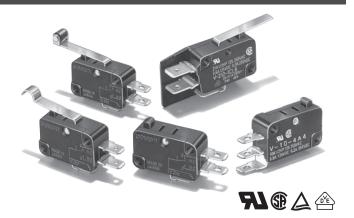
Snap Action Switch

General Purpose Snap Action Switch

- · Industry standard design with switching currents of 10A to 21A
- · Widely used for applications where long life expectancy and high reliability is required.
- Choose from a variety of levers, terminals and operating forces.
- Right and Left Barrier options are available for the V-21 and
- Heat resistant versions of the V-15 and V-10 are available.
- RoHS Compliant



Ordering Information

■ Model Number Legend



Ratings

21: 21 A at 250 VAC 16: 16 A at 250 VAC 15 A at 250 VAC 15. 11: 11 A at 250 VAC 10 A at 250 VAC 10:

Contact Gap

None: 1 mm (F gap) 0.5 mm (G gap)

Actuator

None: Pin plunger Short hinge lever 1: 2: Hinge lever 3: Long hinge lever

4: Simulated roller lever 5: Short hinge roller lever

6: Hinge roller lever

Contact Form

COM Terminal, Bottom position:

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

COM Terminal, Side position:

4: **SPDT** 5: SPST-NC 6: SPST-NO

Terminals

not found in this datasheet.

A: Solder terminals

Note: Consult Omron regarding nomenclature combinations and part numbers

C2: Quick-connect terminal (#187) Quick-connect terminal (#250) C:

6. Insulation Barrier

None: Without Barrier Right-hand barrier Left-hand barrier

(Barriers available for V-21 and V-16, only)

Maximum Operating Force

400 gf 6: 200 gf 5: 4: 100 gf

Note: These OF values are for the pin plunger models.

Special Purpose

None: Standard Heat resistive (V-15 and V-10, only)

Mounting Hole Size

None: 3.1 mm 2.9 mm

■ Available Combinations

| | | | | | Thermopl | astic case | | | Thermose | tting case | |
|-------------------|------------|----------------------|---------------------------------------|--------|----------|------------|--------|--------|----------|------------|--------|
| | | | Model | V-21 | V- | 16 | V-11 | V- | 15 | V- | 10 |
| | | | Rated Current | 21 A | 16 | A | 11 A | 15 | Α | 10 A | |
| COM | Insulation | Heat | OF | 400 gf | 400 gf | 200 gf | 100 gf | 400 gf | 200 gf | 200 gf | 100 gf |
| terminal position | Barrier | Resistance | Terminal Symbol | | | | | | | | |
| Bottom | No | Standard | Solder terminals (A) | | О | 0 | 0 | О | 0 | О | 0 |
| | | (80°C) | Quick-connect terminals (#187)(C2) | | 0 | 0 | 0 | 0 | 0 | 0 | O |
| | | | Quick-connect terminals (#250)(C) | 0 | 0 | O | О | О | O | 0 | O |
| | | Heat | Solder terminals (A) | | | | | 0 | О | 0 | 0 |
| | | resistant (150°C) | Quick-connect terminals (#187)(C2) | | | | | О | О | 0 | О |
| | | | Quick-connect terminals (#250)(C) | | | | | | | | |
| | Yes | Standard | Solder terminals (A) | | 0 | 0 | | | | | |
| | | (80°C) | Quick-connect terminals (#187)(C2) | | 0 | 0 | | | | | |
| | | | Quick-connect terminals (#250)(C) | О | 0 | 0 | | | | | |
| Side | No | Standard | Solder terminals (A) | | | | | 0 | О | 0 | О |
| | | (80°C) | Quick-connect terminals (#187)(C2) | | | | | О | О | О | О |
| | | | Quick-connect terminals (#250)(C) | О | | | | | | | |

Note: 1. O: Available model.

Consult OMRON for specific models with standard approval.

■ List of Models

Thermoplastic Case

21 A (OF: 400 gf)

| | | | | Without barrier | Right-hand barrier | Left-hand barrier |
|--------------------------------|--------------|----------------|--------------------------|-----------------|--------------------|-------------------|
| Common terminal position | Contact form | Terminal style | Actuator | | | |
| Bottom | SPDT | Quick-connect | | V-21-1C6 | V-21-1CR6 | V-21-1CL6 |
| | SPST-NC | (#250) (C) | Pin plunger | V-21-2C6 | V-21-2CR6 | V-21-2CL6 |
| | SPST-NO |] | | V-21-3C6 | V-21-3CR6 | V-21-3CL6 |
| | SPDT | | Short hinge lever | V-211-1C6 | V-211-1CR6 | V-211-1CL6 |
| | | | Hinge lever | V-212-1C6 | V-212-1CR6 | V-212-1C6 |
| | | | Long hinge lever | V-213-1C6 | V-213-1CR6 | V-213-1CL6 |
| | | | Simulated roller lever | V-214-1C6 | V-214-1CR6 | V-214-1CL6 |
| | | | Short hinge roller lever | V-215-1C6 | V-215-1CR6 | V-215-1CL6 |
| | | | Hinge roller lever | V-216-1C6 | V-216-1CR6 | V-216-1CL6 |

Note: 1. Add "G" to the part number in the appropriate location to obtain a 0.5 mm contact gap. Add "-K" to the part number in the appropriate location to obtain 2.9 mm mounting holes. Example: V-21 G2-1C6-K

2. Not all combinations are available. Consult Omron regarding nomenclature combinations and part numbers not found in this datasheet.

