximum	Up to 300 mm/s	Up to 400 mm/s	Up to 500 mm/s
Coefficient	1.7	1	0.6

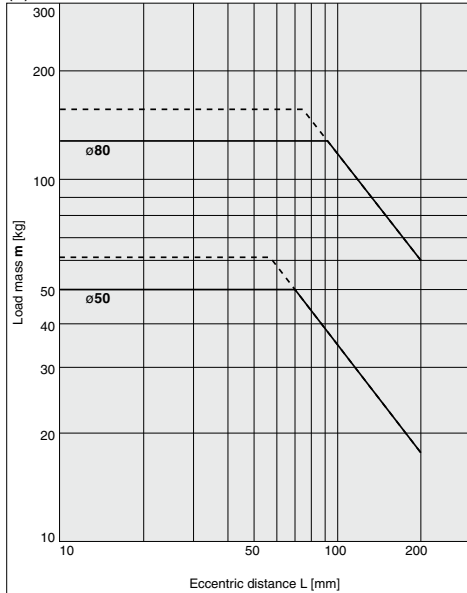
· Use the Guide Cylinder Selection Software, when the eccentric distance is 200 mm or more.

Vertical Mounting Slide Bearing

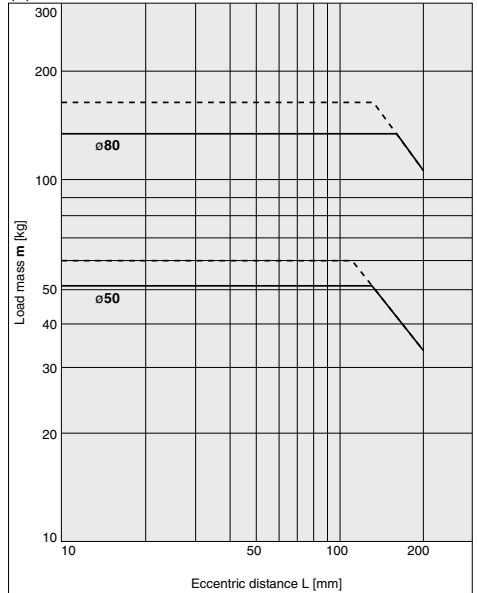
— Operating pressure 0.4 MPa
 - - - Operating pressure 0.5 MPa or more

MGPS50, 80

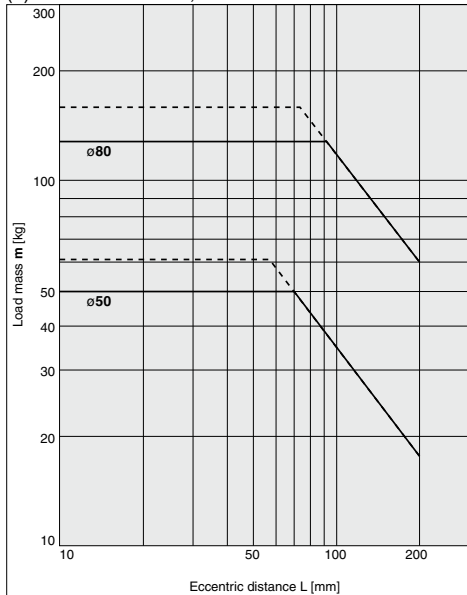
(1) 50 Stroke or Less, V = 200 mm/s or less



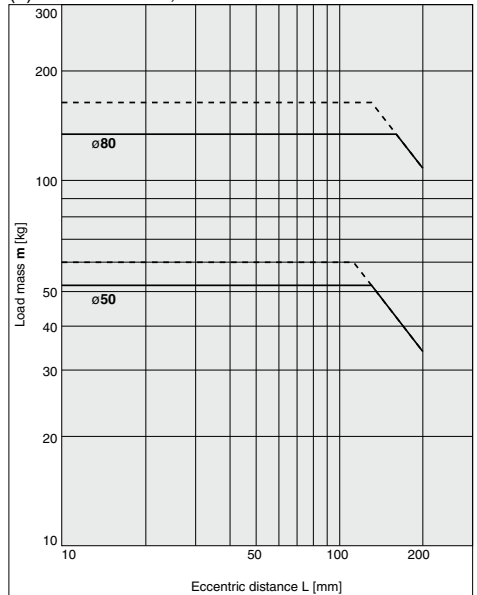
(2) Over 50 Stroke, V = 200 mm/s or less



