

Subminiature Basic Switch (Sealed) – D2VW

High-quality, High-precision Miniature Switch Conforms to IP67 (Lead wire type only)

- Use of epoxy resin assured stable sealing, making this switch ideal for places subject to water spray or excessive dust.
- V-series internal mechanism assures high precision and long life.
- Ideal for automobiles, agricultural machines, large-scale home applications, and industrial equipment, which require high environmental resistance.
- Models available with conformance to safety standards, including UL, CSA and VDE.



Ordering Information

■ Model Number Legend

D2VW-□□-□□

1 2 3 4

1. Ratings

- 5: 5 A
- 01: 0.1 A

2. Actuator

- None: Pin plunger
- L1A: Short hinge lever
- L1: Hinge lever
- L1B: Long hinge lever
- L3: Simulated roller lever
- L2A: Short hinge roller lever
- L2: Hinge roller lever

3. Contact Form

- 1: SPDT
- 2: SPST-NC
- 3: SPST-NO

4. Terminal

- None, HS: Solder terminals
(HS for UL and CSA approval)
- M, MS: Molded lead wires (MS and UL and CSA approval)

■ List of Models

	Actuator	Model	
		0.1 A	5 A
Pin plunger	Solder and quick-connect terminals (#187)	D2VW-01-1	D2VW-5-1
		Lead wire	D2VW-01-1M
Short hinge lever	Solder and quick-connect terminals (#187)	D2VW-01L1A-1	D2VW-5L1A-1
		Lead wire	D2VW-01L1A-1M
Hinge Lever	Solder and quick-connect terminals (#187)	D2VW-01L1-1	D2VW-5L1-1
		Lead wire	D2VW-01L1-1M
Long hinge lever	Solder and quick-connect terminals (#187)	D2VW-01L1B-1	D2VW-5L1B-1
		Lead wire	D2VW-01L1B-1M
Simulated roller lever	Solder and quick-connect terminals (#187)	D2VW-01L3-1	D2VW-5L3-1
		Lead wire	D2VW-01L3-1M
Short roller lever	Solder and quick-connect terminals (#187)	D2VW-01L2A-1	D2VW-5L2A-1
		Lead wire	D2VW-01L2A-1M
Hinge roller lever	Solder and quick-connect terminals (#187)	D2VW-01L2-1	D2VW-5L2-1
		Lead wire	D2VW-01L2-1M

Note: 1. The standard lengths of the lead wires (AVO.75f) of models incorporating them are 30cm.

2. Consult your Omron sales representative for details on SPST-NO and SPST-NC models.

3. Add "HS" or "MS" to the end of the model number for the UL/CSA approved version (eg D2VW-01-1 → D2VW-01-1HS). Consult your Omron representative for details.

Specifications

■ Ratings

Model	Rated voltage	Non-inductive load				Inductive load	
		Resistive load		Lamp load		Inductive load	
		NC	NO	NC	NO	NC	NO
D2VW-5	125 VAC	5 A		0.5 A		4 A	
	250 VAC	5 A		0.5 A		4 A	
	30 VDC	5 A		3 A		4 A	
	125 VDC	0.4 A		0.1 A		0.4 A	
D2VW-01	125 VAC	0.1 A		—		—	
	30 VDC	0.1 A		—		—	

- Note:**
- The above current ratings are the values of the steady-state current.
 - Inductive load has a power factor of 0.7 min. (AC) and a time constant of 7 ms max. (DC).
 - Lamp load has an inrush current of 10 times the steady-state current.
 - The ratings values apply under the following test conditions:
 Ambient temperature: $20 \pm 15^{\circ}\text{C}$
 Ambient humidity: $65 \pm 20\%$
 Operating frequency: 30 operations/min

■ Characteristics

Operating speed	0.1 mm to 1 m/s (at pin plunger models)
Operating frequency	Mechanical: 300 operations/min Electrical: 60 operations/min
Insulation resistance	100 M Ω min. (at 500 VDC)
Contact resistance (initial value)	50 m Ω max. (100 m Ω max. for lead wire model)
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground (see note 2) 1,500 VAC, 50/60 Hz for 1 min between each terminal and non-current-carrying metal parts
Vibration resistance (see note 3)	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance (see note 3)	Destruction: 1,000m/s (approx 100g) max. Malfunction: 300 m/s ² (approx. 30G) max.
Life expectancy (see note 4)	Mechanical: 10,000,000 operations min (60 operations/min) Electrical: D2VW-5 models: 100,000 operations min (30 operations/min) D2VW-01 models: 1,000,000 operations min (30 operations/min)
Degree of protection	IEC IP67 (excluding the terminals on terminal models) IP50 for terminal model
Degree of protection against electric shock	Class I
Proof tracking index (PTI)	175
Ambient temperature	-40°C to 85°C (at ambient humidity of 60% max) (with no icing)
Ambient humidity	Operating: 95% max. (for 5°C to 35°C)
Weight	Approx. 7 g (terminal type pin plunger models)

