

With Dust Cover

Series *MHQJ2*

ø10, ø16, ø20, ø25

Air gripper with dust proof and drip proof construction.

Enclosed to prevent accumulation of dust.

Sealed construction with a dust cover.

Three dust cover materials are available to suit your applications.

Solid state switches with indicator light can be mounted.



Specifications

Fluid		Air	
Operating pressure	Double acting		0.1 to 0.6MPa
	Single acting	Normally open	0.25 to 0.6MPa
		Normally closed	
Ambient and fluid temperature			-10 to 60°C
Repeatability			±0.01mm
Max. operating frequency			180c.p.m
Lubrication			Not required
Action			Double acting, Single acting
Auto switch (Option) ⁽¹⁾			Solid state switch: D-F9N(V), D-F9P(V), D-F9B(V)



¹⁾ Refer to p.2.11-25 for auto switch specifications.

Model

Action	Model	Bore size (mm)	Holding force ⁽¹⁾ (Effective value) (N)	Opening/closing stroke (Both sides) (mm)	Weight ⁽²⁾ (g)	
Double acting	MHQJ2-10D	10	11	4	90	
	MHQJ2-16D	16	34	6	180	
	MHQJ2-20D	20	42	10	340	
	MHQJ2-25D	25	63	14	640	
Single acting	Normally open	MHQJ2-10S	10	7.8	4	90
		MHQJ2-16S	16	26	6	181
		MHQJ2-20S	20	33	10	342
		MHQJ2-25S	25	49	14	643
	Normally closed	MHQJ2-10C	10	7.8	4	90
		MHQJ2-16C	16	26	6	181
		MHQJ2-20C	20	33	10	342
		MHQJ2-25C	25	49	14	643



¹⁾ Values at 0.5MPa. Represent both external and internal holding force for double acting, external holding force for single acting normally open and internal holding force for single acting normally closed.

²⁾ Except weight of auto switches.

³⁾ Refer to CAT. E230 for details.

MHZ2

MHZJ2

MHQ

MHL2

MHR

MHK

MHS

MHC2

MHT2

MHY2

MHW2

MRHQ

Auto switch

Solid State Switch/Direct Mounting Type D-F9N(V)/D-F9P(V)/D-F9B(V)

Grommet



Applicable rotary actuator series

Series	Size	Auto switch adjustment
MSQ	10, 20, 30, 50, 70, 100, 200	Refer to p.1.6-6

Applicable air gripper series

Series	Size	Auto switch setting example
MHZ2	10, 16, 20, 25	Refer to p.2.10-1
MHZJ2	10, 16, 20, 25	Refer to p.2.10-1
MDHR	10, 15, 20, 30	Refer to p.2.10-5
MHK2	12, 16, 20, 25	Refer to p.2.10-1
MHS	16, 20, 25	Refer to p.2.10-9
MHT2	32, 40, 50, 63	Refer to p.2.10-1
MHY2	10, 16, 20, 25	Refer to p.2.10-11
MRHQ	10, 16	Refer to p.2.10-13

Auto switch specifications

PLC: Programmable Logic Controller

D-F9□/ D-F9□V (With indicator light)

Auto switch model no.	D-F9N	D-F9NV	D-F9P	D-F9PV	D-F9B	D-F9BV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring	3 wire			2 wire		
Output	NPN type		PNP type		—	
Application	IC circuit, Relay, PLC					
Power voltage	5, 12, 24V DC (4.5 to 28V)				—	
Current consumption	8mA or less		10mA or less		—	
Load voltage	28V DC or less		—		24V DC (10 to 28V DC)	
Load current	40mA or less		80mA or less		5 to 40mA	
Internal voltage drop	1.5V or less (0.8V or less at load current 10mA)		0.8V or less		4V or less	
Leakage current	100μA or less at 24V DC				1mA or less at 24V DC	
Indicator light	ON: Red light emitting diode					

