3 Port Direct Operated Poppet Solenoid Valve
Rubber Seal
VK300 Series

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

N ℓ/min: 196

Compact/Width 18 X Length 63 (mm)

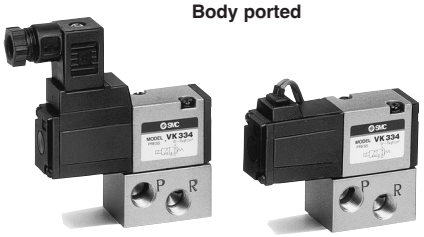
Low consumption
4 W DC (Standard)
2 W DC (Low wattage style)

Applicable for vacuum use -101.2 kPa

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



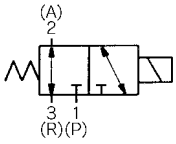
Body ported



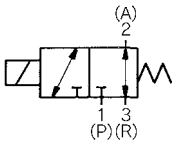
Base mounted

JIS symbol

Body ported



Base mounted



Regarding mixed installations

Series VK300 can be mounted on manifold base (VV5K3) of series VK3000.
Refer to p. 3 for detailed information.

Model

Valve Model		Operating pressure range (MPa)	Port size	Effective area* (N ℓ/min)	Weight (g)
Body ported	**VK332**	0 to 0.7	M5	3.6 (196)	80
	VK332Y (Low wattage, DC 2W)			2.7 (147)	
	VK332E (Long loading time)			2.7 (147)	
	VK332V (Vacuum)	–101.2 kPa to 0.1		3.6 (196)	
	VK332W (Low wattage, vacuum)			2.7 (147)	
Base mounted (With sub-plate)	**VK334**	0 to 0.7	1/8	4.2 (225)	120
	VK334Y (Low wattage, DC 2W)			2.7 (147)	
	VK334E (Long loading time)			2.7 (147)	
	VK334V (Vacuum)	–101.2 kPa to 0.1		4.2 (225)	
	VK334W (Low wattage, vacuum)			2.7 (147)	

* Value at single style. In case of manifold, it depends on operating conditions.

Specifications

Actuation	Direct operated style 3 port single solenoid
Fluid	Air
Ambient and fluid temperature	-5 to 50 °C (No freezing)
Response time (0.5 MPa) (1)	10 ms or less (standard), 15ms or less (low wattage)
Manual override	Non-locking push style
Lubrication	Non-lube (Use turbine oil # 1 ISO VG32, if lubrication is required)
Mounting position	Free
Impact/vibration resistance (2)	300/50m/s^2
Protection structure	Dust proof

Note 1) According to dynamic performance test of JIS B8374- 1981. (Coil temperature 20 °C, rated voltage, without surge voltage suppressor)
Note 2) Impact resistance: No malfunction from test using drop impact tester, to axis and right angle directions of main valve and armature, each one time when energized and de-energized. (Value in the initial stage.)
Vibration resistance: No malfunction from test with 8.3 to 2000 Hz 1 sweep, to axis and right angle directions of main valve and armature, each one time when energized and de-energised. (Value in the initial stage.)

Solenoid specifications

Electrical entry			DIN terminal (D)
Rated voltage		AC	100 V, 110 V, 200 V, 220 V, 240 V
		DC	6 V, 12 V, 24 V, 48 V
Allowable voltage			±10 % of rated voltage
Apparent power (AC)*	Standard	Inrush	9.5 VA/50 Hz, 8 VA/60 Hz
		Holding	7 VA/50 Hz, 5 VA/60 Hz
	Long loading time	Inrush	3.5 VA/50 Hz, 3.3 VA/60 Hz
		Holding	3 VA/50 Hz, 2.8 VA/60 Hz
Power consumption (DC)*		Without light	4 W (Standard), 2 W (Low wattage)
		With light	4.3 W (Standard), 2.3 W (Low wattage)
Surge voltage suppressor		AC	Varistor
		DC	Diode (12 VDC or less: varistor)
Indicator light		AC	Neon lamp
		DC	LED

* At rated voltage

VK300

How to Order

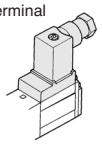
Rated voltage

	Rated voltage \ Valve option	–	V	Y	W	E
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	●	●	–	–	●

Note 1) Applicable only for DIN terminal type.
Note 2) For other rated voltages, please consult with SMC.



Electrical Entry

D: DIN terminal	DO: DIN terminal * (Without connector)
	

* Refer to the p. 9 for connector part No.

Option Part No.