16 A (OF: 200 gf)

| | | | | Without barrier | Right-hand barrier | Left-hand barrier |
|--------------------------|--------------|-------------------|--------------------------|-----------------|--------------------|-------------------|
| Common terminal position | Contact form | Terminal style | Actuator | | | |
| Bottom | SPDT | A | Pin plunger | V-16-1A5 | V-16-1AR5 | V-16-1AL5 |
| | | C2 | . 3 | V-16-1C25 | V-16-1C2R5 | V-16-1C2L5 |
| | | С | | V-16-1C5 | | |
| | SPST-NC | Α | | V-16-2A5 | V-16-2AR5 | V-16-2AL5 |
| | | C2 | | V-16-2C25 | V-16-2C2R5 | V-16-2C2L5 |
| | | С | | V-16-2C5 | | |
| | SPST-NO | A | | V-16-3A5 | V-16-3AR5 | V-16-3AL5 |
| | | C2 | | V-16-3C25 | V-16-3C2R5 | V-16-3C2L5 |
| | | С | | V-16-3C5 | | |
| | SPDT A S | Short hinge lever | V-161-1A5 | V-161-1AR5 | V-161-1AL5 | |
| | | C2 | | V-161-1C25 | V-161-1C2R5 | V-161-1C2L5 |
| | | С | | V-161-1C5 | | |
| | | A | Tillige level | V-162-1A5 | V-162-1AR5 | V-162-1AL5 |
| | | C2 | | V-162-1C25 | V-162-1C2R5 | V-162-1C2L5 |
| | | С | | V-162-1C5 | | |
| | | A | Long hinge lever | V-163-1A5 | V-163-1AR5 | V-163-1AL5 |
| | | C2 | | V-163-1C25 | V-163-1C2R5 | V-163-1C2L5 |
| | | С | | V-163-1C5 | | |
| | | Α | Simulated roller lever | V-164-1A5 | V-164-1AR5 | V-164-1AL5 |
| | | C2 | <u> </u> | V-164-1C25 | V-164-1C2R5 | V-164-1C2L5 |
| | | С | | V-164-1C5 | | |
| | | A | Short hinge roller lever | V-165-1A5 | V-165-1AR5 | V-165-1AL5 |
| | | C2 | | V-165-1C25 | V-165-1C2R5 | V-165-1C2L5 |
| | | С | <u> </u> | V-165-1C5 | | |
| | | Α | Hinge roller lever | V-166-1A5 | V-166-1AR5 | V-166-1AL5 |
| | | C2 | | V-166-1C25 | V-166-1C2R5 | V-166-1C2L5 |
| | | С | | V-166-1C5 | | |

11 A (OF: 100 gf)

| Common terminal position | Contact form | Terminal style | Actuator | Without barrier |
|--------------------------------|--------------|----------------|--------------------------|-----------------|
| Bottom | SPDT | A | Pin plunger | V-11-1A4 |
| | | C2 | | V-11-1C24 |
| | | С | | V-11-1C4 |
| | | A | Short hinge lever | V-111-1A4 |
| | | C2 | | V-111-1C24 |
| | | С | | V-111-1C4 |
| | | A | Hinge lever | V-112-1A4 |
| | | C2 | | V-112-1C24 |
| | | С | | V-112-1C4 |
| | | Α | Long hinge lever | V-113-1A4 |
| | | C2 | | V-113-1C24 |
| | | С | | V-113-1C4 |
| | | A | Simulated roller lever | V-114-1A4 |
| | | C2 | | V-114-1C24 |
| | | С | | V-114-1C4 |
| | | A | Short hinge roller lever | V-115-1A4 |
| | | C2 | | V-115-1C24 |
| | | С | | V-115-1C4 |
| | | A | Hinge roller lever | V-116-1A4 |
| | | C2 | | V-116-1C24 |
| | | С | <u> </u> | V-116-1C4 |

Note: 1. Add "G" to the part number in the appropriate location to obtain a 0.5 mm contact gap. Add "-K" to the part number in the appropriate location to obtain 2.9 mm mounting holes. Examples: 1) V-16*G*3-1C25-*K* 2) V-11*G*-1A4-*K*

2. Not all combinations are available. Consult Omron regarding nomenclature combinations and part numbers not found in this datasheet.

