

# Non-rotating Double Power Cylinder

# Series MGZ

∅20, ∅25, ∅32, ∅40, ∅50, ∅63, ∅80

## How to Order

### Standard

MGZ    40    Z 100 Z73   

#### Mounting types

Nil	Basic type
L	Transaxial foot type
F	Front flange type
G	Rear flange type

#### Bore size

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

#### Port thread type

Nil	M5 x 0.8	∅20
	Rc	∅25
TN	NPT	∅32
		∅40
		∅50
TF	G	∅63
		∅80

#### Number of auto switches

Nil	2 pcs.
S	1 pc.

#### Auto switch type

Nil	Without auto switch (cylinder with built-in magnet)
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\*Select applicable auto switch models from the table below.

\*Auto switches are packed together when shipped (unassembled).

#### Stroke (mm)

Refer to the standard stroke table on page 6.

#### Coil scraper

Nil	Without
Z	With

### Applicable auto switches: ∅20, ∅25, ∅32

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch type		Lead wire length (m)*			Applicable load	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
Reed switch	—	Grommet	No	2-wire	24V	5V, 12V	100V or less	A90V	A90	●	●	○	IC circuit	Relay PLC
						12V	100V	A93V	A93	●	●	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN equiv.)	24V	5V, 12V	—	A96V	A96	●	●	—	IC circuit	Relay PLC
				3-wire (NPN)				F9NV	F9N	●	●	○	IC circuit	
				3-wire (PNP)				F9PV	F9P	●	●	○	—	
				2-wire				F9BV	F9B	●	●	○	—	
				3-wire (NPN)				F9NWV	F9NW	●	●	○	IC circuit	
				3-wire (PNP)				F9PWV	F9PW	●	●	○	—	
				2-wire				F9BWV	F9BW	●	●	○	—	
				—				F9BA	—	●	○	—		
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	24V	5V	—	—	Z76	●	●	—	IC circuit	Relay PLC
				2-wire				—	Z73	●	●	●	—	
				No				5V, 12V	100V or less	—	Z80	●	●	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay PLC
				3-wire (PNP)				Y7PV	Y7P	●	●	○	—	
				2-wire				Y69B	Y59B	●	●	○	—	
				3-wire (NPN)				Y7NWV	Y7NW	●	●	○	IC circuit	
				3-wire (PNP)				Y7PWV	Y7PW	●	●	○	—	
				2-wire				Y7BWV	Y7BW	●	●	○	—	
				—				Y7BA	—	●	○	—		

### Applicable auto switches: ∅40, ∅50, ∅63, ∅80

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch type		Lead wire length (m)*			Applicable load	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	24V	5V	—	—	Z76	●	●	—	IC circuit	Relay PLC
				2-wire				—	Z73	●	●	●	—	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay PLC
				3-wire (PNP)				Y7PV	Y7P	●	●	○	—	
				2-wire				Y69B	Y59B	●	●	○	—	
				3-wire (NPN)				Y7NWV	Y7NW	●	●	○	IC circuit	
				3-wire (PNP)				Y7PWV	Y7PW	●	●	○	—	
				2-wire				Y7BWV	Y7BW	●	●	○	—	
				—				Y7BA	—	●	○	—		

\*Lead wire length symbols: 0.5m..... Nil (Example) Y69B  
3m..... L (Example) Y69BL  
5m..... Z (Example) Y69BZ

Notes) • Solid state switches marked "○" are produced upon receipt of order.  
• Retrofitting of an auto switch on a cylinder that is originally ordered without one requires a switch spacer per the next page.

# Non-rotating Double Power Cylinder *Series MGZ*

## Specifications



Bore size (mm)	20	25	32	40	50	63	80
Action	Double acting/Single rod						
Fluid	Air						
Proof pressure	1.5MPa						
Max. operating pressure	1.0MPa						
Min. operating pressure	Standard stroke: 0.08MPa						
	Long stroke: 0.12MPa						
Ambient and fluid temperature	Without auto switch: -10° to 70°C (with no freezing)						
	With auto switch: -10° to 60°C (with no freezing)						
Lubrication	Non-lube						
Piston speed	OUT	50 to 700mm/s					
	IN	50 to 350mm/s	50 to 450mm/s				
Stroke length tolerance	Up to 250 <sup>+1.0</sup> <sub>0</sub> , 251 to 1000 <sup>+1.4</sup> <sub>0</sub>						
Cushion	Rubber bumper						
Screw tolerance	JIS class 2						
Mounting	Basic type, Transaxial foot type, Front flange type, Rear flange type						

