

Guide Table

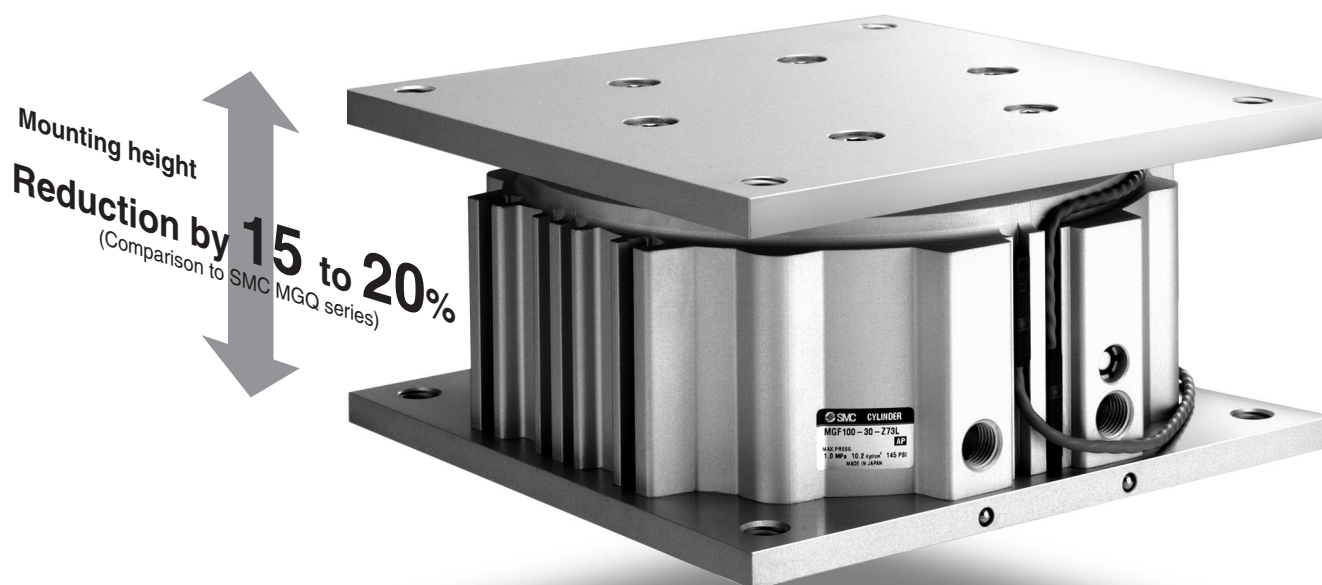
Series MGF

ø40, ø63, ø100

Low profile compact cylinder utilizes a large concentric guiding sleeve to provide excellent eccentric load resistance.

■ Mounting height greatly reduced

Low profile cylinder enables compact machine design.



Guide Table

Series MGF

ø40, ø63, ø100

■ Built-in non-rotating mechanism

Rotation of top table is prevented by non-rotating pin located inside the cylinder.

Non-rotating accuracy

Bore size (mm)	Non-rotating accuracy θ
40	$\pm 0.08^\circ$
63	$\pm 0.06^\circ$
100	$\pm 0.05^\circ$

■ With T-slot

T-slots are provided on 3 faces of the body (except port face), allowing mounting for various brackets. (Not suitable for mounting the cylinder.)

■ Product range

Model	Bore size (mm)	Standard stroke (mm)			
		30	50	75	100
MGF 40	40	●	●	●	●
MGF 63	63	●	●	●	●
MGF100	100	●	●	●	●

Low profile compact cylinder utilizes a large concentric guiding sleeve to provide excellent eccentric load resistance

■ Large concentric guiding sleeve (Eccentric load resistant)

Thick guide sleeve rod enables the cylinder to be resistant against eccentric loads from any direction within a 360° radius.

Allowable moment

Bore size (mm)	Allowable moment (Nm)
40	10
63	40
100	110

□ Value at a cylinder speed of 100mm/s

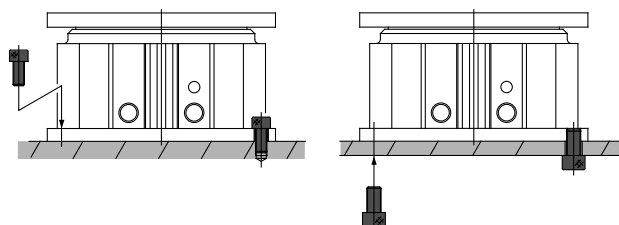


■ Auto switch can be mounted on 4 faces of the body.

■ Mounting from 2 directions is possible.

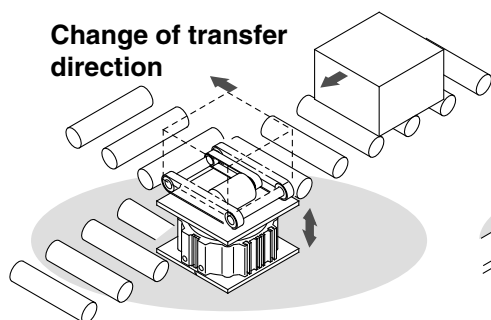
Mounting from top

Mounting from bottom

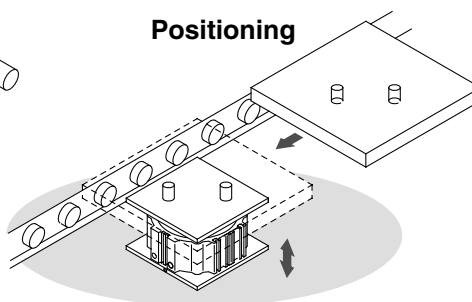


■ Typical applications

Change of transfer direction



Positioning





Series MGF/Precautions

Be sure to read before handling.

Selection

⚠ Caution

① Use the cylinder within its load limitation.

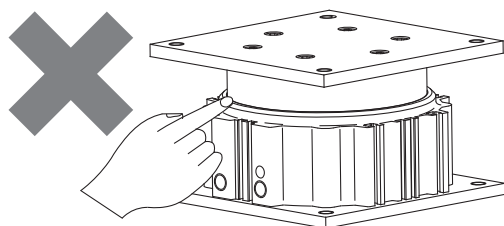
Select a model taking into consideration horizontal allowables loads, rotation torque and eccentric loads. When used in excess of the applicable limit, eccentric loads applied to the tube guide will cause wear of the guide, decrease of life of the cylinder, and damage of the mounting bolts.

