3 Port Solenoid Valve

Series VKF300

Rubber Seal Direct Operated Poppet Type

As of September 2020, production of the VKF300 series will be discontinued. Please consider a product from the VK300 series as a substitute. **Click here**

CE [Option]

Compact yet provides a large flow capacity

Body width 18 mm

Available in vacuum applications (–101.2 kPa)

Can be used in vacuum/release circuits

Universal porting

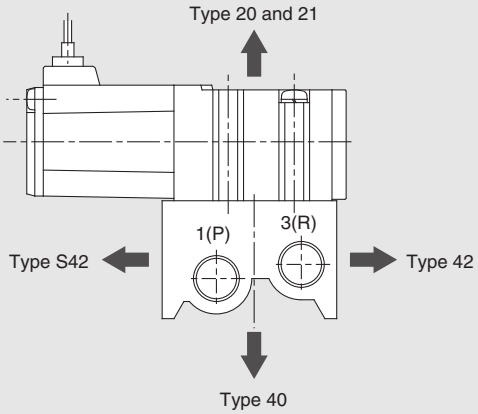
N.C./N.O. type can be switched by supplying air to port 1 (P) or 3 (R). 2 way valves and selector valves can also be freely used.

Ozone resistant (Series 80-)

FKM (Fluororubber) is used for the fluid-contact rubber materials, allowing for use even in ozone environments.

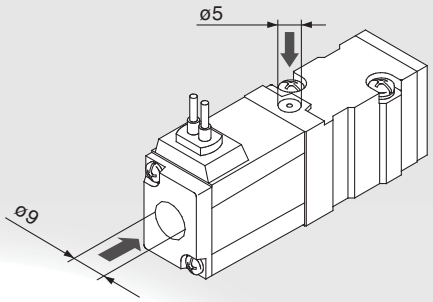
Various manifold piping directions

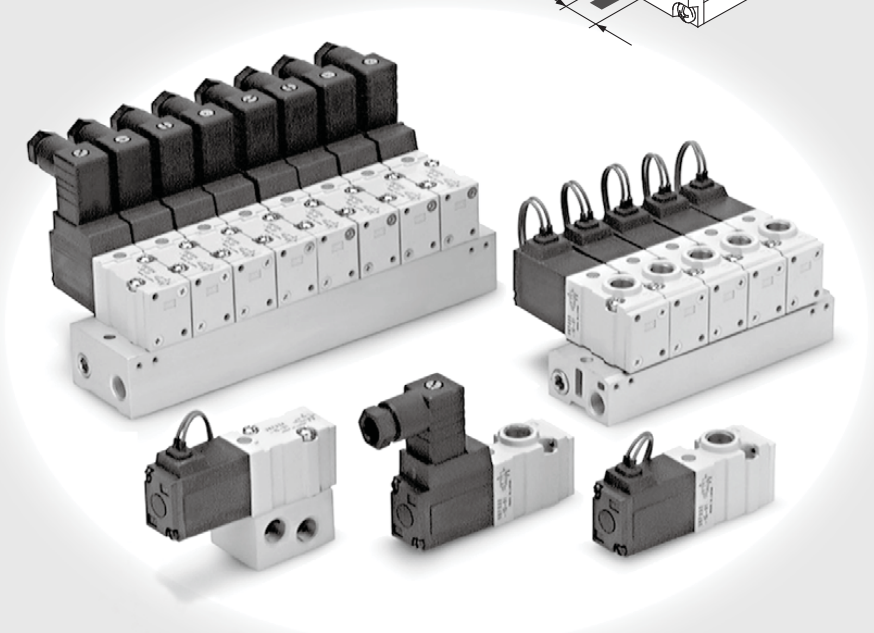
Output port: Manifold set-up allowing 360° rotation of 2 (A) entry direction (in 90° increments)



Easy manual operation

Since manual overrides are located in 2 directions, on the top and on the side of the valve, manual override operation is possible and is unaffected by mounting space and piping direction, etc.





3 Port Solenoid Valve
Direct Operated Poppet Type
Series VKF300

CE [Option]

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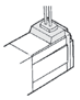
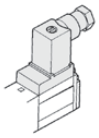
How to Order Valves

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

* Semi-Standard
For other rated voltages, please consult with SMC.

Electrical entry

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

* Refer to page 1978 for Connector part no.

Thread type

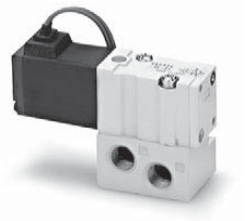
Nil	RC
F	G
N	NPT
T	NPTF

* For the port size 01 only.

Port size

M5	M5 x 0.8
01	Rc 1/8 (A port)

Body ported (Single type)	**VKF332**	□	—	5	G	□	—	M5	□	—	□	**(With bracket)**
Body ported (For manifold)	**VKF333**	□	—	5	G	□	—	M5	□	—	□	
Base mounted	**VKF334**	□	—	5	G	□	—	01	□	—	□	



CE-compliant

Nil	—
Q	CE-compliant

Valve option

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

* Applicable voltage: 12 and 24 VDC

Port size

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

Light/Surge voltage suppressor

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

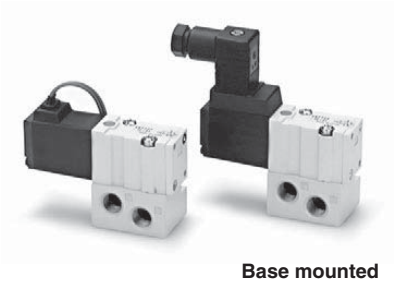
* Since the indicator light is built in the connector, thus, "DOZ" is not available.

