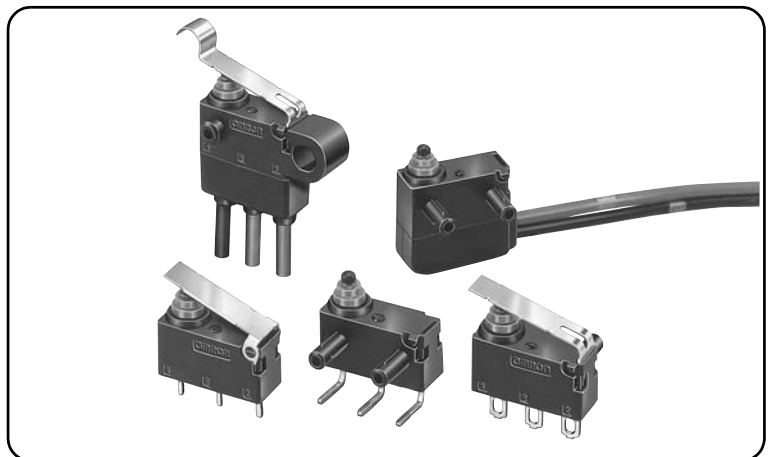


D2HW

Sealed Ultra Subminiature Basic Switch

Smallest sealed snap-action switch in the industry with a very long stroke for reliable ON/OFF action

- The case dimensions are 78% of conventional models, contributing to down-sizing of mechanical modules.
- Extra-long stroke even without levers. (OT reference value: 1.4 mm).
- Made of environmentally-friendly materials. All models are lead-free, including molded lead wire models.



D
2
H
W

Model Number Legend

D2HW - 1 2 3 4 5 6 7						
1. Mounting Structure A : Without posts (base-mounting) BR : Long post on right BL : Long post on left C : M3-screw mounting models ER : Short post on right EL : Short post on left			4. Contact form 1 : SPDT 2 : SPST-NC (Molded lead wire models only) 3 : SPST-NO (Molded lead wire models only)			
2. Ratings 2 : 5 VDC 1mA to 12 VDC 2A			5. Terminals D, DS : PCB terminals (Straight) DR, DRS : PCB Terminals (Right-angled) DL, DLS : PCB Terminals (Left-angled) H, HS : Solder terminals M, MS : Molded lead wires downwards MR, MRS : Molded lead wires on right-side ML, MLS : Molded lead wires on left-side Note. UL/cUL approved versions are available. In this case, a "S" will be added to the end of the model number. The Lead wire is a UL approved wire (AWG24, UL1007).			
3. Actuator 0 : Pin plunger 1 : Hinge lever 2 : Long hinge lever 3 : Simulated roller lever 4 : Hinge roller lever 5 : Straight leaf lever 6 : Leaf lever 7 : Simulated roller leaf lever 8 : Long leaf lever			6. Special Specification 7. Special Industry Specification			

List of Models

●PCB-mounted Models

List of Models				Long post on right 	Short post on right 
Actuator	Terminals	Contact form			
Pin plunger 	For PCB	Straight	SPDT	-	-
		Angled		D2HW-BR201DR	D2HW-ER201DR
Hinge lever 		Straight		-	-
		Angled		D2HW-BR211DR	D2HW-ER211DR
Long hinge lever 		Straight		-	-
		Angled		D2HW-BR221DR	D2HW-ER221DR
Simulated roller hinge lever 		Straight		-	-
		Angled		D2HW-BR231DR	D2HW-ER231DR

List of Models				Long post on left 	Short post on left 	Without posts 
Actuator	Terminals	Contact form				
Pin plunger 	For PCB	Straight	SPDT	-	-	D2HW-A201D
		Angled		D2HW-BL201DL	D2HW-EL201DL	-
Hinge lever 		Straight		-	-	D2HW-A211D
		Angled		D2HW-BL211DL	D2HW-EL211DL	-
Long hinge lever 		Straight		-	-	D2HW-A221D
		Angled		D2HW-BL221DL	D2HW-EL221DL	-
Simulated roller hinge lever 		Straight		-	-	D2HW-A231D
		Angled		D2HW-BL231DL	D2HW-EL231DL	-

Note1. Angled terminals and posts are the same direction.