Thermosetting Case

Standard models - 15 A / 10 A

| Common | Contact | Terminal style | Actuator | 15 A | 10 A | | |
|-------------------|---------|----------------|--------------------------|---------------|---------------|---------------|--|
| terminal position | form | | | 200 gf | 200 gf | 100 gf | |
| Bottom | SPDT | А | Pin plunger■ | V-15G-1A5-K | V-10G-1A5-K | V-10G-1A4-K | |
| | | C2 | , , , | V-15G-1C25-K | V-10G-1C25-K | V-10G-1C24-K | |
| | | С | | V-15G-1C5-K | _ | _ | |
| | SPST-NC | Α | | V-15G-2A5-K | V-10G-2A5-K | V-10G-2A4-K | |
| | | C2 | | V-15G-2C25-K | V-10G-2C25-K | V-10G-2C24-K | |
| | SPST-NO | Α | | V-15G-3A5-K | V-10G-3A5-K | V-10G-3A4-K | |
| | | C2 | | V-15G-3C25-K | V-10G-3C25-K | V-10G-3C24-K | |
| | | С | | V-15G-3C5-K | _ | _ | |
| Side | SPDT | Α | | V-15G-4A5-K | V-10G-4A5-K | V-10G-4A4-K | |
| | SPST-NC | 1 | | V-15G-5A5-K | V-10G-5A5-K | V-10G-5A4-K | |
| | SPST-NO | 1 | | V-15G-6A5-K | V-10G-6A5-K | V-10G-6A4-K | |
| Bottom | SPDT | Α | Short hinge lever | V-15G1-1A5-K | V-10G1-1A5-K | V-10G1-1A4-K | |
| | | C2 | | V-15G1-1C25-K | V-10G1-1C25-K | V-10G1-1C24-K | |
| | | Α | Hinge lever | V-15G2-1A5-K | V-10G2-1A5-K | V-10G2-1A4-K | |
| | | C2 | Long hinge lever | V-15G2-1C25-K | V-10G2-1C25-K | V-10G2-1C24-K | |
| | | Α | | V-15G3-1A5-K | V-10G3-1A5-K | V-10G3-1A4-K | |
| | | C2 | <u> </u> | V-15G3-1C25-K | V-10G3-1C25-K | V-10G3-1C24-K | |
| | | Α | Simulated roller lever | V-15G4-1A5-K | V-10G4-1A5-K | V-10G4-1A4-K | |
| | | C2 | <u> </u> | V-15G4-1C25-K | V-10G4-1C25-K | V-10G4-1C24-K | |
| | | Α | Short hinge roller lever | V-15G5-1A5-K | V-10G5-1A5-K | V-10G5-1A4-K | |
| | | C2 | onor mingeroner level | V-15G5-1C25-K | V-10G5-1C25-K | V-10G5-1C24-K | |
| | | Α | Hinge roller lever | V-15G6-1A5-K | V-10G6-1A5-K | V-10G6-1A4-K | |
| | | C2 | | V-15G6-1C25-K | _ | V-10G6-1C24-K | |

Note: 1. For SPST-NC and SPST-NO with levers consult Omron.

Heat Resistant Models (Up to 150°C) - 15 A / 10A

| Common | Contact | Terminal style | Actuator | 15 A | 10 A |
|-------------------|---------|------------------|--------------------------|-------------|-------------|
| terminal position | form | | | 200 gf | 100 gf |
| Bottom | SPDT | Solder Terminals | Pin plunger | V-15-1A5-T | V-10-1A4-T |
| | | (A) | Short hinge lever | V-151-1A5-T | V-101-1A4-T |
| | | | Hinge lever | V-152-1A5-T | V-102-1A4-T |
| | | | Long hinge lever | V-153-1A5-T | V-103-1A4-T |
| | | | Simulated roller lever | V-154-1A5-T | V-104-1A4-T |
| | | | Short hinge roller lever | V-155-1A5-T | V-105-1A4-T |
| | | | Hinge roller lever | V-156-1A5-T | V-106-1A4-T |
| | | | | | |

Note: 1. Add "G" to the part number in the appropriate location to obtain a 0.5 mm contact gap. Add "-K" to the part number in the appropriate location to obtain 2.9 mm mounting holes. Add "C2" to the part number in the appropriate location to obtain versions with #187 quickconnect terminals. Example: 1) V-15G1-1C25-T-K

2. Not all combinations are available. Consult Omron regarding nomenclature combinations and part numbers not found in this datasheet.

^{2.} Not all combinations are available. Consult Omron regarding nomenclature combinations and part numbers not found in this datasheet.

Specifications

■ Ratings (reference values)

| Туре | Rated voltage | | Non-indu | ctive load | | | Inducti | ve load | |
|--------------|---------------|---------|---|------------|-------|---------|---------|---------|--------|
| | İ | Resisti | ve load | Lamp | oload | Inducti | ve load | Moto | r load |
| | | NC | NO | NC | NO | NC | NO | NC | NO |
| V-21 | 250 VAC | 21 | A | 3 | Α | 12 | 2 A | 4 | A |
| | 8 VDC | 21 | Α | 5 A | | 12 | 2 A | 7 A | |
| | 30 VDC | 14 | A | 5 | Α | 12 | 2 A | 5 | A |
| | 125 VDC | 0.6 A | | 0. | 1 A | 0.0 | 6 A | 0. | 1 A |
| | 250 VDC | 0.3 | 3 A | 0.0 | 5 A | 0.3 | 3 A | 0.0 |)5 A |
| V-16 | 250 VAC | 16 | S A | 2 | Α | 10 |) A | 3 | A |
| V-16 V-15 | 8 VDC | 16 A | | 4 | Α | 10 |) A | 6 | A |
| | 30 VDC | 10 A | | 4 | Α | 10 |) A | 4 | - A |
| | 125 VDC | 0.6 | NO NC NO NC NO NC 1 A 3 A 12 A 12 A 14 A 5 A 12 A 14 A 14 A 5 A 12 A 14 A 15 A 12 A 14 A 16 A | 0. | 1 A | | | | |
| | 250 VDC | 0.3 | 3 A | 0.0 | 5 A | 0.3 | 3 A | 0.0 |)5 A |
| V-15 | 250 VAC | 15 A | | 2 A | | 10 |) A | 3 | i A |
| | 8 VDC | 15 A | | 4 A | | 10 |) A | 6 | i A |
| | 30 VDC | 10 | Α | 4 A | | 10 A | | 4 A | |
| | 125 VDC | 0.6 | 6 A | 0.1 A | | 0.6 A | | 0.1 A | |
| | 250 VDC | 0.3 | 3 A | 0.0 | 5 A | 0.3 | 3 A | 0.0 |)5 A |
| V-11 | 250 VAC | 11 | Α | 1.9 | 5 A | 6 | Α | 2 | : A |
| | 8 VDC | 11 | Α | 3 | Α | 6 A | | 3 A | |
| | 30 VDC | 6 | Α | 3 | Α | 6 | Α | 3 | i A |
| | 125 VDC | 0.6 | 6 A | 0. | 1 A | 0.0 | 6 A | 0. | 1 A |
| | 250 VDC | 0.3 | 3 A | 0.0 | 5 A | 0.3 | 3 A | 0.0 |)5 A |
| V-10 | 250 VAC | 10 A | | 1.9 | 5 A | 6 | Α | 2 | : A |
| | 8 VDC | 10 A | | | | 6 | Α | 3 | Б A |
| | 30 VDC | 6 A | | 3 A | | 6 A | | 3 A | |
| | 125 VDC | 0.6 A | | | | 0.6 A | | 0.1 A | |
| | 250 VDC | 0.3 A | | - | | 0.3 | 3 A | 0.05 A | |

Note: 1. The above current values are the normal current values of models with a contact gap of 1 mm (gap F), which vary with the normal current values of models with a contact gap of 0.5 mm (gap G).

