



# Auto Switches Precautions 1

Be sure to read before handling.

For detailed precautions on every series, refer to main text.

## Design and Selection

### Warning

#### 1. Check the specifications.

Read the specifications carefully and use this product appropriately. The product may be damaged or malfunction if it is used outside the range of specifications of current current, voltage, temperature or impact.

#### 2. Use caution when multiple cylinders are used and close to each other.

When two or more auto switch cylinders are lined up in close proximity to each other, magnetic field interference may cause the switches to malfunction. Maintain a minimum cylinder separation of 40 mm. (When the allowable interval is specified for each cylinder series, use the indicated value.)

#### 3. Use caution to the ON time of a switch at the intermediate position of stroke.

When an auto switch is placed at an intermediate position of the stroke and a load is driven at the time the piston passes, the auto switch will operate, but if the speed is too great, the operating time will be shortened and the load may not operate properly. The maximum detectable piston speed is:

$$V \text{ (mm/s)} = \frac{\text{Auto switch operating range (mm)}}{\text{Load operating time (ms)}} \times 1000$$

In cases of high piston speed, the use of an auto switch (D-F5NT/F7NT/G5NT and M5□T) with a built-in OFF delay timer (≈ 200 ms) makes it possible to extend the load operating time.

#### 4. Wiring should be kept as short as possible.

<Reed switches>

As the length of the wiring to a load gets longer, the rush current at switching ON becomes greater, and this may shorten the product's life. (The switch will stay ON all the time.)

- 1) For an auto switch without a contact protection circuit, use a contact protection box when the wire length is 5 m or longer.
- 2) Even if an auto switch has a built-in contact protection circuit, when the wiring is more than 30 m long, it is not able to adequately absorb the rush current and its life may be reduced. It is again necessary to connect a contact protection box in order to extend its life. Please contact SMC in this case.

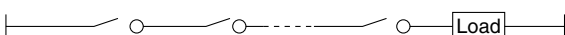
<Solid state switches>

- 3) Although wire length should not affect switch function, use a wire 100 m or shorter.

#### 5. Use caution to the internal voltage drop of a switch.

<Reed switches>

- 1) Switches with an indicator light (Except D-A56/A76H/A96/A96V/C76/E76A/Z76)
- If auto switches are connected in series as shown below, take note that there will be a large voltage drop because of internal resistance in the light emitting diodes. (Refer to internal voltage drop in the auto switch specifications.)  
[The voltage drop will be "n" times larger when "n" auto switches are connected.]  
Even though an auto switch operates normally, the load may not operate.



- Similarly, when operating below a specified voltage, it is possible that the load may be ineffective even though the auto switch function is normal. Therefore, the formula below should be satisfied after confirming the minimum operating voltage of the load.

$$\text{Supply voltage} - \text{Internal voltage drop of switch} > \text{Minimum operating voltage of load}$$

- 2) If the internal resistance of a light emitting diode causes a problem, select a switch without an indicator for right (MODEL D-A6□/A80/A80H/A90/A90V/C80/R80/90/E80A/Z80)

<Solid state switches>

- 3) Generally, the internal voltage drop will be greater with a 2-wire solid state auto switch than with a reed switch. Take the same precautions as in 1).

Also note that a 12 VDC relay is not applicable.

#### 6. Use caution to the leakage current.

<Solid state switches>

With a 2-wire solid state auto switch, current (leakage current) flows to the load to operate the internal circuit even when in the OFF state.

$$\text{Current to operate load (OFF condition)} > \text{Leakage current}$$

If the condition given in the above formula is not met, it will not reset correctly (stays ON). Use a 3-wire switch if this specification cannot be satisfied.

Moreover, leakage current flow to the load will be "n" times larger when "n" auto switches are connected in parallel.

#### 7. Do not use a load that generates surge voltage.

<Reed switches>

If driving a load such as a relay that generates a surge voltage, use a switch with a built-in contact protection circuit or use a contact protection box.

<Solid state switches>

Although a zener diode for surge protection is connected at the output side of a solid state auto switch, damage may still occur if the surge is applied repeatedly. When a load, such as a relay or solenoid, which generates surge is directly driven, use a type of switch with a built-in surge absorbing element.

#### 8. Cautions for use in an interlock circuit

When an auto switch is used for an interlock signal requiring high reliability, devise a double interlock system to avoid trouble by providing a mechanical protection function, or by also using another switch (sensor) together with the auto switch.

Also perform periodic maintenance inspections and confirm proper operation.

#### 9. Ensure sufficient space for maintenance activities.

When designing an application, be sure to allow sufficient space for maintenance and inspection.



# Auto Switches Precautions 2

Be sure to read before handling.  
For detailed precautions on every series, refer to main text.

## Mounting and Adjustment

### Warning

#### 1. Do not drop or bump.

Do not drop, bump, or apply excessive impacts (300 m/s<sup>2</sup> or more for reed switches and 1000 m/s<sup>2</sup> or more for solid state switches) while handling. Although the body of the switch may not be damaged, the inside of the switch could be damaged and cause a malfunction.

#### 2. Do not carry a cylinder by the auto switch lead wires.

Never carry a cylinder by its lead wires. This may not only cause broken lead wires, but it may cause internal elements of the switch to be damaged by the stress.

#### 3. Mount switches using the proper tightening torque.

When a switch is tightened beyond the range of fastening torque, the mounting screws or switch may be damaged. On the other hand, tightening below the range of fastening torque may allow the switch to slip out of position. (Refer to switch mounting for each series regarding switch mounting, moving, and fastening torque, etc.)

#### 4. Mount a switch at the center of the operating range.

Adjust the mounting position of an auto switch so that the piston stops at the center of the operating range (the range in which a switch is ON). (The mounting positions shown in the catalog indicate the optimum position at the stroke end.) If mounted at the end of the operating range (around the borderline of ON and OFF), the operation will be unstable.

## Wiring

### Warning

#### 1. Avoid repeatedly bending or stretching lead wires.

Broken lead wires will result from repeatedly applying bending stress or stretching force to the lead wires.

#### 2. Be sure to connect the load before power is applied.

<2-wire type>

If the power is turned on when an auto switch is not connected to a load, the switch will be instantly damaged because of excess current.

#### 3. Confirm proper insulation of wiring.

Be certain that there is no faulty wiring insulation (contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

#### 4. Do not wire with power lines or high voltage lines.

Wire separately from power lines or high voltage lines, avoiding parallel wiring or wiring in the same conduit with these lines. Control circuits including auto switches may malfunction due to noise from these other lines.

#### 5. Do not allow short circuiting of loads.

<Reed switches>

If the power is turned on with a load in a short circuited condition, the switch will be instantly damaged because of excess current flow into the switch.

<Solid state switches>

Model D-F9□(Y)/F9□W(V)/J51/G5NB and all models of PNP output switches do not have built-in short circuit prevention circuits. If loads are short circuited, the switches will be instantly damaged.

Use caution to avoid reverse wiring with the brown [red] power supply line and the black [white] output line on 3-wire type switches.

#### 6. Avoid incorrect wiring.

<Reed switches>

A 24 VDC switch with indicator light has polarity. The brown lead wire or terminal no. 1 is (+), and the blue lead wire or terminal no. 2 is (-).

[In the case of model D-97, the side without indicator is (+), and the black line side is (-).]

1) If connections are reversed, a switch will operate, however, the light emitting diode will not light up.

Also note that a current greater than the maximum specified one will damage a light emitting diode and make it inoperable.

Applicable models:

D-A73/A73H/A73C/C73/C73C/E73A/Z73/R73

D-97/93A/A93/A93V

D-A33/A34/A33A/A34A/A44/A44A

D-A53/A54/B53/B54

2) However, when using a two color indication auto switch, the switch (D-A79W/A59W/B59W), be aware that the switch will constantly remain ON if the connections are reversed.

<Solid state switches>

1) If connections are reversed on a 2-wire type switch, the switch will not be damaged if protected by a protection circuit, but the switch will always stay in an ON state. However, it is still necessary to avoid reversed connections, since the switch could be damaged by a load short circuit in this condition.

2) If connections are reversed (power supply line (+) and power supply line (-) on a 3-wire type switch, the switch will be protected by a protection circuit. However, if the power supply line (+) is connected to the blue (black) wire and the power supply line (-) is connected to the black (white) wire, the switch will be damaged.

#### \* Lead wire color changes

Lead wire colors of SMC auto switches have been changed in order to meet NECA Standard 0402 for production beginning September, 1996 and thereafter. Please refer to the tables provided.

#### 2-wire

	Old	New
Output (+)	Red	Brown
Output (-)	Black	Blue

#### Solid State with Diagnostic Output

	Old	New
Power supply (+)	Red	Brown
Power supply GND	Black	Blue
Output	White	Black
Diagnostic output	Yellow	Orange

#### 3-wire

	Old	New
Power supply (+)	Red	Brown
Power supply GND	Black	Blue
Output	White	Black

#### Solid State with Latch Type Diagnostic Output

	Old	New
Power supply (+)	Red	Brown
Power supply GND	Black	Blue
Output	White	Black
Latch type diagnostic output	Yellow	Orange

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data



# Auto Switches Precautions 3

Be sure to read before handling.

For detailed precautions on every series, refer to main text.

## Operating Environment

### Warning

- 1. Never use in the presence of explosive gases.**  
The construction of our auto switches does not make them explosion-proof. Never use them in the presence of an explosive gas, as this may cause a serious explosion.
- 2. Do not use in an area where a magnetic field is generated.**  
Auto switches will malfunction or magnets inside cylinders will become demagnetized. (Please consult with SMC regarding the availability of a magnetic field resistant auto switch.)
- 3. Do not use in environments where the auto switches will be constantly exposed to water.**  
Although switches except D-A3□/A44□/G39□/K39 satisfy the IEC standard IP67 structure (JIS C 0920: anti-immersion structure), do not use switches in applications where continually exposed to water splash or spray. Poor insulation or swelling of the potting resin inside switches may cause malfunction.
- 4. Do not use in environments with oil or chemicals.**  
Please consult with SMC if auto switches will be used in an environment with coolants, cleaning solvents, various oils or chemicals. If auto switches are used under these conditions for even a short time, they may be adversely affected by improper insulation, a malfunction due to swelling of the potting resin, or hardening of the lead wires.
- 5. Do not use in an environment with temperature cycles.**  
Please consult with SMC if switches are to be used where there are temperature cycles other than normal temperature changes, as they may be adversely affected internally.
- 6. Do not use in environments where there is excessive impact shock.**  
<Reed switches>  
When excessive impact (300 m/s<sup>2</sup> or more) is applied to a reed switch during operation, the contact point may malfunction and generate or cut off a signal momentarily (1 ms or less). Please consult with SMC regarding the need to use a solid state switch depending on the environment.
- 7. Do not use in locations where surges are generated.**  
<Solid state switches>  
When there are units (solenoid type lifters, high frequency induction furnaces, motors, etc.) which generate a large amount of surge in the area around cylinders with solid state auto switches, this may cause deterioration or damage to the switches. Avoid sources of surge generation and crossed lines.
- 8. Avoid accumulation of iron debris or close contact with magnetic substances.**  
When a large amount of ferrous debris such as machining chips or spatter is accumulated, or a magnetic substance (something attracted by a magnet) is brought into close proximity with an auto switch cylinder, it may cause the auto switches to malfunction due to a loss of the magnetic force inside the cylinder.

## Maintenance

### Warning

- 1. Perform the following maintenance periodically in order to prevent possible danger due to unexpected auto switch malfunction.**
  - 1) Securely tighten switch mounting screws.  
If screws become loose or the mounting position is dislocated, retighten screws securely after readjusting the mounting position.
  - 2) Confirm that there is no damage to lead wires.  
To prevent faulty insulation, replace switches or repair lead wires if damage is discovered.
  - 3) Confirm that the green light on the 2-color indicator type switch lights up.  
Confirm that the Green LED is ON when stopped at the set position. If the Red LED is ON when stopped at the set position, the mounting position is not appropriate. Readjust the mounting position until the Green LED lights up.

## Other

### Warning

- 1. Please consult with SMC concerning water resistance, elasticity of lead wires, and use at welding sites.**

# Before Operation

## Auto Switches Common Specifications

### ⚠ Precautions

Refer to "Auto Switches Precautions" on pages 6-16-4 to 6-16-6 before handling.

### Auto Switches Common Specifications

Type	Reed switch	Solid state switch
Leakage current	None	3-wire: 100 $\mu$ A or less, 2-wire: 0.8 mA or less <sup>(4)</sup>
Operating time	1.2 ms	1 ms or less <sup>(3)</sup>
Impact resistance	300 m/s <sup>2</sup>	1000 m/s <sup>2</sup>
Insulation resistance	50 M $\Omega$ or more at 500 M VDC (Between lead wire and case)	
Withstand voltage	1500 VAC for 1 minute <sup>(1)</sup> (Between lead wire and case)	1000 VAC for 1 minute (Between lead wire and case)
Ambient temperature	-10 to 60°C	
Enclosure	IEC529 Standard IP67, Immersible construction (JIS C 0920) <sup>(2)</sup>	

Note 1) Electrical entry: Connector type (A73C/A80C/C73C/C80C) and D-9/9□A/A9/A9□V type: 1000 VAC/min. (Between lead wire and the case)

Note 2) The following switches, 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) meet the IEC529 standard.

Note 3) IP63, JIS C 0920 Rainproof construction  
Except solid state switch with timer (D-M5□TL, G5NTL/F7NTL/F5NTL) and magnetic resistant 2-color indication type solid state switch (D-P5DWL). D-J51: 5 ms or less

Note 4) Except D-J51 (1 mA or less at 100 VAC, 1.5 mA or less at 200 VAC), D-M5NW/M5PW/M5BW, D-F9BAL, D-P5DWL (1 mA or less at 24 VDC).

### Lead Wire Length

Lead wire length indication

(Example) **D-A73 L**

Lead wire length

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

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

(Example) **D-F8PL-61**

Flexible lead wire specifications

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

### 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

Note 1) Applicable auto switch with 5 m lead wire ("Z")

Reed 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 switch: Manufactured upon receipt of order as standard.

Note 2) The standard lead wire length of solid state switches with timer, water resistant 2-color indication type or heat resistant 2-color indication type is 3 meters in length. (0.5 m is not available.)

Note 3) Lead wire lengths of 3 m and 5 m are standard for magnetic field resistant 2-color indicator type solid state switches. (0.5 m is not available.)

Note 4) Add "-61" at th end of the part number for the flexible lead wire except D-Y59, D-Y69, D-Y7 and D-M9□/M9□V type auto switches.

### Contact Protection Box: CD-P11, CD-P12

1

<Applicable switch types>

D-A7/A8, D-A7□H/A80H, D-A73C/A80C, D-C7/C8, D-C73C/C080C, D-E7□A/E80A, D-Z7/Z8, D-9/9□A, D-A9/A9□V, and D-A79W type

The above auto switches do not have internal contact protection circuits.

1. Operating load is an inductive load.
2. The length of wiring to the load is 5 m or more.
3. The load voltage is 100 or 200 VAC.

A contact protection box should be used in any of the above conditions. Unless using a contact protection box, 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 styles and lead wire length.**

2

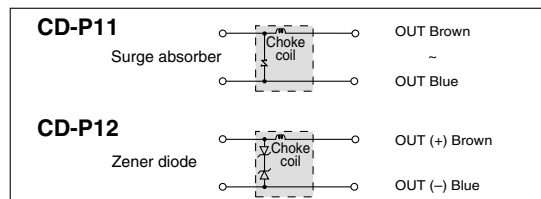
Please contact SMC when using built-in contact protection circuit style (D-A34[A][C], D-A44[A][C], D-A54/A64, D-B54/B64, D-A59W, D-B59W) in the following conditions: 1. The wiring length to load is more than 30 m; 2. When using PLC with large flow current.

### Contact Protection Box Specifications

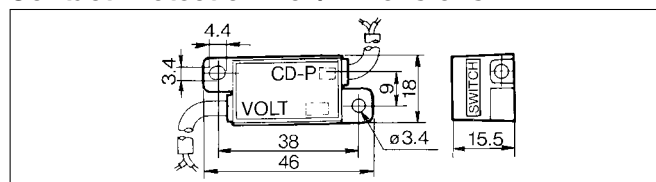
Part no.	CD-P11		CD-P12
Load voltage	100 VAC or less	200 VAC	24 VDC
Max. load current	25 mA	12.5 mA	50 mA

\* Lead wire length — Switch connection side 0.5 m  
Load connection side 0.5 m

### Contact Protection Box Internal Circuit



### Contact Protection Box/Dimensions

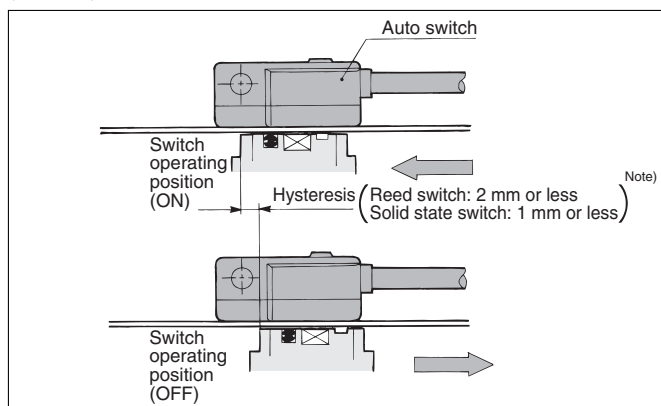


### Contact Protection Box Connection

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.

### 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).



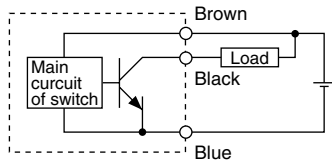
Note) Hysteresis may fluctuate due to the operating environment. Please contact SMC if hysteresis causes an operational problem.

# Before Operation

## Auto Switches Connection and Example

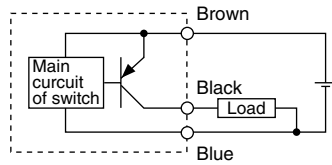
### Basic Wiring

#### Solid state 3-wire, NPN

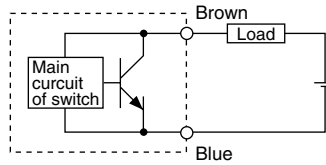


(Power supply for switch and load are separate)

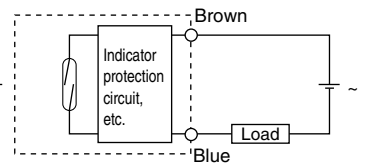
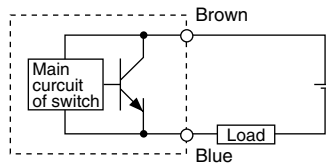
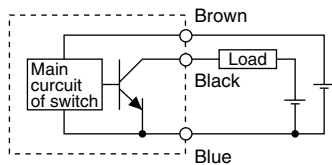
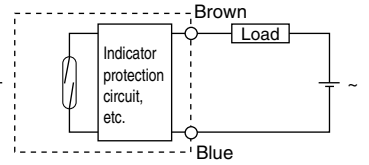
#### Solid state 3-wire, PNP



#### Solid state 2-wire

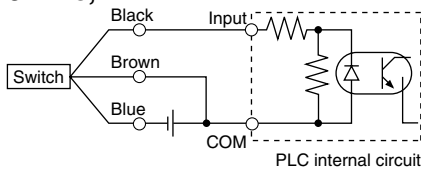


#### Reed switch 2-wire

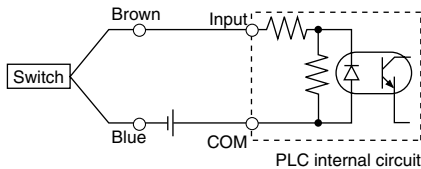


### Example of Connection with PLC (Programmable Logic Controller)

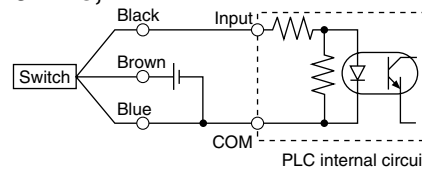
#### • Sink input specifications 3-wire, NPN



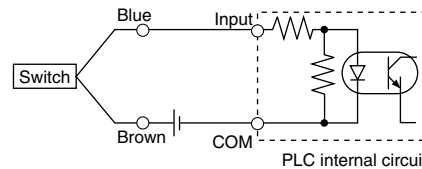
#### 2-wire



#### • Source input specifications 3-wire, PNP



#### 2-wire

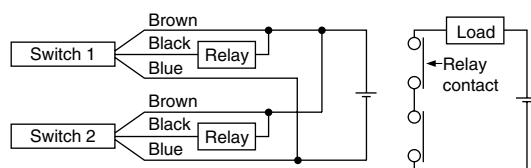


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

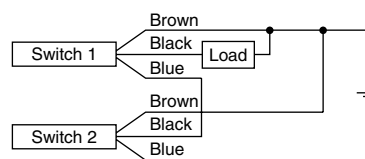
### Example of AND (Series) and OR (Parallel) Connection

#### • 3-wire

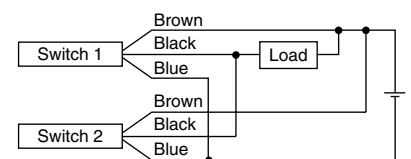
##### AND connection for NPN output (Using relays)



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



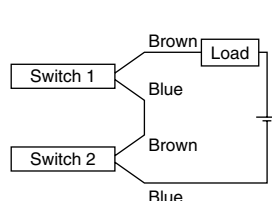
##### OR connection for NPN output



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

#### • 2-wire

##### 2-wire with 2-switch AND connection

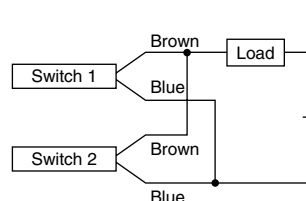


When two switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the switches are in the ON state.

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

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

##### 2-wire with 2-switch OR connection



(Solid state switch)  
When two 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 switch is 1 mA.

(Reed switch)  
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of 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 switches.





# Reed Switch Band Mounting Style D-C73/D-C76/D-C80

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

## Grommet



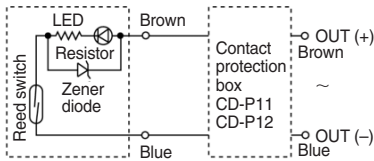
## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

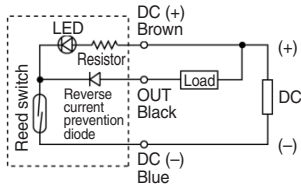
D-C7 (With indicator light)			
Auto switch model	D-C73		D-C76
Applicable load	Relay, PLC		IC circuit
Load voltage	24 VDC	100 VAC	4 to 8 VDC
Max. load current and range <sup>(3)</sup>	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	None		
Internal voltage drop	2.4 V or less		0.8 V or less
Indicator light	Red LED lights when ON.		
D-C8 (Without indicator light)			
Auto switch model	D-C80		
Applicable load	Relay, PLC, IC circuit		
Load voltage	24 V <sub>DC</sub> <sup>AC</sup> or less	48 V <sub>DC</sub> <sup>AC</sup>	100 V <sub>DC</sub> <sup>AC</sup>
Max. 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)		

## Auto Switch Internal Circuit

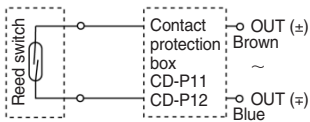
### D-C73



### D-C76



### D-C80



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 6-16-7 for contact protection box.)

• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

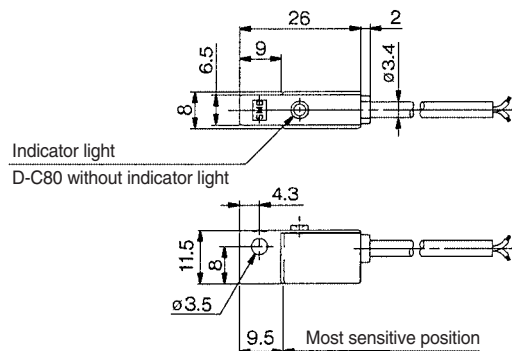
Note 2) Regarding the lead wire length, refer to page 6-16-7.

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.

## Weight

(g)				
Auto switch model	D-C73	D-C76	D-C80	
Lead wire length (m)	0.5	9	10	9
	3	46	50	46
	5	76	—	—

## Dimensions



# Reed Switch Band Mounting Style D-B53/D-B54/D-B64

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## Grommet



## Auto Switch Specifications

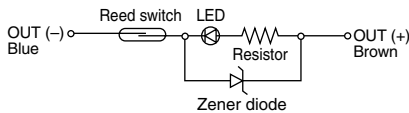
PLC: Abbreviation of Programmable Logic Controller

D-B5 (With indicator light)				
Auto switch model	D-B53	D-B54		
Applicable load	PLC	Relay, PLC		
Load voltage	24 VDC	24 VDC	100 VAC	200 VAC
Load current range <sup>(3)</sup>	5 to 50 mA	5 to 50 mA	5 to 25 mA	5 to 12.5 mA
Contact protection circuit	None	Built-in		
Internal voltage drop	2.4 V or less	2.4 V or less (to 20 mA)/3.5 V or less (to 50 mA)		
Indicator light	Red LED lights when ON.			
D-B6 (Without indicator light)				
Auto switch model	D-B64			
Applicable load	Relay, PLC			
Load voltage	24 V <sup>DC</sup> or less	100 VAC	200 VAC	
Max. load current	Max. 50 mA	Max. 25 mA	Max. 12.5 mA	
Contact protection circuit	Built-in			
Internal resistance	25 Ω or less			

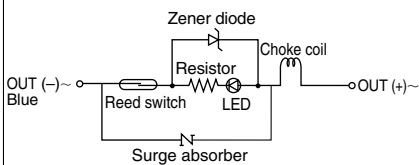
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.
- Note 2) Regarding the lead wire length, refer to page 6-16-7.
- Note 3) Under 5 mA, the strength 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.

## Auto Switch Internal Circuit

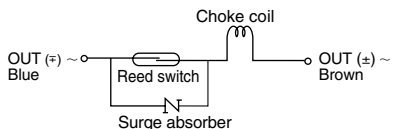
### D-B53



### D-B54



### D-B64

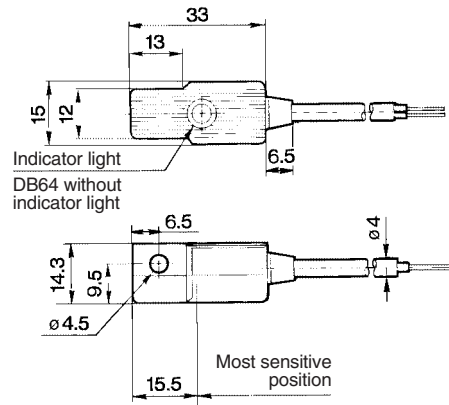


## Weight

Auto switch model	D-B53	D-B54	D-B64
Lead wire length (m)	0.5	22	22
	3	78	78
	5	126	126

(g)

## Dimensions



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data





# Reed Switch Band Mounting Style D-A33/D-A34/D-A44

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Terminal conduit: D-A3  
DIN terminal: D-A4



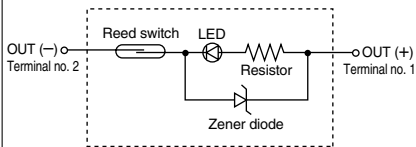
## Caution

### Precautions

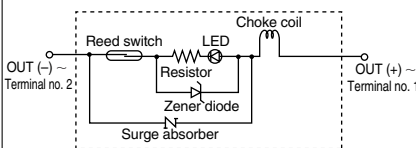
1. Use cable whose O.D. is within the size in the figure to maintain water resistant performance.
2. After wiring, confirm that tightening gland and all screws are tightened.

## Auto Switch Internal Circuit

### D-A33



### D-A34, D-A44



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

### D-A3 (With indicator light) Terminal conduit

Auto switch model	D-A33	D-A34		
Applicable load	PLC	Relay, PLC		
Load voltage	24 VDC	24 VDC	100 VAC	200 VAC
Load current range <sup>(2)</sup>	5 to 50 mA	5 to 50 mA	5 to 25 mA	5 to 12.5 mA
Contact protection circuit	None	Built-in		
Internal voltage drop	2.4 V or less	≤ 2.4 V (to 20 mA) / ≤ 3.5 V (to 50 mA)		
Indicator light	Red LED lights when ON.			

### D-A44 (With indicator light) DIN terminal

Auto switch model	D-A44		
Applicable load	Relay, PLC		
Load voltage	24 VDC	100 VAC	200 VAC
Load current range	5 to 50 mA	5 to 25 mA	5 to 12.5 mA
Contact protection circuit	Built-in		
Internal voltage drop	2.4 V or less (to 20 mA) / 3.5 V or less (to 50 mA)		
Indicator light	Red LED lights when ON.		

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) 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.

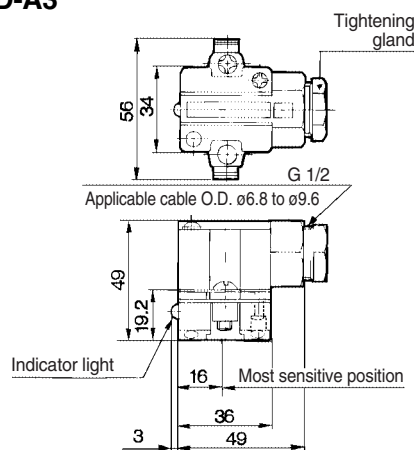
## Weight

Auto switch model	D-A33	D-A34	D-A44
Lead wire	None	116	114

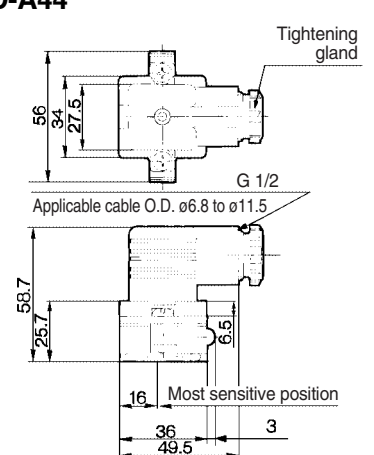
(g)

## Dimensions

### D-A3



### D-A44



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Reed Switch Band Mounting Style D-A33A/D-A34A/D-A44A

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Terminal conduit: D-A3□A  
DIN terminal: D-A44A



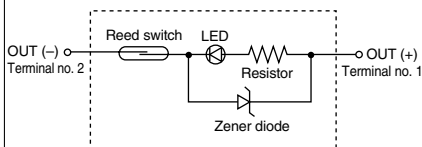
## Caution

### Precautions

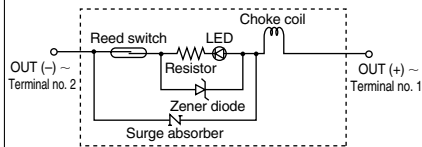
1. Use cable whose O.D. is within the size in the figure to maintain water resistant performance.
2. After wiring, confirm that tightening gland and all screws are tightened.

### Auto Switch Internal Circuit

#### D-A33A



#### D-A34A, D-A44A



### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

#### D-A3□A (With indicator light) Terminal conduit

Auto switch model	D-A33A	D-A34A		
Applicable load	PLC	Relay, PLC		
Load voltage	24 VDC	24 VAC	100 VAC	200 VAC
Load current range <sup>(2)</sup>	5 to 50 mA	5 to 50 mA	5 to 25 mA	5 to 12.5 mA
Contact protection circuit	None	Built-in		
Internal voltage drop	2.4 V or less	≤ 2.4 V (to 20 mA)/≤ 3.5 V (to 50 mA)		
Indicator light	Red LED lights when ON.			

#### D-A44A (With indicator light) DIN terminal

Auto switch part model	D-A44A		
Applicable load	Relay, PLC		
Load voltage	24 VDC	100 VAC	200 VAC
Load current range	5 to 50 mA	5 to 25 mA	5 to 12.5 mA
Contact protection circuit	Built-in		
Internal voltage drop	2.4 V or less (to 20 mA)/3.5 V or less (to 50 mA)		
Indicator light	Red LED lights when ON.		

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) 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.

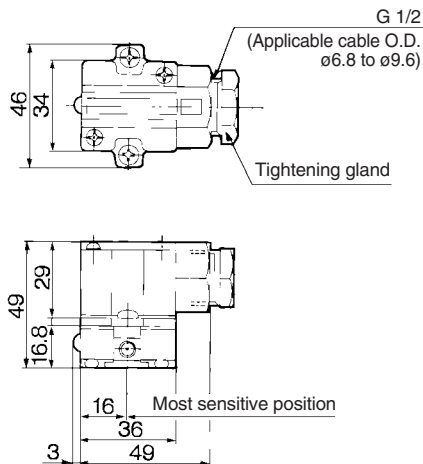
### Weight

Auto switch model		D-A33A	D-A34A	D-A44A
Lead wire	None	112	112	110

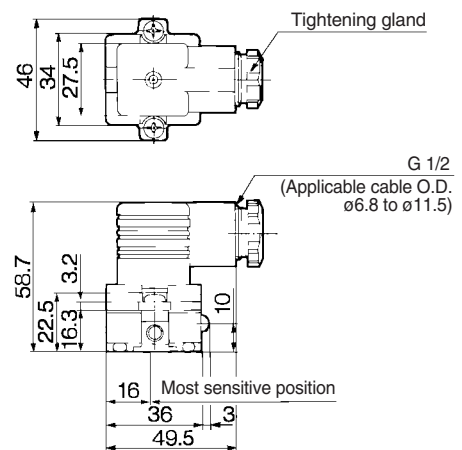
(g)

### Dimensions

#### D-A3□A



#### D-A44



# Reed Switch Band Mounting Style D-A72/D-A73/D-A80

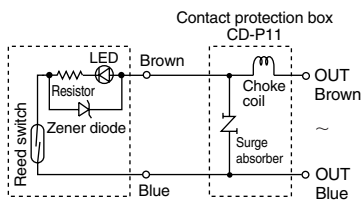
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**Grommet  
Electrical entry: Perpendicular**

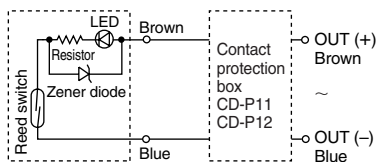


## Auto Switch Internal Circuit

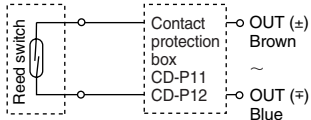
### D-A72



### D-A73



### D-A80



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 6-16-7 for contact protection box.)

## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

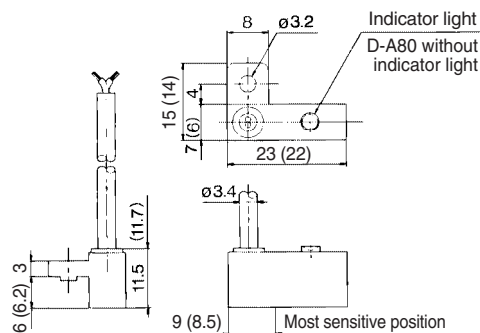
D-A7 (With indicator light)			
Auto switch model	D-A72	D-A73	
Applicable load	Relay, PLC	Relay, PLC	
Load voltage	200 VAC	24 VDC	100 VAC
Load current range <sup>(3)</sup>	5 to 10 mA	5 to 40 mA	5 to 20 mA
Contact protection circuit	None		
Internal voltage drop	2.4 V or less		
Indicator light	Red LED lights when ON.		
D-A8 (Without indicator light)			
Auto switch model	D-A80		
Applicable load	Relay, IC circuit, PLC		
Load voltage	24 V <sup>AC</sup> DC or less	48 V <sup>AC</sup> DC	100 V <sup>AC</sup> DC
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)		

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.
- Note 2) Regarding the lead wire length, refer to page 6-16-7.
- 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.

