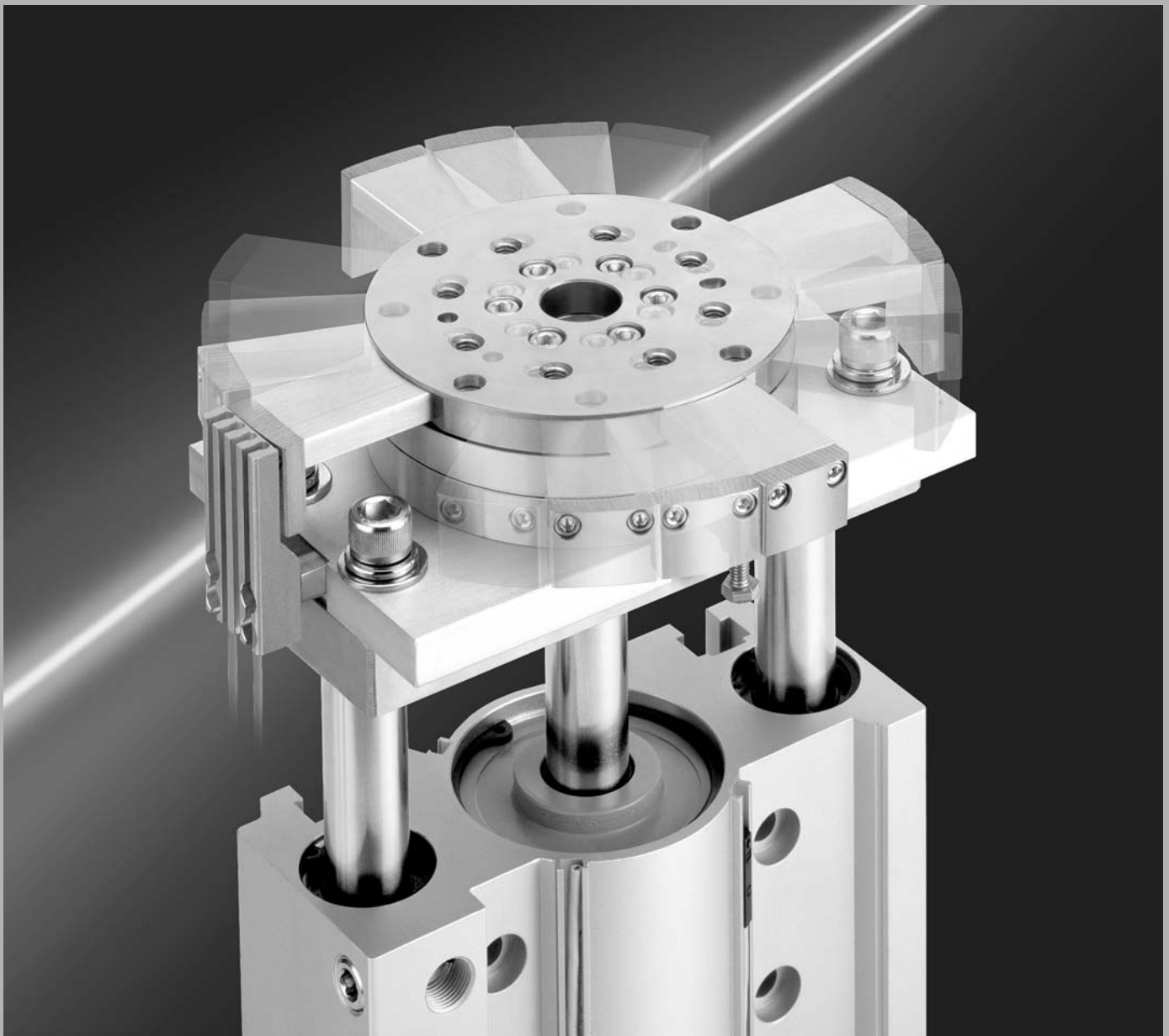


Cylinder with Turntable

Series MGT

ø63, ø80, ø100



Flat cylinder with guide (Series MGP) and manual turntable combination

MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual
-X□

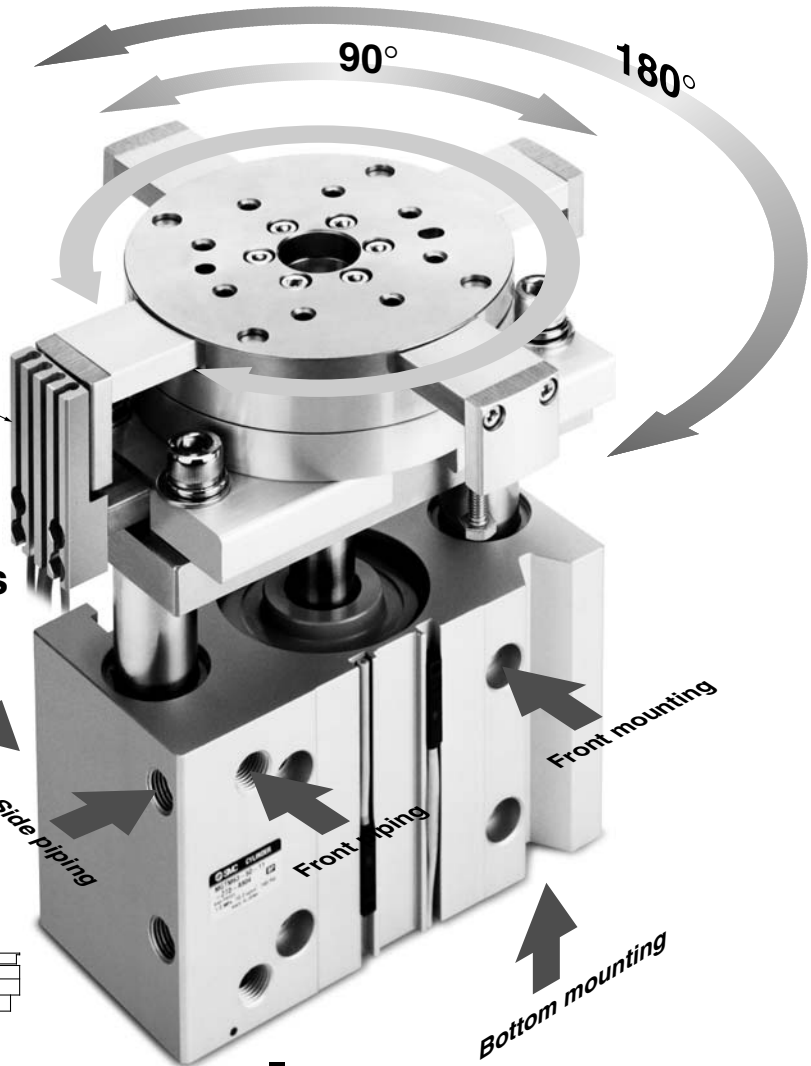
Cylinder with Turntable

Series MGT

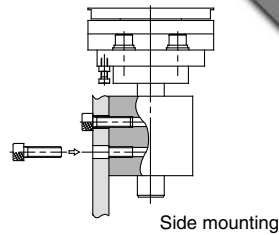
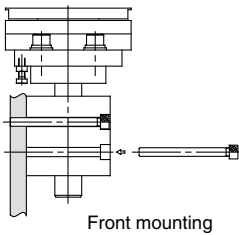
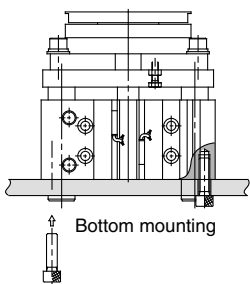
ø63, ø80, ø100

Flat cylinder with guide (Series MGP) and manual turntable combination
 High precision bearings for smooth turning return movement
 Table unit has positioning mechanisms for each 90° and 180° of rotation

Rotation position is detected by provision of an auto switch sensor

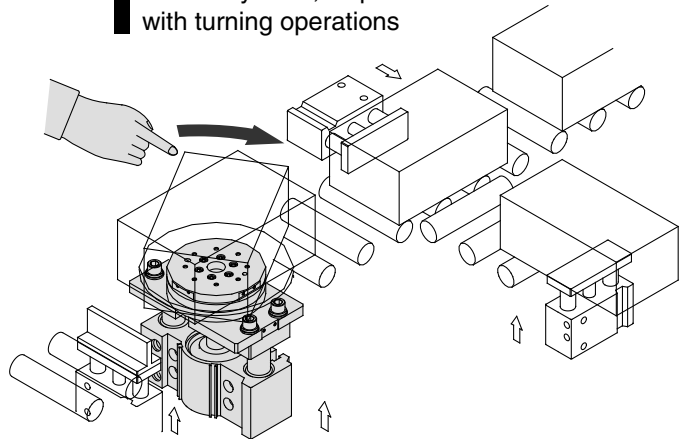


Can be mounted 3 ways



Application Example

Assembly lines, inspection lines etc.
with turning operations



Series Variations

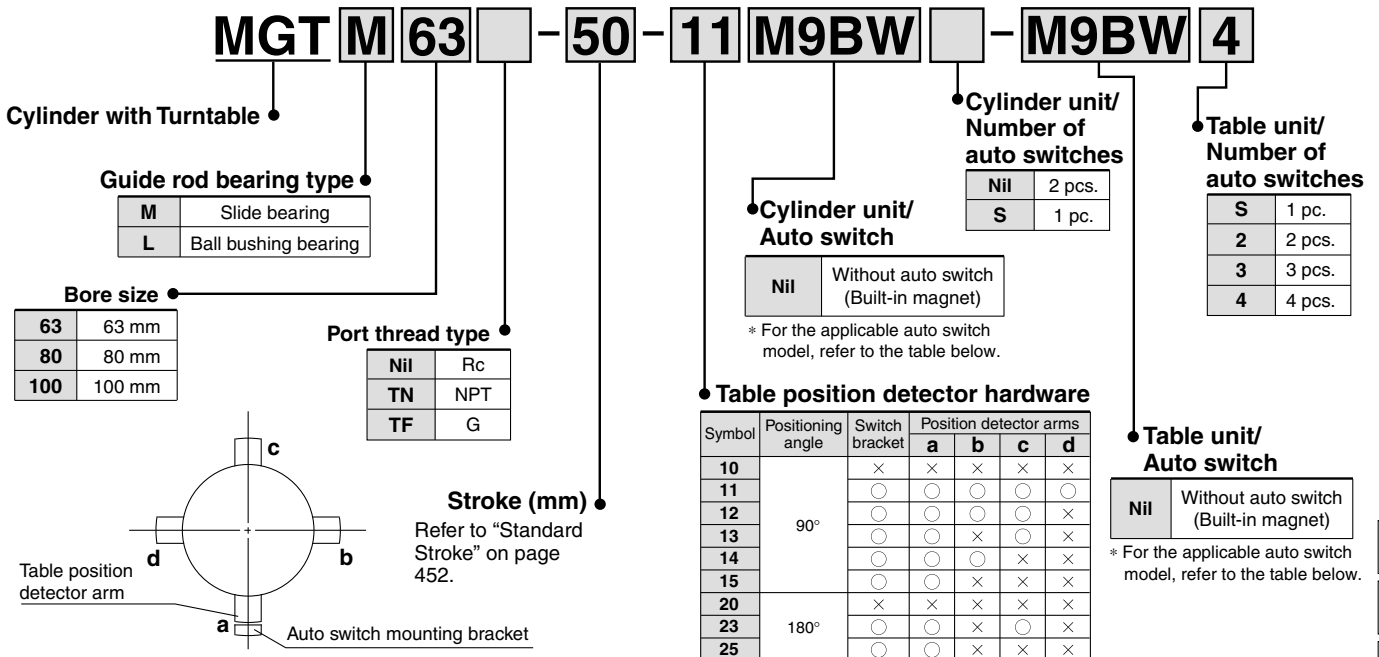
Model	Bearing type	Bore size (mm)	Standard stroke (mm)
MGTM	Slide bearing	63	25, 50, 75, 100, 125, 150, 175, 200
		80	
MGTL	Ball bushing bearing	100	

Cylinder with Turntable

Series MGT

ø63, ø80, ø100

How to Order



Cylinder Unit/Applicable Auto Switch/Refer to pages 1719 to 1827 for detailed specifications of 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)		IC circuit	Relay, PLC		
Solid state switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○			
				2-wire	24V	12 V	—	M9BV	M9B	●	●	●	○	○	—		
				3-wire (NPN)				M9NWV	M9NW	●	●	●	○	○			IC circuit
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○			
				2-wire				M9BWB	M9BW	●	●	●	○	○			
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	24V	12 V	100 V or less	A96V	A96	●	—	●	—	—	IC circuit	Relay, PLC	
				2-wire				A93V	A93	●	—	●	—	—	—		
				—	A90V	A90	●	—	●	—	—	—	—	IC circuit			

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

* Refer to page 457 for applicable auto switches other than listed above.
 * Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.
 * Auto switches are shipped together (not assembled).