Flow Characteristics/Weight

Valve model		Operating pressure range (MPa)	Port size	Flow characteristics						Weight (g)	
				1 → 2 (P → A)			2 → 3 (A → R)			Grommet	DIN terminal
				C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv		
Body ported	VKF33²₃	0 to 0.7	M5 x 0.8 Rc 1/8	0.67	0.10	0.15	0.41	0.39	0.11	80 (1)	90 (1)
	VKF33²₃Y			0.56	0.13	0.13	0.32	0.25	0.09		
	VKF33²₃E			0.56	0.13	0.13	0.32	0.25	0.09		
	VKF33²₃V	−101.2 KPa to 0.1		0.67	0.10	0.15	0.41	0.39	0.11		
	VKF33²₃W			0.56	0.13	0.13	0.32	0.25	0.09		
Base mounted (With sub-plate)	VKF334	0 to 0.7		0.68	0.13	0.15	0.59	0.31	0.14	120	130
	VKF334Y			0.56	0.13	0.13	0.32	0.25	0.09		
	VKF334E			0.56	0.13	0.13	0.32	0.25	0.09		
	VKF334V	−101.2 kPa to 0.1		0.68	0.13	0.15	0.59	0.31	0.14		
	VKF334W			0.56	0.13	0.13	0.32	0.25	0.09		

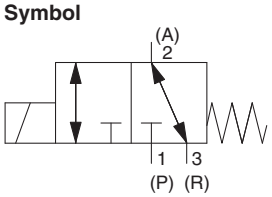
Note 1) VKF33□: Add 10 g to each when equipped with bracket.

Body ported



Base mounted

Symbol



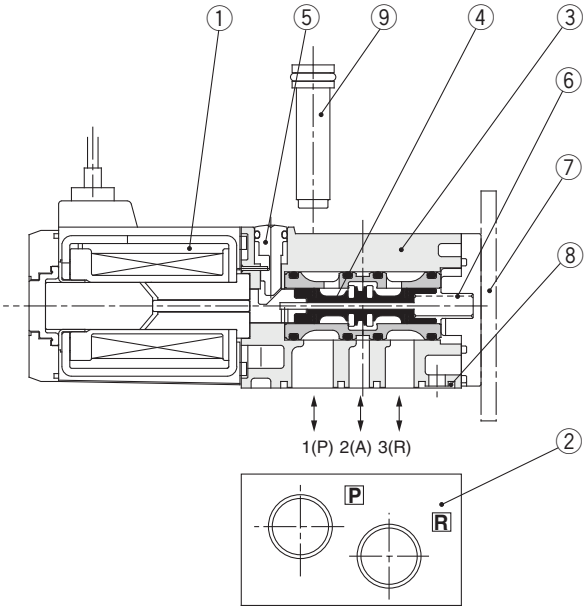
Standard Specifications

Valve specifications	**Type of actuation**		Direct operated type 2 position single solenoid
	Fluid		Air
	Ambient and fluid temperature		Max. 50°C
	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
	Impact/Vibration resistance (2)		300/50 m/s²
	Enclosure		Dustproof
Electricity specifications	**Electrical entry**		Grommet (G), DIN terminal (D)
	Rated voltage	**AC**	100, 110, 200, 220, 240 V
		DC	6, 12, 24, 48 V
	Allowable voltage fluctuation		±10% of rated voltage
	Apparent power (AC)	**Inrush**	9.5 VA/50 Hz, 8 VA/60 Hz
		Holding	7 VA/50 Hz, 5 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

Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
∗ When equipped with DC solenoid/surge voltage suppressor, a delay of about 20 to 30 msec. occurs in the OFF response time.

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)

