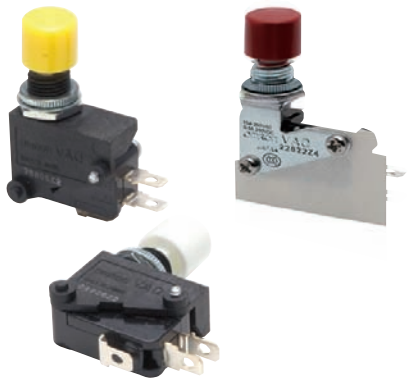
VAQ

CSM_VAQ_DS_E_4_9

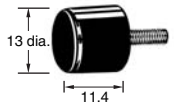
Built-in V-series Miniature Basic Switch for Compatibility with Business and Consumer Equipment

- Momentary operation and lock.
- Operation Unit available in six colors.
- Improved sense of touch with built-in miniature basic switch.



Refer to *Safety Precautions for All Pushbutton Switches/ Indicators* and *Safety Precautions* on page 4.

Ordering Information

Classification	Shape of Operation Unit	Output	Operation Unit color					
			Blue (-A)	Black (-B)	Green (-G)	Red (-R)	White (-W)	Yellow (-Y)
Momentary operation		1 *1	VAQ-4A-K	VAQ-4B-K	VAQ-4G-K	VAQ-4R-K	VAQ-4W-K	VAQ-4Y-K
		1 *2	VAQ-4A-L	VAQ-4B-L	VAQ-4G-L	VAQ-4R-L	VAQ-4W-L	VAQ-4Y-L
		2 *2	2VAQ-4A	2VAQ-4B	2VAQ-4G	2VAQ-4R	2VAQ-4W	2VAQ-4Y
Lock	*2	1 *2	—	VAQR-4B	VAQR-4G	VAQR-4R	VAQR-4W	—

*1. The Operation Unit can be inserted and removed.
*2. The Operation Unit is screwed in.

Specifications

Ratings

Item / Built-in Switch	Rated voltage (V)	Non-inductive load (A)		Inductive load (A)	
		Resistive load	Lamp load	Inductive load	Motor load
V-15-1A5	125 VAC	15	2	10	3
	250 VAC	15	2	10	3
	8 VDC	15	4	10	6
	30 VDC	10	4	10	4
	125 VDC	0.6	0.1	0.6	0.1
	250 VDC	0.3	0.05	0.3	0.05

Note: 1. The above values are for steady-state currents.
2. Inductive load: Power factor = 0.4 (AC); time constant = 7 ms (DC).
3. The lamp load has an inrush current of 10 times the steady-state current.
4. The motor load has an inrush current of 6 times the steady-state current.
5. The rated values above are for testing conducted under the following conditions.
(1) Ambient temperature: 20 ± 2°C.
(2) Ambient humidity: 65% ± 5%RH
(3) Operating frequency: 20 times/min.

Specifications

Characteristics

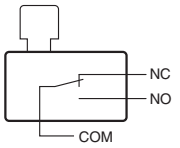
Operating frequency	**Mechanical**	120 operations/min
	Electrical	20 operations/min
Insulation resistance		100 MΩ min. (at 500 VDC)
Contact resistance		30 mΩ max. (initial value)
Dielectric strength	**Between terminals of same polarity**	1,000 VAC, 50/60 Hz for 1 minute
	Between current-carrying metal part and ground, and between each terminal and non-current-carrying metal part	1,500 VAC, 50/60 Hz for 1 minute
Vibration resistance	**Malfunction**	10 to 55 Hz, 1.5 mm double amplitude *
Shock resistance	**Destruction**	500 m/s² max.
	Malfunction	200 m/s² max. *
Durability	**Mechanical**	3,000,000 operations min.
	Electrical	100,000 operations min.
Weight		Approx. 12 to 40 g
Inrush current	**NC**	36 A max.
	NO	36 A max.
Ambient operating temperature		–25 to 80°C (with no icing or condensation)
Ambient operating humidity		35% to 85%RH
Ambient storage temperature		–25 to 80°C (with no icing or condensation)
Degree of protection		IP00
Electric shock protection class		Class II
PTI (proof tracking index)		175
Pollution degree		3 (IEC947-5-1)

