

3 Port Direct Operated Poppet Solenoid Valve Rubber Seal

Series VK300

Universal porting

Available for N.C. valve, N.O. valve, divider valve, selector valve, etc.

C: 0.80 dm³/(s·bar)

(Passage 2 → 3)

Compact: Width 18 x Length 63 (mm)

Low power consumption

4 W DC (Standard type)

2 W DC (Low wattage type)

Suitable for use in vacuum applications –101.2 kPa

Suitable for use in copper-free applications

The portions that come in contact with fluids do not contain copper, thus enabling the standard product to be used as is.



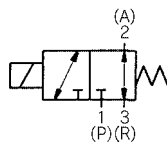
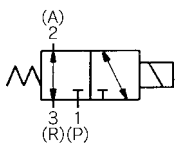
Body ported

Base mounted

JIS Symbol

Body ported

Base mounted



Specifications

| | |
|---|--|
| Type of actuation | Direct operated type 2 position single solenoid |
| Fluid | Air |
| Ambient and fluid temperature | –5 to 50°C (No freezing. Refer to page 4-18-4.) |
| Response time (at 0.5 MPa) ⁽¹⁾ | 10 ms or less (Standard), 15 ms or less (Low power consumption type) |
| Manual override | Non-locking push type |
| Lubrication | Not required (Use turbine oil Class 1 ISO VG32, if lubricated.) |
| Mounting orientation | Unrestricted |
| Shock/Vibration resistance ⁽²⁾ | 300/50 m/s ² |
| Enclosure | Dustproof |



Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

| | | | |
|-------------------------------|-------------------------------|--|----------------------------|
| Electrical entry | Grommet (G), DIN terminal (D) | | |
| Rated voltage (V) | AC | 100, 110, 200, 220, 240 | |
| | DC | 6, 12, 24, 48 | |
| Allowable voltage fluctuation | ±10% of rated voltage | | |
| Apparent power (AC) * | Standard type | Inrush | 9.5 VA/50 Hz, 8 VA/60 Hz |
| | | Holding | 7 VA/50 Hz, 5 VA/60 Hz |
| | Continuous duty type | Inrush | 3.5 VA/50 Hz, 3.3 VA/60 Hz |
| | | Holding | 3 VA/50 Hz, 2.8 VA/60 Hz |
| Power consumption (DC) * | W/o indicator light | 4 W (Standard), 2 W (Low power consumption type) | |
| | W/ indicator light | 4.3 W (Standard), 2.3 W (Low power consumption type) | |
| Surge voltage suppressor | AC | Varistor | |
| | DC | Diode (Varistor for 12 VDC or less) | |
| Indicator light | AC | Neon bulb | |
| | DC | LED | |



* At the rated voltage

Flow Characteristics/Weight

| Valve model | Operating pressure range (MPa) | Port size | Flow characteristics | | | | | | | | | | | | Weight (g) | |
|-------------------------------|--------------------------------|-----------|----------------------------------|------|------|------------------------------|------|------|------------------------------|------|------|------------------------------|------|------|------------|-----|
| | | | 1 → 2 (P → A) | | | 2 → 3 (A → R) | | | 3 → 2 (R → A) | | | 2 → 1 (A → P) | | | | |
| | | | C [dm ³ /(s·bar)] | b | Cv | C [dm ³ /(s·bar)] | b | Cv | C [dm ³ /(s·bar)] | b | Cv | C [dm ³ /(s·bar)] | b | Cv | | |
| Body ported | 0 to 0.7 | M5 x 0.8 | VK332 | 0.47 | 0.44 | 0.13 | 0.47 | 0.40 | 0.13 | 0.48 | 0.47 | 0.14 | 0.47 | 0.44 | 0.13 | 80 |
| | | | VK332Y (For low wattage, 2 W DC) | 0.41 | 0.27 | 0.10 | 0.39 | 0.35 | 0.10 | 0.41 | 0.38 | 0.11 | 0.38 | 0.40 | 0.10 | |
| | | | VK332E (Continuous duty type) | 0.41 | 0.27 | 0.10 | 0.39 | 0.35 | 0.10 | 0.41 | 0.38 | 0.11 | 0.38 | 0.40 | 0.10 | |
| | | | VK332V (For vacuum) | 0.47 | 0.44 | 0.13 | 0.47 | 0.40 | 0.13 | 0.48 | 0.47 | 0.14 | 0.47 | 0.44 | 0.13 | |
| | | | VK332W (Low wattage, vacuum) | 0.41 | 0.27 | 0.10 | 0.39 | 0.35 | 0.10 | 0.41 | 0.38 | 0.11 | 0.38 | 0.40 | 0.10 | |
| Base mounted (With sub-plate) | 0 to 0.7 | 1/8 | VK334 | 0.85 | 0.26 | 0.19 | 0.80 | 0.27 | 0.19 | 0.83 | 0.26 | 0.20 | 0.76 | 0.41 | 0.20 | 120 |
| | | | VK334Y (For low wattage, 2 W DC) | 0.65 | 0.24 | 0.15 | 0.55 | 0.32 | 0.14 | 0.65 | 0.15 | 0.14 | 0.41 | 0.63 | 0.14 | |
| | | | VK334E (Continuous duty type) | 0.65 | 0.24 | 0.15 | 0.55 | 0.32 | 0.14 | 0.65 | 0.15 | 0.14 | 0.41 | 0.63 | 0.14 | |
| | | | VK334V (For vacuum) | 0.85 | 0.26 | 0.19 | 0.80 | 0.27 | 0.19 | 0.83 | 0.26 | 0.20 | 0.76 | 0.41 | 0.20 | |
| | | | VK334W (Low wattage, vacuum) | 0.65 | 0.24 | 0.15 | 0.55 | 0.32 | 0.14 | 0.65 | 0.15 | 0.14 | 0.41 | 0.63 | 0.14 | |



Mounting with VK300

Series VK300 can be mounted on the same manifold base VV5K3 of VK3000 series. For details, refer to the Best Pneumatics Vol. 3.

