

3 Port Direct Operated Poppet Solenoid Valve Rubber Seal

Series VT317

Compact yet provides a large flow capacity

Dimensions (W x H x D).....45 x 89.5 x 45 (Grommet)

C: 2.6 dm³/(s·bar)
(Passage 2 → 3)

Suitable for use in vacuum applications

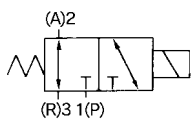
-101.2 kPa
(For vacuum specifications: VT/VO317V)

A single valve with 6 valve functions

(Universal porting type)
Selective porting can provide 6 valve functions, such as N.C. valve, N.O. valve, Divider valve, Selector valve etc.



JIS Symbol



How to Order

V T 317 [] 1 G [] 02 []

Body type

T	Body ported
0	Manifold

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Nil	Without port (For manifold)
02	1/4 (8A)

Valve option

Nil	Standard type
E*	Continuous duty type
V*	For vacuum

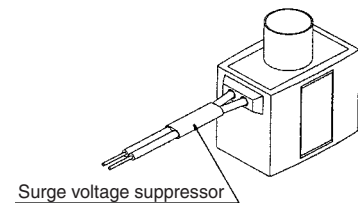
* Option

Light/Surge voltage suppressor

Electrical entry	G	H	C	T	D
Symbol					
Nil	—	—	—	—	—
S	● (Note)	● (Note)	● (Note)	●	●
Z	—	—	—	●	●

S: With surge voltage suppressor
Z: With light/surge voltage suppressor
* As to the case of rated voltage [Others (9)], please contact SMC.

Surge voltage suppressor mounting part (For "G")



Electrical entry

G	Grommet, 300 mm lead wire
H	Grommet, 600 mm lead wire
C	Conduit
T	Conduit terminal
D	DIN terminal

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

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

VS

VFN

Manifold

Model	Applicable manifold type	Accessory
VO317□	Common or individual exhaust	O-ring (P10, 4 pcs.) (Note) Bolts (M4 x 0.7 x 20, 2 pcs.)



(Note) It is not applied to "Continuous duty type". Refer to the accessories on page 4-7-14.

Series VT317

Standard Specifications

Type of actuation	Direct operated type 2 position single solenoid		
Fluid	Air		
Operating pressure range	0 to 0.9 MPa		
Ambient and fluid temperature	-10 to 50°C (No freezing. Refer to page 4-18-4.)		
Response time ⁽¹⁾	30 ms or less (at the pressure of 0.5 MPa)		
Max. operating frequency	10 Hz		
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)		
Manual override	Non-locking push type		
Mounting orientation	Unrestricted		
Shock/Vibration resistance ⁽²⁾	150/50 m/s ²		
Enclosure	Dustproof		
Electrical entry	Grommet, Conduit, Conduit terminal, DIN terminal		
Coil rated voltage (V)	AC (50/60 Hz)	100, 200, 24*, 48*, 110*, 220*, 240*	
	DC	24, 6*, 12*, 48*, 100*	
Allowable voltage fluctuation	-15 to +10% of rated voltage		
Apparent power ⁽³⁾	AC	Inrush	19 VA (50 Hz), 16 VA (60 Hz)
		Holding	11 VA (50 Hz), 7 VA (60 Hz)
Power consumption ⁽³⁾	DC	Without indicator light: 6 W, With indicator light: 6.3 W	
Light/Surge voltage suppressor (Not applicable for grommet type)	AC	ZNR (Varistor), Neon bulb	
	DC	ZNR (Varistor), LED (Neon bulb for 100 V or more)	



* Option

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 1000 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)

Note 3) At rated voltage

Flow Characteristics/Weight

Valve model	Flow characteristics												Weight
	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	
VT317													
VT317V (Vacuum spec. type)	2.4	0.26	0.62	2.6	0.34	0.67	2.8	0.25	0.67	2.5	0.37	0.66	Grommet
VT317E (Continuous duty type)													

Note) Values for a single valve unit. It differs in the manifold case. Refer to manifold specifications on page 4-7-14.

