CSM_VE_DS_E_2_2

Small, Lightweight Enclosed Switches

- V-series Switches were placed in diecast cases to provide superior dust resistance and mechanical strength.
- Cam arms and cam roller arms can be set to any position within 360°

⚠ **Be sure to read *Safety Precautions* on page 4 and *Precautions for All Limit Switches*.**

Model Number Legend

Model Number Structure (Some combinations may not be available. Contact your OMRON sales representative for details.)

□VE-10□-□-□

1 2 3 4

1. Number of Built-in Switches
1: 1

2. Actuator Type
N: Sealed plunger
CA: Cam arm
CA2: Cam roller arm

3. Operation Direction (for Arm Actuators Only)
Blank: Plunger
11: Counterclockwise operation (one-side operation)
12: Clockwise operation (one-side operation)
13: Operation in both directions (two-side operation)

4. Bushing Type
Blank: Rubber bushing for single-core vinyl cables
C: Rubber bushing for vinyl cabtire cable
Note: For details, refer to *Safety Precautions* on page 4.

Ordering Information

Actuator type	Operating direction	One built-in switch
		Model
Sealed plunger	—	1VE-10N
Cam arm	Counterclockwise operation	1VE-10CA-11
	Clockwise operation	1VE-10CA-12
	Two-side operation	1VE-10CA-13
Cam roller arm	Counterclockwise operation	1VE-10CA2-11
	Clockwise operation	1VE-10CA2-12
	Two-side operation	1VE-10CA2-13

Ratings and Specifications

Ratings

Rated voltage (V)	Non-inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 AC	10		2		10		3	
250	10		1.5		10		2	
8 DC	10		2		6		6	
14	10		3		6		6	
30	6		3		4		4	
125	0.6		0.1		0.6		0.1	
250	0.3		0.05		0.3		0.05	

Inrush current	NC	24 A max.
	NO	24 A max.

Note: 1. The above values are continuous currents.
2. Inductive loads have a power factor of 0.4 or higher (AC) or a time constant of 7 ms or lower (DC).
3. Lamp loads have an inrush current of 10 times the steady-state current.
4. Motor loads have an inrush current of 6 times the steady-state current.

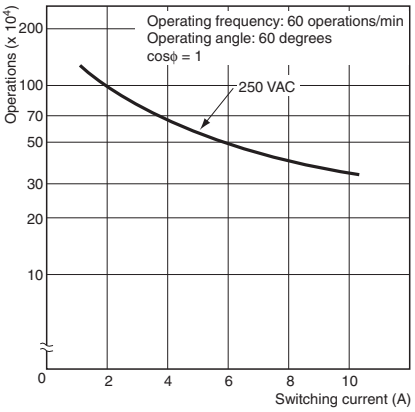
Characteristics

Degree of protection		IP60
Durability*	Mechanical	1,500,000 operations min.
	Electrical	300,000 operations min. (10 A at 250 VAC, resistive load)
Operating speed		Sealed plunger: 0.1 mm/s to 0.5 m/s Cam arm: 0.5 mm/s to 0.5 m/s Cam roller arm: 0.5 mm/s to 0.5 m/s
Allowable operating frequency	Mechanical	120 operations/min.
	Electrical	60 operations/min.
Rated frequency		50/60 Hz
Insulation resistance		100 MΩ min. (at 500 VDC)
Contact resistance		15 mΩ max. (initial value)
Dielectric strength	Between terminals of the same polarity	1,000 VAC at 50/60 Hz for 1 minute
	Between each terminal and non-current-carrying parts	1,500 VAC, 50/60 Hz for 1 minute
Vibration resistance		Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance		Destruction: 1,000 m/s^2 max., Malfunction: 300 m/s^2 max.
Ambient operating temperature		−10°C to 80°C (with no icing)
Ambient operating humidity		35% to 95%
Weight		Approx. 120 to 170 g

Note: The above values are initial values.
✻ The values are calculated at an operating temperature of 5°C to 35°C and an operating humidity of 40% to 70%.
Contact your OMRON sales representative for more detailed information on other operating environments.