Construction

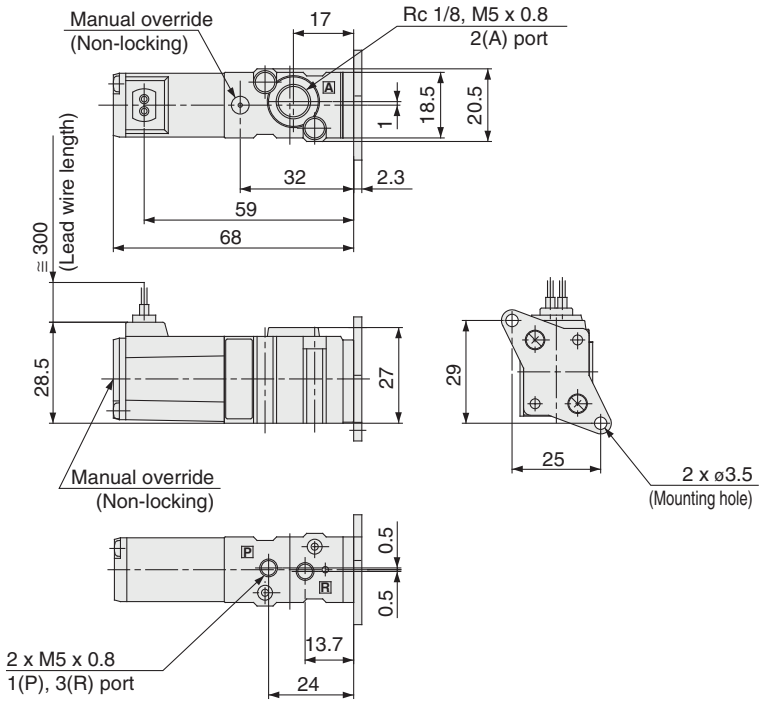


Component Parts

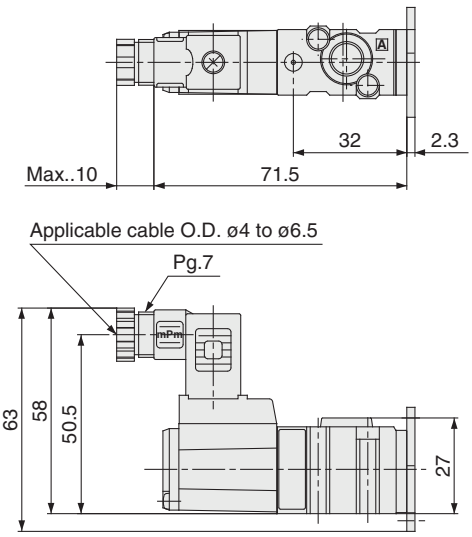
No.	Description	Material	Note
①	Solenoid coil assembly	—	
②	Sub-plate	Aluminum die-casted	For VKF334: VKF300-S-01
③	Body	Aluminum die-casted	
④	Spool/Sleeve	Aluminum	
⑤	Manual override	Resin	
⑥	Return spring	Stainless steel	
⑦	Bracket assembly	Steel	For VKF332: VKF300-13A-2
⑧	Gasket assembly (With mounting screw)	—	For VKF333: VKF300-11A-2 For VKF334: VKF300-11A-1
⑨	Bushing assembly	Resin	For VKF33 3/4: VKF300-6A-1 2 sets per unit required

Dimensions: Single Type

Body ported
Grommet: VKF332□-□G- $^{M5}_{01}$

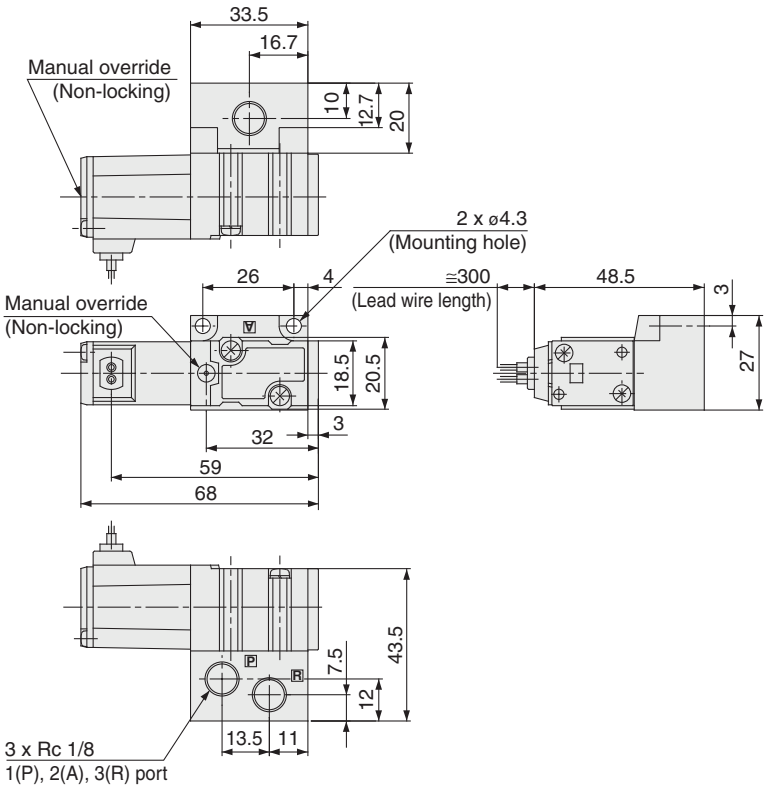


DIN terminal: VKF332□-□D- $^{M5}_{01}$

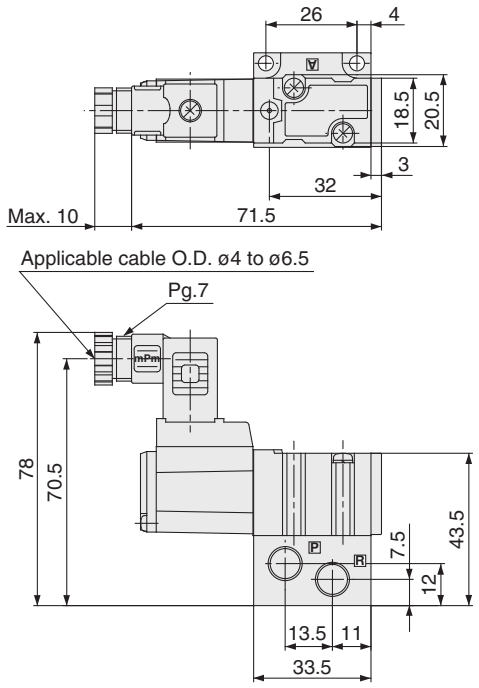


Refer to grommet type for other dimensions.