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

VS

VFN

Series VK300

How to Order

Electrical entry

| | | | |
|--|--|---------------------------|--|
| G: Grommet (Lead wire length: 300 mm) | H: Grommet (Lead wire length: 600 mm) | D: DIN terminal | * DO: DIN terminal (Without connector) |
|--|--|---------------------------|--|



* For the connector part number, refer to page 4-5-10.

Rated voltage

| | |
|----|-------------------|
| 1 | 100 VAC, 50/60 Hz |
| 2 | 200 VAC, 50/60 Hz |
| 3* | 110 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz |
| 5 | 24 VDC |
| 6* | 12 VDC |
| 7* | 240 VAC, 50/60 Hz |
| 9 | Other |

* Option



Port size (A port)

| | |
|-----------|----------|
| M5 | M5 x 0.8 |
| 01 | Rc 1/8 |



* P, R port: M5

Thread type

| | |
|------------|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

Option

| | |
|------------|---------------------------------|
| Nil | None |
| F | With bracket (Not assembled) |



Option Part No.

| Description | Part no. | Note |
|-------------|-------------|------------|
| Bracket | VK300-43-2A | With screw |

Body ported

VK332

1

G

M5

Base mounted

VK334

1

G

01

Valve option

| | |
|------------|----------------------------------|
| V | Standard type |
| Nil | For vacuum |
| Y* | For low wattage |
| W* | For vacuum/low power consumption |
| E* | Continuous duty type |



* For the applicable voltage, please contact SMC.

Port size

| | |
|------------|-------------------------|
| Nil | Without sub-plate |
| 01 | Rc 1/8 (With sub-plate) |

Light/Surge voltage suppressor

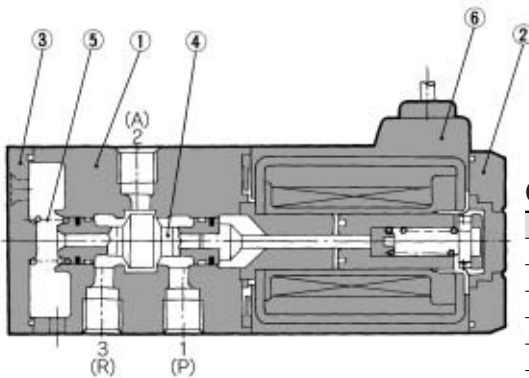
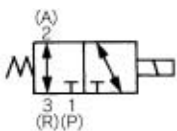
| | |
|------------|---|
| Nil | None |
| S | With surge voltage suppressor |
| Z | With light/surge voltage suppressor (Type D only) |



* Since the indicator light is built in connector, thus, "DOZ" is not available.

Construction

JIS Symbol



Component Parts

| No. | Description | Material | Note |
|-----|----------------------|---------------------|-----------------|
| ① | Body | Aluminum die-casted | Platinum silver |
| ② | Cover | Resin | Black |
| ③ | End cover | Resin | Black |
| ④ | Spool valve assembly | Aluminum, NBR | |
| ⑤ | Return spring | Stainless steel | |
| ⑥ | Molded coil | Resin | Black |

Series VK300 Manifold Specifications



VV3K3-20-04

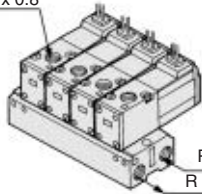
Specifications

| | | |
|----------------|----------------------------|---------------------------|
| Valve stations | | 1 to 20 |
| Piping method | Common SUP, Common EXH | Body ported, Base mounted |
| | Common SUP, Individual EXH | Body ported |

Common SUP/Common EXH

Type 20: Body ported (A port top ported)

A port:
Rc 1/8, M5 x 0.8



P port: Rc 1/8
R port: Rc 1/8

How to Order

VV3K3 - 20 - 05 - [] - []

Valve stations

| | |
|----|-------------|
| 01 | 1 station |
| ⋮ | ⋮ |
| 20 | 20 stations |

Option

| | |
|-----|-------------------------------|
| Nil | None |
| F | With bracket (Not mounted) |

Thread type

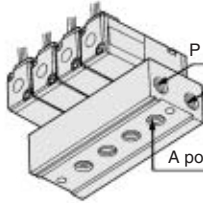
| | |
|-----|------|
| Nil | Rc |
| 00F | G |
| 00N | NPT |
| 00T | NPTF |

Applicable solenoid valve
VK332□-□□□-M5
VK332□-□□□-01

Applicable blanking plate assembly
VK300-42-1A

Bracket
VK300-43-1A

Type 40: Base mounted (A port bottom ported)



P port: Rc 1/8
R port: Rc 1/8
A port: Rc 1/8

How to Order

VV3K3 - 40 - 05 - 01 - [] - []

Valve stations

| | |
|----|-------------|
| 01 | 1 station |
| ⋮ | ⋮ |
| 20 | 20 stations |

Port size

| | |
|----|--------|
| 01 | Rc 1/8 |
|----|--------|

Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

Option

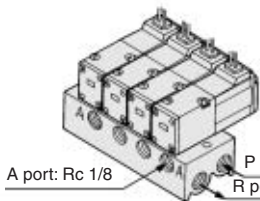
| | |
|-----|-------------------------------|
| Nil | None |
| F | With bracket (Not mounted) |