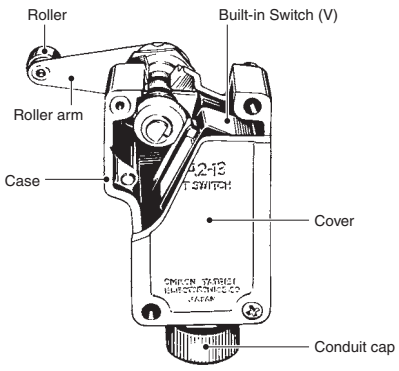
Engineering Data

Switch with Cam Roller Arm Electrical Durability Graph

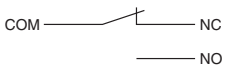


Nomenclature

Structure



Contact Form



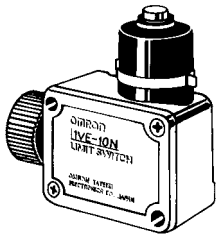
Dimensions/Operating Characteristics

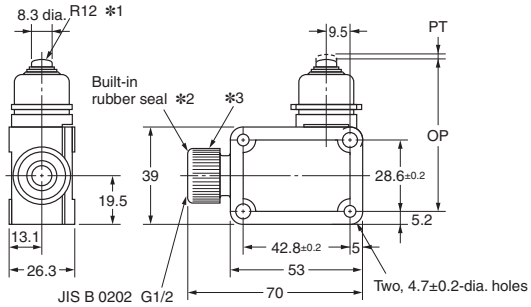
The □ in the model numbers is replaced by the operation direction code.

Refer to *Model Number Legend* on page 1 for details.

(Unit: mm)

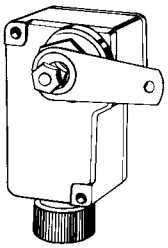
Sealed Plunger
1VE-10N

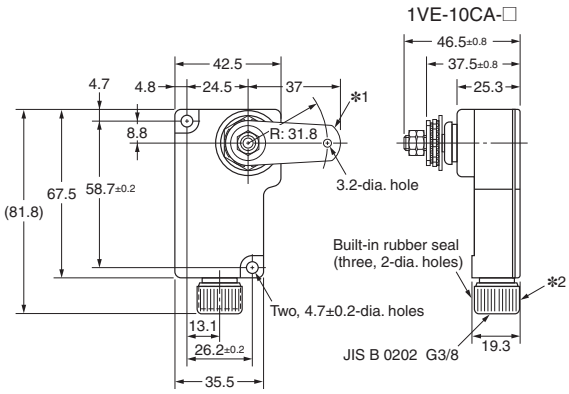




✻1. Stainless steel plunger.
✻2. Three,2-dia. holes (1VE-10N).
✻3. Conduit cap.

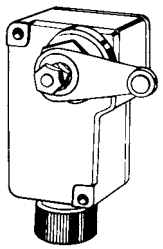
Cam Arm
1VE-10CA-□

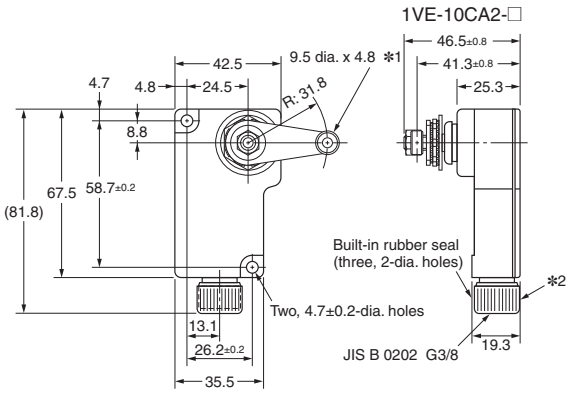




✻1. The stainless steel arm can be set to any position within 360°.
✻2. Conduit cap.

Cam Roller Arms
1VE-10CA2-□





✻1. The stainless steel roller arm can be set to any position within 360°.
✻2. Conduit cap.

Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

Operating characteristic	Model	1VE-10N	1VE-10CA-□	1VE-10CA2-□
Operating force	OF max.	22.26N	6.69N	6.69N
Release force	RF min.	2.23N	1.12N	1.12N
Pretravel	PT max.	2mm	30°	30°
Overtravel	OT min.	6.3mm	55°	55°
Movement differential	MD max.	0.8mm	10°	10°
Operating position	OP	61.1±0.8mm	---	---

Safety Precautions

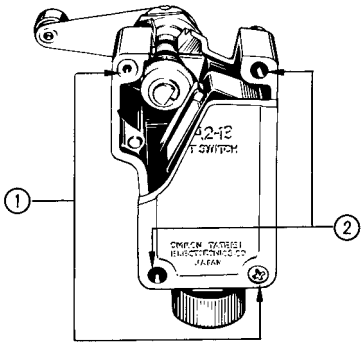
Refer to *Precautions for All Limit Switches* for general precautions.

Precautions for Correct Use

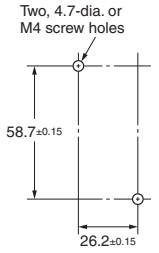
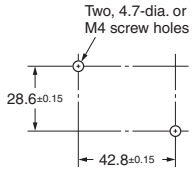
Tightening Torque

If screws are too loose, they can lead to an early malfunction of the Switch, so ensure that all screws are tightened using the correct torque.

No.	Type	Tightening torque
①	Cover mounting screws	0.49 to 0.59 N·m
②	Body clamping screws	1.18 to 1.37 N·m



Mounting Hole Dimensions

1VE-10CA-□ 1VE-10CA2-□	1VE-10N
	

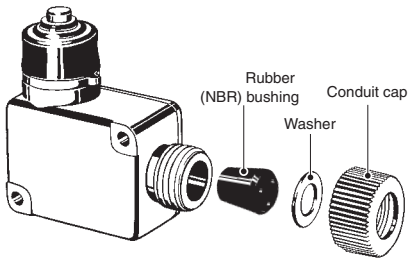
Operation

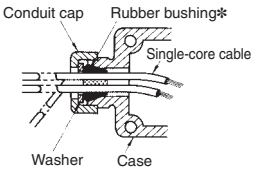
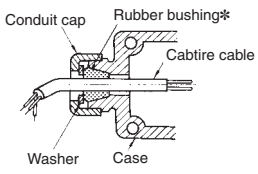
- The operating method, shape of cam or dog, operating frequency, and overtravel have a significant effect on the durability and precision of the Switch. Make sure that the shape of the cam is smooth enough.
- Check that OT has a sufficient margin.
  Set the overtravel to between 70% and 100% of the specified overtravel.
- Do not change the operating position by remodeling the actuator.

Wiring

- When routing wires into the conduit opening, be sure that cuttings and other foreign matter do not enter the Switch.
- Sealing materials may deteriorate when used outdoors or when exposed to cutting oil, solvents, or chemicals. Check this on actual equipment and, if deterioration is foreseen, consult your OMRON representative in advance.
- Refer to the following table for the cable connection method.

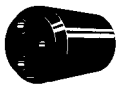
Conduit Part: 1VE-10N



Cable type Item	Single-core, vinyl cables	Vinyl cabtire cable
Cable outlet		
Accessories for Cable Connection	Rubber bushing, conduit cap, and washer	Rubber bushing, conduit cap, and washer
Connected cable specifications and dimensions	JIS C 3306 Finished OD: 2.6 to 3.4 mm	JIS C 3306 Finished OD: 6.6 to 7.6 mm
Resistance to water drops	High: The conduit cap can be tightened securely when connecting the cables without gaps resulting from twisting or other causes.	Good: Sealing is achieved by using a cable with diameter that is the same as or slightly larger than the inner diameter of the rubber bushing.

Note: The accessories for the single-core vinyl cables are included as standard features.
Ask your OMRON representative for details on vinyl cabtire cables (models that contain -C at the end).

✻Bushing Types

Model Type	1VE-10N	1VE-10CA-□ 1VE-10CA2-□	Remarks
For single-core, vinyl cables			Standard product There is no -C at the end of the model number.
For vinyl cabtire cable			There is a -C at the end of the model number.

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