Description	Part No.	Note
Bracket	VK300-43-2A	With screw
Manifold gasket	VK300-41-1A	With screw for body ported
	VK300-41-2A	With screw for base mounted

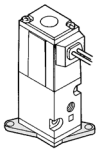
Port size (A port)

M5	M5
01	1/8

* P, R port: M5

Option

–	None
F	With bracket (Not mounted)



Body Ported VK332 □ – 1 D □ – M5 □ – □ – Q

Base Mounted VK334 □ – 1 D □ – 01 □ – Q



Thread

–	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Port size

–	Without sub-plate
01	1/8 (With sub-plate)

Valve option

–	Standard
V	Vacuum
Y	Low wattage
W	Vacuum/low wattage
E	Long loading time

Indicator light and surge voltage suppressor

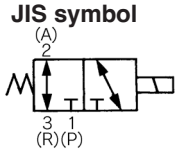
–	None
S	With surge voltage suppressor
Z	With indicator light and surge voltage suppressor (Only D type)

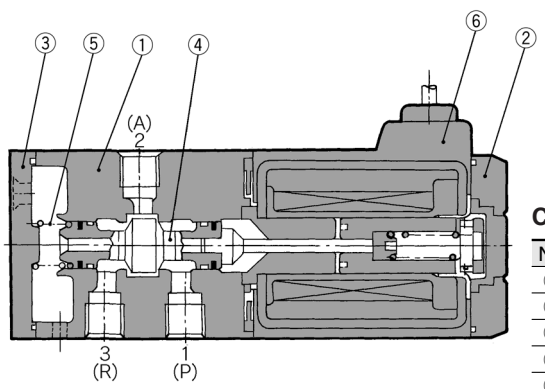
⚠ Protective class class I (Mark:⏚)..... DIN terminal type

Note) Since the indicator light is bulit in connector, thus, "DOZ" is not available.
* The continuous duty AC type is equipped with a rectifier,

Construction

JIS symbol

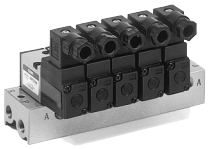




Component Parts

No.	Description	Material	Note
①	Body	Die cast aluminium	Platinum silver
②	Cover	Resin	Black
③	End cover	Resin	Black
④	Spool valve ass'y	Aluminium/NBR	
⑤	Return spring	Stainless steel	
⑥	Mold coil	Resin	Black

VK300 Series
Manifold


VV3K3-S42-05-01


VV3K3-20-04

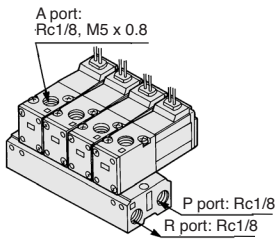
Specifications

Stations		1 to 20 stations
Piping system	Common SUP/Common EXH	Body ported, Base mounted
	Common SUP/Individual EXH	Body ported

Note) For 9 stations or more, supply air both sides of P port.
The common exhaust type should exhaust from both of the R port.

Common SUP/Common EXH

20 Type/Body Ported
(A port top ported)



How to Order

VV3K3 − 20 − 05 − □ − □ − Q

Stations

01	1 station
⋮	⋮
20	20 stations

Option

—	None
F	With bracket (Not mounted)

Thread(P, R port)

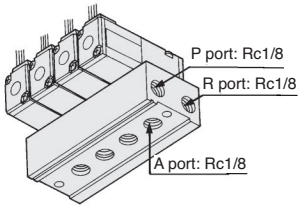
—	Rc (PT)
00F	G (PF)
00N	NPT
00T	NPTF

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

Applicable blank plate ass'y
VK300-42-1A

Bracket
VK300-43-1A

40 Type/Base Mounted
(A port bottom ported)



How to Order

VV3K3 − 40 − 05 − 01 − □ − □ − Q

Stations

01	1 station
⋮	⋮
20	20 stations

Port size

01	Rc1/8

Thread(P, R port)

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Option

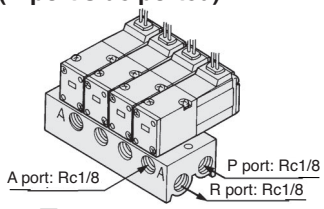
—	None
F	With bracket (Not mounted)

Applicable solenoid valve
VK334□-□□□-Q

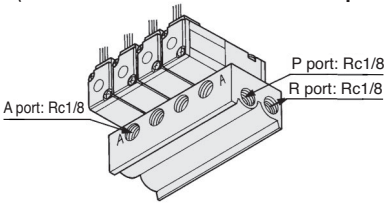
Applicable blank plate ass'y
VK300-42-1A