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



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



MGJ

JMGP

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

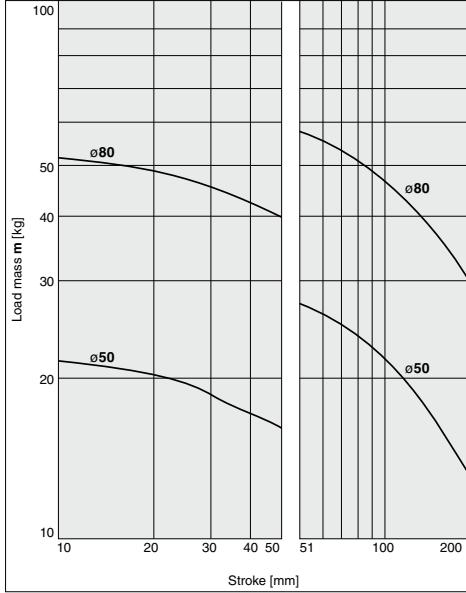
D-□

-X□

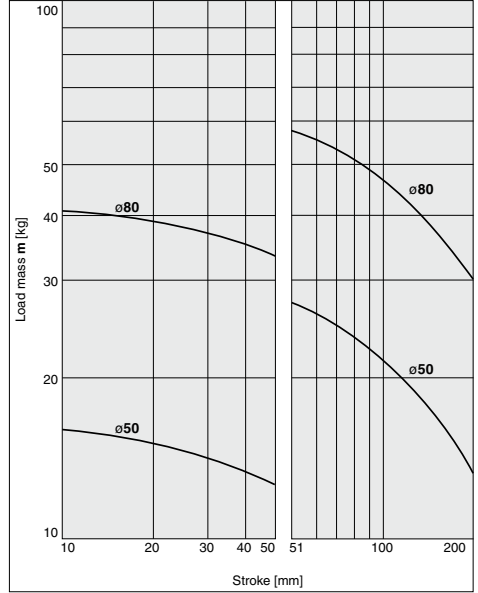
· Use the Guide Cylinder Selection Software, when the eccentric distance is 200 mm or more.

MGPS50, 80

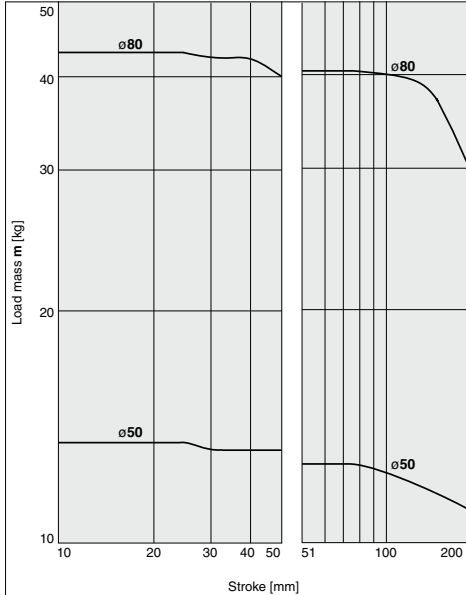
(5) L = 50 mm, V = 200 mm/s or less



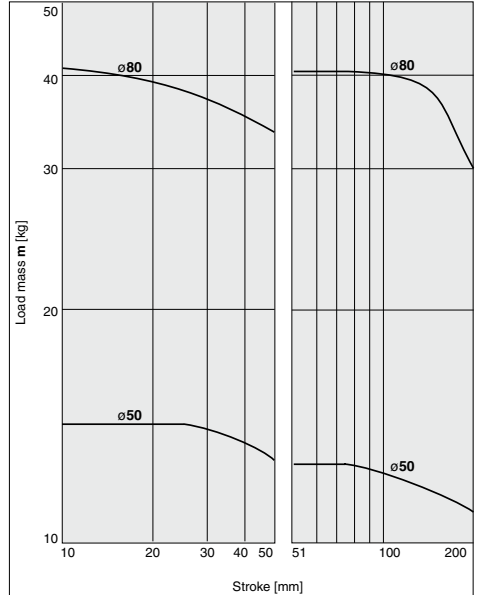
(6) L = 100 mm, V = 200 mm/s or less



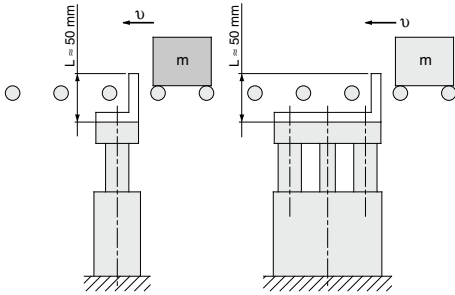
(7) L = 50 mm, V = 400 mm/s



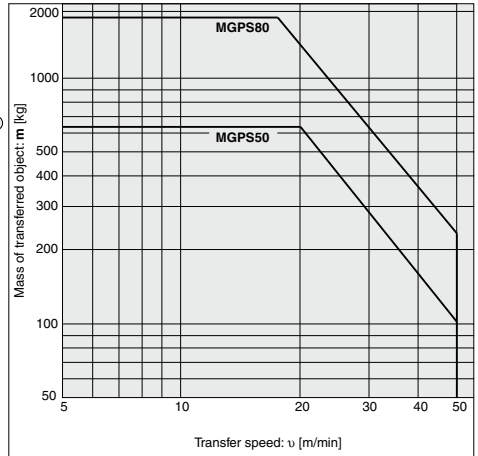
(8) L = 100 mm, V = 400 mm/s



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

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

MGJ

JMGP

MGPS

MGPW

MGQ

MGG

MGC

MGF

MGZ

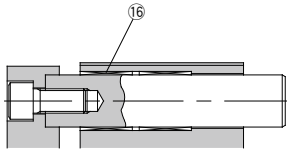
MGT

D-□

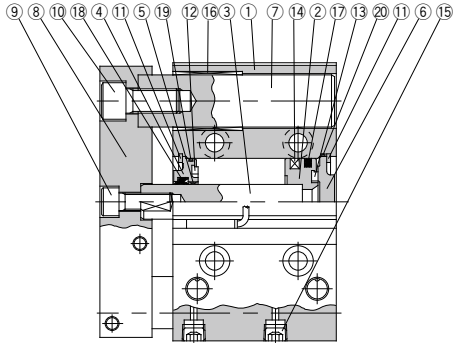
-X□

MGPS Series

Construction



Over 50 stroke



50 stroke or less

Component Parts

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

Component Parts

No.	Description	Material	Note
11	Retaining ring	Carbon tool steel	Phosphate coated
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	—	
15	Hexagon socket head taper plug	Carbon steel	Nickel plating
16	Slide Bearing	Bearing alloy	
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	