Option

Continuous duty type: VT317E

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

⚠ Caution

1. 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.
2. Energizing solenoid should be done at least once in 30 days.

Vacuum spec. type: VT317V

This vacuum model has less air leakage than the standard model under low pressure. It is recommended for vacuum application.

⚠ Caution

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

Specifications different from standard are as follows.

Operating pressure range	-101.2 kPa to 0.1 MPa
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Construction

De-energized

Energized

Operation principles
<De-energized>
 Spool valve ② is pushed upward by the return spring ③, port P is closed, and port A and port R are opened.

<Energized>
 When an electric current is applied to the molded coil ④, the armature ⑤ is attracted to the core ⑥, and through the push rod ⑦, it pushes down the spool valve ②. Then, port P and port A are connected. At this time, there will be gaps between the armature ⑤ and the core ⑥, but the armature will be magnetically attracted to the core ⑥.

Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Color: Platinum silver
②	Spool valve	Aluminum, NBR	

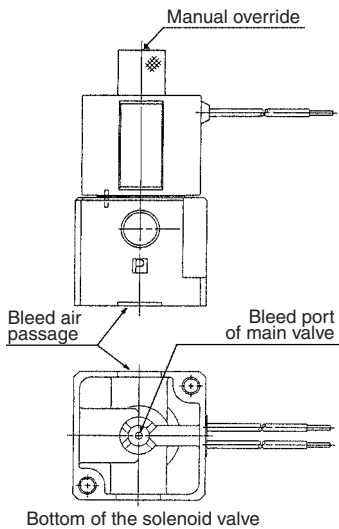
3 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series VT317

⚠ Precautions

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

⚠ Caution

1. A bleed port for the main valve is located at the bottom of the solenoid valve. Since blocking it causes malfunction, do not block it.
* Ordinarily, when the solenoid valve is mounted on a metal surface, it can breathe through the breather hole, via the breather groove. However, in particular, if the surface to be mounted is made of the rubber, the rubber could deform and block the hole.
2. Make sure that dust and/or other foreign materials should not enter the valve from the unused port (e.g. exhaust port). Also, since there is a bleed port for the armature in the manual override, do not allow accumulation of dust and/or other foreign materials to block bleed port.



How to Calculate the Flow Rate

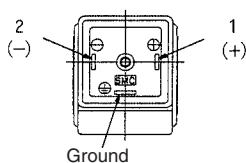
For obtaining the flow rate, refer to page 4-1-6.

Lead Wire Color (Grommet)

Voltage	Color
100 VAC	Blue
200 VAC	Red
DC	Red (+), Black (-)
Other	Gray

Electrical Connection

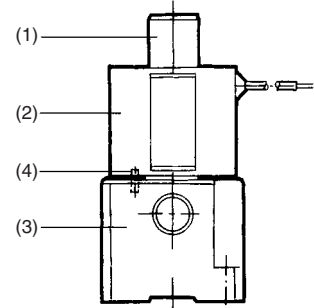
DIN terminal is connected inside as in the figure below. Connect to the corresponding power supply.



⚠ Caution

Change of Electrical Entry Angle

1. Series VT317 can change electrical entry angle. (4 positions)
2. How to change: Loosen the nut (1), remove the coil (2) from the body assembly (3), place the positioning pin (4) at the required place, put back the coil (2) to its place, and tighten sufficiently with lock nut (1).



Light/Surge Voltage Suppressor

		Grommet (G) Conduit (C)	Conduit terminal (T) DIN terminal (D)
Surge voltage suppressor (S)	AC		
	DC		
Light/Surge voltage suppressor (Z)	AC	None	
	DC		<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>48 VDC or less</p> </div> <div style="text-align: center;"> <p>100 VDC</p> </div> </div>

Protection circuit for light/surge voltage suppressor is not the polarity type.