* Malfunction within 1 ms

Operating Characteristics

Operating characteristics	Output	1	2
Operating force	**OF max.**	1.96 N	4.90 N
Releasing force	**RF min.**	0.39 N	0.78 N
Pretravel	**PT max.**	1.3 mm	1.6 mm

Contact Form

Name	Contact form
Double-throw contacts	

Approved Standard Ratings

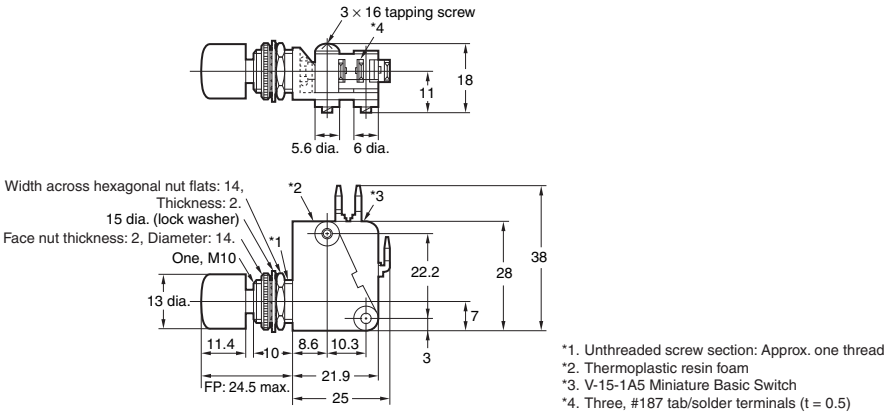
- The built-in V-15-1A5 Switch is UL and cUL certified.

Dimensions

Insert one of the following letters into the box (□) in the model number. Refer to Ordering Information for color symbols.
(Unit: mm)

VAQ-4□-K

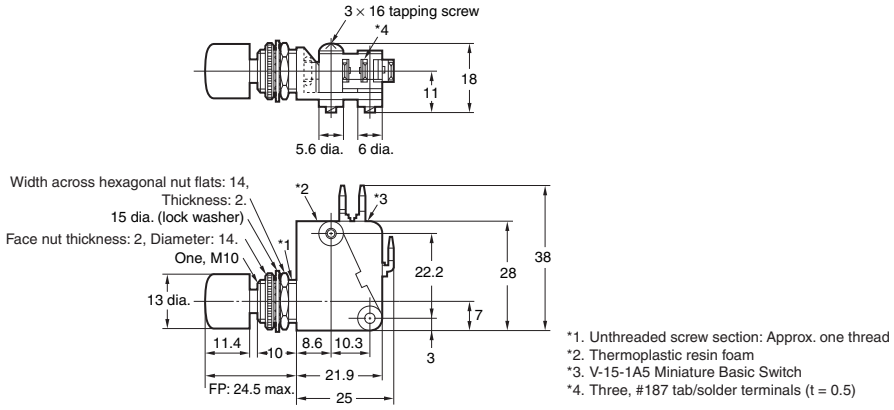
Note: The Operation Unit can be inserted and removed.



*1. Unthreaded screw section: Approx. one thread
*2. Thermoplastic resin foam
*3. V-15-1A5 Miniature Basic Switch
*4. Three, #187 tab/solder terminals (t = 0.5)

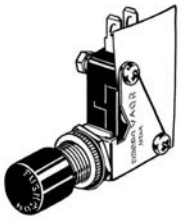
VAQ-4□-L

Note: The Operation Unit is mounted with M3 screws.