## Weight

Auto switch model	D-A72	D-A73	D-A80
Lead wire length (m)	0.5	10	10
	3	47	47
	5	—	77

## Dimensions



( ) values for D-A72

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Reed Switch Rail Mounting Style D-A7□H/D-A80H

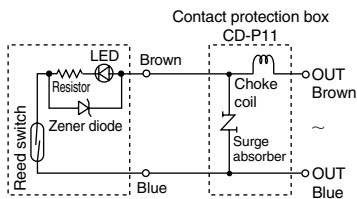
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**Grommet  
Electrical entry: In-line**

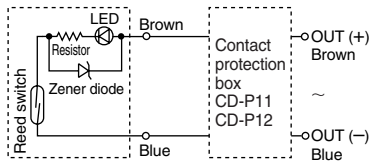


## Auto Switch Internal Circuit

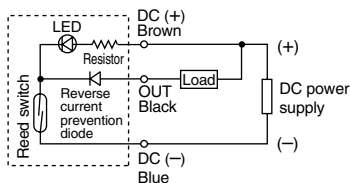
### D-A72H



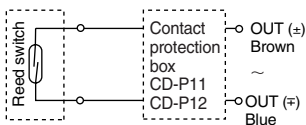
### D-A73H



### D-A76H



### D-A80H



Note 1) Operating load is an induction load.  
 Note 2) In the case the wiring length to load is more than 5 m.  
 Note 3) Wiring to the load is 5 m or longer.  
 Use the contact protection box in any of the above listed situations. The contact point life may decrease. **Especially in the case of D-A72H, be sure to use the contact protection box.** (Refer to page 6-16-7 for contact protection box.)

## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-A7□H (With indicator light)				
Auto switch model	D-A72H	D-A73H		D-A76H
Applicable load	Relay, PLC	Relay, PLC		IC circuit
Load voltage	200 VAC	24 VDC	100 VAC	4 to 8 VDC
Max. load voltage/Load current range <sup>(3)</sup>	5 to 10 mA	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	2.4 V or less			0.8 V or less
Internal voltage drop	None			
Indicator light	Red LED lights when ON.			
D-A80H (Without indicator light)				
Auto switch model	D-A80H			
Applicable load	Relay, IC circuit, PLC			
Load voltage	24 V <sup>AC</sup> <sub>DC</sub> or less	48 V <sup>AC</sup> <sub>DC</sub>	100 V <sup>AC</sup> <sub>DC</sub>	
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)			

• Lead wire — Oil resistant vinyl heavy-duty cord, 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 cores (Brown, Black, Blue), 0.5 m

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

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.

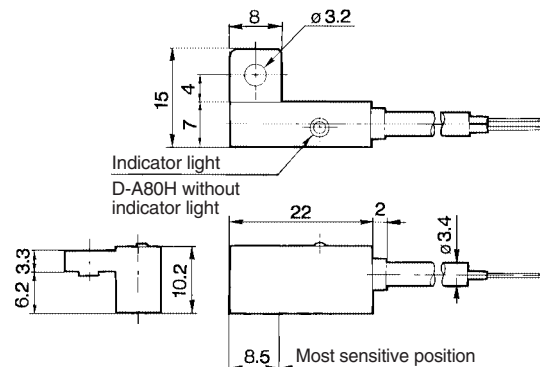
## Weight

(g)

Auto switch model	D-A72H	D-A73H	D-A76H	D-A80H
Lead wire length (m)	0.5	10	11	10
	3	47	47	47
	5	—	77	—

## Dimensions

### D-A7□H, D-A80H



# Reed Switch Rail Mounting Style D-A73C/D-A80C

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## Connector



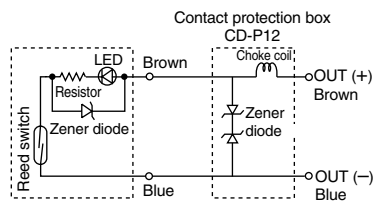
## Caution

### Precautions

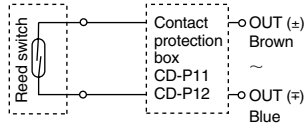
1. Confirm that the connector is appropriately tightened. If tightened insufficiently, the waterproof performance will deteriorate.
2. Refer to page 6-16-63 for the details.

## Auto Switch Internal Circuit

### D-A73C



### D-A80C



Note 1) Operating load is an induction load.  
Note 2) Wiring to the load is 5 m or longer.  
Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 6-16-7 for contact protection box.)

## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-A73C (With indicator light)	
Auto switch model	<b>D-A73C</b>
Applicable load	Relay, PLC
Load voltage	24 VDC
Load current range	5 to 40 mA
Contact protection circuit <sup>(4)</sup>	None
Internal voltage drop	2.4 V or less
Indicator light	Red LED lights when ON.
D-A80C (Without indicator light)	
Auto switch model	<b>D-A80C</b>
Applicable load	Relay, IC circuit, PLC
Load voltage	24 V <sup>AC</sup> <sub>DC</sub>
Maximum load current	50 mA
Contact protection circuit	None
Internal resistance	1 Ω or less (Including lead wire length of 3 m)

• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

Note 3) Lead wire with connector may be shipped with switch.

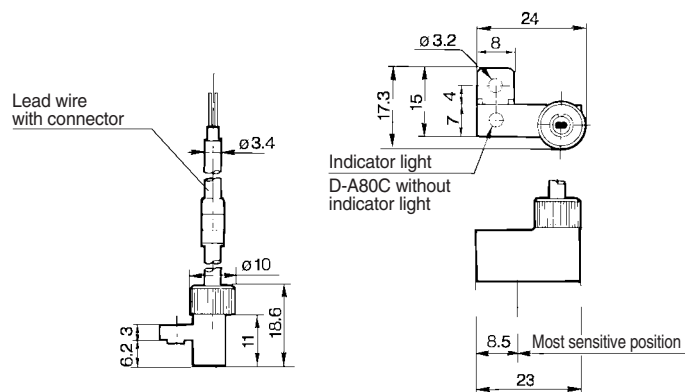
Note 4) Under 5 mA, the strength of the indicator light is poor. In some cases, visibility of the indicator light will not be possible where the output signal is less than 2.5 mA. However, there is no problem in terms of contact output, when an output signal exceeds 1 mA or more.

## Weight

Auto switch model	<b>D-A73C</b>		<b>D-A80C</b>	
Lead wire length (m)	0.5	12	12	
	3	54	54	
	5	84	84	

(g)

## Dimensions



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data



# Reed Switch Tie-rod Mounting Style D-A5□/□/ D-A6□□

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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

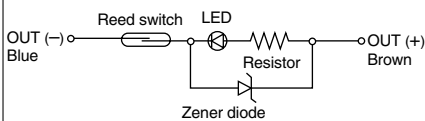
D-A5 (With indicator light)					
Auto switch part model	D-A53	D-A54		D-A56	
Applicable load	PLC	Relay, PLC		IC circuit	
Load voltage	24 VDC	24 VDC	100 VAC	200 VAC	4 to 8 VDC
Maximum load <sup>(3)</sup> current and range	5 to 50 mA	5 to 50 mA	5 to 25 mA	5 to 12.5 mA	20 mA
Contact protection circuit	None	Built-in			None
Internal voltage drop	2.4 V or less	≤ 2.4 V (to 20 mA)/≤ 3.5 V (to 50 mA)			0.8 V or less
Indicator light	Red LED lights when ON.				

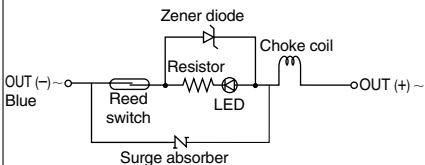
D-A6 (Without indicator light)				
Auto switch model	D-A64			D-A67
Applicable load	Relay, PLC			PLC/IC circuit
Load voltage	24 V <sup>AC</sup> DC or less	100 VAC	200 VAC	Max. 24 VDC
Maximum load current	50 mA	25 mA	12.5 mA	30 mA
Contact protection circuit	Built-in			None
Internal resistance	25 Ω or less			1 Ω or less (Including lead wire length of 3 m)

## Auto Switch Internal Circuit

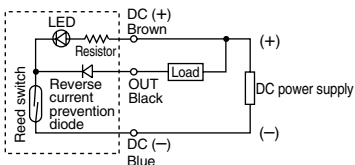
### D-A53



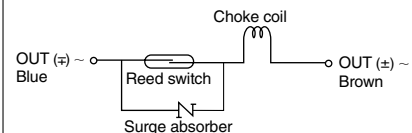
### D-A54



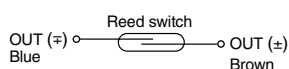
### D-A56



### D-A64



### D-A67



- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 2 cores (Brown, Blue), or 0.2 mm<sup>3</sup> cores (Brown, Black, Blue), 0.5 m

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

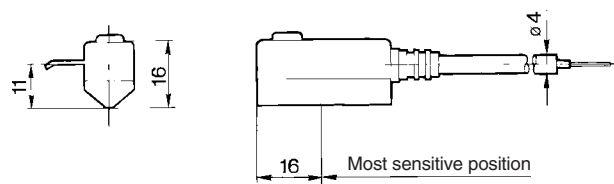
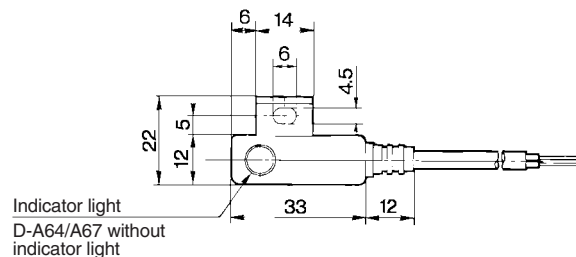
Note 2) Regarding the lead wire length, refer to page 6-16-7.

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.

## Weight

Auto switch model		D-A53	D-A54	D-A56	D-A64	D-A67
Lead wire length (m)	0.5	24	24	24	24	24
	3	48	48	48	48	48
	5	96	—	—	—	—

## Dimensions



# Reed Switch Tie-rod Mounting Style D-A33C/D-A34C/D-A44C

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Terminal conduit: D-A3□C  
DIN terminal: D-A44C



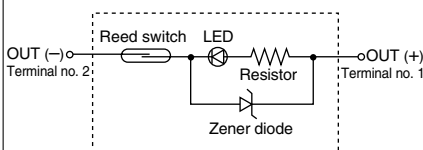
## Caution

### Precautions

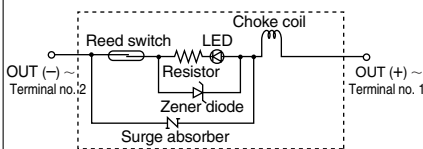
1. Use cable whose O.D. is within the size in the figure to maintain water resistant performance.
2. After wiring, confirm that tightening gland and all screws are tightened.

## Auto Switch Internal Circuit

### D-A33C



### D-A34C, D-A44C



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-A3□C (With indicator light) Terminal conduit				
Auto switch model	D-A33C	D-A34C		
Applicable load	PLC	Relay, PLC		
Load voltage	24 VDC	24 VAC	100 VAC	200 VAC
Load current range <sup>(2)</sup>	5 to 50 mA	5 to 50 mA	5 to 25 mA	5 to 12.5 mA
Contact protection circuit	None	Built-in		
Internal voltage drop	2.4 V or less	≤ 2.4 V (to 20 mA)/≤ 3.5 V (to 50 mA)		
Indicator light	Red LED lights when ON.			
D-A44C (With indicator light) DIN terminal				
Auto switch model	D-A44C			
Applicable load	Relay, PLC			
Load voltage	24 VDC	100 VAC	200 VAC	
Load current range <sup>(2)</sup>	5 to 50 mA	5 to 25 mA	5 to 12.5 mA	
Contact protection circuit	Built-in			
Internal voltage drop	2.4 V or less (to 20 mA)/3.5 V or less (to 50 mA)			
Indicator light	Red LED lights when ON.			

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) 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.

## Weight

Auto switch model	D-A33C	D-A34C	D-A44C
Applicable bore size (mm)	40	162	160
	50	166	164
	63	184	182
	80	210	208
	100	232	230

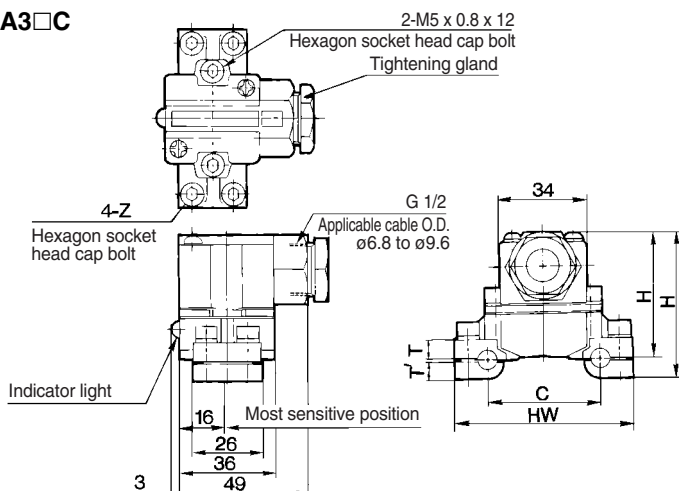
## Dimensions

Auto switch model	Applicable bore size (mm)	C	HW	H	H'	T	T'	Z
D-A3□C-4, D-A44C-4	40	44	69	58 (67.5)	50.5 (60)	7.5	6.5	M5 x 0.8 x 16
D-A3□C-5, D-A44C-5	50	52	77	59 (68.5)	51.5 (61)	8.5	6.5	
D-A3□C-6, D-A44C-6	63	64	91	61.5 (71)	53 (62.5)	10.5	7.5	M5 x 0.8 x 20
D-A3□C-8, D-A44C-8	80	78	107	65 (74.5)	54.5 (64)	12.5	9.5	
D-A3□C-10, D-A44C-10	100	92	121	68 (77.5)	57.5 (67)	15.5	9.5	M5 x 0.8 x 25

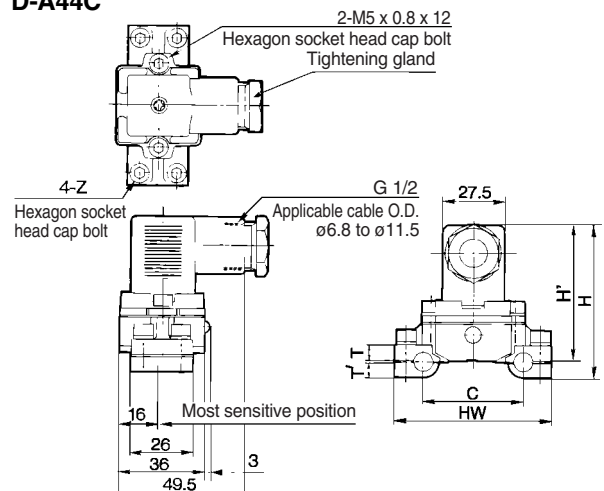
\* ( ): Denotes the values of D-A44C

## Dimensions

### D-A3□C



### D-A44C



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

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

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## Grommet Electrical entry: In-line



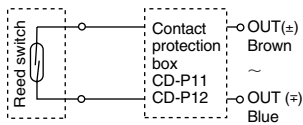
### Caution

#### Precautions

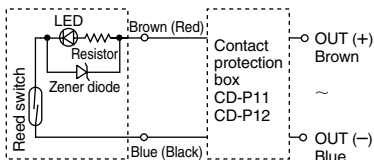
- Fix the switch with appropriate screw installed on the switch body. If using other screws, switch may be damaged.

**Auto Switch Internal Circuit**  
Colors of lead wire inside ( ) are the ones before conformed to IEC standard.

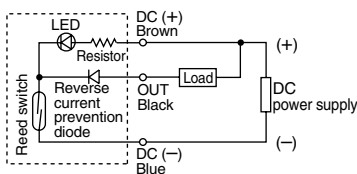
#### D-A90V



#### D-A93V



#### D-A96V



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 6-16-7 for contact protection box.)

## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-A90, D-A90V (Without indicator light)			
Auto switch model	D-A90, D-A90V		
Applicable load	IC circuit, Relay, PLC		
Load voltage	24 V <sub>AC</sub> or less	48 V <sub>AC</sub> or less	100 V <sub>AC</sub> 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)		
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 <sup>(3)</sup>	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 lights when ON.		

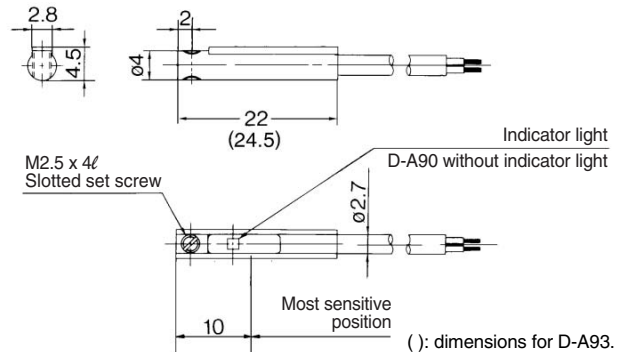
- Lead wire  
D-A90(V)/D-A93(V)—Oil resistant vinyl heavy-duty cord,  $\phi 2.7$ , 0.18 mm<sup>2</sup> x 2 cores (Brown, Blue), 0.5 m  
D-A96(V)—Oil resistant vinyl heavy-duty cord,  $\phi 2.7$ , 0.15 mm<sup>2</sup> x 3 cores (Brown, Black, Blue), 0.5 m
- Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.
- Note 2) Regarding the lead wire length, refer to page 6-16-7.
- 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.

## Weight

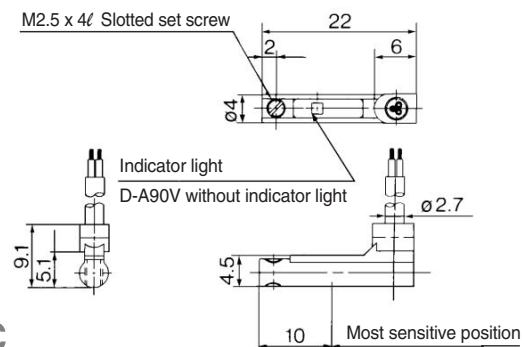
Model	D-A90	D-A90V	D-A93	D-A93V	D-A96	D-A96V
Lead wire length: 0.5 m	6	6	6	6	8	8
Lead wire length: 3 m	30	30	30	30	41	41

## Dimensions

### D-A90, D-A93, D-A96



### D-A90V, D-A93V, D-A96V



# Reed Switch Direct Mounting Style D-90/D-97

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**Grommet**  
Lead wire: Parallel cord



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-90 (Without indicator light)			
Auto switch model	D-90		
Applicable load	Relay, IC circuit, PLC		
Load voltage	5 VAC 5 VDC	12 VAC 12 VDC	24 VAC 24 VDC
Max. load current	50 mA		
Internal resistance	1 or less (Including lead wire length of 3 m)		
D-97 (With indicator light)			
Auto switch model	D-97		
Applicable load	Relay, PLC		
Load voltage	24 VDC		
Load current range <sup>(3)</sup>	5 to 40 mA		
Internal voltage drop	2.4 V or less		
Indicator light	Red LED lights when ON.		

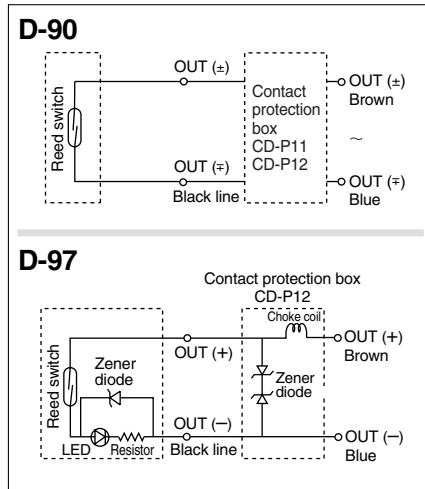
• Lead wire — Vinyl parallel cord, 0.2 mm<sup>2</sup>, 2 cores, 0.5 m

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

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.

## Auto Switch Internal Circuit



Note 1) Operating load is an induction load.

Note 2) Wiring to the load is 5 m or longer.

Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 6-16-7 for contact protection box.)

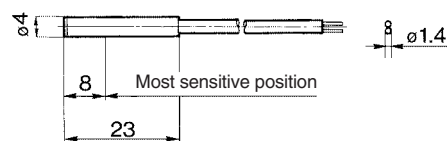
## Weight

Auto switch model	D-90	D-97
Lead wire length (m)		
0.5	5	5
3	23	23
5	37	37

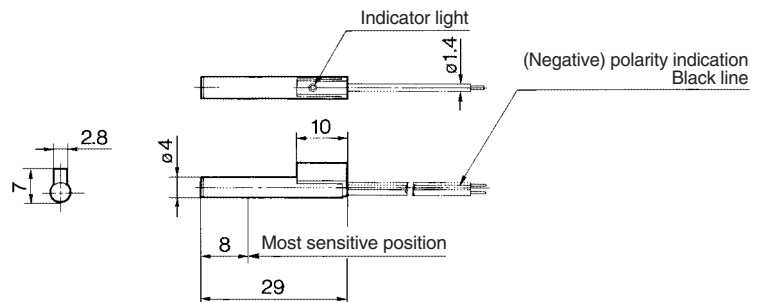
(g)

## Dimensions

### D-90



### D-97



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

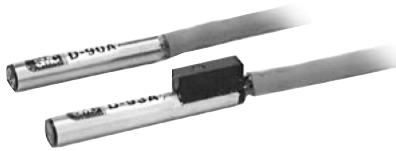
20-

Data

# Reed Switch Direct Mounting Style D-90A/D-93A

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**Grommet**  
Lead wire: Heavy-duty cord



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-90A (Without indicator light)				
Auto switch model	D-90A			
Applicable load	Relay, IC circuit, PLC			
Load voltage	5 VAC	24 VAC	24 VAC	100 VAC
	5 VDC	12 VDC	24 VDC	100 VDC
Max. load current	50 mA			20 mA
Internal resistance	1 or less (Including lead wire length of 3 m)			
D-93A (With indicator light)				
Auto switch model	D-93A			
Applicable load	Relay, PLC			
Load voltage	24 VDC		100 VAC	
Load current range <sup>(3)</sup>	5 to 40 mA		5 to 20 mA	
Internal voltage drop	2.4 V or less			
Indicator light	Red LED lights when ON.			

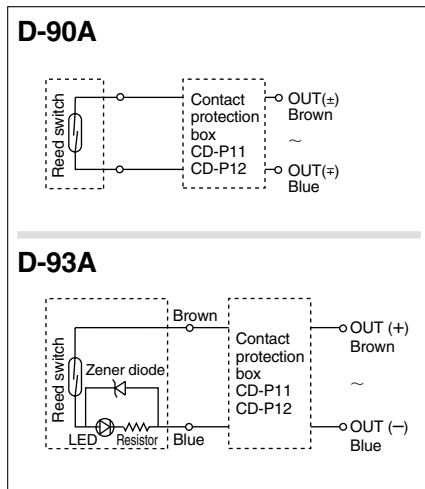
• Lead wire — Oil resistant vinyl heavy-duty cord, 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

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.

## 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 6-16-7 for contact protection box.)

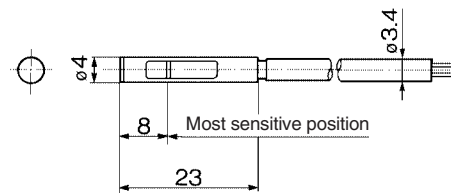
## Weight

Auto switch model	D-90A		D-93A	
Lead wire length (m)	0.5	9	9	
	3	47	47	
	5	77	77	

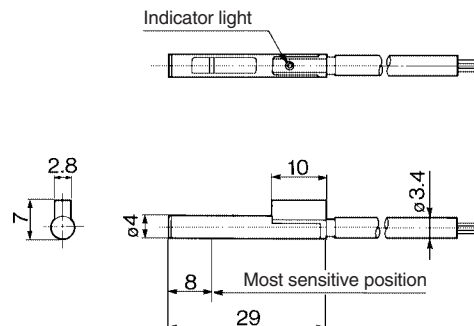
(g)

## Dimensions

### D-90A



### D-93A



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

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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

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 <sup>(3)</sup>	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	None		
Internal voltage drop	≤ 2.4 V (to 20 mA) ≤ 3 V (to 40 mA)		0.8 V or less
Indicator light	Red LED lights when ON.		
D-Z8 (Without indicator light)			
Auto switch model	D-Z80		
Applicable load	Relay, PLC, IC circuit		
Load voltage	24 V <sub>DC</sub> <sup>AC</sup> or less	48 V <sub>DC</sub> <sup>AC</sup>	100 V <sub>DC</sub> <sup>AC</sup>
Maximum load current	50 mA	40 mA	20 mA
Contact protection circuit	None		
Internal resistance	1 Ω or less (Including 3 m lead wire)		

• Lead wire — Oil resistant vinyl heavy-duty cord, ø3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m (For only D-Z73, ø2.7, 0.18 mm<sup>2</sup>, 2 cores)

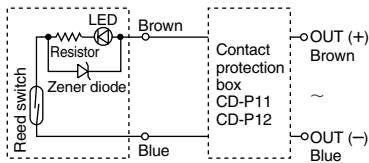
Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

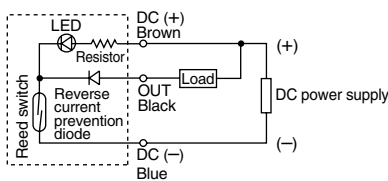
Note 3) Under 5 mA, the strength of the indicator light is poor. In some cases, visibility of the indicator light will not be possible where the output signal is less than 2.5 mA. However, there is no problem in terms of contact output, when an output signal exceeds 1 mA or more.

## Auto Switch Internal Circuit

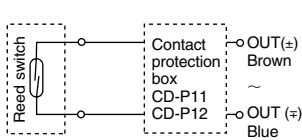
### D-Z73



### D-Z76



### D-Z80



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.

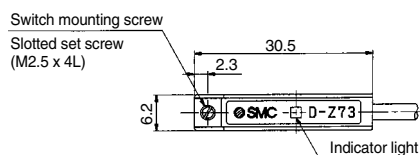
Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 6-16-7 for contact protection box.)

## Weight

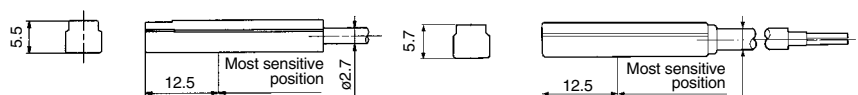
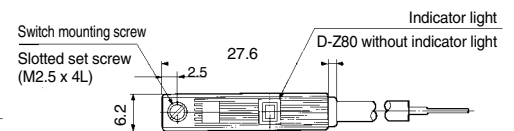
Auto switch model	D-Z73	D-Z76	D-Z80
Lead wire length (m)	0.5	7	9
	3	31	49
	5	50	—

## Dimensions

### D-Z73



### D-Z76, Z80



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

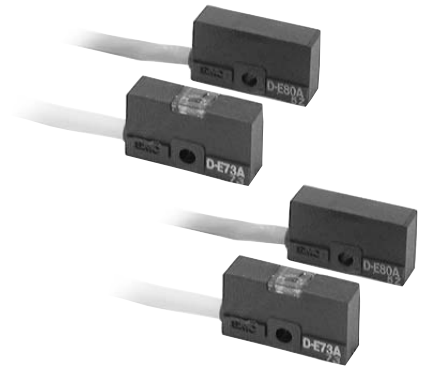


# Reed Switch Direct Mounting Style D-E73A/D-E76A/D-E80A



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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-E7□A (With indicator light)			
Auto switch model	D-E73A		D-E76A
Applicable load	Relay, PLC		IC circuit
Load voltage	24 VDC	100 VAC	4 to 8 VDC
Max. load current and load current range <sup>(3)</sup>	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	None		
Internal voltage drop	2.4 V or less		0.8 V or less
Indicator light	Red LED lights when ON.		
D-E80A (Without indicator light)			
Auto switch model	D-E80A		
Applicable load	Relay, PLC, IC circuit		
Load voltage	24 V <sub>DC</sub> <sup>AC</sup> or less	48 V <sub>DC</sub> <sup>AC</sup>	100 V <sub>DC</sub> <sup>AC</sup>
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)		

- Lead wire — Oil resistant vinyl heavy-duty cord, ø3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

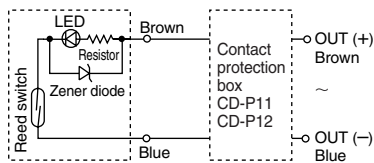
Note 1) Regarding the common specifications of the reed switches, refer to page 8-30-7.

Note 2) Regarding the lead wire length, refer to page 8-30-7.

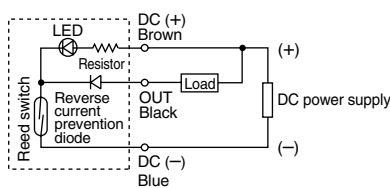
Note 3) Under 5 mA, the strength of the indicator light is poor. In some cases, visibility of the indicator light will not be possible where the output signal is less than 2.5 mA. However, there is no problem in terms of contact output, when an output signal exceeds 1 mA or more.

## Auto Switch Internal Circuit

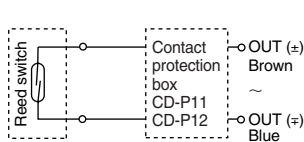
### D-E73A



### D-E76A



### D-E80A



Note 1) Operating load is an induction load.

Note 2) Wiring to the load is 5 m or longer.

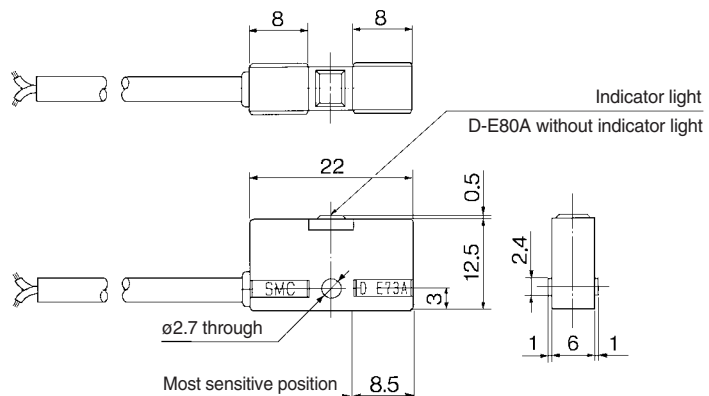
Note 3) Load voltage is 100 VAC.

Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 8-30-7 for contact protection box.)



## Weight

Auto switch model	D-E73A	D-E76A	D-E80A
Lead wire length (m)	0.5	10	10
	3	47	47
	5	—	—

## Dimensions



# Reed Switch Direct Mounting Style D-R73/D-R80

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**Grommet  
Electrical entry: In-line**

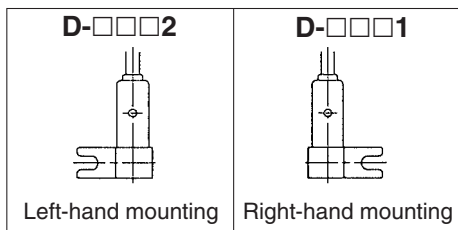


## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-R73□ (With indicator light)		D-R80□ (Without indicator light)			
Auto switch model	D-R731, D-R732		D-R801, D-R802		
Applicable load	Relay, PLC		Relay, IC circuit, PLC		
Load voltage	100 VAC	24 VDC	24 V <sup>AC</sup> <sub>DC</sub> or less	48 V <sup>AC</sup> <sub>DC</sub>	100 V <sup>AC</sup> <sub>DC</sub>
Max. load current and load current range	5 to 20 mA	5 to 40 mA	50 mA	40 mA	20 mA
Contact protection circuit	None		None		
Internal voltage drop	2.4 V or less		0		
Indicator light	Red LED lights when ON.		None		

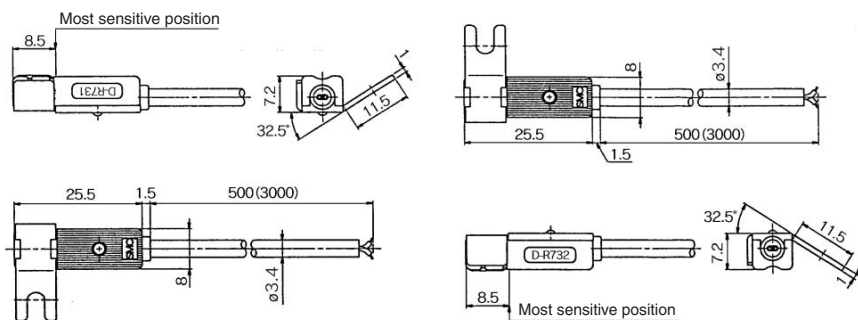
• Lead wire — Oil resistant vinyl heavy-duty cord 0.2 mm<sup>2</sup>, 2-wire (Brown, Blue) 0.5 m  
 Note 1) Regarding the common specifications of the reed switches, refer to page 11-11-5.  
 Note 2) Regarding the lead wire length, refer to page 11-11-5.



## Dimensions

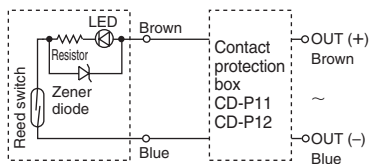
### D-R731: Right-hand mounting

### D-R732: Left-hand mounting

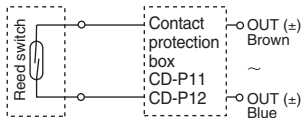


## Auto Switch Internal Circuit

### D-R731, D-R732

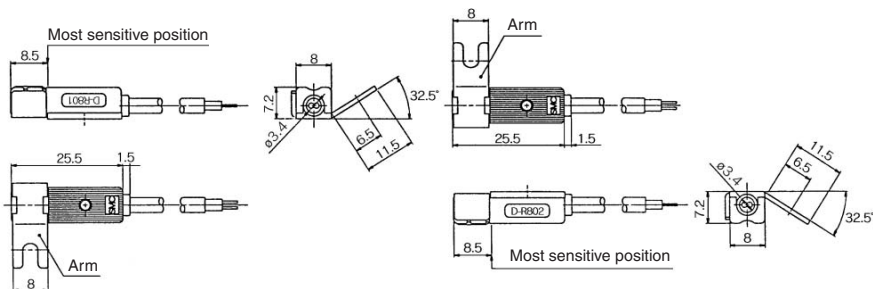


### D-R801, D-R802



### D-R801: Right-hand mounting

### D-R802: Left-hand mounting





# Solid State Switch Band Mounting Style D-H7A1/D-H7A2/D-H7B

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## Grommet



## Auto Switch Specifications

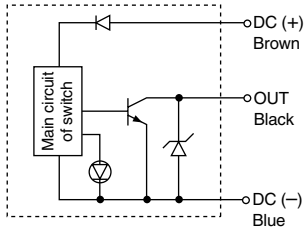
PLC: Abbreviation of Programmable Logic Controller

D-H7□ (With indicator light)			
Auto switch model	D-H7A1	D-H7A2	D-H7B
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 lights when ON.		