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

Series VT317

How to Use DIN Terminal

1. Disassembly

- 1) After loosening the thread (1), then if the cover (4) is pulled in the direction of the thread, the connector will be removed from the body of equipment (solenoid, etc.).
- 2) Pull out the screw (1), then remove the gasket (2a) or (2b).
- 3) On the bottom part of the terminal block (3), there's a cut-off part (indication of an arrow) (3a). If a small flat head screwdriver is inserted between the opening in the bottom, terminal block (3) will be removed from the cover (4). (Refer to graph at right.)
- 4) Remove the cable gland (5) and plain washer (6) and rubber seal (7).

2. Wiring

- 1) Pass them through the cable (8) in the order of cable ground (5), washer (6), rubber seal (7), and then insert into the housing (4).
- 2) Dimensions of the cable (8) are the figure as below. Skin the cable and crimp the crimped terminal (9) to the edges.
- 3) Remove the screw with washer (3e) from the bracket (3e). (Loosen in the case of Y shape type terminal.) As shown in the below figure, mount a crimped terminal (9), and then again tighten the screw (3e).

Note) Tighten within the tightening torque of 0.5 N·m \pm 15%.

Note: It is possible to wire even in the state of bare wire. In that

case, loosen the screw with washer (3e) and place a lead wire into the bracket (3d), and then tighten it once again.

b The maximum size for the round terminal (9) is 1.25 mm²—3.5 and for the Y terminal is 1.25 mm²—4.

c Cable (8) external: ϕ 6 to ϕ 12 mm

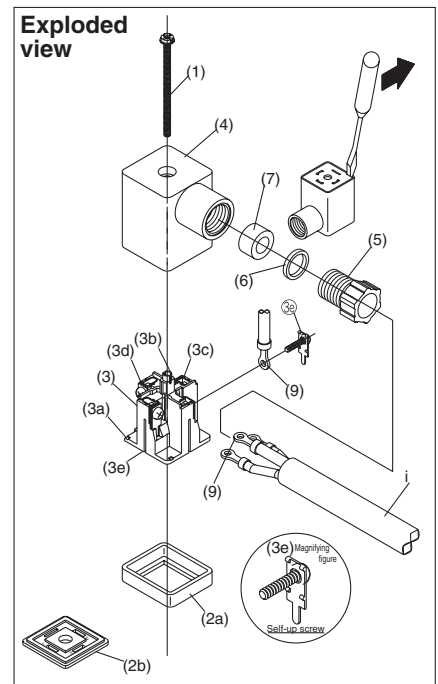
Note) For the one with the external dimension ranged between 9 to 12 mm ϕ , remove the inside parts of the rubber seal (7) before using.

3. Assembly

- 1) Terminal box (3) connected with housing (4) should be reinstated. (Push it down until you hear the click sound.)
- 2) Putting rubber seal (7), plain washer (6), in this order into the cable introducing slit on the housing (4), then further tighten the cable gland (5) securely.
- 3) By inserting gasket (2a) or (2b) between the bottom part of the terminal box (3) and a plug on an equipment, screw in (1) on top of the housing (4) and tighten it.

Note) Tighten within the tightening torque of 0.5 N·m \pm 20%.

Note: The orientation of a connector can be changed arbitrarily, depending on the combination of a housing (4) and a terminal box (3).



Comparison between the Product Model No. and the Coil Part No.