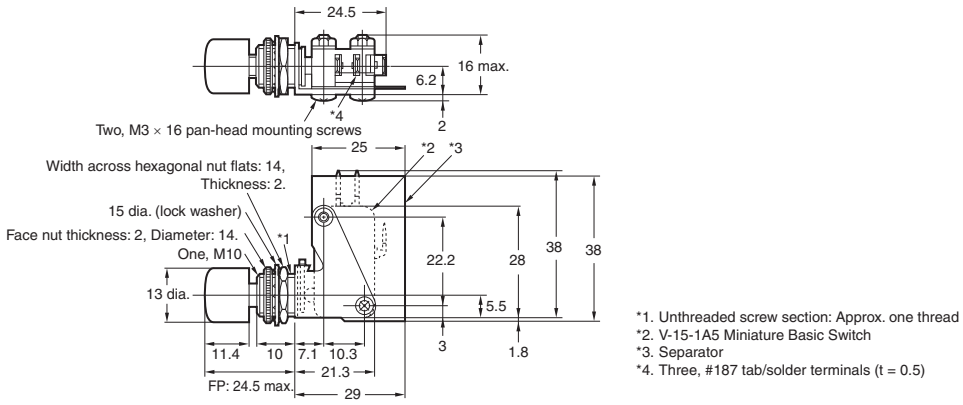


*1. Unthreaded screw section: Approx. one thread
*2. Thermoplastic resin foam
*3. V-15-1A5 Miniature Basic Switch
*4. Three, #187 tab/solder terminals (t = 0.5)

VAQR-4□

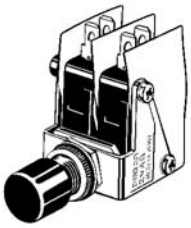


Note: The Operation Unit is mounted with M3 screws.

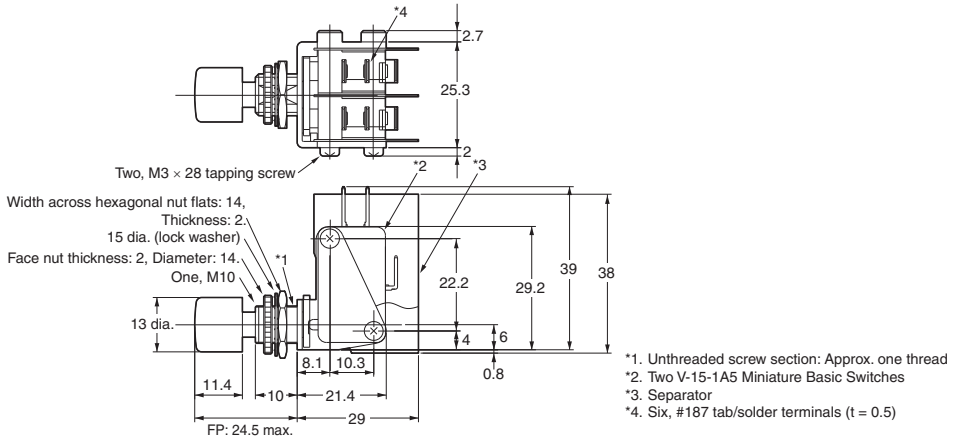


*1. Unthreaded screw section: Approx. one thread
*2. V-15-1A5 Miniature Basic Switch
*3. Separator
*4. Three, #187 tab/solder terminals (t = 0.5)

2VAQ-4□



Note: The Operation Unit is mounted with M3 screws.



*1. Unthreaded screw section: Approx. one thread
*2. Two V-15-1A5 Miniature Basic Switches
*3. Separator
*4. Six, #187 tab/solder terminals (t = 0.5)

Panel Cutout

(Unit: mm)

Note: Recommended panel thickness: 1 to 4 mm.

Safety Precautions

Refer to *Safety Precautions for All Pushbutton Switches/Indicators*.

