

4 Port Direct Operated Poppet Solenoid Valve

Series VQD1000

High speed coil with stable response times

ON: 4ms, OFF: 2ms,
Dispersion accuracy: ± 1 ms
(With light and surge voltage suppressor at a supply pressure of 0.5MPa, subject to clean, dry air)

Compact and lightweight (34g) with large flow capacity

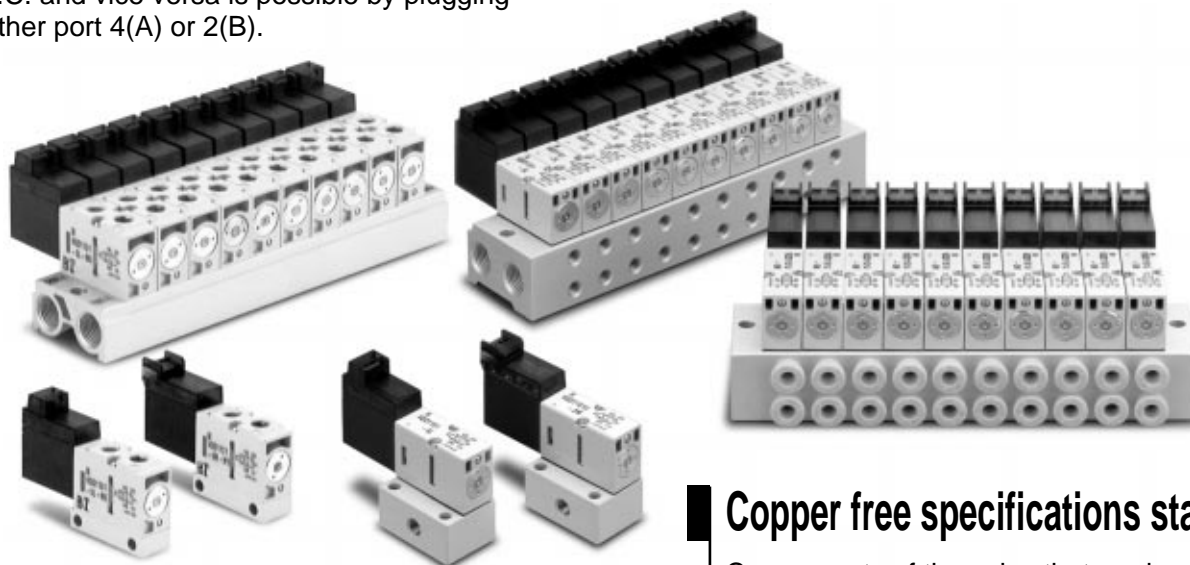
Body width of 10mm, Cv0.05 2W (Standard)
Cv0.08 4W (U type: Large flow)

Vacuum applications possible (up to -100kPa)

(Valve leakage: $0.03\text{cm}^3/\text{s}$ He or less)
Can be used for vacuum and vacuum release circuits.
When used as a 3 port valve, conversion from N.O. to N.C. and vice versa is possible by plugging either port 4(A) or 2(B).

Clean room specifications available as special.

Main valve has no sliding seals or grease and air is not exhausted to the atmosphere.



Body ported

Base mounted

Copper free specifications standard

Components of the valve that are in contact with fluid are all copper free.

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

VS7

Cylinder Speed

Port size Effective area mm ² (Cv)	Cylinder speed (mm/s)	Cylinder bore size (mm)						
		Series CJ2			Series CM2			
		Pressure: 0.5MPa Load ratio: 50% Cylinder stroke: 60mm			Pressure: 0.5MPa Load ratio: 50% Cylinder stroke: 300mm			
		ø6	ø10	ø16	ø20	ø25	ø32	ø40
VQD1151U (Large flow capacity)	M5 X 0.8 1.5 (0.08)	150						
		300						
		450						
		600						
		750						

Note 1) Cylinder speed varies depending on piping and air component equipment used. Use the table as a guideline for selection.

Note 2) Cylinder speed of "CJ2" and "CM2" is limited by the fixed orifice built-in.

Note 3) Cylinder speed: when the cylinder is extended.

Characteristic values mentioned in the catalog are typical values and are not to be guaranteed.