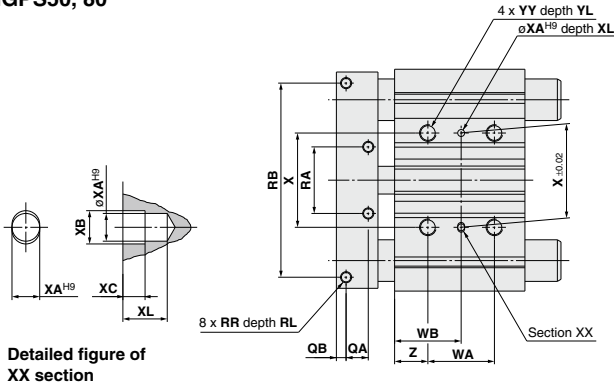
*: Seal kit includes 17 to 20. Order the seal kit, based on each bore size.

*: Since the seal kit does not include a grease pack, order it separately.

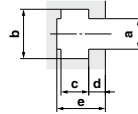
Grease pack part no.: GR-S-010 (10 g)

Dimensions

MGPS50, 80

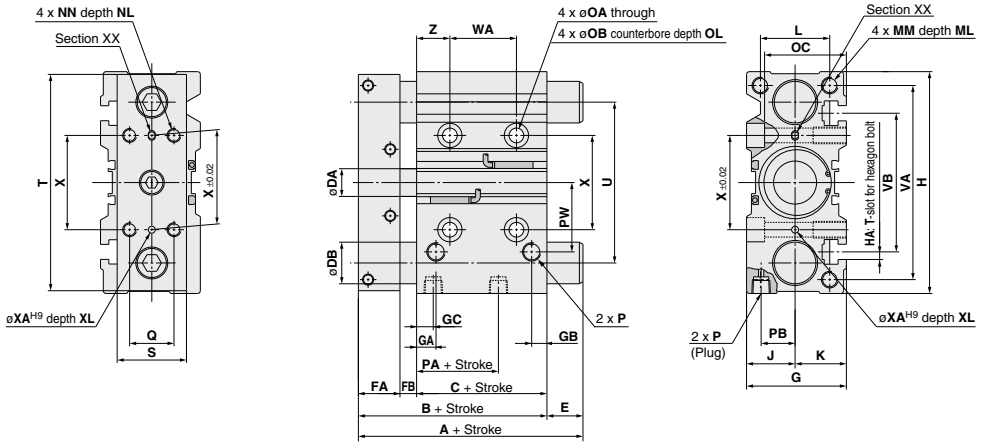


T-slot dimensions



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

Detailed figure of XX section



- MGJ
- JMP
- MGP**
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

*: For intermediate strokes other than standard strokes, refer to the Manufacture of Intermediate Stroke on page 479.
*: Rc, NPT and G ports can be selected. (Refer to page 478.)

Dimensions

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	86	110	86	44	20	30	0	24	29.5	12.5	72	14	11	12	160	M10	35	37	50
80	125, 150, 175, 200	118	151	118	65	25	45	0	33	35	18	95	19	24	14.5	242	M12	47	48	66
Bore size [mm]	MM	ML	NN	NL	OA	OB	OC	OL	P			PA	PB	PW	Q	QA	QB	RA	RB	RR
									Nii	N	TF									
50	M12 x 1.75	20	M10 x 1.5	20	10.6	17.5	59	13	Rc 1/4	NPT 1/4	G 1/4	9	24.5	50	32	16	7	48	140	M8 x 1.25
80	M16 x 2.0	32	M12 x 1.75	24	12.5	20	72	17.5	Rc 3/8	NPT 3/8	G 3/8	14.5	29	77	40	18	9	80	200	M10 x 1.5
Bore size [mm]	RL	S	T	U	VA	VB	WA			WB			X	XA	XB	XC	XL	YY	YL	Z
							25 st	50, 75, 100 st	Over 100 st	25 st	50, 75, 100 st	Over 100 st								
50	14	50	156	116	140	100	24	48	124	36	48	86	68	5	6	4	8	M12 x 1.75	24	24
80	20	65	228	170	214	138	28	52	128	42	54	92	100	6	7	5	10	M14 x 2.0	28	28

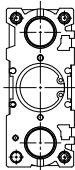
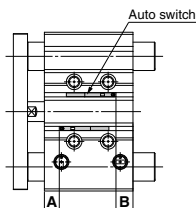
- D
- X

MGP Series Auto Switch Mounting

Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height/MGP-Z (Basic type), MGP-AZ (Air cushion), MGPS (Heavy duty guide rod type)

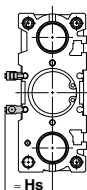
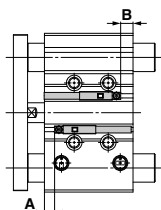
D-M9□/M9□V
D-M9□W/M9□WV
D-M9□A/M9□AV
D-A9□/A9□V

φ12 to φ100

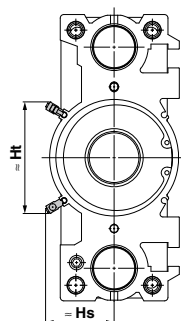


D-P3DWA

φ25 to φ63

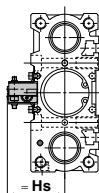
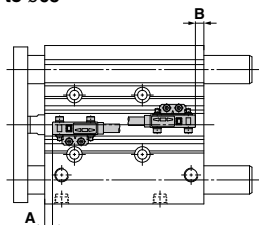


φ80, φ100

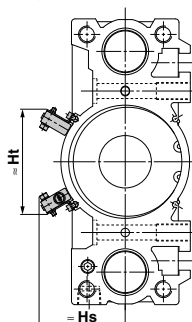


D-P4DW

φ32 to φ63



φ80, φ100



*: The MGP-Z (Basic type) is shown as a representative example.