② Do not allow any dents, scratches, etc. on the mounting faces of either the plate or end plate.

Mounting face may deteriorate and cause decrease the life of the cylinder, increase of sliding resistance, etc.

③ Do not allow hand, fingers, etc. near to the cylinder during cylinder operation.

Your fingers may be caught between the body and the plate. If you need come near to the cylinder, install a cover, etc. on the cylinder.



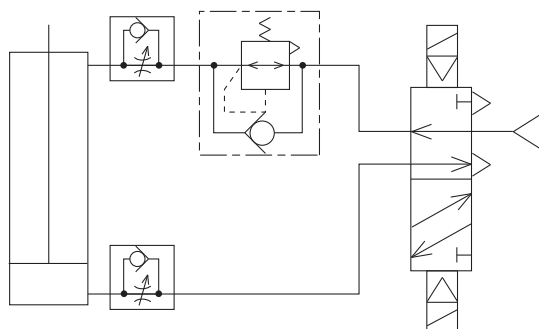
④ Do not locate near objects which will be affected by magnets.

Since a magnet is built in the cylinder, do not place near magnetic disks, magnetic cards, magnetic tapes, etc. Data may be lost.

⑤ If the cylinder is operated vertically with heavy loads, a measure must be taken to prevent rapid advancement of the piston rod when starting to operate in the downward direction.

If the cylinder is operated vertically with heavy loads at the same pressure for both upward and downward directions, starting speed in the downward direction may be over the speed controlled with a speed controller. In this case, use a dual pressure control circuit for air circuit.

Example)

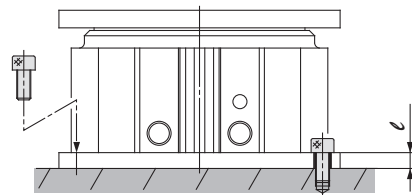


Mounting

⚠ Caution

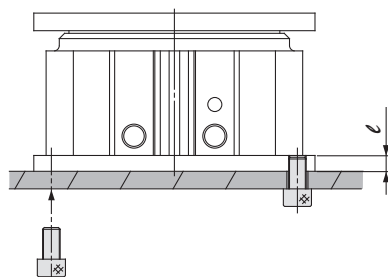
① For mounting the cylinder, use screws with appropriate length and tighten the screws less than the max. clamping torque.

Mounting from top



Model	Applicable screw	Max. clamping torque (Nm)	ℓ (mm)
MGF 40	M6x1	10	8
MGF 63	M8x1.25	25	10
MGF100	M10x1.50	51	10

Mounting from bottom



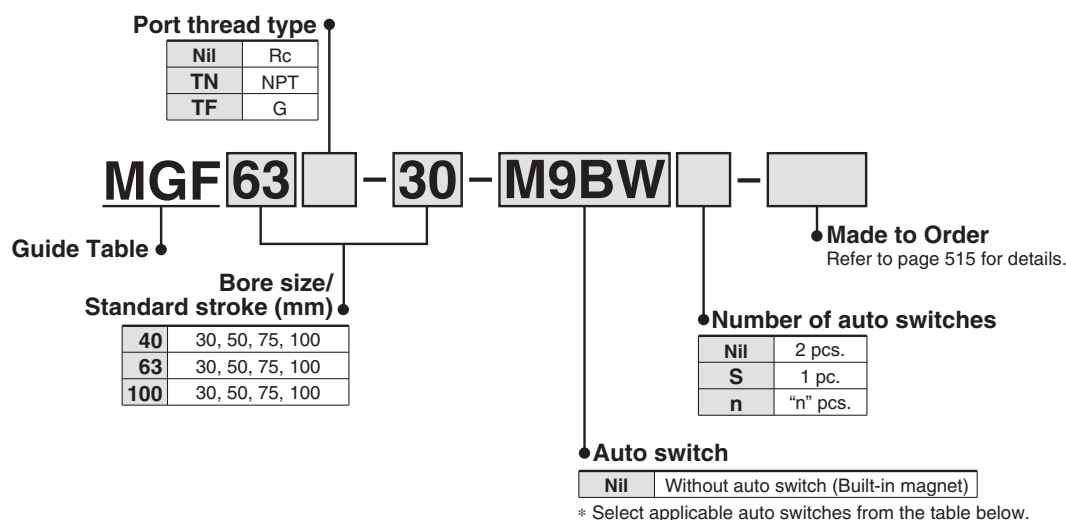
Model	Applicable screw	Max. clamping torque (Nm)	ℓ (mm)
MGF 40	M8x1.25	18	8
MGF 63	M10x1.50	36	10
MGF100	M12x1.75	65	10

② When mounting a workpiece to the cylinder, do so when the piston is retracted. Also, make sure that a rotational torque that exceeds the allowable torque (given on p. 2-497) is not applied to the cylinder body. (This will damage the non-rotating mechanism and lead to a malfunction.)

Series MGF

ø40, ø63, ø100

How to Order



Applicable Auto Switches/Refer to Auto Switch Guide for further information on auto switches.

Applicable Auto Switch Selection Guide 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 (—)	1 (M)	3 (L)	5 (Z)					
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
	Diagnostic indication (2-colour indication)			3-wire (PNP)		12 V		M9PV	M9P	●	●	●	○	○			
				2-wire		12 V		M9BV	M9B	●	●	●	○	○			
				3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○			
				3-wire (PNP)	12 V	M9PWV		M9PW	●	●	●	○	○				
				2-wire	12 V	M9BWV		M9BW	●	●	●	○	○				
				3-wire (NPN)	5 V, 12 V	M9NAV**		M9NA**	○	○	●	○	○				
	Water resistant (2-colour indication)			3-wire (PNP)	12 V	M9PAV**		M9PA**	○	○	●	○	○				
				2-wire	12 V	M9BAV**	M9BA**	○	○	●	○	○					
	Reed auto switch			—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	—	Z76	●	—	●		—
2-wire		24 V	12 V				100 V	—	Z73	●	—	●	—	—	—	Relay, PLC	
			100 V or less				—	Z80	●	—	●	—	—				

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

* Lead wire length symbols: 0.5 m — (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.
* ○ : D-A9□/A9□V cannot be mounted.