Product model no.	Coil no.	Coil assembly with terminal part no.
VT/O317□-*G(-02)	PVT317-001GB-**	—
VT/O317□-*GS(-02)	PVT317-*G	—
VT/O317□-*H(-02)	PVT317-001GB-**L06	—
VT/O317□-*HS(-02)	PVT317-*G-06	—
VT/O317□-*C(-02)	PVT317-001CB-**	—
VT/O317□-*CS(-02)	PVT317-*C	—
VT/O317□-*T(-02)	—	PVT317-001TBT-**
VT/O317□-*TS(-02)	—	PVT317-001TBTS-**
VT/O317□-*TZ(-02)	—	PVT317-001TBTZ-**
VT/O317□-*D(-02)	PVT317-001DB-**	PVT317-001DBT-**
VT/O317□-*DS(-02)	PVT317-001DB-**	PVT317-001DBTS-**
VT/O317□-*DZ(-02)	PVT317-001DB-**	PVT317-001DBTZ-**

Note 1) * mark in the product model numbers denotes the rated voltage.

Note 2) □ mark denotes the valve option.

Note 3) * mark and ** mark are for coil part number and coil assembly with terminal the rated voltage.

Example 1) In the case of ** VT317-001GB-05

Example 2) In the case of * PVT317-5G

⚠ Caution

When the rated voltage is AC and if it is assembled with the coil for DC, response may be delayed and occur malfunction. Also, for DC valves, when the coil for AC is assembled, it occurs malfunction. For AC valves, assemble the coil for AC, and for DC valves, assemble the coil for DC.

Connector for DIN Terminal

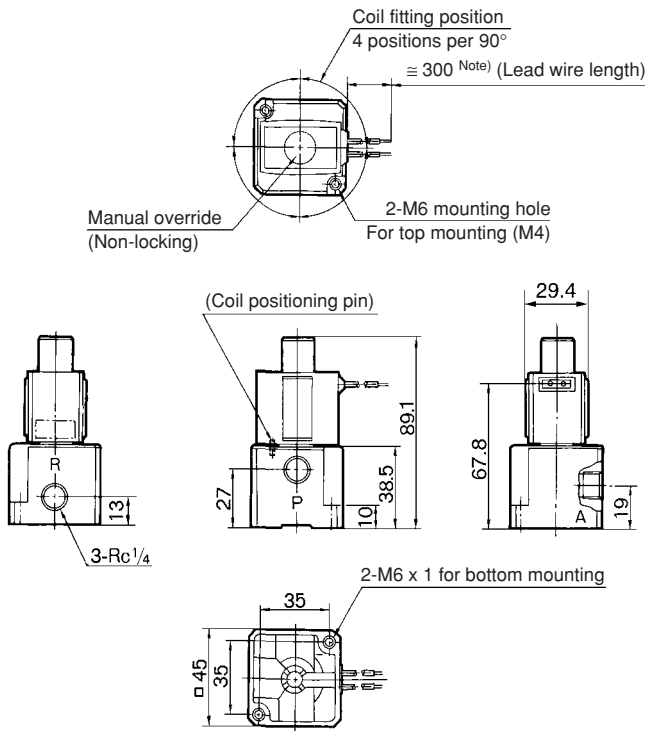
Rated voltage	Light/Surge voltage suppressor (D)	With surge voltage suppressor (DS)	Light/Surge voltage suppressor (DZ)
100 VAC	GDM2A	GDM2A-S1	GDM2A-Z1
200 VAC		GDM2A-S2	GDM2A-Z2
24 VDC		GDM2A-S5	GDM2A-Z5

For other rated voltages, please consult with SMC.