Note2. "S" is added to the end of the model number for the UL/cUL-approved version Consult your OMRON sales representative for details.

● Models with Solder Terminals or Molded Lead Wires

List of Models			Long post on right 	Short post on right 
Actuator	Terminals	Contact form		
Pin plunger 	Solder	SPDT	D2HW-BR201H	D2HW-ER201H
	Molded lead wires	SPDT	D2HW-BR201M	D2HW-ER201M
		Downwards	SPST-NC	D2HW-BR202M
			SPST-NO	D2HW-BR203M
		Right-side	SPST-NC	D2HW-BR202MR
			SPST-NO	D2HW-BR203MR
		Left-side	SPST-NC	D2HW-BR202ML
			SPST-NO	D2HW-BR203ML
Hinge lever 	Solder	SPDT	D2HW-BR211H	D2HW-ER211H
	Molded lead wires	SPDT	D2HW-BR211M	D2HW-ER211M
		Downwards	SPST-NC	D2HW-BR212M
			SPST-NO	D2HW-BR213M
		Right-side	SPST-NC	D2HW-BR212MR
			SPST-NO	D2HW-BR213MR
		Left-side	SPST-NC	D2HW-BR212ML
			SPST-NO	D2HW-BR213ML
Long hinge lever 	Solder	SPDT	D2HW-BR221H	D2HW-ER221H
	Molded lead wires	SPDT	D2HW-BR221M	D2HW-ER221M
		Downwards	SPST-NC	D2HW-BR222M
			SPST-NO	D2HW-BR223M
		Right-side	SPST-NC	D2HW-BR222MR
			SPST-NO	D2HW-BR223MR
		Left-side	SPST-NC	D2HW-BR222ML
			SPST-NO	D2HW-BR223ML
Simulated roller hinge lever 	Solder	SPDT	D2HW-BR231H	D2HW-ER231H
	Molded lead wires	SPDT	D2HW-BR231M	D2HW-ER231M
		Downwards	SPST-NC	D2HW-BR232M
			SPST-NO	D2HW-BR233M
		Right-side	SPST-NC	D2HW-BR232MR
			SPST-NO	D2HW-BR233MR
		Left-side	SPST-NC	D2HW-BR232ML
			SPST-NO	D2HW-BR233ML
Hinge roller lever 	Solder	SPDT	D2HW-BR241H	D2HW-ER241H
	Molded lead wires	SPDT	D2HW-BR241M	D2HW-ER241M
		Downwards	SPST-NC	D2HW-BR242M
			SPST-NO	D2HW-BR243M
		Right-side	SPST-NC	D2HW-BR242MR
			SPST-NO	D2HW-BR243MR
		Left-side	SPST-NC	D2HW-BR242ML
			SPST-NO	D2HW-BR243ML
Straight leaf lever 	Solder	SPDT	D2HW-BR251H	D2HW-ER251H
	Molded lead wires	SPDT	D2HW-BR251M	D2HW-ER251M
		Downwards	SPST-NC	D2HW-BR252M
			SPST-NO	D2HW-BR253M
		Right-side	SPST-NC	D2HW-BR252MR
			SPST-NO	D2HW-BR253MR
		Left-side	SPST-NC	D2HW-BR252ML
			SPST-NO	D2HW-BR253ML
Leaf lever 	Solder	SPDT	D2HW-BR261H	D2HW-ER261H
	Molded lead wires	SPDT	D2HW-BR261M	D2HW-ER261M
		Downwards	SPST-NC	D2HW-BR262M
			SPST-NO	D2HW-BR263M
		Right-side	SPST-NC	D2HW-BR262MR
			SPST-NO	D2HW-BR263MR
		Left-side	SPST-NC	D2HW-BR262ML
			SPST-NO	D2HW-BR263ML
Simulated roller leaf lever 	Solder	SPDT	D2HW-BR271H	D2HW-ER271H
	Molded lead wires	SPDT	D2HW-BR271M	D2HW-ER271M
		Downwards	SPST-NC	D2HW-BR272M
			SPST-NO	D2HW-BR273M
		Right-side	SPST-NC	D2HW-BR272MR
			SPST-NO	D2HW-BR273MR
		Left-side	SPST-NC	D2HW-BR272ML
			SPST-NO	D2HW-BR273ML
Long leaf lever 	Solder	SPDT	D2HW-BR281H	D2HW-ER281H
	Molded lead wires	SPDT	D2HW-BR281M	D2HW-ER281M
		Downwards	SPST-NC	D2HW-BR282M
			SPST-NO	D2HW-BR283M
		Right-side	SPST-NC	D2HW-BR282MR
			SPST-NO	D2HW-BR283MR
		Left-side	SPST-NC	D2HW-BR282ML
			SPST-NO	D2HW-BR283ML