* Since there are other applicable auto switches than listed, refer to page 2-502 for details.
* For details about auto switches with pre-wired connector, refer to Auto Switch Guide.
* Auto switches are shipped together (not assembled).

Specifications



Made to Order Specifications

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

Action	Double acting
Fluid	Air
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-10 to 60°C
Operating piston speed	20 to 200mm/s
Cushion	Rubber bumper at both ends
Lubrication	Not required
Stroke allowable tolerance	+1.0 0 mm

Standard Stroke

Model	Standard stroke (mm)	Intermediate stroke
MGF 40	30, 50, 75, 100	Intermediate strokes (increments of 5mm) other than standard strokes are available with a spacer of 5, 10, 15, 20, and 25mm. Example) MGF63-15 A spacer of 15mm is installed in the MGF63-30. Therefore, the total length is same as that of 30mm stroke.
MGF 63		
MGF100		

Theoretical Force



Bore (mm)	Rod dia. (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
40	25	OUT	1256	251	376	502	628	753	879	1004	1130	1256
		IN	765	153	229	306	382	459	535	612	688	765
63	36	OUT	3117	623	935	1246	1558	1870	2182	2493	2805	3117
		IN	2099	419	629	839	1049	1259	1469	1679	1889	2099
100	36	OUT	7853	1570	2356	3141	3926	4711	5497	6282	7067	7853
		IN	6835	1367	2050	2734	3417	4101	4784	5468	6151	6835

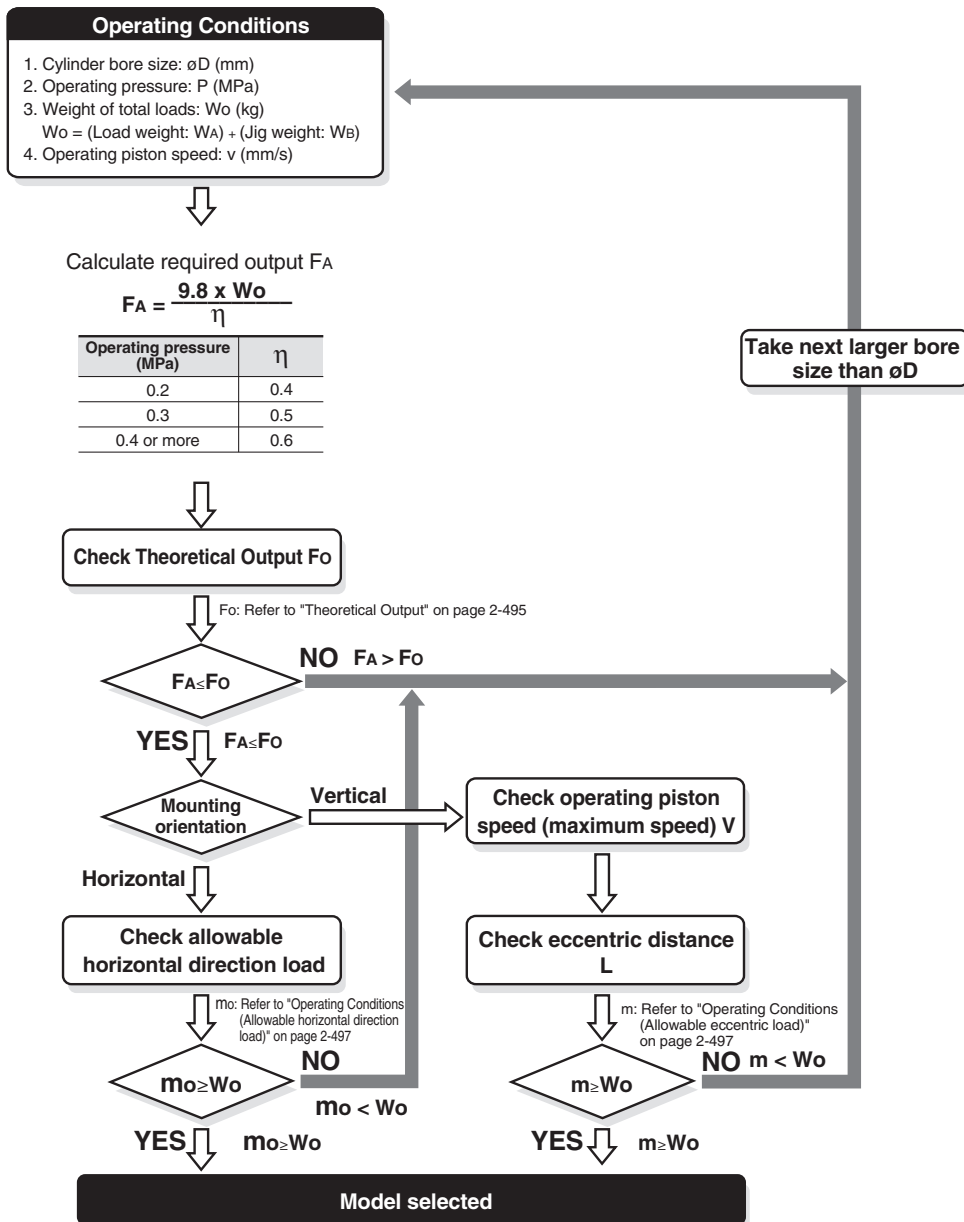
Note) Theoretical force=Pressure X Piston area

Weight

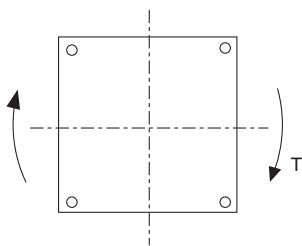
Model	Bore size (mm)	Standard stroke (mm)			
		30	50	75	100
MGF 40	40	2.0	2.4	3.0	3.6
MGF 63	63	4.1	4.8	5.7	6.6
MGF100	100	6.2	7.2	8.4	9.6

Series MGF

How to Select a Model



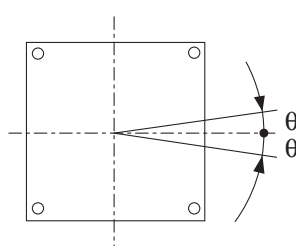
Allowable rotational torque



T (N·m)

Bore size (mm)	Stroke (mm)			
	30	50	75	100
40	7	5	4	3
63	22	16	12	10
100	30	22	17	13

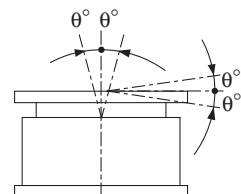
Non-rotating accuracy



Bore size (mm)	Non-rotating accuracy θ
40	$\pm 0.08^\circ$
63	$\pm 0.06^\circ$
100	$\pm 0.05^\circ$

Note) The value given for the non-rotating accuracy is applicable below the allowable rotational torque. If a greater rotational torque is applied, the non-rotating rod (page 2-498 (8)) bends, exceeding the value of the non-rotating accuracy.