- Note:**
- The data given above are initial values.
 - The dielectric strength shown in the table indicates the value for models with a Separator.
 - For the pin plunger models, the above values apply for use at both the free position and total travel position. For the lever models, they apply at the total travel position.
 - For testing conditions, consult your OMRON sales representative.

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Approved Standards

UL1054 (File No. E41515)
CSA C22.2 No.55 (File No. LR21642)

Rated voltage	D2VW-5 Models	D2VW-01 Models
125 VAC	3 A	0.1 A
250 VAC	3 A	—
30 VDC	—	0.1 A

VDE/EN61058-1 (File No. 104068, VDE approval)

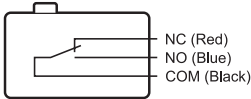
Rated voltage	D2VW-5 Models	D2VW-01 Models
125 VAC	—	0.1 A
250 VAC	3 A	—

Testing conditions

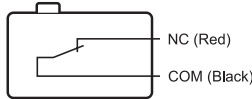
25E3 (25,000 operations), T85 (0°C to 85°C) for D2VW-5
1E5 (100,000 operations), T85 (0°C to 85°C) for D2VW-01

Contact Form

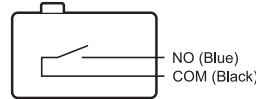
SPDT



SPST-NC



SPST-NO



Dimensions

- Note: 1. All units are in millimeters unless otherwise indicated.
2. Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

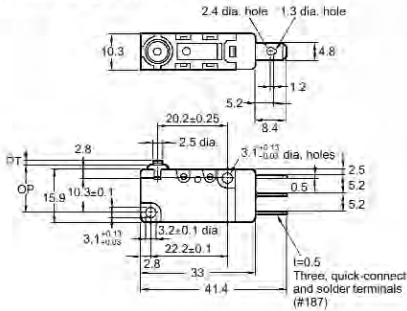
Terminal Models

The pin plunger model is shown here as a typical example. Operating characteristics and dimensions of the actuator section are the same as for the lead wire models.

Dimensions and Operating Characteristics

Pin Plunger

D2VW-01-1
D2VW-5-1

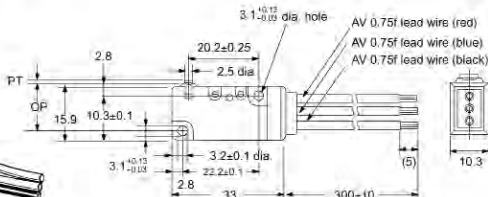


OF max.	1.96 N {200 gf}
RF min.	0.29 N {30 gf}
PT max.	1.2 mm
OT min.	1.0 mm
MD max.	0.4 mm
OP	14.7 \pm 0.4 mm

Lead Wire Models

Pin Plunger

D2VW-01-1M
D2VW-5-1M

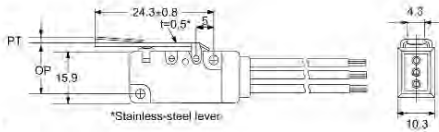


OF max.	1.96 N {200 gf}
RF min.	0.29 N {30 gf}
PT max.	1.2 mm
OT min.	1.0 mm
MD max.	0.4 mm
OP	14.7 \pm 0.4 mm

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Short Hinge Lever

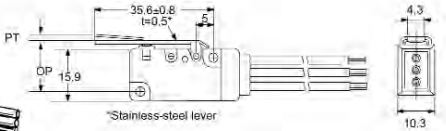
D2VW-01L1A-1M
D2VW-5L1A-1M



OF max.	1.96 N {200 gf}
RF min.	0.20 N {20 gf}
PT max.	1.6 mm
OT min.	0.8 mm
MD max.	0.5 mm
OP	15.2±0.5 mm

Hinge Lever

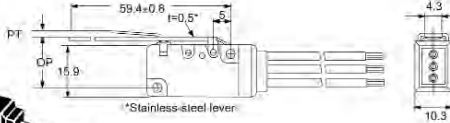
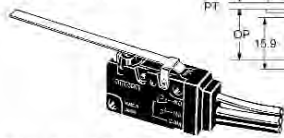
D2VW-01L1-1M
D2VW-5L1-1M