Precautions

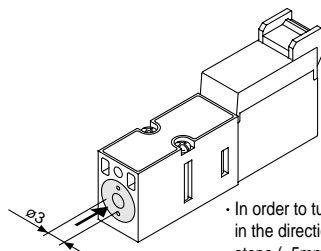
Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

Manual Operation

Warning

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

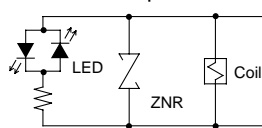
■ Non-locking push style (Flush)



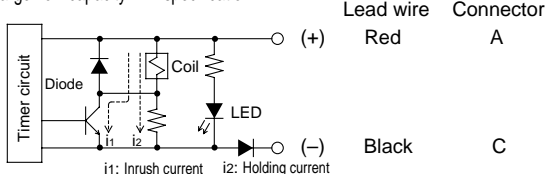
Wiring Specifications

⚠ Caution

- Standard: 2W specification
- Lead wire Connector

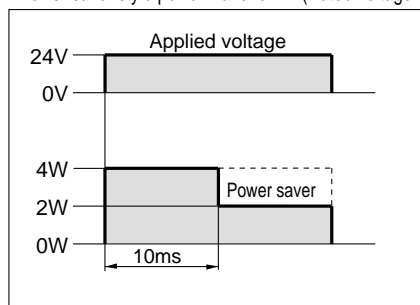


- Large flow capacity: 4W specification



For the 4W specification (power saver), power consumption at holding is reduced with the above circuit. Refer to the power wave form below.

<Power saver style power wave form> (Rated voltage: 24V DC)



How to Mount Valve

Caution

After confirming that the gasket is sung, tighten the mounting screws securely with the clamping torque shown in the table below.

Appropriate clamping torque (Nm)
0.18 to 0.25

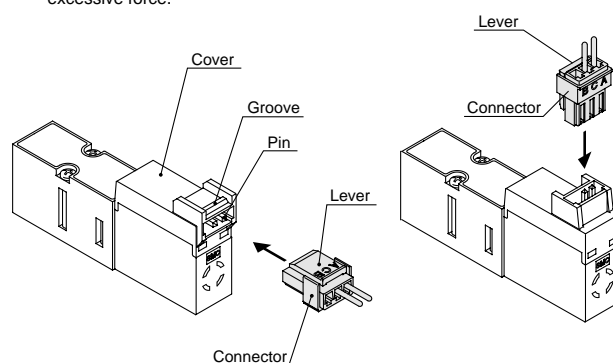
How to Use Plug Connector

Caution


Installation and removal of connector

- For installation of the connector, insert the connector straight on the pins of the solenoid, making sure that the lip of the lever is securely positioned in the groove of the cover and locked.
- To remove the connector, press the lever against the connector and pull connector away from the solenoid.

Note: To avoid contact failure and broken wires, do not pull out the lead wire with excessive force.



- How to order connector assembly

AXT661-14A-

- Lead wire length

—	300mm
6	600mm
10	1000mm
20	2000mm
30	3000mm

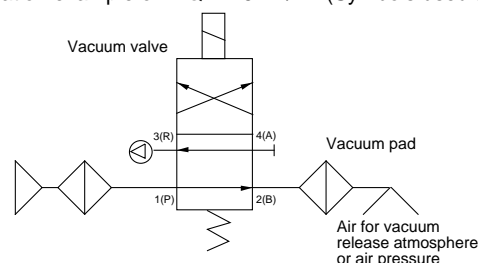
- Lead wire length of plug connector

Lead wire length of plug connector valve with lead wire is 300mm. When lead wire length of 600mm or longer is required, order a valve without connector and order connector assembly separately.

How to Use the Valve for Vacuum Applications (When used as a 3 port valve)

Caution

Application example of “VQD1151 V/W” (Symbols used are typical.)



- Use a VQD1151V/W valve for vacuum applications. Connect the vacuum source to the 3(R) port.
*Air pressure cannot be applied to the 3(R) port.
- When used as a 3 port valve, conversion from N.O. to N.C. and vice versa is possible by plugging either port 4(A) or 2(B).
*Cannot be used as 2 port valve.

4 Port Direct Operated Poppet Solenoid Valve

Series VQD1000

How to Order

VQD11 5 1 5 L

Body

2	Body ported (Single unit)
3	Body ported (Manifold)
5	Base mounted

Sub-plate port size

Body ported	M5	M5 thread
Base mounted	—	Without sub-plate (Manifold)

Valve option

—	Standard (2W)
V	Vacuum (2W)
U ⁽¹⁾	Large flow (4W)
W ⁽¹⁾	Large flow, Vacuum (4W)

Note 1) Power saver type

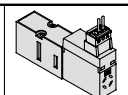
Rated voltage

5	24V DC
6	12V DC

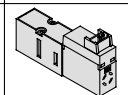
Note) Consult SMC for other voltages.