MHZ2

MHZJ2

MHQ

MHL2

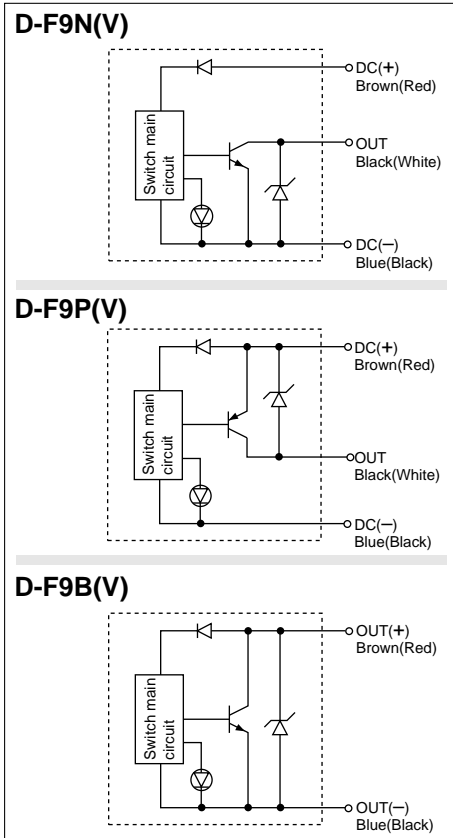
MHR

MHK

MHS

Auto switch internal circuit

() : Before IEC standard



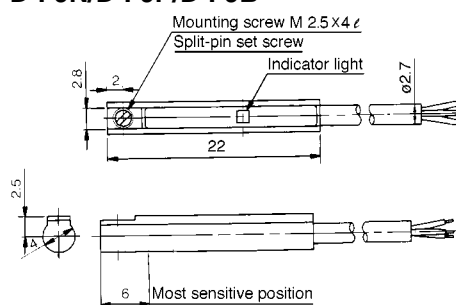
● Lead wire — Oil proof vinyl heavy insulation cable $\phi 2.7$, 3 wire (brown, black, blue) 0.15mm², 2 wire (brown, blue) 0.18mm², 0.5m

Note 1) Refer to p.2.11-5 for common specifications of solid state switch.

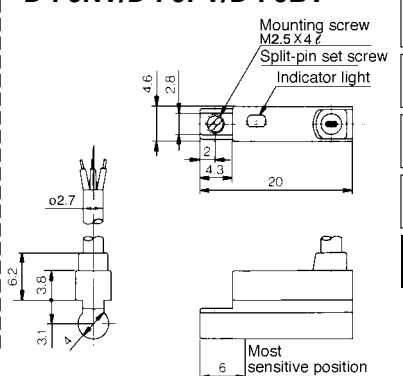
Note 2) Refer to p.2.11-5 for lead wire length.

Dimensions

D-F9N/D-F9P/D-F9B



D-F9NV/D-F9PV/D-F9BV



MHC2

MHT2

MHY2

MHW2

MRHQ

Auto switch

⚠ Specific Product Precautions

Be sure to read before handling.
Refer to p.0-20 and 0-21 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.2.11-2 to 2.11-4 for detailed precautions on every series.

⚠ Caution

Do not use set screw which is not attached to auto switch body. If it is used, the switch may damage.

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



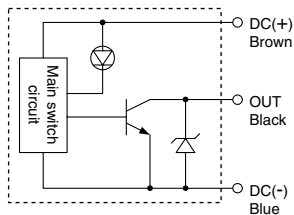
Grommet

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

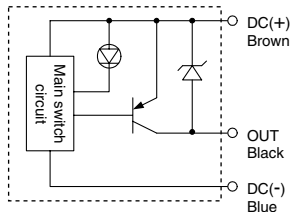


Internal circuits

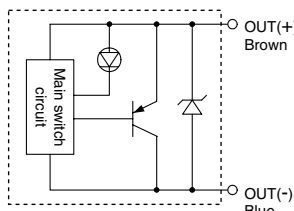
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