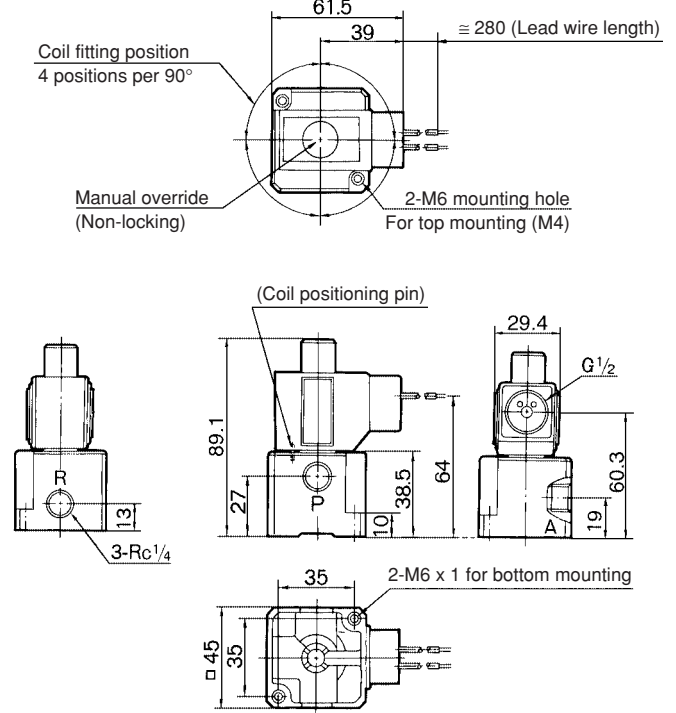
3 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series **VT317**

Dimensions

Grommet: VT317-□G

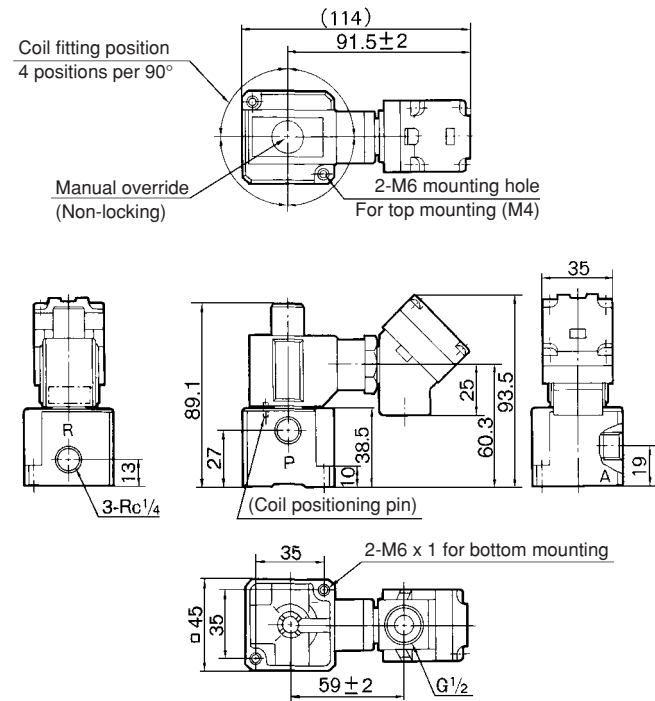


Conduit: VT317-□C

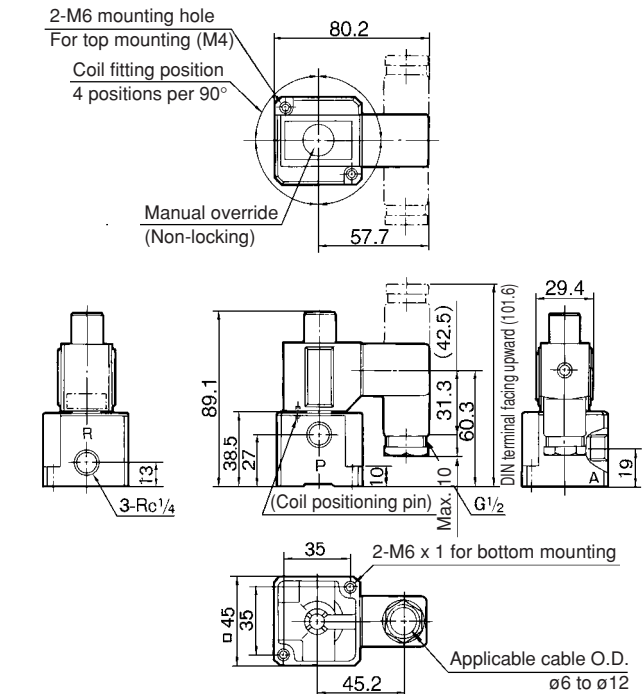


Note) There is also "VT317-□H" (Lead wire length: 600 mm).