- 2. Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
- 3. Lamp load has an inrush current of 10 times the steady-state current.
- 4. Motor load has an inrush current of 6 times the steady-state current.
- 5. The ratings values apply under the following test conditions: Ambient temperature: 20±2°C, Ambient humidity: 65±5%, Operating frequency: 30 operations/min

■ Approved Standards

UL1054 (File No. E41515)

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

| Rated voltage | V-21 | V-16 | V-15 | V-11 | V-10 |
|---------------|--------------|---------------|----------------|---------------|--------------|
| 125 VAC | 21 A. 1/2 HP | 16 A, 1/2 HP | 15 A. 1/2 HP | 11 A, 1/3 HP | 10 A, 1/3 HP |
| 250 VAC | 217, 1/2111 | 10 A, 1/2 111 | 15 A, 1/2 I II | 11 A, 1/3 111 | 10 A, 1/3 TH |
| 125 VDC | | | 0.6 A | | |
| 250 VDC | | | 0.3 A | | |

EN 61058-1 (File No. 129608, VDE approval)

| Rated voltage | V-21 | V-16 | V-11 |
|---------------|----------|----------|----------|
| 250 VAC | 20 (4) A | 16 (4) A | 11 (3) A |

Testing conditions: 5E4 (50,000 operations), T105 (0°C to 105°C)

EN 61058-1 (File No. T9451451, TÜV Rheinland approval)

| Rated voltage | V-15 | V-10 |
|---------------|------|------|
| 250 VAC | 15 A | 10 A |
| 250 VDC | 0.3 | 3 A |

Testing conditions: 5E4 (50,000 operations), T85 (0°C to 85°C)

■ Characteristics

| Operating speed | 0.1 mm to 1 m/s (plunger models) | | | | | |
|---|--|-------------------------------------|--|--|--|--|
| Operating frequency | Mechanical: 600 operations/minute, max. | | | | | |
| | Electrical: 30 operations/minute, max. | | | | | |
| Insulation resistance | 100 M Ω min. (at 500 VDC) | | | | | |
| Contact resistance | 15 m Ω max. | | | | | |
| Dielectric strength (see note 2) | 1,000 VAC, 50/60 Hz for 1 min between terminals of the same polarity | | | | | |
| | V-21, V-16 and V-11: 2,000 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal parts | | | | | |
| | V-15 and V-10: 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and betweach 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: 1,000 m/s ² (approx. 100G) max. | | | | | |
| | Malfunction: V-21/V-16/V-15: 300 m/s² (approx. 30G) max. | | | | | |
| | V-11/V10: 200 m/s ² (approx. 20G) max. | | | | | |
| Life expectancy | Mechanical: 50,000,000 operations min. (60 operations/minute) | | | | | |
| | Electrical: V-21/V-16/V-15: 100,000 operations min. (30 operations/minute) | | | | | |
| | (V-15 heat resistive: 20,000 operations min. (30 ops/minute)) | , | | | | |
| | V-11/V-10: 300,000 operations min. (30 operations/minute) | | | | | |
| | (V-10 heat resistive: 50,000 operations min. (30 ops/minute)) |) | | | | |
| Degree of protection | IEC IP40 | | | | | |
| Degree of protection against electric shock | Class I | | | | | |
| Proof tracking index (PTI) | 175 | | | | | |
| Ambient operating temperature | -25°C to 80°C (at 60% RH max.) with no icing | 80°C (at 60% RH max.) with no icing | | | | |
| | .25°C to 150°C for heat resistive models (at 60% RH max.) with no icing. | | | | | |
| Ambient operating humidity | 85% max. (for 5°C to 35°C) | | | | | |
| Weight | Approx. 6.2 g (plunger models) | | | | | |

- Note: 1. Data shown are of initial value.
 - 2. The dielectric strength shown is measured using a separator between the switch and metal mounting plate.
 - 3. For pin plunger models, the above values apply for use at both the free position and total travel position. For lever models, they apply at the total travel position.
 - 4. For testing conditions, contact your OMRON sales representative.