Base mounted
Grommet: VKF334□-□G-01



DIN terminal: VKF334□-□D-01



Refer to grommet type for other dimensions.

How to Order Manifold

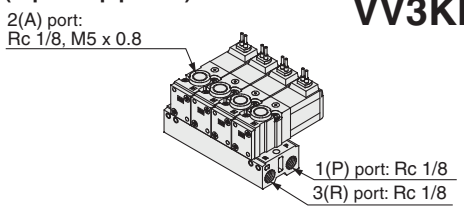
As of September 2020, production of the VKF300 series will be discontinued. Please consider a product from the VK300 series as a substitute. **Click here**

[Option]

Body ported

Common SUP/Common EXH

Type 20: Body ported
(A port top ported)



How to Order

VV3KF3 – 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

CE-compliant

Nil	—
Q	CE-compliant

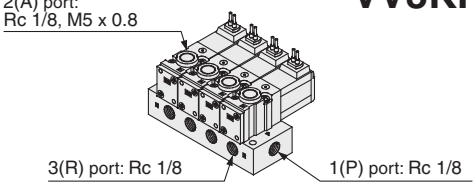
Applicable solenoid valve
VKF333□-□□□-M5 (-Q)
VKF333□-□□□-01 (-Q)

Applicable blanking plate assembly
VK300-42-1A

Bracket
VK300-43-1A

Common SUP/Individual EXH

Type 21: Body ported
(A port top ported)



How to Order

VV3KF3 – 21 – 05 – □ – □

Valve stations

01	1 station
⋮	⋮
20	20 stations

Thread type

Nil	Rc
00F	G
00N	NPT
00T	NPTF

CE-compliant

Nil	—
Q	CE-compliant

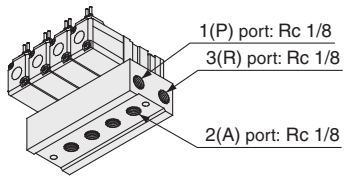
Applicable solenoid valve
VKF333□-□□□-M5 (-Q)
VKF333□-□□□-01 (-Q)

Applicable blanking plate assembly
VK300-42-1A

Base mounted

Common SUP/Common EXH

Type 40: Base mounted
(A port bottom ported)



How to Order

VV3KF3 – 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)

CE-compliant

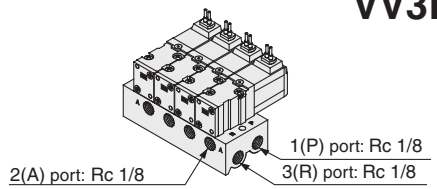
Nil	—
Q	CE-compliant

Applicable solenoid valve
VKF334□-□□□ (-Q)

Applicable blanking plate assembly
VK300-42-1A

Bracket
VK300-43-1A

Type 42: Base mounted
(A port side ported)



How to Order

VV3KF3 – □ 42 – 05 – 01 □ – □

Solenoid direction

Nil	Solenoid on opposite A port
S	Solenoid on same side as A port

Valve stations

01	1 station
⋮	⋮
20	20 stations

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

01	Rc 1/8
C4	ø4 cassette
C6	ø6 cassette

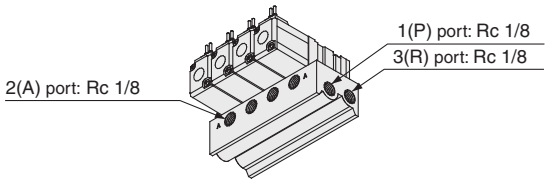
CE-compliant

Nil	—
Q	CE-compliant

Applicable solenoid valve
VKF334□-□□□ (-Q)

Applicable blanking plate assembly
VK300-42-1A

Type S42 (Solenoid on same side as port A)