Electrical entry

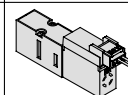
L: Plug lead
L plug connector, With lead wire and light and surge suppressor



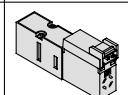
LO: Plug lead
L plug connector, Without lead wire and light and surge suppressor



M: Plug lead
M plug connector, With lead wire and light and surge suppressor



MO: Plug lead
M plug connector, Without lead wire and light and surge suppressor



L plug connector
Base mounted



L plug connector
Body ported



M plug connector
Base mounted



M plug connector
Body ported

Standard Specifications

Item		Model	Standard (2W)	Large flow capacity (4W, Power Saver)
Valve specifications	Valve structure		4 port direct operated poppet valve	
	Fluid		Air, Inert gas	
	Max. operating pressure		0.7MPa	
	Min. operating pressure/Vacuum		0MPa/−100kPa	
	Effective area (Cv)		0.9mm ² (Cv0.05)	1.5mm ² (Cv0.08)
	Response time ⁽¹⁾		ON: 4ms, OFF: 2ms	
	Ambient and fluid temperature		−10 to 50°C ⁽²⁾	
	Lubrication		Not required	
	Manual override		Non-locking push style	
	Shock/Vibration resistance		150/30m/s ² ⁽³⁾	
	Mounting orientation		Free	
	Enclosure		Dust proof	
	Weight		34g (Without sub-plate)	
Solenoid specifications	Coil rated voltage	DC	24V, 12V	
	Allowable voltage		±10% of rated voltage	
	Type of coil insulation		Class B or equivalent	
	Power consumption	DC	2W	4W (Power saving) (Inrush: 4W, Holding: 2W)
	Electrical entry		L plug connector, M plug connector (With light and surge voltage suppressor)	

Note 1) According to JISB8375-1981. Factor: With light and surge suppressor (Subject to clean air). Dispersion accuracy: ±1ms

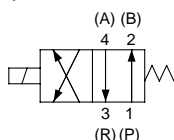
Note 2) Operating the valve at low temperatures may cause condensate to form, therefore dry air must be used.

Note 3) Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle direction of the main valve and armature, for both energized and de-energized states.

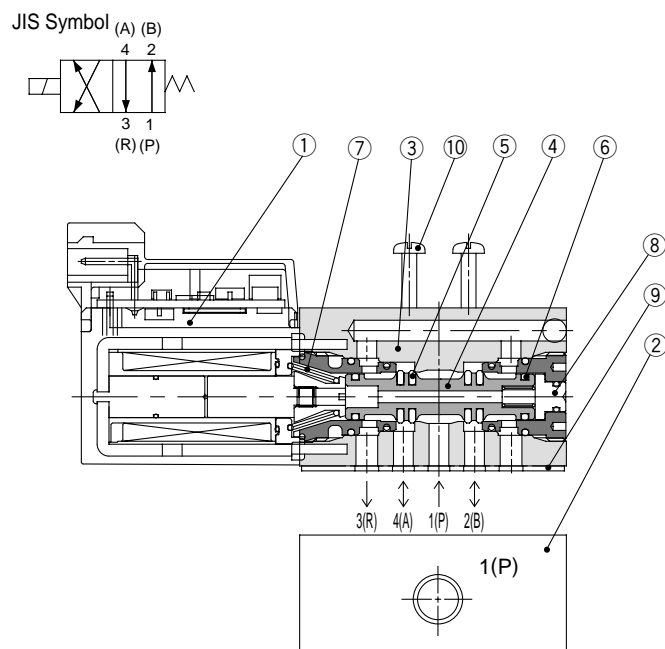
Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000Hz.

Test was performed at both energized and de-energized states to the axis and right angle direction of the main valve and armature. (Value in the initial stage.)

JIS Symbol



Construction



Component Parts

No.	Part name	Material	Note
①	Solenoid coil assembly	—	
②	Sub-plate	Aluminum	VQD1000-S-M5(Base mounted only)
③	Body	ZDC	
④	Spool valve	Aluminum	
⑤	Poppet	NBR	
⑥	Guide ring	Resin	
⑦	Return spring	Stainless steel	
⑧	Manual override	Aluminum	
⑨	Gasket	NBR	VQD1000-9-1
⑩	Round head screw	Steel	AXT632-7-13(M1.7 X 18)



Note) Body cannot be disassembled.