Applicable solenoid valve
VK334□-□□□

Applicable blanking plate assembly
VK300-42-1A

Bracket
VK300-43-1A

Type 42: Base mounted (A port side ported)



A port: Rc 1/8
P port: Rc 1/8
R port: Rc 1/8

How to Order

VV3K3 - [] - 42 - 05 - 01 - [] - []

Solenoid direction

| | |
|-----|-------------------------|
| Nil | Opposite side of A port |
| S | Same side of A port |

Port size

| | |
|----|-------------|
| 01 | Rc 1/8 |
| C4 | ø4 cassette |
| C6 | ø6 cassette |

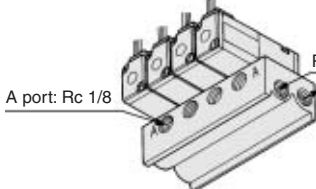
Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

Applicable solenoid valve
VK334□-□□□

Applicable blanking plate assembly
VK300-42-1A

Type S42 (Solenoids on the same side of A port)



A port: Rc 1/8
P port: Rc 1/8
R port: Rc 1/8

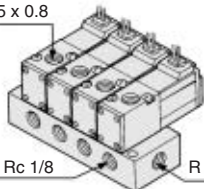
Valve stations

| | |
|----|-------------|
| 01 | 1 station |
| ⋮ | ⋮ |
| 20 | 20 stations |

Common SUP/Individual EXH

Type 21: Body ported (A port top ported)

A port:
Rc 1/8, M5 x 0.8



P port: Rc 1/8
R port: Rc 1/8

How to Order

VV3K3 - 21 - 05 - [] - []

Valve stations

| | |
|----|-------------|
| 01 | 1 station |
| ⋮ | ⋮ |
| 20 | 20 stations |

Thread type

| | |
|-----|------|
| Nil | Rc |
| 00F | G |
| 00N | NPT |
| 00T | NPTF |

Applicable solenoid valve
VK332□-□□□-M5
VK332□-□□□-01

Applicable blanking plate assembly
VK300-42-1A

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

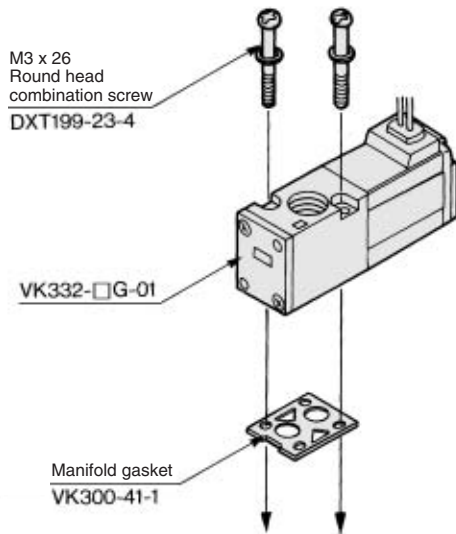
VS

VFN

Series VK300

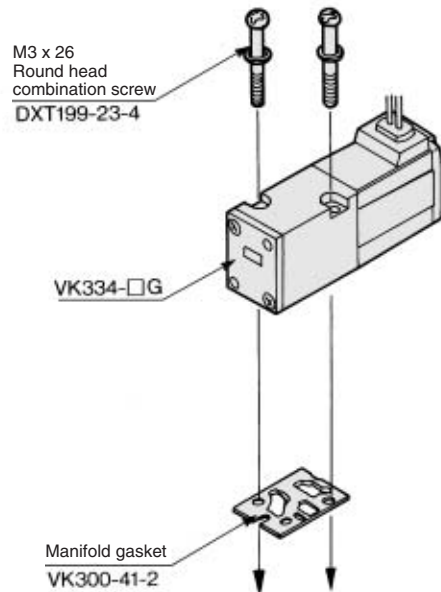
Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

3 port body ported: VK332



Applicable base
 VV3K3-20 }
 21 } **Manifold base**
 VV5K3-20 }
 21 }

3 port base mounted: VK334



Applicable base
 VK300-45-1 Sub-plate }
 VV3K3-40 }
 (S) 42 } **Manifold base**
 VV5K3-40 }
 (S) 41 }
 (S) 42 }

⚠ Caution

**Mounting Screw
Tightening Torques**
M3: 0.6 N·m

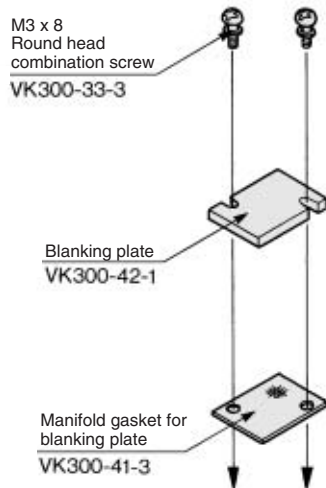
| Manifold gasket and screw assembly | Body ported | Base mounted |
|------------------------------------|-------------|--------------|
| | VK300-41-1A | VK300-41-2A |

🔍 Note 1) Mounting direction is fixed, do not mount on opposite side.

📖 Note 2) Series VK300 can be mounted on manifold base (VV5K3) of Series VK3000. For details, refer to Best Pneumatics Vol. 3.