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

Table Unit/Applicable Auto Switch/Refer to pages 1719 to 1827 for detailed specifications of 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	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	IC circuit		Relay, PLC		
Solid state switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24V	12 V	—	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9P	●	●	●	○	○			
				2-wire	24V	12 V	—	M9B	●	●	●	○	○	—		
				3-wire (NPN)				M9NW	●	●	●	○	○			IC circuit
				3-wire (PNP)				M9PW	●	●	●	○	○			
				2-wire				M9BW	●	●	●	○	○			
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	24V	12 V	100 V or less	A96	●	—	●	—	—	IC circuit	Relay, PLC	
				2-wire				A93	●	—	●	—	—	—		
				—	A90	●	—	●	—	—	—	—	IC circuit			

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

* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.
 * Auto switches are shipped together (not assembled).

* Solid state auto switches marked "○" are produced upon receipt of order.
 * The in-line electrical entry type cannot be mounted.

MGT
MGT
MGT
MGT
MGT
MGT
MGT
MGT

D-□
-X□
Individual -X□

Series MGT



Specifications

Bore size (mm)	63	80	100
Action	Double acting		
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Minimum operating pressure	0.1 MPa		
Ambient & fluid temperatures	-10 to 60°C (No freezing)		
Piston speed	50 to 400 mm/s		
Cushion	Rubber bumper on both ends		
Lubrication	Non-lube		
Stroke length tolerance	+1.5 0 mm		
Table rotation system	Manual type		
Table rotation direction	Right, left, free repetitive rotation		
Table angle of rotation	Quarter circle 90°, half circle 180°, with positioning mechanism		

Standard Stroke

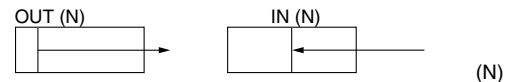
Bore size (mm)	Standard strokes (mm)
63	25, 50, 75, 100, 125, 150, 175, 200
80	
100	

Intermediate strokes

Intermediate strokes (in 5 mm increments) other than the standard strokes are made by installing spacers of 5, 10, 15 and 20 mm widths.

(Ex.) 1.MGTM63-35St is made by installing a 15 mm spacer inside a MGTM63-50St, however the overall length will be the same as the 50St.

Theoretical Output



Bore size (mm)	Rod size (mm)	Actuation 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			
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)

Additional Bracket Mass

Bore size (mm)	Symbols for table unit position detector bracket (kg)					
	10	11	12	13	14	15
	20	—	—	23	—	25
63	0	0.21	0.16	0.12	0.12	0.08
80	0	0.24	0.19	0.14	0.13	0.08
100	0	0.25	0.19	0.14	0.14	0.09

Mass

MGTM63 to 100 (Slide bearing)

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
63	MGTM63	6.96 (4.78)	7.81 (5.12)	8.57 (5.38)	9.32 (5.63)	10.08 (5.88)	10.83 (6.14)	11.59 (6.39)	13.10 (6.90)
		12.07 (9.29)	13.31 (9.96)	14.25 (10.33)	15.18 (10.71)	16.12 (11.08)	17.06 (11.46)	18.00 (11.83)	19.87 (12.58)
80	MGTM80	17.53 (13.51)	19.33 (14.45)	20.89 (14.99)	22.22 (15.53)	23.55 (16.07)	24.88 (16.60)	26.21 (17.14)	28.87 (18.22)
		17.53 (13.51)	19.33 (14.45)	20.89 (14.99)	22.22 (15.53)	23.55 (16.07)	24.88 (16.60)	26.21 (17.14)	28.87 (18.22)

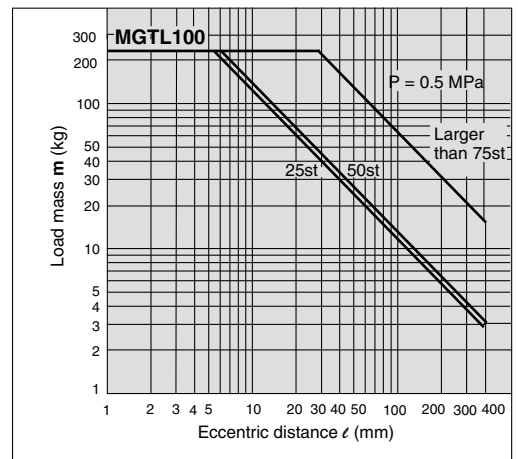
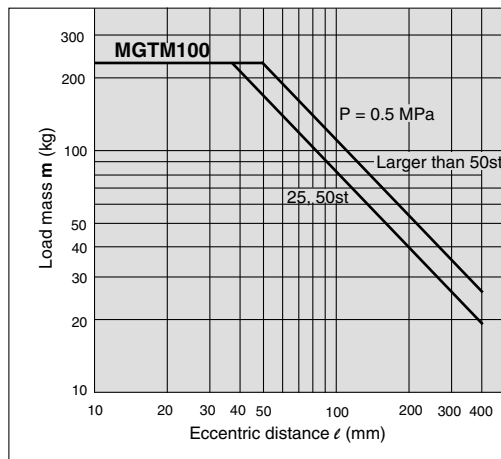
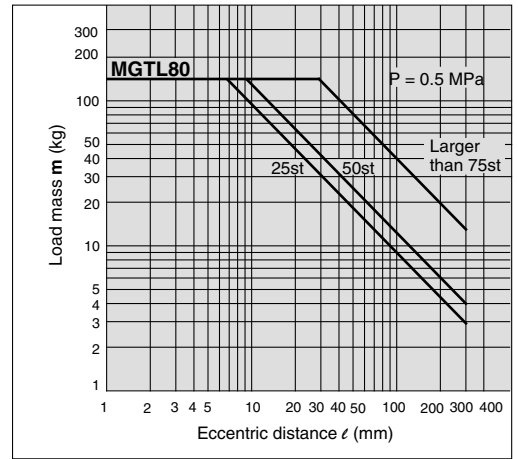
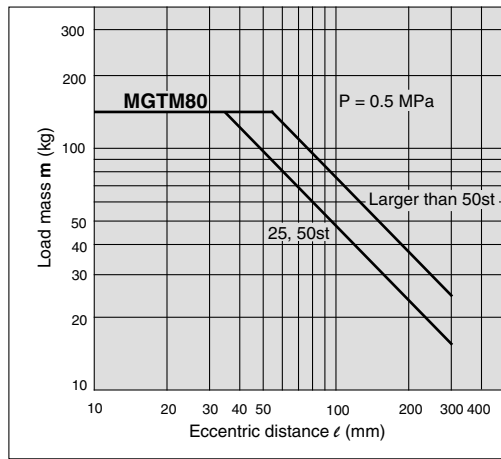
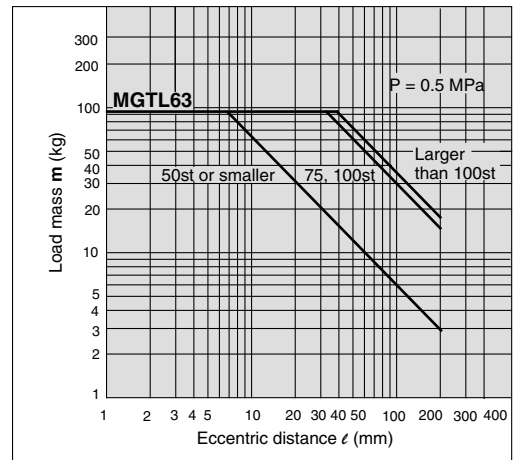
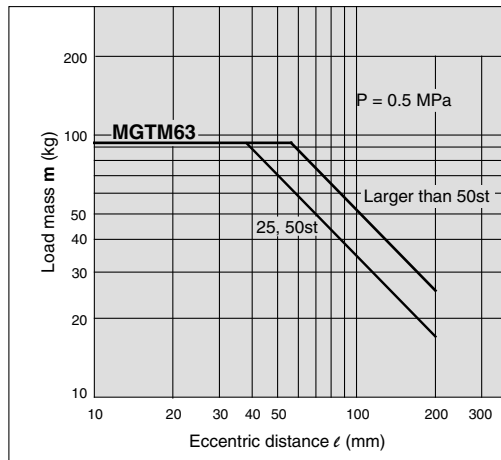
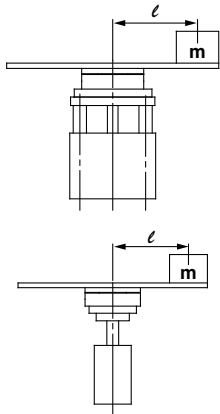
MGTL63 to 100 (Ball bushing bearing)

Bore size (mm)	Model	Standard stroke (mm)							
		25	50	75	100	125	150	175	200
63	MGTL63	6.62 (4.33)	7.49 (4.61)	8.15 (4.80)	8.91 (5.08)	9.57 (5.27)	10.24 (5.45)	10.90 (5.64)	12.23 (6.01)
		12.03 (8.92)	13.33 (9.44)	14.15 (9.73)	14.97 (10.02)	15.79 (10.31)	16.61 (10.60)	17.43 (10.89)	19.07 (11.46)
80	MGTL80	17.53 (12.84)	19.33 (13.62)	20.51 (14.04)	21.69 (14.46)	22.87 (14.87)	24.04 (15.29)	25.22 (15.70)	27.58 (16.54)
		17.53 (12.84)	19.33 (13.62)	20.51 (14.04)	21.69 (14.46)	22.87 (14.87)	24.04 (15.29)	25.22 (15.70)	27.58 (16.54)

Numbers inside () indicate the mass of moving parts.

Operating Conditions

Allowable eccentric load mass



MGJ

MGP

MGQ

MGG

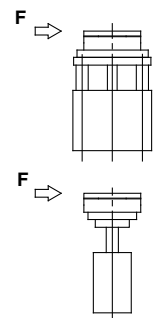
MGC

MGF

MGZ

MGT

Allowable side load



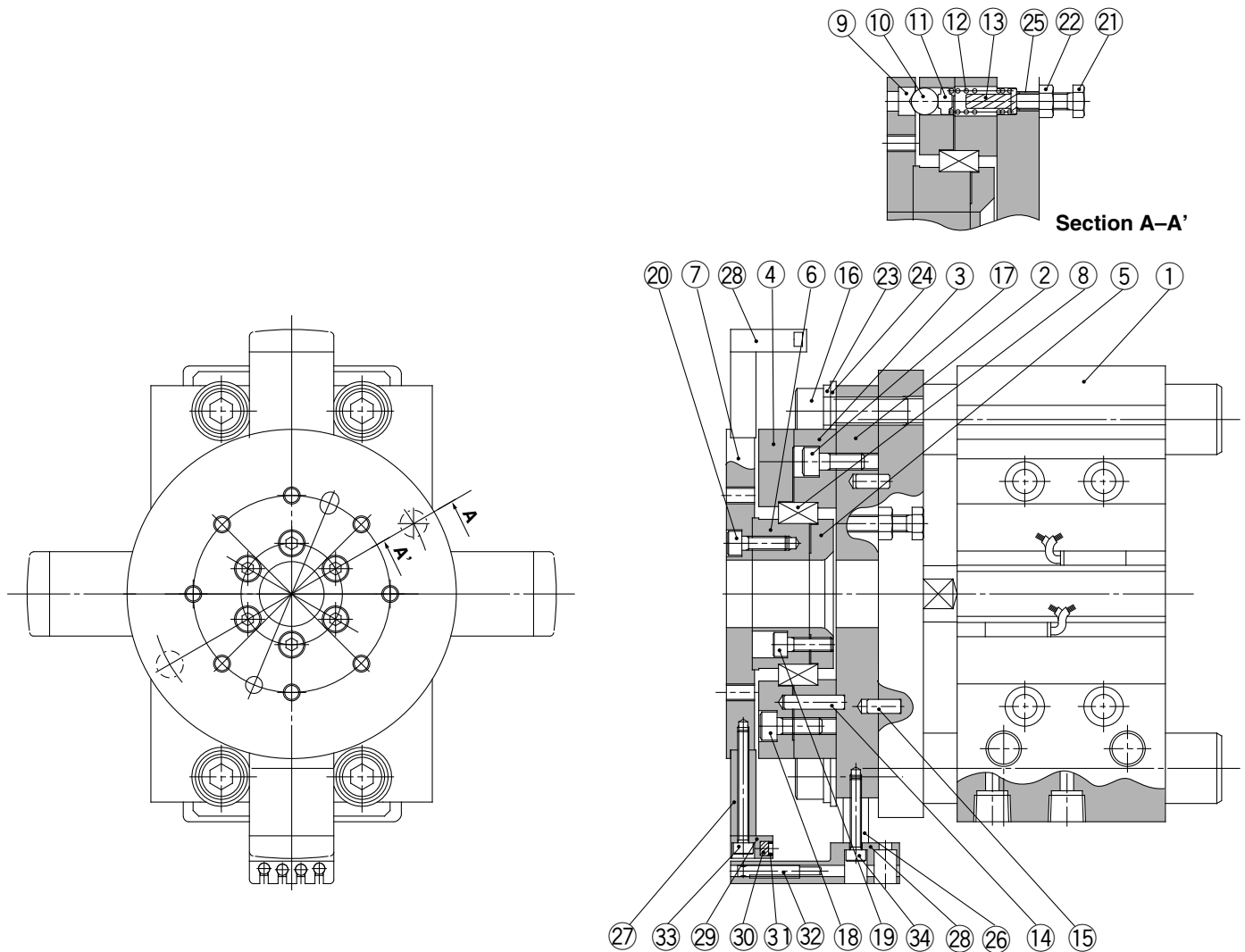
Bore size (mm)	Model	Stroke (mm)							
		25	50	75	100	125	150	175	200
63	MGTM	204	178	212	193	176	162	151	140
	MGTL	143	127	186	170	243	226	212	199
80	MGTM	250	221	291	267	246	228	213	199
	MGTL	62	154	255	237	220	205	192	180
100	MGTM	356	321	382	353	328	307	288	271
	MGTL	114	153	335	313	292	274	257	242