Bracket
VK300-43-1A

42 Type/Base Mounted
(A port side ported)



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



How to Order

VV3K3 − □ − 42 − 05 − 01 − □ − Q

Direction of solenoid

—	Opposite side of A port
S	Same side of A port

Stations

01	1 station
⋮	⋮
20	20 stations

Port size

01	1/8
C4	Ø 4 cassette
C6	Ø 6 cassette

Thread(P, R port)

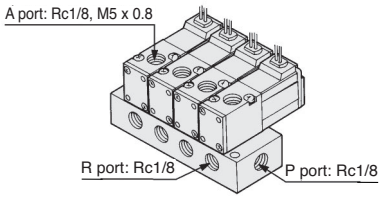
—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Applicable solenoid valve
VK334□-□□□-Q

Applicable blank plate ass'y
VK300-42-1A

Common SUP/Individual EXH

21 Type/Body Ported
(A port top ported)



How to Order

VV3K3 − 21 − 05 − □ − Q

Stations

01	1 station
⋮	⋮
20	20 stations

Thread(P, R port)

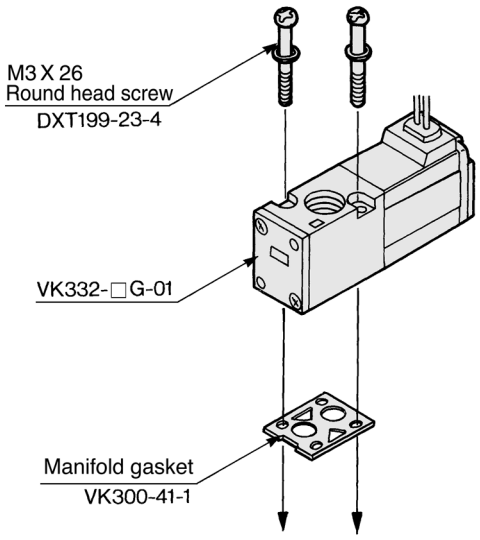
—	Rc (PT)
00F	G (PF)
00N	NPT
00T	NPTF

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

Applicable blank plate ass'y
VK300-42-1A

Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

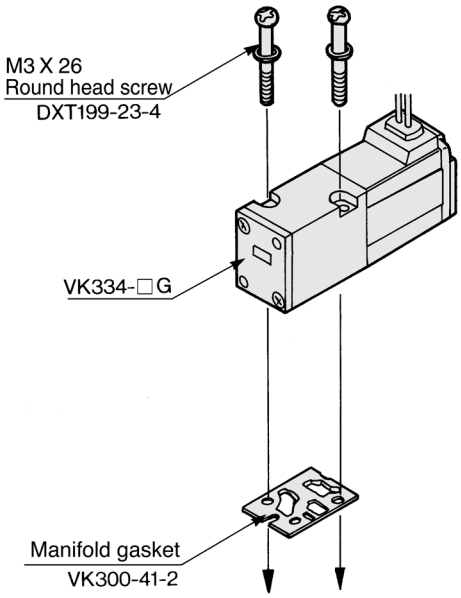
3 Port body ported: VK332



Applicable base

VV3K3-20
21
VV5K3-20
21
} Manifold base

3 Port base mounted: VK334



Applicable base

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

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

Note 1) Mounting direction is fixed, so do not mount on opposite side.
Note 2) Series VK300 can be mounted on manifold base (VV5K3) of series VK3000.