PLC: Programmable Logic Controller

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

- Lead wire: oil-proof heavy-duty vinyl cable
2.7 x 3.2 with elliptic cross-section, 0.15 mm², two cores (D-M9B),
or three cores (D-M9N and D-M9P)

Solid state switch specifications

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

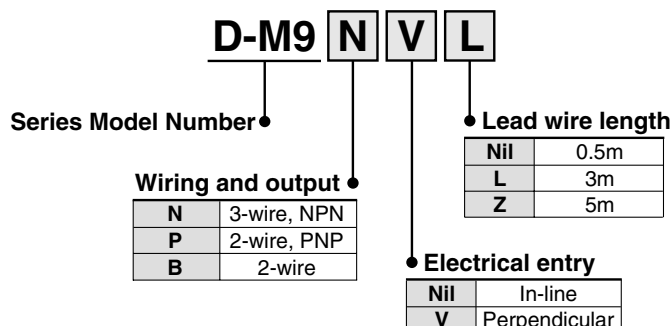
Weight

Unit: g

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

How to Order

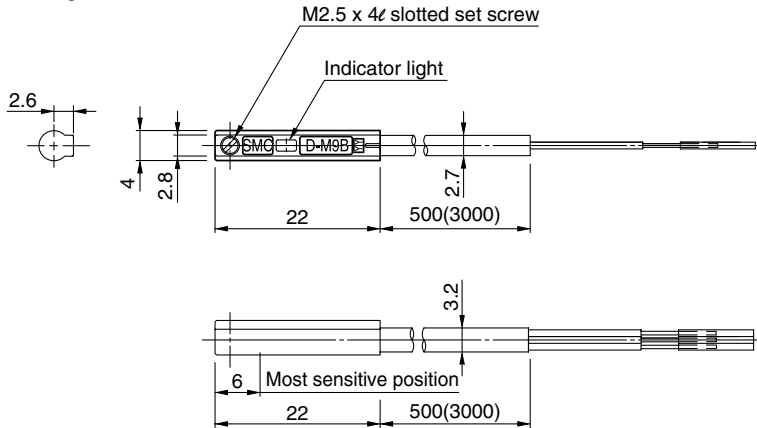
Standard Model Number



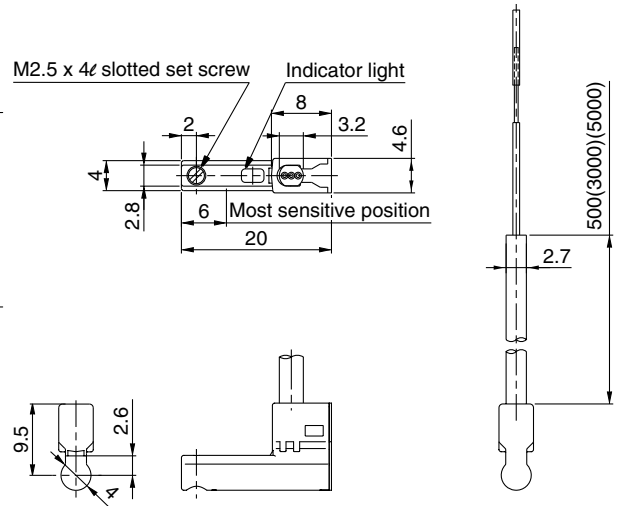
Series D-M9

Auto Switch Dimensions

D-M9□



D-M9□V



⚠ Specific Product Precautions

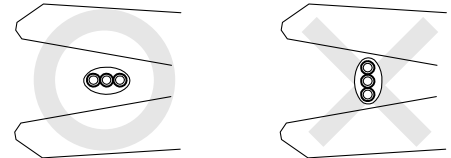
Be sure to read before handling. Contact SMC when the required specification is out of range.

Handling

⚠ Caution

Observe the following precautions when handling the product.

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



- We recommend the following tools

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

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

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

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

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

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

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

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