D-□

-X□

Individual
-X□

Construction



Component Parts

No.	Description	Material	Note
1	Flat cylinder w/turtable	MGTM	MGPM63 to 100-□-□
		MGTL	MGPL63 to 100-□-□
2	Guide plate	Aluminum alloy	White anodized
3	Bearing guide A	Aluminum alloy	White anodized
4	Bearing guide B	Aluminum alloy	White anodized
5	Bearing guide C	Aluminum alloy	Chromated
6	Bearing guide D	Aluminum alloy	Chromated
7	Notch table	Carbon steel	Nickel plated
8	Bearing	—	
9	Notch ring	Carbon steel	Hard zinc chromated
10	Steel ball	High carbon chromium bearing steel	
11	Ball cap	Stainless steel	
12	Return spring	Piano wire	Zinc chromated

Component Parts (Position detector bracket)

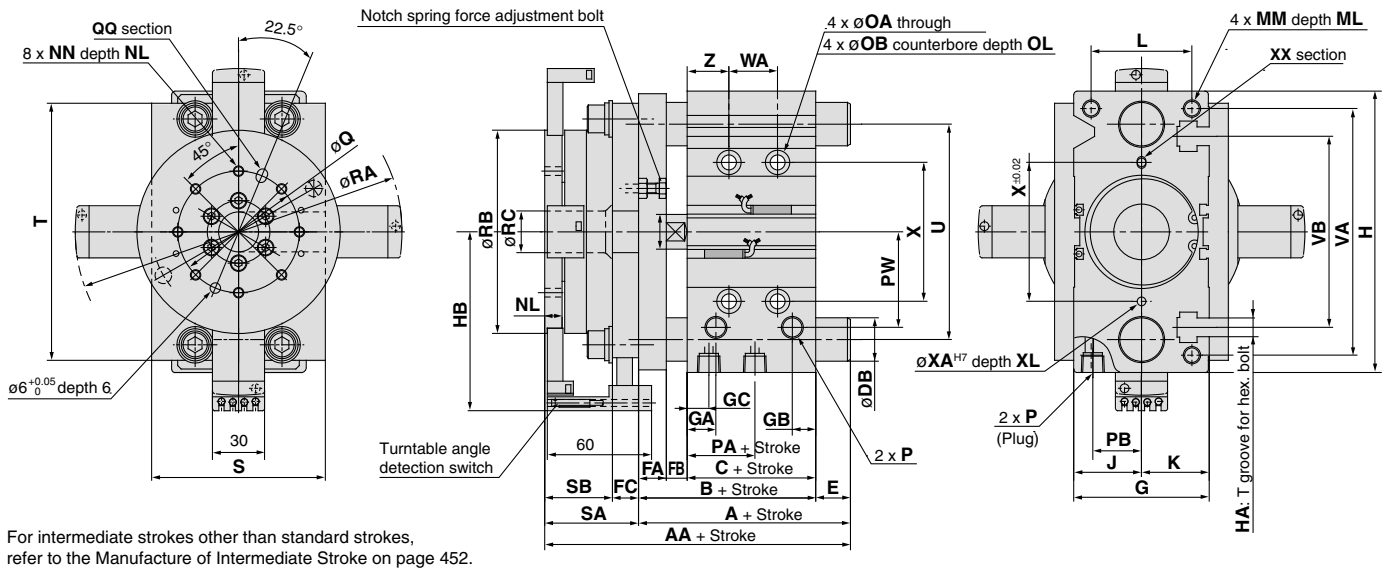
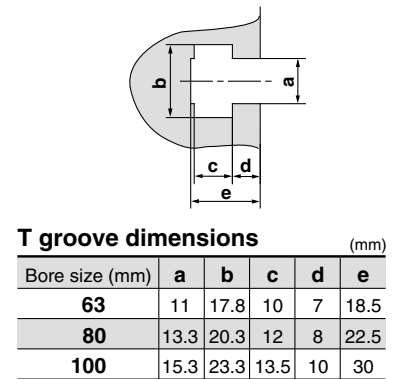
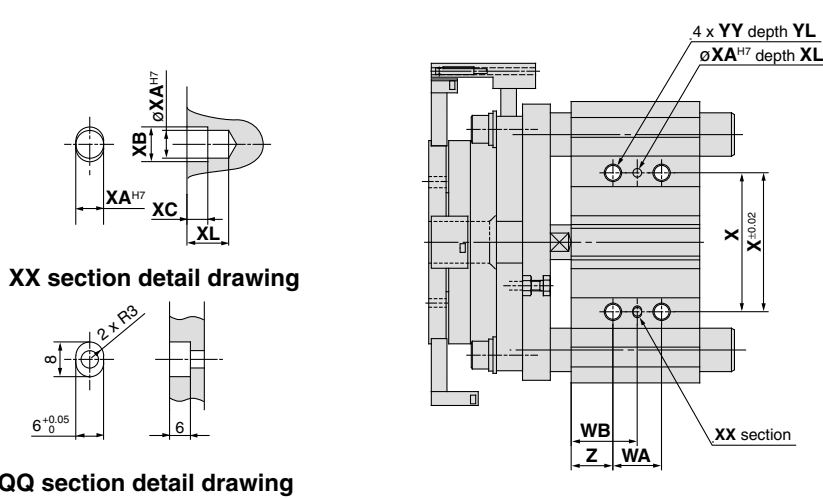
No.	Description	Material	Note
26	Magnet base A	Aluminum alloy	White anodized
27	Magnet base B	Aluminum alloy	White anodized
28	Switch holder	Aluminum alloy	White anodized
29	Magnet holder	Aluminum alloy	White anodized
30	Magnet	—	
31	Retaining ring	Carbon tool steel	
32	Auto switch	—	
33	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
34	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated

Note) Please refer to page 284 for details on components and replaceable parts for flat cylinders with guides (MGPM, MGPL).

Component Parts

No.	Description	Material	Note
13	Spring guide	Carbon steel	
14	Parallel pin	High carbon chromium bearing steel	
15	Parallel pin	High carbon chromium bearing steel	
16	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
17	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
18	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
19	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
20	Hexagon socket head cap screw	Chrome molybdenum steel	Nickel plated
21	Hexagon bolt	Chrome molybdenum steel	Nickel plated
22	Hexagon nut	Carbon steel	Nickel plated
23	Spring washer	Steel wire	Nickel plated
24	Plain washer	Carbon wire	Nickel plated
25	Helical insert	Stainless steel	

Dimensions



For intermediate strokes other than standard strokes, refer to the Manufacture of Intermediate Stroke on page 452.

Bore size (mm)	Standard stroke (mm)	(mm)																				
		B	C	DA	FA	FB	FC	G	GA	GB	GC	H	HA	HB	J	K	L	MM	ML	NN	NL	OA
63	25, 50, 75,	77	49	20	16	12	15	78	16.5	13.5	16.5	162	M10	103	39	39	58	M10 x 1.5	22	M6 x 1.0	10	8.6
80	100, 125, 150,	96.5	56.5	25	22	18	15	91.5	19	15.5	14.5	202	M12	121.5	45.5	46	54	M12 x 1.75	26	M8 x 1.25	12	10.6
100	175, 200	116	66	30	25	25	20	111.5	23	19	18	240	M14	145	55.5	56	62	M14 x 2.0	32	M10 x 1.5	15	12.5

Bore size (mm)	OB	OL	P																VA	VB
			P			PA	PB	PW	Q	RA	RB	RC	S	SA	SB	T	U			
			Nil	TN	TF	PA	PB	PW	Q	RA	RB	RC	S	SA	SB	T	U			
63	14	9	Rc 1/4	NPT 1/4	G 1/4	14	28	58	70	188	117	24	100	54	39	148	124	142	110	
80	17.5	8	Rc 3/8	NPT 3/8	G 3/8	14.5	25.5	74	80	225	128	24	125	56	41	198	156	180	140	
100	20	8	Rc 3/8	NPT 3/8	G 3/8	17.5	32.5	89	100	272	168	35	150	71	51	236	188	210	166	

Bore size (mm)	WA			WB			X	XA	XB	XC	XL	YY	YL	Z
	25st	50, 75, 100st	Larger than 100st	25st	50, 75, 100st	Larger than 100st								
	63	28	52	128	38	50								
80	28	52	128	42	54	92	100	6	7	5	10	M12 x 1.75	24	28
100	48	72	148	35	47	85	124	6	7	5	10	M14 x 2.0	28	11

Bore size (mm)	MGTM (Slide bearing)							
	AA		A		BD	E		
	25, 50st	Larger than 50st	25, 50st	Larger than 50st		25, 50st	Larger than 50st	
63	160.5	172	106.5	118	25	29.5	41	
80	171	198	115	142	30	18.5	45.5	
100	208	233	137	162	36	21	46	

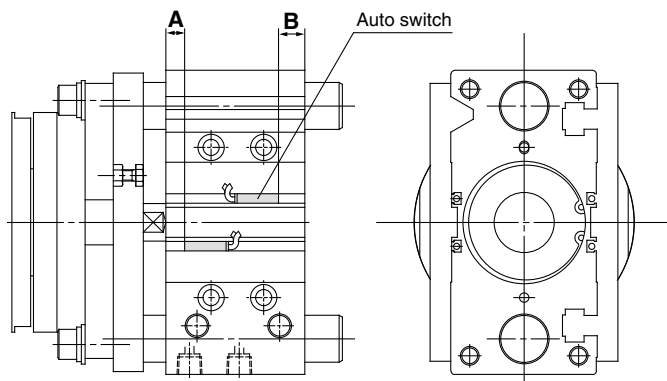
Bore size (mm)	MGTL (Ball bushing bearing)												
	AA				A				DB	E			
	25st	50st	75st, 100st	Larger than 100st	25st	50st	75st, 100st	Larger than 100st		25st	50st	75st, 100st	Larger than 100st
63	147	168	188	93	114	134	20	16	37	57			
80	165.5	186	216	109.5	130	160	25	13	33.5	63.5			
100	192	218	251	121	147	180	30	5	31	64			

MGJ
 MGP
 MGQ
 MGG
 MGC
 MGF
 MGZ
MGT

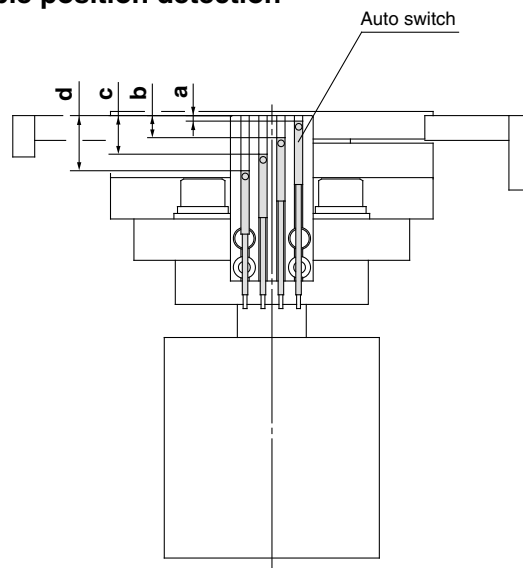
D-□
 -X□
 Individual
 -X□

Auto Switch Proper Mounting Position (Detection at Stroke End)