Applicable Cylinder: MGP-Z (Basic type)

Auto Switch Proper Mounting Position [mm]

Auto switch model	D-M9□ D-M9□V D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-P3DWA		D-P4DW ^{*1}	
	A	B	A	B	A	B	A	B
Bore size								
12	7.5	9.5	3.5	5.5	—	—	—	—
16	10.5	10.5	6.5	6.5	—	—	—	—
20	12.5	12.5	8.5	8.5	—	—	—	—
25	11.5	14	7.5	10	7	9.5	—	—
32	12.5	13	8.5	9	8	8.5	5.5	6
40	15.5	16.5	11.5	12.5	11	12	8.5	9.5
50	14.5	17	10.5	13	10	12.5	7.5	10
63	16.5	20	12.5	16	12	15.5	9.5	13
80	18	26	14	22	13.5	21.5	11	19
100	21.5	32.5	17.5	28.5	17	28	14.5	25.5

*1: The auto switch mounting bracket BMG7-032 is used.
 *: Adjust the auto switch after confirming the operating conditions in the actual setting.

Applicable Cylinder: MGP-Z (Basic type)

Auto Switch Proper Mounting Height [mm]

Auto switch model	D-M9□V D-M9□WV D-M9□AV		D-A9□V		D-P3DWA		D-P4DW ^{*1}	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
Bore size								
12	19.5	—	17	—	—	—	—	—
16	22	—	19.5	—	—	—	—	—
20	20	—	22	—	—	—	—	—
25	26	—	24	—	32.5	—	—	—
32	29	—	26.5	—	35	—	40	—
40	33	—	30.5	—	39	—	44	—
50	38.5	—	36	—	44.5	—	49.5	—
63	45.5	—	43	—	51.5	—	56.5	—
80	45	74	43	71.5	50	80.5	61	74
100	55	85.5	53	83	60	92	71.5	86

*1: The auto switch mounting bracket BMG7-032 is used.

Applicable Cylinder: MGP-AZ (Air cushion)

Auto Switch Proper Mounting Position [mm]

Auto switch model	D-M9□ D-M9□V D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-P3DWA		D-P4DW ^{*1}	
	A	B	A	B	A	B	A	B
Bore size								
16	25	20.5	21	16.5	—	—	—	—
20	27	23	23	19	—	—	—	—
25	27	23	23	19	22.5	18.5	—	—
32	21	29	17	25	16.5	24.5	14	22
40	25.5	31.5	21.5	27.5	21	27	18.5	24.5
50	26	30.5	22	26.5	21.5	26	19	23.5
63	30	31.5	26	27.5	25.5	27	23	24.5
80	30.5	38.5	26.5	34.5	26	34	23.5	31.5
100	34.5	44	30.5	40	30	39.5	27.5	37

*1: The auto switch mounting bracket BMG7-032 is used.

Applicable Cylinder: MGP-AZ (Air cushion)

Auto Switch Proper Mounting Height [mm]

Auto switch model	D-M9□V D-M9□WV D-M9□AV		D-A9□V		D-P3DWA		D-P4DW ^{*1}	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
Bore size								
16	22	—	19.5	—	—	—	—	—
20	24.5	—	22	—	—	—	—	—
25	26	—	24	—	32.5	—	—	—
32	29	—	26.5	—	35	—	40	—
40	33	—	30.5	—	39	—	44	—
50	38.5	—	36	—	44.5	—	49.5	—
63	45.5	—	43	—	51.5	—	56.5	—
80	45	74	43	71.5	50	80.5	61	74
100	55	85.5	53	83	60	92	71.5	86

*1: The auto switch mounting bracket BMG7-032 is used.

Applicable Cylinder: MGPS (Heavy duty guide rod)

Auto Switch Proper Mounting Position [mm]

Auto switch model	D-M9□ ^{*1} D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ ^{*1} D-A9□V		D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y69□ D-Y7PV D-Y7CW D-Y7 D-WV D-Y7BA		D-P3DWA ^{*1}		D-P4DW ^{*2}	
	A	B	A	B	A	B	A	B	A	B
Bore size										
50	12.5	16.5	8.5	12.5	7.5	11.5	8	12	7	11
80	18	23.5	14	19.5	13	18.5	13.5	19	12.5	18

*1: The auto switch mounting bracket BMG2-012 is used.
 *2: The auto switch mounting bracket BMG1-040 is used.
 *: Adjust the auto switch after confirming the operating conditions in the actual setting.