## Standard Strokes

Bore sizes (mm)	Standard strokes (mm)	Long strokes (mm)
<b>20, 25</b>	75, 100, 125, 150, 175 200, 250, 300	350, 400, 450, 500 600, 700, 800
<b>32, 40, 50 63, 80</b>	75, 100, 125, 150, 175 200, 250, 300	350, 400, 450, 500, 600 700, 800, 900, 1000

Intermediate strokes and strokes shorter than 75 mm are also available.

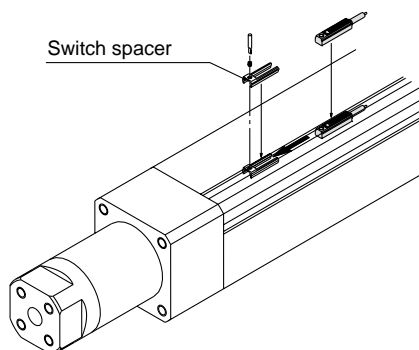
## Switch Spacer

Applicable bore size (mm)	<b>20, 25, 32</b>	<b>40, 50, 63, 80</b>
Switch spacer model	BMZY3-016	BMP1-032

## Mounting Bracket Part Nos.

Bore size (mm)	20	25	32	40
Foot	MGZ-L02	MGZ-L25	MGZ-L03	MGZ-L04
Flange	MGZ-F02	MGZ-F25	MGZ-F03	MGZ-F04

Bore size (mm)	50	63	80
Foot	MGZ-L05	MGZ-L06	MGZ-L08
Flange	MGZ-F05	MGZ-F06	MGZ-F08



## Weights

(kg)

Bore size (mm)	20	25	32	40	50	63	80
Standard weight	Basic type	0.47	0.69	1.04	1.90	3.03	8.63
	Foot	0.63	0.86	1.34	2.39	3.92	10.61
	Flange	0.58	0.83	1.32	2.34	3.79	9.92
Weight per each 50mm of stroke	All mounting brackets	0.18	0.21	0.28	0.39	0.59	1.17