OF max.	1.18 N {120 gf}
RF min.	0.15 N {15 gf}
PT max.	4.0 mm
OT min.	1.6 mm
MD max.	0.8 mm
OP	15.2±1.2 mm

Long Hinge Lever

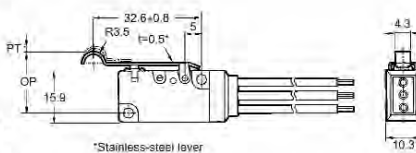
D2VW-01L1B-1M
D2VW-5L1B-1M



OF max.	0.59 N {60 gf}
RF min.	0.05 N {5 gf}
PT max.	9.0 mm
OT min.	3.2 mm
MD max.	2.0 mm
OP	15.2±2.6 mm

Simulated Roller Lever

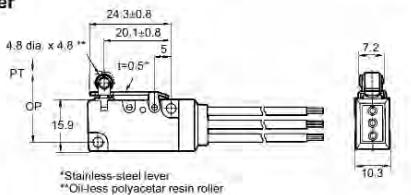
D2VW-01L3-1M
D2VW-5L3-1M



OF max.	1.18 N {120 gf}
RF min.	0.15 N {15 gf}
PT max.	4.0 mm
OT min.	1.6 mm
MD max.	0.8 mm
OP	18.7±1.2 mm

Short Hinge Roller Lever

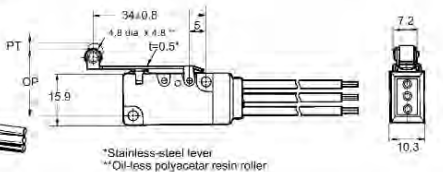
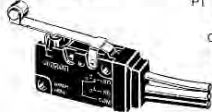
D2VW-01L2A-1M
D2VW-5L2A-1M



OF max.	2.25 N {230 gf}
RF min.	0.20 N {20 gf}
PT max.	1.6 mm
OT min.	0.8 mm
MD max.	0.5 mm
OP	20.7±0.6 mm

Hinge Roller Lever

D2VW-01L2-1M
D2VW-5L2-1M



OF max.	1.18 N {120 gf}
RF min.	0.15 N {15 gf}
PT max.	4.0 mm
OT min.	1.6 mm
MD max.	0.8 mm
OP	20.7±1.2 mm

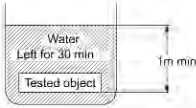
Note: AV 0.75f wires are used for standard lead wire model
UL1015 AWG20 wires are used for UL/CSA approved models.

Precautions

■ Degree of Protection

The D2VW was tested under water and passed the following water-tightness tests, which however, does not mean that the D2VW can be used in the water.

IEC Publication 529, class IP67. Refer to the following illustration for the test method at OMRON.



■ Protection Against Chemicals

Prevent the Switch from coming into contact with oil and chemicals. Otherwise, damage to or deterioration of Switch materials may result.

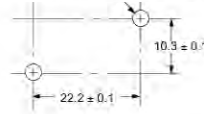
■ Using Micro Loads

Using a model for ordinary loads to open or close the contact of a microload circuit may result in faulty contact. Use models that operate in the following range. However, even when using micro load models within the operating range shown below, if inrush current occurs when the contact is opened or closed, it may increase contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary.

The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% ($\lambda,60$). The equation, $\lambda,60 = 0.5 \times 10^{-6}/\text{operations}$ indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.

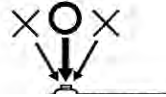
■ Mounting Dimensions

Use two M3 mounting screws with spring washers to mount the switch. Tighten the screws to a torque of 0.39 to $0.59 \text{ N} \cdot \text{m}$ {4 to 6 $\text{kgf} \cdot \text{cm}$ }.

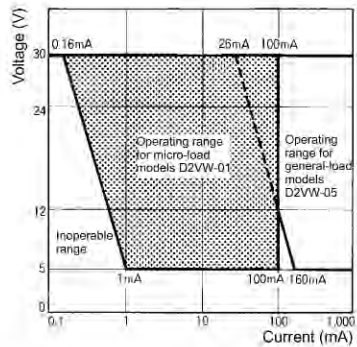


Operation

With the pin plunger models, set the Switch so that the plunger can be pushed in from directly above. Since the plunger is covered with a rubber cap, applying a force from lateral directions may cause damage to the plunger or reduction in the sealing capability.



Use the Switch in the following operating range.



ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.

To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.