SY

SYJ

SX

VK

VZ

VF

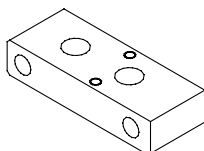
VFR

VP7

VP4

Valve Single Unit Option

Piping plate assembly
VQD1000-20A



Manifold style (VQD1131) can be changed to single unit style (VQD1121) by mounting plate assembly.

Note) Plate should be mounted with manifold mounting screws (M1.7 X 20).
Tightening torque: 0.18 to 0.25Nm

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

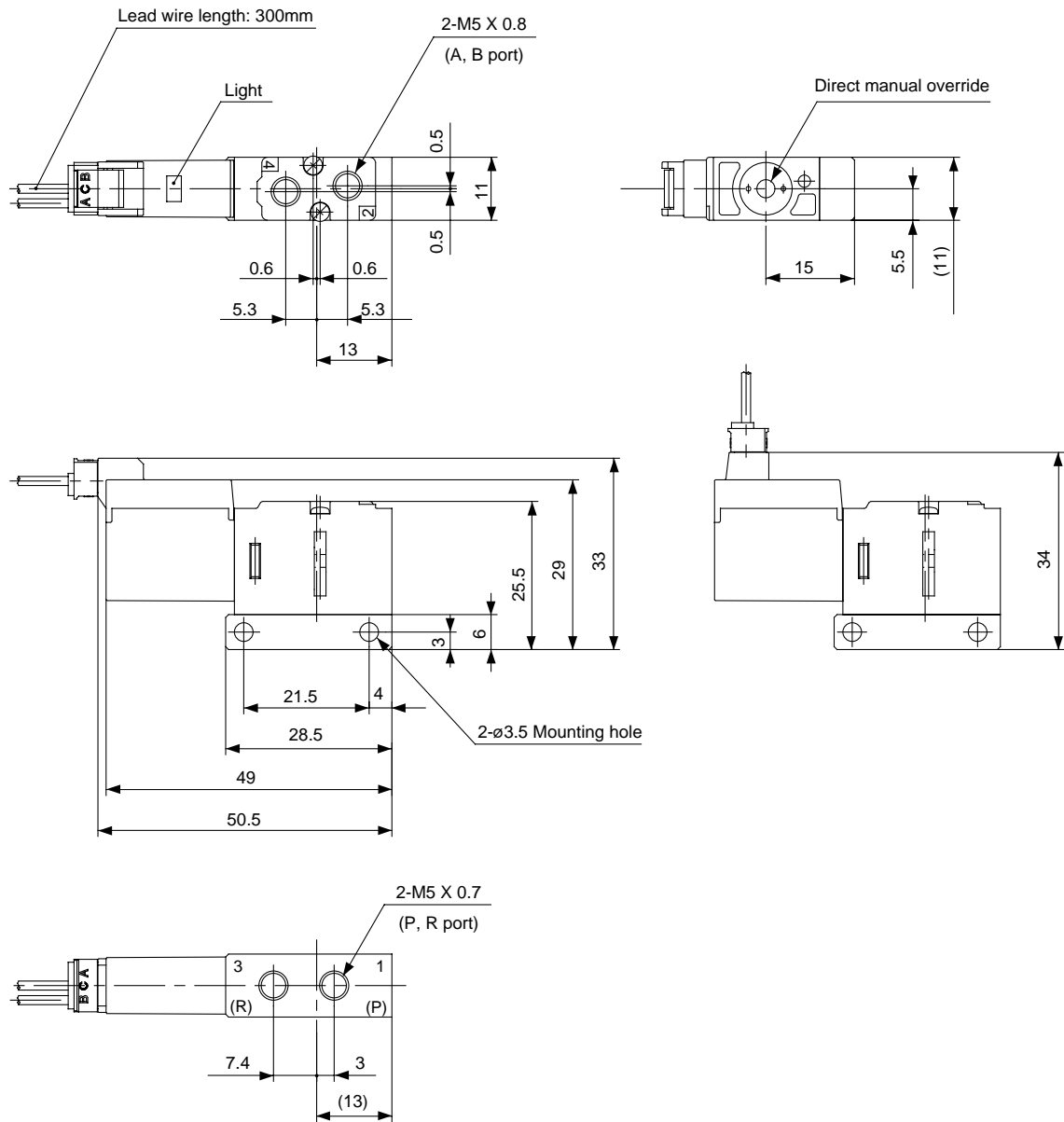
VS7

Series VQD1000

Dimensions

L plug connector: VQD1121□-□L-M5

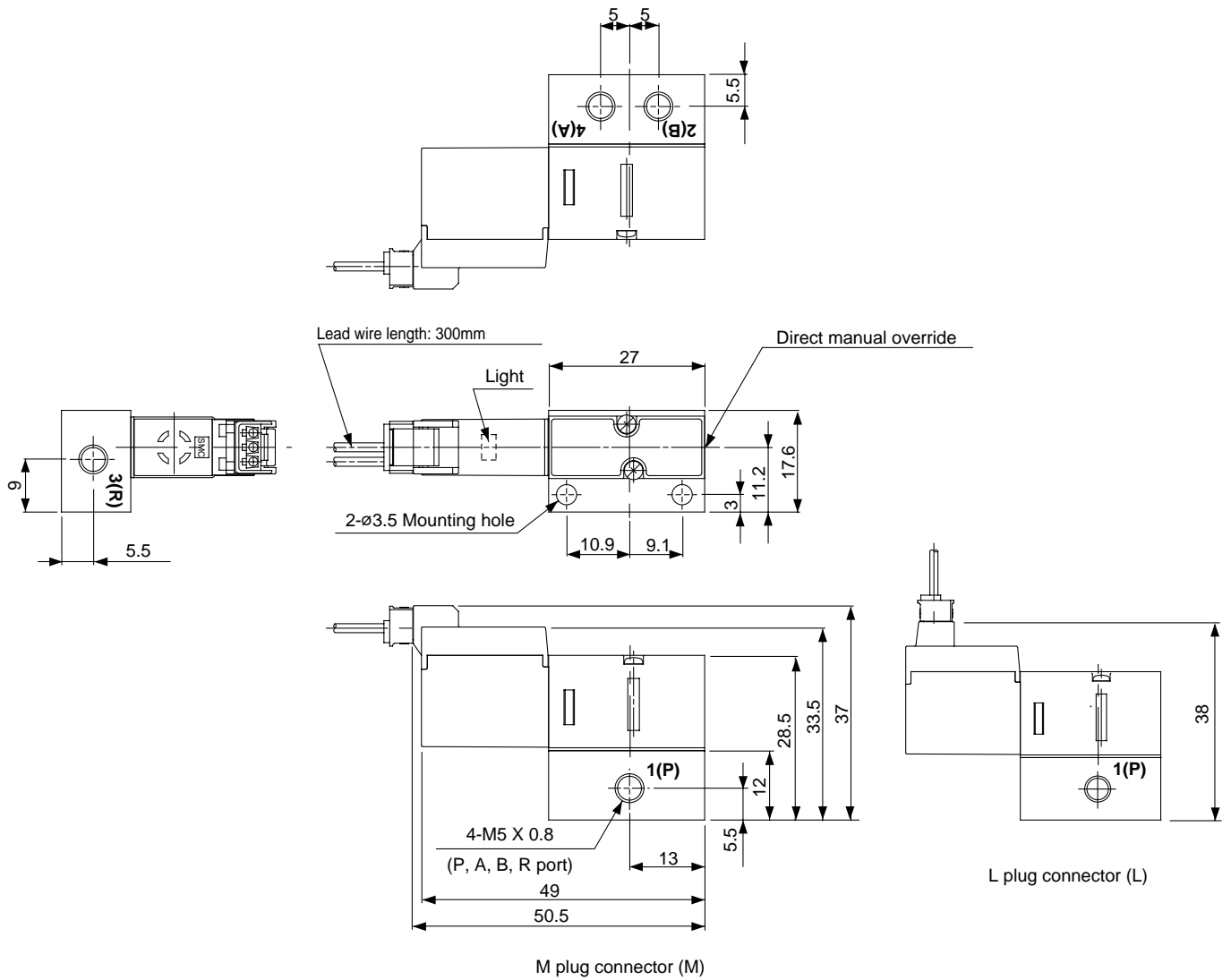
M plug connector: VQD1121□-□M-M5



Dimenisons

L plug connector: VQD1151□-□L-M5

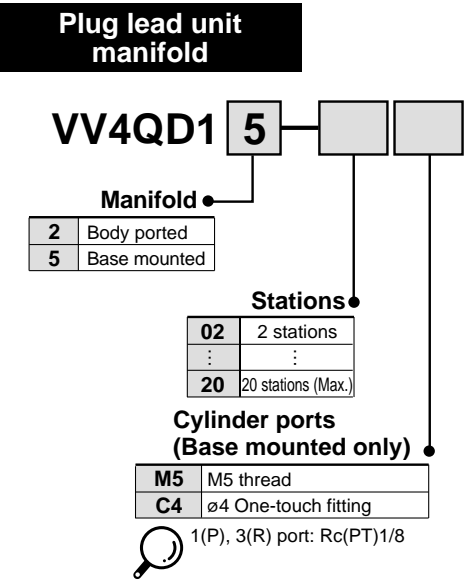
M plug connector: VQD1151□-□M-M5



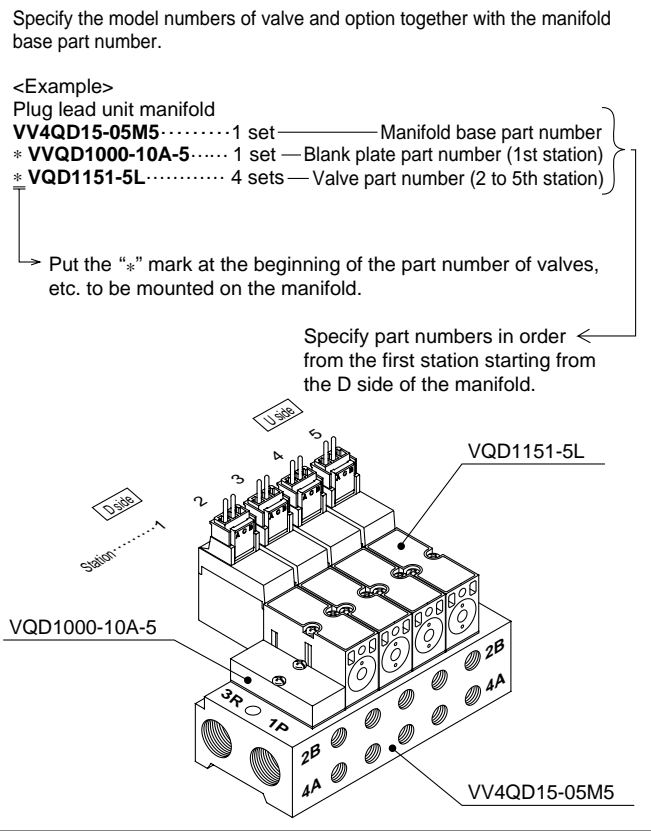
SY
SYJ