Applicable Cylinder: MGPS (Heavy duty guide rod)

Auto Switch Proper Mounting Height [mm]

Auto switch model	D-M9□ ^{*1} D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□V ^{*2}		D-Z7□ ^{*2} D-Z80 D-Y59□ D-Y7P D-Y7CW D-Y7 D-WV D-Y7BA		D-Y69□ ^{*2} D-Y7PV D-Y7WV		D-P3DWA ^{*2}		D-P4DW ^{*3}	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
Bore size												
50	32.5	38.5	—	36	—	34	—	44.5	—	50	—	—
80	40	45	74	43	71.5	41	70	49.5	78.5	61	84.5	—

*1: For the D-M9□, the auto switch mounting bracket BMG2-012 is used.
 *2: The auto switch mounting bracket BMG2-012 is used.
 *3: The auto switch mounting bracket BMG1-040 is used.

- MGJ
- JMGF
- MGP
- MGPW
- MGQ
- MGG
- MGC
- MGF
- MGZ
- MGT

- D-□
- X□

MGP Series

Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height/MGP (With end lock)

Applicable cylinder: MGP series, With end lock

With rod end lock

D-M9□	D-M9□A	D-Z7□	D-Y7P
D-M9□V	D-M9□AV	D-Z80	D-Y7PV
D-M9□W	D-A9□	D-Y59□	D-Y7□W
D-M9□WV	D-A9□V	D-Y69□	D-Y7□WV
			D-Y7BA

Auto Switch Proper Mounting Position

Auto switch model	D-M9□ ^{*1}		D-A9□ ^{*1}		D-Z7□/Z80		D-Y59□/Y7P		D-P3DWA ^{*3,*4}		D-P4DW ^{*2}	
	A	B	A	B	A	B	A	B	A	B	A	B
20	40	7	36	3	35	2	—	—	—	—	—	—
25	40.5	7	36.5	3	35.5	2	36	2.5	—	—	—	—
32	37.5	10	33.5	6	32.5	5	33	5.5	32	4.5	—	—
40	43.5	10.5	39.5	6.5	38.5	5.5	39	6	38	5	—	—
50	44.5	9.5	40.5	5.5	39.5	4.5	40	5	39	4	—	—
63	47	12	43	8	42	7	42.5	7.5	41.5	6.5	—	—
80	68	23.5	64	19.5	63	18.5	63.5	19	62.5	18	—	—
100	72.5	28.5	68.5	24.5	67.5	23.5	68	24	67	23	—	—

- *1: The auto switch mounting bracket BMG2-012 is used.
- *2: The auto switch mounting bracket BMG1-040 is used.
- *3: The auto switch mounting bracket BMG10-025 is used.
- *4: This shows the top end position of the mounting bracket when the auto switch is put in contact with the mounting bracket.
- *: Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Proper Mounting Height (D-P3DWA)

Bore size	Hs	Ht
25	32	—
32	35	—
40	39	—
50	44.5	—
63	51.5	—
80	49.5	78.5
100	60	90

Auto Switch Proper Mounting Height (D-P4DW)

Bore size	Hs	Ht
32	41.5	—
40	44.5	—
50	50	—
63	57	—
80	61	84.5
100	71	96.5

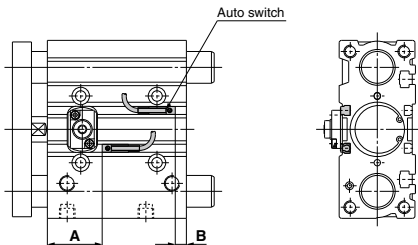
With head end lock

D-M9□	D-M9□A	D-Z7□	D-Y7P
D-M9□V	D-M9□AV	D-Z80	D-Y7PV
D-M9□W	D-A9□	D-Y59□	D-Y7□W
D-M9□WV	D-A9□V	D-Y69□	D-Y7□WV
			D-Y7BA

Auto Switch Proper Mounting Position

Auto switch model	D-M9□ ^{*1}		D-A9□ ^{*1}		D-Z7□/Z80		D-Y59□/Y7P		D-P3DWA ^{*3,*4}		D-P4DW ^{*2}	
	A	B	A	B	A	B	A	B	A	B	A	B
20	9	38	5	34	4	33	—	—	—	—	—	—
25	9.5	38	5.5	34	4.5	33	5	33.5	5	—	—	—
32	10.5	37	6.5	33	5.5	32	6	32.5	5	31.5	—	—
40	14.5	39.5	10.5	35.5	9.5	34.5	10	35	9	34	—	—
50	12.5	41.5	8.5	37.5	7.5	36.5	8	37	7	36	—	—
63	15	44	11	40	10	39	10.5	39.5	9.5	38.5	—	—
80	18	73.5	14	69.5	13	68.5	13.5	69	12.5	68	—	—
100	22.5	78.5	18.5	74.5	17.5	73.5	18	74	17	73	—	—

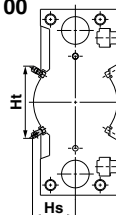
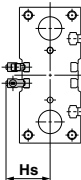
- *1: The auto switch mounting bracket BMG2-012 is used.
- *2: The auto switch mounting bracket BMG1-040 is used.
- *3: The auto switch mounting bracket BMG10-025 is used.
- *4: This shows the top end position of the mounting bracket when the auto switch is put in contact with the mounting bracket.
- *: Adjust the auto switch after confirming the operating conditions in the actual setting.



For D-P3DWA (*: Cannot be mounted on bore size $\phi 20$.)