Note1. The length of standard lead wires (AVSS 0.5) for molded lead wire models shown above is 30 cm.

Note2. "S" is added to the end of the model number for the UL/cUL-approved version The lead wire models are UL approved wires (AWG24, UL1007). Consult your OMRON sales representative for details.

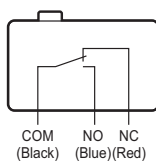
Sealed Ultra Subminiature Basic Switch

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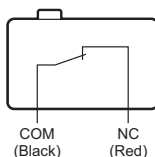
Note1. The length of standard lead wires (AVSS 0.5) for molded lead wire models shown above is 30 cm.
 Note2. "S" is added to the end of the model number for the UL/cUL-approved version The lead wire models are UL approved wires (AWG24, UL1007).
 Consult your OMRON sales representative for details.

Contact form

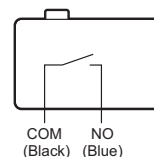
● SPDT



● SPST-NC, (Molded Lead Wire Models Only)



● SPST-NO, (Molded Lead Wire Models Only)



Molded lead wire colors are indicated in parentheses.

Contact Specifications

Contact	Specification	Crossbar
	Material	Gold alloy
	Gap (standard value)	0.5 mm
Minimum applicable load (see note)		5 VDC 1mA

Ratings

Rated voltage	Resistive load
125 VAC	0.1A
12 VDC	2A
24 VDC	1A
42 VDC	0.5A

Note. The above rating values apply under the following test conditions.

- (1) Ambient temperature: 20±2°C
- (2) Ambient humidity: 65±5 %
- (3) Operating frequency: 30 operations/min

Approved Safety Standard

Consult your OMRON sales representative for specific models with standard approvals.

UL (UL61058-1/cUL C22.2 No.61058-1)

Model	D2HW
Rated voltage	Resistive load
100 VAC	0.1A
12 VDC	2A
24 VDC	1A
42 VDC	0.5A

Characteristics

Permissible operating speed		1 mm to 500 mm/s (for pin plunger models)
Permissible operating frequency		30 operations/min
Insulation resistance		100 MΩ min. (at 500 VDC with insulation tester)
Contact resistance (initial value)	Terminals	100 mΩ max.
	Molded lead wire models	150 mΩ max.
Dielectric strength	Between terminals of the same polarity	600 VAC 50/60 Hz 1min
	Between current-carrying metal parts and ground	1,500 VAC 50/60 Hz 1 min
	Between terminals and non-current-carrying metal parts	1,500 VAC 50/60 Hz 1 min
Vibration resistance * 1	Malfunction	10 to 55 Hz, 1.5 mm double amplitude
Shock resistance	Durability	1,000 m/s ² {approx. 100G} max.
	Malfunction * 1	300 m/s ² {approx. 30G} max.
Durability * 2	Mechanical	1,000,000 operations min. (30 operations/min)
	Electrical	100,000 operations min. (20 operations/min)
Degree of protection	Terminals	IEC IP67 (excluding the terminals on terminal models)
	molded lead wire models	IEC IP67
Ambient operating temperature		-40 to +85°C (at ambient humidity of 60% max.) (with no icing or condensation)
Ambient operating humidity		95% max. (for +5 to +35°C)
Weight		Approx. 0.7 g (for pin plunger models with terminals)