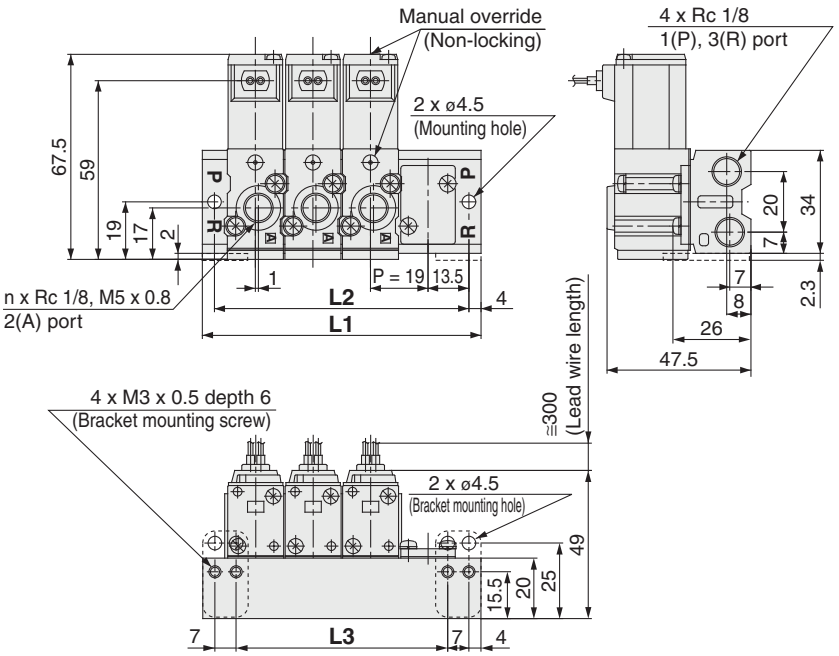


Dimensions: Manifold

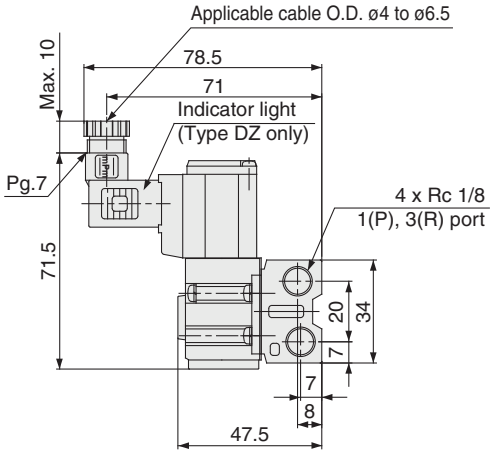
Body ported

Type 20 Manifold Common SUP, Common EXH/Top Ported

Grommet: G



DIN terminal: D



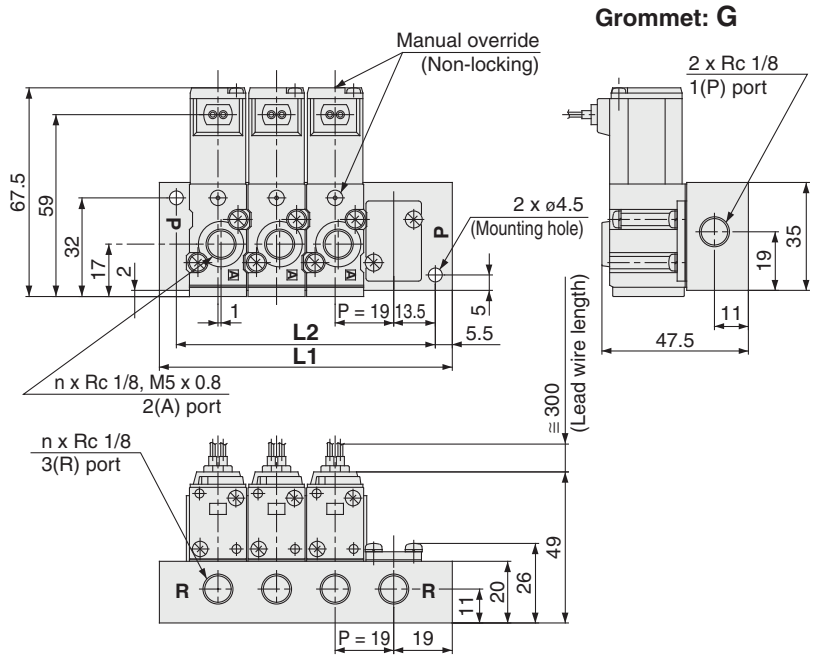
L Dimension

n: Stations

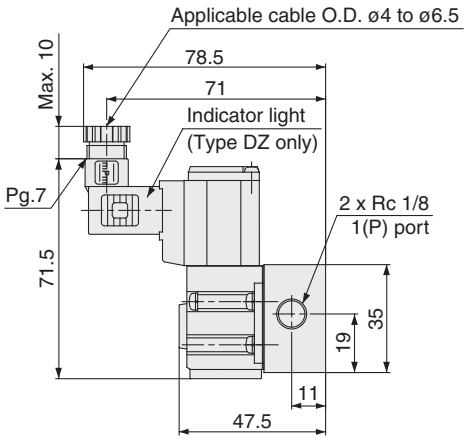
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	35	54	73	92	111	130	149	168	187	206	225	244	263	282	301	320	339	358	377	396
L2	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
L3	13	32	51	70	89	108	127	146	165	184	203	222	241	260	279	298	317	336	355	374