$\phi 25$ to $\phi 63$

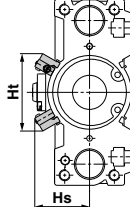
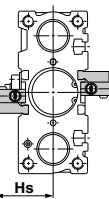
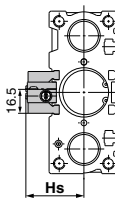
$\phi 80$, $\phi 100$



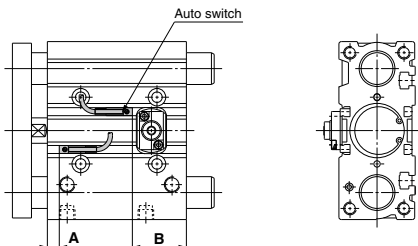
For D-P4DW (*: Cannot be mounted on bore size $\phi 25$ or less.)

$\phi 32$ to $\phi 63$

$\phi 80$, $\phi 100$



- For 25 stroke
- *: For bore sizes $\phi 40$ to $\phi 63$ with two auto switches, one switch is mounted on each side.



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.

Minimum Stroke for Auto Switch Mounting

		[mm]										
Auto switch model	Number of auto switches	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	
D-M9□V	1 pc.						5					
	2 pcs.						5					
D-M9□	1 pc.	5 *1						10			5	
	2 pcs.	10 *1										
D-M9□W	1 pc.						5 *2					
	2 pcs.	10 *2										
D-M9□WV	1 pc.						5 *2					
D-M9□AV	2 pcs.						10					
D-M9□A	1 pc.						5 *2					
	2 pcs.						10 *2					
D-A9□	1 pc.	5 *1									5	
	2 pcs.	10 *1									10	
D-A9□V	1 pc.						5					
	2 pcs.						10					
D-Z7□	1 pc.	—	5 *1						5			
D-Z80	2 pcs.	—				10						
D-Y59□	1 pc.	—	5 *1						5			
D-Y7P	2 pcs.	—				10						
D-Y69□	1 pc.	—				5						
D-Y7PV	2 pcs.	—				5						
D-Y7□W	1 pc.	—				5 *2						
D-Y7□WV	2 pcs.	—				10 *2						
D-Y7BA	1 pc.	—				5 *2						
	2 pcs.	—				10 *2						
D-P3DWA	1 pc.	—							15			
	2 pcs.	—							15			
D-P4DW	1 pc.	—							5 *2,3			
	2 pcs. (Different surface)	—							10 *2,3			
	2 pcs. (Same surface)	—				75			10			

- *1: Confirm that it is possible to secure the minimum bending radius of 10 mm of the auto switch lead wire before use.
- *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, also consider *1 shown above.
- *3: The D-P3DWA is mountable on bore size ø25 to ø100.

Operating Range

		[mm]									
Auto switch model	Bore size										
	12	16	20	25	32	40	50	63	80	100	
D-M9□/M9□V	3.5	5	5	5	6	6	6	6.5	6	7	
D-M9□W/M9□WV											
D-M9□A/M9□AV											
D-A9□/A9□V	7	9	9	9	9.5	9.5	9.5	11	10.5	10.5	
D-Z7□/Z80	—	—	10	10	10.5	10.5	10.5	11.5	11.5	12	
D-Y59□/Y69□	—	—	7.5	7	6.5	6	7	8	9.5	10	
D-Y7P/Y7PV											
D-Y7□W/Y7□WV											
D-Y7BA	—	—	—	5.5	6.5	6	6	6.5	6	7	
D-P3DWA	—	—	—	—	5	4	4	5	4	4	
D-P4DW	—	—	—	—	—	—	—	—	—	—	

- *: Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Other than the applicable auto switches listed in How to Order, the following auto switches are mountable.
Refer to pages 1119 to 1245 for the detailed specifications.

Type	Model	Electrical entry	Features
Reed	D-Z73, Z76	Grommet (In-line)	—
	D-Z80		Without indicator light
Solid state	D-P4DW	Grommet (In-line)	Magnetic field resistant (2-color indicator) Bore size: ø32 to ø100
	D-Y69A, Y69B, Y7PV	Grommet (Perpendicular)	—
	D-Y7NWV, Y7PWV, Y7BWW		Diagnostic indication (2-color indicator)
	D-Y59A, Y59B, Y7P		—
	D-Y7NW, Y7PW, Y7BW	Grommet (In-line)	Diagnostic indication (2-color indicator)
	D-Y7BA		Water resistant (2-color indicator)

- *: With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1192 and 1193.
- *: Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to page 1137.
- *: When installing the D-P4DW, use the BMG7-032 auto switch mounting bracket.
- *: **The auto switches other than the D-P4DW are mountable on the models with end lock and heavy duty guide rod type only.**

MGJ

JMGF

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

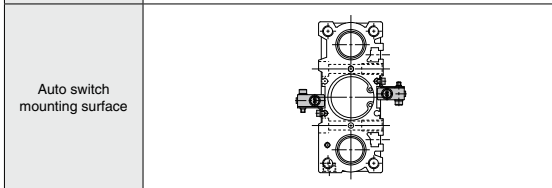
-X□

Auto Switch Mounting

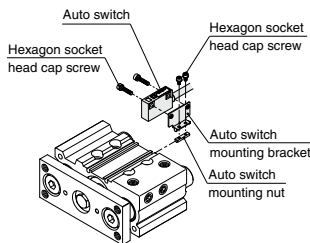
Applicable Cylinder: MGP-Z (Basic type), MGP-AZ (Air cushion)

Applicable auto switches	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V	D-P3DWA
Bore size [mm]	ø12 to ø100	ø25 to ø100
Auto switch tightening torque	[N·m]	
	Auto switch model	Tightening torque
	D-M9□(V) D-M9□W(V) D-M9□A(V)	0.05 to 0.15
	D-A9□(V)	0.10 to 0.20

Applicable auto switches	D-P4DW
Bore size [mm]	ø32 to ø100
Auto switch mounting bracket part no.	BMG7-032
Auto switch mounting bracket/ Quantity	<ul style="list-style-type: none"> • Auto switch mounting bracket x 1 pc. • Auto switch mounting nut x 1 pc. • Hexagon socket head cap screw x 2 pcs. • Hexagon socket head cap screw x 2 pcs. (With spring washer x 2 pcs.)