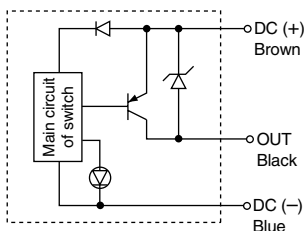
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.
- Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Auto Switch Internal Circuit

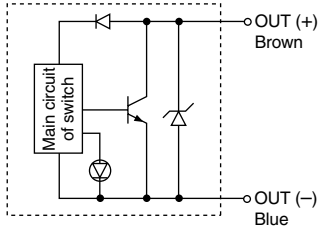
### D-H7A1



### D-H7A2



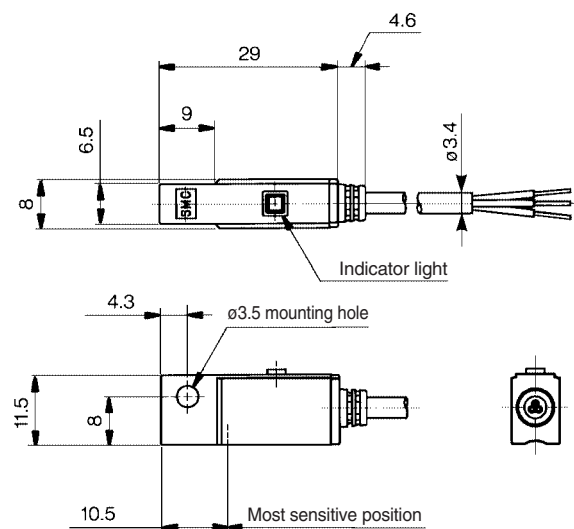
### D-H7B



## Weight

Auto switch model					(g)
		D-H7A1	D-H7A2	D-H7B	
Lead wire length (m)	0.5	13	13	11	
	3	57	57	50	
	5	92	92	81	

## Dimensions



# Solid State Switch Band Mounting Style D-G59/D-G5P/D-K59

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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-G5□, D-K59 (With indicator light)			
Auto switch model	D-G59	D-G5P	D-K59
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 lights when ON.		

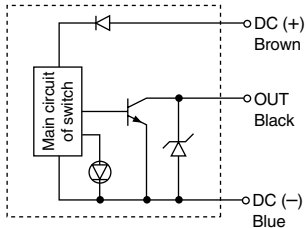
• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.

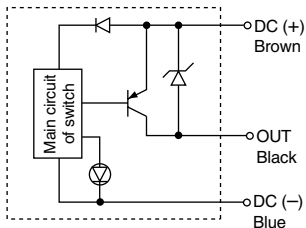
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Auto Switch Internal Circuit

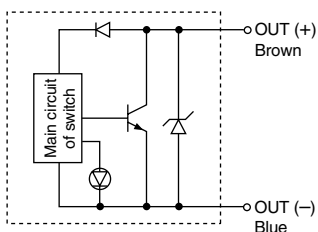
### D-G59



### D-G5P



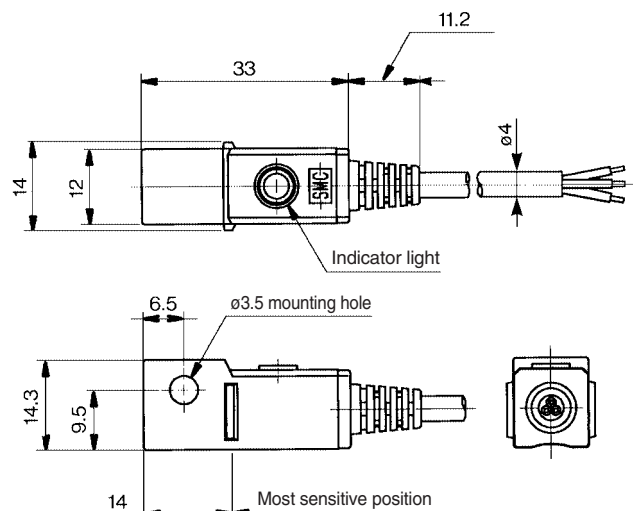
### D-K59



## Weight

(g)				
Auto switch model	D-G59	D-G5P	D-K59	
Lead wire length (m)	0.5	20	20	18
	3	78	78	68
	5	124	124	108

## Dimensions



# Solid State Switch Band Mounting Style D-H7C

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## Connector



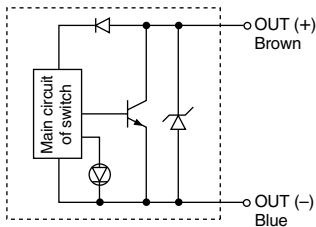
## Caution

### Precautions

1. Confirm that the connector is appropriately tightened. If tightened insufficiently, the waterproof performance will deteriorate.
2. Refer to page 8-30-55 for the details.

## Auto Switch Internal Circuit

### D-G59



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-H7C (With indicator light)	
Auto switch model	<b>D-H7C</b>
Wiring type	2-wire
Output type	—
Applicable load	24 VDC Relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 40 mA
Internal voltage drop	4 V or less
Leakage current	0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.

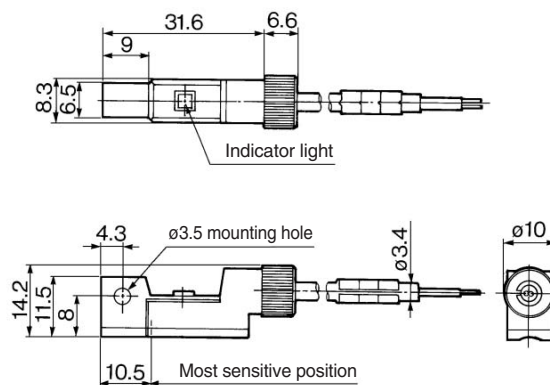
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.  
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Weight

Auto switch model		<b>D-H7C</b>
Lead wire length (m)	0.5	15
	3	54
	5	85

(g)

## Dimensions





# Solid State Switch Band Mounting Style D-G39/D-K39

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## Terminal conduit



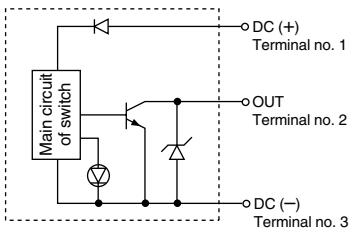
## Caution

### Precautions

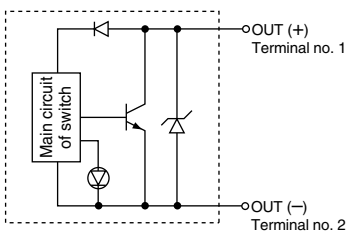
1. Use cable whose O.D. is within the size in the figure to maintain water resistant performance.
2. After wiring, confirm that tightening gland and all screws are tightened.

## Auto Switch Internal Circuit

### D-G39



### D-K39



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-G39, D-K39 (With indicator light)		
Auto switch model	D-G39	D-K39
Wiring type	3-wire	2-wire
Output type	NPN	—
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	5 to 40 mA
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA of load current)	4 V or less
Leakage current	100 $\mu$ A or less at 24 VDC	0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.	

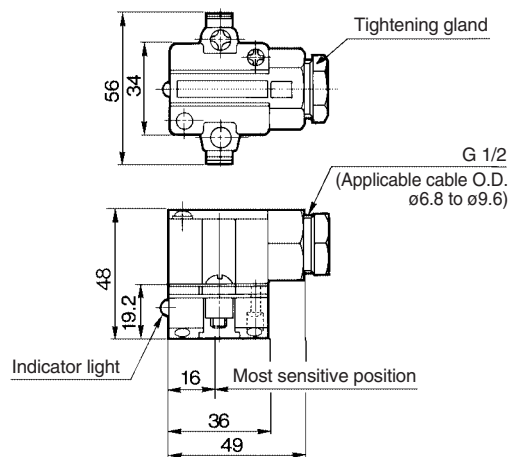
Note) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

## Weight

Auto switch model		D-G39	D-K39
Lead wire	None	116	116

(g)

## Dimensions



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Solid State Switch Band Mounting Style D-G39A/D-K39A

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## Terminal conduit



## Caution

### Precautions

1. Use cable whose O.D. is within the size in the figure to maintain water resistant performance.
2. After wiring, confirm that tightening gland and all screws are tightened.

## Auto Switch Specifications

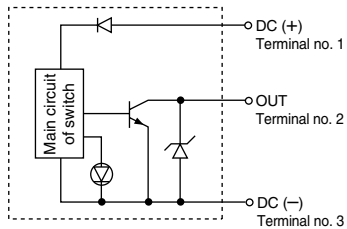
PLC: Abbreviation of Programmable Logic Controller

D-G39A, D-K39A		
Auto switch model	D-G39A	D-K39A
Wiring type	3-wire	2-wire
Output type	NPN	—
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	5 to 40 mA
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA of load current)	4 V or less
Leakage current	100 $\mu$ A or less at 24 VDC	0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.	

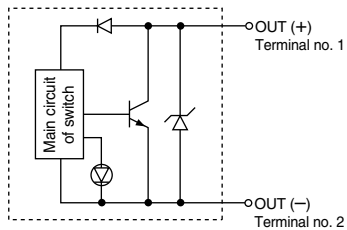
Note) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

## Auto Switch Internal Circuit

### D-G39A



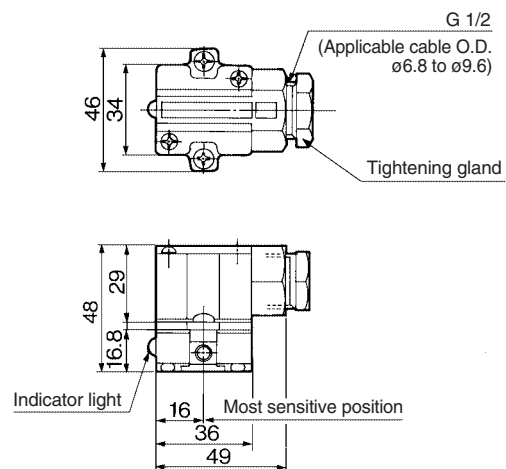
### D-K39A



## Weight

			(g)	
Auto switch model		D-G39A	D-K39A	
Lead wire	None	110	110	

## Dimensions



# Solid State Switch Rail Mounting Style D-F79/D-F7P/D-J79

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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

### D-F7□, D-J79 (With indicator light)

Auto switch model	D-F79	D-F7P	D-J79
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 lights when ON.		

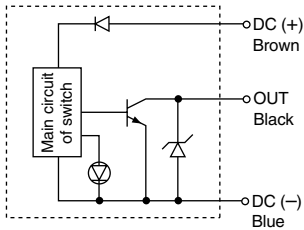
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.

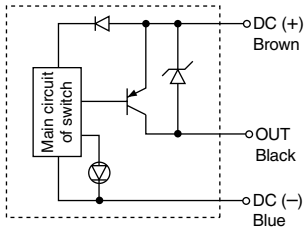
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Auto Switch Internal Circuit

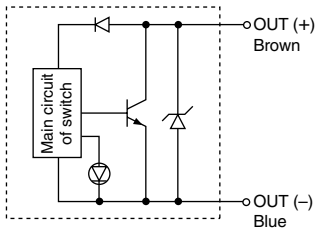
### D-F79



### D-F7P



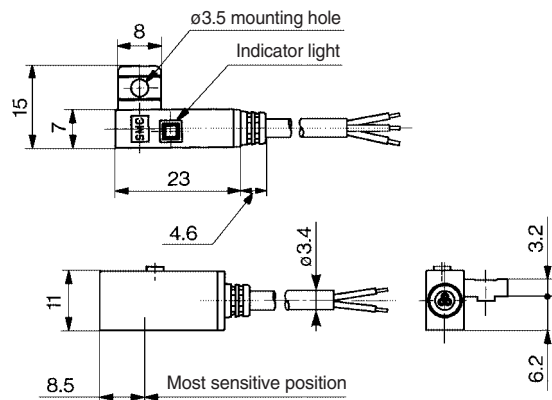
### D-J79



## Weight

Auto switch model	D-F79	D-F7P	D-J79
Lead wire length (m)	0.5	13	11
	3	57	50
	5	92	81

## Dimensions



# Solid State Switch Rail Mounting Style D-F7NV/D-F7PV/D-F7BV

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**Grommet  
Electrical entry: Perpendicular**



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F7□V (With indicator light)			
Auto switch model	D-F7NV	D-F7PV	D-F7BV
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 lights when ON.		

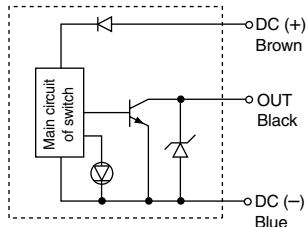
• Lead wire — Oil resistant vinyl heavy-duty cord, ø3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.

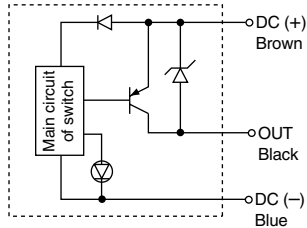
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Auto Switch Internal Circuit

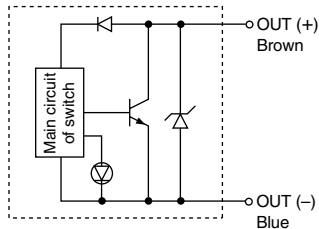
### D-F7NV



### D-F7PV



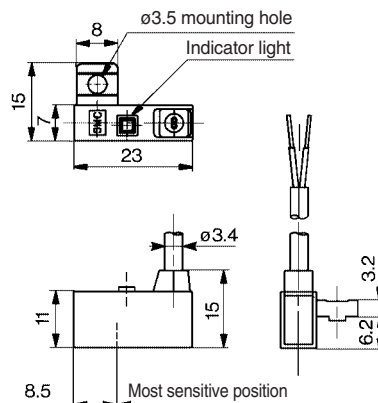
### D-F7BV



## Weight

(g)				
Auto switch model	D-F7NV	D-F7PV	D-F7BV	
Lead wire length (m)	0.5	13	13	11
	3	57	57	50
	5	92	92	81

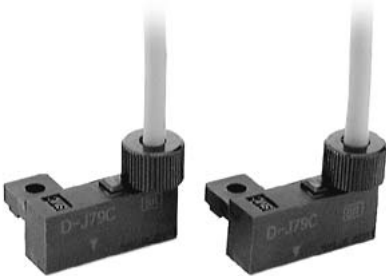
## Dimensions



# Solid State Switch Rail Mounting Style D-J79C

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## Connector



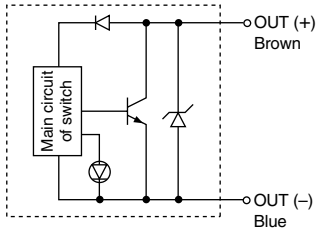
## Caution

### Precautions

1. Confirm that the connector is appropriately tightened. If tightened insufficiently, the waterproof performance will deteriorate.
2. Refer to page 8-30-55 for the details.

## Auto Switch Internal Circuit

### D-J79C



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

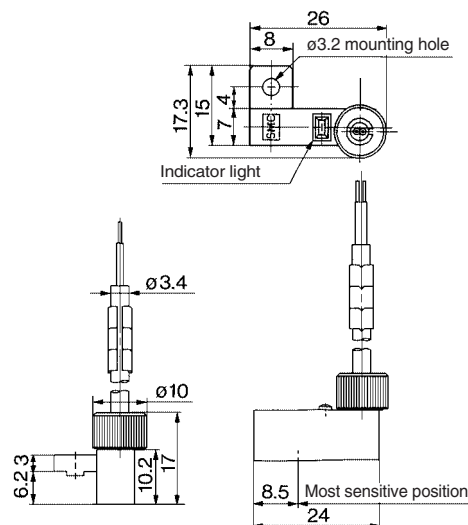
D-J79C	
Auto switch model	D-J79C
Wiring type	2-wire
Output type	—
Applicable load	24 VDC Relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 40 mA
Internal voltage drop	4 V or less
Leakage current	0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.
- Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Weight

Auto switch model		D-J79C
Lead wire length (m)	0.5	13
	3	52
	5	83

## Dimensions



MX

MTS

MY

CY

MG

CX

D-

-X

20-

Data

# Solid State Switch Tie-rod Mounting Style D-F59/D-F5P/D-J59/D-J51

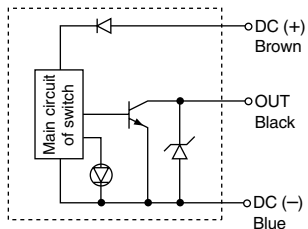
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## Grommet

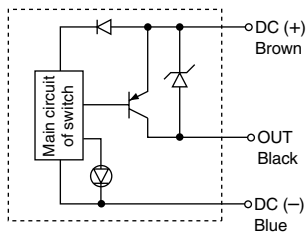


## Auto Switch Internal Circuit

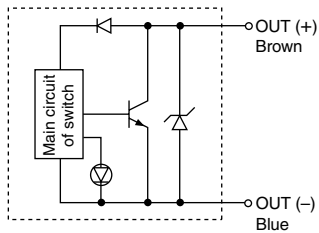
### D-F59



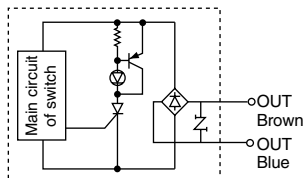
### D-F5P



### D-J59



### D-J51



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F5□, D-J5□				
Auto switch model	D-F59	D-F5P	D-J59	D-J51
Wiring type	3-wire		2-wire	
Output type	NPN	PNP	—	—
Applicable load	IC circuit, Relay, PLC		24 VDC Relay, PLC	AC 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)	80 to 260 VAC
Load current	40 mA or less	80 mA or less	5 to 40 mA	5 to 80 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	14 V or less
Leakage current	100 μA or less at 24 VDC		0.8 mA or less at 24 VDC	1 mA or less at 100 VDC 1.5 mA or less at 200 VDC
Indicator light	Red LED lights when ON.			

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

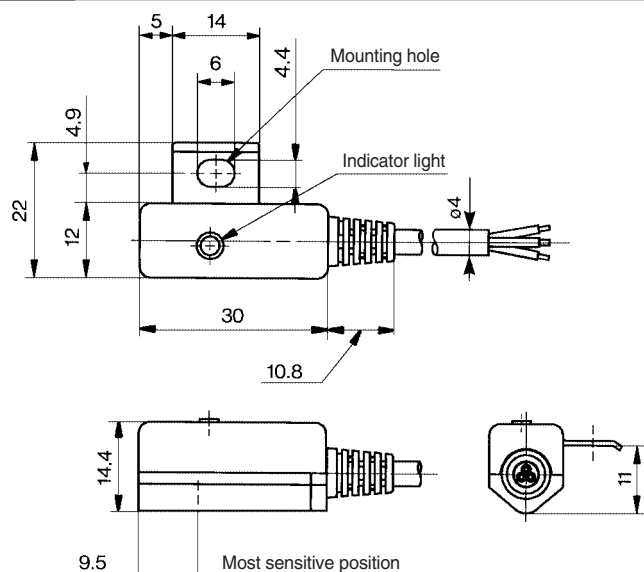
Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

## Weight

Auto switch model		D-F59	D-F5P	D-J59	D-J51
Lead wire length (m)	0.5	23	23	21	21
	3	81	81	71	71
	5	127	127	111	111

## Dimensions





# Solid State Switch Tie-rod Mounting Style D-G39C/D-K39C

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## Terminal conduit



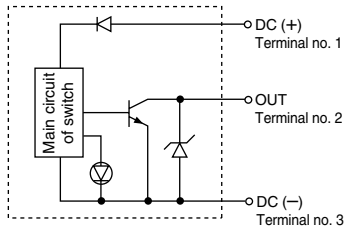
## Caution

### Precautions

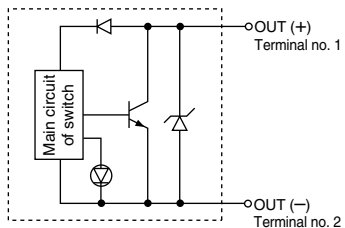
1. Use cable whose O.D. is within the size in the figure to maintain water resistant performance.
2. After wiring, confirm that tightening gland and all screws are tightened.

## Auto Switch Internal Circuit

### D-G39C



### D-K39C



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

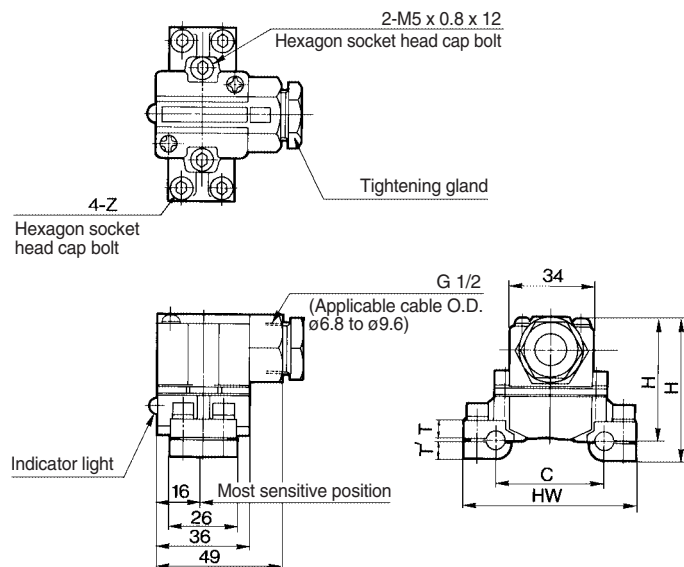
D-G39C, D-K39C		
Auto switch model	D-G39C	D-K39C
Wiring	3-wire	2-wire
Output	NPN	—
Applicable load	IC circuit, Relay, PLC	24 VDC Relay, PLC
Power voltage	5, 12, 24 VDC (4.5 to 28 VDC)	—
Current consumption	10 mA or less	—
Load voltage	28 VDC or less	24 VDC (10 to 28 VDC)
Load current	40 mA or less	5 to 40 mA
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA of load current)	4 V or less
Current leakage	100 $\mu$ A or less at 24 VDC	0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.	

Note) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

## Weight

Auto switch model	D-G39C	D-K39C
Applicable bore size (mm)	40	162
	50	166
	63	184
	80	210
	100	232

## Dimensions



## Dimensions

Auto switch model	Applicable bore size (mm)	C	HW	H	H'	T	T'	Z
D-G39C-4, D-K39C-4	40	44	69	57	49.5	7.5	6.5	M5 x 0.8 x 16
D-G39C-5, D-K39C-5	50	52	77	58	50.5	8.5	6.5	
D-G39C-6, D-K39C-6	63	64	91	60.5	52	10.5	7.5	M5 x 0.8 x 20
D-G39C-8, D-K39C-8	80	78	107	64	53.5	12.5	9.5	
D-G39C-10, D-K39C-10	100	92	121	67	56.5	15.5	9.5	M5 x 0.8 x 25

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

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

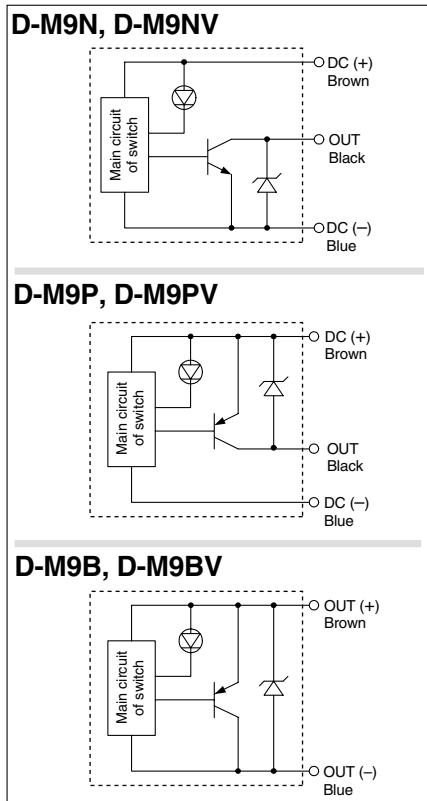
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## Grommet

- Lower load current
- Lead free solder
- Using UL certified (style 2844) lead wire



## Auto Switch Internal Circuit



### Operating range shortened, compared to conventional types.

When replacing conventional types, dependant upon application, the shortened operating range may cause auto switch imperceptive.

- When the range of stroke is wider than the operating range. Example) Stamping, press-fitting, clamping, etc.
- When used to detect intermediate position. (Detection output time is shortened.)

Note) Please consult with SMC regarding details of operation range by each actuator.

Since short circuit protection circuit is not built-in, the auto switch will be immediately damaged when the load is short-circuited. Be careful not to exchange the power cable (brown) with the output cable (black).

## Auto Switch Specifications

PLC: Abbreviation of 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				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED lights when ON.					

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 2.7 \times 3.2$  ellipse 0.15 mm<sup>2</sup>, 2 cores (D-M9B), 3 cores (D-M9N, D-M9P)

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.

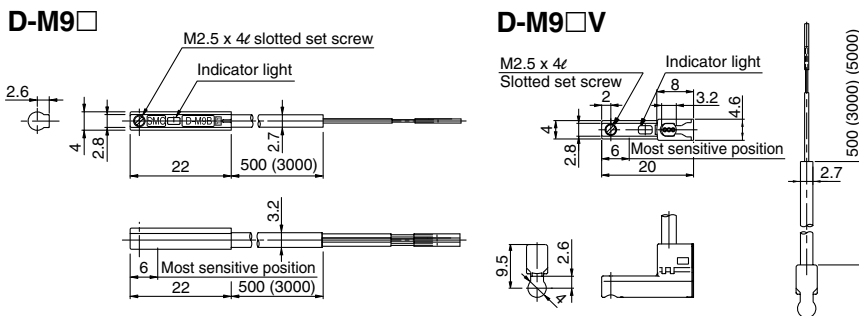
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Weight

(g)

Auto switch model	D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length (m)	0.5	8	8
	3	41	41
	5	68	68

## Dimensions



## Precautions

Be sure to read before handling. Please contact SMC when using beyond specifications.

### Caution on Handling

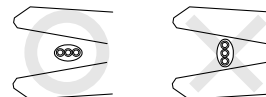
#### Caution

- Over-current protection is not equipped with this product series. When it is wired incorrectly or a load is short-circuited, a switch may be damaged or burned.
- In the event of stripping cable sheath, use caution for the stripping direction. Its insulation may be torn or damaged, depending on the direction.
- Below is given as the recommended tool.

Maker	Product's name	Part no.
VESSEL Co., Inc.	Wirestripper	No 3000G
Tokyo Ideal Co., Ltd.	Stripmaster	45-089

\* As for 2-wire, a stripper for round shape cord ( $\phi 2.0$ ) is usable.

- Fix the switch with appropriate screw installed on the switch body. If using other screws, switch may be damaged.



# Normally Closed Solid State Switch Direct Mounting Style D-F9G/D-F9H

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## Grommet



## Caution

### Precautions

Fix the switch with appropriate screw installed on the switch body. If using other screws, switch may be damaged.

## Auto Switch Specifications

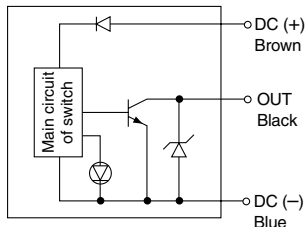
PLC: Abbreviation of Programmable Logic Controller

D-F9G, D-F9H (With indicator light)		
Auto switch model	D-F9G	D-F9H
Wiring type	3-wire	
Output type	NPN	PNP
Applicable load	IC circuit, 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	—
Load current	40 mA or less	80 mA or less
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA load current)	0.8 V or less
Leakage current	100 $\mu$ A or less at 24 VDC	
Indicator light	Red LED lights when detecting nothing.	

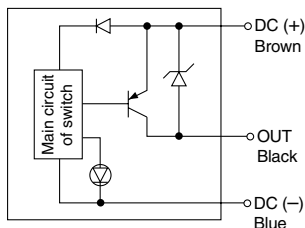
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 2.7$ , 0.15 mm<sup>2</sup>, 3 cores (Brown, Black, Blue) 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 7-9-7.
- Note 2) Regarding the lead wire length, refer to page 7-9-7.

## Auto Switch Internal Circuit

### D-F9G



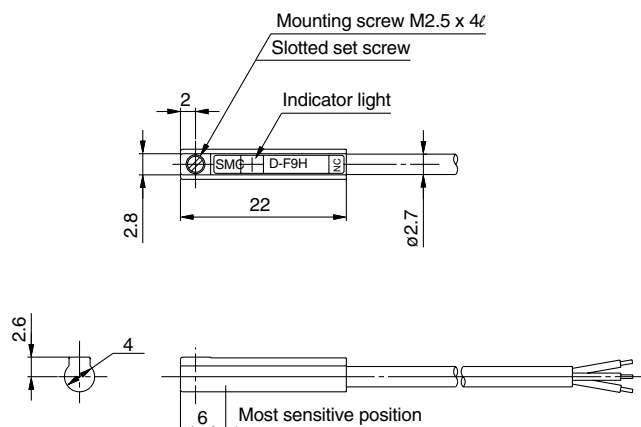
### D-F9H



## Weight

				(g)	
Auto switch model		D-F9G	D-F9H		
Lead wire length (m)	0.5	7	7		
	3	37	37		
	5	61	61		

## Dimensions



CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

Data

# Solid State Switch Direct Mounting Style D-F8N/D-F8P/D-F8B

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## Grommet



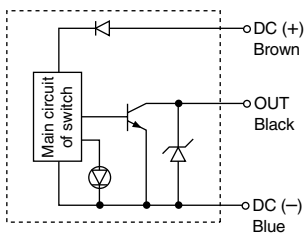
### Caution

#### Precautions

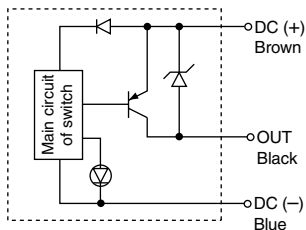
Fix the switch with appropriate screw installed on the switch body. If using other screws, switch may be damaged.

## Auto Switch Internal Circuit

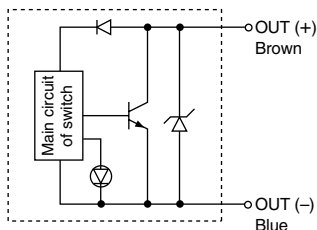
### D-F8N



### D-F8P



### D-F8B



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

Auto switch model	D-F8N	D-F8P	D-F8B
Electrical entry direction	Perpendicular	Perpendicular	Perpendicular
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, 24 VDC 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	2.5 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 $\mu$ A or less at 24 VDC		0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.		

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 2.7$ , 0.5 m  
D-F8N, D-F8P 0.15 mm<sup>2</sup> x 3 cores (Brown, Black, Blue)  
D-F8B 0.18 mm<sup>2</sup> x 2 cores (Brown, Blue)

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.  
Note 2) Regarding the lead wire length, refer to page 8-30-7.

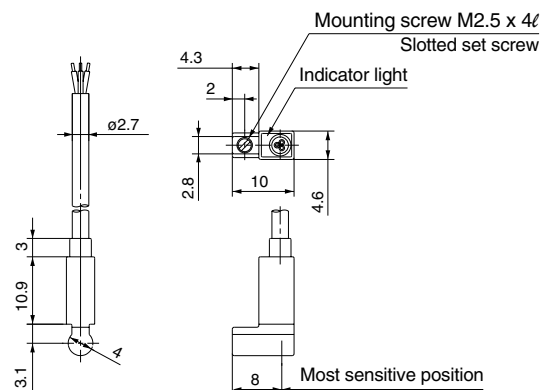
## Weight

Auto switch model	D-F8N	D-F8P	D-F8B
Lead wire length (m)	0.5	7	7
	3	32	32
	5	52	52

(g)

## Dimensions

### D-F8N, D-F8P, D-F8B



# Solid State Switch Direct Mounting Style D-Y59<sup>A</sup><sub>B</sub>/D-Y69<sup>A</sup><sub>B</sub>/D-Y7P(V)

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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of 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 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		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 lights when ON.					

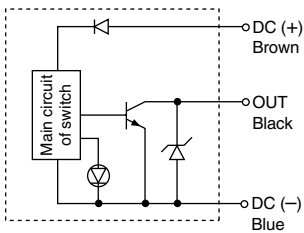
• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.15 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.

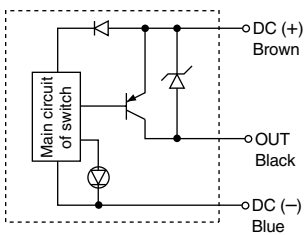
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Auto Switch Internal Circuit

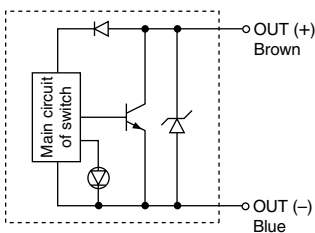
### D-Y59A, D-Y69A



### D-Y7P, D-Y7PV



### D-Y59B, D-Y69B

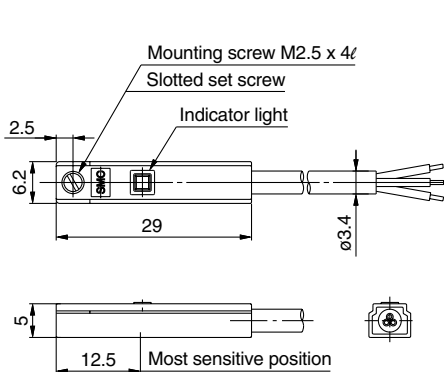


## Weight

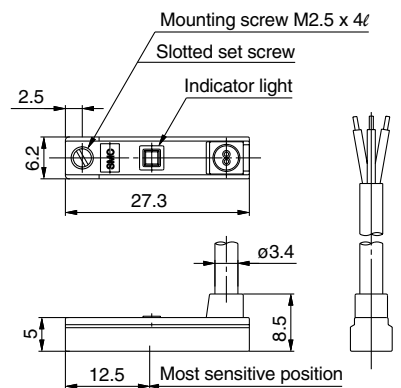
Auto switch model	D-Y59B	D-Y69B	D-Y59A	D-Y69A	D-Y7P(V)
Lead wire length (m)	0.5	9	10	10	10
	3	50	53	53	53
	5	83	87	87	87

## Dimensions

### D-Y59A, D-Y7P, D-Y59B



### D-Y69A, D-Y7PV, D-Y69B



# Normally Closed Solid State Switch Direct Mounting Style D-Y7G/D-Y7H

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## Grommet



## Auto Switch Specifications

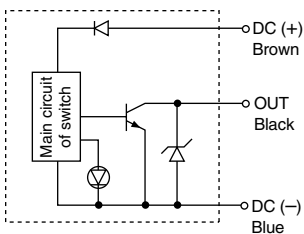
PLC: Abbreviation of Programmable Logic Controller

D-Y7G, D-Y7H (With indicator light)		
Auto switch model	D-Y7G	D-Y7H
Wiring type	3-wire	
Output type	NPN	PNP
Applicable load	IC circuit, 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	—
Load current	40 mA or less	80 mA or less
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA load current)	0.8 V or less
Leakage current	100 $\mu$ A or less at 24 VDC	
Indicator light	Red LED lights when detecting nothing.	