Conduit terminal: VT317-□T



DIN terminal: VT317-□D



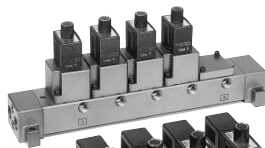
- V100
- SY
- SYJ
- VK
- VZ
- VT**
- VP
- VG
- VP
- S070
- VQ
- VKF
- VQZ
- VZ
- VS
- VFN

Series VT317

Manifold Specifications

VT317 manifold is B mount style and available both as a common exhaust and individual exhaust model.

VV317-02-051-02-A



Common exhaust

VV317-02-051-02



VV317-02-053-02

Individual exhaust

How to Order Manifold

VV317 - 02 - 05 1 - 02 - A

Base type: 1/4

VT317 manifold
* Please indicate manifold base type, applicable manifold valve and blanking plate when ordering.

Ordering example:
VV317-02-051-02-A..... 1 pc. (5-station manifold base)
VO317-1G..... 4 pcs.
PVT317-53-1A..... 1 pc. (Blanking plate)

Valve stations

02	2 stations
:	:
20	20 stations

Max. 20

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

A port size (Base piping) 1/4

Option
A | Mounting bracket *
* Common exhaust type only

Symbol

Symbol	Passage		Porting specifications
	P	R	
1	Common	Common	Side
3	Common	Individual	Side

Manifold Specifications

Manifold type	B mount			
Max. number of stations	20 stations ⁽¹⁾			
Applicable solenoid valve	VO317□-□□□□ ⁽³⁾			
Exhaust port		Port location (Direction)/Port size		
Symbol	Type	P	A	R
1	Common ⁽²⁾	Base (Side) 1/4 (3/8)	Base (Side) 1/4	Base (Side) 1/4 (3/8)
3	Individual	Base (Side) 1/4	Base (Side) 1/4	Base (Side) 1/4

Note 1) For more than 3 stations, supply air both sides of P port. The common exhaust type should exhaust from both of the R port.

Note 2) In the case of common exhaust type, R and P ports size can be Rc 3/8 by using a mounting adaptor.

Note 3) Can also be applied to Series VVT320 manifold.

Accessory for Applicable Solenoid

Description	Part no.	Qty	Note
O-ring	P10	4	Standard type vacuum specifications type Continuous duty type
	P10F		
Hexagon socket head screw	Max. 0.7 x 20	2	

Option

Description	Part no.
Blanking plate (With screw, O-ring)	PVT317-53-1A
Mounting bracket (With screw)	DXT010-37-4 (For common exhaust)