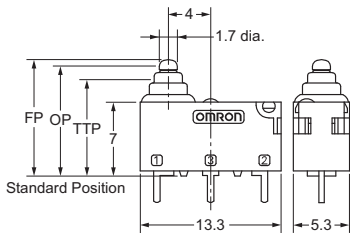
Note. The data given above are initial values.

*1. For the pin plunger models, the above values apply for use at the free position, operating position, and total travel position. For the lever models, they apply at the total travel position. Close or open circuit of the contact is 1ms max.

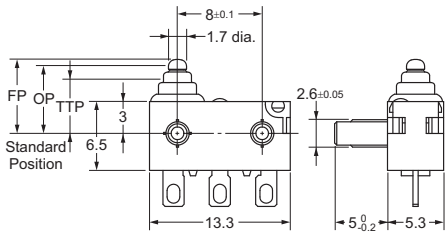
*2. For testing conditions, consult your OMRON sales representative.

Mounting Structure and Reference Positions for Operating Characteristics (Unit: mm)

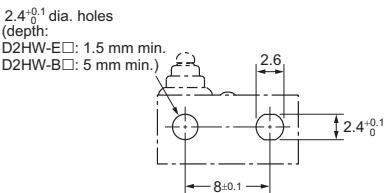
● Without posts
D2HW-A□



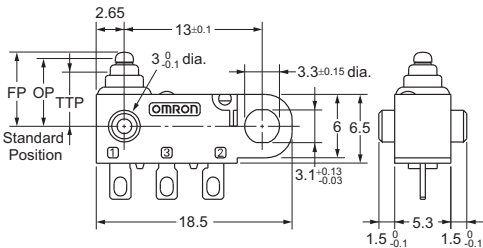
● Long post
D2HW-B□



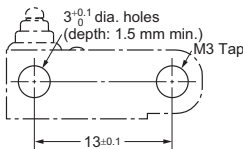
Mounting Hole Dimensions (Reference)



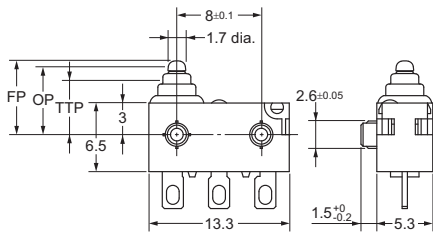
● M3-screw Mounting Models
D2HW-C□



Mounting Hole Dimensions (Reference)



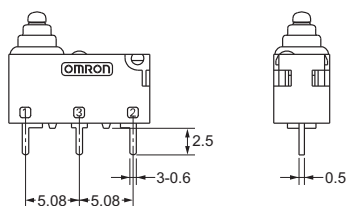
● Short post
D2HW-E□



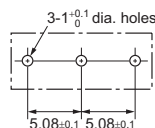
Note. The reference positions used for Free Position (FP), Operating Position (OP), and Total Travel Position (TTP) values are as shown above for each type of mounting.