Type 21 Manifold Common SUP, Individual EXH/Top Ported

Grommet: G



DIN terminal: D



L Dimension

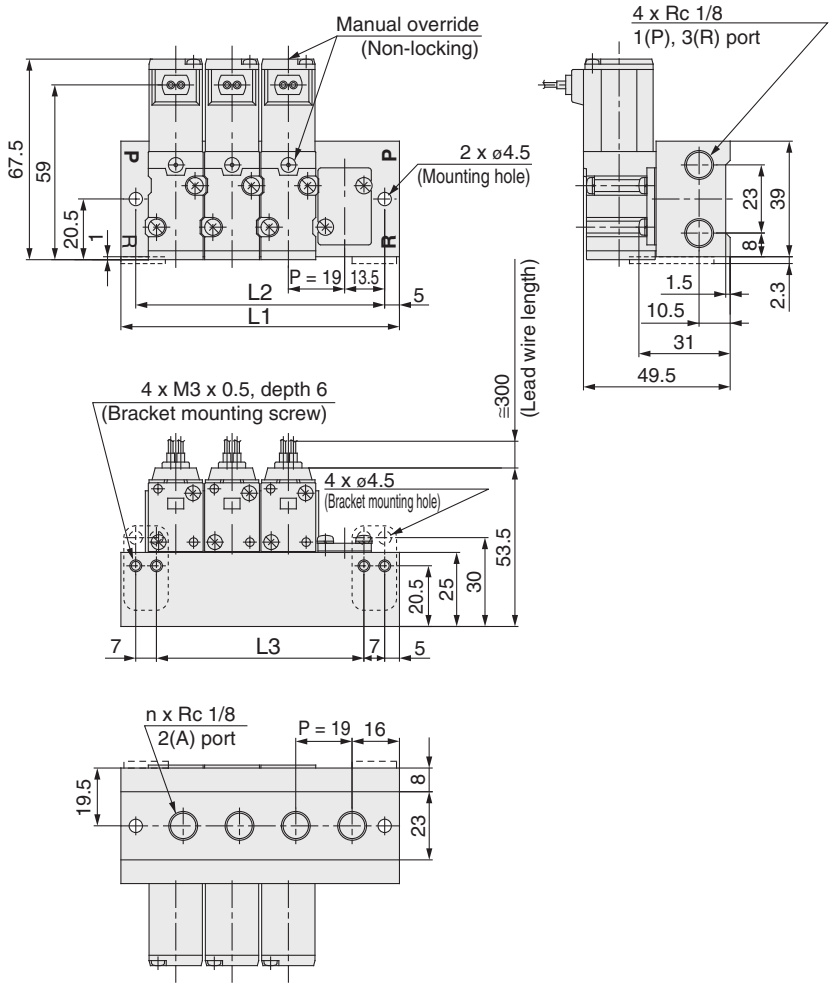
n: Stations

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

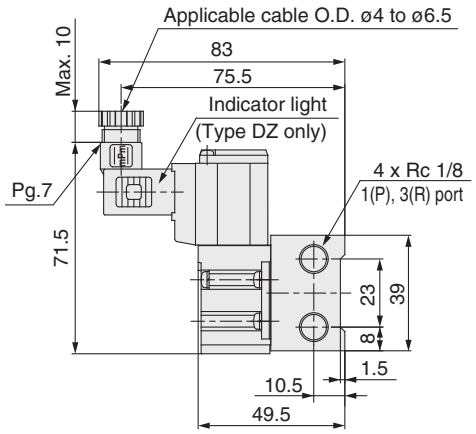
Base mounted

Type 40 Manifold **Common SUP, Common EXH/Bottom Ported**

Grommet: G



DIN terminal: D



L Dimension

n: Stations

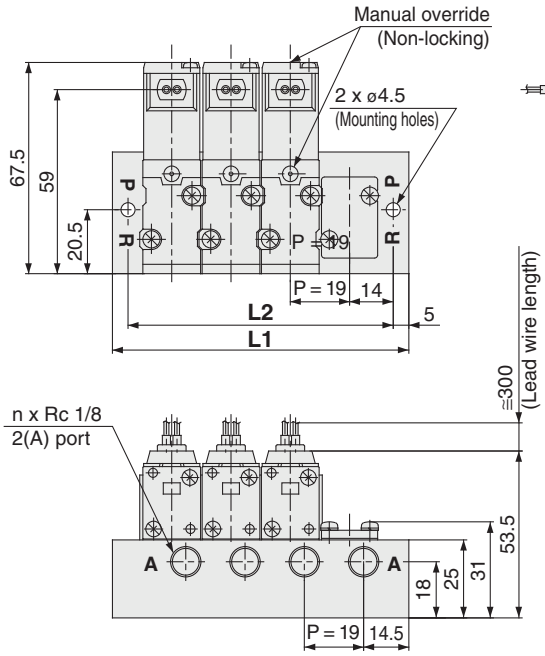
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398
L2	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
L3	13	32	51	70	89	108	127	146	165	184	203	222	241	260	279	298	317	336	355	374