Proper auto switch mounting position for cylinder (stroke end)



Proper auto switch mounting position for table position detection



Proper Mounting Position

Auto switch model	(mm)					
	D-M9□ D-M9□V D-M9□W D-M9□WV		D-A9□ D-A9□V		D-Z7□/Z80 D-Y59□/Y7P D-Y69□/Y7PV D-Y7□W D-Y7□WV	
Bore size	A	B	A	B	A	B
63	15	19	11	15	10	14
80	18	23.5	14	19.5	13	18.5
100	22.5	28.5	18.5	24.5	17.5	23.5

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

Proper Mounting Position

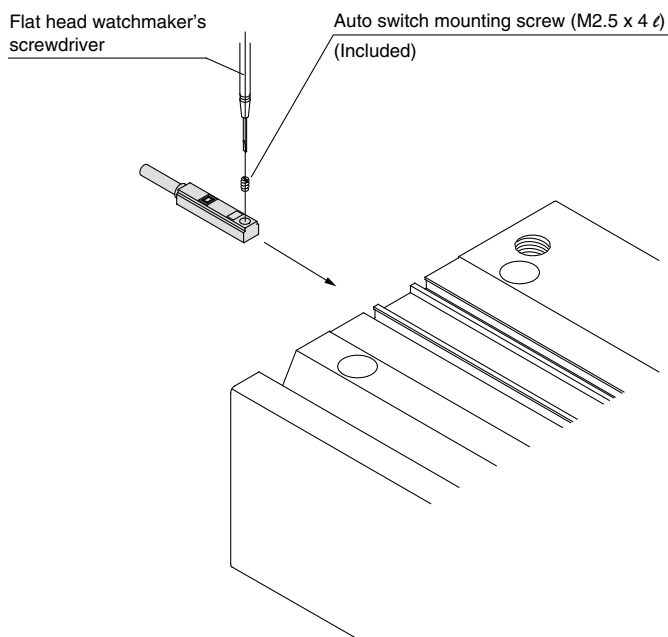
Auto switch model	(mm)			
	a	b	c	d
D-A9□	2	8	14	20
D-M9□	6	12	18	24
D-M9□W	5	11	17	23

* In order that adjacent auto switches do not misoperate, they should be set within ± 1 mm of the proper mounting positions indicated in the table above.

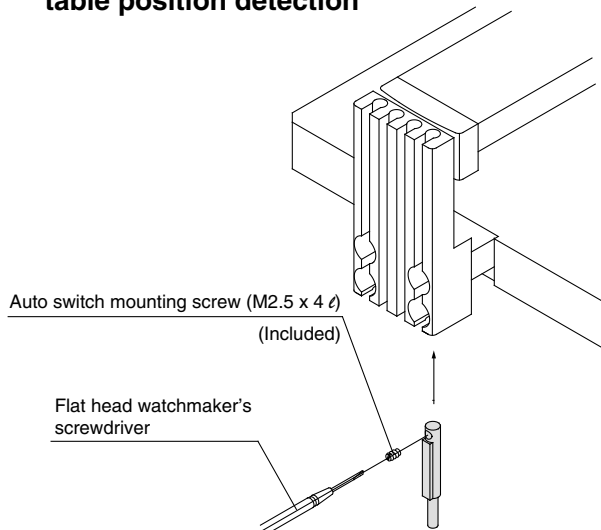
Auto Switch Mounting

When mounting an auto switch, insert it into the cylinder's auto switch groove from the direction shown in the figure below. After setting it in the mounting position, use a flat head watchmaker's screwdriver to secure it with the auto switch mounting screw which is included.

Mounting of auto switches for cylinder



Mounting of auto switch for table position detection



Note) When fastening the auto switch mounting screw, use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm. The fastening torque should be 0.05 to 0.1 N·m. As a rule, it should be turned about 90° past the position at which tightening can be felt.

Minimum Stroke for Mounting

Auto switch model	No. of auto switches	(mm)		
		ø63	ø80	ø100
D-A9□ D-A9□V D-M9□ D-M9□V	1 pc.		5	
D-Z7□ D-Z80 D-Y59□ D-Y7P	2 pcs.		10	
D-M9□W D-M9□WV	1 pc.		10	
	2 pcs.		10	
D-Y69□ D-Y7PV	1 pc.		5	
	2 pcs.		5	
D-Y7□W D-Y7□WV	1 pc.		10	
	2 pcs.		15	

Operating Range

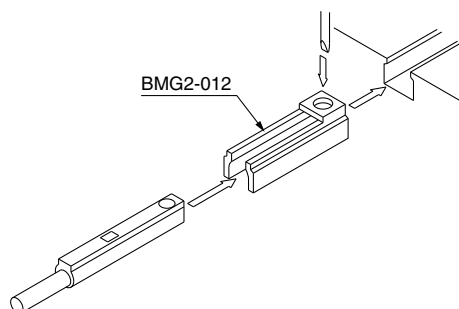
Auto switch model	(mm)		
	Bore size		
	63	80	100
D-A9□/A9□V	11	10.5	10.5
D-M9□/M9□V D-M9□W/M9□WV	7.5	7.5	8.5
D-Z7□/Z80	11.5	11.5	12
D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV	8	9.5	10

* Hysteresis specifications are given as a guide, it is not a guaranteed range. (Tolerance ±30%)
Hysteresis may fluctuate due to the operating environment.

Auto Switch Mounting Bracket/Part No.

Auto switch model	Bore size (mm)
	ø63 to ø100
D-A9□/A9□V D-M9□/M9□W D-M9□W/M9□WV	BMG2-012

D-A9□(V)/M9□(V)/M9□W(V)



Besides the models listed in How to Order, the following auto switches can be mounted on cylinder units. Refer to pages 1719 to 1827 for the detailed specifications.

Auto switch type	Model	Electrical entry (Fetching direction)	Features
Reed	D-Z73, Z76	Grommet (In-line)	—
	D-Z80		Without indicator light
Solid state	D-Y69A, Y69B, Y7PV	Grommet (Perpendicular)	—
	D-Y7NWV, Y7PWV, Y7BWV		Diagnostic indication (2-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 1784 and 1785 for details.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1746 and 1748 for details.

MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual
-X□



Series MGT Specific Product Precautions

Be sure to read before handling.

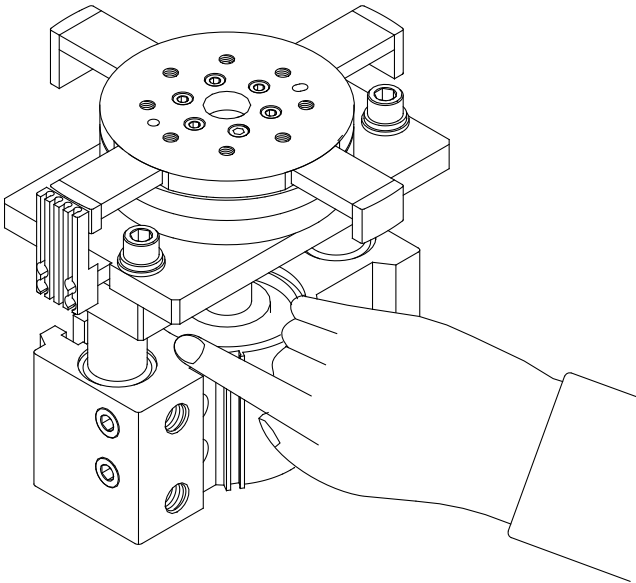
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Mounting

Warning

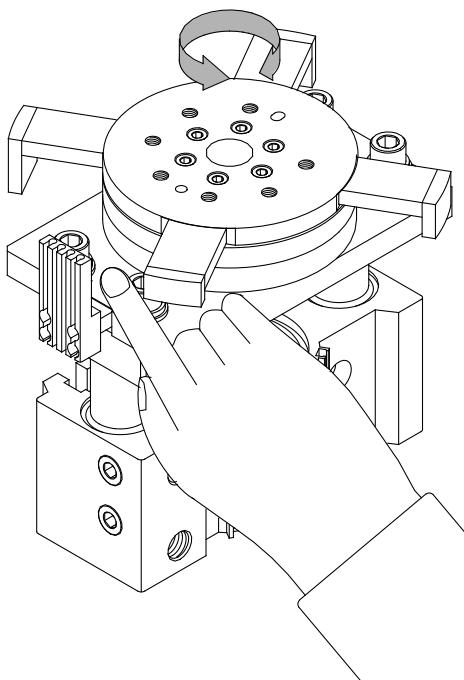
1. Do not put hands or fingers between the plate and body.

Care should be taken that hands or fingers do not get caught in the space between the cylinder body and the plate when air pressure is applied.



2. When rotating the turntable, take care that hands or fingers are not caught by the position detector auto switch bracket.

Because there is a danger of hands or fingers getting caught between the switch bracket and one of the magnet arms, please use caution when the turntable is being rotated.



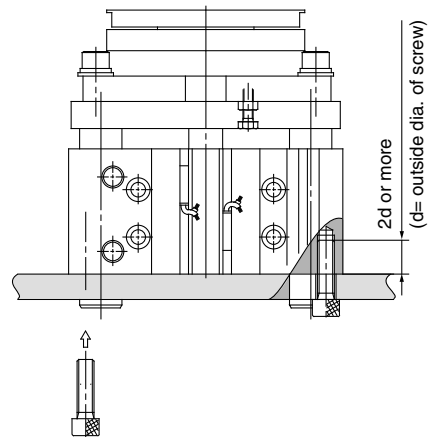
Mounting

Caution

1. Do not scratch or dent the sliding parts of the piston rod and guide rods.

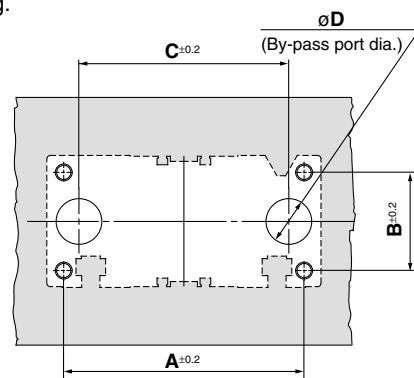
Damage to seals may cause air leaks or faulty operation.

2. In cases where the cylinder will be bottom mounted and shock will be delivered during use, the mounting bolts should be inserted to a depth of 2d or more.



3. If the cylinder is to be bottom mounted, bypass ports should be provided for the guide rods.

Since the guide rods protrude from the bottom of the cylinder at the end of the retracting stroke, in cases where the cylinder is to be bottom mounted it is necessary to provide by-pass ports for the guide rods in the mounting surface, as well as holes for the hexagon socket head screws which are used for mounting.



Bore size (mm)	A (mm)	B (mm)	C (mm)	D (mm)		Hexagon socket head mounting screws
				MGTM	MGTL	
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

Prior to Use

Auto Switches Common Specifications 1

⚠ Specific Product Precautions

Refer to the Auto Switch Precautions on pages 8 to 11 before using auto switches.

Auto Switches Common Specifications

Type	Reed auto switch	Solid state auto switch
Leakage current	None	3-wire: 100 μ A or less, 2-wire: 0.8 mA or less
Operating time	1.2 ms	1 ms or less ⁽³⁾
Impact resistance	300 m/s ²	1000 m/s ² ⁽⁴⁾
Insulation resistance	50 M Ω or more at 500 VDC Mega (Between lead wire and case)	
Withstand voltage	1500 VAC for 1 minute ⁽¹⁾ (Between lead wire and case)	1000 VAC for 1 minute (Between lead wire and case)
Ambient temperature	-10 to 60°C	
Enclosure	IEC60529 Standard IP67 ⁽²⁾	

- * 1) Electrical entry: Connector type (A73C/A80C/C73C/C80C): 1000 VAC/min. (Between lead wire and the case)
- * 2) The terminal conduit type (D-A3/A3□A/A3□C/G39/G39A/G39C/K39/K39A/K39C), DIN terminal type (D-A44/A44A/A44C) and heat resistant auto switch (D-F7NJL) conform to IEC60529 Standard IP63. The trimmer type amplifier section (D-R□K) conforms to IP40.
- * 3) Excluding the solid state auto switches with a timer (D-M5□TL/G5NTL/F7NNTL/F5NTL types) and magnetic field resistant 2-color indication solid state auto switch (D-P4DWL). The operating time for D-J51 is 2 ms or less and for D-P4DWL is 40 ms or less.
- * 4) 980 m/s² for the trimmer type sensor section, 98 m/s² for the amplifier section.