- Auto switch mounting surface
1. Attach the auto switch to the auto switch mounting bracket with the hexagon socket head cap screw (M3 x 14 L). The tightening torque for the M3 hexagon socket head cap screw is 0.5 to 0.8 N·m.
 2. Fix the auto switch mounting nut and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 5 L).
 3. Insert the temporarily fixed auto switch mounting bracket into the auto switch mounting groove, and slide the auto switch through the auto switch mounting groove.
 4. Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 5 L). The tightening torque for the M2.5 hexagon socket head cap screw is 0.2 to 0.3 N·m.
 5. If the detecting position is changed, go back to step 3.

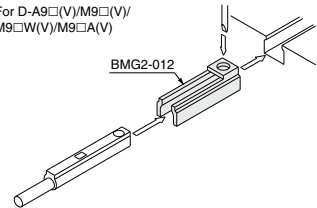


Applicable Cylinder: MGP (With end lock), MGPS
(Heavy duty guide rod type)

Auto switch model	Bore size [mm]	
	ø25	ø32 to ø100
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V	BMG2-012	
D-P3DWA	BMG10-025 (With end lock) BMG2-012 (Heavy duty guide rod type)	
D-P4DW	—	BMG1-040

- *: Cylinders with an end lock are available in ø25 to ø100.
- *: The heavy duty guide rod type is available in ø50 and ø80.

For D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)



*: Auto switch mounting brackets and auto switches are enclosed with the cylinder for shipment. For an environment that needs the water-resistant auto switch, select the D-M9□A(V) type.

MGP Series

Made to Order: Individual Specifications



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

1 Symmetrical Port Position

Symbol
-X144

Ports are mounted symmetrically.

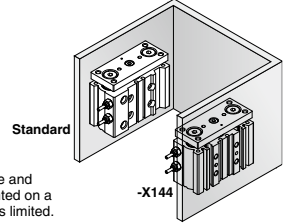
Applicable Series

Description	Model	Action
Standard type	MGPM-Z	Double acting
	MGPL-Z	Double acting
	MGPA-Z	Double acting

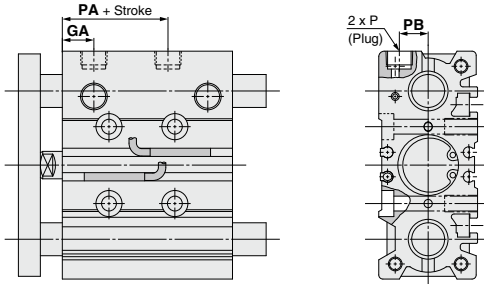
How to Order

MGP^M_L^A Standard model no. -X144
Symmetrical port position ↓

This makes it easy to remove and rotate piping when it is mounted on a wall where mounting space is limited.



Dimensions (Dimensions other than below are the same as standard type.)



MGPM-Z, MGPL-Z, MGPA-Z Common Dimensions

Bore size [mm]	GA	PA	PB
12	10	13	8
16	10.5	14.5	10
20	11.5	13.5	10.5
25	11.5	12.5	13.5
32	12	6.5	16
40	15	13	18
50	15	9	21.5
63	15.5	13	28
80	19	14.5	25.5
100	22.5	17.5	32.5

MGJ

JMGP

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

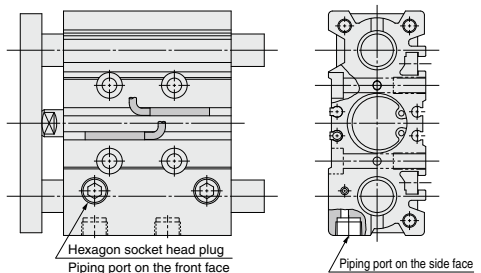
2 Side Porting Type (Plug location changed)

Symbol
-X867

Ports on the top plugged in order to use the piping port on the side.

Applicable Series

Description	Model	Action
Standard type	MGPM-Z	Double acting
	MGPL-Z	Double acting
	MGPA-Z	Double acting
With air cushion	MGPM-AZ	Double acting
	MGPL-AZ	Double acting
	MGPA-ZA	Double acting
With end lock	MGPM	Double acting
	MGPL	Double acting
	MGPA	Double acting
Heavy duty guide rod type	MGPS	Double acting



How to Order

MGP^M_L^A Standard model no. -X867
Side porting type (Plug location changed) ↓

D-□

-X□



MGP Series

Specific Product Precautions 1

Be sure to read this before handling the products.

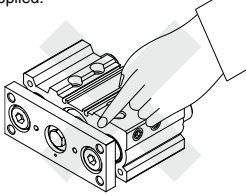
Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

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. Use cylinders within the piston speed range.