■ Contact Specifications

| Item | | V-21 | V-16 | V-15 | V-11 | V-10 | | |
|-------------------------|-------------------------|--|--------------------|-----------|------|------|--|--|
| Contact | Specification | Rivet | | | | | | |
| Material | | | Silver alloy Silve | | | | | |
| | Gap (standard value) | 1 mm (F gap type) or 0.5 mm (G gap type) | | | | | | |
| Inrush current | NC | 50 A max. | 40 A max. | 36 A max. | 24.4 | may | | |
| | NO | 50 A max. 40 A max. 36 A max. 24 A max. | | | | | | |
| Minimum applicable load | | 160 mA at 5 VDC | | | | | | |

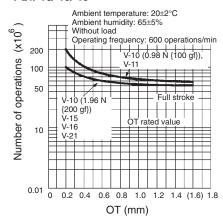
Note: Minimum applicable loads are indicated by N standard reference values. This value represents the failure rate at a 60% (λ_{60}) reliability level (JIS C5003). The equation λ_{60} =0.5 x 10⁻⁶ / operations indicates that a failure rate of 1/2,000,000 operations can be expected at a reliability level of 60%

Engineering Data

■ Mechanical service life

(Pin plunger models)

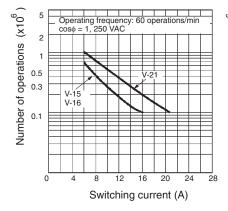
V-21/-16/-15/-10



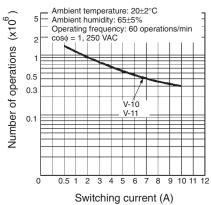
■ Electrical service life

(Pin plunger models)

V-21/-16/-15



V-11/-10



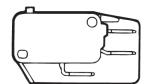
■ Contact Form

| Common | Contact form | | |
|-------------------|-----------------|----------|----------|
| terminal position | SPDT | SPST-NC* | SPST-NO* |
| Bottom type | | | |
| | NC OM NO | NC | NO |
| Side type | | | |
| | NC NO COM | NC COM | NO COM |

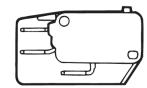
The SPST-NC and SPST-NO contact form types listed in the ordering information tables are for Pin Plunger models only. For information concerning lever models consult Omron.

■ Barrier direction (V-21 and V-16)

Right-hand Barrier

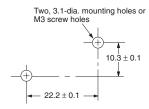


Left-hand Barrier



■ Mounting Holes

All switches may be panel mounted using M3 mounting screws with plane washers or spring washers to securely mount the switch. Tighten the screws to a torque of 0.39 to 0.59 N·m.



Dimensions

■ Terminals

- Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ± 0.4 mm applies to all dimensions
 - 2. The following table is for the SPDT contact specifications. Two terminals will be available for SPST-NO or SPST-NC contact specifications. For terminal positions, refer to the above Contact Form
 - 3. Right-angle PCB terminal type is available with some models (not shown). Drawings will be provided if requested.
 - D5: Pins at right angles, to the right
 - D6: Pins at right angle, to the left

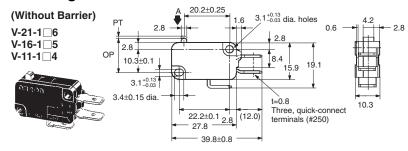
| Terminal type | Solder Terminal (A) | Quick-connect Terminal (#187) (C2) | Quick-connect Terminal (#250) (C) |
|------------------------|---|---|---|
| COM bottom position | (5.5) (6.5) t = 0.5 (10) Three, solder terminals | (5.5) (6.5) t = 0.5 (10) Three, quick-connect terminals (#187) | t = 0.8 (12.0) Three, quick-connect terminals (#250) |
| COM side position | (5.5) (6.5) 2.4 | (5.5) (6.5) (2.4 | (4.9) |
| Terminal dimensions | 2.4 dia. 1.6 dia. Note: Indicates the length to the center of the 1.6-dia. holes | 6.35 3.2 4.75±0.1 1.6-dia. terminal hole | 3.95 -9 6.35±0.1 1.65-dia. terminal hole |

■ Dimensions and Operating Characteristics

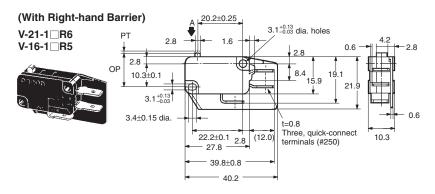
Thermoplastic Case Models

- Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions
 - 2. The following illustrations and drawings are for quick-connect terminals (#250) (terminals C). V models also incorporate terminals A and C2, which are omitted from the following drawings. Refer to Terminals section for the dimensions of these terminals.
 - 3. The \square in the model number is for the terminal code.
 - 4. The illustrations for V-21, V-16 and V-11 show a hole size of 3.1 mm. V-21, V-16 and V-11 models with a suffix "K" have a hole size of 2.9 mm.
 - **5.** The operating characteristics are for operation in the A direction ().

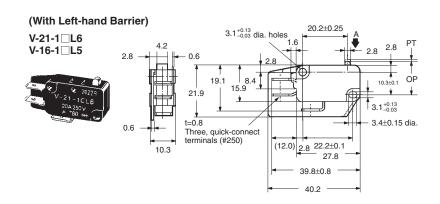
Pin Plunger Models



| Characteristics | V-21-1□6 | V-16-1□5 | |
|-----------------|---------------|----------|--|
| OF max. | 400 gf | 200 gf | |
| RF min. | 80 gf | 50 gf | |
| PT max. | 1.2 mm | | |
| OT min. | 1.0 mm | | |
| MD max. | 0.4 mm | | |
| ОР | 14.7 ± 0.4 mm | | |



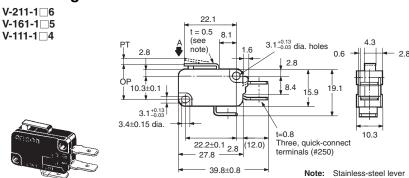
| Characteristics | V-11-1□4 | V-11-1□5 | |
|-----------------|---------------|----------|--|
| OF max. | 100 gf | 200 gf | |
| RF min. | 20 gf | 50 gf | |
| PT max. | 1.2 mm | | |
| OT min. | 1.0 mm | | |
| MD max. | 0.4 mm | | |
| ОР | 14.7 ± 0.4 mm | | |





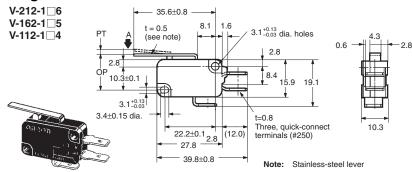
- Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions
 - 2. The following illustrations and drawings are for quick-connect terminals (#250) (terminals C). V models also incorporate terminals A and C2, which are omitted from the following drawings. Refer to Terminals section for the dimensions of these terminals.
 - **3.** The \square in the model number is for the terminal code.
 - 4. The illustrations for V-21, V-16 and V-11 show a hole size of 3.1 mm. V-21, V-16 and V-11 models with a suffix "K" have a hole size of 2.9 mm.
 - **5.** The operating characteristics are for operation in the A direction (\blacksquare).