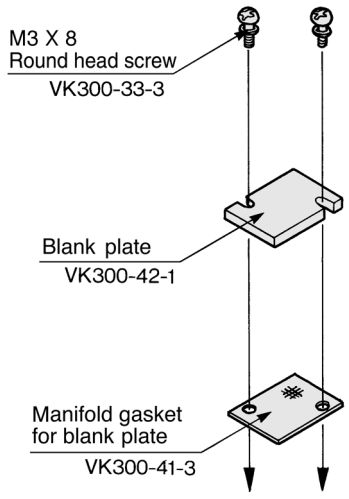
⚠ Caution

Mounting Screw Tightening Torques

M3: 0.6 N·m

Combinations of Blank Plate Ass'y and Manifold Base

Blanking plate assembly: VK300-42-1A



Applicable base: VV3K3 type

⚠ Caution

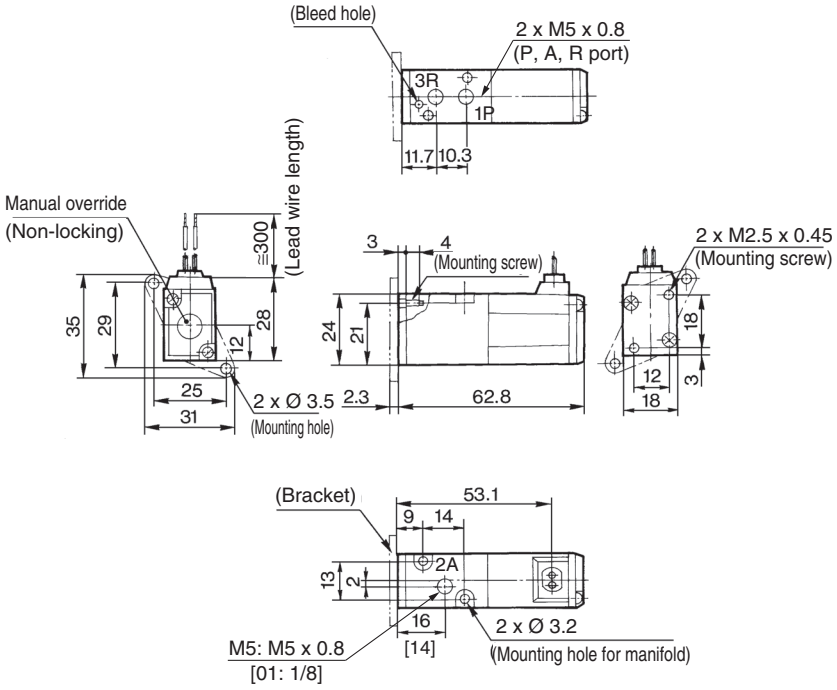
Mounting Screw Tightening Torques

M3: 0.6 N·m

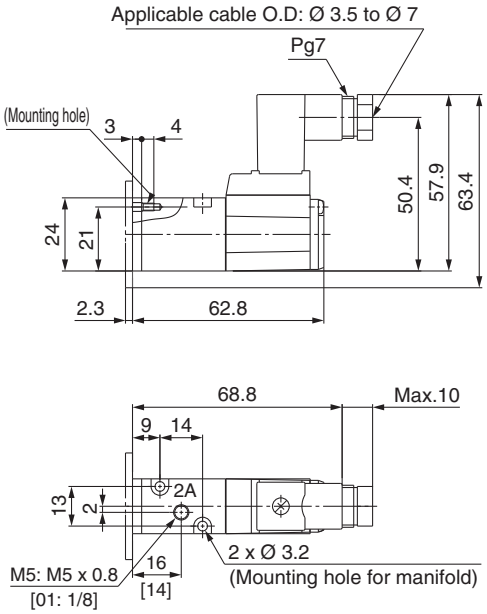
Dimensions: Body Ported

Grommet: VK332-□G-$^{M5}_{01}$

Note: This valve series is □ now only available □ with DIN connector.