Lead Wire

Lead wire length indication

(Example)

D-M9BW **L**

● Lead wire length

Nil	0.5 m
M	1 m
L	3 m
Z	5 m
N*	None

* Applicable for the connector type (D-□□C) only.

Note 1) Lead wire length Z: 5 m

Applicable auto switches

Reed auto switch: D-B53/B54, D-C73(C)/C80C, D-A73(C)(H)/A80C, D-A53/A54, D-Z73, D-90/97/90A/93A

Solid state auto switch: Manufactured upon receipt of order as standard.

Note 2) The standard lead wire length for solid state auto switches with a timer, water resistant 2-color indication solid state auto switches, wide range detection type solid state auto switches, heat resistant 2-color indication solid state auto switches and trimmer auto switches is 3 m. (0.5 m is not available.)

Note 3) The standard lead wire length for magnetic field resistant 2-color indication solid state auto switches is 3 m or 5 m. (0.5 m is not available.)

Note 4) 1 m (M): D-M9□(W)(V) only

Lead wire length	Tolerance
0.5 m	±15 mm
1 m	±30 mm
3 m	±90 mm
5 m	±150 mm

Solid state auto switch oil resistant flexible cable cord indication

Add a -61 at the end of the part number for the solid state auto switch flexible cord except D-Y59□, D-Y69□, D-Y7□, D-M9□/M9□V, and D-M9□W/M9□WV.

(Example)

D-F7PL-**61**

● Flexible specification

(D-Y59, D-Y69, D-Y7 and D-M9 series use flexible lead wire as standard.)

Lead wires with a connector indication

Part No. of Lead Wires with Connectors

(Applicable only for connector type)

Model	Lead wire length
D-LC05	0.5 m
D-LC30	3 m
D-LC50	5 m

Solid State Auto Switch Direct Mounting Style D-M9N(V)/D-M9P(V)/D-M9B(V)



Refer to SMC website for the details of the products conforming to the international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standard	CE marking					

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.



- Lead wires — Oilproof flexible heavy-duty vinyl cord: $\phi 2.7 \times 3.2$ ellipse, 0.15 mm², 2 cores (D-M9B(V)), 3 cores (D-M9N(V), D-M9P(V))

Note 1) Refer to page 1728 for solid state auto switch common specifications.

Note 2) Refer to page 1728 for lead wire lengths.

Caution

Precautions

Do not fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Mass

(g)

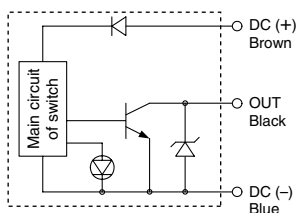
Auto switch model	D-M9N(V)	D-M9P(V)	D-M9B(V)	
Lead wire length (m)	0.5	8	8	7
	1	14	14	13
	3	41	41	38
	5	68	68	63

Dimensions

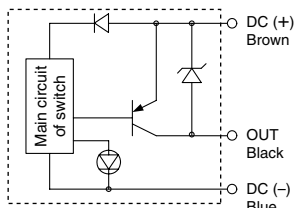
(mm)

Auto Switch Internal Circuit

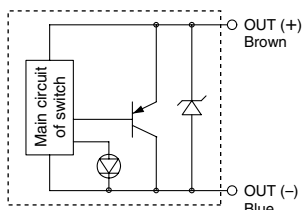
D-M9N, D-M9NV



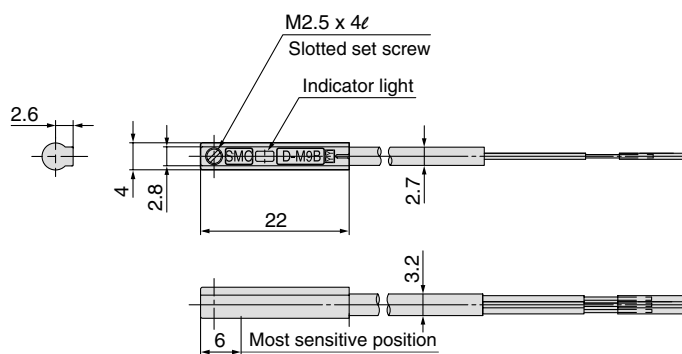
D-M9P, D-M9PV



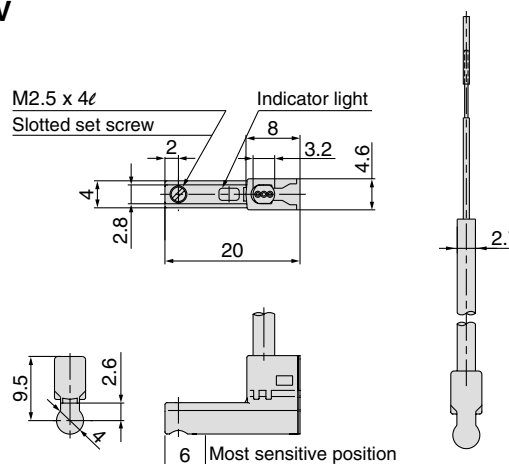
D-M9B, D-M9BV



D-M9□



D-M9□V



Solid State Auto Switch Direct Mounting Style D-Y59^A/_B/D-Y69^A/_B/D-Y7P(V)



Refer to SMC website for the details of the products conforming to the international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-Y5□, D-Y6□, D-Y7P, D-Y7PV (With indicator light)						
Auto switch model	D-Y59A	D-Y69A	D-Y7P	D-Y7PV	D-Y59B	D-Y69B
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire			2-wire		
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less		80 mA or less		5 to 40 mA	
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA load current)		0.8 V or less		4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less at 24 VDC	
Indicator light	Red LED illuminates when turned ON.					
Standard	CE marking					

• Lead wires — Oilproof flexible heavy-duty vinyl cord, ø3.4, 0.15 mm², 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Refer to page 1728 for solid state auto switch common specifications.

Note 2) Refer to page 1728 for lead wire lengths.

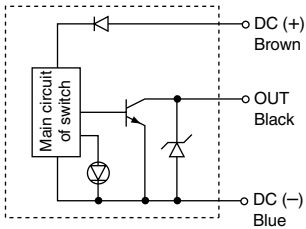
Grommet

Using flexible cable as standard spec.

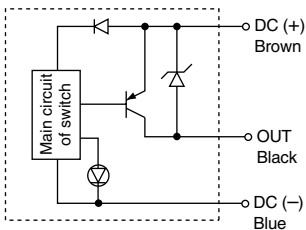


Auto Switch Internal Circuit

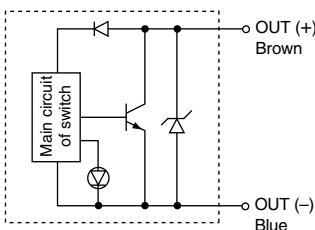
D-Y59A, D-Y69A



D-Y7P, D-Y7PV



D-Y59B, D-Y69B



Mass

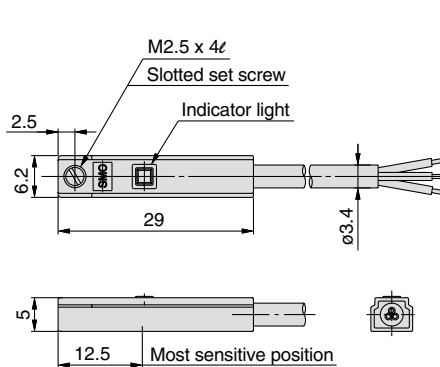
(g)

Auto switch model	D-Y59B	D-Y69B	D-Y59A	D-Y69A	D-Y7P(V)
Lead wire length (m)	0.5	9	10	10	10
	3	50	53	53	53
	5	83	87	87	87

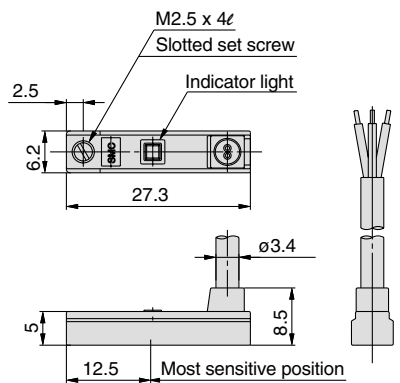
Dimensions

(mm)

D-Y59A/D-Y7P/D-Y59B



D-Y69A/D-Y7PV/D-Y69B



2-Color Indication Type Solid State Auto Switch Direct Mounting Style

D-M9NW(V)/D-M9PW(V)/D-M9BW(V)



Refer to SMC website for the details of the products conforming to the international standards.

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.
- The optimum operating position can be determined by the color of the light. (Red → Green ← Red)



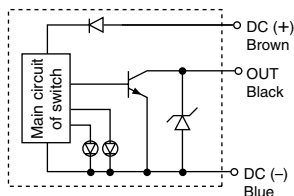
⚠ Caution

Precautions

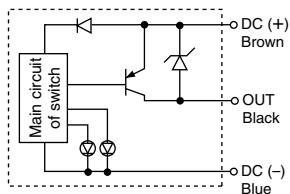
Do not fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit

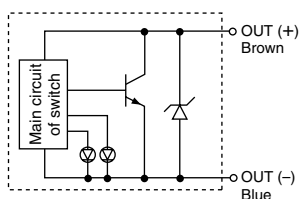
D-M9NW, D-M9NWV



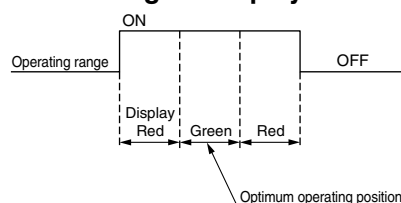
D-M9PW, D-M9PWV



D-M9BW, D-M9BWV



Indicator light / Display method



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire			2-wire		
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating position Red LED illuminates. Optimum operating position Green LED illuminates.					
Standard	CE marking					

- Lead wires — Oilproof flexible heavy-duty vinyl cord: $\varnothing 2.7 \times 3.2$ ellipse, 0.15 mm², 2 cores (D-M9BW(V)), 3 cores (D-M9NW(V), D-M9PW(V))

Note 1) Refer to page 1728 for solid state auto switch common specifications.

Note 2) Refer to page 1728 for lead wire lengths.

Mass

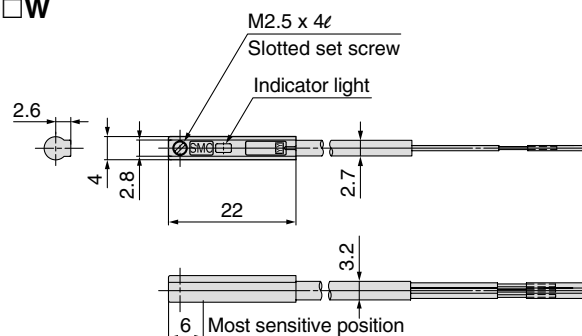
(g)

Auto switch model	D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Lead wire length (m)	0.5	8	8
	1	14	14
	3	41	41
	5	68	68

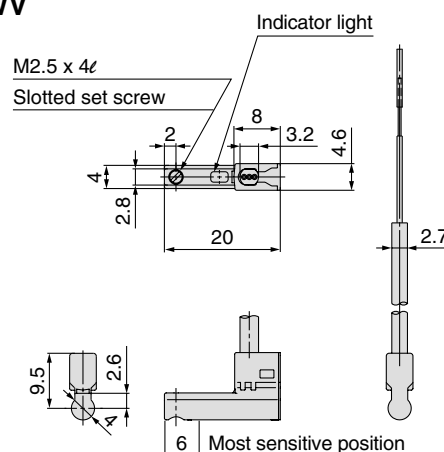
Dimensions

(mm)

D-M9□W



D-M9□WV



2-Color Indication Type Solid State Auto Switch Direct Mounting Style

D-Y7NW(V)/D-Y7PW(V)/D-Y7BW(V)



Refer to SMC website for the details of the products conforming to the international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-Y7□W, D-Y7□WV (With indicator light)						
Auto switch model	D-Y7NW	D-Y7NWV	D-Y7PW	D-Y7PWV	D-Y7BW	D-Y7BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire			2-wire		
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less		80 mA or less		5 to 40 mA	
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA load current)		0.8 V or less		4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less at 24 VDC	
Indicator light	Operating position Red LED illuminates. Optimum operating position Green LED illuminates.					
Standard	CE marking					

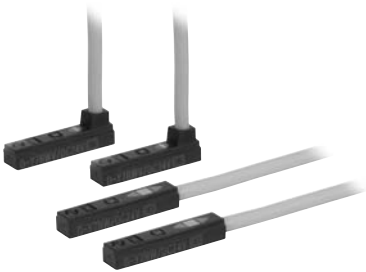
• Lead wires — Oilproof flexible heavy-duty vinyl cord, $\phi 3.4$, 0.15 mm², 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Refer to page 1728 for solid state auto switch common specifications.