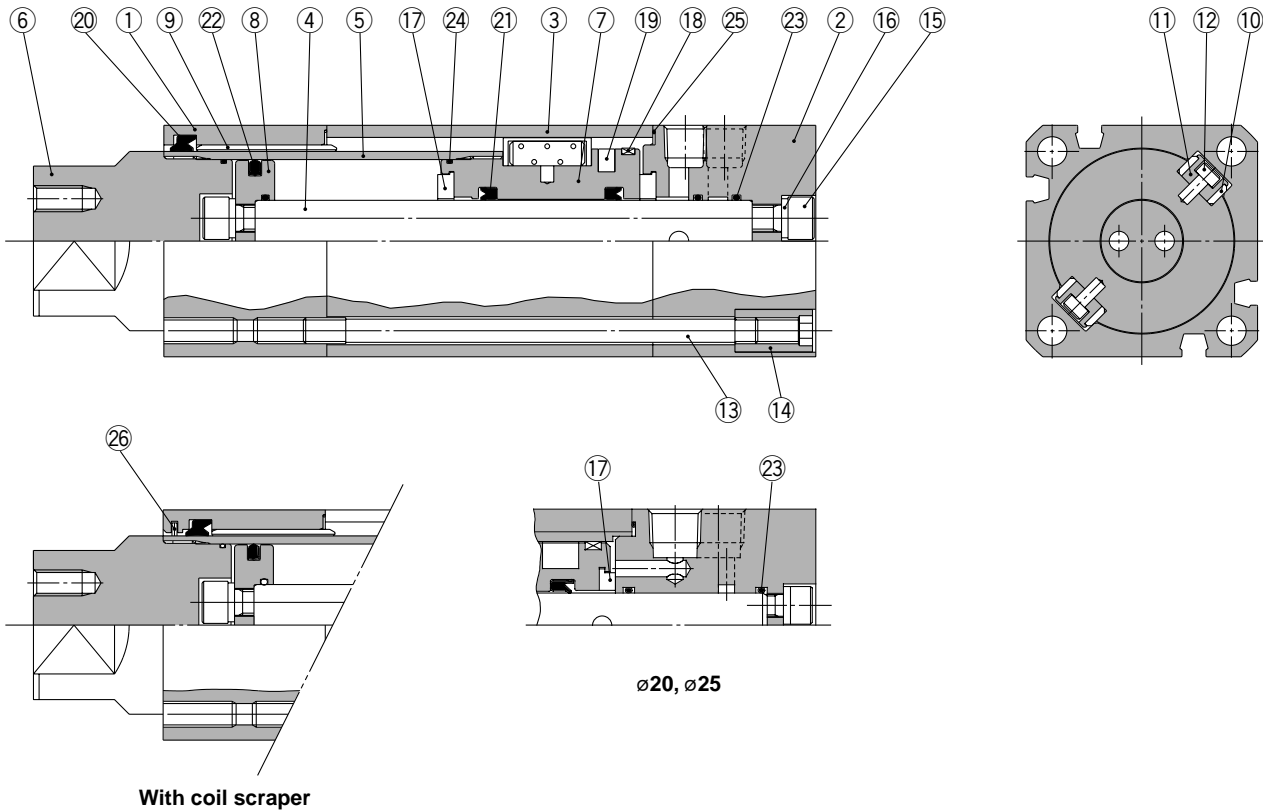
## Theoretical Output

(N)

Model	Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)								
					0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
<b>MGZ20</b>	20 × 25	10	OUT	726	145	218	290	363	436	508	581	653	726
			IN	236	47	71	94	118	141	165	189	212	236
<b>MGZ25</b>	25 × 30	12	OUT	1085	217	326	434	543	651	760	868	977	1085
			IN	378	76	113	151	189	227	265	302	340	378
<b>MGZ32</b>	36 × 32	16	OUT	1621	324	486	648	811	973	1135	1297	1459	1621
			IN	603	121	181	241	302	362	422	482	543	603
<b>MGZ40</b>	45 × 40	20	OUT	2533	507	760	1013	1267	1520	1773	2026	2280	2533
			IN	942	188	283	377	471	565	659	754	848	942
<b>MGZ50</b>	55 × 50	25	OUT	3848	770	1154	1539	1924	2309	2694	3078	3463	3848
			IN	1473	295	442	589	737	884	1031	1178	1326	1473
<b>MGZ63</b>	68 × 63	32	OUT	5945	1189	1784	2378	2973	3567	4162	4756	5351	5945
			IN	2313	463	694	925	1157	1388	1619	1850	2082	2313
<b>MGZ80</b>	87 × 80	40	OUT	9715	1943	2915	3886	4858	5829	6801	7772	8744	9715
			IN	3770	754	1131	1508	1885	2262	2639	3016	3393	3770

# Series MGZ

## Construction



### Parts list

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear anodized
2	Head cover	Aluminum alloy	Clear anodized
3	Cylinder tube	Aluminum alloy	Hard anodized
4	Piston rod	Aluminum alloy	Hard anodized
5	Tube rod	Carbon steel tube	Hard chromium electronplated
6	Tube rod cover	Carbon steel	Electroless nickel plated
7	Piston	Aluminum alloy	Chromated
8	Stationary piston	Aluminum alloy	Chromated
9	Bushing	Lead-bronze casting	
10	Thrust plate	Lead-bronze casting	
11	Holder	Aluminum alloy	Chromated
12	Pin	Carbon steel	Zinc chromated
13	Tie rod	Carbon steel	Corrosion resistant chromated

No.	Description	Material	Note
14	Tie rod nut	Carbon steel	Nickel plated
15	Hexagon socket head screw	Chrome molybdenum steel	Nickel plated
16	Spring washer	Steel wire	Nickel plated
17	Bumper	Urethane rubber	
18	Wear ring	Resin	
19	Magnet	Magnet	
20*	Rod seal A	NBR	
21	Rod seal B	NBR	
22	Piston seal	NBR	
23	Piston gasket	NBR	
24	Tube rod gasket	NBR	
25*	Cylinder tube gasket	NBR	
26	Coil scraper	Metal	