Combinations of Blanking Plate Assembly and Manifold Base

Blanking plate assembly: VK300-42-1A



Applicable base: In common for all types of VV3K3 models

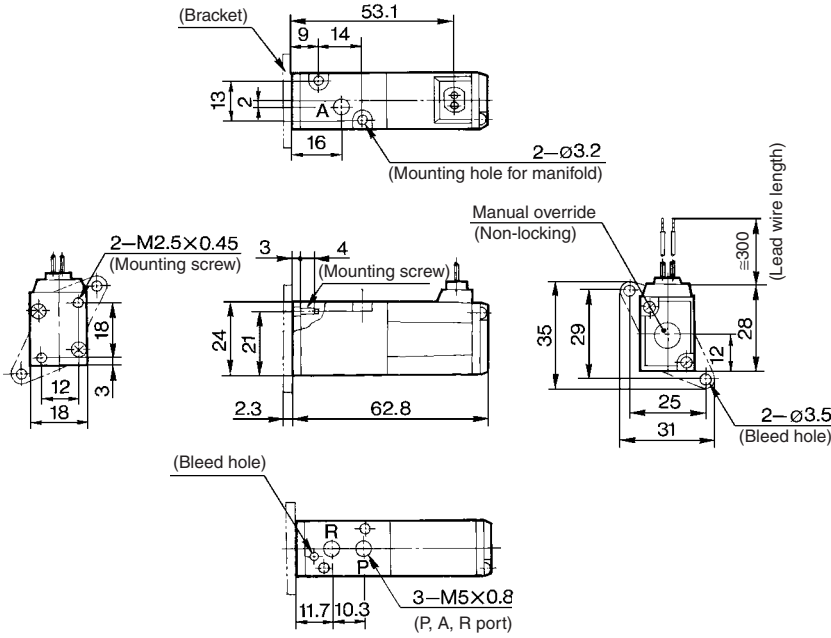
⚠ Caution

**Mounting Screw
Tightening Torques**
M3: 0.6 N·m

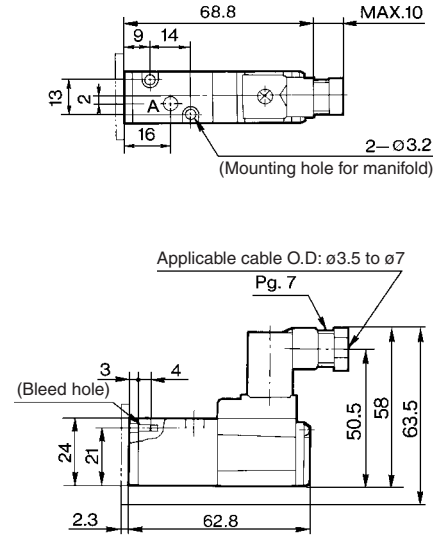
3 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series VK300

Dimensions: Body Ported

Grommet: VK332-□G-M5



DIN terminal: VK332-□D-M5

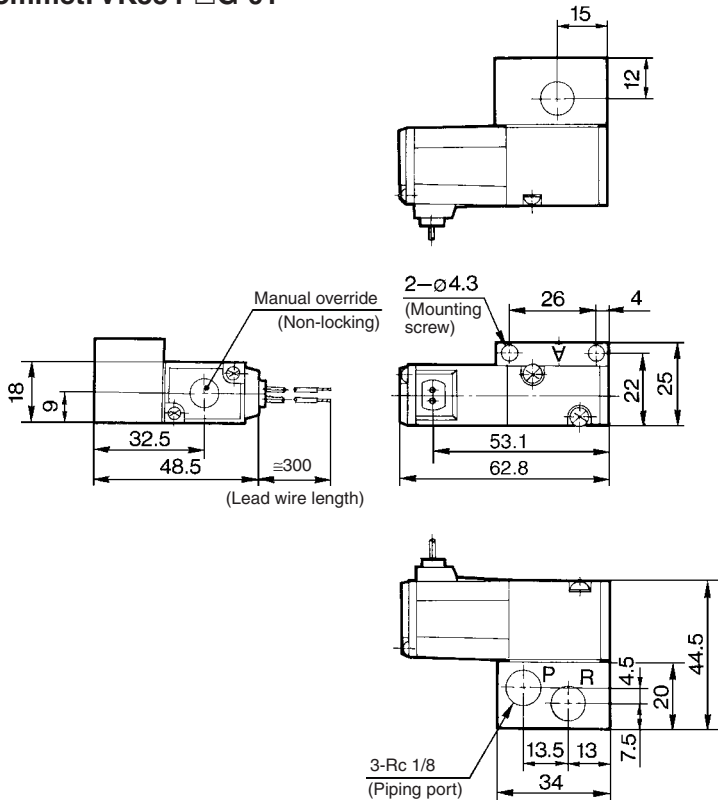


Refer to grommet type for other dimensions.