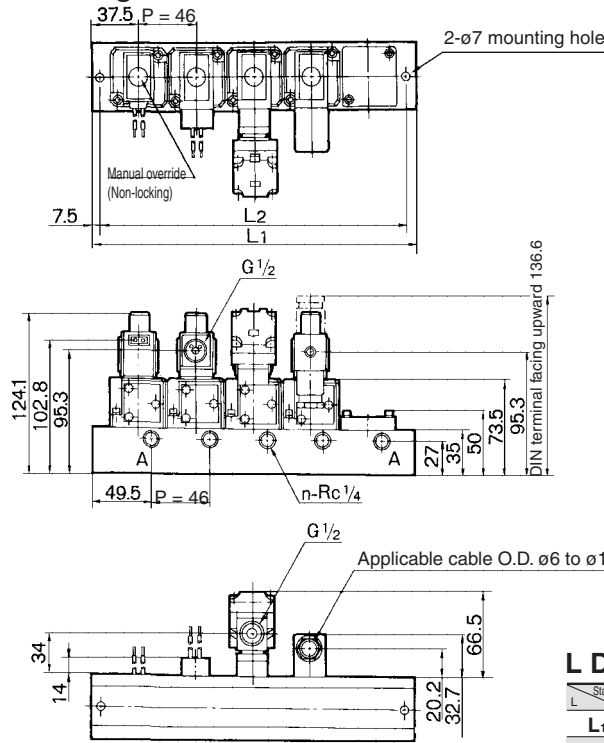
Flow Characteristics/Weight

Valve model	Flow characteristics												Weight Grommet
	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	
VO317	2.0	0.11	0.47	2.2	0.12	0.49	2.0	0.14	0.45	2.1	0.14	0.48	0.32 kg
VO317V (Vacuum spec. type)													
VO317E (Continuous duty type)													

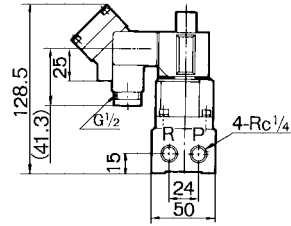
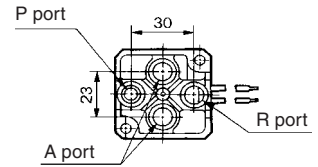
3 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series **VT317**

Dimensions: Common Exhaust (Interchangeable with VVT320 for mounting)

Without mounting bracket: VV317-02-□1-02



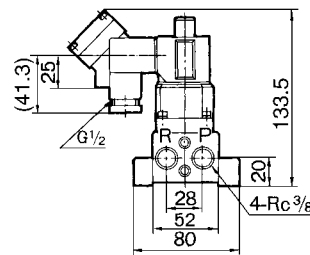
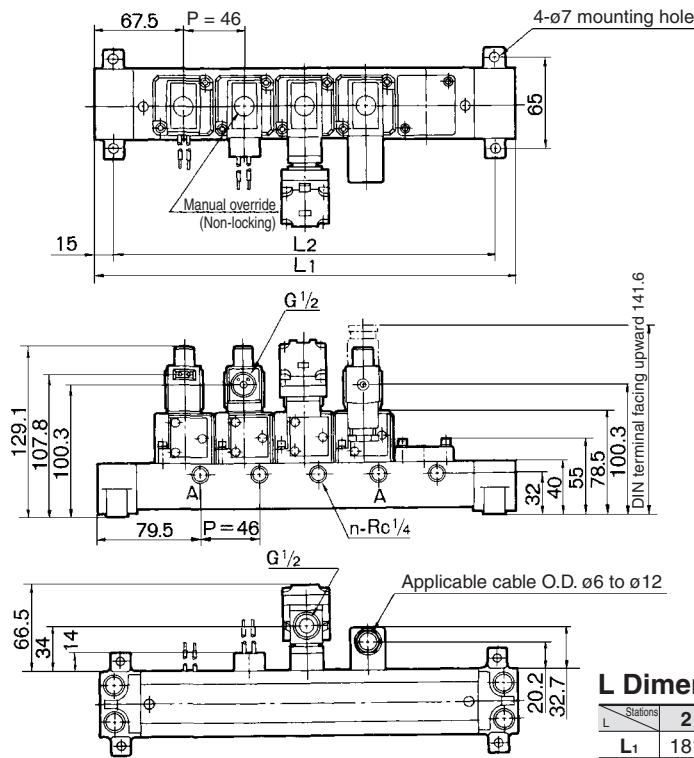
A single valve unit port location



L Dimension

Stations		2	3	4	5	6	7	8	9	10	Formula
L ₁		121	167	213	259	305	351	397	443	489	L ₁ = 46 x n + 29
L ₂		106	152	198	244	290	336	382	428	474	L ₂ = 46 x n + 14