Dimensions: Manifold

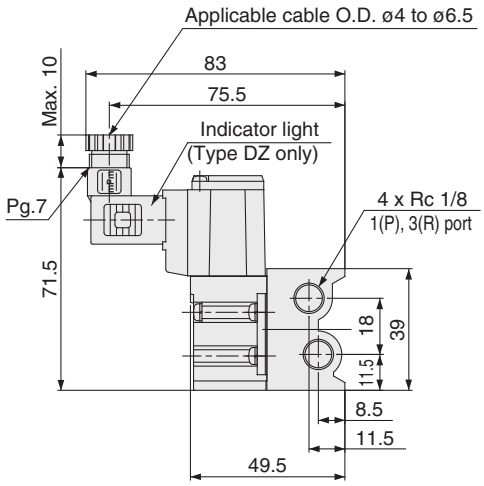
Base mounted

Type 42 Manifold Common SUP, Common EXH/Side Ported

Grommet: G

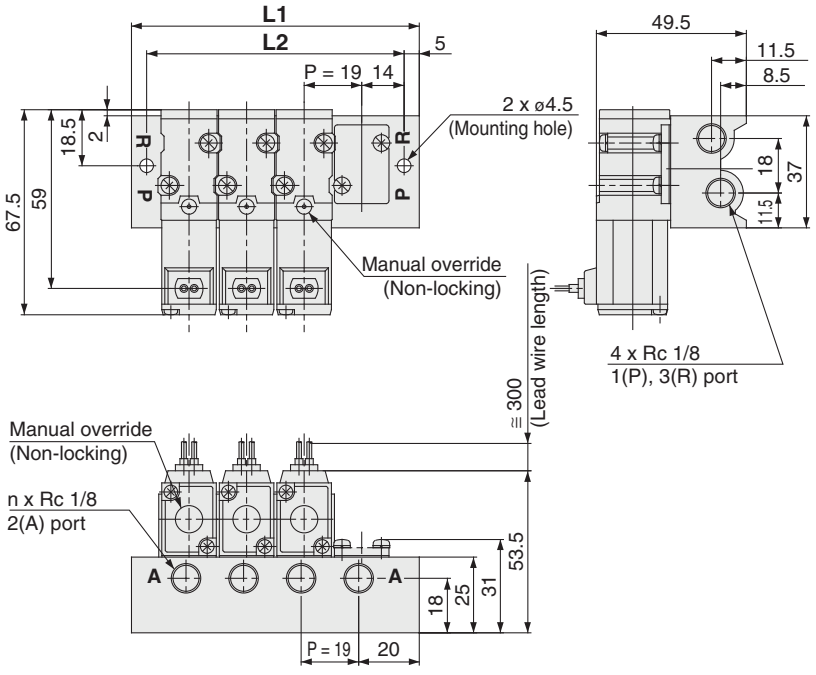


DIN terminal: D

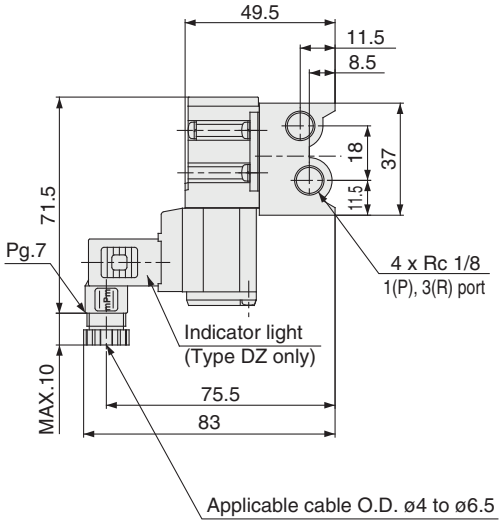


Type S42 Manifold Common SUP, Common EXH/Side Ported: Same direction as solenoid

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	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313	332	351	370	389

Series VKF300
Specific Product Precautions 1

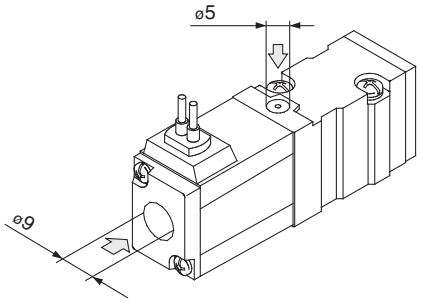
Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

Manual Override Operation

⚠Warning

Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

■ Non-locking push type (Tool required)



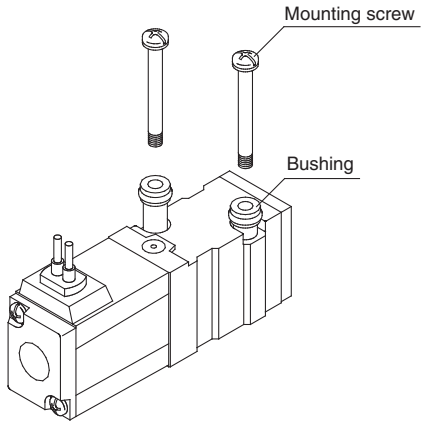
There are manual overrides in 2 directions, on the top and on the side (solenoid side). By pressing either of the manual overrides in the direction of the arrow (R) until it stops (approx. 1 mm), it will turn ON, and it turns OFF when released.

Mounting of Valves

⚠Caution

After confirming the gasket is correctly placed under the valve, securely tighten the bolts with the proper torque shown in the table below.

Proper tightening torque (N·m)
0.6 to 0.8



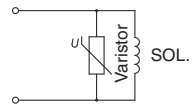
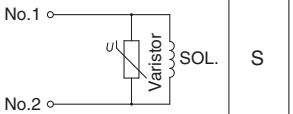
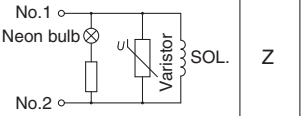
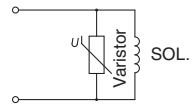
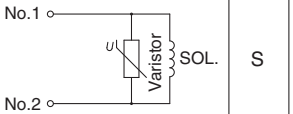
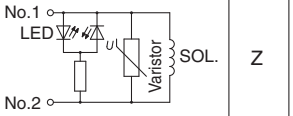
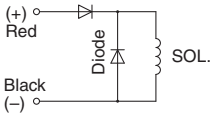
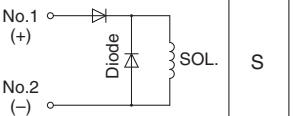
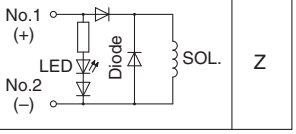
The bushing may be damaged if the tightening torque of 0.8 N·m is exceeded. In the event that damage does occur, be sure to replace the bushing.