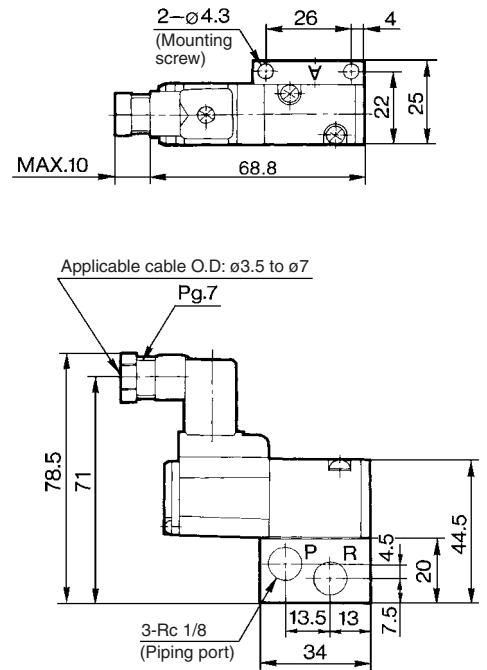
- V100
- SY
- SYJ
- VK**
- VZ
- VT
- VP
- VG
- VP
- S070
- VQ
- VKF
- VQZ
- VZ
- VS
- VFN

Dimensions: Base Mounted

Grommet: VK334-□G-01



DIN terminal: VK334-□D-01



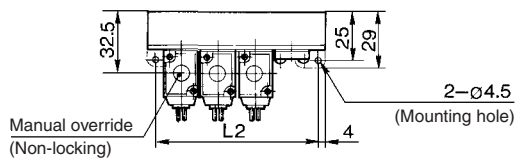
Refer to grommet type for other dimensions.

Series VK300

Type 20 Manifold Body Ported (Top ported)

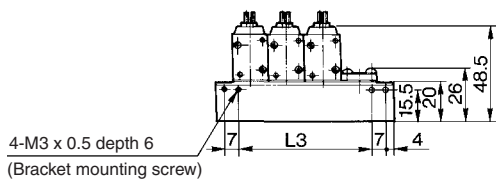
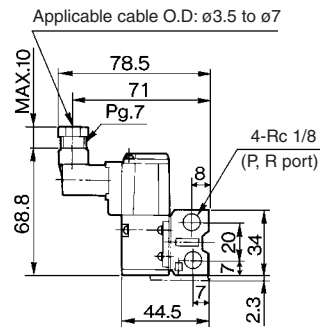
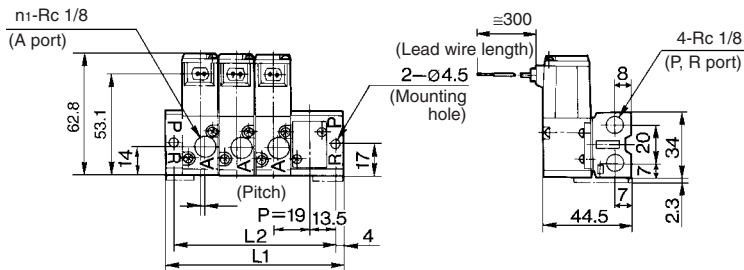
VV3K3-20-**Stations**

n₁ = Number of VK300



Grommet: G

DIN terminal: D



L Dimension

n: Stations

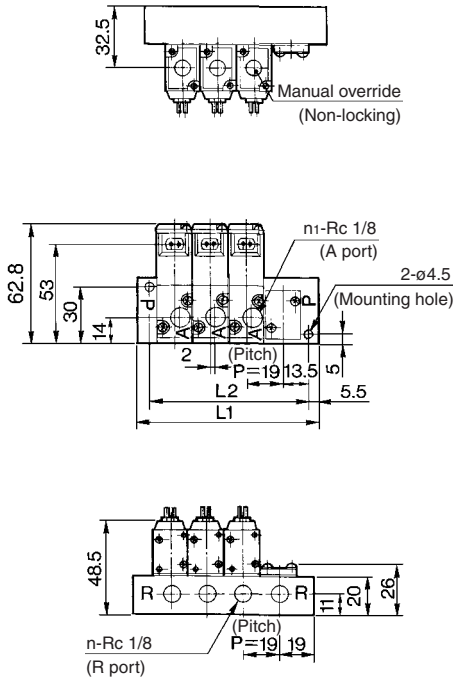
| L | n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----------------|---|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L ₁ | | 35 | 54 | 73 | 92 | 111 | 130 | 149 | 168 | 187 | 206 | 225 | 244 | 263 | 282 | 301 | 320 | 339 | 358 | 377 | 396 |
| L ₂ | | 27 | 46 | 65 | 84 | 103 | 122 | 141 | 160 | 179 | 198 | 217 | 236 | 255 | 274 | 293 | 312 | 331 | 350 | 369 | 388 |
| L ₃ | | 13 | 32 | 51 | 70 | 89 | 108 | 127 | 146 | 165 | 184 | 203 | 222 | 241 | 260 | 279 | 298 | 317 | 336 | 355 | 374 |

3 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series **VK300**

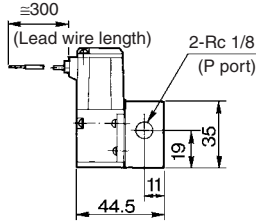
Type 21 Manifold Body Ported (Top ported)

VV3K3-21- Stations

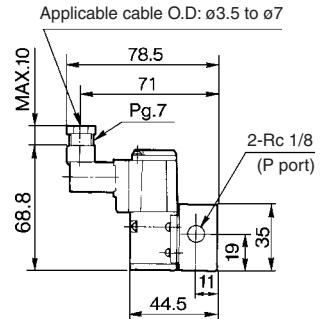
n1 = Number of VK300



Grommet: G



DIN terminal: D



L Dimension

n: Stations

| L | n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----|---|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L1 | | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 | 209 | 228 | 247 | 266 | 285 | 304 | 323 | 342 | 361 | 380 | 399 |
| L2 | | 27 | 46 | 65 | 84 | 103 | 122 | 141 | 160 | 179 | 198 | 217 | 236 | 255 | 274 | 293 | 312 | 331 | 350 | 369 | 388 |