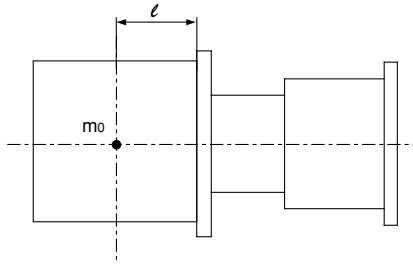
Deflection angle of plate for eccentric load



Bore size (mm)	Deflection angle θ°
40	$\pm 0.35^\circ$ or less
63	$\pm 0.3^\circ$ or less
100	

Operating Conditions

Allowable horizontal direction load

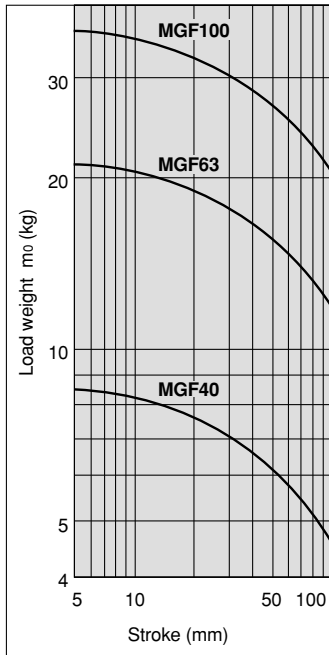
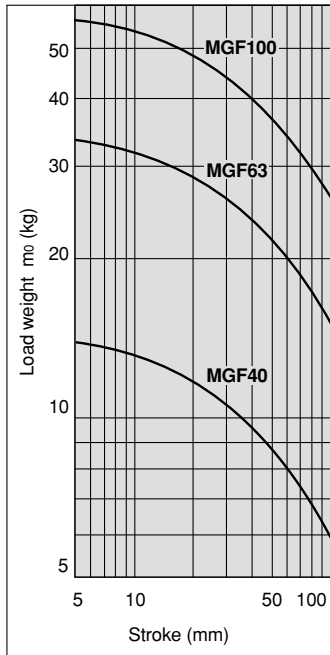


$l = 50\text{mm}$

Graph 1

$l = 100\text{mm}$

Graph 2

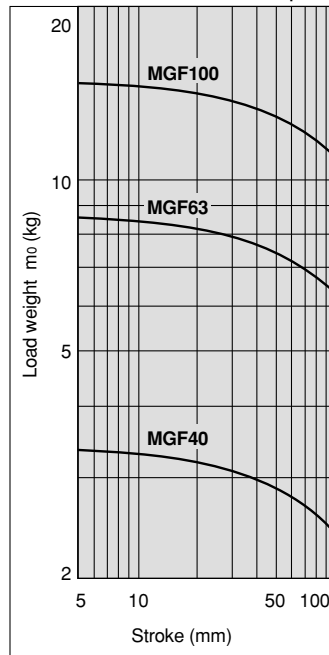
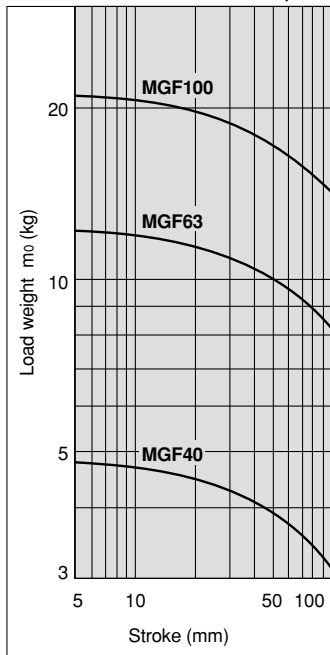


$l = 200\text{mm}$

Graph 3

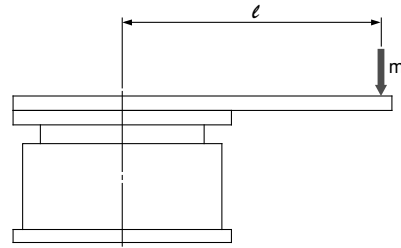
$l = 300\text{mm}$

Graph 4



Allowable eccentric load

The maximum value of load which can be applied at an eccentric position at a distance of l (mm) from the cylinder center.

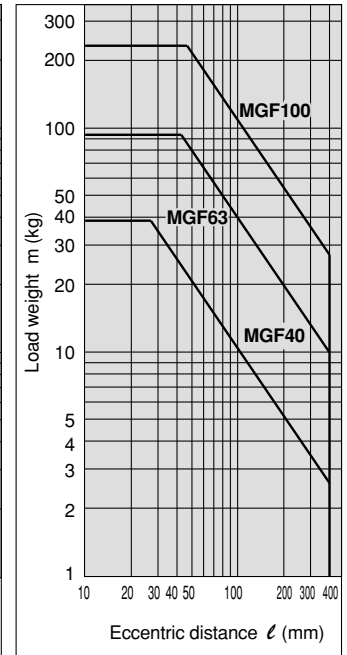
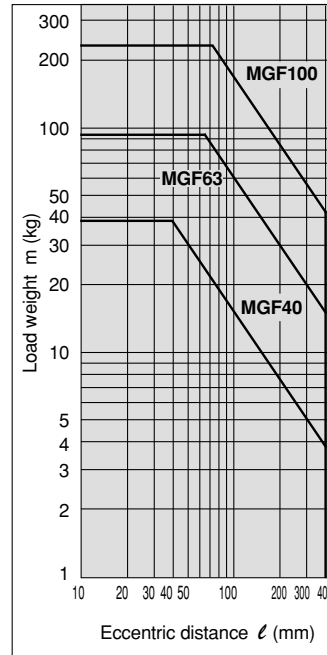