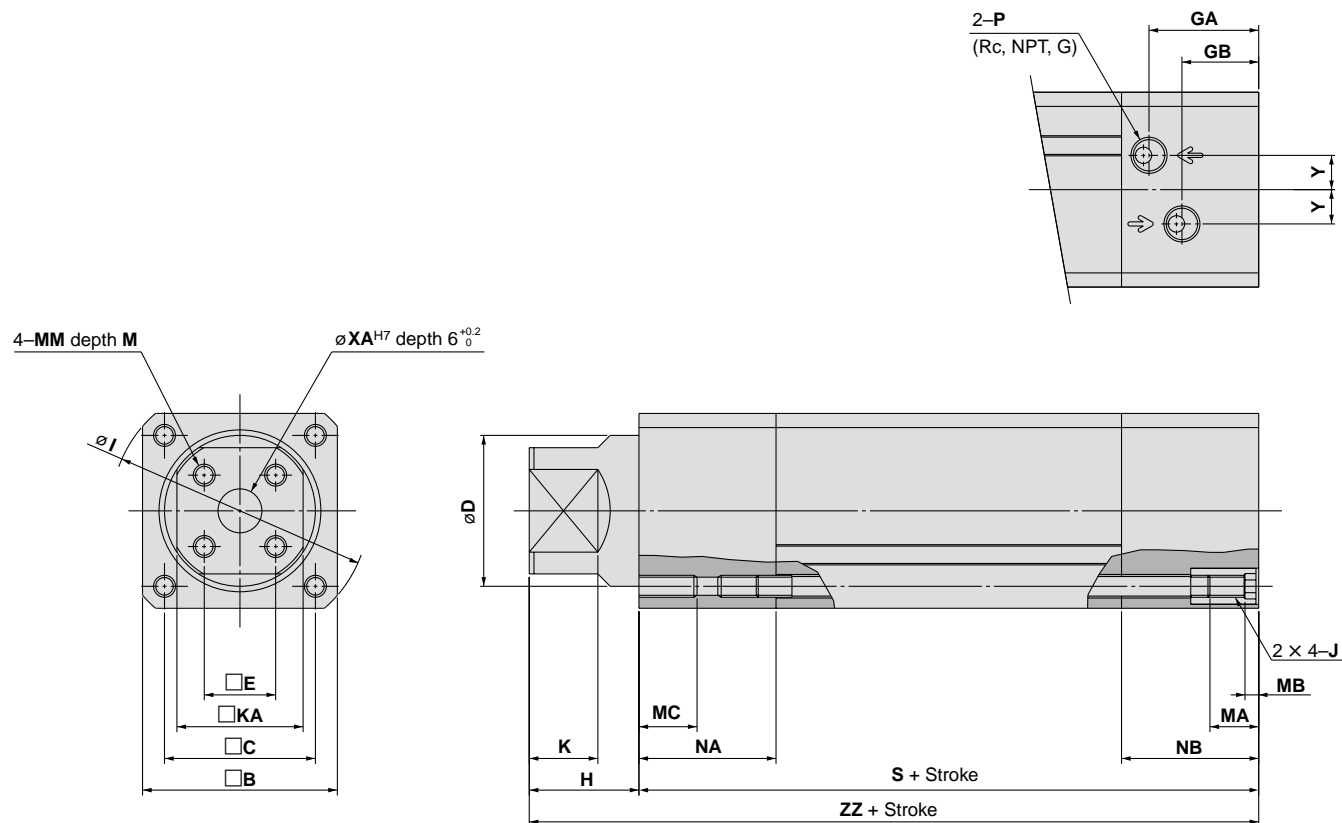
### Replacement parts: Seal kits

Bore size (mm)	Seal kit no.	Kit components
20	MGZ20-PS	Items 20 and 25 from the above chart
25	MGZ25-PS	
32	MGZ32-PS	
40	MGZ40-PS	
50	MGZ50-PS	
63	MGZ63-PS	
80	MGZ80-PS	

\* Seal kits consist of items 20 and 25, and can be ordered by using the seal kit number corresponding to each bore size.

## Dimensions

### Basic type



The allowable angle difference of  $\square E$  to  $\square B$  should be limited to  $\pm 1.5^\circ$ .