DIN terminal: VK332-□D-$^{M5}_{01}$-Q

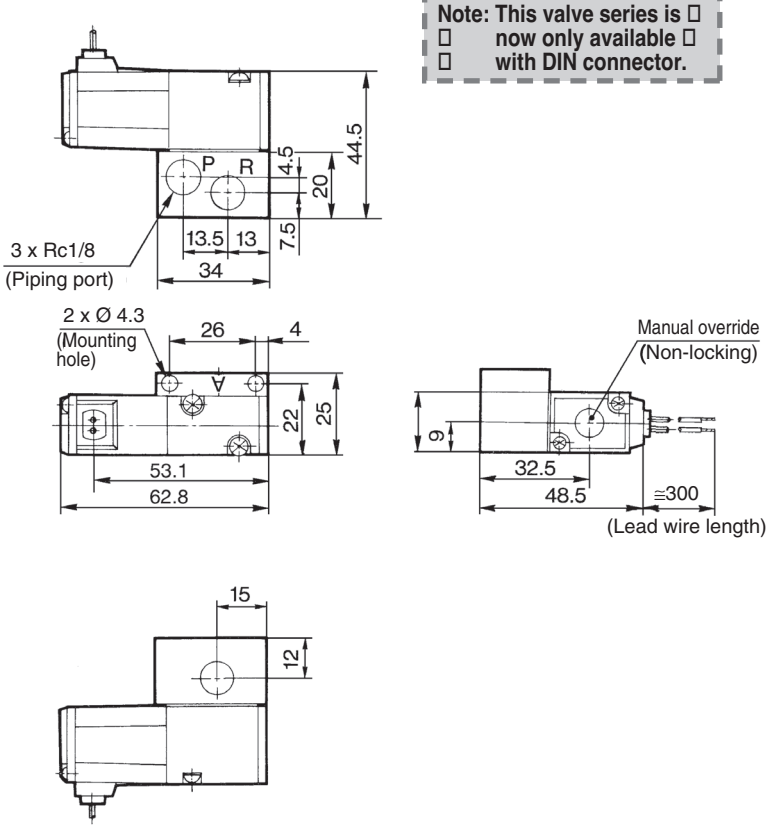


Refer to grommet type for other dimensions.
[ ]: For port size 01

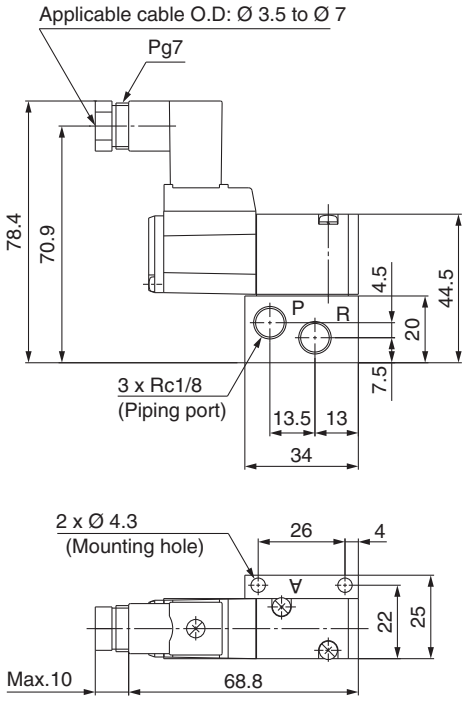
Dimensions: Base Mounted

Grommet: VK334-□G-01

Note: This valve series is □ now only available □ with DIN connector.



DIN terminal: VK334-□D-01-Q



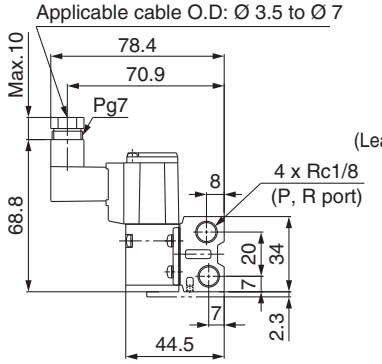
Refer to grommet type for other dimensions.

Type 20 Manifold/Body Ported (Top ported)

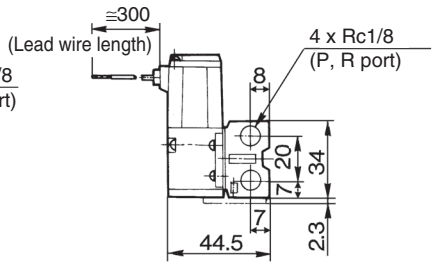
VV3K3-20- Stations -Q

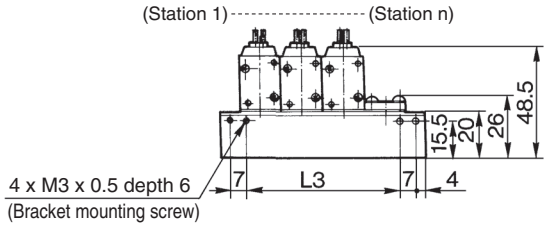
n1 = Number of VK300

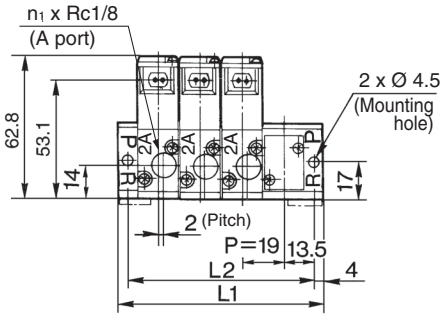
DIN terminal: D



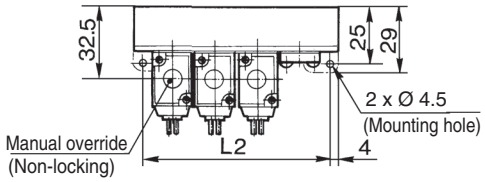
Grommet: G







Note: This valve series is now only available with DIN connector.