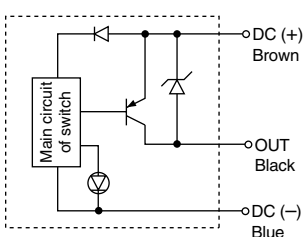
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi$ 3.4, 0.15 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.
- Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Auto Switch Internal Circuit

### D-Y7G



### D-Y7H

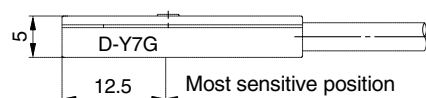
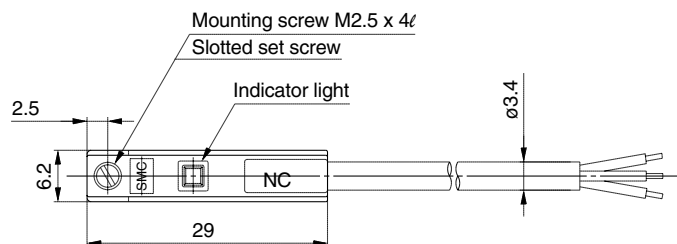


## Weight

Auto switch model		D-Y7G	D-Y7H
Lead wire length (m)	0.5	10	10
	3	53	53
	5	87	87

(g)

## Dimensions





# Solid State Switch Direct Mounting Style D-M5N/D-M5P/D-M5B

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## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-M5□ (With indicator light)			
Auto switch model	D-M5N	D-M5P	D-M5B
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 lights when ON.		

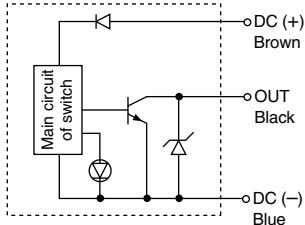
• Lead wire — Oil resistant vinyl heavy-duty cord, ø3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.

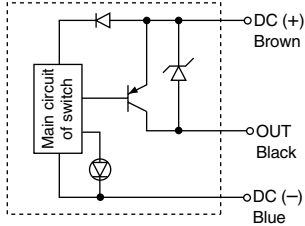
Note 2) Regarding the lead wire length, refer to page 10-20-7.

## Auto Switch Internal Circuit

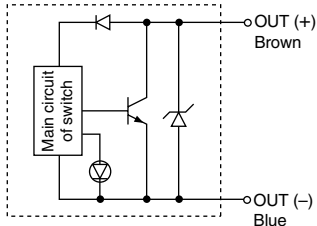
### D-M5N



### D-M5P



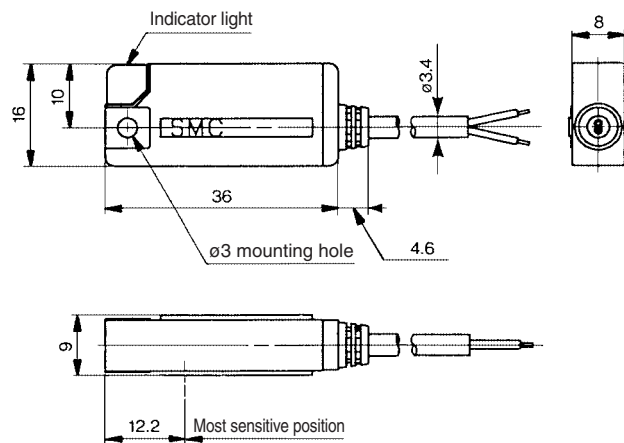
### D-M5B



## Weight

(g)				
Auto switch model		D-M5N	D-M5P	D-M5B
Lead wire length (m)	0.5	16	16	14
	3	60	60	53
	5	95	95	84

## Dimensions



RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>G</sub><sup>J</sup>-S

CV

MVGQ

CC

RB

J

D-

-X

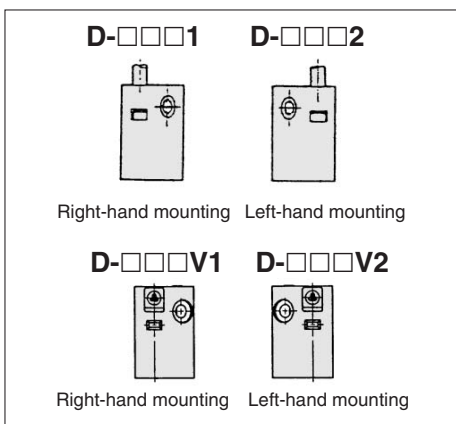
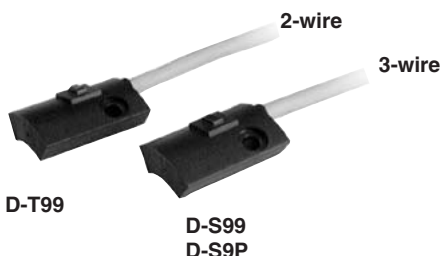
20-

Data

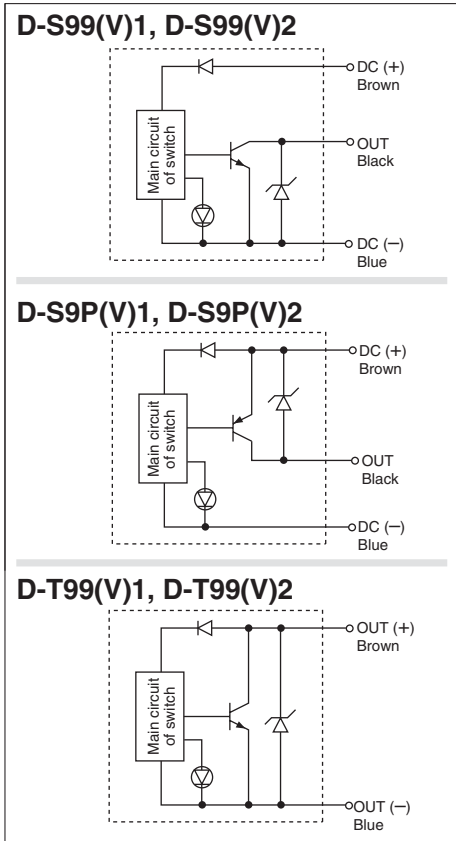
# Solid State Switch Direct Mounting Style D-S99(V)/D-S9P(V)/D-T99(V)

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## Grommet



## Auto Switch Internal Circuit



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-S99(V)/D-S9P(V)/D-T99(V) (With indicator light)						
Auto switch model	D-S991 D-S992	D-S99V1 D-S99V2	D-S9P1 D-S9P2	D-S9PV1 D-S9PV2	D-T991 D-T992	D-T99V1 D-T99V2
Electrical entry	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 load current 10 mA)		0.8 V or less		4 V or less	
Leakage current	100 $\mu$ A or less at 24 VDC				0.8 mA or less at 24 VDC	
Indicator light	Red LED lights when ON.					

• Lead wire — Oil resistant vinyl heavy-duty cord  $\phi$ 3.4, 0.2 mm<sup>2</sup>, 3-wire (Brown, Black, Blue), 2-wire (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 11-11-5.

Note 2) Regarding the lead wire length, refer to page 11-11-5.

## Dimensions

D-S991: Right-hand mounting

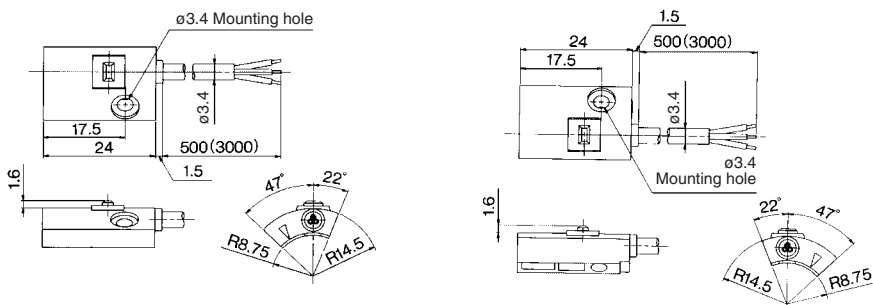
D-S9P1:

D-T991:

D-S992: Left-hand mounting

D-S9P2:

D-T992:



D-S99V1: Right-hand mounting

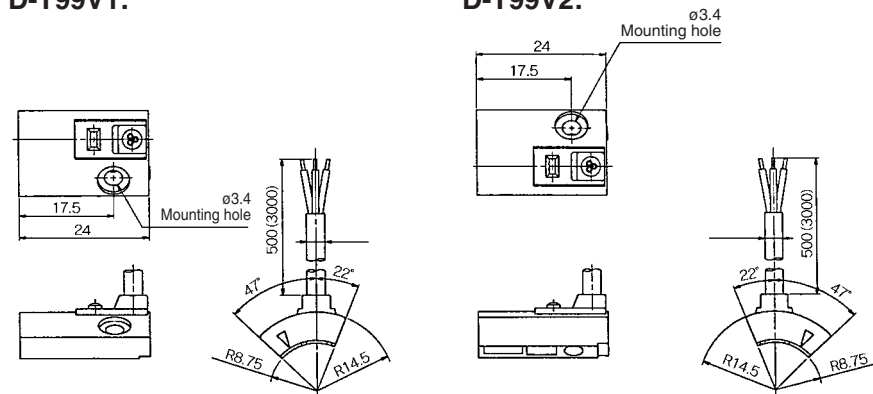
D-S9PV1:

D-T99V1:



D-S99V2: Left-hand mounting

D-S9PV2:

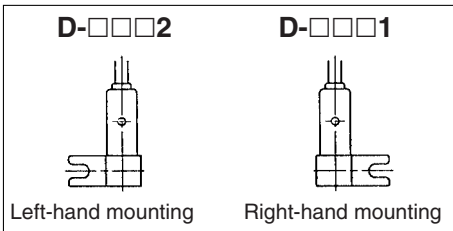
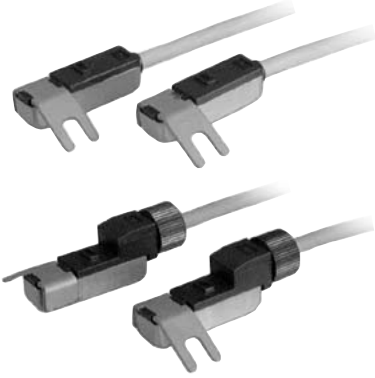
D-T99V2:



# Solid State Switch Direct Mounting Style *D-S79/D-S7P/D-T79(C)*

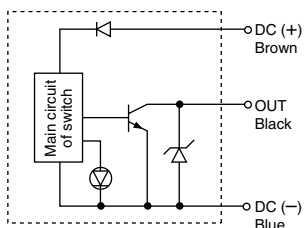
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## Grommet, Connector Electrical Entry: In-line

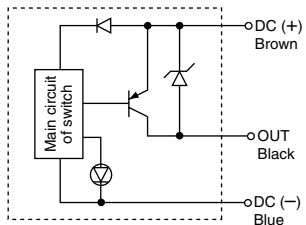


## Auto Switch Internal Circuit

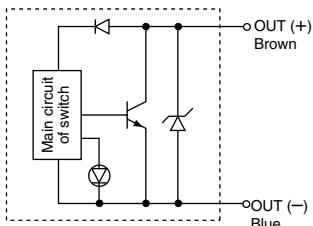
### D-S791, D-S792



### D-S7P1, D-S7P2



### D-T791(C), D-T792(C)



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

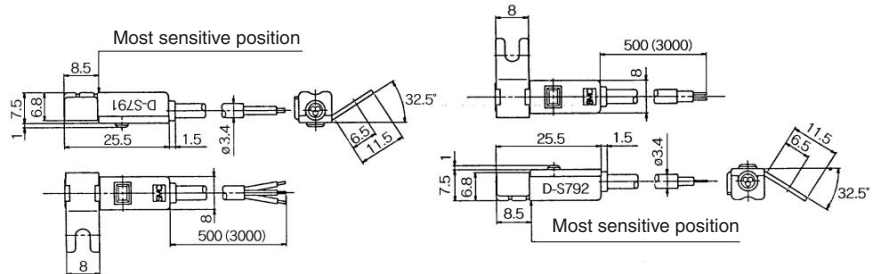
<b>D-S79/D-T79 (With indicator light)</b>			
Auto switch model	<b>D-S791, D-S792</b>	<b>D-S7P1, D-S7P2</b>	<b>D-T791, D-T792, D-T791C, D-T792C</b>
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)		—
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)	0.8 V or less	4 V or less
Leakage current	100 $\mu$ A or less at 24 VDC		0.8 mA or less at 24 VDC
Indicator light	Red LED lights when ON.		

- Lead wire — Oil resistant vinyl heavy-duty cord  $\phi$ 3.4, 0.2 mm<sup>2</sup>, 3-wire (Brown, Black, Blue), 2-wire (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 11-11-5.
- Note 2) Regarding the lead wire length, refer to page 11-11-5.

## Dimensions

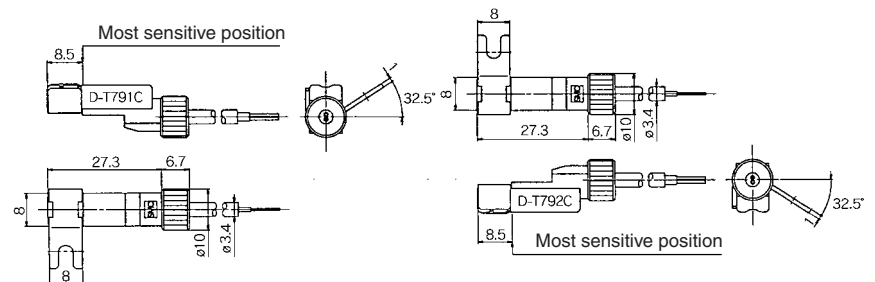
**D-S791: Right-hand mounting**  
**D-S7P1:**  
**D-T791:**

**D-S792: Left-hand mounting**  
**D-S7P2:**  
**D-T792:**



**D-T791C: Right-hand mounting**

**D-T792C: Left-hand mounting**





# 2-color Indication Type Reed Switch Band Mounting Style D-B59W

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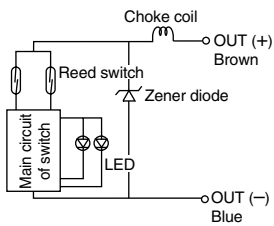
## Grommet

The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)

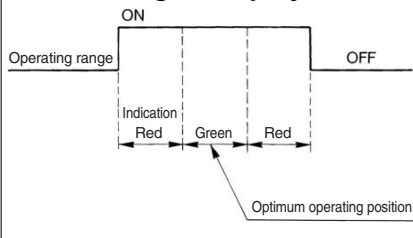


## Auto Switch Internal Circuit

### D-B59W



## Indicator light/Display method



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

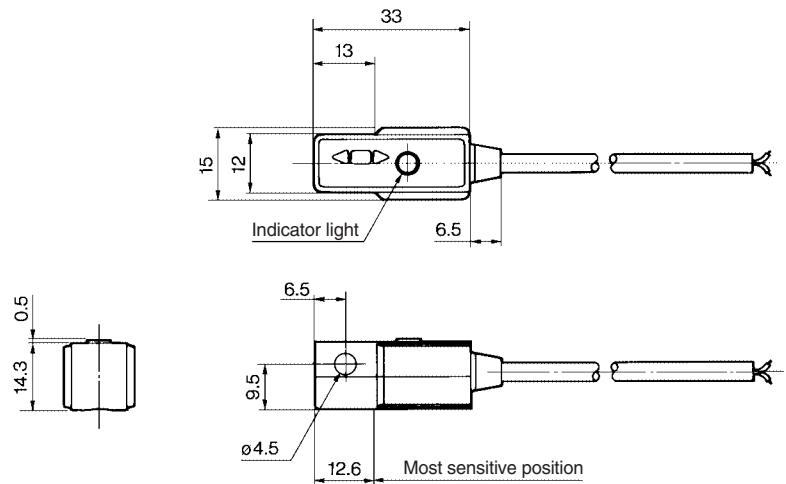
D-B59W (With indicator light)	
Auto switch model	<b>D-B59W</b>
Applicable load	Relay, PLC
Load voltage	24 VDC
Load current range <sup>(3)</sup>	5 to 40 mA
Contact protection circuit	Built-in
Internal voltage drop	4 V or less
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.
- Note 2) Regarding the lead wire length, refer to page 6-16-7.
- 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.

## Weight

Auto switch model		<b>D-B59W</b>
Lead wire length (m)	0.5	20
	3	76
	5	—

## Dimensions



# 2-color Indication Type with Diagnostic Output Solid State Switch: Band Mounting Style D-H7NF

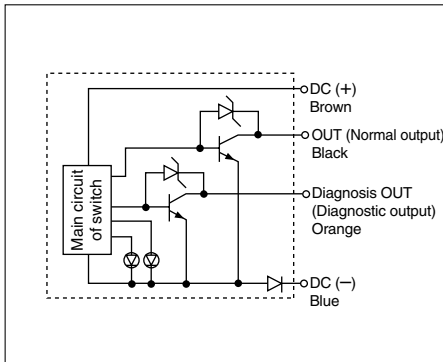
For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

## Grommet

Since the output signal can be detected in an unsteady detecting area, the difference of detecting position can be confirmed by the side of PLC (Programmable Logic Controller).



## Auto Switch Internal Circuit



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-H7NF (With indicator light)	
Auto switch model	D-H7NF
Wiring	4-wire
Output	NPN
Diagnostic output	Normal operation
Applicable load	IC circuit, Relay, PLC
Power voltage	5, 12, 24 VDC (4.5 to 28 VDC)
Current consumption	10 mA or less
Load voltage	28 VDC or less
Load current	50 mA or less at the total amount of normal output and diagnostic output
Internal voltage drop	1.5 V or less (0.8 V or less at each output 5 mA)
Current leakage	100 $\mu$ A or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi$ 3.4, 0.2 mm<sup>2</sup>, 4 cores (Brown, Black, Orange, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.

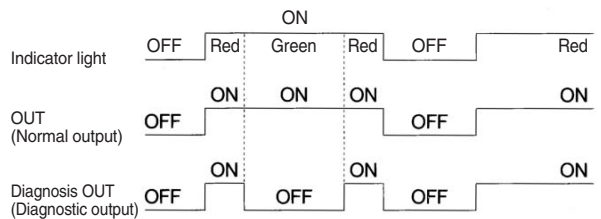
Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Weight

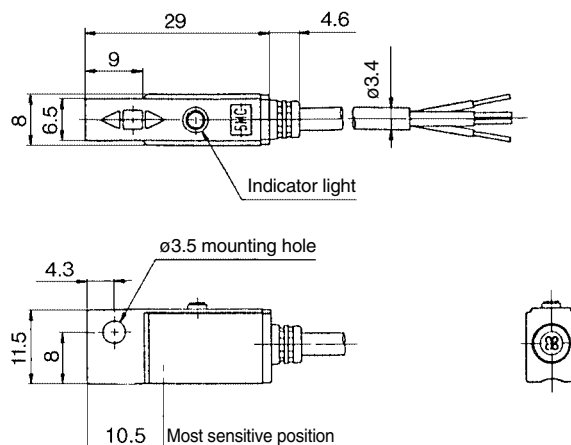
Auto switch model	D-H7NF	
Lead wire length (m)	0.5	13
	3	56
	5	90

## Diagnostic Output Operation

The diagnostic signal is output within unsteady detecting area (where indicator light is Red), and the diagnostic output becomes OFF when the detecting position remains within the optimum operating position (where indicator is Green). When the detecting position is not adjusted, the diagnostic output becomes ON.



## Dimensions



# 2-color Indication Type with Diagnostic Output Solid State Switch: Band Mounting Style D-G59F

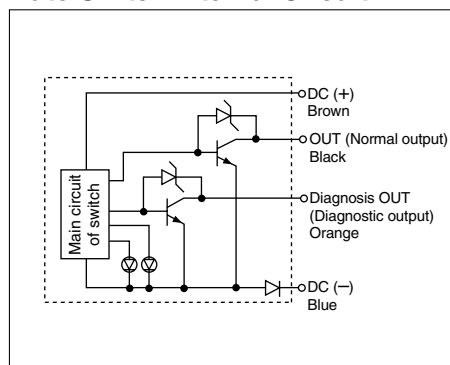
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## Grommet

Since the output signal can be detected in an unsteady detecting area, the difference of detecting position can be confirmed by the side of PLC (Programmable Logic Controller).



## Auto Switch Internal Circuit



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-G59F (with indicator light)	
Auto switch model	<b>D-G59F</b>
Wiring	4-wire
Output	NPN
Diagnostic output	Normal operation
Applicable load	IC circuit, Relay, PLC
Power voltage	5, 12, 24 VDC (4.5 to 28 VDC)
Current consumption	10 mA or less
Load voltage	28 VDC or less
Load current	50 mA or less at the total amount of normal output and diagnostic output
Internal voltage drop	1.5 V or less (0.8 V or less at 5 mA)
Current leakage	100 $\mu$ A or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.2 mm<sup>2</sup>, 4 cores (Brown, Black, Orange, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.  
Note 2) Regarding the lead wire length, refer to page 8-30-7.

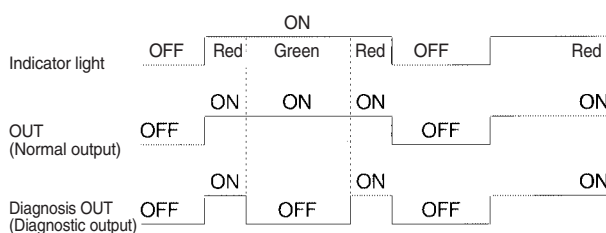
## Weight

Auto switch model		<b>D-G59F</b>
Lead wire length (m)	0.5	20
	3	74
	5	117

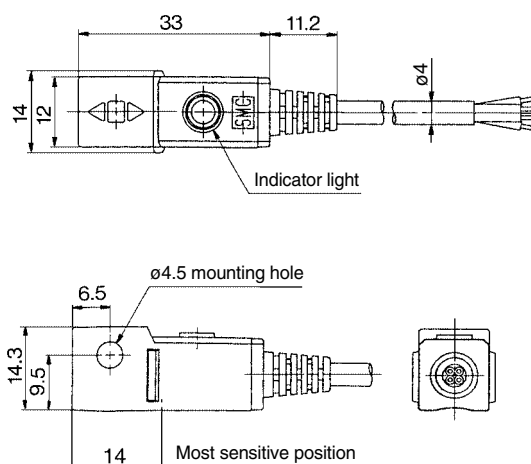
(g)

## Diagnostic Output Operation

The diagnostic signal is output within unsteady detecting area (where indicator light is Red), and the diagnostic output becomes OFF when the detecting position remains within the optimum operating position (where indicator is Green). When the detecting position is not adjusted, the diagnostic output becomes ON.



## Dimensions





# 2-color Indication Type with Diagnostic Output Solid State Switch: Rail Mounting Style D-F79F

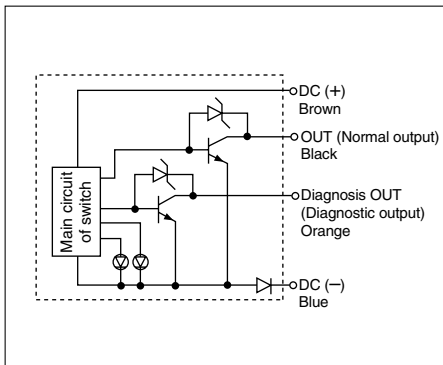
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## Grommet

Since the output signal can be detected in an unsteady detecting area, the difference of detecting position can be confirmed by the side of PLC (Programmable Logic Controller).



## Auto Switch Internal Circuit



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F79F (With indicator light)	
Auto switch model	D-F79F
Wiring	4-wire
Output	NPN
Diagnostic output	Normal operation
Applicable load	IC circuit, Relay, PLC
Power voltage	5, 12, 24 VDC (4.5 to 28 VDC)
Current consumption	10 mA or less
Load voltage	28 VDC or less
Load current	50 mA or less at the total amount of normal output and diagnostic output
Internal voltage drop	1.5 V or less (0.8 V or less at 5 mA)
Current leakage	100 $\mu$ A or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

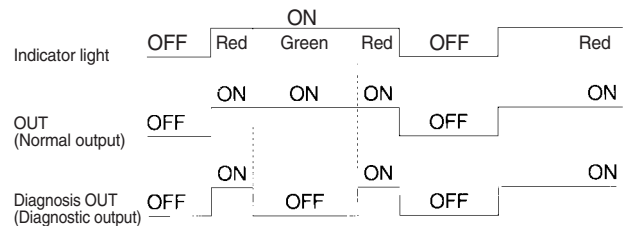
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi$ 3.4, 0.2 mm<sup>2</sup>, 4 cores (Brown, Black, Orange, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 8-30-7.
- Note 2) Regarding the lead wire length, refer to page 8-30-7.

## Weight

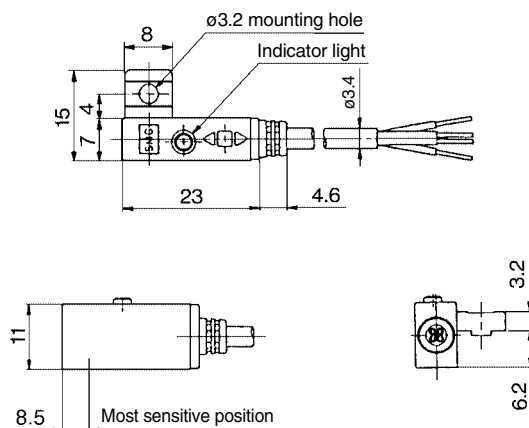
Auto switch model	D-F79F	
Lead wire length (m)	0.5	13
	3	56
	5	90

## Diagnostic Output Operation

The diagnostic signal is output within unsteady detecting area (where indicator light is Red), and the diagnostic output becomes OFF when the detecting position remains within the optimum operating position (where indicator is Green). When the detecting position is not adjusted, the diagnostic output becomes ON.



## Dimensions



# 2-color Indication Type with Diagnostic Output Solid State Switch: Tie-rod Mounting Style D-F59F

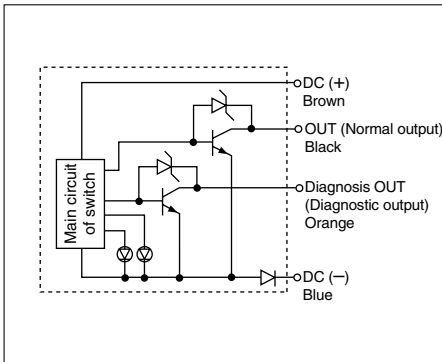
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## Grommet

Since the output signal can be detected in an unsteady detecting area, the difference of detecting position can be confirmed by the side of PLC (Programmable Logic Controller).



## Auto Switch Internal Circuit



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F59F (With indicator light)	
Auto switch model	D-F59F
Wiring type	4-wire
Output type	NPN
Diagnostic output	Normal operation
Applicable load	IC circuit, 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
Load current	50 mA or less at the total amount of normal output and diagnostic output
Internal voltage drop	1.5 V or less (0.8 V or less at 5 mA)
Leakage current	100 $\mu$ A or less at 28 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi$ 4, 0.2 mm<sup>2</sup>, 4 cores (Brown, Black, Orange, Blue), 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 11-11-5.
- Note 2) Regarding the lead wire length, refer to page 11-11-5.

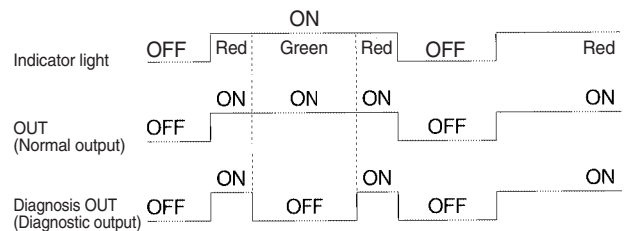
## Weight

Auto switch model	D-F59F	
Lead wire length (m)	0.5	22
	3	77
	5	121

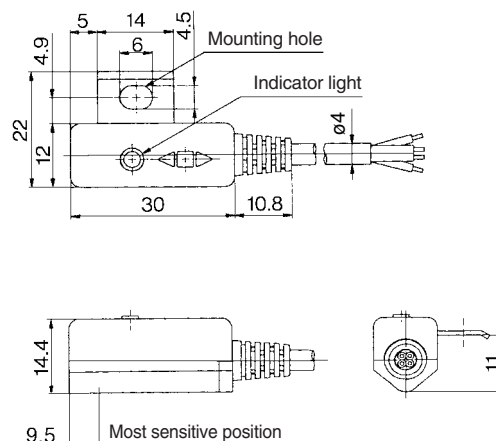
(g)

## Diagnostic Output Operation

The diagnostic signal is output within unsteady detecting area (where indicator light is Red), and the diagnostic output becomes OFF when the detecting position remains within the optimum operating position (where indicator is Green). When the detecting position is not adjusted, the diagnostic output becomes ON.



## Dimensions



# 2-color Indication Type Solid State Switch Band Mounting Style

## D-H7NW/D-H7PW/D-H7BW

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### Grommet

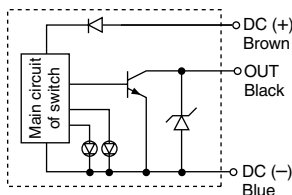
The optimum operating position can be determined by the color of the light.

(Red → Green ← Red)

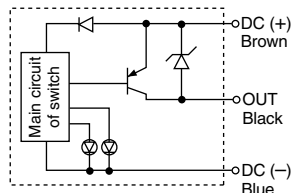


### Auto Switch Internal Circuit

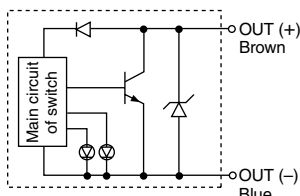
#### D-H7NW



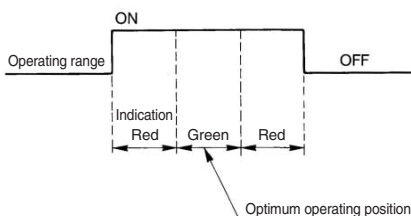
#### D-H7PW



#### D-H7BW



### Indicator light/Display method



### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-H7□W (With indicator light)			
Auto switch model	D-H7NW	D-H7PW	D-H7BW
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 lights when ON. Optimum operating position.....Green LED lights when ON.		

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

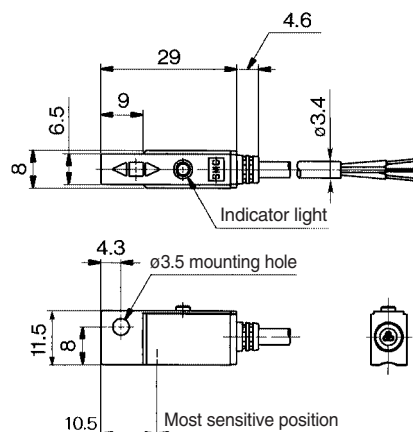
Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

### Weight

(g)				
Auto switch model		D-H7NW	D-H7PW	D-H7BW
Lead wire length (m)	0.5	13	13	11
	3	57	57	50
	5	92	92	81

### Dimensions



# 2-color Indication Type Solid State Switch Band Mounting Style

## D-G59W/D-G5PW/D-K59W

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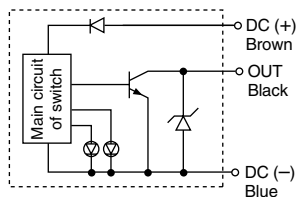
### Grommet

The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)

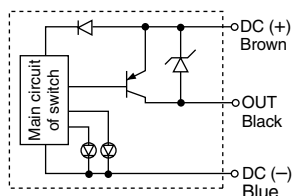


### Auto Switch Internal Circuit

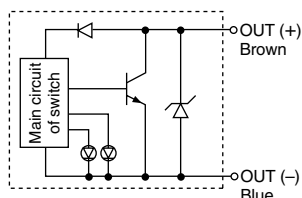
#### D-G59W



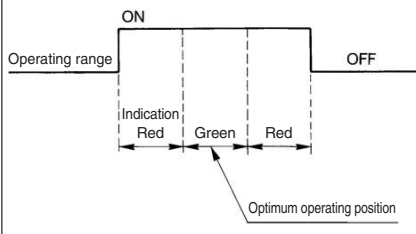
#### D-G5PW



#### D-K59W



### Indicator light/Display method



### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-G5□W, D-K59W (With indicator light)			
Auto switch model	D-G59W	D-G5PW	D-K59W
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 lights when ON. Optimum operating position.....Green LED lights when ON.		

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

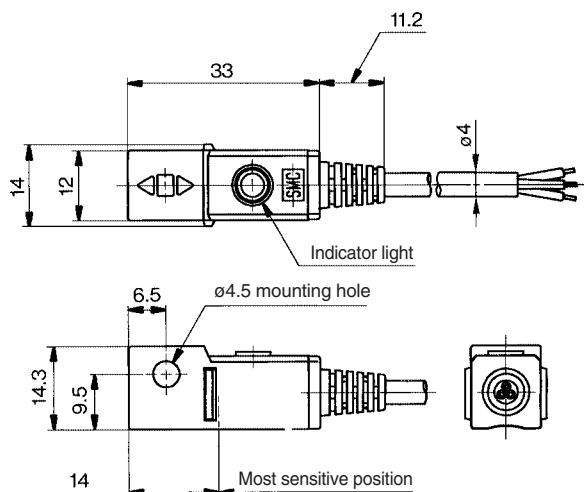
Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

### Weight

Auto switch model		D-G59W	D-G5PW	D-K59W
Lead wire length (m)	0.5	20	20	18
	3	78	78	68
	5	124	124	108

### Dimensions



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# 2-color Indication Type Reed Switch Rail Mounting Style D-A79W

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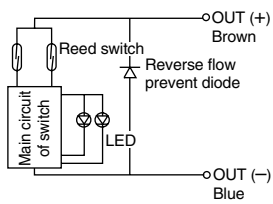
## Grommet

The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)

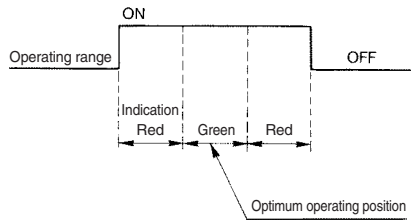


## Auto Switch Internal Circuit

### D-A79W



## Indicator light/Display method



Note 1) Operating load is an induction load.  
Note 2) Wiring to the load is 5 m or longer.  
Use the contact protection box in any of the above listed situations. The contact point life may decrease. (Refer to page 6-16-7 for contact protection box.)

## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-A79W (With indicator light)	
Auto switch model	<b>D-A79W</b>
Applicable load	Relay, PLC
Load voltage	24 VDC
Load current range <sup>(3)</sup>	5 to 40 mA
Contact protection circuit	None
Internal voltage drop	4 V or less
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

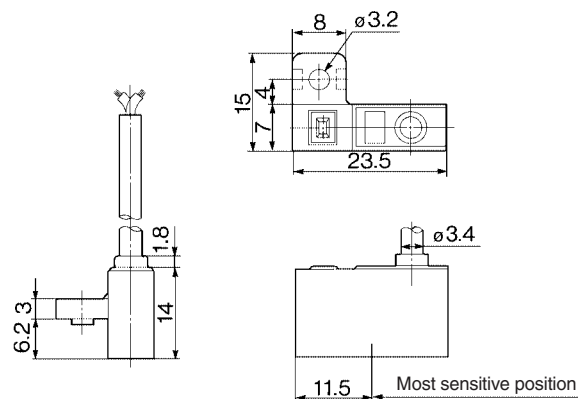
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the reed switches, refer to page 6-16-7.
- Note 2) Regarding the lead wire length, refer to page 6-16-7.
- Note 3) Under 5 mA, the strength 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.