$v = 50\text{mm/s or less}$

Graph 5

$v = 100\text{mm/s or less}$

Graph 6

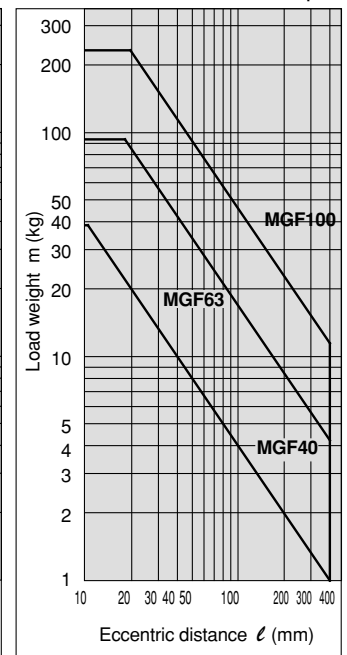
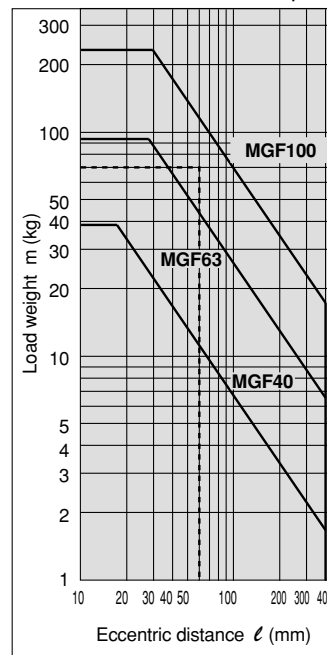


$v = 150\text{mm/s or less}$

Graph 7

$v = 200\text{mm/s or less}$

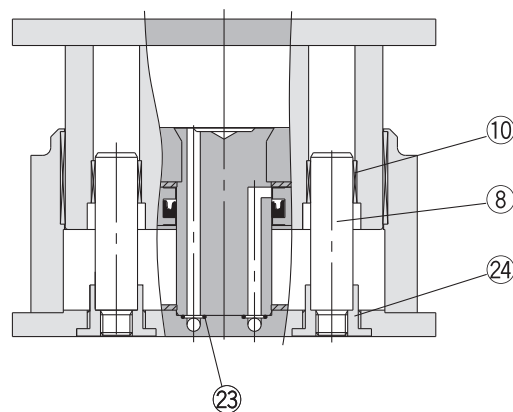
Graph 8



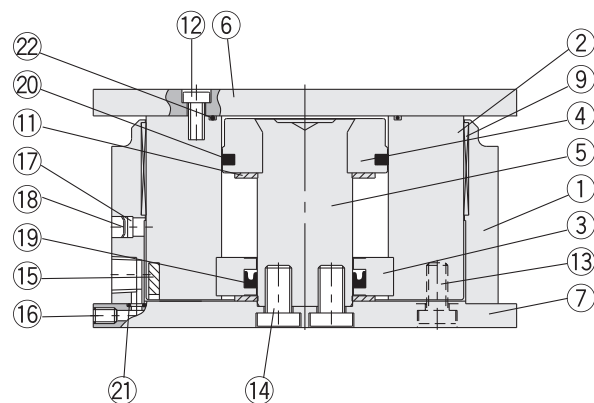
How to read the graph

- When the load weight is 70kg, eccentric distance is 60mm, and the maximum speed is 150mm/s □ Select MGF100 from Graph 7.
- When MGF63 is operated with a load weight 30kg and 100mm eccentric distance □ From Graph 6, the cylinder can be used at a maximum speed of 100mm/s or less.

Construction



When the cylinder is extended



When the cylinder is retracted

Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Clear anodized
2	Tube	Aluminum alloy	Hard anodized
3	Rod cover	Aluminum alloy	Clear anodized
4	Piston	Aluminum alloy	Chromated
5	Piston rod	Carbon steel	Electroless nickel plated
6	Plate	Aluminum alloy	Anodized
7	End plate	Aluminum alloy	Anodized
8	Non-rotating rod	Stainless steel	Hard chrome plated
9	Bushing	Resin	
10	Bushing (for non-rotating rod)	Lead-bronze casting	
11	Bumper	Urethane rubber	
12	Hexagon socket head cap screw A	Carbon steel	Nickel plated

Parts list

No.	Description	Material	Note
13	Hexagon socket head cap screw B	Carbon steel	Nickel plated
14	Hexagon socket head cap screw C	Carbon steel	Nickel plated
15	Magnet	Magnet	
16	Plug	Carbon steel	
17	Element	Resin	
18	Snap ring	Spring steel	
19	Rod seal	NBR	
20	Piston seal	NBR	
21	O-ring A	NBR	
22	O-ring B	NBR	
23	O-ring C	NBR	
24	Reinforcement ring	Carbon steel	Electroless nickel plated