An orifice is set for this cylinder, but the piston speed may exceed the operating range if the speed controller is not used. If the cylinder is used outside the operating speed range, it may cause damage to the cylinder and shorten the service life. Adjust the speed by installing the speed controller and use the cylinder within the limited range.

2. Pay attention to the operating speed when the product is mounted vertically.

When using the product in the vertical direction, if the load factor is large, the operating speed can be faster than the control speed of the speed controller (i.e. quick extension). In such cases, it is recommended to use a dual speed controller.

3. 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.

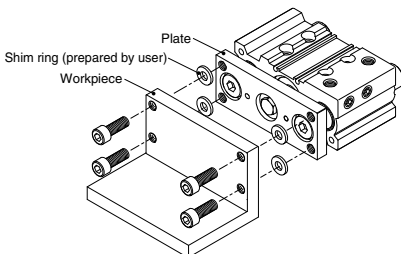
4. Do not dent or scratch the mounting surface of the body and the plate.

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

5. 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.

If it is difficult to maintain a flatness of 0.05 or less, put a thin shim ring (prepared by user) between the plate and workpiece mounting surface to prevent the sliding resistance from increasing.



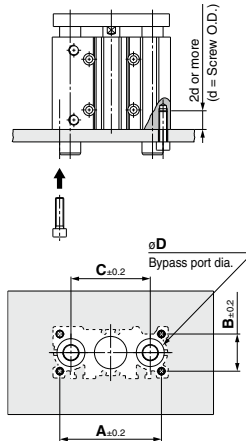
Mounting

⚠ Caution

6. 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 cap screws which are used for mounting.

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



Bore size [mm]	A [mm]	B [mm]	C [mm]	D [mm]		Hexagon socket head cap screw
				MGPM	MGPL/A	
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

*: Air cushions are not available for bore size 12.



MGP Series

Specific Product Precautions 2

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Piping

⚠ Caution

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

1. M5

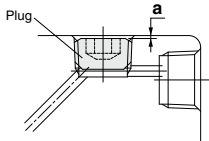
After tightening by hand, tighten additional 1/6 to 1/4 rotation with a tightening tool.

2. Tapered thread for Rc port (MGP) and NPT port (MGP□□TN)

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 (dimension "a" 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 (plug) 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



3. Parallel pipe thread for G port (MGP□□TF)

Screw in the plug to the surface of the body (dimension "a" in the drawing) by checking visually instead of using the tightening torque shown in the table.

Cushion

With air cushion

⚠ Warning

1. Do not open the cushion valve excessively.

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. Be aware that the cushion valve may jump up from the cover when the air is supplied.

⚠ Caution

1. Be sure to use the cylinder after the air cushion has been adjusted appropriately.

First, fully close the cushion valve. Start the operation at the cylinder speed to be used with the load applied, and then open the cushion valve gradually to make the adjustment. The optimal adjustment is that the piston reaches its stroke end and the collision sound is minimized. If the cushion valve is used without adjusting the air cushion appropriately, this may cause damage to the retaining ring or piston.

Bore size [mm]	Applicable tool
16, 20, 25, 32, 40	JIS B4648 hexagon wrench key 1.5
50, 63, 80, 100	JIS B4648 hexagon wrench key 3

2. 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.

MGJ

JMGP

MGP

MGPW

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□



MGP Series

Specific Product Precautions 3

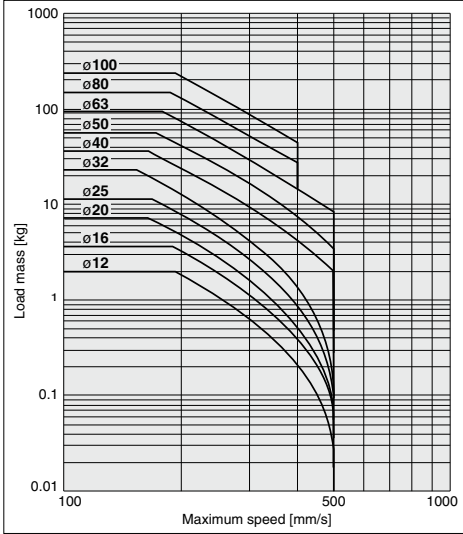
Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Allowable Kinetic Energy

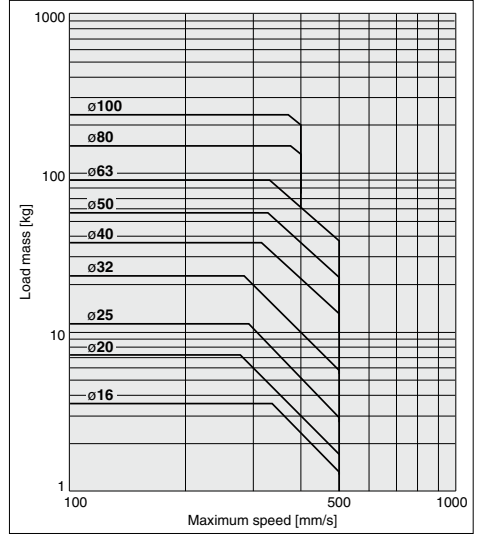
⚠ Caution

Load mass and a maximum speed must be within the ranges shown in the graph below.

MGP with Rubber Bumper



MGP with Air Cushion



MGP without Cushion (MGP-□V (Water resistant), XB6, XC9, XC22)