Terminals/Apearances (Unit: mm)

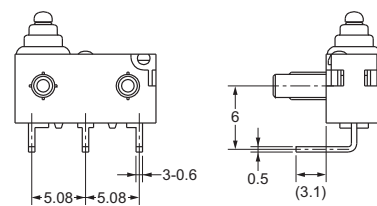
● PCB terminals (Straight)



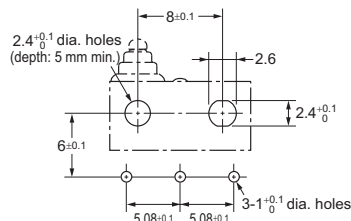
<PCB Mounting Dimensions (Reference)>



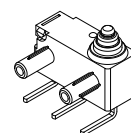
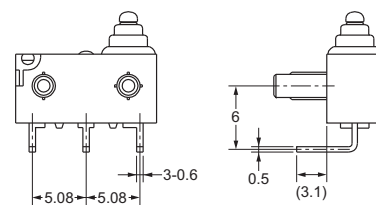
● PCB Terminals (Left-angled)



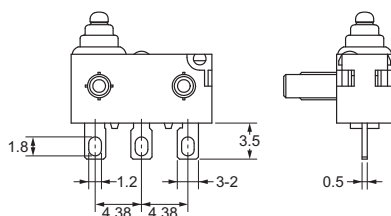
<PCB Cutout Dimensions (Reference)>



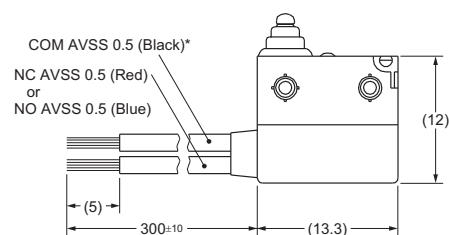
● PCB terminals (Right-angled)



● Solder terminals

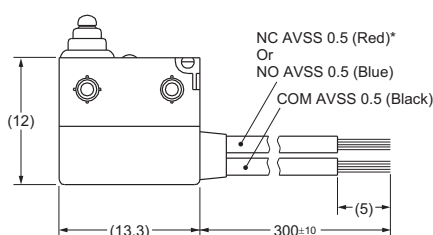


● Molded Lead Wires on Left-side



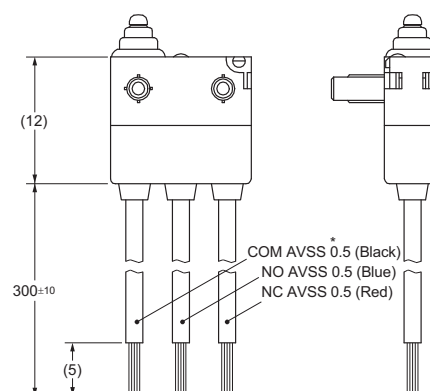
* UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

● Molded Lead Wires on Right-side



* UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

● Molded Lead Wires Downwards



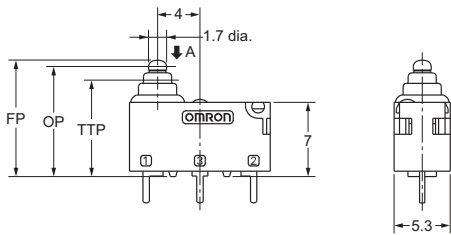
* UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

Dimensions (Unit: mm) /Operating Characteristics

The following illustrations and drawings are representative models. When ordering, replace □ with the code for the mounting structure, contact form and terminal that you need.
See the "■List of Models" for available combinations of appearances.
Refer to page 3 to 4 for the mounting structures and terminal forms.

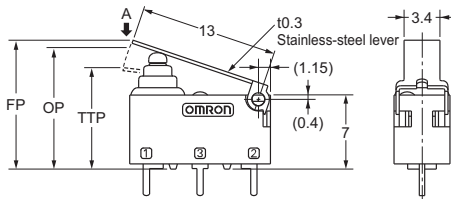
● Pin plunger
D2HW-□20□□

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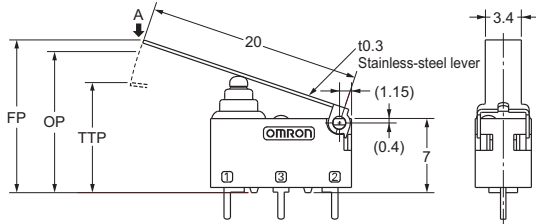
Operating characteristics	Type	Without posts	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	0.75N {76 gf}		
Releasing Force	RF Min.	0.10N {10 gf}		
Overtravel	OT	1.4 mm (reference value)		
Movement Differential	MD Max.	0.25 mm		
Free Position	FP Max.	11.2 mm	7.2 mm	
Operating Position	OP	10.4±0.2 mm	6.4±0.2 mm	
Total Travel Position	TTP Max.	9.1 mm	5.1 mm	