L Dimension

n: Stations

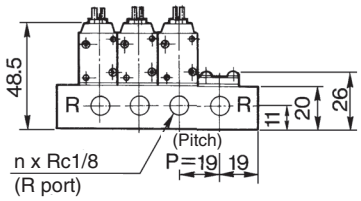
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	35	54	73	92	111	130	149	168	187	206	225	244	263	282	301	320	339	358	377	396
L2	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
L3	13	32	51	70	89	108	127	146	165	184	203	222	241	260	279	298	317	336	355	374

Type 21 Manifold/Body Ported (Top ported)

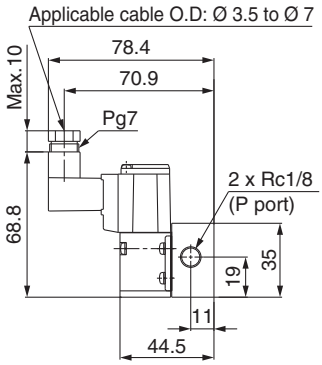
VV3K3-21- Stations -Q

n1 = Number of VK300

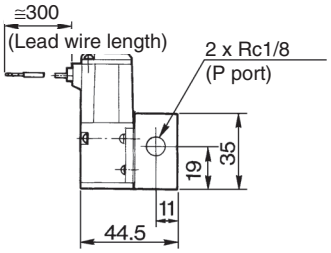
(Station 1) ---------- (Station n)

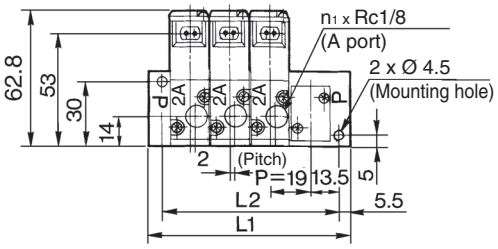


DIN terminal: D

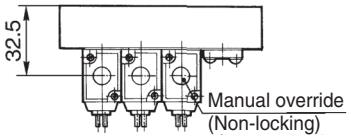


Grommet: G





Note: This valve series is now only available with DIN connector.



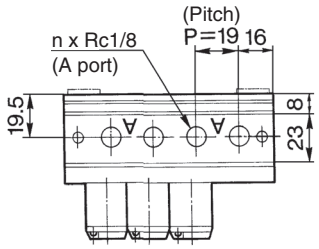
L Dimension

n: Stations

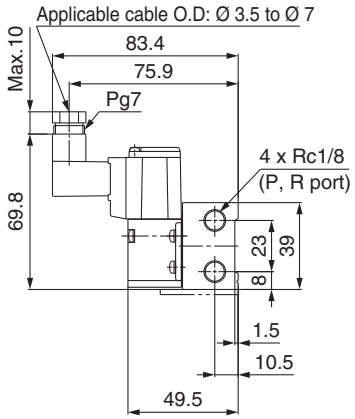
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399
L2	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

Type 40 Manifold/Base Mounted (Bottom ported)

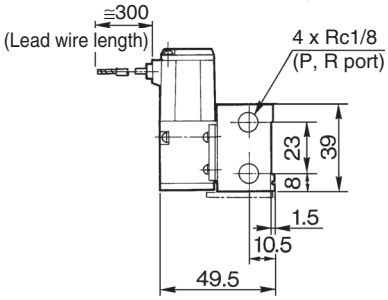
VV3K3-40- Stations -01-Q

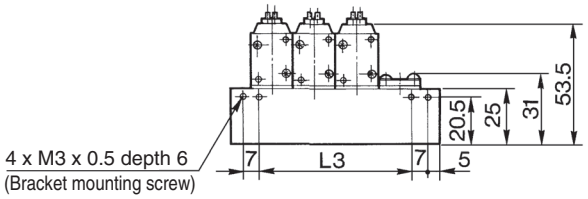


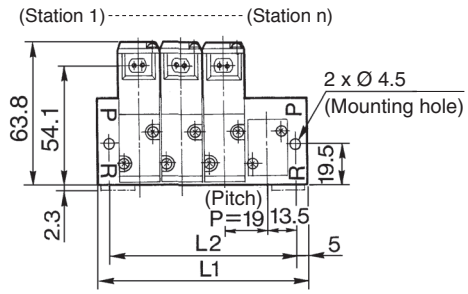
DIN terminal: D

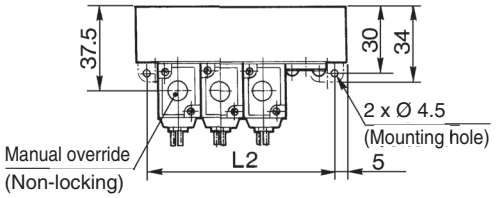


Grommet: G









Note: This valve series is □□ now only available □□ with DIN connector.