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Series VQD1000

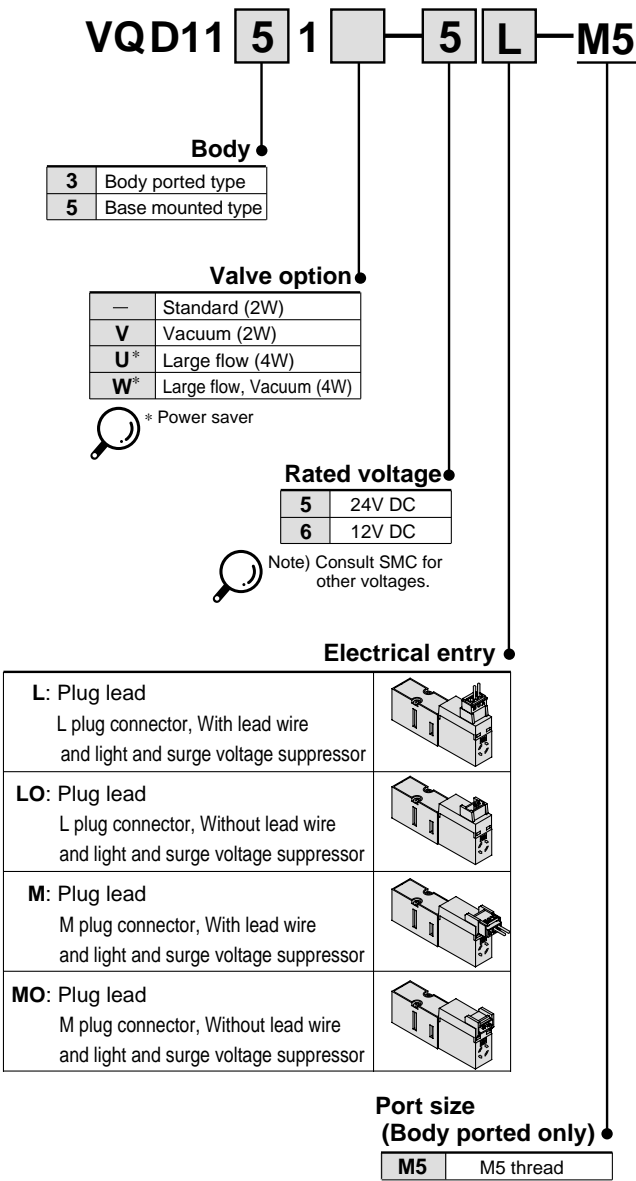
How to Order Manifold



How to Order Manifold Assembly



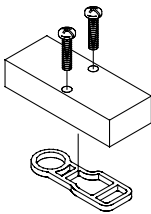
How to Order Valve



Manifold Option

Blank Plate Assembly/Body Ported

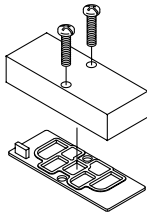
VVQD1000-10A-2



Blank plate assembly includes 2 screws and 1 gasket.