Precautions for Correct Use

Operation Unit Mounting

VAQ-4□-K

- The Operation Unit can be inserted and removed.
- Mounting can be performed by inserting the slit of the Operation Unit into the mounting screw of the Switch.
- Mounting force: 39.2 N max.
- Removing strength: 22.5 N min.

VAQ-4□-L

- The Operation Unit is screwed in.
- Mounting can be performed by inserting the M3 screw of the Operation Unit into the flange of the Switch.
- Tighten the Operation Unit to a torque of 0.20 to 0.39 N·m.

2VAQ-4□

VAQR-4□

- The Operation Unit is screwed in.
- Mounting can be performed by inserting the M3 screw of the Operation Unit into the metal flange of the Switch.
- Tighten the Operation Unit to a torque of 0.20 to 0.39 N·m.

Mounting

- Tighten the nut to a torque of 0.49 to 0.78 N·m.
- Do not perform wiring with power supplied to the Switch. Do not touch the terminals or other charged parts of the Switch while power is being supplied. Doing so may result in electric shock.
- After wiring the Switch, ensure an appropriate insulating distance.

Wiring

- Twist the conductors through the terminal holes before soldering.
- To perform soldering on solder terminals, use a soldering iron with a tip temperature of 250 to 350°C and complete soldering within 5 seconds. Do not exert any external force on the solder during soldering and for one minute after completing soldering.
- For connection with tab terminals, gently insert receptacles for #187 tabs in the terminal push-out direction.
  The Switch does not have a ground terminal.

Operation Unit Models

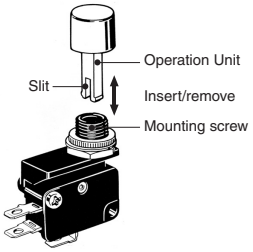
Method / Operation Unit color	Insert/remove	Screw-mounted
Blue (A)	VAQ-BA HEAD	VAQ-4A YO HEAD
Black (B)	VAQ-BB HEAD	VAQ-4B YO HEAD
Green (G)	VAQ-BG HEAD	VAQ-4G YO HEAD
Red (R)	VAQ-BR HEAD	VAQ-4R YO HEAD
White (W)	VAQ-BW HEAD	VAQ-4W YO HEAD
Yellow (Y)	VAQ-BY HEAD	VAQ-4Y YO HEAD

Panel Mounting and Operation Unit Mounting

Operation Unit Mounting

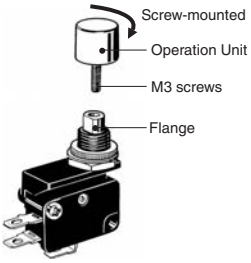
VAQ-4□-K

- The Operation Unit can be inserted and removed.
- Mounting can be performed by inserting the slit of the Operation Unit into the mounting screw of the Switch.
- Mounting force: 39.2 N max.
- Removing strength: 22.5 N min.



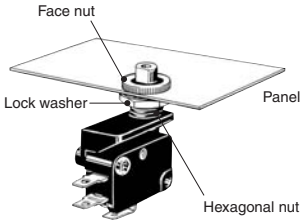
VAQ-4□-L, 2VAQ-4□, VAQR-4□

- The Operation Unit is screwed in.
- Mounting can be performed by inserting the M3 screw of the Operation Unit into the flange of the Switch.
- Tighten the Operation Unit to a torque of 0.20 to 0.39 N·m.



Panel Mounting

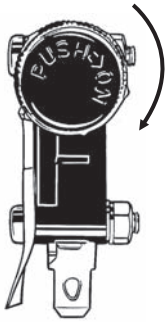
Tighten the hexagonal nut using a wrench while securing the Switch by holding it with your fingers.
(Hexagonal nut tightening torque: 0.49 to 0.78 N·m)



Locking Method

VAQR-□□

- To turn ON the lock, press the Operation Unit and turn it clockwise as indicated at the top of the Operation Unit.
- To release the lock, turn the Operation Unit counterclockwise.



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