Bore size (mm)	Stroke range	B	C	D	E	KA	GA	GB	H	I	J	K	M
20	to 800	39	29	25	11	21	16	12.5	20	51	M5 × 0.8	11	8
25	to 800	43	33	30	12	24	26	18	21	57	M5 × 0.8	12	8
32	to 1000	49	38	36	16	30	28.5	19.5	35	66	M6 × 1	22	10
40	to 1000	59	46	45	21	36	34.5	23.5	40	78	M6 × 1	25	10
50	to 1000	71	55	55	26	46	40	28	45	92	M8 × 1.25	25	14
63	to 1000	82	66	68	32	53	46.5	34.5	50	110	M8 × 1.25	25	14
80	to 1000	106	86	87	36	65	54	36	50	144	M12 × 1.75	25	20

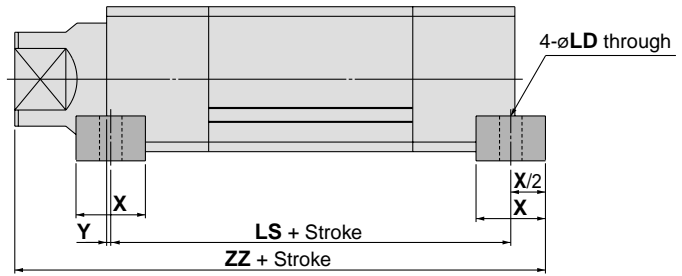
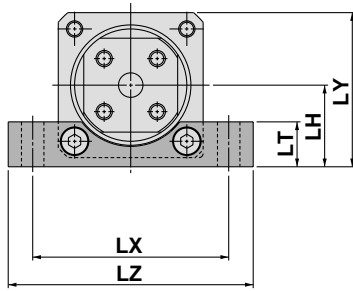
  

Bore size (mm)	Stroke range	MA	MB	MC	MM	NA	NB	P	S	XA	Y	ZZ
20	to 800	11	4	10	M5 × 0.8	19	21	M5 × 0.8	86	6	5	106
25	to 800	11	4	10	M5 × 0.8	26	34	1/8	107	6	6.5	128
32	to 1000	16	4	12	M6 × 1	37		1/8	120	12	8.5	155
40	to 1000	16	4	12	M6 × 1	44		1/4	138	12	9.5	178
50	to 1000	16	5	15	M8 × 1.25	50		1/4	150	16	12.5	195
63	to 1000	16	5	15	M8 × 1.25	56		1/4	171	16	15	221
80	to 1000	20	6	23	M12 × 1.75	66		3/8	198	20	20	248

# Series MGZ

## Dimensions: With Mounting Bracket

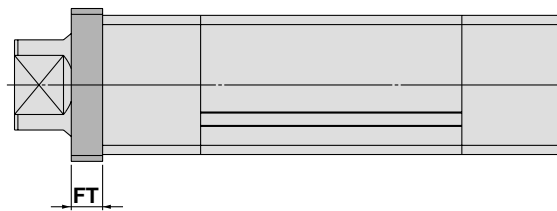
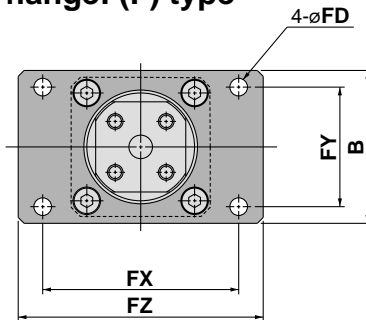
### Transaxial foot: (L) type



(mm)

Bore size (mm)	Stroke range	X	Y	LD	LH	LT	LX	LY	LZ	LS	ZZ
20	to 800	16	0	6.6	22	13	58	41.5	72	86	114
25	to 800	16	0	6.6	24	14	62	45.5	75	107	136
32	to 1000	22	0	9	27.5	16	70	52	88	120	166
40	to 1000	24	0	9	34	19	80	63.5	100	138	190
50	to 1000	32	1	11	40	22	96	75.5	120	148	210
63	to 1000	36	3	13	47	24	110	88	140	165	236
80	to 1000	40	3	17	59	30	146	112	180	192	265