## Weight

Auto switch model	<b>D-A79W</b>	
Lead wire length (m)	0.5	11
	3	53
	5	—

(g)

## Dimensions



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

**D-**

-X

20-

Data

# 2-color Indication Type Solid State Switch Rail Mounting Style

## D-F79W/D-F7PW/D-J79W

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### Grommet

The optimum operating position can be determined by the color of the light.

(Red → Green ← Red)



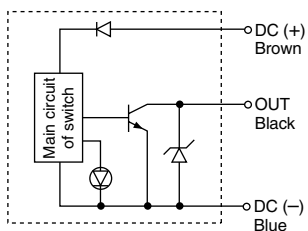
### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

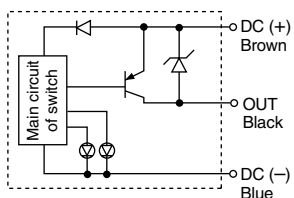
D-F7□W, D-J79W			
Auto switch model	D-F79W	D-F7PW	D-J79W
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC Relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)		—
Current consumption	10 mA or less		—
Load voltage	28 VDC or less	—	24 VDC (10 to 28 VDC)
Load current	40 mA or less	80 mA	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 lights when ON. Optimum operating position.....Green LED lights when ON.		

### Auto Switch Internal Circuit

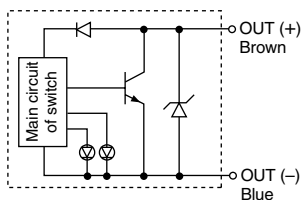
#### D-F79W



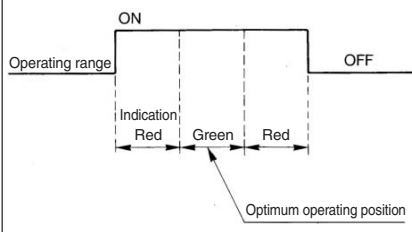
#### D-F7PW



#### D-J79W



### Indicator light/Display method



- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

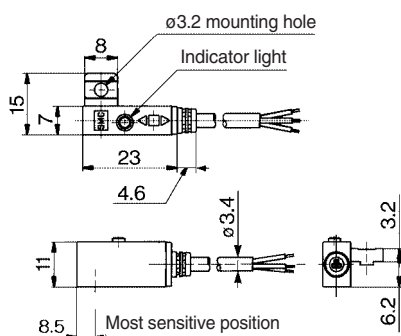
Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

Note 2) Regarding the lead wire length, refer to page 6-16-7.

### Weight

(g)				
Auto switch model		D-F79W	D-F7PW	D-J79W
Lead wire length (m)	0.5	13	13	11
	3	57	57	50
	5	92	92	81

### Dimensions



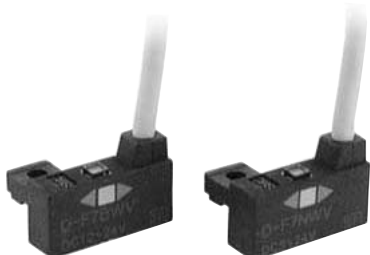
# 2-color Indication Type Solid State Switch Rail Mounting Style

## D-F7NWV/D-F7BWV

CE For details about the applicable products conforming to the standards applied in some countries, refer to SMC's web site.

### Grommet Electrical entry: Perpendicular

The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)



### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F7□WV (With indicator light)		
Auto switch model	D-F7NWV	D-F7BWV
Wiring type	3-wire	2-wire
Output type	NPN	—
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	5 to 40 mA
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA load current)	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 lights when ON. Optimum operating position.....Green LED lights when ON.	

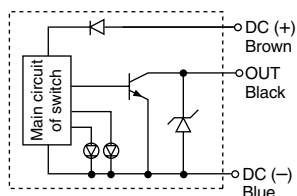
• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

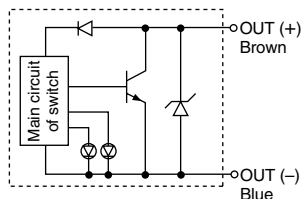
Note 2) Regarding the lead wire length, refer to page 6-16-7.

### Auto Switch Internal Circuit

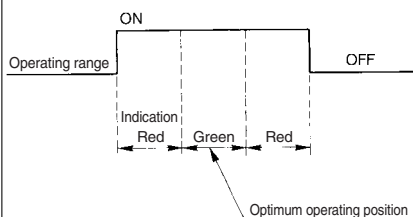
#### D-F7NWV



#### D-F7BWV



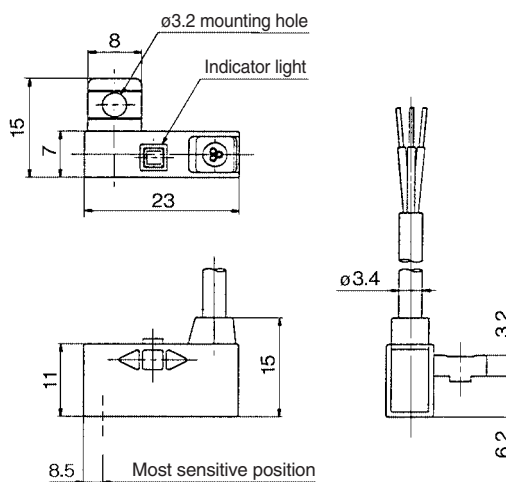
### Indicator light/Display method



### Weight

Auto switch model		D-F7NWV	D-F7BWV
Lead wire length (m)	0.5	13	11
	3	57	50
	5	92	81

### Dimensions





# 2-color Indication Type Reed Switch Tie-rod Mounting Style D-A59W

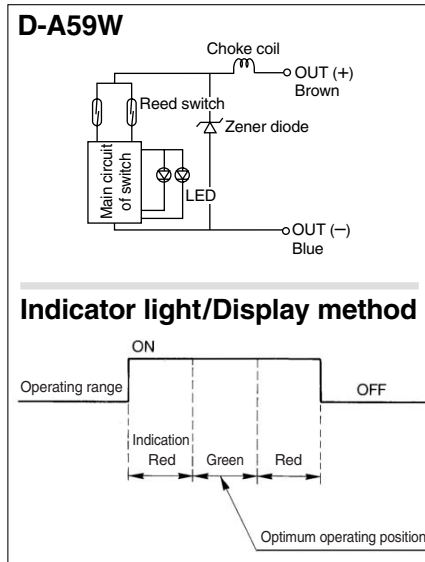
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## Grommet

The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)



## Auto Switch Internal Circuit



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-A59W (With indicator light)	
Auto switch model	<b>D-A59W</b>
Applicable load	Relay, PLC
Load voltage	24 VDC
Load current range <sup>(3)</sup>	5 to 40 mA
Contact protection circuit	None
Internal voltage drop	4 V or less
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

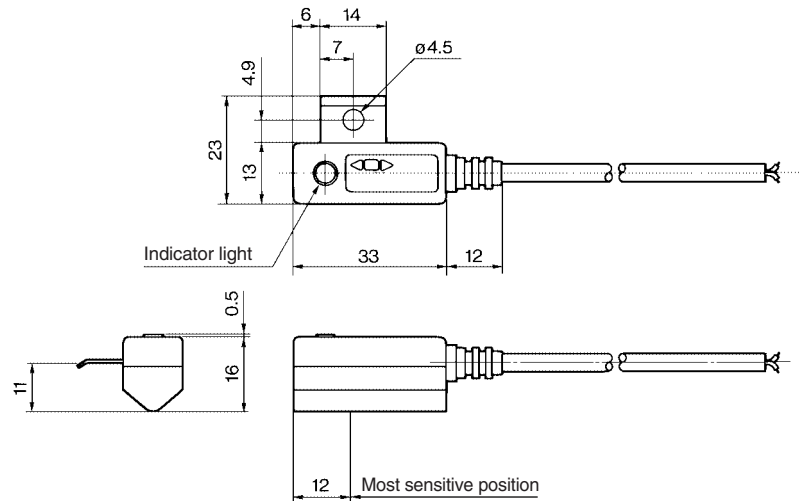
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 2 cores (Brown, Blue), 0.5 m
- Note 1) Regarding the common specifications of the reed switches, refer to page 10-20-7.
- Note 2) Regarding the lead wire length, refer to page 10-20-7.
- Note 3) Under 5 mA, the strength 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.

## Weight

Auto switch model	<b>D-A59W</b>	
Lead wire length (m)	0.5	25
	3	80
	5	—

(g)

## Dimensions



RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>6</sub><sup>J</sup>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

# 2-color Indication Type Solid State Switch Band Mounting Style

## D-F59W/D-F5PW/D-J59W

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### Grommet

The optimum operating position can be determined by the color of the light.

(Red → Green ← Red)



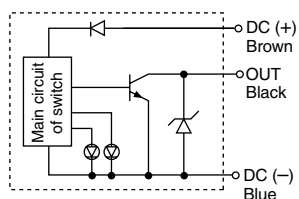
### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

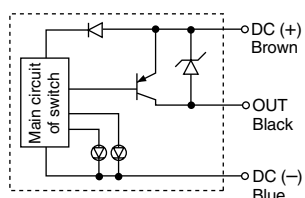
D-F5□W, D-J59W (With indicator light)			
Auto switch model	D-F59W	D-F5PW	D-J59W
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC Relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)		—
Current consumption	10 mA or less		—
Load voltage	28 VDC or 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 lights when ON. Optimum operating position.....Green LED lights when ON.		

### Auto Switch Internal Circuit

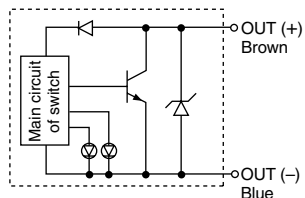
#### D-F59W



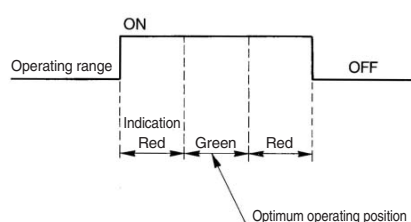
#### D-F5PW



#### D-J59W



### Indicator light/Display method



- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

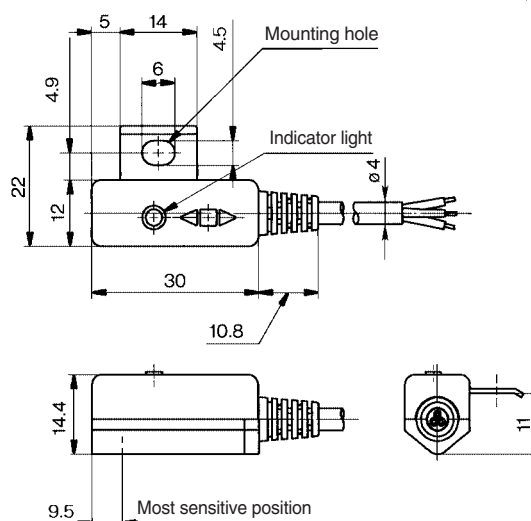
Note 2) Regarding the lead wire length, refer to page 6-16-7.

### Weight

Auto switch model	D-F59W	D-F5PW	D-J59W
Lead wire length (m)	0.5	23	21
	3	81	71
	5	127	111

(g)

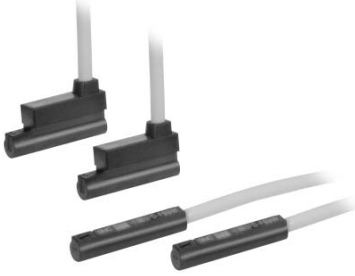
### Dimensions



# 2-color Indication Type Solid State Switch Direct Mounting Style D-F9NW(V)/D-F9PW(V)/D-F9BW(V)

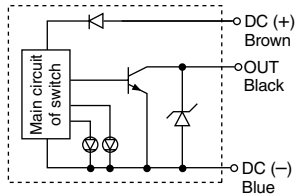
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## Grommet

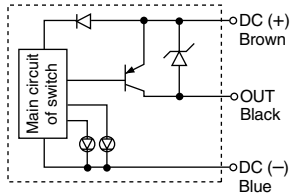


## Auto Switch Internal Circuit

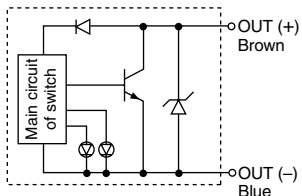
### D-F9NW, D-F9NWV



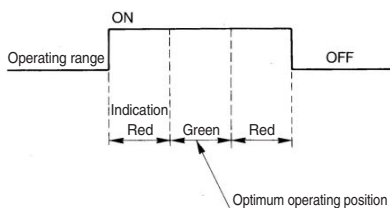
### D-F9PW, D-F9PWV



### D-F9BW, D-F9BWV



## Indicator light/Display method



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F9□W, D-F9□WV (With indicator light)						
Auto switch model	D-F9NW	D-F9NWV	D-F9PW	D-F9PWV	D-F9BW	D-F9BWV
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		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	
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.					

- Lead wire — Oil resistant vinyl heavy-duty cord:  $\phi 2.7$ , 3 cores (Brown, Black, Blue), 0.15 mm<sup>2</sup> 2 cores (Brown, Blue) 0.18 mm<sup>2</sup>, 0.5 m

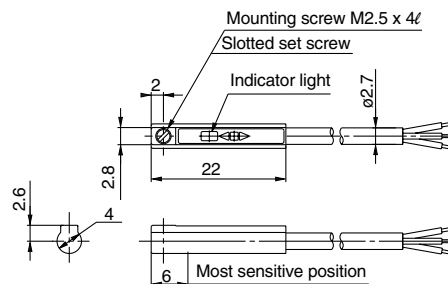
Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.  
Note 2) Regarding the lead wire length, refer to page 10-20-7.

## Weight

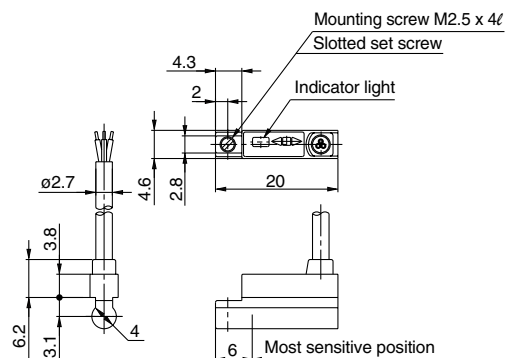
Auto switch model	D-F9NW(V)	D-F9PW(V)	D-F9BW(V)
Lead wire length (m)	7	7	7
	34	34	32
	56	56	52

## Dimensions

### D-F9□W



### D-F9□WV



RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>6</sub><sup>J</sup>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

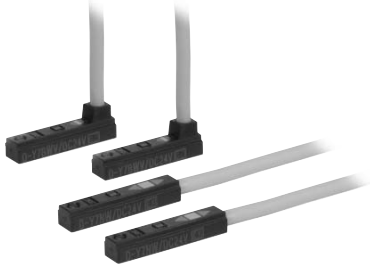
Data

# 2-color Indication Type Solid State Switch Direct Mounting Style D-Y7NW(V)/D-Y7PW(V)/D-Y7BW(V)

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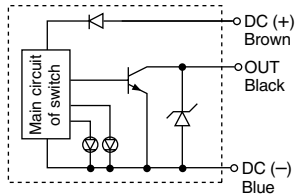
## Grommet

The optimum operating position can be determined by the color of the light. (Red → Green ← Red)

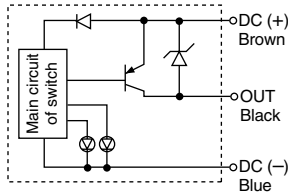


## Auto Switch Internal Circuit

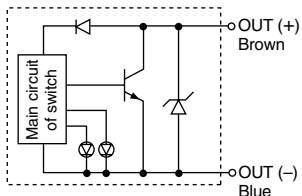
### D-Y7NW, D-Y7NWV



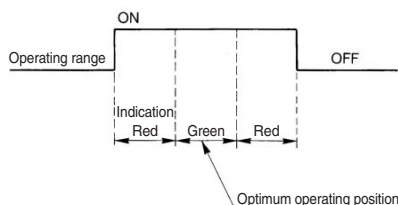
### D-Y7PW, D-Y7PWV



### D-Y7BW, D-Y7BWV



## Indicator light/Display method



## Auto Switch Specifications

PLC: Abbreviation of 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 lights when ON. Optimum operating position.....Green LED lights when ON.					

- Lead wire — Oil resistant, flexible vinyl heavy-duty cord,  $\phi 3.4$ , 0.15 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5 m

Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.

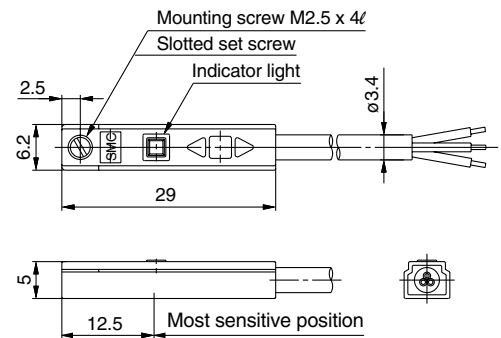
Note 2) Regarding the lead wire length, refer to page 6-16-7.

## Weight

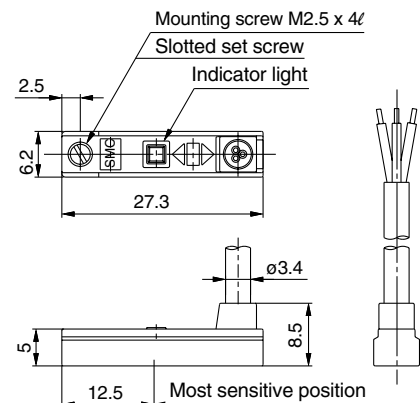
Auto switch model	D-Y7NW(V)	D-Y7PW(V)	D-Y7BW(V)
Lead wire length (m)	0.5	11	11
	3	54	54
	5	88	88

## Dimensions

### D-Y7□W



### D-Y7□WV



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# 2-color Indication Type Solid State Switch Direct Mounting Style

## D-M5NW/D-M5PW/D-M5BW

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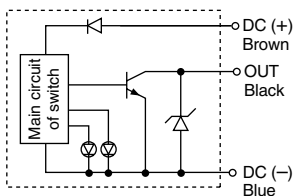
### Grommet

The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)

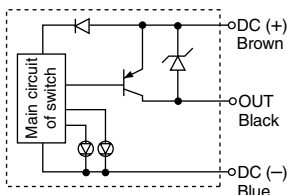


### Auto Switch Internal Circuit

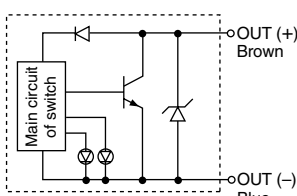
#### D-M5NW



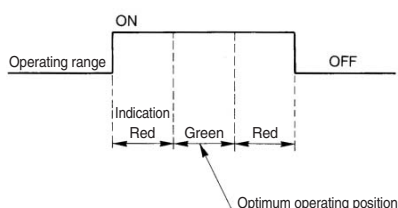
#### D-M5PW



#### D-M5BW



### Indicator light/Display method



### Auto Switch Specifications

D-M5□W (With indicator light)			
Auto switch model	D-M5NW	D-M5PW	D-M5BW
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		1 mA or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.		

• Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue) 0.5 m

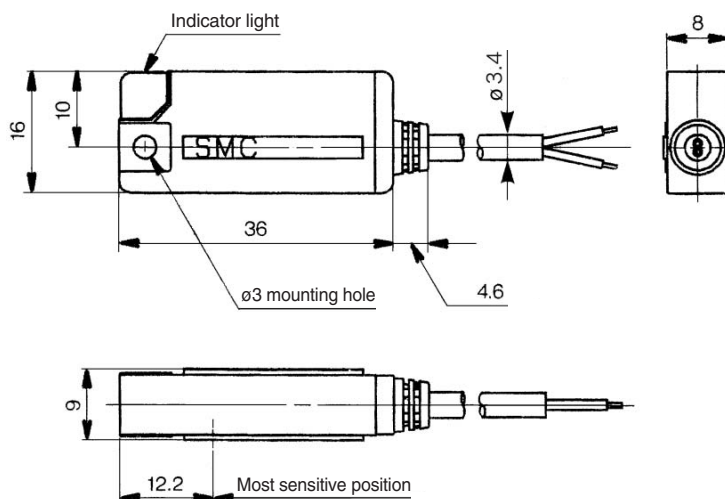
Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.

Note 2) Regarding the lead wire length, refer to page 10-20-7.

### Weight

Auto switch model		D-M5NW	D-M5PW	D-M5BW
Lead wire length (m)	0.5	16	16	14
	3	60	60	53
	5	95	95	84

### Dimensions



RE<sup>A</sup><sub>B</sub>  
REC  
C□X  
C□Y  
MQ<sup>Q</sup><sub>M</sub>  
RHC  
MK(2)  
RS<sup>Q</sup><sub>G</sub>  
RS<sup>H</sup><sub>A</sub>  
RZQ  
MI<sup>W</sup><sub>S</sub>  
CEP1  
CE1  
CE2  
ML2B  
C<sup>J</sup><sub>5-S</sub>  
CV  
MVGQ  
CC  
RB  
J  
D-  
-X  
20-  
Data











# Solid State Switch with Timer Band Mounting Style D-G5NTL

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## Grommet

With built-in OFF-delay timer (200 ms)



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-G5NTL (With indicator light)	
Auto switch model	D-G5NTL
Wiring type	3-wire
Output type	NPN
Output operation	Off-delay
Operating time	1 ms or less
Off-delay time	200 ± 50 ms
Applicable load	IC circuit, 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
Load current	40 mA or less
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA)
Leakage current	100 µA or less at 24 VDC
Indicator light	Red LED lights when ON.

• Lead wire — Oil resistant vinyl heavy-duty cord, ø4, 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 3 m (Standard)

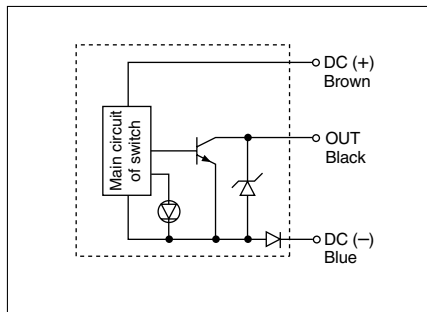
Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.

Note 2) Regarding the lead wire length, refer to page 10-20-7.

## Weight

Auto switch model		D-G5NT
Lead wire length (m)	0.5	—
	3	78
	5	124

## Auto Switch Internal Circuit



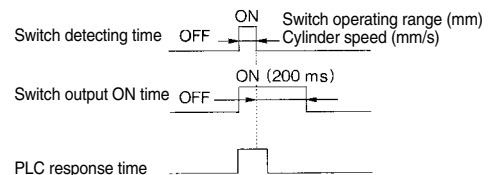
## Timer Operation

### Detection of intermediate positioning for high-speed cylinder

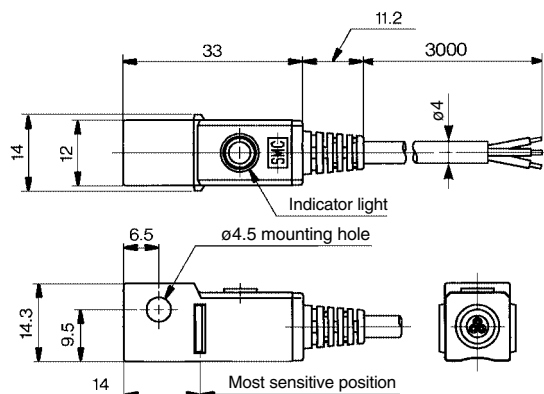
Detecting point dispersion occurs due to response time of PLC (sequencer); e.g. scanning.

Ex.) Cylinder speed — 1000 mm/sec.  
Sequencer response time — 0.1 sec.  
Detecting point dispersion — Within 100 mm (= 1000 mm/sec. x 0.1 sec.)

Take PLC response time into consideration when using.



## Dimensions



# Solid State Switch with Timer

## Rail Mounting Style

### D-F7NTL

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#### Grommet

With built-in OFF-delay timer (200 ms)



#### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F7NTL (With indicator light)	
Auto switch model	D-F7NTL
Wiring type	3-wire
Output type	NPN
Output operation	Off-delay
Operating time	1 ms or less
Off-delay time	200 ± 50 ms
Applicable load	IC circuit, 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
Load current	40 mA or less
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA)
Leakage current	100 μA or less at 24 VDC
Indicator light	Red LED lights when ON.

• Lead wire — Oil resistant vinyl heavy-duty cord, ø3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 3 m (Standard)

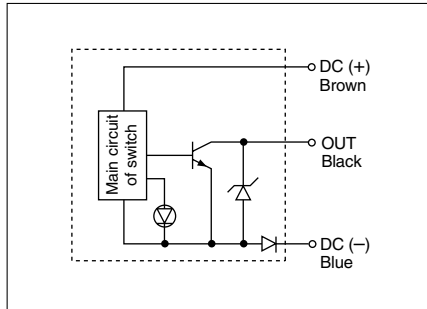
Note 1) For the solid state switch common specifications, refer to page 10-20-7.

Note 2) For lead wire length, refer to page 10-20-7.

#### Weight

Auto switch model	D-F7NT	
Lead wire length (m)	0.5	—
	3	57
	5	92

#### Auto Switch Internal Circuit



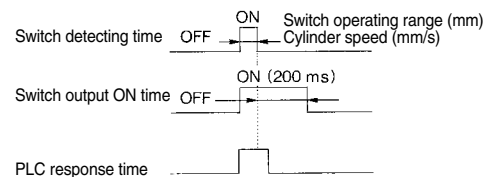
#### Timer Operation

##### Detection of intermediate positioning for high-speed cylinder

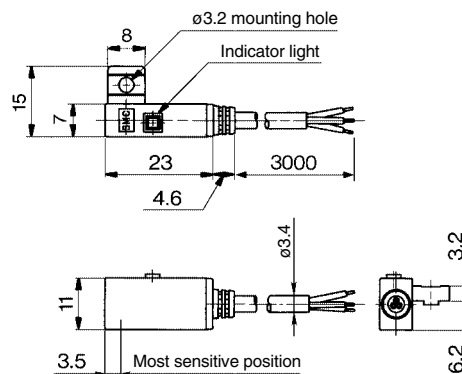
Detecting point dispersion occurs due to response time of PLC (sequencer); e.g. scanning.

Ex.) Cylinder speed — 1000 mm/sec.  
 Sequencer response time — 0.1 sec.  
 Detecting point dispersion — Within 100 mm (= 1000 mm/sec. x 0.1 sec.)

Take PLC response time into consideration when using.



#### Dimensions



RE<sub>B</sub><sup>A</sup>

REC

C□X

C□Y

MQ<sub>M</sub><sup>Q</sup>

RHC

MK(2)

RS<sub>G</sub><sup>Q</sup>

RS<sub>A</sub><sup>H</sup>

RZQ

MI<sub>S</sub><sup>W</sup>

CEP1

CE1

CE2

ML2B

C<sub>5</sub>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

# Solid State Switch with Timer

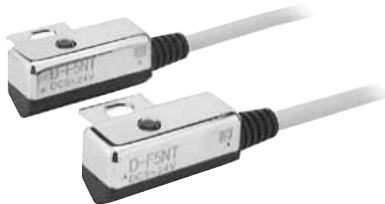
## Tie-rod Mounting Style

### D-F5NTL

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

#### Grommet

With built-in OFF-delay timer (200 ms)



#### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F5NTL (With indicator light)	
Auto switch model	<b>D-F5NTL</b>
Wiring type	3-wire
Output type	NPN
Output operation	Off-delay
Operating time	1 ms or less
Off-delay time	200 ± 50 ms
Applicable load	IC circuit, 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
Load current	40 mA or less
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA)
Leakage current	100 μA or less at 24 VDC
Indicator light	Red LED lights when ON.

- Lead wire— Oil resistant vinyl heavy-duty cord, ø4, 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 3 m (Standard)

Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.

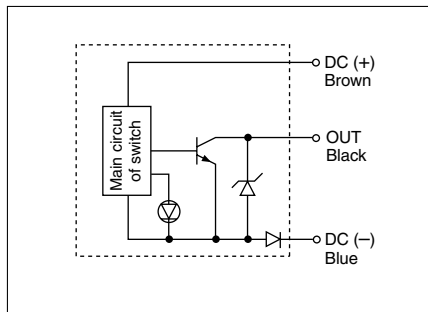
Note 2) Regarding the lead wire length, refer to page 10-20-7.

#### Weight

(g)

Auto switch model	D-F5NT	
Lead wire length (m)	0.5	—
	3	81
	5	127

#### Auto Switch Internal Circuit



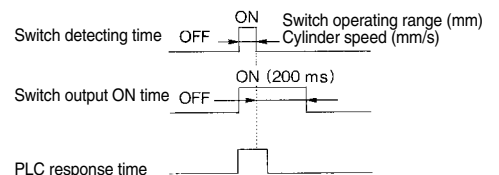
#### Timer Operation

##### Detection of intermediate positioning for high-speed cylinder

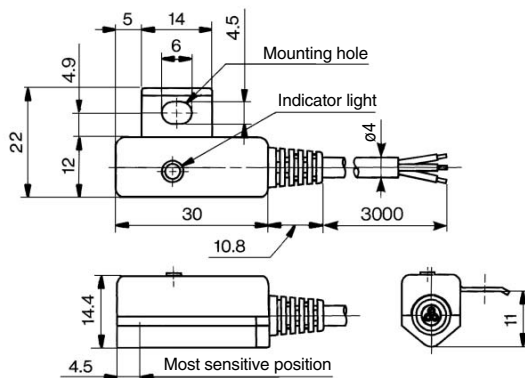
Detecting point dispersion occurs due to response time of PLC (sequencer); e.g. scanning.

Ex.) Cylinder speed — 1000 mm/sec.  
 Sequencer response time — 0.1 sec.  
 Detecting point dispersion — Within 100 mm (= 1000 mm/sec. x 0.1 sec.)

Take PLC response time into consideration when using.



#### Dimensions



# Solid State Switch with Timer

## Direct Mounting Style

### D-M5NTL/D-M5PTL

CE For details about the applicable products conforming to the standards applied in some countries, refer to SMC's web site.

#### Grommet

With built-in OFF-delay timer (200 ms)



#### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-M5□TL (With indicator light)		
Auto switch model	D-M5NTL	D-M5PTL
Wiring type	3-wire	
Output type	NPN	PNP
Output operation	Off-delay	
Operating time	1 ms or less	
Off-delay time	200 ± 50 ms	
Applicable load	IC circuit, Relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)	
Current consumption	10 mA or less	12 mA or less
Load voltage	28 VDC or less	—
Load current	80 mA or less	
Internal voltage drop	2 V or less (0.8 V or less at 10 mA load current)	0.8 V or less
Leakage current	100 μA or less at 24 VDC	
Indicator light	Red LED lights when ON.	

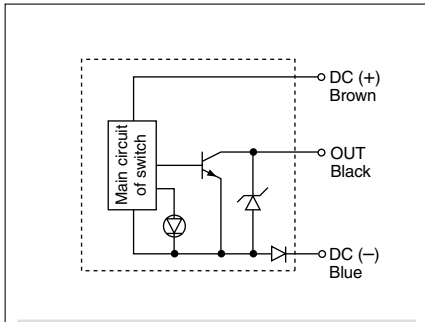
• Lead wire — Oil resistant vinyl heavy-duty cord, ø3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 3 m (Standard)

Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.  
Note 2) Regarding the lead wire length, refer to page 10-20-7.

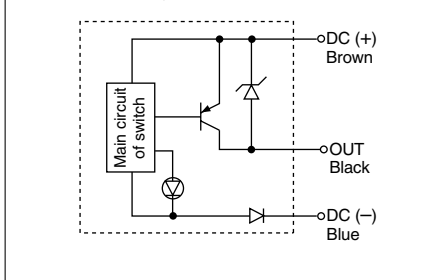
#### Weight

Auto switch model		D-M5NT	D-M5PT
Lead wire length (m)	0.5	—	—
	3	60	60
	5	95	95

#### Auto Switch Internal Circuit



#### Indicator light/Display method



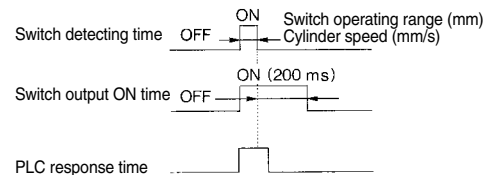
#### Timer Operation

##### Detection of intermediate positioning for high-speed cylinder

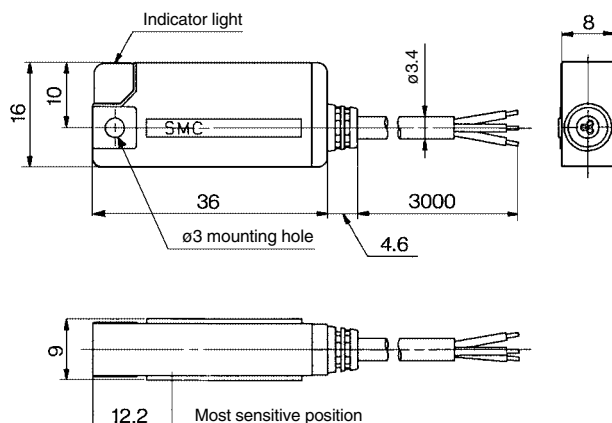
Detecting point dispersion occurs due to response time of PLC (sequencer); e.g. scanning.

Ex.) Cylinder speed — 1000 mm/sec.  
Sequencer response time — 0.1 sec.  
Detecting point dispersion — Within 100 mm (= 1000 mm/sec. x 0.1 sec.)

Take PLC response time into consideration when using.



#### Dimensions



RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>5</sub>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

# Water Resistant 2-color Indication Type Solid State Switch: Band Mounting Style

## D-H7BAL

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Water (coolant) resistant type



### Caution

#### Precautions

Please consult with SMC if using coolant liquid other than water based solution.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

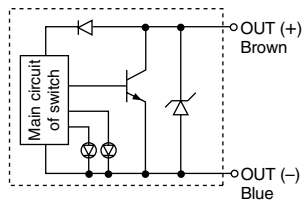
D-H7BAL (With indicator light)	
Auto switch model	D-H7BAL
Wiring type	2-wire
Output type	—
Applicable load	24 VDC Relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 40 mA
Internal voltage drop	4 V or less
Leakage current	0.8 mA or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 m (Standard)
- Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.
- Note 2) Regarding the lead wire length, refer to page 10-20-7.

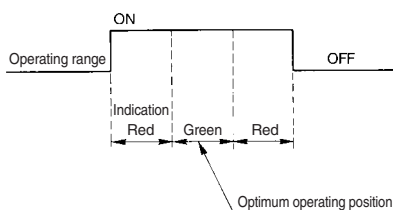
### Weight

Auto switch model		D-H7BA
Lead wire length (m)	0.5	—
	3	50
	5	81

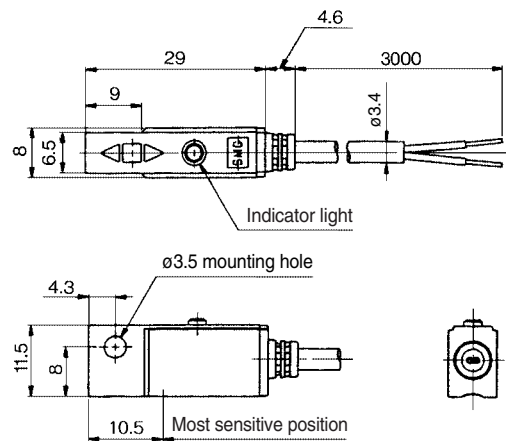
### Auto Switch Internal Circuit



### Indicator light/Display method



### Dimensions





# Water Resistant 2-color Indication Type Solid State Switch: Band Mounting Style D-G5BAL

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

## Grommet

Water (coolant) resistant type



## Caution

### Precautions

Please consult with SMC if using coolant liquid other than water based solution.

## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-G5BAL (With indicator light)	
Auto switch model	D-G5BAL
Wiring type	2-wire
Output type	—
Applicable load	24 VDC Relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 40 mA
Internal voltage drop	4 V or less
Leakage current	0.8 mA or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

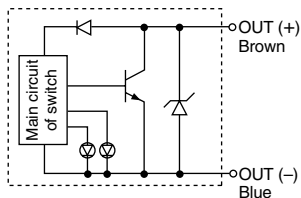
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 m (Standard)  
Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.  
Note 2) Regarding the lead wire length, refer to page 10-20-7.

## Weight

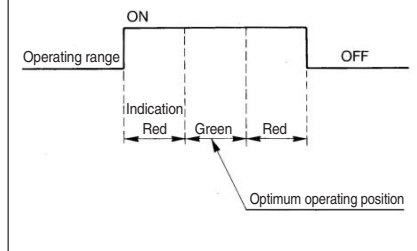
Auto switch model		D-G5BA
Lead wire length (m)	0.5	—
	3	68
	5	108

(g)

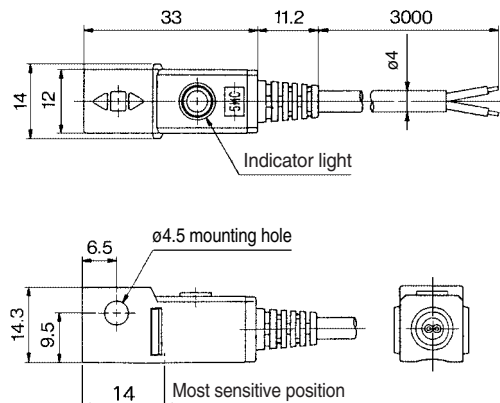
## Auto Switch Internal Circuit



## Indicator light/Display method



## Dimensions



RE<sub>B</sub><sup>A</sup>

REC

C<sub>X</sub>

C<sub>Y</sub>

MQ<sub>M</sub><sup>Q</sup>

RHC

MK(2)

RS<sub>G</sub><sup>Q</sup>

RS<sub>A</sub><sup>H</sup>

RZQ

MI<sub>S</sub><sup>W</sup>

CEP1

CE1

CE2

ML2B

C<sub>5-S</sub><sup>J</sup>

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

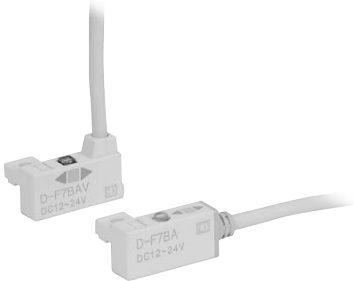
# Water Resistant 2-color Indication Type Solid State Switch: Rail Mounting Style

## D-F7BA(V)L

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Water (coolant) resistant type



### Caution

#### Precautions

Please consult with SMC if using coolant liquid other than water based solution.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

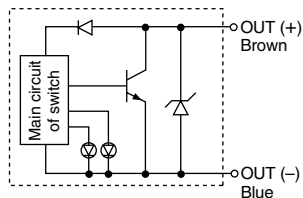
D-F7BA(V)L (With indicator light)		
Auto switch model	D-F7BAL	D-F7BAVL
Electrical entry direction	In-line	Perpendicular
Wiring type	2-wire	
Output type	—	
Applicable load	24 VDC Relay, PLC	
Power supply voltage	—	
Current consumption	—	
Load voltage	24 VDC (10 to 28 VDC)	
Load current	5 to 40 mA	
Internal voltage drop	4 V or less	
Leakage current	0.8 mA or less at 24 VDC	
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.	

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 3.4$ , 0.2 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 m (Standard)
- Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.
- Note 2) Regarding the lead wire length, refer to page 10-20-7.

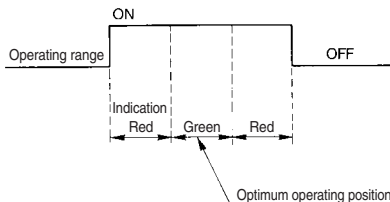
### Weight

Auto switch model		D-F7BA	D-F7BAV
Lead wire length (m)	0.5	—	—
	3	50	50
	5	81	81

### Auto Switch Internal Circuit

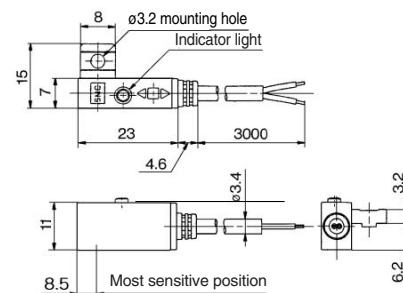


### Indicator light/Display method

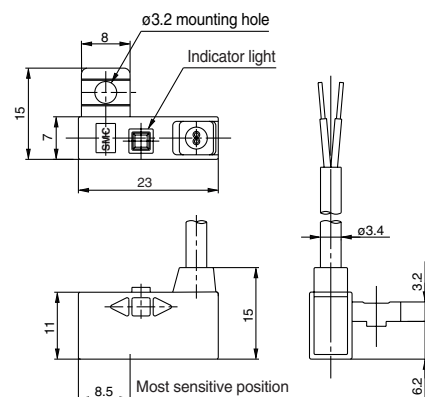


### Dimensions

#### D-F7BAL



#### D-F7BAVL



# Water Resistant 2-color Indication Type Solid State Switch: Tie-rod Mounting Style

## D-F5BAL

CE For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Water (coolant) resistant type



### Caution

#### Precautions

Please consult with SMC if using coolant liquid other than water based solution.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-F5BAL (With indicator light)	
Auto switch model	D-F5BAL
Wiring type	2-wire
Output type	—
Applicable load	24 VDC Relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 40 mA
Internal voltage drop	4 V or less
Leakage current	0.8 mA or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

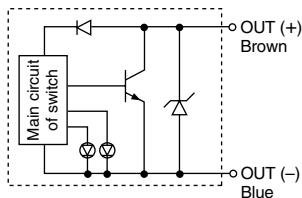
- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 m (Standard)  
Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.  
Note 2) Regarding the lead wire length, refer to page 10-20-7.

### Weight

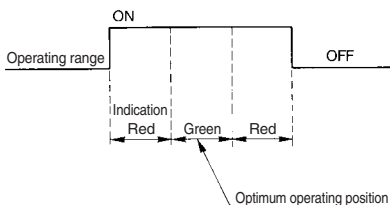
Auto switch model		D-F5BA
Lead wire length (m)	0.5	—
	3	71
	5	111

(g)

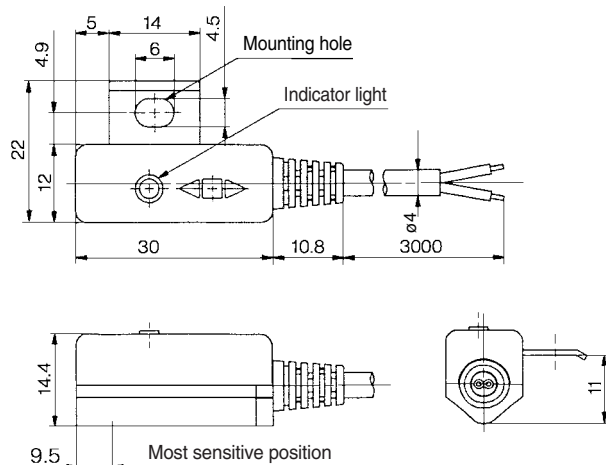
### Auto Switch Internal Circuit



### Indicator light/Display method



### Dimensions



RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>G</sub><sup>J</sup>5-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

# Water Resistant 2-color Indication Type Solid State Switch: Direct Mounting Style

## D-F9BAL

CE For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Water (coolant) resistant type



### Caution

#### Precautions

Please consult with SMC if using coolant liquid other than water based solution.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

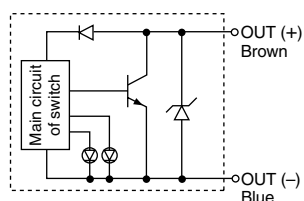
D-F9BAL (With indicator light)	
Auto switch model	D-F9BAL
Wiring type	2-wire
Output type	—
Applicable load	24 VDC Relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 30 mA
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 2.7$ , 2 cores (Brown, Blue), 0.18 mm<sup>2</sup>, 0.5 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.
- Note 2) Regarding the lead wire length, refer to page 10-20-7.

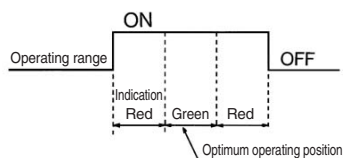
### Weight

Auto switch model		D-F9BA
Lead wire length (m)	0.5	—
	3	37
	5	57

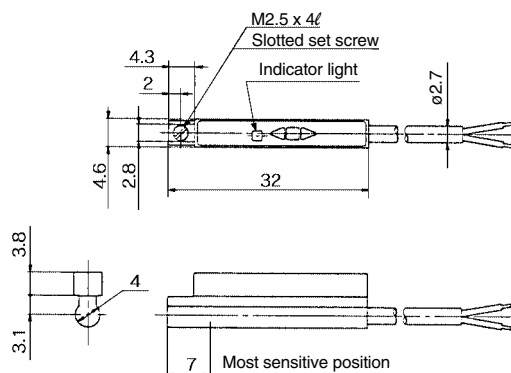
### Auto Switch Internal Circuit



### Indicator light/Display method



### Dimensions



# Water Resistant 2-color Indication Type Solid State Switch: Direct Mounting Style

## D-Y7BAL

CE For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Water (coolant) resistant type



### Caution

#### Precautions

Please consult with SMC if using coolant liquid other than water based solution.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-Y7BAL (With indicator light)	
Auto switch model	D-Y7BAL
Wiring type	2-wire
Applicable load	24 VDC Relay, PLC
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 40 mA or less
Internal voltage drop	4 V or less
Leakage current	0.8 mA or less at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

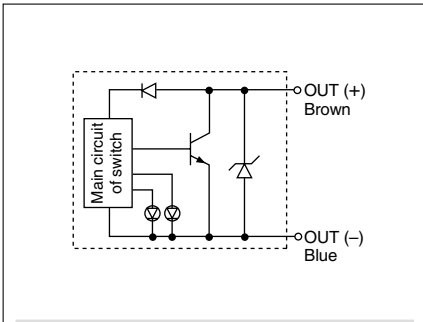
- Lead wire — Oil resistant, flexible vinyl heavy-duty cord,  $\phi 3.4$ , 0.15 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 m (Standard)

Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.  
Note 2) Regarding the lead wire length, refer to page 10-20-7.

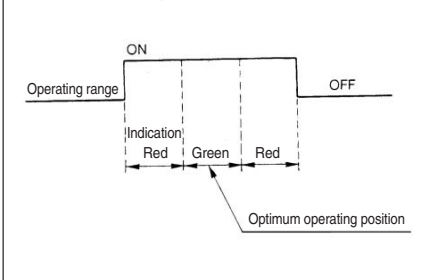
### Weight

Auto switch model		D-Y7BA
Lead wire length (m)	0.5	—
	3	54
	5	88

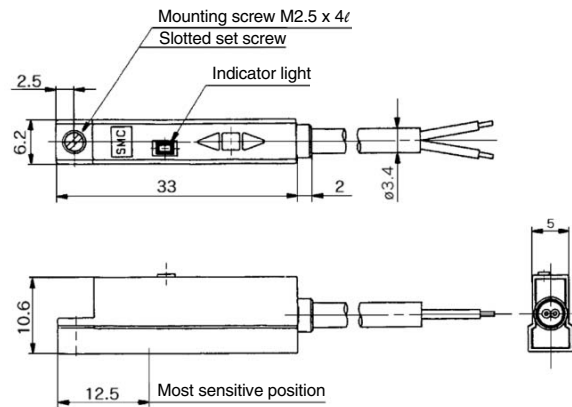
### Auto Switch Internal Circuit



### Indicator light/Display method



### Dimensions



RE<sup>A</sup><sub>B</sub>

REC

C<sup>□</sup>X

C<sup>□</sup>Y

MQ<sup>□</sup><sub>M</sub>

RHC

MK(2)

RS<sup>□</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sup>J</sup><sub>5-S</sub>

CV

MVGQ

CC

RB

J

D-

-X

20-

Data



# Magnetic Field Resistant 2-color Indication Type Solid State Switch: Rail Mounting Style

## D-P5DWL

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Possible to use in an environment where disturbance magnetic fields are generated.



### Caution

#### Precautions

For use with single-phase AC welders. Not applicable for DC inverter welding, arc welding nor capacitor welding.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

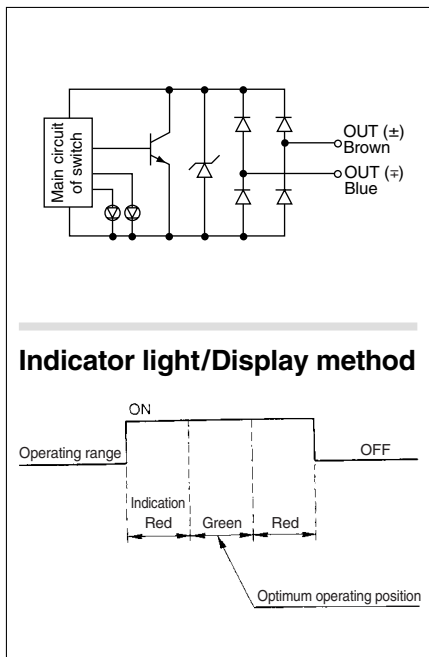
D-P5DW (With indicator light)	
Auto switch model	<b>D-P5DWL</b>
Wiring type	2-wire (non-polar)
Applicable load	24 VDC relay, PLC
Load voltage	24 VDC (20 to 28 VDC)
Load current	6 to 40 mA or less
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Operating time	40 ms or less
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 6$ , 0.5 mm<sup>2</sup>, 2 cores (Brown, Blue), 3 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 10-20-7.
- Note 2) Regarding the lead wire length, refer to page 10-20-7.

### Weight

Auto switch model		<b>D-P5DW</b>
Lead wire length (m)	0.5	—
	3	150
	5	244

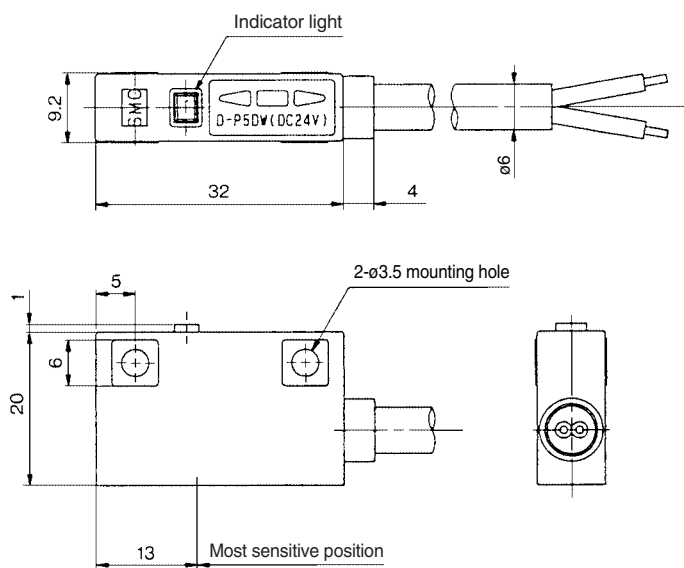
### Auto Switch Internal Circuit



### Magnetic Field Resistance

When the AC welding current is 16000 A or less, the operational distance between the welding conductor (welding gun or cable) and the cylinder or auto switch can be 0 mm. Please consult with SMC when exceeding 16000 A.

### Dimensions





# Magnetic Field Resistant 2-Color Display

## Solid State Auto Switch

### D-P3DW/L/Z

(Electrical entry: Grommet)



For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

- It is possible to use in an environment which generates a magnetic field disturbance (AC magnetic field).
- The optimum operating position can be determined by the color of the light.  
(Red → Green ← Red)



### ⚠ Caution

#### Precautions

For single-phase AC welding machines  
If it is used for current inverter welders (including rectifying type) and condenser type welders, the magnetic field resistance is reduced. Please contact SMC regarding the performance.

## Auto Switch Specifications

PLC: Programmable Logic Controller

D-P3DW/L/Z (With indicator light)	
Auto switch model	D-P3DW/L/Z
Applicable load	24 VDC relay, PLC
Load voltage	24 VDC (20 to 28 VDC)
Load current	6 to 40 mA
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Operating time	40 ms or less
Indicator light	Operating position.....Red LED illuminates. Optimum operating position.....Green LED illuminates.
Standards	CE marking, UL (CSA), RoHS

- Lead wire — Oilproof heavy-duty vinyl cable,  $\phi 0.189$ ,  $0.775 \times 10^{-3}$  in<sup>2</sup>, 2 cores,  
D-P3DW: 19.7 in, D-P3DWL: 118 in, D-P3DWZ: 197 in
- Impact resistance — Switch: 39370 in/s<sup>2</sup>
- Insulation resistance — 50 M $\Omega$  or more at 500 VDC Mega (between lead wire and case)
- Withstand voltage — 1000 VAC for 1 minute (between lead wire and case)
- Ambient temperature — 14 to 140°F
- Enclosure — IEC60529 standard IP67
- Polarity: Non-polar

## Magnetic Field Resistance

If the current of the AC welding machine is 16000 A or lower, the auto switch can be used, even if the distance between the welding conductor (gun cable) and the cylinder/actuator or auto switch is 0 in. Please contact SMC when the AC welding current exceeds 16000 A.

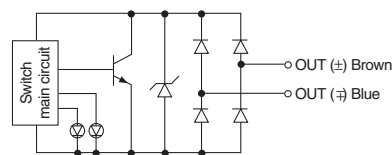
## Mass

Unit: lb(s)

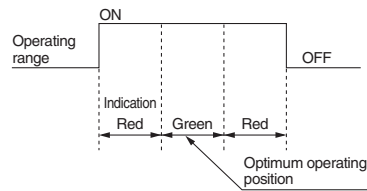
Auto switch model	D-P3DW/L/Z	
Lead wire length (in)	19.7	0.044
	118	0.225
	197	0.37

## Auto Switch Internal Circuit

### D-P3DW/L/Z



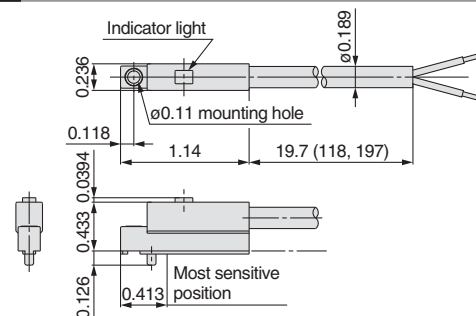
## Indicator light/Display method



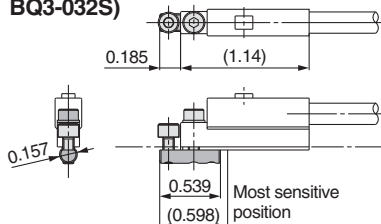
## Dimensions

Unit: in

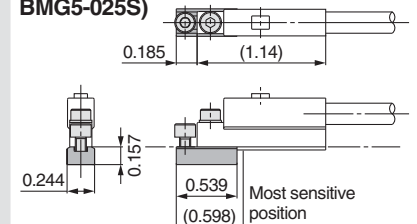
### Body



### Auto switch mounting bracket (For round groove mounting: BQ3-032S)



### Auto switch mounting bracket (For square groove mounting: BMG5-025S)



\* When the auto switch is ordered on its own, the auto switch mounting bracket is not enclosed. In that case, please order it separately.

# Magnetic Field Resistant 2-color Indication Solid State Switch

## D-P4DWL/D-P4DWZ



For details about certified products conforming to international standards, visit us at [www.smworld.com](http://www.smworld.com).

### Grommet

It is possible to use in an environment which generates a magnetic field disturbance (AC magnetic field).



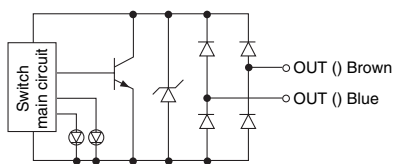
### Caution

#### Precautions

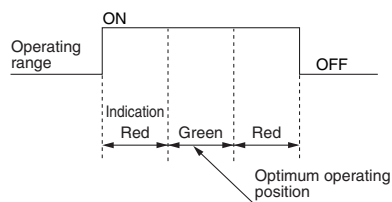
For single-phase AC welding machines  
Not applicable for DC inverter welding machines (including rectifying type) and or condenser type welding

#### Auto Switch Internal Circuit

##### D-P4DWL/Z



#### Indicator light/Display method



### Auto Switch Specifications

PLC: Programmable Logic Controller

D-P4DW□ (With indicator light)		
Auto switch model	D-P4DWL	D-P4DWZ
Applicable load	24 VDC relay, PLC	
Load voltage	24 VDC (20 to 28 VDC)	
Load current	6 to 40 mA or less	
Internal voltage drop	5 V or less	
Leakage current	1 mA or less at 24 VDC	
Operating time	40 ms or less	
Indicator light	Operating position.....Red LED illuminates when turned ON. Optimum operating position.....Green LED illuminates when turned ON.	

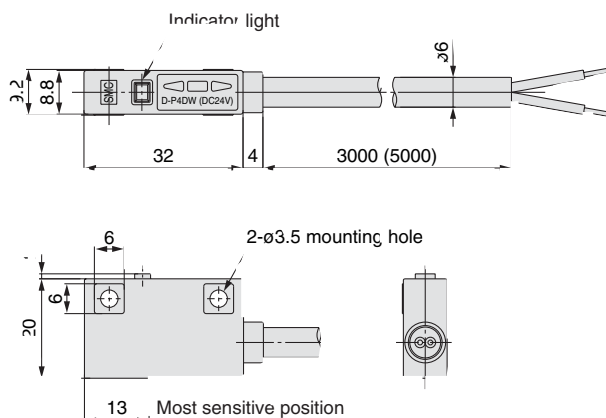
- Lead wire — Oilproof heavy-duty vinyl cable,  $\phi 6$ , 0.5 mm<sup>2</sup>, 2 cores, D-P4DWL 3 m, D-P4DWZ 5 m
- Impact resistance — 1000 m/s<sup>2</sup>
- Insulation resistance — 50 M or more at 500 VDC Mega (between lead wire and case)
- Withstand voltage — 1000 VAC for 1 minute (between lead wire and case)
- Ambient temperature — -10 to 60C
- Enclosure — IEC529 standard IP67, JIS 0920 waterproof structure

### Magnetic Field Resistance

If the current of the AC welding machine is 16,000 A or lower, the switch can be used even if the distance between the welding conductor (gun cable) and the cylinder of switch is 0 mm. Please contact SMC when the AC welding current exceeds 16,000 A.

### Dimensions

Unit: mm



# Magnetic Field Resistant Reed Switches

## D-P70/P74/P75/P80

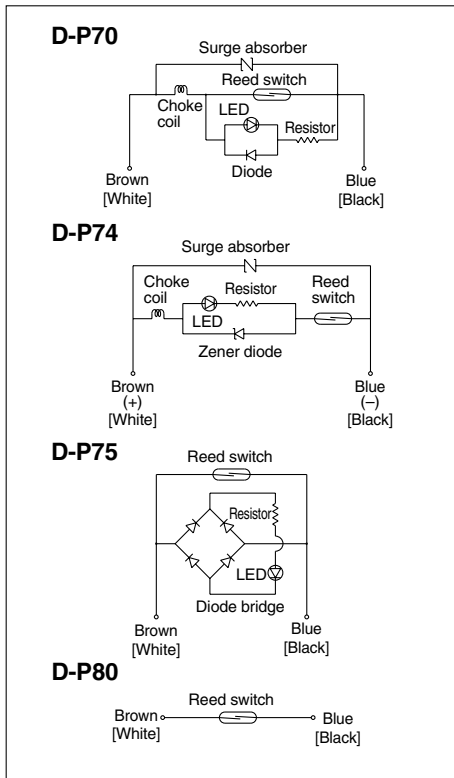
### Grommet



### ⚠ Caution

Refer to "Magnetic Field Resistant Reed Switches/Specific Product Precautions" (pages 31 and 32).

### Auto Switch Internal Circuits



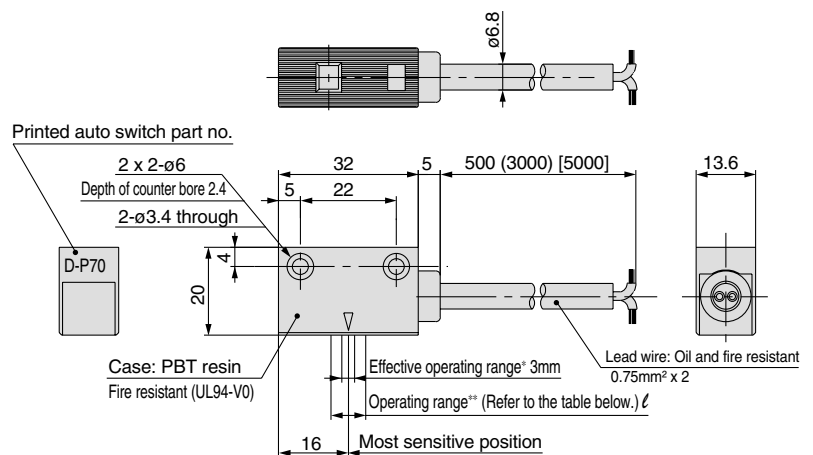
### Auto Switch Specifications

D-P70, D-P74, D-P75 (with indicator light)			
Auto switch part no.	D-P70	D-P74	D-P75
Electrical entry	Grommet		
Application	Relay, PLC		
Load voltage	100VAC	24VDC	100VDC
Max. load voltage/Load current range	20mA	5 to 40mA	5 to 20mA
Contact protection circuit	Yes		
Internal voltage drop (internal resistance)	(10Ω or less)	2.4V or less	(0)
Leakage current	1.8mA	0	1.2mA
Indicator light	Red LED lights up when OFF	Red LED lights up when ON	Red LED lights up when OFF

D-P80 (without indicator light)			
Auto switch part no.	D-P80		
Electrical entry	Grommet		
Application	Relay, PLC		
Load voltage	24V <sup>AC</sup> <sub>DC</sub> or less	48V <sup>AC</sup> <sub>DC</sub>	100V <sup>AC</sup> <sub>DC</sub>
Maximum load voltage	50mA	40mA	20mA
Contact protection circuit	No		
Internal resistance	0		

- Operating time — 1.2ms
  - Lead wire — Oil resistant, fire resistant heavy duty cord, ø6.8, 0.75mm<sup>2</sup>, 2 wire (Brown, Blue [White, Black]), 0.5m\*
  - Impact resistance — 300m/s<sup>2</sup>
  - Insulation resistance — 50MΩ or more at 500VAC (between lead wire and case)
  - Ambient temperature — -10 to 60°C
  - Enclosure — IEC standard IP67, watertight (JISCO920), oil proof construction
- \* Indicate "L" for 3m lead wire and "Z" for 5m lead wire at the end of an auto switch part number.

### Auto Switch Dimensions



### Operating range ( Dimension ℓ )

Cylinder series	Applicable bore sizes (mm)		
	40	50	63
CLK1P□	7	8	8

\* Effective operating range:  
The range with enough magnetic force to resist malfunction due to the outside magnetic field when the switch is ON.

\*\* Operating range:  
The range within which the switch turns ON.



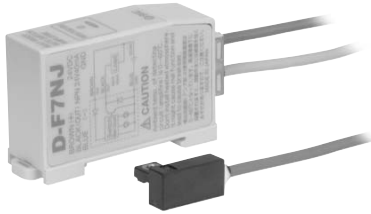
# Heat Resistant 2-color Indication Type Solid State Switch: Rail Mounting Style

## D-F7NJL

For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

### Grommet

Improved heat resistant type



### Caution

#### Precautions

Auto switch which can be mounted on heat resistant, compact cylinder, CDQ2-XB14. For using for other cylinders, please confirm SMC.

### Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

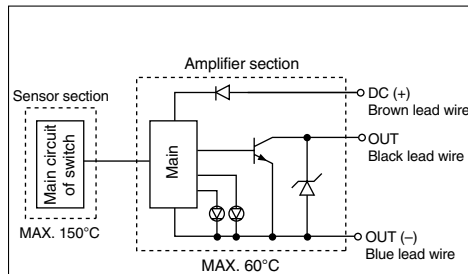
D-F7NJL (With indicator light)	
Auto switch model	<b>D-F7NJL</b>
Wiring type	3-wire
Output type	NPN
Applicable load	Relay, PLC
Power supply voltage	24 VDC (20 to 26 VDC)
Current consumption	25 mA or less
Load voltage	28 VDC or less
Load current	40 mA
Internal voltage drop	0.8 V or less
Leakage current	100 $\mu$ A at 24 VDC
Indicator light	Operating position.....Red LED lights when ON. Optimum operating position.....Green LED lights when ON.
Ambient temperature	Sensor section: 0 to 150°C Amplifier section: 0 to 60°C
Impact resistance	Sensor section: 1000 m/s <sup>2</sup> Amplifier section: 300 m/s <sup>2</sup>

- Lead wire — Between sensor and amplifier: Oil resistant vinyl heavy-duty cord,  $\phi$ 3.4, 3 m  
Grommet on amplifier: Oil resistant vinyl heavy-duty cord,  $\phi$ 3.4, 0.2 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 3 m

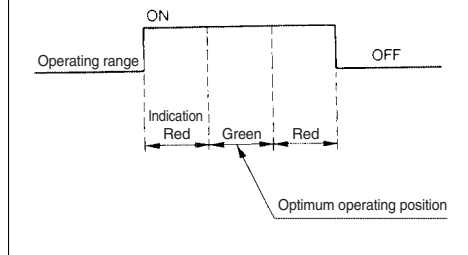
### Weight

Auto switch model	D-F7NJ	
Lead wire length (m)	0.5	—
	3	170
	5	210

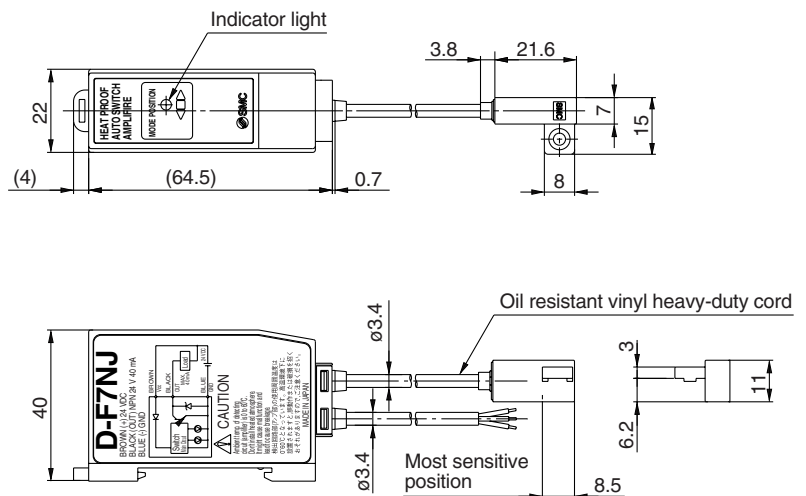
### Auto Switch Internal Circuit



### Indicator light/Display method



### Dimensions

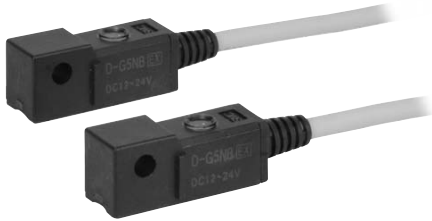




# Wide Range Detection Type Solid State Switch: Band Mounting Style D-G5NBL

CE For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

## Grommet



## Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

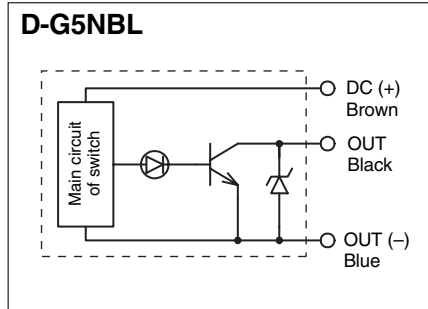
D-G5NBL (With indicator light)	
Auto switch model	<b>D-G5NBL</b>
Wiring type	3-wire
Output type	NPN
Applicable load	Relay, PLC
Power supply voltage	12 VDC, 24 V (10 to 28 VDC)
Current consumption	12 mA or less
Load voltage	10 to 28 VDC or less
Load current	40 mA or less
Internal voltage drop	0.4 V or less
Leakage current	100 $\mu$ A at 24 VDC
Indicator light	Red LED lights when ON.

- Lead wire — Oil resistant vinyl heavy-duty cord,  $\phi 4$ , 0.3 mm<sup>2</sup>, 3 cores (Brown, Black, Blue), 3 m
- Note 1) Regarding the common specifications of the solid state switches, refer to page 6-16-7.
- Note 2) Regarding the lead wire length, refer to page 6-16-7.

## Weight

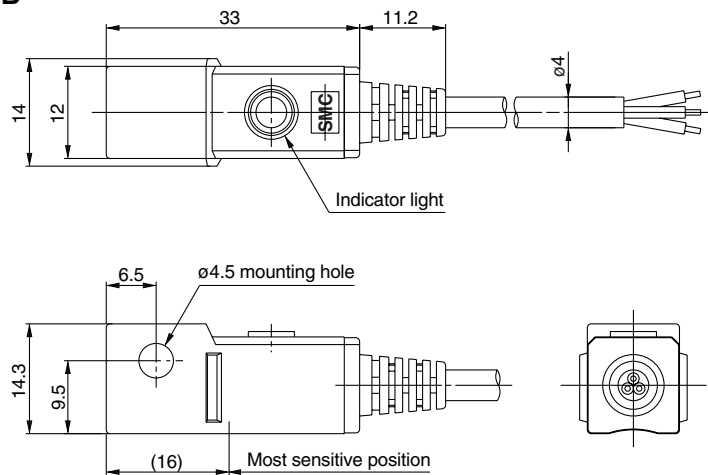
Auto switch model	D-G5NB	
Lead wire length (m)	0.5	—
	3	79
	5	125

## Auto Switch Internal Circuit



## Dimensions

### D-G5NB



CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data



# Made to Order Specifications: Solid State Switch With Pre-wired Connector

CE For details about certified products conforming to international standards, visit us at [www.smcworld.com](http://www.smcworld.com).

## 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 switch**  
**Standard part no.**

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

### Cable length

<b>S</b>	0.5 m
<b>M</b>	1.0 m
<b>L</b>	3.0 m

Note) L is available for the D-P5DW type only.