Note 2) Refer to page 1728 for lead wire lengths.

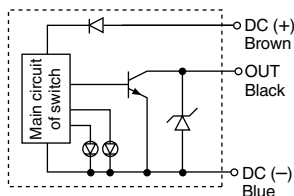
Grommet

- The optimum operating position can be determined by the color of the light. (Red → Green ← Red)
- Using flexible cable as standard spec.

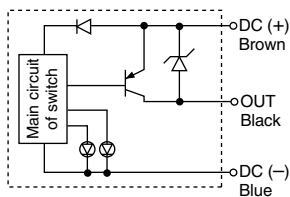


Auto Switch Internal Circuit

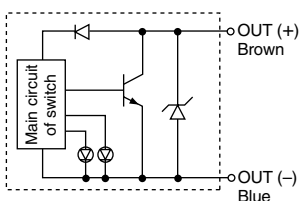
D-Y7NW, Y7NWV



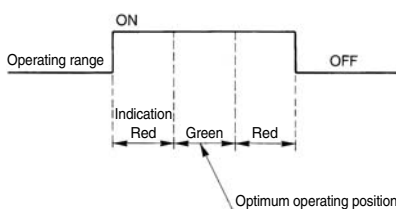
D-Y7PW, Y7PWV



D-Y7BW, Y7BWV



Indicator light/Display method



Mass

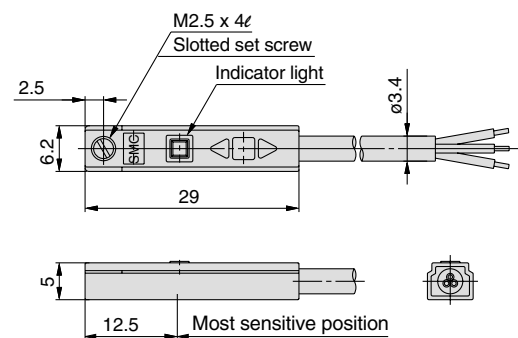
(g)

Auto switch model		D-Y7NW(V)	D-Y7PW(V)	D-Y7BW(V)
Lead wire length (m)	0.5	11	11	11
	3	54	54	54
	5	88	88	88

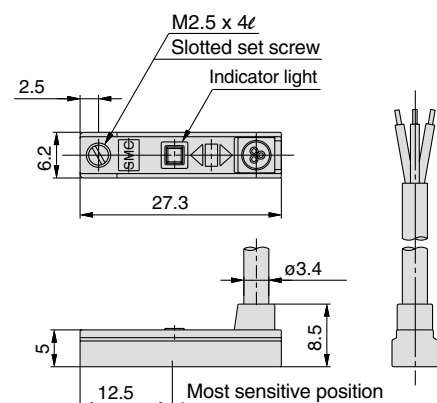
Dimensions

(mm)

D-Y7□W



D-Y7□WV



Reed Auto Switch Direct Mounting Style D-A90(V)/D-A93(V)/D-A96(V)



Refer to SMC website for the details of the products conforming to the international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

Grommet

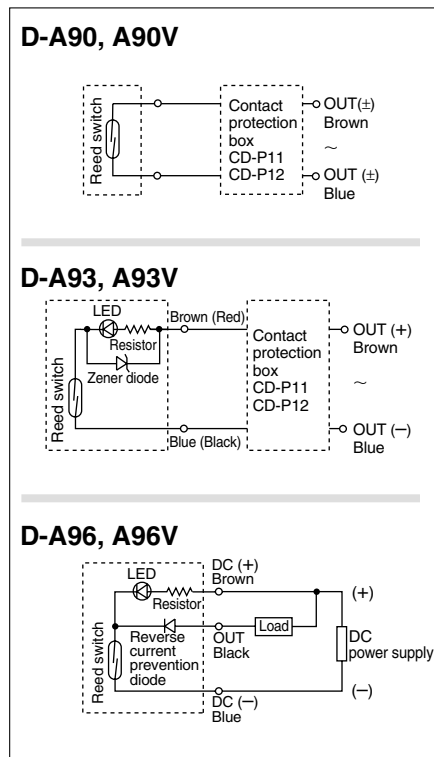


Caution

Precautions

Do not fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Internal Circuit



Note 1) Operating load is an induction load.
 Note 2) Wiring to the load is 5 m or longer.
 Note 3) Load voltage is 100 VAC.
 Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 1729 for contact protection box.)

D-A90, D-A90V (Without indicator light)			
Auto switch model	D-A90, D-A90V		
Applicable load	IC circuit, Relay, PLC		
Load voltage	24 V AC or less	48 V AC or less	100 V AC or less
Maximum load current	50 mA	40 mA	20 mA
Contact protection circuit	None		
Internal resistance	1 Ω or less (Including lead wire length of 3 m)		
Standard	CE marking		
D-A93, D-A93V, D-A96, D-A96V (With indicator light)			
Auto switch model	D-A93, D-A93V		D-A96, D-A96V
Applicable load	Relay, PLC		IC circuit
Load voltage	24 VDC	100 VAC	4 to 8 VDC
Load current range and Maximum load current ⁽³⁾	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	None		
Internal voltage drop	D-A93: 2.4 V or less (up to 20 mA)/3 V or less (up to 40 mA) D-A93V: 2.7 V or less		0.8 V or less
Indicator light	Red LED illuminates when turned ON.		
Standard	CE marking		

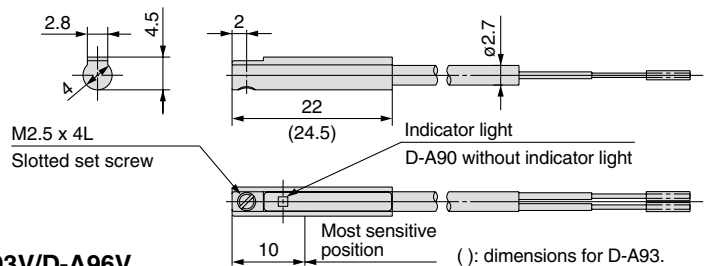
- Lead wires
 D-A90(V)/D-A93(V)—Oilproof heavy-duty vinyl cord, $\phi 2.7$, 0.18 mm² x 2 cores (Brown, Blue), 0.5 m
 D-A96(V)—Oilproof heavy-duty vinyl cord, $\phi 2.7$, 0.15 mm² x 3 cores (Brown, Black, Blue), 0.5 m
 Note 1) Refer to page 1728 for reed auto switch common specifications.
 Note 2) Refer to page 1728 for lead wire lengths.
 Note 3) Under 5 mA, the strength of the indicator light is poor. In some cases, visibility of the indicator light will not be possible where the output signal is less than 2.5 mA. However, there is no problem in terms of contact output, when an output signal exceeds 1 mA or more.

Mass

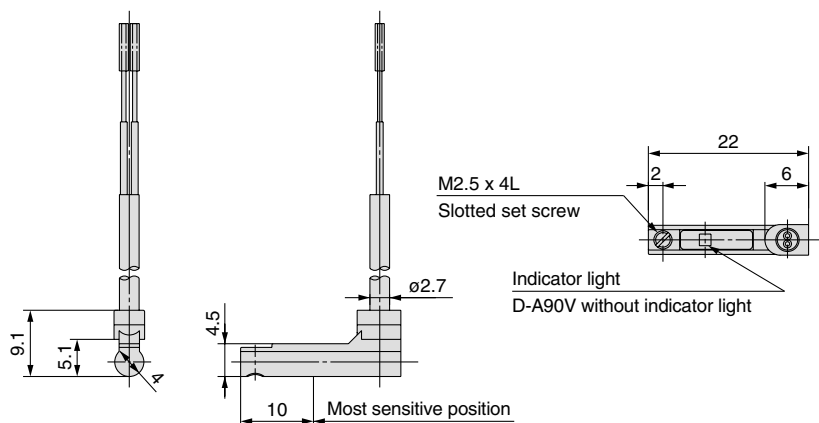
Model	D-A90	D-A90V	D-A93	D-A93V	D-A96	D-A96V
Lead wire length (m)	0.5	6	6	6	6	8
	3	30	30	30	30	41

Dimensions

D-A90/D-A93/D-A96



D-A90V/D-A93V/D-A96V



Reed Auto Switch Direct Mounting Style D-Z73/D-Z76/D-Z80



Refer to SMC website for the details of the products conforming to the international standards.

Auto Switch Specifications

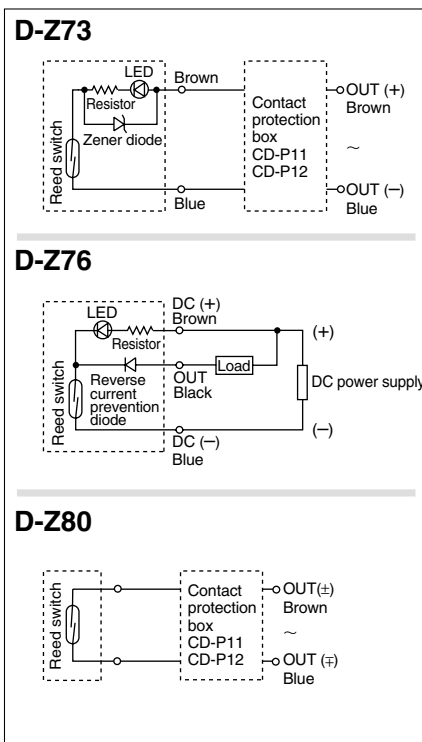
PLC: Programmable Logic Controller

Grommet



D-Z7 (With indicator light)			
Auto switch model	D-Z73		D-Z76
Applicable load	Relay, PLC		IC circuit
Load voltage	24 VDC	100 VAC	4 to 8 VDC
Max. load current and load current range ⁽³⁾	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	None		
Internal voltage drop	2.4 V or less (to 20 mA)/3 V or less (to 40 mA)		0.8 V or less
Indicator light	Red LED illuminates when turned ON.		
Standard	CE marking		
D-Z8 (Without indicator light)			
Auto switch model	D-Z80		
Applicable load	Relay, PLC, IC circuit		
Load voltage	24 V ^{AC} _{DC} or less	48 V ^{AC} _{DC}	100 V ^{AC} _{DC}
Maximum load current	50 mA	40 mA	20 mA
Contact protection circuit	None		
Internal resistance	1 Ω or less (Including 3 m lead wire)		
Standard	CE marking		

Auto Switch Internal Circuit



Note 1) Operating load is an induction load.
 Note 2) Wiring to the load is 5 m or longer.
 Note 3) Load voltage is 100 VAC.
 Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 1729 for contact protection box.)

• Lead wires — Oilproof heavy-duty vinyl cord, $\phi 3.4$, 0.2 mm², 2 cores (Brown, Blue), 3 cores (Brown, Black, Blue), 0.5 m (For only D-Z73, $\phi 2.7$, 0.18 mm², 2 cores)

Note 1) Refer to page 1728 for reed auto switch common specifications.

Note 2) Refer to page 1728 for lead wire lengths.

Note 3) Under 5 mA, the strength of the indicator light is poor. In some cases, visibility of the indicator light will not be possible where the output signal is less than 2.5 mA. However, there is no problem in terms of contact output, when an output signal exceeds 1 mA or more.