Short Hinge Lever Models



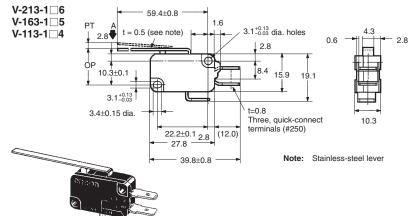
| Characteristics | V-211-1□6 | V-161-1□5 | V-111-1□4 |
|-----------------|---------------|-----------|-----------|
| OF max. | 400 gf | 200 gf | 100 gf |
| RF min. | 50 gf | 50 gf | 15 gf |
| PT max. | 1.6 mm | | |
| OT min. | 0.8 mm | | |
| MD max. | 0.6 mm | | |
| OP | 15.2 ± 0.5 mm | | |

Hinge Lever Models



| Characteristics | V-212-1□6 | V-162-1□5 | V-112-1□4 |
|-----------------|---------------|-----------|-----------|
| OF max. | 250 gf | 125 gf | 60 gf |
| RF min. | 25 gf | 14 gf | 6 gf |
| PT max. | 4.0 mm | | |
| OT min. | 1.6 mm | | |
| MD max. | 1.5 mm | | |
| OP | 15.2 ± 1.2 mm | | |

Long Hinge Lever Models

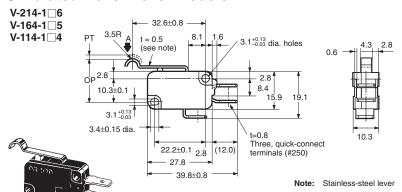


| Characteristics | V-213-1□6 | V-163-1□5 | V-113-1□4 |
|-----------------|---------------|-----------|---------------|
| OF max. | 130 gf | 70 gf | 35 gf |
| RF min. | 12 gf | 6 gf | |
| PT max. | 9.0 mm | | |
| OT min. | 2.0 mm 3.2 mm | | |
| MD max. | 2.8 mm | | |
| OP | 15.2 ± 2.6 m | | 15.2 ± 2.6 mm |



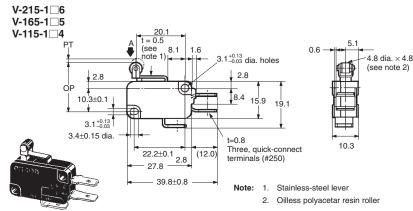
- Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions
 - 2. The following illustrations and drawings are for quick-connect terminals (#250) (terminals C). V models also incorporate terminals A and C2, which are omitted from the following drawings. Refer to Terminals section for the dimensions of these terminals.
 - **3.** The \square in the model number is for the terminal code.
 - 4. The illustrations for V-21, V-16 and V-11 show a hole size of 3.1 mm. V-21, V-16 and V-11 models with a suffix "K" have a hole size of 2.9 mm.
 - 5. The operating characteristics are for operation in the A direction (\blacksquare).

Simulated Roller Lever Models



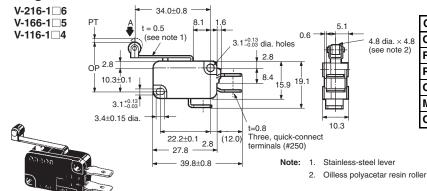
| Characteristics | V-214-1□6 | V-164-1□5 | V-114-1□4 |
|-----------------|---------------|-----------|-----------|
| OF max. | 250 gf | 125 gf | 60 gf |
| RF min. | 25 gf | 14 gf | 6 gf |
| PT max. | 4.0 mm | | |
| OT min. | 1.6 mm | | |
| MD max. | 1.5 mm | | |
| OP | 18.7 ± 1.2 mm | | |

Short Hinge Roller Lever Models



| Characteristics | V-215-1□6 | V-165-1□5 | V-115-1□4 |
|-----------------|---------------|-----------|-----------|
| OF max. | 480 gf | 240 gf | 120 gf |
| RF min. | 50 gf | 50 gf | 15 gf |
| PT max. | 1.6 mm | | |
| OT min. | 0.8 mm | | |
| MD max. | 0.6 mm | | |
| OP | 20.7 ± 0.6 mm | | n |

Hinge Roller Lever Models

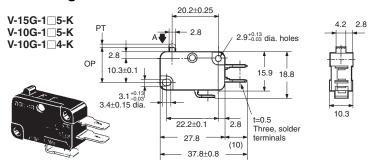


| Characteristics | V-216-1□6 | V-166-1□5 | V-116-1□4 |
|-----------------|---------------|-----------|-----------|
| OF max. | 250 gf | 125 gf | 60 gf |
| RF min. | 25 gf | 14 gf | 6 gf |
| PT max. | 4.0 mm | | |
| OT min. | 1.6 mm | | |
| MD max. | 1.5 mm | | |
| OP | 20.7 ± 1.2 mm | | |

Thermosetting Case Models

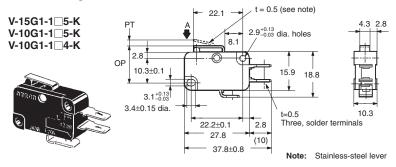
- Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions
 - 2. The following illustrations are for quick-connect terminals (#250) (terminals C). Refer to Terminals section for the dimensions of other terminals.
 - **3.** The \square in the model number is for the terminal code.
 - 4. The illustrations show models with a suffix "K", which have a hole size of 2.9 mm. Omit the "K" to obtain models with hole size = 3.1 mm.
 - 5. The operating characteristics are for operation in the A direction (\blacksquare).