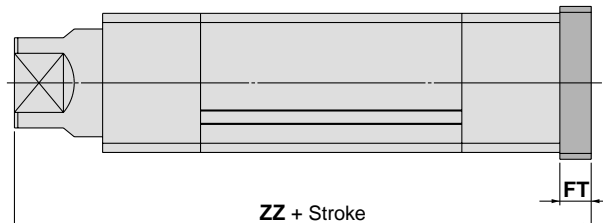
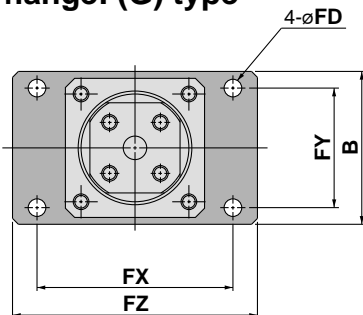
### Front flange: (F) type



(mm)

Bore size (mm)	Stroke range	B	FD	FT	FX	FY	FZ
20	to 800	44	5.5	8	50	34	60
25	to 800	48	6.6	8	57	36	70
32	to 1000	60	9	12	64	46	78
40	to 1000	74	9	12	80	58	100
50	to 1000	78	9	16	100	61	125
63	to 1000	100	12	16	112	75	138
80	to 1000	120	14	16	132	95	155

### Rear flange: (G) type



(mm)

Bore size (mm)	Stroke range	B	FD	FT	FX	FY	FZ	ZZ
20	to 800	44	5.5	8	50	34	60	114
25	to 800	48	6.6	8	57	36	70	136
32	to 1000	60	9	12	64	46	78	167
40	to 1000	74	9	12	80	58	100	190
50	to 1000	78	9	16	100	61	125	211
63	to 1000	100	12	16	112	75	138	237
80	to 1000	120	14	16	132	95	155	264

## Solid-state Auto Switches for Direct Mounting Series D-M9N(V)/D-M9P(V)/D-M9B(V)



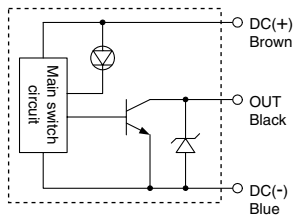
### Grommet

- Reduced load currents for two-wire model (2.5 to 40 mA)
- Compliance with lead-free requirements
- Use of UL-approved lead wires (style 2844)

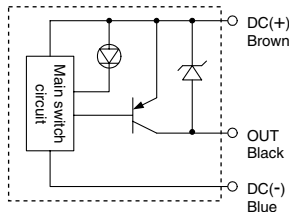


### Internal circuits

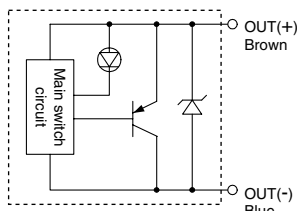
#### D-M9N/M9NV



#### D-M9P/M9PV



#### D-M9B/M9BV



### Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□/D-M9□V (with Indicator light)						
Model number	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring	Three-wire			Two-wire		
Output	NPN		PNP		—	
Applicable load	Integrated circuit, relay and PLC				24 V DC relay and PLC	
Power voltage	5, 12, or 24 V DC (4.5 to 28 V DC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 V DC or less		—		24 V DC (10 to 28 V DC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA max. at 24 V DC				0.8 mA or less	
Indicator light	Red LED lights when ON.					

- Lead wire: oil-proof heavy-duty vinyl cable  
2.7 x 3.2 with elliptic cross-section, 0.15 mm<sup>2</sup>, two cores (D-M9B),  
or three cores (D-M9N and D-M9P)

### Solid state switch specifications

Leakage current	3-wire: 100 μA or less; 2-wire: 0.8 mA max.
Operating time	1 ms or less
Impact resistance	1000 m/s <sup>2</sup>
Insulation resistance	50 MΩ or more at 500 V DC (between lead wire and case)
Withstand voltage	1000 V AC for 1 min. (between lead wire and case)
Ambient temperature	-10°C to 60°C
Enclosure	IEC529 standard IP67, JIS C 0920 watertight construction

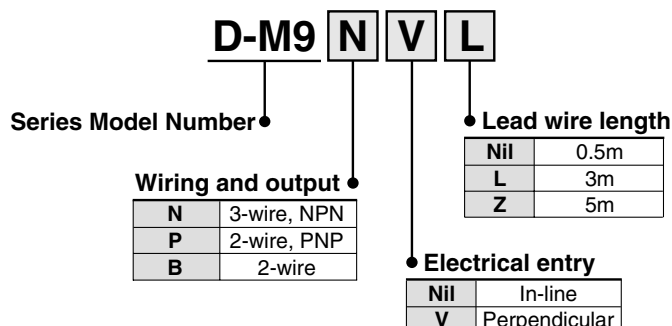
### Weight

Unit: g

Model	D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length (m)			
0.5	8	8	7
3	41	41	38
5	68	68	63