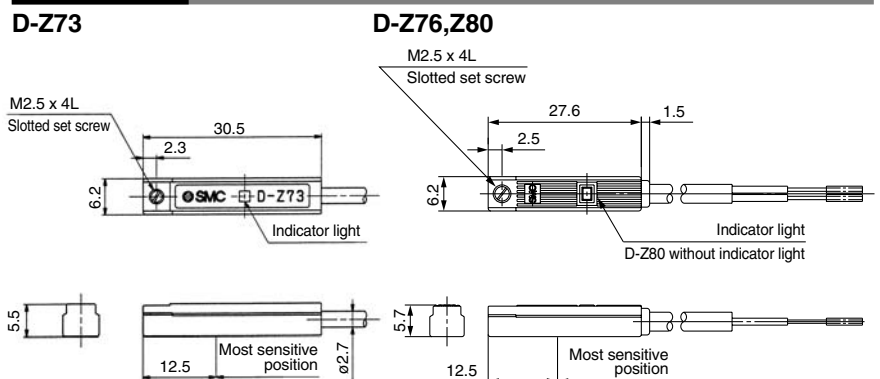
Mass

(g)

Auto switch model	D-Z73	D-Z76	D-Z80
Lead wire length (m)	0.5	7	10
	3	31	55
	5	50	—

Dimensions

(mm)



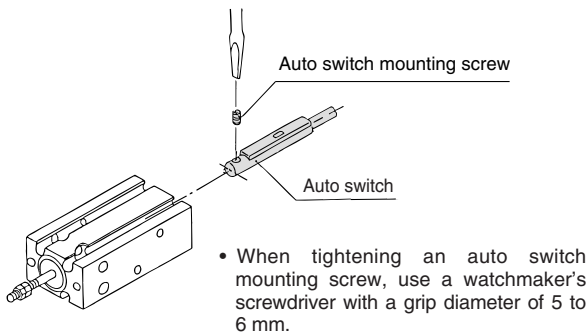
How to Mount and Move the Auto Switch

Mounting Bracket Direct Mounting Style

<Applicable auto switch>

Solid state D-M9N(V), D-M9P(V), D-M9B(V),
D-M9NW(V), D-M9PW(V), D-M9BW(V),
D-M9NA(V)L, D-M9PA(V)L, D-M9BA(V)L
Reed D-A90(V), D-A93(V), D-A96(V)

How to Mount and Move the Auto Switch

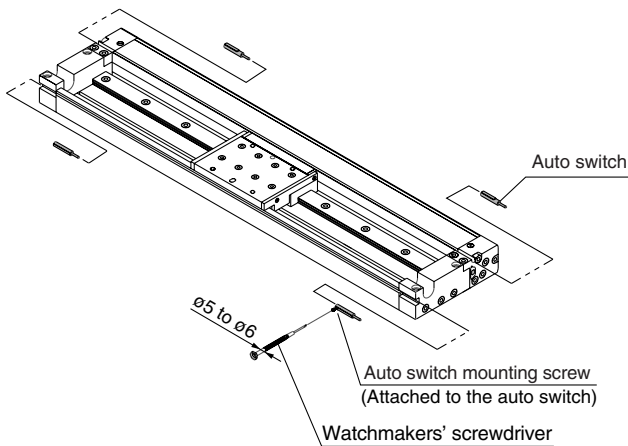


Auto Switch Mounting Screw Tightening Torque (N·m)

Auto switch model	Tightening torque
D-A9□(V)	0.10 to 0.20
D-M9□(V)	0.05 to 0.15
D-M9□W(V)	0.05 to 0.15

Series MY2

When mounting auto switches, insert them into the cylinder's switch groove from the direction shown in the drawing. After setting in the mounting position, use a flat head watchmaker's screwdriver to tighten the provided set screw.

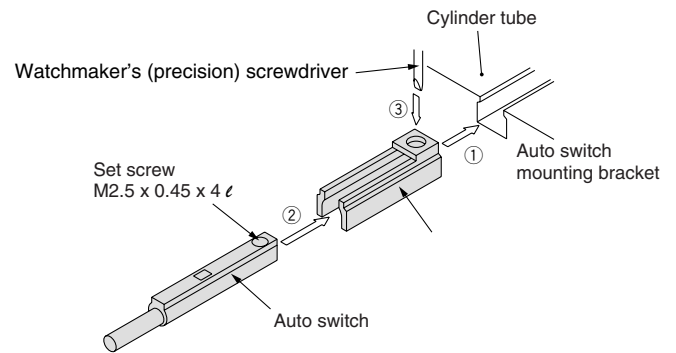


(Note) When tightening an auto switch mounting screw, use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm. The tightening torque should be about 0.05 to 0.1 N·m.

<Applicable auto switch>

Solid state D-M9N(V), D-M9P(V), D-M9B(V),
D-M9NW(V), D-M9PW(V), D-M9BW(V),
D-M9NA(V), D-M9PA(V), D-M9BA(V)
Reed D-A90(V), D-A93(V), D-A96(V)

How to Mount and Move the Auto Switch



1. Insert the auto switch mounting bracket into the auto switch mounting groove to set it roughly to the auto switch mounting position.
2. Insert the auto switch into the attachment part of the auto switch mounting bracket.
3. After confirming the detecting position, secure the auto switch by tightening the set screw (M2.5) attached to the auto switch.
4. When changing the detecting position, carry out in the state of 2.

Note 1) When tightening a set screw (M2.5), use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm. Also set the tightening torque to be 0.1 to 0.15 N·m. As a guide, turn 90° from the position where it comes to feel tight.

Auto Switch Mounting Bracket Part No.

Cylinder series	Applicable bore size (mm)									
	12	16	20	25	32	40	50	63	80	100
MY1B	—	—	—	BMG2-012	—	—	—	—	BMG2-012	BMG2-012
MY1M, MY1MW	—	—	—	—	—	—	BMG2-012	BMG2-012	—	—
MY1C, MY1CW	—	—	—	—	—	—	—	—	—	—
MY1H	—	—	—	—	BMG2-012	—	—	—	—	—
CY3R	—	—	—	—	—	BMG2-012	BMG2-012	BMG2-012	—	—
REAR	—	—	—	—	—	—	—	—	—	—
REBR	—	—	—	—	—	—	—	—	—	—
MGPS	—	—	—	—	—	—	—	—	—	—
MGP, MGPA	BMG2-012	BMG2-012	BMG2-012	BMG2-012	BMG2-012	—	—	—	—	—
MGQ, MVGQ	—	—	—	—	—	BMG2-012	BMG2-012	—	—	—
MGP□-□A	—	—	—	—	—	—	—	BMG2-012	—	—
MLGP	—	—	—	—	—	—	—	—	—	BMG2-012
MGF	—	—	—	—	—	—	—	—	—	—
MGT	—	—	—	—	—	—	—	—	—	BMG2-012
RSH	—	—	—	BMG2-012	—	BMG2-012	—	—	—	—
RS1H	—	—	—	—	—	—	—	BMG2-012	BMG2-012	BMG2-012

Cylinder series	Applicable bore size (mm)				
	125	140	160	180	200
CDQ2 (Large bore)	BMG2-012	BMG2-012	BMG2-012	BMG2-012	BMG2-012

Note 2) Color or gloss differences in the metal surfaces have no effect on metal performance.

The special properties of the chromate (trivalent) applied to the main body of the auto switch mounting bracket for BMG2-012 result in differences in coloration depending on the production lot, but these have no adverse impact on corrosion resistance.

How to Mount and Move the Auto Switch

Mounting Bracket Direct Mounting Style

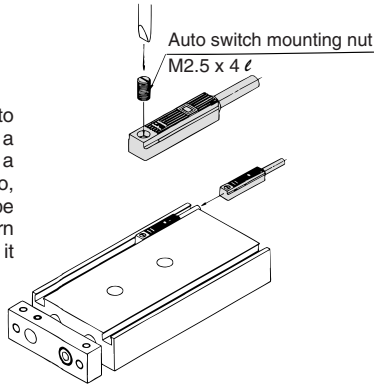
<Applicable auto switch>

Solid state D-Y59^A, D-Y69^A, D-Y7P(V),
D-Y7NW(V), D-Y7PW(V), D-Y7BW(V),
D-Y7BAL

Reed D-Z73, D-Z76, D-Z80

How to Mount and Move the Auto Switch

Note) When tightening an auto switch mounting screw, use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm. Also, set the tightening torque to be 0.05 to 0.1 N·m. As a guide, turn 90° from the position where it comes to feel tight.



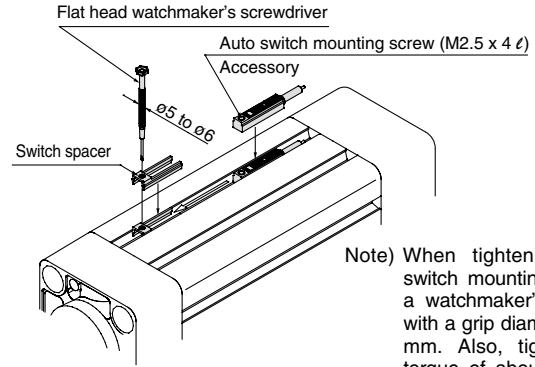
1. Insert the auto switch into the mounting groove and set it at the auto switch mounting position.
2. After reconfirming the detecting position, tighten the mounting screw to secure the auto switch.
3. Modification of the detecting position should be made in the condition of 1.

<Applicable auto switch>

Solid state D-Y59^A, D-Y69^A, D-Y7P(V),
D-Y7NW(V), D-Y7PW(V), D-Y7BW(V),
D-Y7BAL

Reed D-Z73, D-Z76, D-Z80

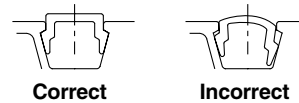
How to Mount and Move the Auto Switch



Note) When tightening an auto switch mounting screw, use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm. Also, tighten with a torque of about 0.05 to 0.1 N·m. As a guide, it should be turned about 90° past the point at which tightening can be felt.

When attaching an auto switch, first take a switch spacer between your fingers and press it into a switch mounting groove. When doing this, confirm that it is set in the correct mounting orientation, or reattach if necessary. Next, insert an auto switch into the groove and slide it until it is positioned under the switch spacer.

After establishing the mounting position, use a watchmakers flat head screwdriver to tighten the auto switch mounting screw which is included.



Switch Spacer No.

Cylinder series	Applicable bore size (mm)					
	32	40	50	63	80	100
MDB1	BMP1-032					

Prior to Use

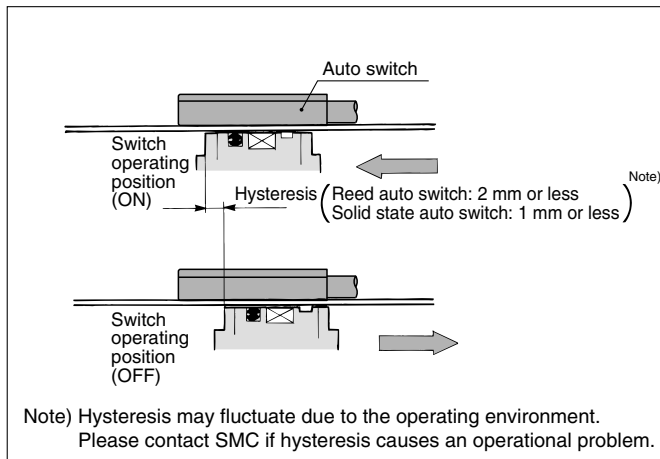
Auto Switches Common Specifications 2

⚠ Specific Product Precautions

Refer to the Auto Switch Precautions on pages 8 to 11 before using auto switches.

Auto Switch Hysteresis

Hysteresis is the distance between the position at which piston movement operates an auto switch to the position at which reverse movement turns the switch off. This hysteresis is included in part of the operating range (one side).



Contact Protection Box: CD-P11, CD-P12

<Applicable switch models>

D-A7/A8, D-A7□H/A80H, D-A73C/A80C, D-C7/C8, D-C73C/C80C, D-E7□A, E80A, D-Z7/Z8, D-9/9□A, D-A9/A9□V, and D-A79W type

The auto switches above do not have a built-in contact protection circuit. A contact protection box is not required for solid state auto switches due to their construction.

- ① Where the operation load is an inductive load.
- ② Where the wiring length to load is greater than 5 m.
- ③ Where the load voltage is 100/200 VAC.

Therefore, use a contact protection box with the switch for any of the above cases:

The contact life may be shortened (due to permanent energizing conditions.)

D-A72(H) must be used with the contact protection box regardless of load types and lead wire length since it is greatly affected by loads.

(Where the load voltage is 110 VAC)

When the load voltage is increased by more than 10% to the rating of applicable auto switches (except D-A73C/A80C/C73C/C80C/90/97/A79W) above, use a contact protection box (CD-P11) to reduce the upper limit of the load current by 10% so that it can be set within the range of the load current range, 110 VAC.

Even for the built-in contact protection circuit type (D-A34[A][C], D-A44[A][C], D-A54/A64, D-A59W, D-B59W), use the contact protection box when the wiring length to load is very long (over 30 m) and PLC (Programmable Logic Controller) with a large inrush current is used.