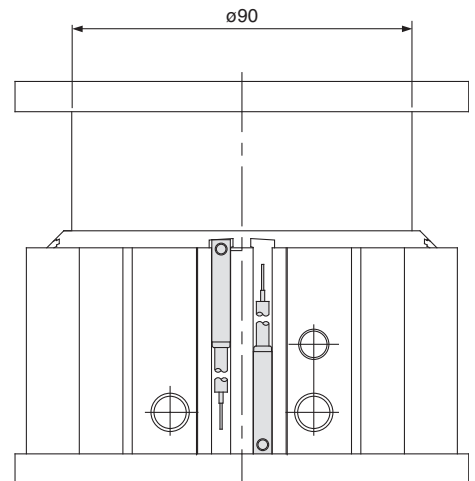
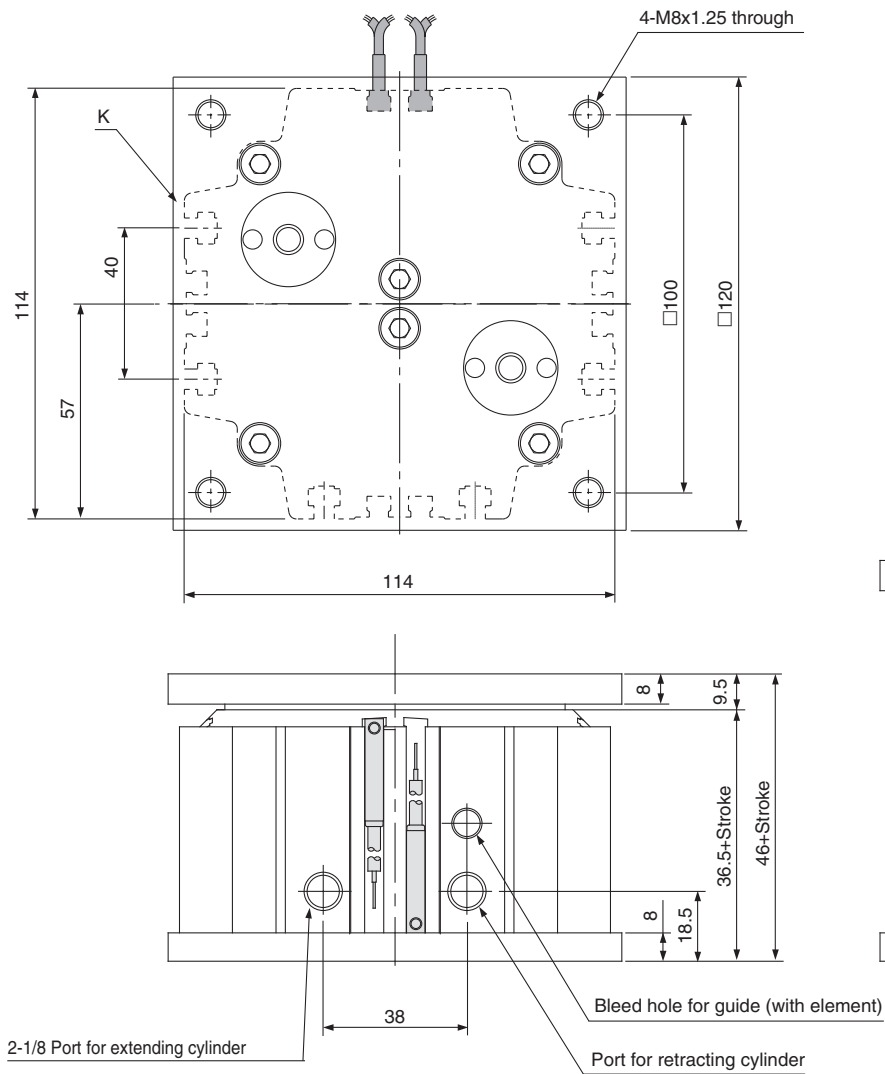
Replacement parts: Seal kits

Bore size (mm)	Order no.	Kit components
40	MGF40-PS	Items 19 through 23 from the table above.
63	MGF63-PS	
100	MGF100-PS	

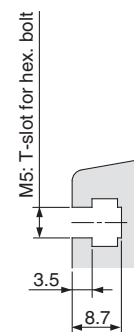
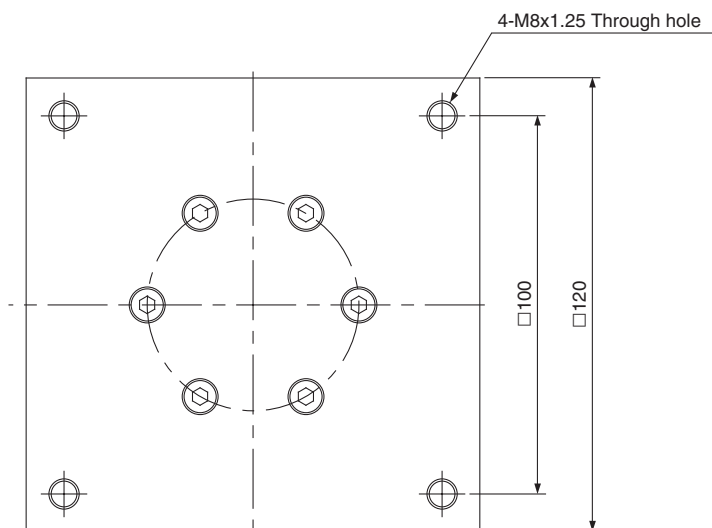
* Seal kit is not compatible with the clean series.
Seal kit includes 19 to 23. Order the seal kit based on each bore size.
* Since the seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-L-010 (10g)

Dimensions **Ø 40**

MGF40



When the cylinder is extended.