Pin Plunger Models



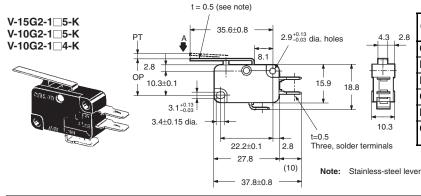
| Characteristics | V-15G-1□5-K V-10G-1□5-K | V-10G-1□4-K | |
|-----------------|----------------------------|-------------|--|
| OF max. | 200 gf | 100 gf | |
| RF min. | 50 gf | 20 gf | |
| PT max. | 1.2 mm | | |
| OT min. | 1.3 mm | | |
| MD max. | 0.3 mm | | |
| OP | 14.7 ± 0.4 mm | | |

Short Hinge Lever Models



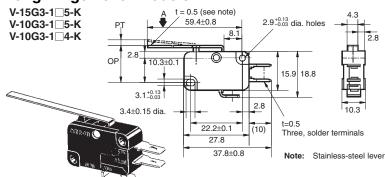
| Characteristics | V-15G1-1□5-K V-10G1-1□5-K | V-10G1-1□4-K | |
|-----------------|------------------------------|--------------|--|
| OF max. | 200 gf | 100 gf | |
| RF min. | 50 gf | 15 gf | |
| PT max. | 1.5 mm | | |
| OT min. | 1.0 mm | | |
| MD max. | 0.5 mm | | |
| OP | 15.2 ± 0.5 mm | | |

Hinge Lever Models



| Characteristics | V-15G2-1□5-K V-10G2-1□5-K | V-10G2-1□4-K |
|-----------------|------------------------------|---------------|
| OF max. | 125 gf | 60 gf |
| RF min. | 14 gf | 6 gf |
| PT max. | 3.3 mm | |
| OT min. | 2.3 mm | |
| MD max. | 0.8 mm | |
| OP | 15.2 ^{+2.6} mm | 15.2 ± 1.2 mm |

Long Hinge Lever Models

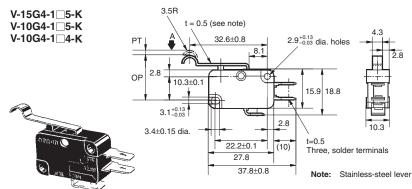


| Characteristics | V-15G3-1□5-K V-10G3-1□5-K | V-10G3-1□4-K |
|-----------------|------------------------------|--------------|
| OF max. | 70 gf | 35 gf |
| RF min. | 6 gf | gf |
| PT max. | 9.0 mm | 7.6 mm |
| OT min. | 3.0 mm | 3.2 mm |
| MD max. | 2.0 mm | |
| OP | 15.2 ± 2.6 mm | |



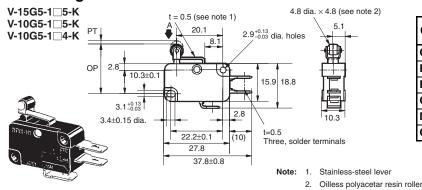
- Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions
 - 2. The following illustrations are for quick-connect terminals (#250) (terminals C). Refer to Terminals section for the dimensions of other terminals.
 - **3.** The \square in the model number is for the terminal code.
 - 4. The illustrations show models with a suffix "K", which have a hole size of 2.9 mm. Omit the "K" to obtain models with hole size = 3.1 mm.
 - 5. The operating characteristics are for operation in the A direction (\blacksquare).

Simulated Roller Lever Models



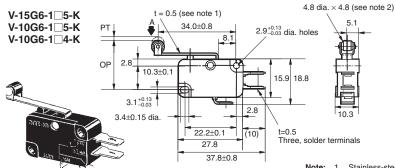
| Characteristics | V-15G4-1□5-K V-10G4-1□5-K | V-10G4-1□4-K |
|-----------------|------------------------------|--------------|
| OF max. | 125 gf | 60 gf |
| RF min. | 14 gf | 6 gf |
| PT max. | 3.3 mm | |
| OT min. | 2.3 mm | |
| MD max. | 0.8 mm | |
| OP | 18.7 ± 1.2 mm | |

Short Hinge Roller Lever Models



| Characteristics | V-15G5-1□5-K V-10G5-1□5-K | V-10G5-1□4-K |
|-----------------|------------------------------|--------------|
| OF max. | 240 gf | 120 gf |
| RF min. | 50 gf | 15 gf |
| PT max. | 1.5 mm | |
| OT min. | 1.0 mm | |
| MD max. | 0.5 mm | |
| OP | $20.7 \pm 0.6~\text{mm}$ | |

Hinge Roller Lever Models



| Characteristics | V-15G6-1□5-K V-10G6-1□5-K | V-10G6-1□4-K |
|-----------------|------------------------------|--------------|
| OF max. | 125 gf | 60 gf |
| RF min. | 14 gf | 6 gf |
| PT max. | 3.3 mm | |
| OT min. | 2.3 | mm |
| MD max. | 0.8 mm | |
| OP | 20.7 ± 1.6 mm | |

Note: 1. Stainless-steel lever

2. Oilless polyacetar resin roller

Accessories

Refer to the "V/VX/D3C Common Accessories" datasheet for information regarding VAL, VAM and VAV external actuators (sold separately).