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

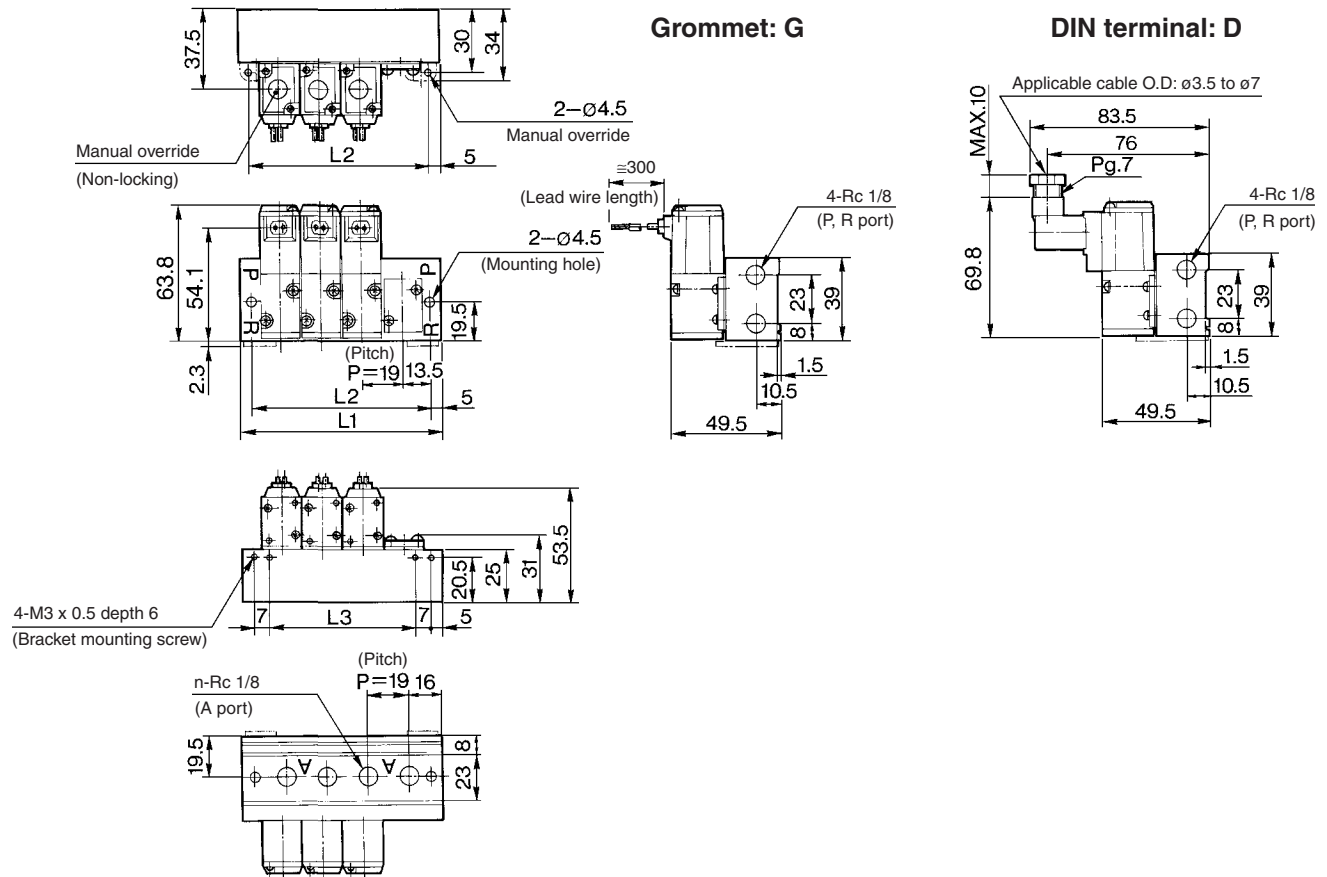
VS

VFN

Series VK300

Type 40 Manifold Base Mounted (Bottom ported)