### Connector model

<b>A</b>	M8—3 pin
<b>B</b>	M8—4 pin
<b>D</b>	M12—4 pin

Note) Type D is available for the D-P5DW 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 <sup>2</sup>		
Enclosure	IP-67 (IEC529 standard)		
Insulation resistance	100 MΩ or more at 500 M VDC		
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		
				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)	F7NWW, F7BWW	●	●	—
	With diagnostic		F79F	●	●	—
	Water resistant		F7BA	●	●	—
With timer		F7NT	●	●	—	
Magnetic field		P5DW	●	●	●	
Band mounting style	—	Grommet (In-line)	H7A1, H7A2, H7B	●	●	—
			G59, G5P, K59	●	●	—
	2-color indication	Grommet (In-line)	H7NW, H7PW, H7BW	●	●	—
			G59W, G5PW, K59W	●	●	—
	Diagnostic output		H7NF, G59F	●	●	—
	Water resistant		H7BA, G5BA	●	●	—
	With timer		G5NT	●	●	—
	Wide detection		G5NB	●	●	—
—			F59, F5P, J59	●	●	—
Tie-rod mounting style	2-color indication		F59W, F5PW, J59W	●	●	—
	Diagnostic output		F59F	●	●	—
	Water resistant		F5BA	●	●	—
	With timer		F5NT	●	●	—

Mounting	Function	Electrical entry	Applicable model	Lead wire length		
				0.5	1.0	3.0
Direct mounting style	—	Grommet (In-line)	M5N, M5P, M5B	●	●	—
			Y59A, Y7P, Y59B	●	●	—
		Grommet (Perpendicular)	Y69A, Y7PV, Y69B	●	●	—
			M9N, M9P, M9B	●	●	—
	2-color indication	Grommet (In-line)	M9NV, M9PV, M9BV	●	●	—
			M5NW, M5PW, M5BW	●	●	—
		Grommet (Perpendicular)	Y7NW, Y7PW, Y7BW	●	●	—
			Y7NWW, Y7PWW, Y7BWW	●	●	—
Water resistant	Grommet (In-line)	F9NW, F9PW, F9BW	●	●	—	
		F9NWW, F9PWW, F9BWW	●	●	—	
With timer	Grommet (In-line)	Y7BA, F9BA	●	●	—	
		M5NT, M5PT	●	●	—	
Rotary actuator	—	Grommet (In-line)	S791/2, S7P1/2, T791/2	●	●	—
			S991/2, S9P1/2, T991/2	●	●	—
		Grommet (Perpendicular)	S99V1/2, T99V1/2	●	●	—

### Connector Pin Arrangement

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 (f)
DC 3-wire type	Brown	—	Blue	Black	DC (+)	—	DC (-)	OUT
DC 4-wire type	Brown	Orange	Blue	Black	DC (+)	Diagnostic output	DC (-)	OUT



M8—3 pin



M8—4 pin



M12—4 pin

### 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 <sup>2</sup>		
Enclosure	IP-67 (IEC529 standard)		
Insulation resistance	100 MΩ or more at 500 M VDC		
Withstand voltage	1500 VAC 1 minute (between contacts), Leak current 1 mA or less		

### Dimensions

Connector model	Dimensions
M8—3 pin 4 pin	
M12—4 pin	

### 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	Corrence Corporation	M8-3D
		OMROM Corporation	XS3
M12	4	Corrence Corporation	VA-4D
		OMROM Corporation	XS2
		Yamatake-Honeywell Co., Ltd.	PA5-4I
		Hirose Electric Co., Ltd.	HR24
		DKK Ltd.	CM01-8DP4S

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

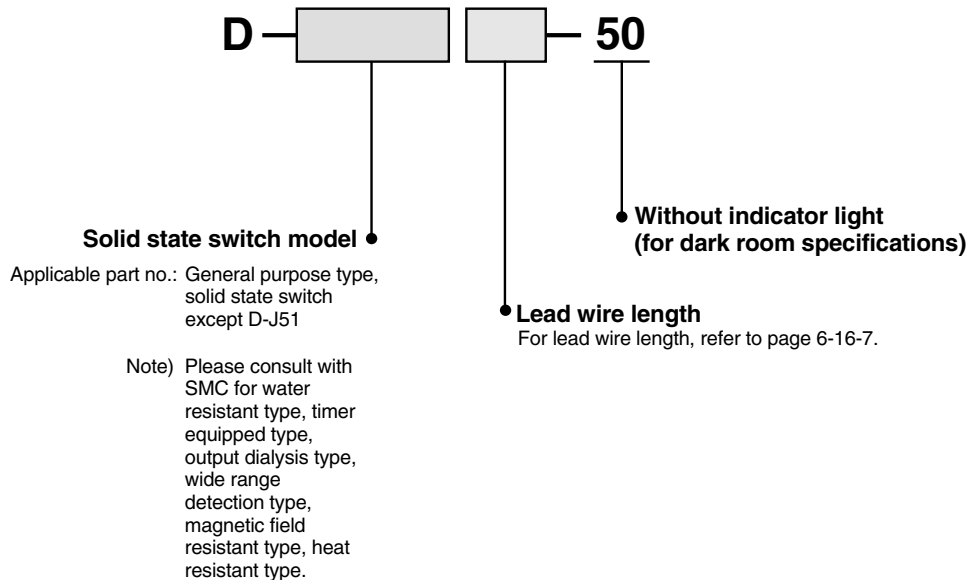
# Made to Order Specifications: Solid State Switch

## -50: No Indicator (Dark room) Specifications

## -61: Oil Resistant, Flexible Cable Specifications

### 2 Without Indicator Light (for dark room specifications) Symbol -50

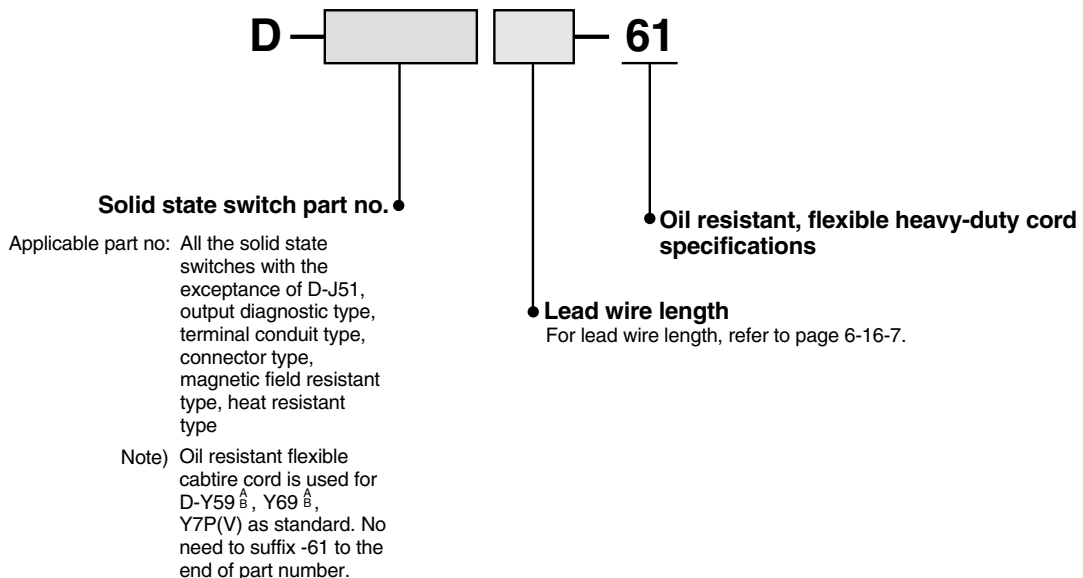
Possible to use under the environment which hates a light.



Dimensions and specifications are common as standard products with the exception of no indicator light.

### 3 Oil Resistant, Flexible Heavy-duty Cord Specifications Symbol -61

This is the product which uses a heavy-duty cord having flexible characteristics 5 times (SMC comparison) as strong as oil resistant heavy-duty cord used in the standard products.



Specifications are the same as standard products with the exception of lead wire specifications.

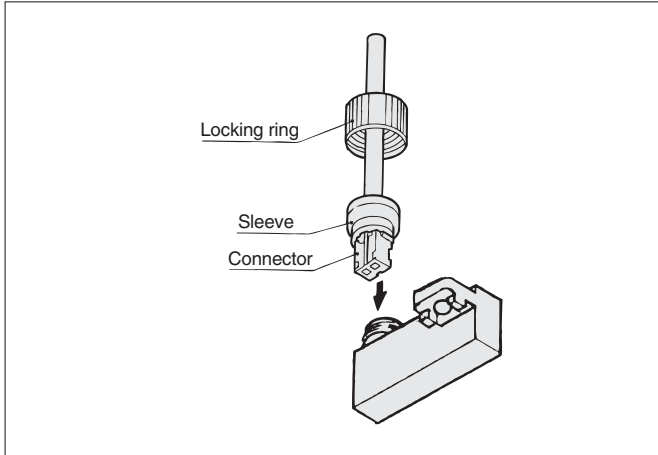
Lead wire: For D-F8, F9 type.....  $\phi 2.7$ , 0.15 mm<sup>2</sup>, 3 cores (Brown, Blue, Black), 2 cores (Brown, Blue)  
For other model nos.....  $\phi 3.4$ , 0.15 mm<sup>2</sup>, 3 cores (Brown, Blue, Black), 2 cores (Brown, Blue)

Dimensions are identical with D-F5 type, G5 type, J59 type, K59 type. Lead wire diameter is changed from  $\phi 4$  to  $\phi 3.4$ . In other series products, it is common as standard product's specifications.

# Technical Data 1: Plug-in Connector Assembly/ How to Use DIN Terminal

## Plug-in Connector Assembly

D-A73C/A80C, D-J79C  
D-C73C/C80C, D-H7C



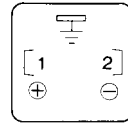
With the convex part of the connector, insert the connector into the auto switch into the sleeve. Screw the locking ring onto the switch. (Do not tighten with pliers.)

## How to Use DIN Terminal: D-A44/A44A/A44C

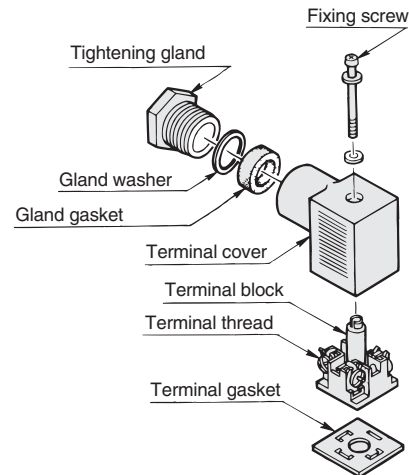
### Connection procedure

1. Loosen the set screw and pull out the connector from the pin plug.
2. Be sure to remove the set screw first and then insert a screwdriver into a recessed groove under the terminal block to separate the terminal cover from the terminal block.
3. Follow the procedures and connect wires securely to specified terminals.
4. In standard cases, crimp-style terminals are used to connect wires. Please select proper crimp-style terminals so that the wire can be properly connected to terminal fittings.

### How to connect



- AC:  
Connect to terminal no. 1 and no. 2  
DC:  
Connect (+) to no. 1 terminal and (-) to no. 2 terminal.



### How to change position of electrical entry

After separating the terminal block from the terminal cover, change the position of the terminal cover to any desired direction (4 directions at every 90°) to change the position of electrical entry.

### Caution

When plugging a connector in the pin plug or pulling it out, hold a connector perpendicularly as much as possible, not to slant it.

### Applicable cable (Heavy-duty cord)

Applicable to cable O.D. of  $\phi 6.8$  to  $\phi 11.5$ .

### Applicable crimp-style terminal

1.25Y-3L, 1.25-3.5S, 1.25-4M

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

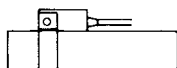
Data

# Technical Data 2: How to Mount and Move the Auto Switch

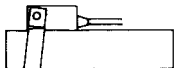
## Mounting Bracket Band Mounting Style

### ⚠ Caution

1. Tighten the screw under the specified torque when mounting auto switch.
2. Set the mounting band perpendicularly to cylinder tube.



Mounting correctly

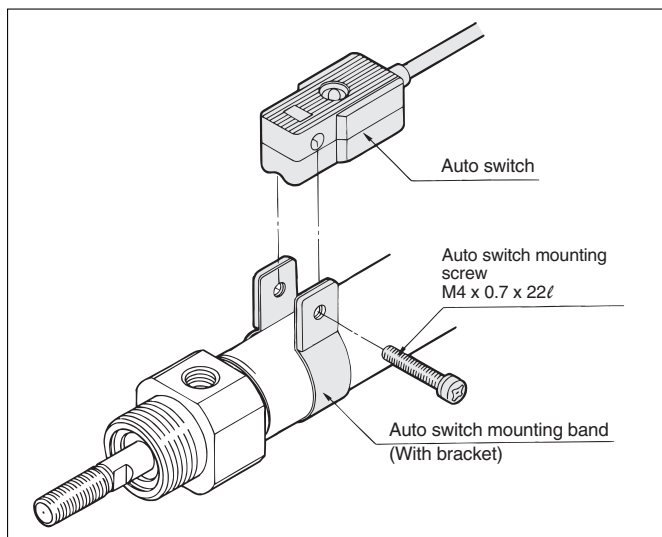


Mounting incorrectly

### <Applicable auto switch>

Reed switch.....D-B53, D-B54, D-B64, D-B59W  
Solid state switch.....D-G59, D-G5P, D-K59, D-G5BAL  
D-G59W, D-G5PW, D-K59W, D-G59F, D-G5NTL

### How to Mount and Move the Auto Switch



1. Put a mounting band on the cylinder tube and set it at the auto switch mounting the mounting hole to the hole of stationary fitting.
2. Put the mounting section of the auto switch between the band mounting holes, then adjust the position of mounting holes of switch to those of mounting band.
3. Lightly thread the auto switch mounting screw through the mounting hole into the thread part of band fitting.
4. After reconfirming the detecting position, tighten the mounting screw to secure the auto switch. (The tightening torque of M4 screw should be about 1 to 1.2 N·m.)
5. Modification of the detection position should be made in the condition of 3.

### Auto Switch Mounting Bracket Part No. (Including band and screw)

Cylinder series	Applicable bore size (mm)							
	20	25	32	40	50	63	80	100
CDM2, CDBM2	BA2	BA2	BA2	BA2	—	—	—	—
CDVM3/5, CDLM2	-020	-025	-032	-040	—	—	—	—
CDG1, MGG	BA	BA	BA	BA	BA	BA-06	BA-08	BA-10
MGC					-05	—	—	—
CDLG1					-01	-02	-32	—
CDV3, CNA	—	—	—	BA	BA	BA	BA	BA
CDVS, CDL1, CE2					-05	-06	-08	-10
RHC, MLGC, REC	BA-01	BA-02	BA-32	—	—	—	—	—

[Mounting screws set made of stainless steel]

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(Please order the mounting band separately, since it is not included.)

BBA3: For D-B5/B6/G5/K5

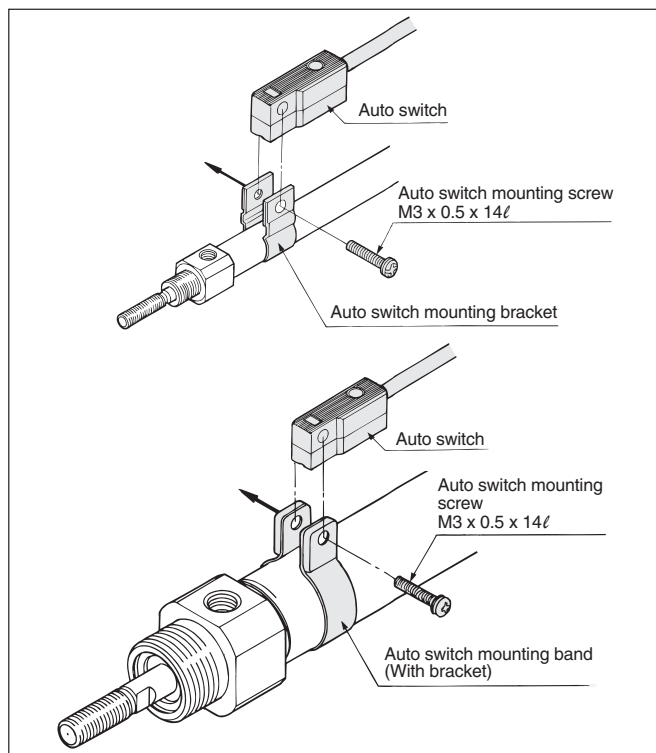
“D-G5BAL” switch is set on the cylinder with the stainless steel screws above when shipped.

When a switch is shipped independently, “BBA3” screws are attached.

### <Applicable auto switch>

Reed switch.....D-C73, D-C76, D-C80, D-C73C, D-C80C  
Solid state switch.....D-H7A1, D-H7A2, D-H7B, D-H7BAL  
D-H7C, D-H7NF, D-H7NW, D-H7PW, D-H7BW

### How to Mount and Move the Auto Switch



1. For Series CDJ2: Put a mounting bracket on the cylinder tube.  
For Series CDM2: Put a mounting band on the cylinder tube and set it at the auto switch mounting position.
2. Put the mounting section of the auto switch between the band mounting holes, then adjust the position of mounting holes of switch to those of mounting band.
3. Lightly thread the auto switch mounting screw through the mounting hole into the thread part of band fitting.
4. Set the whole body to the detecting position by sliding, tighten the mounting screw to secure the auto switch. (Tightening torque of M3 screw should be 0.8 to 1.0 N·m.)
5. Modification of the detection position should be made in the condition of 3.
6. After auto switch is mounted and fixed, attach a protective tube on the tip of an auto switch mounting screw.

### Auto Switch Mounting Bracket Part No. (Including band and screw)

Cylinder series	Applicable bore size (mm)									
	6	10	15	16	20	25	32	40	50	63
CDJ2	BJ2-006	BJ2	—	BJ2	—	—	—	—	—	—
CDVJ3/5	—	-010	—	BJ2	—	—	—	—	—	—
CDLJ2	—	—	—	-016	—	—	—	—	—	—
CDM2, CDBM2	—	—	—	—	BM2	BM2	BM2	BM2	—	—
CDVM3/5, CDLM2	—	—	—	—	-020	-025	-032	-040	—	—
CDG1, MGG	—	—	—	—	—	—	—	—	BMA2-050	BMA2-063
CDLG1	—	—	—	—	—	—	—	—	—	—
MGC	—	—	—	—	—	—	—	—	BMA2-040	BMA2-050
RHC, MLGC, REC	—	—	—	—	—	—	—	—	—	—
RSDG	—	—	—	—	—	—	—	—	—	BMA2-050

[Mounting screws set made of stainless steel]

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(Please order the mounting band separately, since it is not included.)

BBA4: For D-C7/C8/H7

“D-H7BAL” switch is set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, “BBA4” screws are attached.

# Technical Data 2: How to Mount and Move the Auto Switch

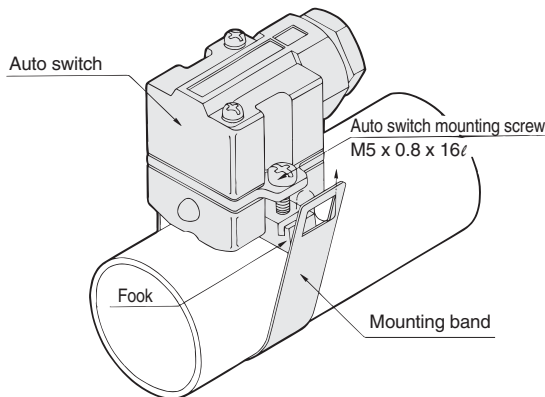
## Mounting Bracket Tie-rod Mounting Style

<Applicable auto switch>

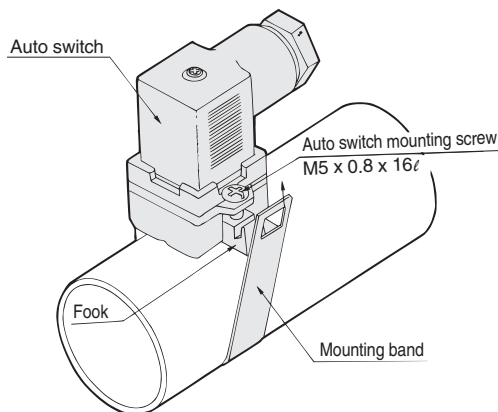
Reed switch .....D-A33, D-A34, D-A44  
Solid state switch.....D-G39, D-K39

### How to Mount and Move the Auto Switch

#### D-A3, D-G3/K3 type



#### D-A4

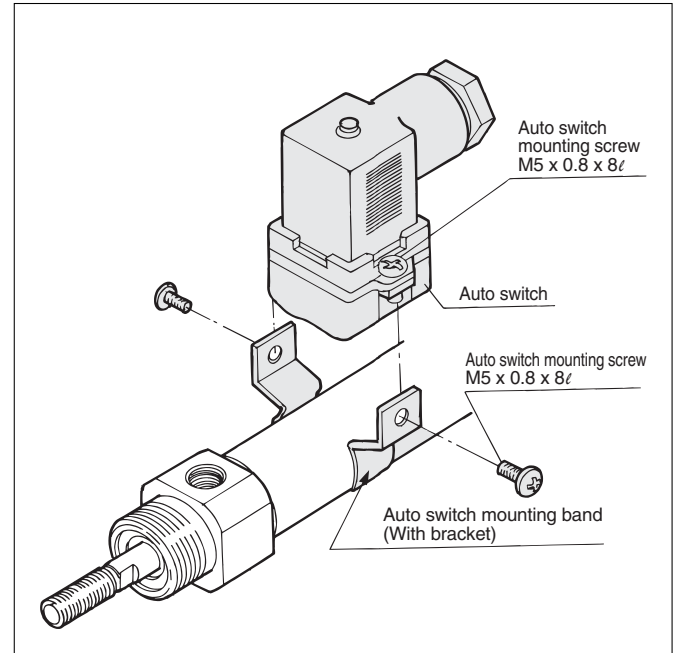


1. Loosen the auto switch mounting screws at both sides to pull down the hook.
2. Put a mounting band on the cylinder tube and set it at the auto switch mounting position, and then hook the band.
3. Screw lightly the auto switch mounting screw.
4. Set the whole body to the detecting position by sliding, tighten the mounting screw to secure the auto switch. (The tightening torque should be about 2 to 3 N·m.)
5. Modification of the detecting position should be made in the condition of 3.

<Applicable auto switch>

Reed switch .....D-A33A, D-A34A, D-A44A  
Solid state switch.....D-G39A, D-K39A

### How to Mount and Move the Auto Switch



1. Tighten completely the switch mounting screw on the switch body side.
2. Put a mounting band on the cylinder tube and set it at the auto switch mounting position. Put the mounting section of auto switch between the interval of mounting band, then adjust the position of mounting holes of switch to those of mounting band.
3. Lightly thread the auto switch mounting screw through the mounting hole into the thread part of band fitting.
4. After reconfirming the detecting position, tighten the mounting screw to secure the auto switch. (The tightening torque of M5 screw should be about 2 to 3 N·m.)
5. Modification of the detecting position should be made in the condition of 3.

### Auto Switch Mounting Bracket Part No. (Including band and screw)

Cylinder series	Applicable bore size (mm)			
	20	25	32	40
CDM2, CDBM2 CDLM2	BM3-020	BM3-025	BM3-032	BM3-040

### Auto Switch Mounting Bracket Part No. (Band)

Cylinder series	Applicable bore size (mm)												
	20	25	32	40	50	63	80	100	125	140	160	180	200
CDV3, CDVS CE2, CNA	—	—	—	BD1-04M	BD1-05M	BD1-06M	BD1-08M	BD1-10M	—	—	—	—	—
CDL1	—	—	—	—	—	—	—	—	BS1-125	BS1-140	BS1-160	—	—
CDS1	—	—	—	—	—	—	—	—	—	—	—	BS1-180	BS1-200
RHC	BD1-01M	BD1-02M	BD1-02	BD1-04M	—	—	—	—	—	—	—	—	—
MDB	—	—	BMB2-032	BMB2-040	BMB1-050	BMB1-063	BMB1-080	BMB1-100	—	—	—	—	—

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

**D-**

**-X**

**20-**

Data

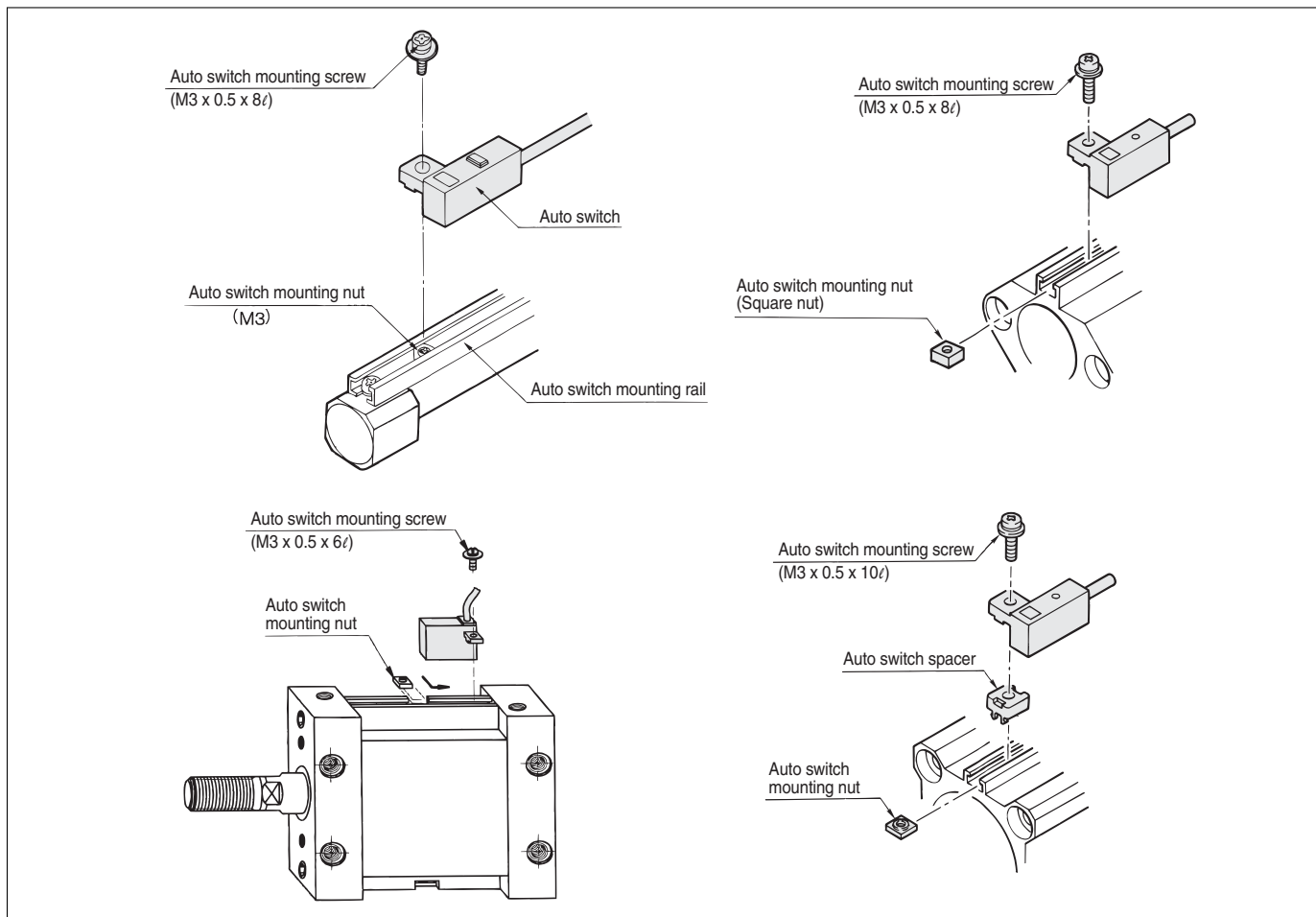
# Technical Data 2: How to Mount and Move the Auto Switch

## Mounting Bracket Rail Mounting Style

<Applicable auto switch>

Reed switch .....D-A72, D-A73, D-A80, D-A72H, D-A73H, D-A76H, D-A80H, D-A73C, D-A80C, D-A79W  
 Solid state switch.....D-F79, D-F7P, D-J79, D-F7NV, D-F7PV, D-F7BV, D-J79C, D-F79W, D-F7PW, D-J79W,  
 D-F7NWV, D-F7BWV, D-F79F, D-F7BAL, D-F7BAVL, D-F7NTL

### How to Mount and Move the Auto Switch



- Slide the auto switch mounting nut inserted into the mounting rail and set it at the auto switch mounting position.
- Fit the convex part of auto switch mounting arm into the concave part of auto switch mounting rail. Then slide the switch over the nut. (Series CDQ2: Fit the convex part of auto switch mounting arm through the auto switch spacer into the concave part of auto switch mounting rail.)
- Push the auto switch mounting screw lightly into the mounting nut through the hole of auto switch mounting arm.
- After reconfirming the detecting position, tighten the mounting screw to secure the auto switch. (Tightening torque of M3 screw should be 0.5 to 0.7 N·m.)
- Modification of the detecting position should be made in the condition of 3.

### Auto Switch Mounting Bracket Part No. (Including nut, screw, (spacer))

Cylinder series	Applicable bore size (mm)												
	12	16	20	25	32	40	50	63	80	100	125	140	160
<b>CDQ2</b>	BQ-1	BQ-1	BQ-1	BQ-1	BQ-2	BQ-2	BQ-2	BQ-2	BQ-2	BQ-2	BQ-2	BQ-2	BQ-2
<b>MDU</b>	—	—	—	BMU1-025	BMU1-025	BMU1-025	BMU1-025	BMU1-025	—	—	—	—	—
<b>RSDQ</b>	—	—	BQ-1	BQ-1	BQ-2	BQ-2	BQ-2	BQ-2	—	—	—	—	—
<b>MK, MK2</b>	—	—							—	—	—	—	—
<b>CE1</b>	BQ-1	—	—	—	—	—	—	—	—	—	—	—	—
<b>CXT</b>	—	—	—	—	—	—	—	—	—	—	—	—	—

[Mounting screws set made of stainless steel]

The set of stainless steel mounting screws (with nuts) described below is available and can be used depending on the operating environment. (Please order the auto switch spacer, since it is not included.)

BBA2: For D-A7/A8/F7/J7

"D-F7BAL" switch is set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, "BBA2" screws are attached.



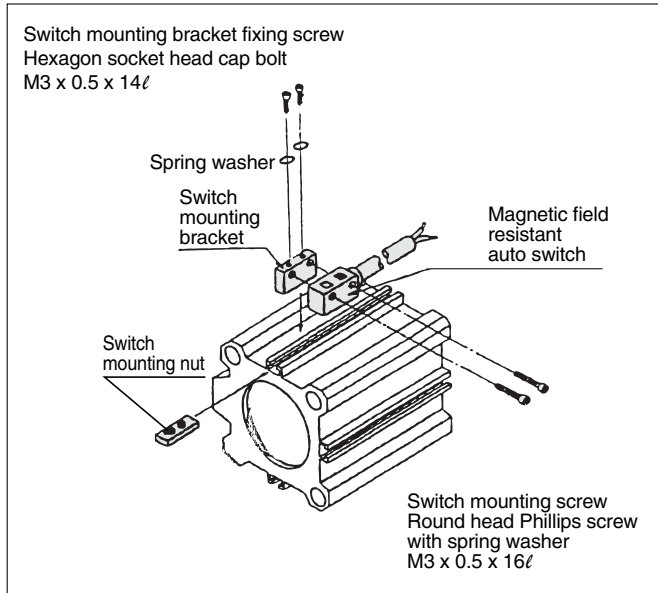
# Technical Data 2: How to Mount and Move the Auto Switch

## Mounting Bracket Rail Mounting Style

<Applicable auto switch>

Solid state switch.....D-P5DWL

### How to Mount and Move the Auto Switch

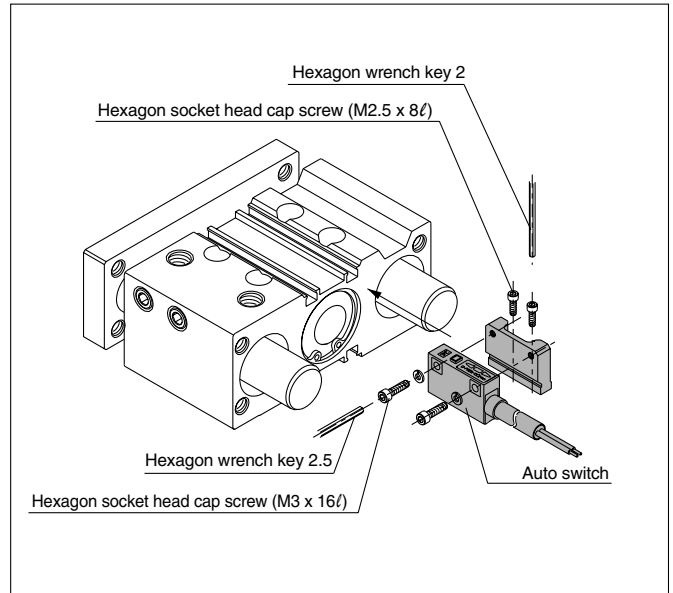


1. Mount the mounting bracket onto the mounting nut by tightening bracket fixing screw lightly through the mounting hole on the top of bracket.
2. Insert the mounting bracket assembly (bracket + nut) into the mounting groove and set it at the auto switch mounting position.
3. Push the auto switch mounting screw lightly into the auto switch through the mounting hole to secure.
4. After reconfirming the detecting position, tighten the mounting screw to secure the mounting bracket and the auto switch. (Tightening torque should be 0.5 to 0.7 N·m.)

### Auto Switch Mounting Bracket Part No. (Including bracket, screw)

Cylinder series	Applicable bore size (mm)				
	40	50	63	80	100
CDQ2	BQP1-050	BQP1-050	BQP1-050	BQP1-050	BQP1-050
MK, MK2					

### How to Mount and Move the Auto Switch



1. Insert the hexagon socket head cap screw (M2.5 x 0.45 x 8ℓ) down lightly to the M2.5 tapped portion of the lower part of switch mounting bracket's concave part. (2 locations) Use caution to avoid the tip of a screw from sticking out of the switch mounting bracket's bottom surface.
2. Install a spring washer in the hexagon socket head cap bolt (M3 x 0.5 x 16ℓ), then put it through the part of through-holes (2 locations) of an auto switch.
3. As for switch mounting bracket, slightly thread the hexagon socket head cap screw w into M3 tapped portion. (2 locations)
4. Fit the switch mounting bracket into the switch mounting groove on the cylinder body, and then slide it to the detection position roughly.
5. After reconfirming the detecting position, tighten the mounting screw to secure the auto switch.

### Auto Switch Mounting Bracket Part No. (Including bracket, screw)

Cylinder series	Applicable bore size (mm)				
	40	50	63	80	100
MGP, MLGP	BMG1-040	BMG1-040	BMG1-040	BMG1-040	BMG1-040

## ⚠ Caution

### Auto Switch Mounting Tool

- When tightening hexagon socket head cap screw of an auto switch, use a hexagon wrench key 2 and 2.5, depending on the case.