● Hinge Lever
D2HW-□21□□



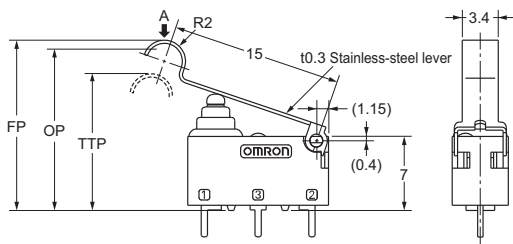
Operating characteristics	Type	Without posts	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	0.75N {76 gf}		
Releasing Force	RF Min.	0.07N {7 gf}		
Overtravel	OT	1.6 mm (reference value)		
Movement Differential	MD Max.	0.5 mm		
Free Position	FP Max.	12.8 mm	8.8 mm	
Operating Position	OP	11.5±0.5 mm	7.5±0.5 mm	
Total Travel Position	TTP Max.	10 mm	6 mm	

● Long Hinge Lever
D2HW-□22□□



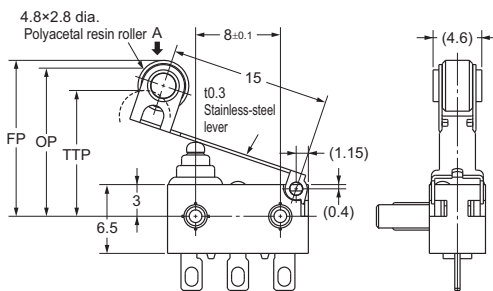
Operating characteristics	Type	Without posts	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	0.5N {50 gf}		
Releasing Force	RF Min.	0.03N {3 gf}		
Overtravel	OT	2.5 mm (reference value)		
Movement Differential	MD Max.	0.8 mm		
Free Position	FP Max.	15.5 mm	11.5 mm	
Operating Position	OP	13.3±0.8 mm	9.3±0.8 mm	
Total Travel Position	TTP Max.	11 mm	7 mm	

● Simulated Roller Lever
D2HW-□23□□



Operating characteristics	Type	Without posts	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	0.65N {66 gf}		
Releasing Force	RF Min.	0.05N {5 gf}		
Overtravel	OT	1.9 mm (reference value)		
Movement Differential	MD Max.	0.5 mm		
Free Position	FP Max.	16.5 mm	12.5 mm	
Operating Position	OP	15.2±0.5 mm	11.2±0.5 mm	
Total Travel Position	TTP Max.	13.5 mm	9.5 mm	

● Hinge Roller Lever
D2HW-□24□□

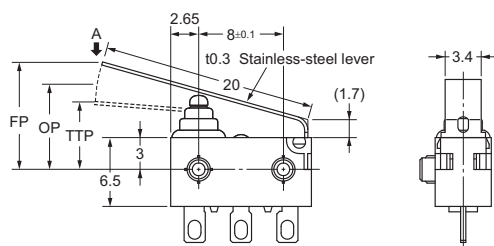
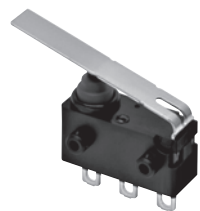


Operating characteristics	Type	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	0.65N {66 gf}	
Releasing Force	RF Min.	0.03N {3 gf}	
Overtravel	OT	1.9 mm (reference value)	
Movement Differential	MD Max.	0.6 mm	
Free Position	FP Max.	15.3 mm	
Operating Position	OP	14±0.6 mm	
Total Travel Position	TTP Max.	12.3 mm	

Note1. Unless otherwise specified, a tolerance of ±0.2mm applies to all dimensions.
Note2. The operating characteristics are for operation in the A direction (↓).