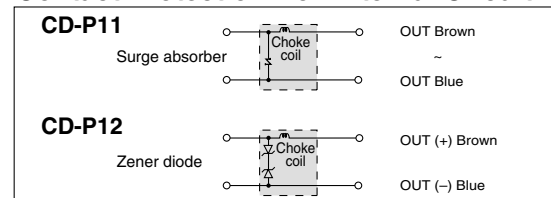
Contact Protection Box Specifications

Part no.	CD-P11	CD-P12
Load voltage	100 VAC or less	200 VAC / 24 VDC
Max. load current	25 mA	12.5 mA / 50 mA

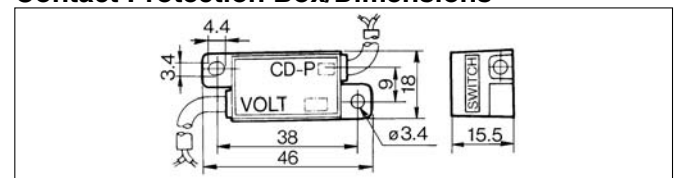
* Lead wire length — Auto switch connection side 0.5 m
Load connection side 0.5 m



Contact Protection Box Internal Circuit



Contact Protection Box/Dimensions



Contact Protection Box Connection

To connect a switch unit to a contact protection box, connect the lead wire from the side of the contact protection box marked SWITCH to the lead wire coming out of the switch unit. Keep the switch as close as possible to the contact protection box, with a lead wire length of no more than 1 meter.

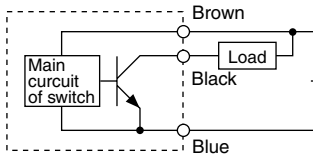
D-□

Prior to Use

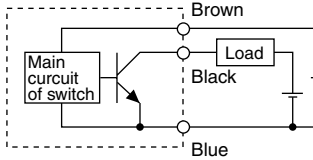
Auto Switches Connection and Example

Basic Wiring

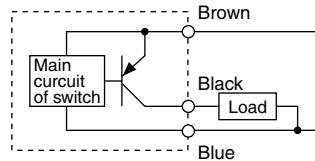
Solid state 3-wire, NPN



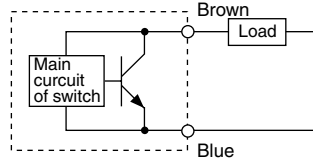
(Power supply for switch and load are separate)



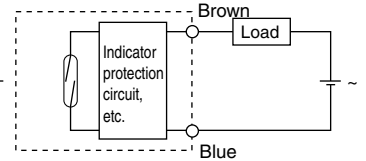
Solid state 3-wire, PNP



2-wire (Solid state)



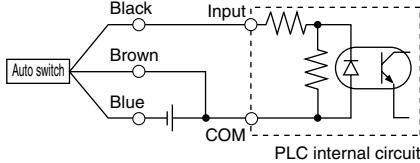
2-wire (Reed switch)



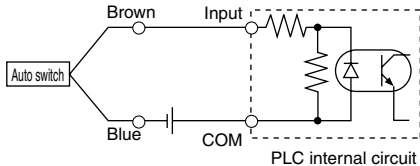
Example of Connection with PLC (Programmable Logic Controller)

• Sink input specifications

3-wire, NPN

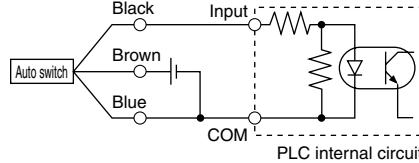


2-wire

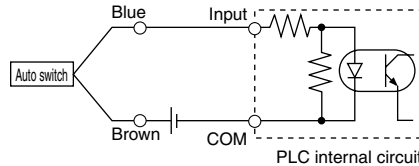


• Source input specifications

3-wire, PNP



2-wire

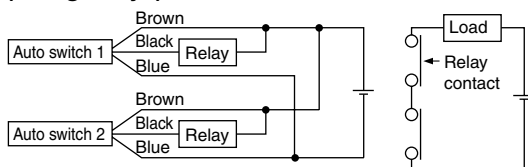


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

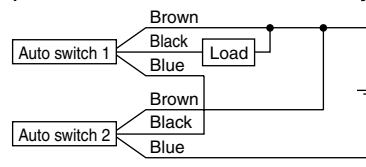
Example of AND (Series) and OR (Parallel) Connection

• 3-wire

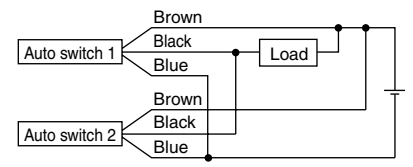
AND connection for NPN output (Using relays)



AND connection for NPN output (Performed with auto switches only)



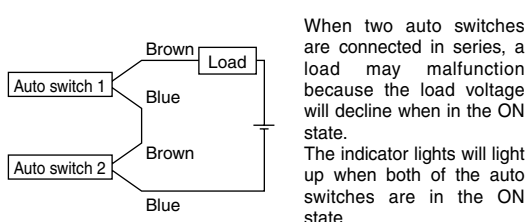
OR connection for NPN output



The indicator lights will light up when both auto switches are turned ON.

• 2-wire

2-wire with 2-switch AND connection

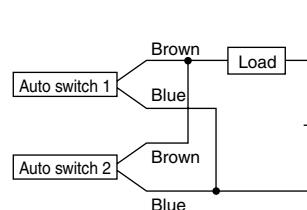


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \text{Residual voltage} \times 2 \text{ pcs.} \\ &= 24 \text{ V} - 4 \text{ V} \times 2 \text{ pcs.} \\ &= 16 \text{ V} \end{aligned}$$

Example: Power supply is 24 VDC
Internal voltage drop in auto switch is 4 V.

2-wire with 2-switch OR connection



(Solid state auto switch)
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \times \text{Load impedance} \\ &= 1 \text{ mA} \times 2 \text{ pcs.} \times 3 \text{ k}\Omega \\ &= 6 \text{ V} \end{aligned}$$

Example: Load impedance is 3 kΩ.
Leakage current from auto switch is 1 mA.

(Reed auto switch)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

Made to Order Specifications: Solid State Auto Switch



Refer to SMC website for the details of the products conforming to the international standards.

1 With Pre-wired Connector

- Eliminates the harnessing work by cable with connector specifications
- Adopts global standardized connector (IEC947-5-2)
- IP67 construction



How to Order

D-M9N S A PC

Solid state auto switch
Standard part no.

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

Cable length

S	0.5 m
M	1.0 m
L	3.0 m

Note) L is available for the D-P4DW type only.

Connector model

A	M8-3 pin
B	M8-4 pin
D	M12-4 pin

Note) Type D is available for the D-P4DW type only.

Connector Specifications

Connector model	M8-3 pin	M8-4 pin	M12-4 pin
Pin arrangement			
Conformed standard	JIS C 4524, JIS C 4525, IEC 947-5-2, NECA 0402		
Impact resistance	300 m/s ²		
Enclosure	IP-67 (IEC60529 standard)		
Insulation resistance	100 MΩ or more at 500 VDC Mega		
Withstand voltage	1500 VAC 1 minute (between contacts), Leak current 1 mA or less		

Applicable Auto Switch

Mounting	Function	Electrical entry	Applicable model	Lead wire length (m)		
				0.5	1.0	3.0
Rail mounting style	—	Grommet (In-line)	F79, F7P, J79	●	●	—
		Grommet (Perpendicular)	F7NV, F7PV, F7BV	●	●	—
	2-color indication	Grommet (In-line)	F79W, F7PW, J79W	●	●	—
		Grommet (Perpendicular)	F7NWV, F7BWV	●	●	—
	With diagnostic output	Grommet (In-line)	F79F	●	●	—
			F7BA	●	●	—
	Water resistant	Grommet (Perpendicular)	F7BAV	●	●	—
F7NT			●	●	—	
Magnetic field resistant	—	P4DW	●	●	●	
		—	Grommet (In-line)	H7A1, H7A2, H7B	●	●
2-color indication	Grommet (In-line)			G59, G5P, K59	●	●
		Diagnostic output	Grommet (In-line)	H7NW, H7PW, H7BW	●	●
Water resistant	Grommet (In-line)			G59W, G5PW, K59W	●	●
		With timer	Grommet (In-line)	H7NF, G59F	●	●
Wide detection	Grommet (In-line)			H7BA, G5BA	●	●
		—	Grommet (In-line)	G5NT	●	●
2-color indication	Grommet (In-line)			G5NB	●	●
		Diagnostic output	Grommet (In-line)	F59, F5P, J59	●	●
Water resistant	Grommet (In-line)			F59W, F5PW, J59W	●	●
		With timer	Grommet (In-line)	F59F	●	●
—	Grommet (In-line)			F5BA	●	●
		2-color indication	Grommet (In-line)	F5NT	●	●
Diagnostic output	Grommet (In-line)			F59W, F5PW, J59W	●	●
		Water resistant	Grommet (In-line)	F59F	●	●
With timer	Grommet (In-line)			F5BA	●	●
		—	Grommet (In-line)	F5NT	●	●
2-color indication	Grommet (In-line)			F59W, F5PW, J59W	●	●
		Diagnostic output	Grommet (In-line)	F59F	●	●
Water resistant	Grommet (In-line)			F5BA	●	●
		With timer	Grommet (In-line)	F5NT	●	●

Mounting	Function	Electrical entry	Applicable model	Lead wire length (m)			
				0.5	1.0	3.0	
Direct mounting style	—	Grommet (In-line)	Y59A, Y7P, Y59B	●	●	—	
		Grommet (Perpendicular)	Y69A, Y7PV, Y69B	●	●	—	
		Grommet (In-line)	M9N, M9P, M9B	●	●	—	
		Grommet (Perpendicular)	M9NV, M9PV, M9BV	●	●	—	
		Grommet (In-line)	F8N, F8P, F8B	●	●	—	
		Grommet (In-line)	F6N, F6P, F6B	●	●	—	
	Normally closed	Grommet (In-line)	Y7G, Y7H	●	●	—	
			F9G, F9H	●	●	—	
			Y7NW, Y7PW, Y7BW	●	●	—	
	2-color indication	Grommet (Perpendicular)	Y7NWV, Y7PWV, Y7BWV	●	●	—	
			Grommet (In-line)	M9NW, M9PW, M9BW	●	●	—
				M9NWV, M9PWV, M9BWV	●	●	—
Water resistant	Grommet (In-line)	Y7BA	●	●	—		
		Grommet (Perpendicular)	M9NA, M9PA, M9BA	●	●	—	
			M9NAV, M9PAV, M9BAV	●	●	—	
Rotary actuator	—	Grommet (In-line)	S791/2, S7P1/2, T791/2	●	●	—	
			S991/2, S9P1/2, T991/2	●	●	—	
		Grommet (Perpendicular)	S791/2, S7P1/2, T791/2	●	●	—	
			S991/2, S9P1/2, T991/2	●	●	—	

With Pre-wired Connector

Connector Pin Arrangement



M8-3 pin



M8-4 pin



M12-4 pin

Sensor type	Color distinction of lead wire				Meaning of contact number			
	1 pin	2 pin	3 pin	4 pin	1 pin	2 pin	3 pin	4 pin
DC 2-wire type	Brown	—	—	Blue	OUT (+)	—	—	OUT (-)
DC 2-wire, Non-polar type	—	—	Brown	Blue	—	—	OUT (±)	OUT (≠)
DC 3-wire type	Brown	—	Blue	Black	DC (+)	—	DC (-)	OUT
DC 4-wire type	Brown	Orange	Blue	Black	DC (+)	Diagnostic output	DC (-)	OUT

Connector Specifications

Connector model	M8-3 pin	M8-4 pin	M12-4 pin
Pin arrangement			
Conformed standard	JIS C 4524, JIS C 4525, IEC 947-5-2, NECA 0402		
Impact resistance	300 m/s ²		
Enclosure	IP67 (IEC60529 standard)		
Insulation resistance	100 MΩ or more at 500 VDC Mega		
Withstand voltage	1500 VAC 1 minute (between contacts), Leak current 1 mA or less		

Dimensions

Connector model	
M8-3 pin 4 pin	
M12-4 pin	

Mass for Connector Type

Part no.	Connector type	Mass
D-□□□APC	M8-3	4 g
D-□□□BPC	M8-4	4 g
D-□□□DPC	M12-4	About 11 g

Connection (Female side) Connector Cable

As the parts are not supplied from SMC, refer to the application examples listed in the below.
(For detail such as catalog availability, etc., please contact each manufacturer.)

Connector size	Number of pins	Manufacturer	Applicable series example
M8	3	Phoenix Contact	SAC-3P
		Corrence Corporation	M8-3D
		OMRON Corporation	M8-4D
M12	4	Phoenix Contact	SAC-4P
		Corrence Corporation	VA-4D
		OMRON Corporation	XS2
		Yamatake Corporation	PA5-4I
		Hirose Electric Co., Ltd.	HR24
		DKK Ltd.	CM01-8DP4S