VV3K3-40- Stations -01



L Dimension

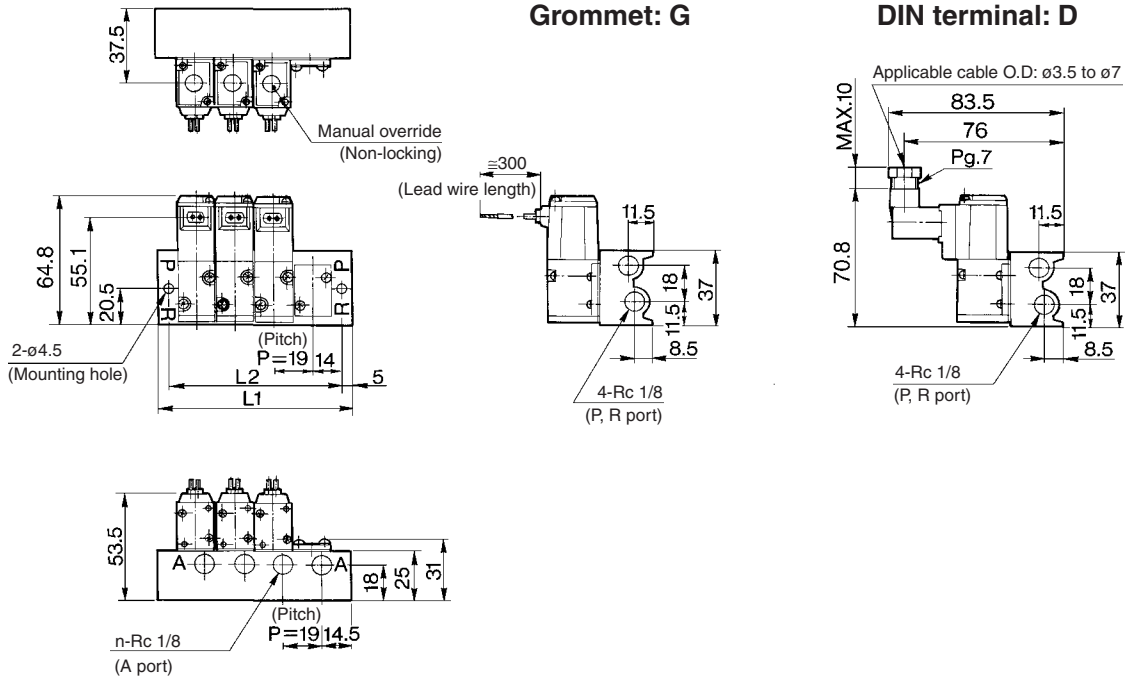
n: Stations

| L \ n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L1 | 37 | 56 | 75 | 94 | 113 | 132 | 151 | 170 | 189 | 208 | 227 | 246 | 265 | 284 | 303 | 322 | 341 | 360 | 379 | 398 |
| L2 | 27 | 46 | 65 | 84 | 103 | 122 | 141 | 160 | 179 | 198 | 217 | 236 | 255 | 274 | 293 | 312 | 331 | 350 | 369 | 388 |
| L3 | 13 | 32 | 51 | 70 | 89 | 108 | 127 | 146 | 165 | 184 | 203 | 222 | 241 | 260 | 279 | 298 | 317 | 336 | 355 | 374 |

3 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series VK300

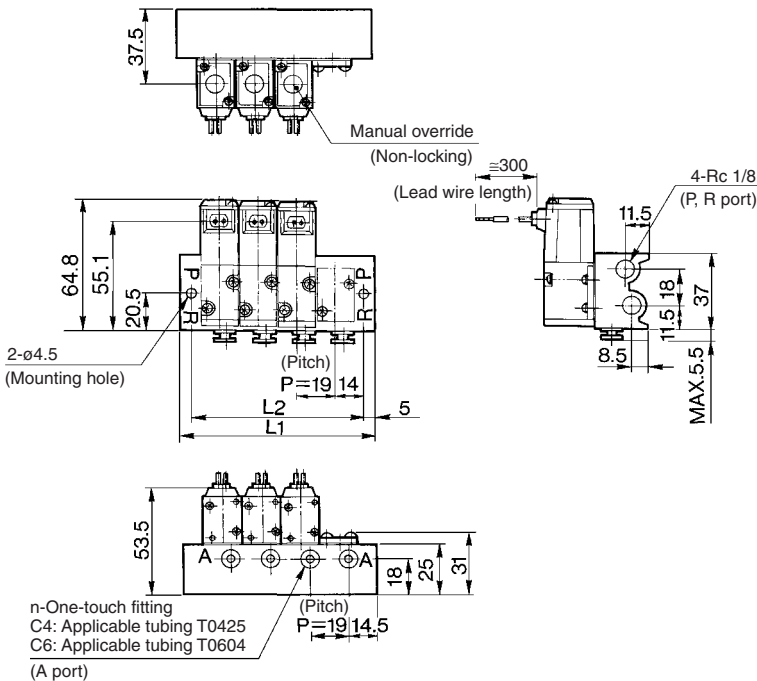
Type 42 Manifold Base Mounted (Side ported)

VV3K3-42-**Stations**-01

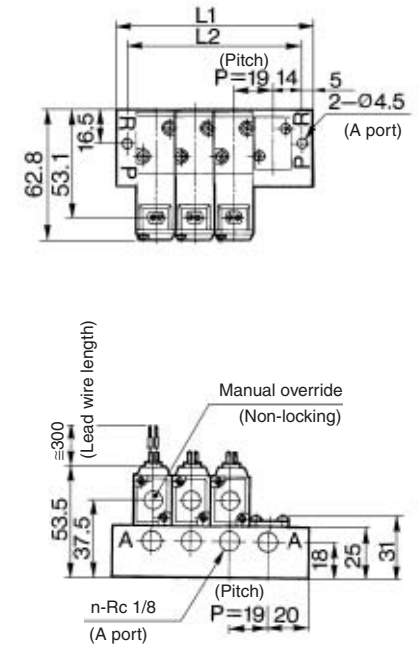


- V100
- SY
- SYJ
- VK**
- VZ
- VT
- VP
- VG
- VP
- S070
- VQ
- VKF
- VQZ
- VZ
- VS
- VFN

Built-in One-touch fitting: VV3K3-42-**Stations**-C4, C6



Solenoid at A port side: VV3K3-S42-**Stations**-□



Refer to the above drawing for DIN terminal dimensions.

Refer to the above drawing for other dimensions.

| L \ n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L1 | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 | 209 | 228 | 247 | 266 | 285 | 304 | 323 | 342 | 361 | 380 | 399 |
| L2 | 28 | 47 | 66 | 85 | 104 | 123 | 142 | 161 | 180 | 199 | 218 | 237 | 256 | 275 | 294 | 313 | 332 | 351 | 370 | 389 |

Series VK300

⚠ Precautions

Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 4-18-2.

How to Wire DIN Terminal

⚠ Caution

● Connection

- Loosen the set screw and pull out the connector from the terminal block of the solenoid.
- Remove screw and insert screwdriver into the slit area near the bottom of terminal block to separate block and housing.
- Loosen the terminal screws (slotted screws) on the terminal block, insert the core of the lead wire into the terminal, and attach securely with the terminal screws.
- Tighten the ground nut to secure the wire.