● Leaf straight lever

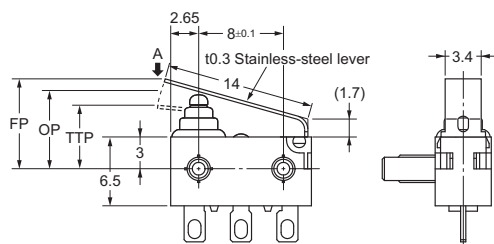
D2HW-□25□□



Operating characteristics	Type	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	1.2N {122 gf}	
Releasing Force	RF Min.	0.05N {5 gf}	
Overtravel	OT	2.5 mm (reference value)	
Movement Differential	MD Max.	0.7 mm	
Free Position	FP Max.	11.9 mm	
Operating Position	OP	8.1±0.8 mm	
Total Travel Position	TTP Max.	6.0 mm	

● Leaf Lever

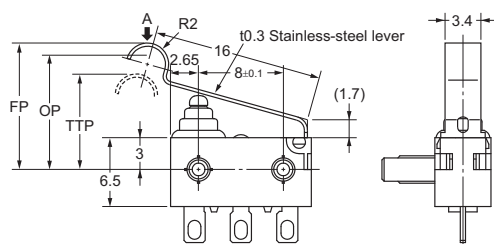
D2HW-□26□□



Operating characteristics	Type	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	1.8N {183 gf}	
Releasing Force	RF Min.	0.20N {20 gf}	
Overtravel	OT	1.8 mm (reference value)	
Movement Differential	MD Max.	0.5 mm	
Free Position	FP Max.	9.3 mm	
Operating Position	OP	7.4±0.5 mm	
Total Travel Position	TTP Max.	5.8 mm	

● Simulated Roller Lever

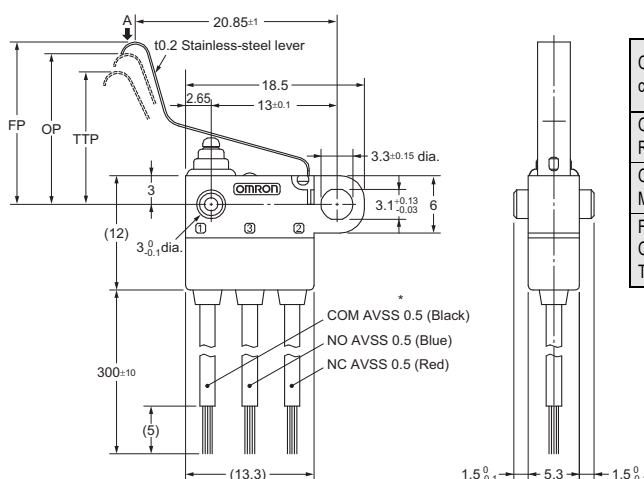
D2HW-□27□□



Operating characteristics	Type	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	1.8N {183 gf}	
Releasing Force	RF Min.	0.20N {20 gf}	
Overtravel	OT	2.0 mm (reference value)	
Movement Differential	MD Max.	0.5 mm	
Free Position	FP Max.	13.0 mm	
Operating Position	OP	10.8±0.5 mm	
Total Travel Position	TTP Max.	8.9 mm	

● Long Leaf Lever

D2HW-□28□□



Operating characteristics	Type	Models with Posts	M3-screw Mounting Models
Operating Force	OF Max.	0.9N {92 gf}	
Releasing Force	RF Min.	0.05N {5 gf}	
Overtravel	OT	2.8 mm (reference value)	
Movement Differential	MD Max.	0.7 mm	
Free Position	FP Max.	19 mm	
Operating Position	OP	15.4±1.5 mm	
Total Travel Position	TTP Max.	12.8 mm	

* UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

Note1. Unless otherwise specified, a tolerance of ±0.2mm applies to all dimensions.