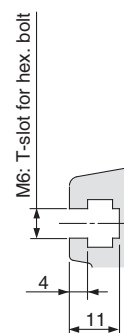
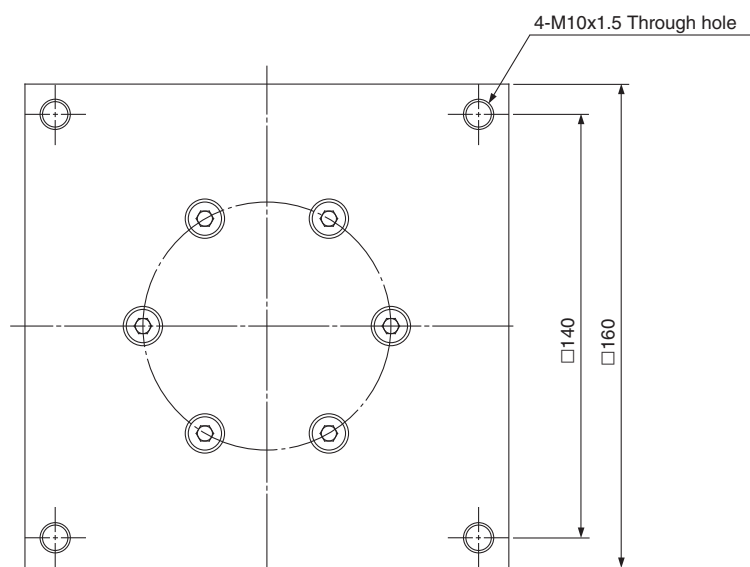
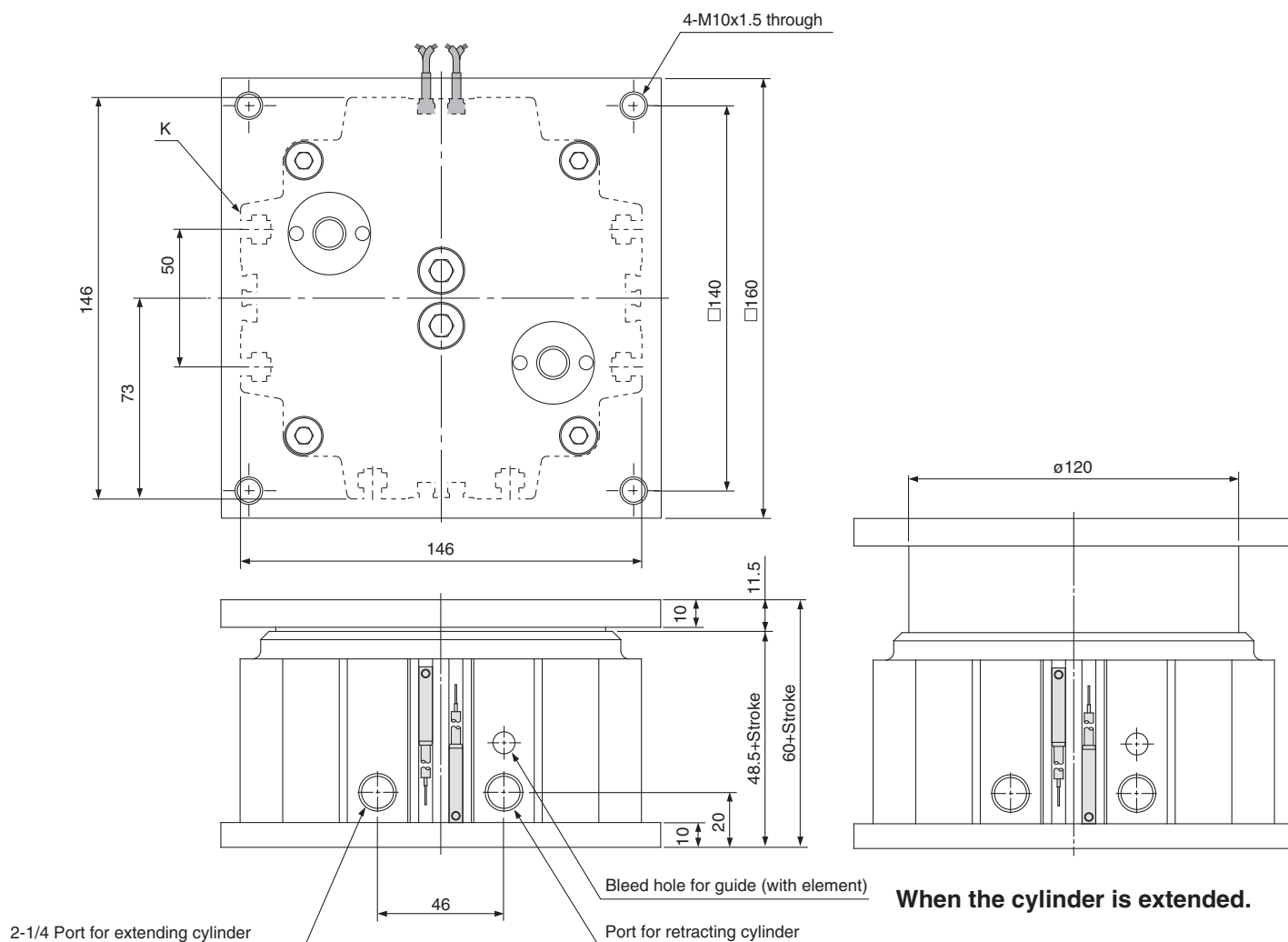


6-K (6 places)

Series MGF

Dimensions **Ø 63**

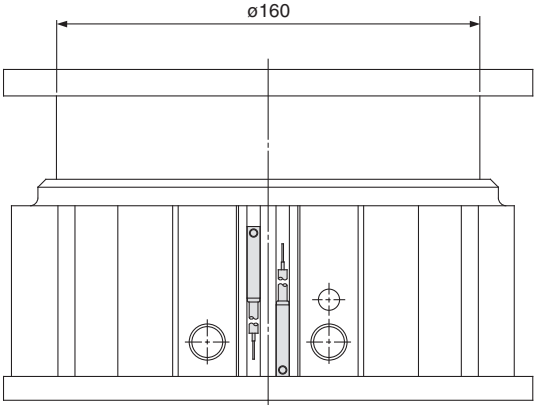
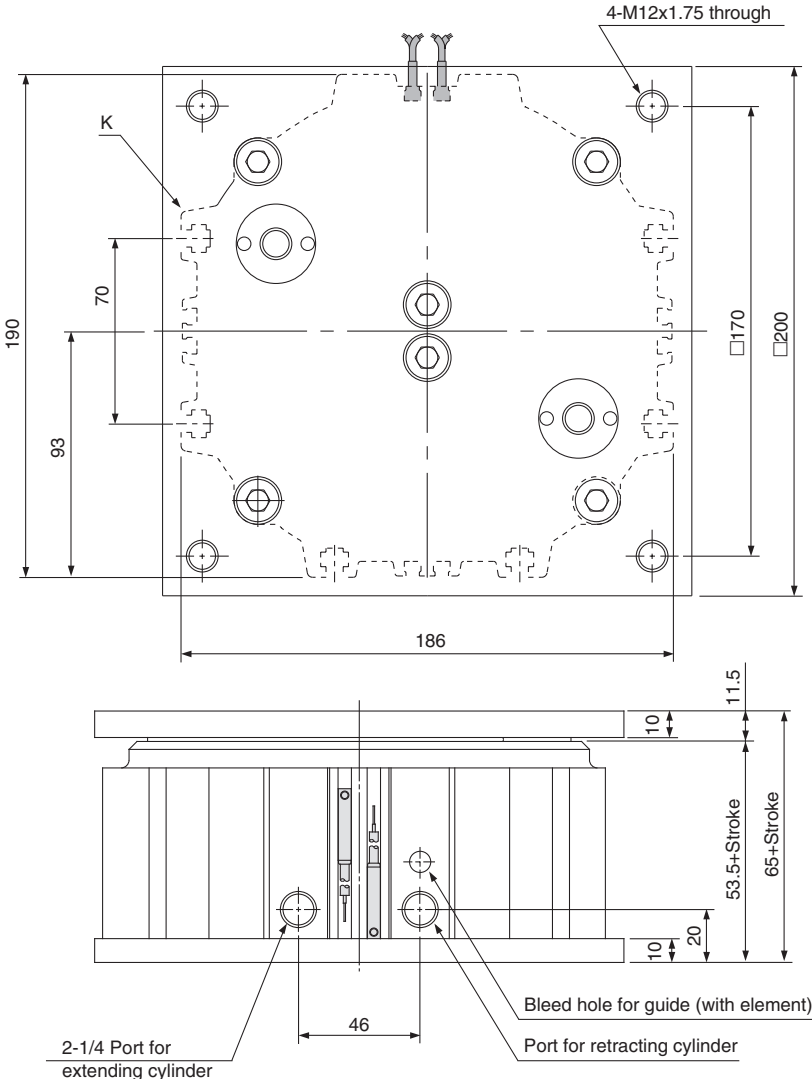
MGF63