### Tightening Torque

- As a guide, set approximately 0.3 to 0.5 N·m for M2.5, 0.5 to 0.7 N·m for M3 respectively.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

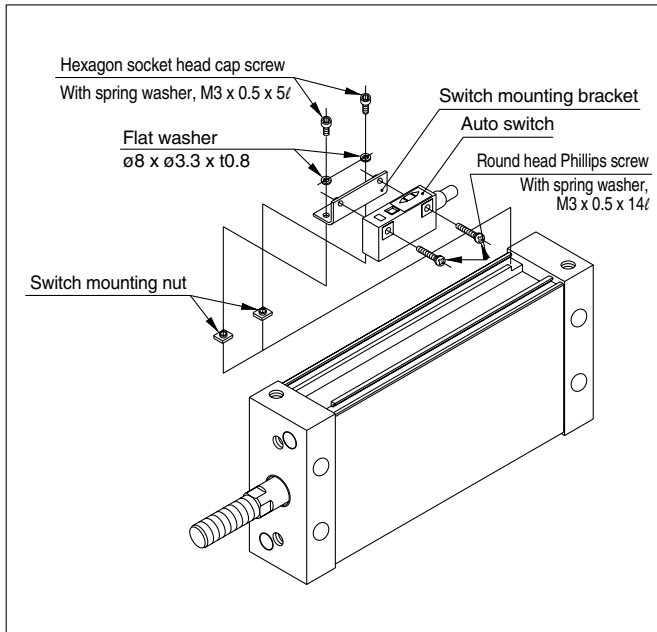
Data

## How to Mount and Move the Auto Switch

### Mounting Bracket Rail Mounting Style

<Applicable auto switch>  
Solid state switch.....D-P5DWL

#### How to Mount and Move the Auto Switch



1. From the cutoff part of the rail on the cylinder body, insert the switch mounting nuts (2 pcs.) into the rail groove.
2. Slide the switch mounting nuts (2 pcs.) and set into the auto switch mounting position roughly. (25 mm or more should be left for the distance between 2 nuts.)
3. Insert the convex portion of the switch mounting bracket into the concave portion of a rail groove. Through-hole for the switch mounting bracket should be placed on the switch mounting nut.
4. Put a flat washer ( $\varnothing 8 \times \varnothing 3.3$ ) through a hexagon socket head screw (with spring washer, M3 x 0.5 x 5l) and passing through the hole of a switch mounting bracket, then turning it lightly down to a mounting nut of switch. (2 locations)
5. Put a round head Phillips screw (with spring washer, M3 x 0.5 x 14l) through the auto switch's through-hole (2 locations), and then push it down into the M3 tapped part on the switch mounting bracket while turning it lightly.
6. After reconfirming the detecting position, tighten the mounting screw to secure the mounting bracket and the auto switch. (Tightening torque of M3 screw should be 0.5 to 0.7 N·m.)

#### Auto Switch Mounting Bracket Part No. (Including bracket, screw)

Cylinder series	Applicable bore size (mm)		
	40	50	63
MDU	BMU2-040	BMU2-040	BMU2-040

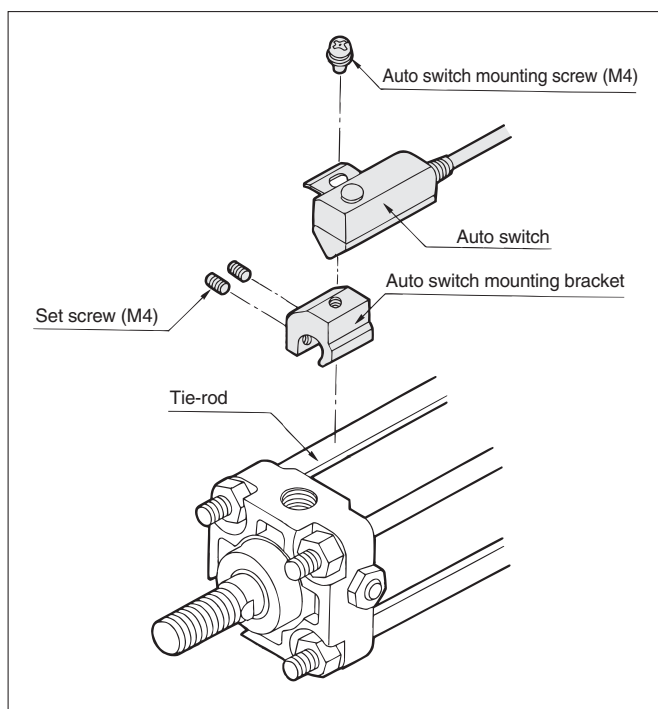
# Technical Data 2: How to Mount and Move the Auto Switch

## Mounting Bracket Tie-rod Mounting Style

### <Applicable auto switch>

Reed switch.....D-A53, D-A54, D-A56, D-A64  
D-A67, D-A59W  
Solid state switch.....D-F59, D-F5P  
D-J59, D-J51, D-F5BAL  
D-F59W, D-F5PW, D-J59W  
D-F59F, D-F5NTL

### How to Mount and Move the Auto Switch



1. Fix the auto switch on the auto switch mounting bracket with the mounting screw (M4) and install the set screw.
2. Fit the mounting bracket into the cylinder tie-rod and then fix the auto switch at the detecting position with the hexagonal wrench. (Be sure to put the auto switch on the surface of cylinder tube.)
3. When changing the detecting position, loosen the set screw to move the auto switch and then re-fix the auto switch on the cylinder tube. (Tightening torque of M4 screw should be 1 to 1.2 N·m.)

### Auto Switch Mounting Bracket Part No. (Including bracket, set screw)

Cylinder series	Applicable bore size (mm)										
	32	40	50	63	80	100	125	140	160	180	200
CDV3, CDVS CE2, CNA	—	BT -04	BT -04	BT -06	BT -08	BT -08	—	—	—	—	—
CDL1	—	—	—	—	—	—	BT -12	BT -12	BT -16	—	—
CDS1	—	—	—	—	—	—	—	—	—	BT -18A	BT -20
MDB, MDBB	BT-03	BT-03	BT-05	BT-05	BT-06	BT-06	—	—	—	—	—

[Mounting screws set made of stainless steel]

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment. (Please order the mounting band separately, since it is not included.)

BBA1: For D-A5/A6/F5/J5

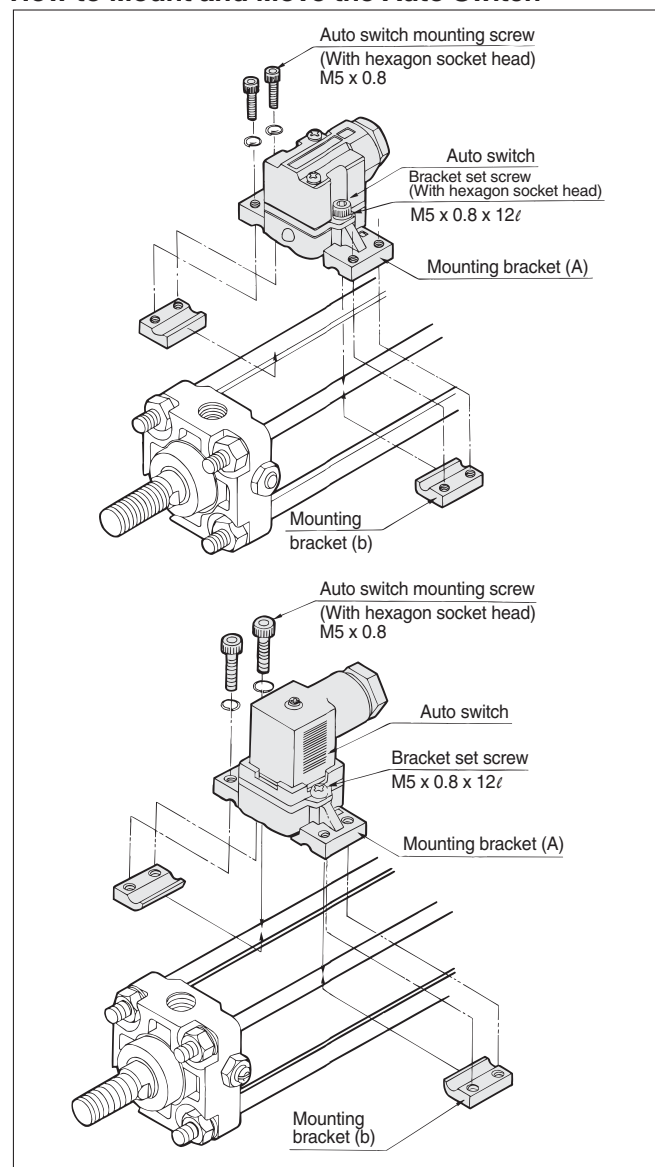
“D-F5BAL” switch is set on the cylinder with the stainless steel screws above when shipped.

When a switch is shipped independently, “BBA1” screws are attached.

### <Applicable auto switch>

Reed switch.....D-A33C, D-A34C, D-A44C  
Solid state switch.....D-G39C, D-K39C

### How to Mount and Move the Auto Switch



1. Fix the mounting bracket (A) on the auto switch with the set screw.
2. Fit the concave part of mounting bracket into tie-rod and set the auto switch at the mounting position.
3. Insert the mounting bracket (B) from the underneath and put lightly in the tie-rod with the mounting screw.
4. Set the whole body to the detecting position by sliding, tighten the mounting screw to secure the auto switch. (Tightening torque of M5 screw should be 2 to 3 N·m.)
5. Modification of the detecting position should be made in the condition of 3.

### Auto Switch Mounting Bracket Part No. (Including bracket, screw)

Cylinder series	Applicable bore size (mm)				
	40	50	63	80	100
CDV3, CDVS, CDL1, CE2, CNA	BA3 -040	BA3 -050	BA3 -063	BA3 -080	BA3 -100

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

**D-**

-X

20-

Data

# Technical Data 2: How to Mount and Move the Auto Switch

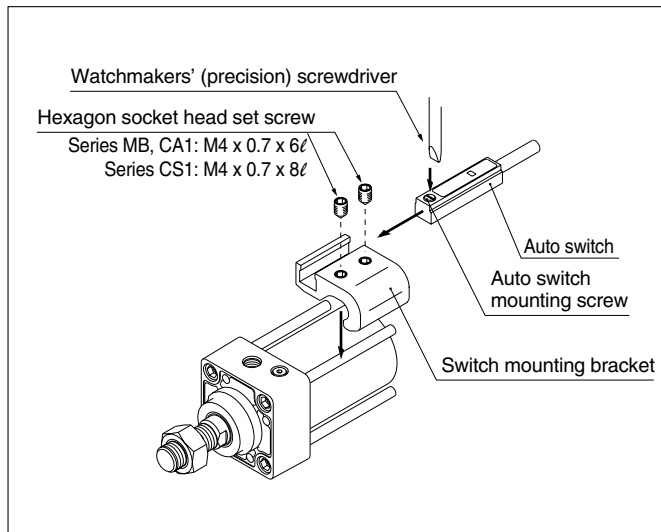
## Mounting Bracket Tie-rod Mounting Style

<Applicable auto switch>

Reed switch.....D-Z73/Z76/Z80

Solid state switch.....D-Y59<sup>A</sup>/Y69<sup>A</sup>, D-Y7P(V)  
D-Y7NW(V)/Y7PW(V)/Y7BW(V)  
D-Y7BAL

### 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. Set the tightening torque of a hexagon socket head set screw (M4 x 0.7) to be 1 to 1.2 N-m.

1. Fix it to the detecting position with a set screw by installing a mounting bracket in cylinder tie-rod and letting the bottom surface of a mounting bracket contact the cylinder tube firmly. (Use hexagon wrench)
2. Fit an auto switch into the switch mounting groove to set it roughly to the mounting position for an auto switch.
3. After confirming the detecting position, tighten up the mounting screw attached to an auto switch, and secure the switch.
4. When changing the detecting position, carry out in the state of 2.

\* To protect auto switches, ensure that main body of an auto switch should be embedded into auto switch mounting groove with a depth of 15 mm or more.

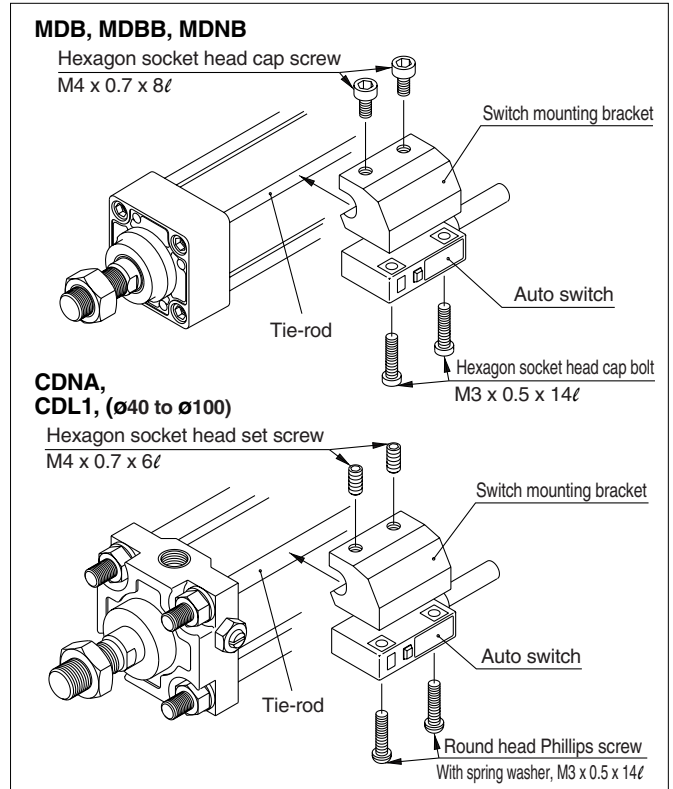
### Auto Switch Mounting Bracket Part No.

Applicable cylinder	Bore size (mm)	Mounting	Accessory
MDB, MBB, MDNB	32, 40	BMB4-032	Hexagon socket head set screw (M4 x 0.7 x 6ℓ) Quantity: 2
	50, 63	BMB4-050	
	80, 100	BA4-063	
CDL1, CDNA	40, 50	BA4-040	
	63, 80, 100	BA4-080	
CDS1, CDL1, CDLS	125, 140	BS4-125	
	160	BS4-160	
	180	BS4-180	
	200	BS4-200	

<Applicable auto switch>

Solid state switch.....D-P5DWL

### How to Mount and Move the Auto Switch



1. (For MDB)  
Slightly screw the hexagon socket head cap screw (M4 x 0.7 x 8ℓ) into the M4 tapped portion of switch mounting bracket. (2 locations) Use caution that the tip of the hexagon socket head cap screw should not stick out to the concave portion of switch mounting bracket.
2. (For MDB)  
Put a round head Phillips screw (M3 x 0.5 x 14ℓ) through the auto switch's through-hole (2 locations), and then push it down into the M3 tapped part on the switch mounting bracket while turning it lightly.
3. Place the concave part of the switch mounting bracket into the cylinder tie-rod, and slide the switch mounting bracket in order to set roughly to the detecting position.
4. After reconfirming the detecting position, tighten the M3 mounting screw to secure the auto switch by making the bottom face of auto switch attached to the cylinder tube. (Tightening torque of M3 screw should be 0.5 to 0.7 N-m.)
5. Tighten up M4 screw of switch mounting bracket to secure the switch mounting bracket. (Ensure that tightening torque of M4 screw should be set 1.0 to 1.2 N-m.)

### Auto Switch Mounting Bracket Part No. (Including bracket, screw)

Cylinder series	Applicable bore size (mm)					
	32	40	50	63	80	100
MDB, MDBB, MDNB	BMB3T-040	BMB3T-040	BMB3T-050	BMB3T-050	BMB3T-080	BMB3T-080
CDL1, CDNA	—	BAP2-040	BAP2-040	BAP2-063	BAP2-080	BAP2-080

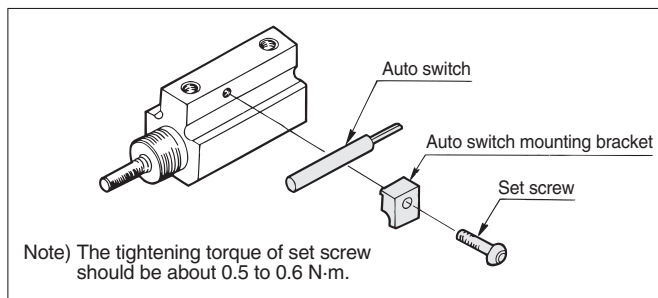
# Technical Data 2: How to Mount and Move the Auto Switch

## Mounting Bracket Tie-rod Mounting Style

### <Applicable auto switch>

Reed switch.....D-90/97, D-90A/93A

### How to Mount and Move the Auto Switch



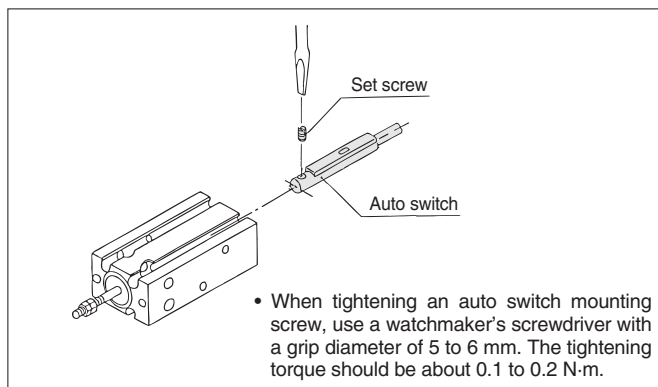
### Auto Switch Mounting Bracket Part No. (Including bracket, screw)

Cylinder series	Applicable bore size (mm)		
	6	10	15
CDJP-□D	BP-1	BP-1	BP-1

### <Applicable auto switch>

Reed switch.....D-A90(V)/A93(V)/A96(V)  
Solid state switch.....D-M9N(V)/M9P(V)/M9B(V)  
F9NW(V)/F59W/F9BW(V)  
F9BAL

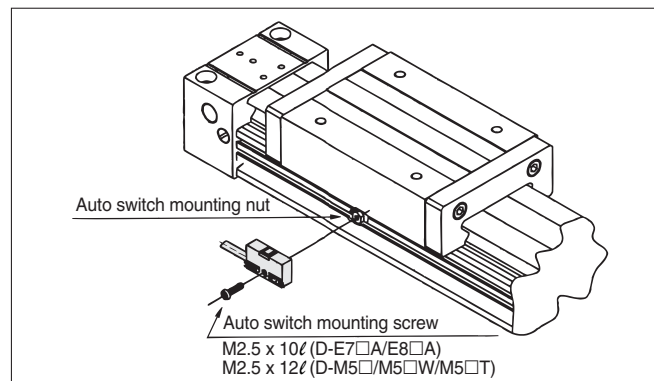
### How to Mount and Move the Auto Switch



### <Applicable auto switch>

Reed switch.....D-E73A/E76A/E80A  
Solid state switch.....D-M5N/M5P/M5B  
D-M5NW/M5PW/M5BW  
D-M5NTL/M5PTL

### How to Mount and Move the Auto Switch



1. Insert the auto switch mounting nut into the auto switch mounting groove and then set the switch at the mounting position by sliding.
2. Put the convex part of auto switch into the mounting groove and slide it over the nut.
3. Push the auto switch mounting screw lightly into the mounting nut through the mounting hole.
4. After reconfirming the detecting position, tighten the mounting screw to secure the auto switch. (Tightening torque of M2.5 screw should be 0.1 to 0.2 N·m.)

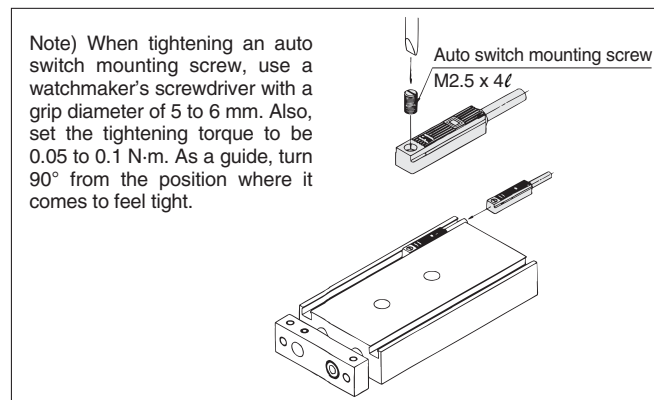
### Auto Switch Mounting Bracket Part No. (Including nut, screw)

Cylinder series	Applicable bore size (mm)	Applicable bore size (mm)		
		25	32	40
ML1	M2.5 x 12ℓ	BM2-025	BM2-025	BM2-025
	M2.5 x 10ℓ	BM1-025	BM1-025	BM1-025

### <Applicable auto switch>

Reed switch.....D-Z73/Z76/Z80  
Solid state switch.....D-Y59<sup>A</sup>/<sub>B</sub>/Y69<sup>A</sup>/<sub>B</sub>, D-Y7P(V)  
D-Y7NW(V)/Y7PW(V)/Y7BW(V)  
D-Y7BAL

### How to Mount and Move the Auto Switch



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.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Technical Data 2: How to Mount and Move the Auto Switch

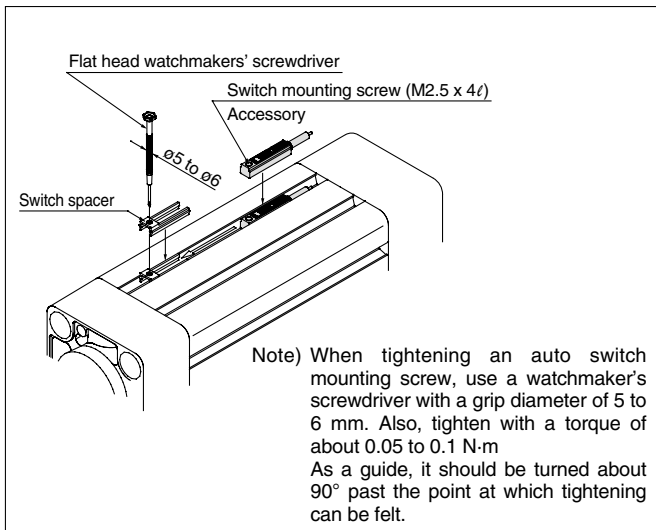
## Mounting Bracket Direct Mounting Style

<Applicable auto switch>

Reed switch..... D-Z73/Z76/Z80

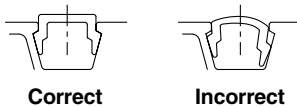
Solid state switch..... D-Y59<sup>A</sup><sub>B</sub>/Y69<sup>A</sup><sub>B</sub>, D-Y7P(V)  
D-Y7NW(V)/Y7PW(V)/Y7BW(V)  
D-Y7BAL

### How to Mount and Move the Auto Switch



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 switch mounting screw which is included.



### Switch Spacer No.

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



## Mounting and Moving Method of Auto Switch

### Direct Mounting to the Round Groove

Applicable cylinder/actuator		Auto switch mounting bracket part no.
Compact cylinder	CDQS $\phi 25$ ( $\phi 0.98$ )*	BQ3-032S
	CDQ2 $\phi 32$ to $\phi 100$ ( $\phi 1.26$ to $\phi 3.94$ )*	
Compact cylinder with lock	CDLQ $\phi 25$ to $\phi 100$ ( $\phi 0.98$ to $\phi 3.94$ )*	
Pin clamp cylinder	CKQG $\phi 50$ ( $\phi 1.97$ )*	
Pin clamp cylinder with lock	CLKQG $\phi 50$ ( $\phi 1.97$ )*	

\* Equivalent inch size.

Note) When the auto switch is mounted onto the CDBQ2 end lock type, please contact SMC.

### Mounting and Moving Method of D-P3DW□ (1)

- ① Insert the protrusion on the bottom of the auto switch into the mating part of the auto switch mounting bracket and fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9 L) 1 to 2 turns.
- ② Insert the temporarily tightened mounting bracket into the mating groove of the cylinder/actuator, and slide the auto switch onto the cylinder/actuator through the groove.
- ③ Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L).\*
- ④ If the detecting position is changed, go back to step ②.

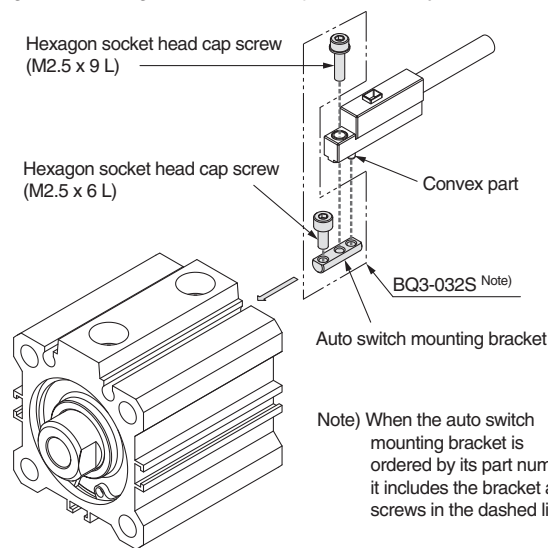
\* The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder/actuator.

This enables the replacement of the auto switch without adjusting the auto switch position.

Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch.

Note 2) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L) is 1.77 to 2.66 in-lb.

Note 3) Tighten the hexagon socket head cap screws evenly.



### Precautions for the Cylinder/Actuator Mounting

- When mounting the D-P3DW onto a cylinder/actuator with  $\phi 1.26$  to  $\phi 1.97$ , to avoid mutual interference, use a fitting with width across flats 0.47 inch or less for  $\phi 1.26$  and  $\phi 1.58$ , and use a fitting with width across flats 0.55 inch or less for  $\phi 1.97$ . Also, if the corner of the fitting interferes with the housing of the auto switch, adjust the tightening of the fitting to eliminate the interference. In the case of interference with an elbow type fitting, direct the port of the fitting away from the auto switch. Such interference must be avoided especially when a speed controller and speed exhaust controller with a fitting are selected.
- In the CDQS $\phi 0.98$  and CDLQ $\phi 0.98$ , the auto switch will interfere with the fitting if mounted onto the face with the port, so it needs to be mounted on a different face.

### Direct Mounting to the Square Groove

Applicable cylinder/actuator		Auto switch mounting bracket part no.
Compact guide cylinder	MGP $\phi 25$ to $\phi 100$ ( $\phi 0.98$ to $\phi 3.94$ )*	BMG5-025S
	MGPS $\phi 50, \phi 80$ ( $\phi 1.97, \phi 3.15$ )*	
Compact guide cylinder with lock	MLGP $\phi 25$ to $\phi 100$ ( $\phi 0.98$ to $\phi 3.94$ )*	

\* Equivalent inch size.

Note) For the MGP end lock type, as the auto switch cannot be mounted onto the lock mechanism face, mount it to the groove on the bottom of the lock mechanism face.

### Mounting and Moving Method of D-P3DW□ (2)

- ① Insert the protrusion on the bottom of the auto switch into the mating part of the auto switch mounting bracket and fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9 L) 1 to 2 turns.
- ② Insert the temporarily tightened mounting bracket into the mating groove of the cylinder/actuator, and slide the auto switch onto the cylinder/actuator through the groove.
- ③ Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L).\*
- ④ If the detecting position is changed, go back to step ②.

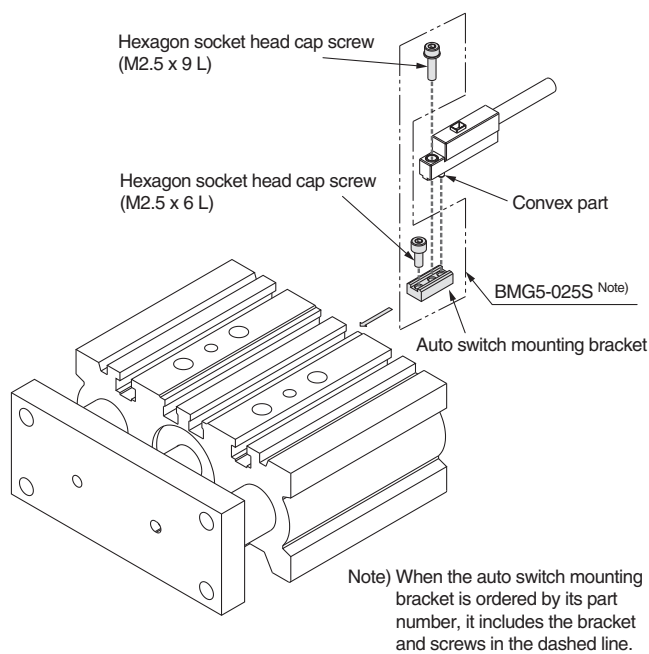
\* The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder/actuator.

This enables the replacement of the auto switch without adjusting the auto switch position.

Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch.

Note 2) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L) is 1.77 to 2.66 in-lb.

Note 3) Tighten the hexagon socket head cap screws evenly.



### Rod Mounting Type 1

Applicable cylinder/actuator		
Clamp cylinder	<b>CKG1</b>	ø40 to ø63 (ø1.58 to ø2.48)*
Clamp cylinder with lock	<b>CLK2G</b>	ø40 to ø63 (ø1.58 to ø2.48)*
Air cylinder	<b>MDB</b>	ø32 to ø63 (ø1.26 to ø2.48)*
	<b>CDA2</b>	ø40, ø50 (ø1.58, ø1.97)*
Air cylinder with lock	<b>MDNB</b>	ø32 to ø63 (ø1.26 to ø2.48)*
	<b>CDNA</b>	ø40, ø50 (ø1.58, ø1.97)*

\* Equivalent inch size.

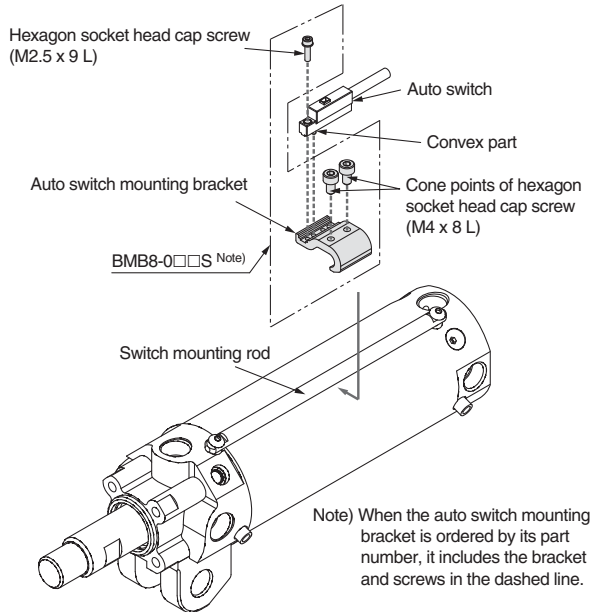
#### Mounting and Moving Method of D-P3DW □ (3)

- ① Insert the protrusion on the bottom of the auto switch into the mating part of the mounting bracket and fix the auto switch by tightening the hexagon socket head cap screw (M2.5 x 9 L).
- ② Install the mounting bracket on which the auto switch is mounted to the switch mounting rod, and move it to find the detecting position while keeping firm contact between the bottom of the auto switch mounting bracket and the cylinder tube.
- ③ After checking the detecting position, fix the auto switch mounting bracket to the detecting position with the cone points of hexagon socket head cap screw (M4 x 8 L).
- ④ If the detecting position is changed, go back to step ②.

Note 1) When tightening the cone points of hexagon socket head cap screw (M4 x 8 L), keep the tightening torque within 8.85 to 10.6 in-lb.

Note 2) The torque for tightening the hexagon socket head cap screw (M2.5 x 9 L) is 1.77 to 2.66 in-lb.

Note 3) Tighten the hexagon socket head cap screws evenly.



#### Auto Switch Mounting Bracket Part No. for CK Series (Including Bracket and Screws)

Series	Bore size		
	40 (1.58)*	50 (1.97)*	63 (2.48)*
<b>CKG1</b> <b>CLK2G</b>	BMB8-050S		

\* Equivalent inch size.

#### Auto Switch Mounting Bracket Part No. for CA Series (Including Bracket and Screws)

Series	Bore size				
	40 (1.58)*	50 (1.97)*	63 (2.48)*	80 (3.15)*	100 (3.94)*
<b>CDA2</b> <b>CDNA</b>	BMB8-050S	BA7T-063S	BA7T-080S		

\* Equivalent inch size.

### Rod Mounting Type 2

Applicable cylinder/actuator		
Air cylinder	<b>MDB</b>	ø80 to ø125 (ø3.15 to ø4.92)*
	<b>CDA2</b>	ø63 to ø100 (ø2.48 to ø3.94)*
Air cylinder with lock	<b>MDNB</b>	ø80 to ø100 (ø3.15 to ø3.94)*
	<b>CDNA</b>	ø63 to ø100 (ø2.48 to ø3.94)*

\* Equivalent inch size.

#### Mounting and Moving Method of D-P3DW □ (4)

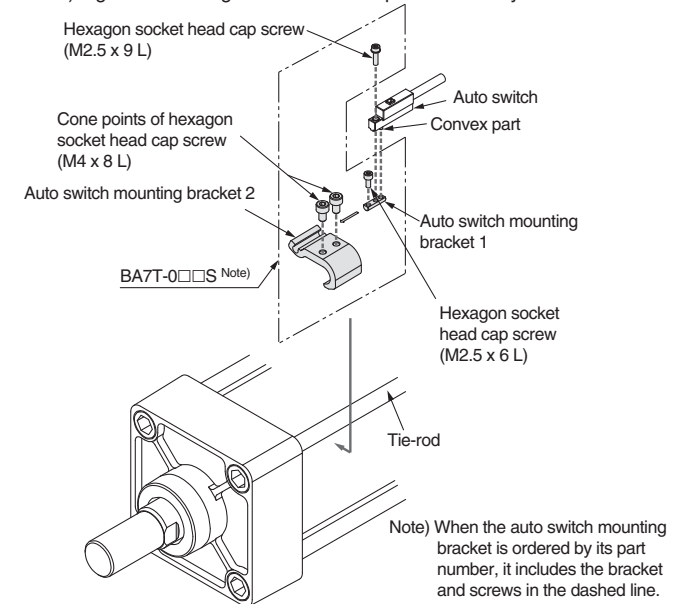
- ① Install the auto switch mounting bracket 2 to the tie-rod, and fix it to the approximate mounting position with the cone points of hexagon socket head cap screw (M4 x 8 L) while keeping firm contact between the bottom of the auto switch mounting bracket 2 and the cylinder tube.
- ② Insert the protrusion on the bottom of the auto switch into the mating part of the auto switch mounting bracket 1 and fix the auto switch and the auto switch mounting bracket 1 temporarily by tightening the hexagon socket head cap screw (M2.5 x 9 L) 1 to 2 turns.
- ③ Insert the temporarily tightened mounting bracket 1 to the mating groove of the mounting bracket 2, and fix the auto switch by tightening the hexagon socket head cap screw (M2.5 x 6 L and M2.5 x 9 L) after checking the detecting position.
- ④ If the detecting position is changed, go back to step ① or ③.

Note 1) Ensure that the auto switch is covered with the mating groove by a minimum of 0.59 inch to protect the auto switch.

Note 2) When tightening the cone points of hexagon socket head cap screw (M4 x 8 L), keep the tightening torque within 8.85 to 10.6 in-lb.

Note 3) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9 L) is 1.77 to 2.66 in-lb.

Note 4) Tighten the hexagon socket head cap screws evenly.



#### Auto Switch Mounting Bracket Part No. for MB Series (Including Bracket and Screws)

Series	Bore size					
	32 (1.26)*	40 (1.58)*	50 (1.97)*	63 (2.48)*	80 (3.15)*	100 (3.94)*
<b>MDB</b> <b>MDNB (1.26 to 3.94)</b>	BMB8-032S	BMB8-050S	BA7T-063S	BA7T-080S		

\* Equivalent inch size.

Note) Differences in color and glossiness of the metal surface treatment do not affect the performance. Due to the characteristics of the chromate treatment (trivalent) applied to the whole body of the auto switch mounting bracket, the color may be slightly different between manufacturing lots. However, this will not reduce the corrosion resistance.