With mounting adaptor: VV317-02-□1-02-A



L Dimension

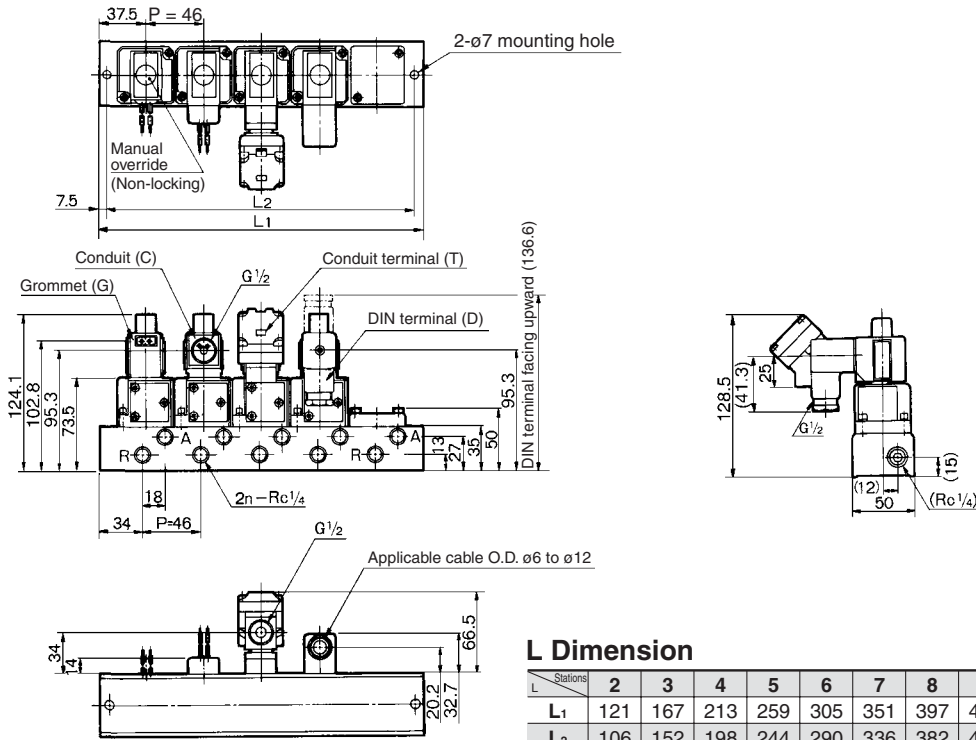
Stations		2	3	4	5	6	7	8	9	10	Formula
L ₁		181	227	273	319	365	411	457	503	549	L ₁ = 46 x n + 89
L ₂		151	197	243	289	335	381	427	473	519	L ₂ = 46 x n + 59

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

Series VT317

Dimensions: Individual Exhaust

Without mounting bracket/VV317-02-□3-02



L Dimension										n: Stations
L Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	121	167	213	259	305	351	397	443	489	L ₁ = 46 x n + 29
L ₂	106	152	198	244	290	336	382	428	474	L ₂ = 46 x n + 14

⚠ Precautions

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

Mounting

⚠ Warning

- When mounting valves on the manifold base, the mounting orientation is decided. If it is mounted in the wrong direction, connected equipment may malfunction. Mount it by referring to how to switch over from N.C. to N.O. specifications.

⚠ Caution

- Each valve is fixed to the manifold base with two M4 mounting screws. Tighten the screws evenly when re-mounting. Tightening torque of the mounting screw (M4): 1.4 N·m
- For mounting, tighten M4 or equivalent screws evenly into the mounting holes of the manifold base.

Changing from N.C. to N.O.

⚠ Caution

Universal porting permits convertibility N.C./N.O. by a simple 180 degree rotation. Mounting conditions for N.C. and N.O. is indicated as below figure.

Exhaust port type \ Valve	N.C.	N.O.
Common exhaust		
Individual exhaust		



* Changing from N.C. to N.O.

This product is delivered as N.C. valve. If N.O. valve is needed, remove mounting screws of the required valve and turn the valve at 180° degrees. (Make sure that there are O-rings fixed on 4 positions of the valve surface.) Then, tighten the mounting screws to fix the valve to the manifold base.