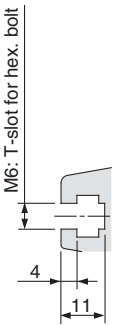
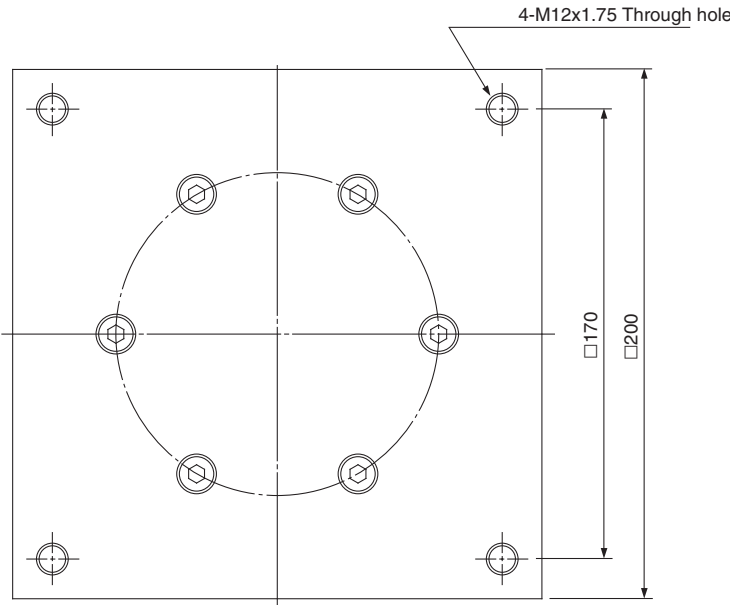
6-K (6 places)

ø100

MGF100



When the cylinder is extended.



6-K (6 places)

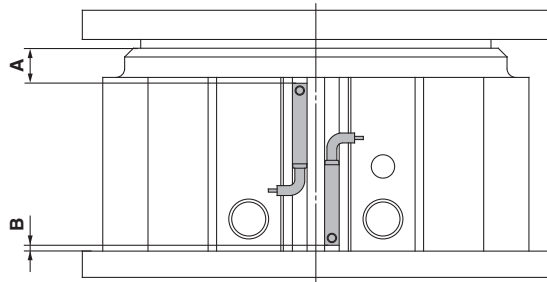
Series MGF

Auto Switch Mounting

Minimum Auto Switch Mounting Stroke

No. of auto switches mounted	Applicable auto switch model								
	D-M9□V	D-M9□WV D-M9□AV	D-M9□W D-M9□W	D-M9□A	D-Z7□ D-Z8□	D-Y69□ D-Y7PV	D-Y59□ D-Y7P	D-Y7□WV	D-Y7□W D-Y7BA
1 pc.	5	10	15	20	10	5	10	15	20
2 pcs.	10	10	20	25	15	10	10	15	20

Auto Switch Proper Mounting Position (Detection at Stroke End)



Auto Switch Proper Mounting Position

Auto switch model Bore size (mm)	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-Z7□/Z80 D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV D-Y7BA	
	A	B	A	B
40	9	4.5	4	0
63	19.5	4	14.5	0
100	24.5	4	19.5	0

Dimensions above denote the standard strokes.

Adjustment on A dimension is required for intermediate strokes.

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

Operating Range

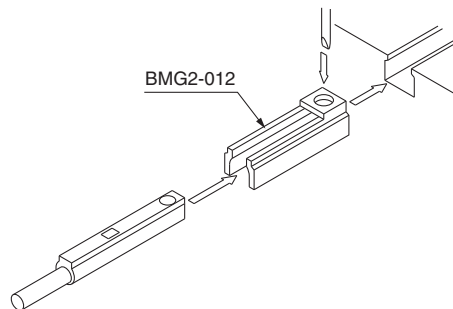
Auto switch model	Bore size (mm)		
	40	63	100
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	6	6.5	6
D-Z7□/Z80	10	10	10
D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV D-Y7BA	6	6	6

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)
There may be the case it will vary substantially depending on an ambient environment.

Auto Switch Mounting Bracket: Part No.

Auto switch model	Bore size (mm)
	ø40, ø63, ø100
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	BMG2-012

D-M9□(V)/M9□W(V)/M9□A(V)



Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to pages 1893 to 2007.

Auto switch type	Model	Electrical entry (Fetching direction)	Features
Solid state	D-Y69A, Y69B, Y7PV	Grommet (Perpendicular)	—
	D-Y7NWV, Y7PWV, Y7BWV		Diagnostic indication (2-color indication)
	D-Y59A, Y59B, Y7P	Grommet (In-line)	—
	D-Y7NW, Y7PW, Y7BW		Diagnostic indication (2-color indication)

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1960 and 1961 for details.

* Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H/Y7G/Y7H type) are also available. For details, refer to pages 1911 and 1913.