Precautions

Be sure to read the precautions and information common to all Snap Action and Detection Switches, contained in the Technical User's Guide, "Snap Action Switches, Technical Information" for correct use.

■ Correct Use

Terminal Connection

To solder the lead to the solder terminal, apply a soldering iron rated at 60 W max. quickly (within 5 seconds) with the actuator at the free

Note that applying a soldering iron for too long a time or using one that is rated at more than 60 W may degrade the switch characteris-

Use an appropriate mating connector for #187 or #250 quick connect

Specifications Approved by TÜV Rheinland According to EN61058-1

Appropriate Cable Size (mm²)

| Model | Solder terminal | |
|-------|-----------------|--|
| V-10 | 0.75, 1.25, 2.0 | |
| V-15 | 1.25, 2.0 | |

Operation

Make sure that the operating body pushes the switch actuator with an adequate force when the switch is to be operated, and that it does not touch the actuator when the switch is released.

Do not change the operating position by modifying the actuator.

Do not use the switch in a application where the operating speed is extremely slow or the actuator is set in the midpoint between the free position and operating position.

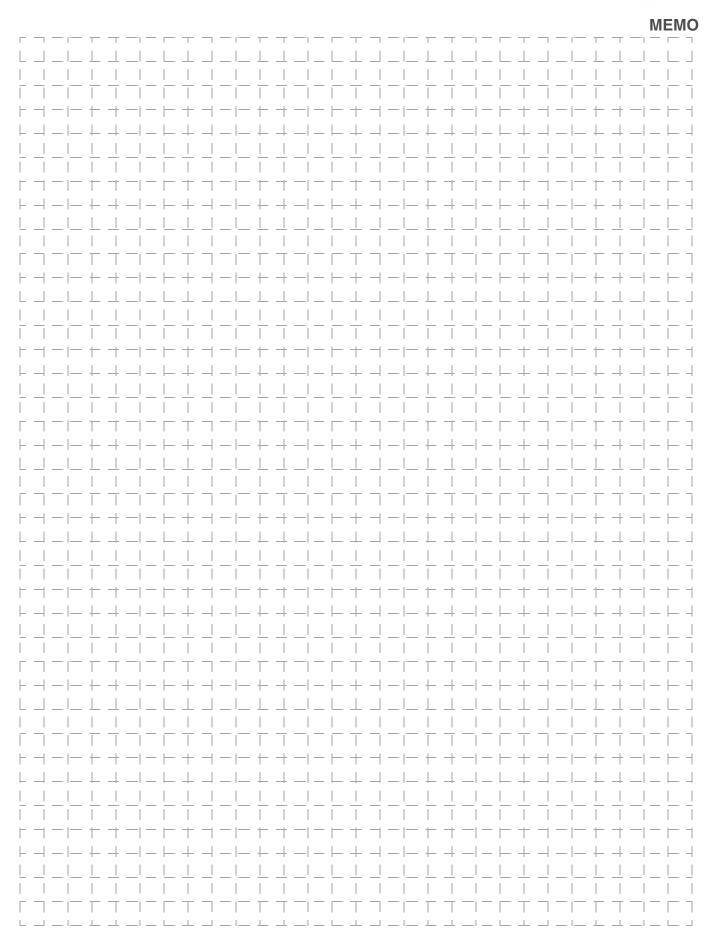
Install the pin plunger switch so that the operating force is applied in alignment with the stroke of the actuator. The switch should be set so that its stroke is in the range of 60 to 90% of the rated OT (minimum value) when the switch has been operated.

■ Cautions

Insulation Distance

According to EN61058-1, the minimum insulation thickness for this switch should be 1.1 mm and minimum clearance distance between the terminal and mounting plate should be 1.0 mm. If the insulation distance cannot be provided in the product incorporating the switch, either use a switch with insulation barrier or use a separator to ensure sufficient insulation distance.

OMRON





All sales are subject to Omron Electronic Components LLC standard terms and conditions of sale, which can be found at http://www.components.omron.com/components/web/webfiles.nsf/sales_terms.html

Specifications subject to change without notice

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

OMRON

OMRON ELECTRONIC COMPONENTS LLC 55 E. Commerce Drive, Suite B Schaumburg, IL 60173

847-882-2288

Cat. No. X303-E-1

11/10

OMRON ON-LINE

Global - http://www.omron.com USA - http://www.components.omron.com

Printed in USA

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Basic / Snap Action Switches category:

Click to view products by Omron manufacturer:

Other Similar products are found below:

83228001 01.098.1358.1 602EN1-6B 602EN532 602EN535-RB 602HE5-RB1 604HE162 604HE223-6B 624HE17-RB 6HM89 6PA78-JM
6SE1 6SX1-H58 70500840 MBD5B1 MBH2731 73-316-0012 79211759 79211923 79218589 7AS12 ML-1155 ML-1376 831010C3.0
831060C3.TL 831090C2.EL 83131904 84212012 8AS239 8HM73-3 903VB1-PG 914CE1-6G PL-100 11SM1077-H4 11SM1077-H58
11SM1-TN107 11SM405 11SM703-T 11SM8423-H2 11SX37-T 11SX48-H58 11SX55-H58 11SM2442-T 11SM76-T 11SM77-H58
11SM77-T 11SM863-T 11SM866 11SX47-H58 A7CN-1M-1-LEFT