⚠ Caution

Use caution in wiring because it will not meet the IP65 (enclosure) standard if you use the other cord than prescribed heavy-duty cord of size (ø3.5 to ø7.5). Tighten the ground nut and set screw within the specified range of torque.

● Change of electrical entry (Orientation)

After separating terminal block and housing, the cord entry direction can be changed by attaching the housing in the desired direction (4 directions in 90 increments).

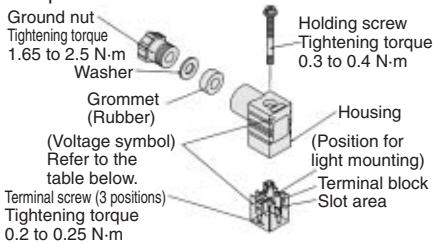
* In the case of w/ indicator light, avoid damaging the light with lead wire.

● Precautions

Plug a connector in or out vertically, never at an angle.

● Applicable cable

O.D. ø3.5 to ø7
(Reference)
0.5 mm² 2 core and 3 core wires equivalent to JIS C 3306



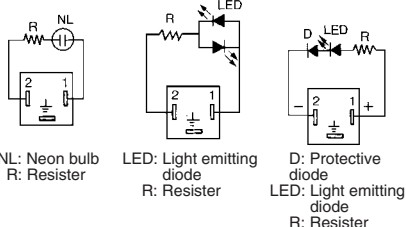
● Connector part no.: VK300-82-1

● Part no. of connector with indicator light

| Rated voltage | Voltage symbol | Part no. |
|---------------|----------------|---------------|
| 100 VAC | 100V | VK300-82-2-01 |
| 110 VAC | 110V | VK300-82-2-03 |
| 200 VAC | 200V | VK300-82-2-02 |
| 220 VAC | 220V | VK300-82-2-04 |
| 240 VAC | 240V | VK300-82-2-07 |
| 6 VDC | 6V | VK300-82-4-51 |
| 12 VDC | 12V | VK300-82-4-06 |
| 24 VDC | 24VD | VK300-82-3-05 |
| 48 VDC | 48VD | VK300-82-3-53 |

● Circuit with indicator light

AC circuit diagram 12 VDC or less circuit diagram 24 VDC or more circuit diagram



Light/Surge Voltage Suppressor

⚠ Caution

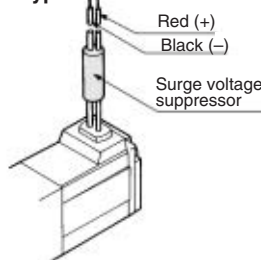
| Rated voltage | Grommet (G) | | DIN terminal (D) | | Part no. symbol |
|---------------|----------------------|--------------------------|---------------------------|---------------------------|-----------------|
| | Standard: Y, V, W | Continuous duty type (E) | Standard: Y, V, W | Continuous duty type (E) | |
| AC | W/o indicator light | | NO.1 NO.2 | NO.1 NO.2 | S |
| | With indicator light | None | NO.1 Neon bulb NO.2 | NO.1 Neon bulb NO.2 | Z |
| DC 24V 48V | W/o indicator light | | NO.1(+) NO.2(-) | NO.1(+) NO.2(-) | S |
| | With indicator light | None | NO.1(+) LED NO.2(-) | NO.1(+) LED NO.2(-) | Z |
| DC 6V 12V | W/o indicator light | | NO.1 NO.2 | NO.1 NO.2 | S |
| | With indicator light | None | NO.1 LED NO.2 | NO.1 LED NO.2 | Z |

Precautions on connection of 24 V or more DC Grommet type should be connected as following; Red lead wire for (+) side, Black lead wire for (-) side respectively.

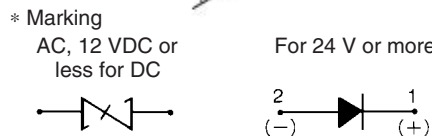
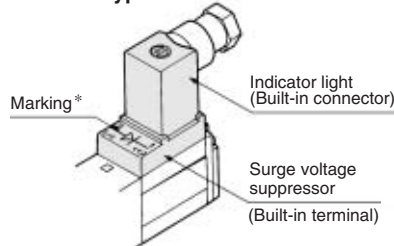
With the DIN terminal, connect the positive (+) side to the connector's no. 1 terminal, and the negative (-) side to the no. 2 terminal. [Refer to the marks on the terminal board.]

* For 12 VDC or below, there is no positive (+) or negative (-) directionality.

● Grommet type



● DIN terminal type



Valve Mounting Direction

⚠ Warning

When mounting a valve on the manifold base or sub-plate, etc., the mounting orientation is already decided. If mounted in a wrong direction, the equipment to be connected may result in malfunction. Refer to pages 4-5-4 to 4-5-9 for external dimensions in mounting.

Vacuum Spec. Type: VK33□V

In contrast to the standard product, this vacuum specification valve has less air leakage at low pressures, a feature that should be taken into consideration when using this valve for vacuum applications.

⚠ Caution

- Since this valve has slight air leakage, it can not be used for holding vacuum (including positive pressure holding) in the pressure container.

Continuous Duty Type: VK33□E

Exclusive use of VT317E is recommended for continuous duty with long time loading.

⚠ Caution

- This model is for continuous duty, not for high cycle rates. But even in low cycle rates, if energizing the valve more than once a day, please consult with SMC.
- Energizing solenoid should be done at least once in 30 days.

How to Calculate the Flow Rate

For obtaining the flow rate, refer to page 4-1-6.