L Dimension

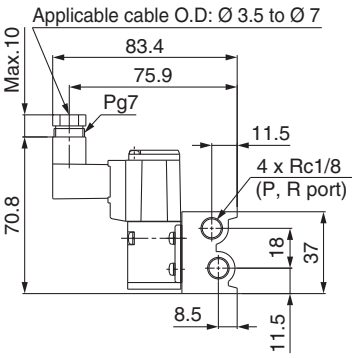
n: Stations

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

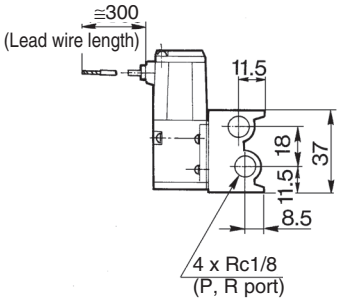
Type 42 Manifold/Base Mounted (Side ported)

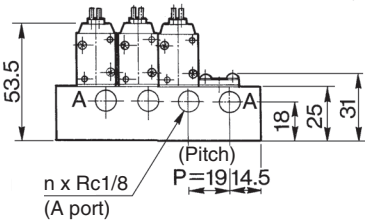
VV3K3-42-Stations-01-Q

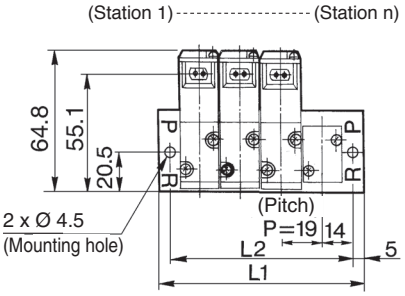
DIN terminal: D

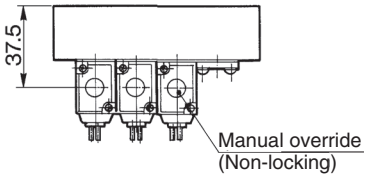


Grommet: G





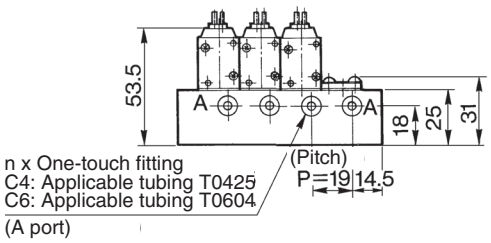


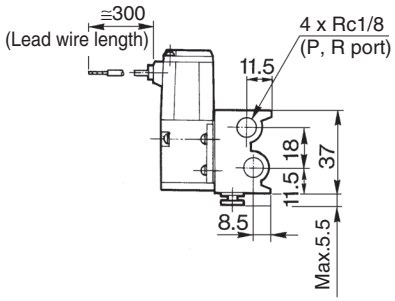


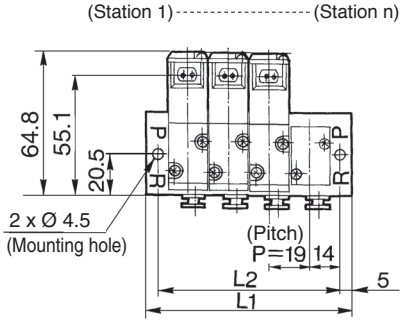
Note: This valve series is □ now only available □ with DIN connector.

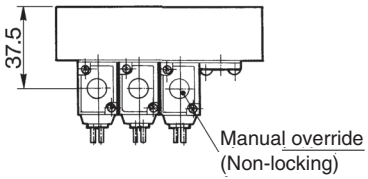
Built-in One-touch fitting: VV3K3-42-Stations-C4, C6-Q

Note: This valve series is □ now only available □ with DIN connector.



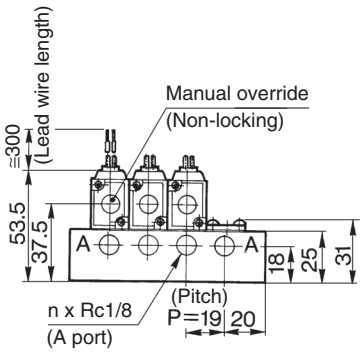


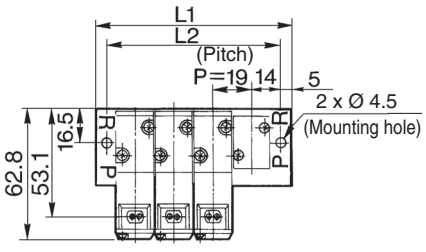




Refer to the above drawing for DIN terminal dimensions.