Blank Plate Assembly/Base Mounted

VVQD1000-10A-5



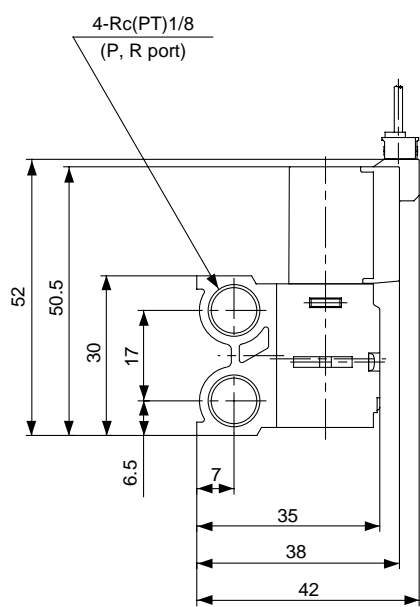
Blank plate assembly includes 2 screws and 1 gasket.

SY
SYJ
SX
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VP4
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VFS
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VS7

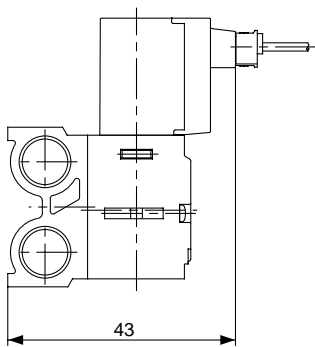
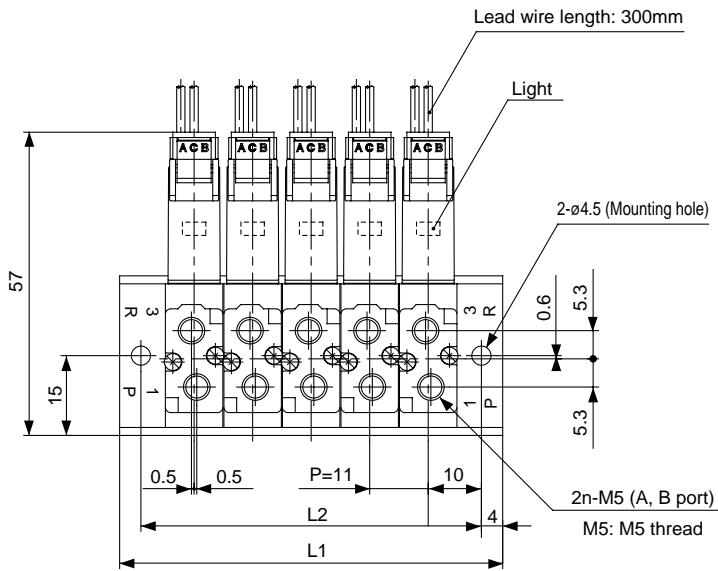
Series VQD1000

Dimensions

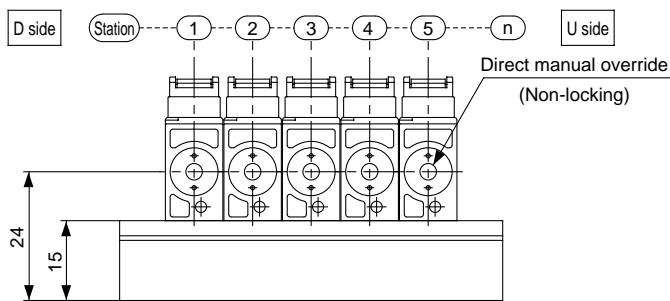
Plug lead unit manifold(VV4QD12-□)



M plug connector (M)



L plug connector (L)