### How to Order

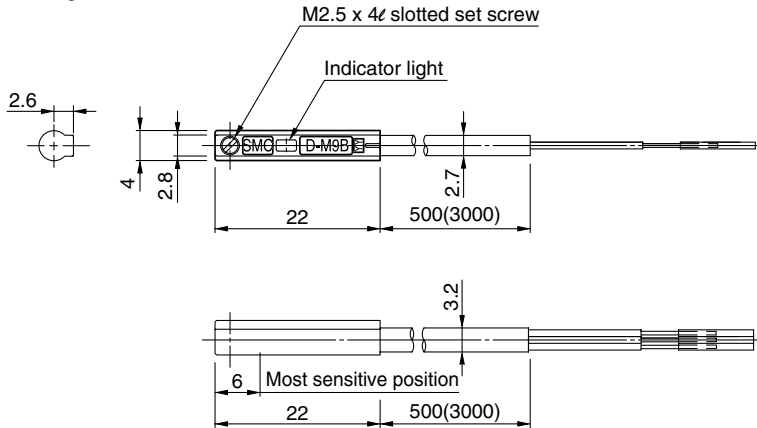
#### Standard Model Number



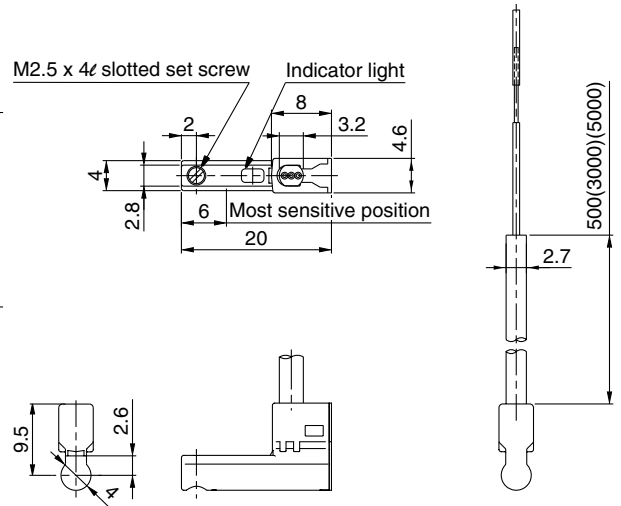
# Series D-M9

## Auto Switch Dimensions

### D-M9□



### D-M9□V



## ⚠ Specific Product Precautions

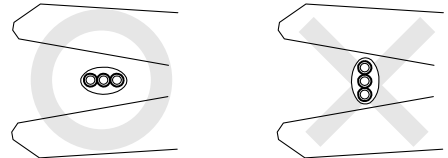
Be sure to read before handling. Contact SMC when the required specification is out of range.

### Handling

## ⚠ Caution

Observe the following precautions when handling the product.

- The D-M9 series of auto switches is not overcurrent-protected. Faulty wiring or short circuit may result in breakage or burning-out of the switch.
- When stripping the cable clad, be careful about the orientation of the cable being stripped. The insulator may be accidentally torn or damaged depending on the orientation, as shown on the right.



- We recommend the following tools

Manufacturer	Product name	Product number
VESSEL	Wire stripper	No 3000G
Tokyo Ideal	Strip master	45-089

\* The stripper for the round shape cords (ø2.0) is for a 2-wire style.

- Please do not attach the switch with any other screws than those already attached to the auto switch body.

## The operation range is shorter than that of the conventional models.

If the auto switch replaces the conventional model, it may not function depending on its application because the operation range is shorter. Refer to the examples below.

- In an application where at the end, the stopping position shifting range is larger than the operation range. For example, pushing a work against something, or pressing a work into a hole, or clamping a work.
- In an application where the auto switch is used to detect an intermediate stopping position. (Detecting time is shortened.)

Note) Please contact SMC for the operation range details for each actuator.

The switch is damaged instantly when a load is shortened since short circuit protection is not built-in. Pay special attention to avoid reversing the connection of the brown lead of the power supply line and the black output line connection.