Note2. The operating characteristics are for operation in the A direction (↓).

Precautions

★ Please refer to "General Information" for correct use.

Cautions

● Degree of Protection

- Do not use this product underwater. Although molded lead wire models satisfy the test conditions for the standard given below, this test is to check the ingress of water into the switch enclosure after submerging the Switch in water for a given time. Satisfying this test condition does not mean that the Switch can be used underwater.

JIS C0920:

Degrees of protection provided by enclosures of electrical apparatus (IP Code)

IEC 60529:

Degrees of protection provided by enclosures (IP Code)

Degree of protection: IP67

(check water intrusion after immersion for 30 min. submerged 1m underwater)

- Do not operate the Switch when it is exposed to water spray, or when water drops adhere to the Switch surface, or during sudden temperature changes, otherwise water may intrude into the interior of the Switch due to a suction effect.
- Prevent the Switch from coming into contact with oil and chemicals. Otherwise, damage to or deterioration of Switch materials may result.
- Do not use the Switch in areas where it is exposed to silicon adhesives, oil, or grease. Otherwise faulty contact may result due to the generation of silicon oxide.

● Soldering

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal hole and then conduct soldering.

Make sure that the temperature of the soldering iron tip does not exceed 300°C, and complete the soldering within 3 seconds. Do not apply any external force for 1 minute after soldering.

Soldering at an excessively high temperature or soldering for more than 3 seconds may deteriorate the characteristics of the Switch.

In case of automatic soldering, please do not apply the heat beyond 260°C within 5 seconds. Pay careful attention so that flux or solder liquid does not flow over the edge of the PCB panel.

● Side-actuated (Cam/Dog) Operation

- When using a cam or dog to operate the Switch, factors such as the operating speed, operating frequency, push-button indentation, and material and shape of the cam or dog will affect the durability of the Switch. Confirm performance specifications under actual operating conditions before using the Switch in applications.

Correct Use

● Mounting

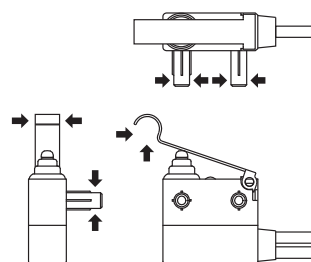
- Turn OFF the power supply before mounting or removing the Switch, wiring, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.
- For M3-screw mounting models, use M3 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.27 to 0.29 N·m {27.5 to 29.5 gf}. Exceeding the specified torque may result in deterioration of the sealing or damage.
- For models with posts, secure the posts by thermal caulking or by pressing into an attached device. When pressed into an attached device, provide guides on the opposite ends of the posts to ensure that they do not fall out or rattle. Thermal caulking conditions varies according to the equipment, jig and base used for switch mounting. Consult your OMRON sales representative for details.

● Operating Body

- Use an operating body with low frictional resistance and of a shape that will not interfere with the sealing rubber, otherwise the plunger may be damaged or the sealing may deteriorate.

● Handling

- Do not handle the Switch in a way that may cause damage to the sealing rubber.
- When handling the Switch, ensure that pressure is not applied to the posts in the directions shown in the following diagram. Also, ensure that uneven pressure or pressure in a direction other than the operating direction is not applied to the Actuator as shown in the following diagram. Otherwise, the post, Actuator, or Switch may be damaged, or the service life may be reduced.



● Wiring Molded Lead Wire Models

- When wiring molded lead wire models, ensure that there is no weight applied on the wire or that there are no sharp bends near the parts where the wire is drawn out. Otherwise, damage to the Switch or deterioration in the sealing may result.

● Using Micro Loads

- Even when using micro load models within the operating range, if inrush/surge current occurs, it may increase the contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary.

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