SUP Block bushing assembly no.	VKF300-6A-1

• 2 sets per unit are required.

Light/Surge Voltage Suppressor

⚠Caution

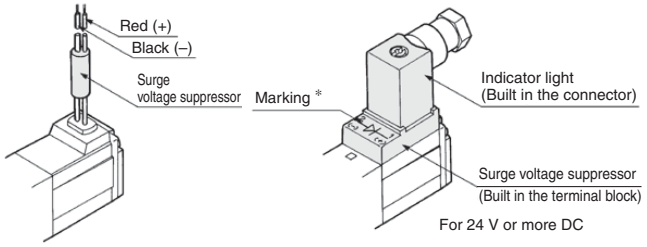
		Grommet type (G)	DIN terminal type (D)	Symbol
AC	Without indicator light			S
	With indicator light	None		Z
12 VDC or less	Without indicator light			S
	With indicator light	None		Z
24 VDC or more	Without indicator light			S
	With indicator light	None		Z

Precautions on connection of 24 V or more DC

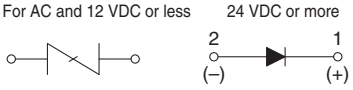
For the grommet type, connect the positive (+) side to the red lead wire and connect the negative (–) side to the black lead wire. For the DIN terminal, connect the positive (+) side to the connector's no.1 terminal and connect the negative (–) side to the no.2 terminal. (See the markings on the terminal block.)

∗ For 12 V or less DC, positive (+) and negative (–) can be connected in either direction.

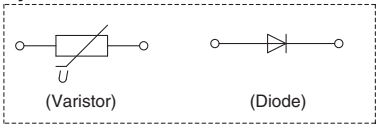
● Grommet type **● DIN terminal type**



∗ Marking



Symbol



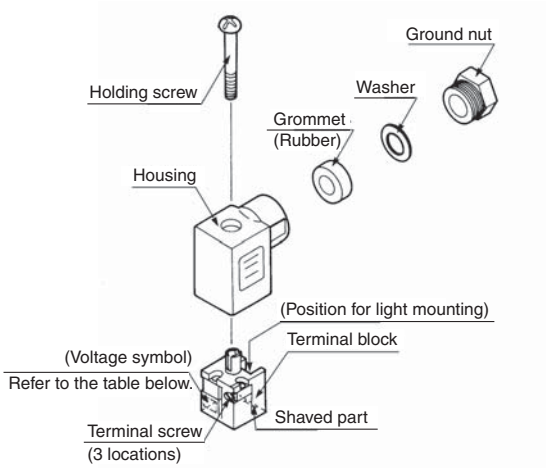
Series VKF300
Specific Product Precautions 2

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

How to Wire DIN Terminal

⚠Warning

- **Connection**
  1. **Loosen the set screw and pull out the connector from the terminal block of the solenoid.**
  2. **After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it up, separating the terminal block and the housing.**
  3. **Loosen the terminal screws (slotted screws) on the terminal block, insert the core of the lead wire into the terminal in accordance with the prescribed connection method, and attach securely with the terminal screws.**
  4. **Tighten the ground nut to secure the wire.**
- **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 indicator light, avoid damaging the light with lead wire.
- **Precautions**
  The connector should be inserted and pulled out in a straight line without tilting diagonally.
- **Applicable cable**
  O.D.: ø4 to ø6.5
  (Reference)
  0.5 mm² 2 core and 3 core wires equivalent to JIS C 3306



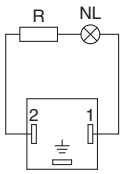
● **Connector part no.** VK300-82-1

● **Part no. for connector with indicator light**

Rated voltage	Voltage symbol	Part no.
100 VAC	A1	VK300-82-2-01
200 VAC	A2	VK300-82-2-02
24 VAC	A3	VK300-82-2-07
6 VDC	LW06	VK300-82-4-51
12 VDC	LW2	VK300-82-4-06
24 VDC	LD4	VK300-82-3-05
48 VDC	LD8	VK300-82-3-53

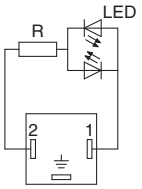
● **Circuit with indicator light**

AC Circuit diagram



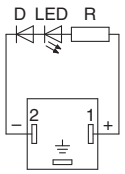
NL: Neon bulb
R: Resistor

12 VDC or less Circuit diagram



LED: Light emitting diode
R: Resistor

24 VDC or more Circuit diagram



D: Protective diode
LED: Light emitting diode
R: Resistor

How to Calculate the Flow Rate

For obtaining the flow rate, refer to front matters 42 to 45.