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





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
L_1	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399
L_2	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313	332	351	370	389

⚠ Caution
How to Wire DIN Terminal

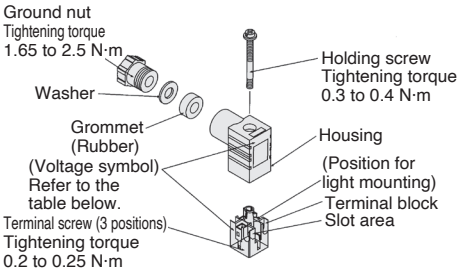
- **Connection**

1. Loosen the set screw and pull out the connector from the terminal block of the solenoid.
2. Remove screw and insert screwdriver into the slit area near the bottom of terminal block to separate block and housing.
3. 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.
4. Tighten the ground nut to secure the cable.

⚠ Caution

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

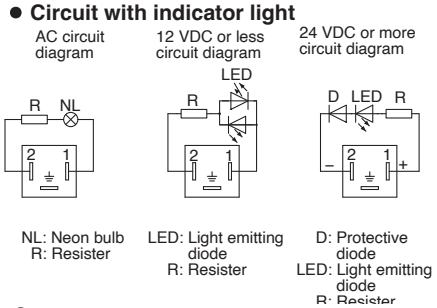
- **Change of electrical entry (Orientation)**
  After separating terminal block and housing, the cable entry direction can be changed by attaching the housing in the desired direction (4 directions in 90 increments).
  * In the case of w/ indicator light, avoid damaging the light with lead wire.
- **Precautions**
  Plug a connector in or out vertically, never at an angle.
- **Applicable cable**
  O.D.: ø3.5 to ø7
  (Reference)
  0.5 mm^2 2 core and 3 core wires equivalent to JIS C 3306
- **Applicable crimped terminal**
  Ferrule: Weidmüller
  H0.5/6 (0.3 to 0.5 mm^2) or equivalent



- **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**

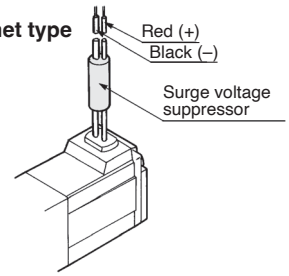


⚠ Caution
Light/Surge Voltage Suppressor

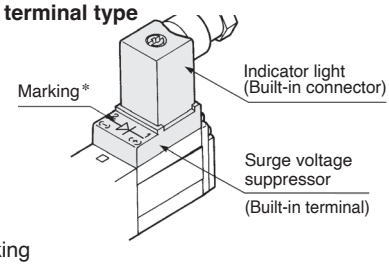
Rated voltage		Grommet (G) Standard: Y, V, W	Grommet (G) Continuous duty type (E)	DIN terminal (D) Standard: Y, V, W	DIN terminal (D) Continuous duty type (E)	Part no. symbol
AC	W/o indicator light	Varistor, Coil	Diode, Coil (G, GS)	No.1, Varistor, Coil, No.2	No.1, Diode, Coil, No.2 (D, DS)	S
AC	With indicator light	None		No.1, Neon bulb, Varistor, Coil, No.2	No.1, Neon bulb, Diode, Coil, No.2	Z
DC 24V 48V	W/o indicator light	Red (+), Diode, Coil, Black (–)		No.1(+), Diode, Coil, No.2(–)		S
DC 24V 48V	With indicator light	None		No.1(+), LED, Diode, Coil, No.2(–)		Z
DC 6V 12V	W/o indicator light	Varistor, Coil		No.1, Varistor, Coil, No.2		S
DC 6V 12V	With indicator light	None		No.1, Coil, 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**



* Marking

AC, 12 VDC or less for DC



For 24 V or more



⚠ Warning
Valve Mounting Direction

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 to 8 for external dimensions in mounting.

Vacuum Spec. Type: VK33□V (VK33□W)

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

1. 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

Recommended for continuous duty with long time loading.

⚠ Caution

1. This model is for continuous duty, not for high cycle rates.
2. Energizing solenoid should be done at least once in 30 days.

How to Calculate the Flow Rate

For obtaining the flow rate, refer to the **Web Catalogue**.

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) [1], and other safety regulations.

⚠ **Danger:**	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ **Warning:**	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Caution:**	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

1) ISO 4414: Pneumatic fluid power – General rules and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power – General rules and safety requirements for systems and their components.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. SMC products cannot be used beyond their specifications.
They are not developed, designed, and manufactured to be used under the following conditions or environments.
Use under such conditions or environments is not allowed.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogues and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

⚠ Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not allowed.
Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country.
The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. [2] Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

2) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**
A suction cup (vacuum pad) is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ **Safety Instructions**	Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.

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