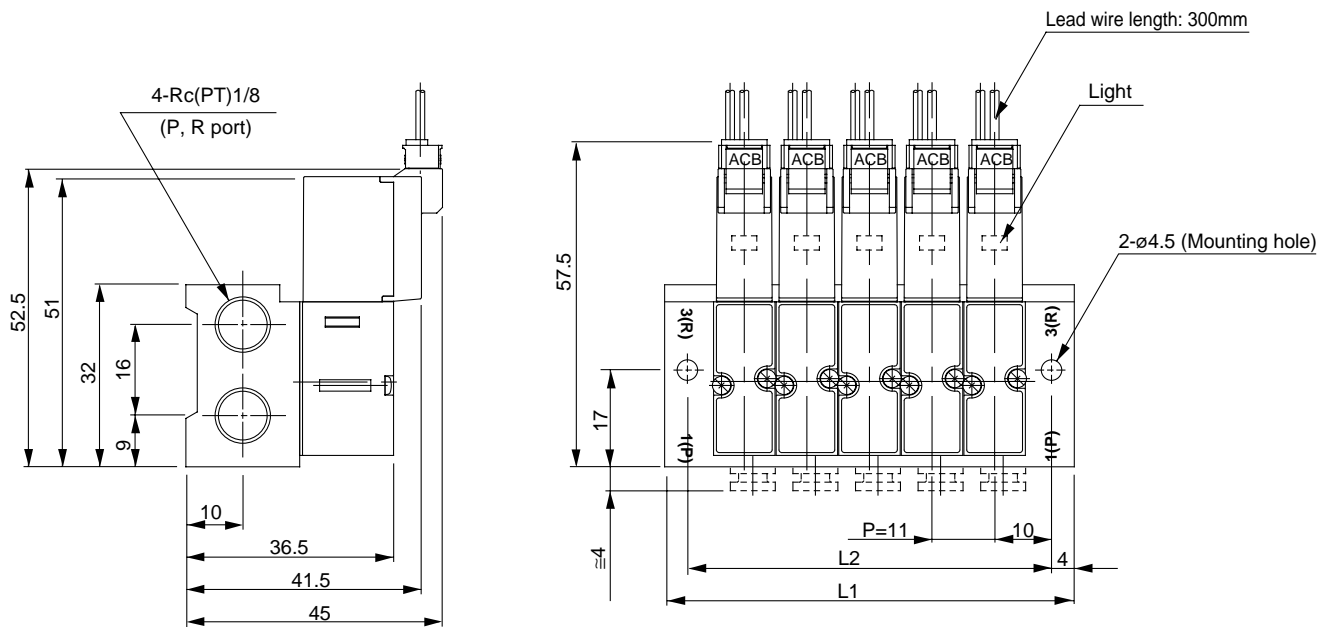
Dimensions

n: Station

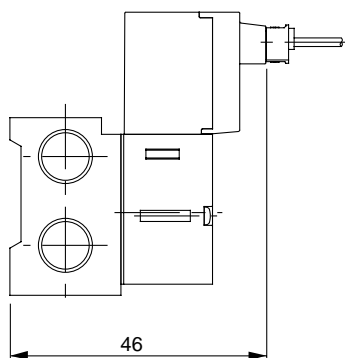
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	28	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204	215	226	237
L2	20	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207	218	229

Dimensions

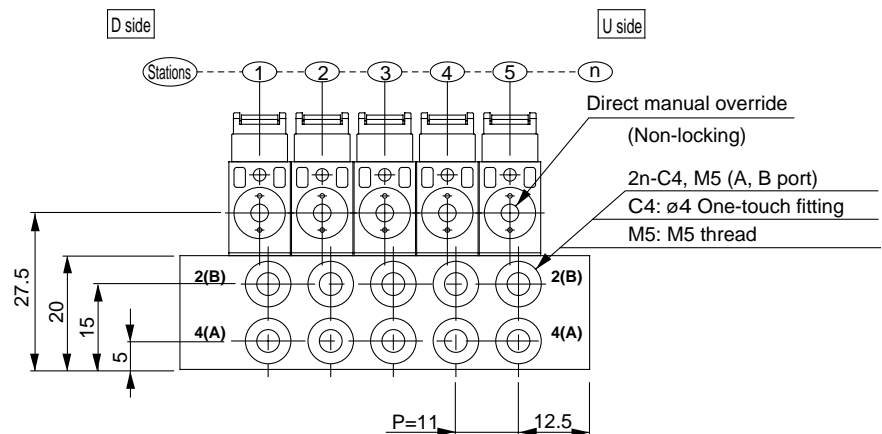
Plug lead manifold unit(VV4QD15-□□)



M plug connector (M)



L plug connector (L)



Dimensions

n: Station

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204	215	226	237
L2	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207	218	229

SY

SYJ

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