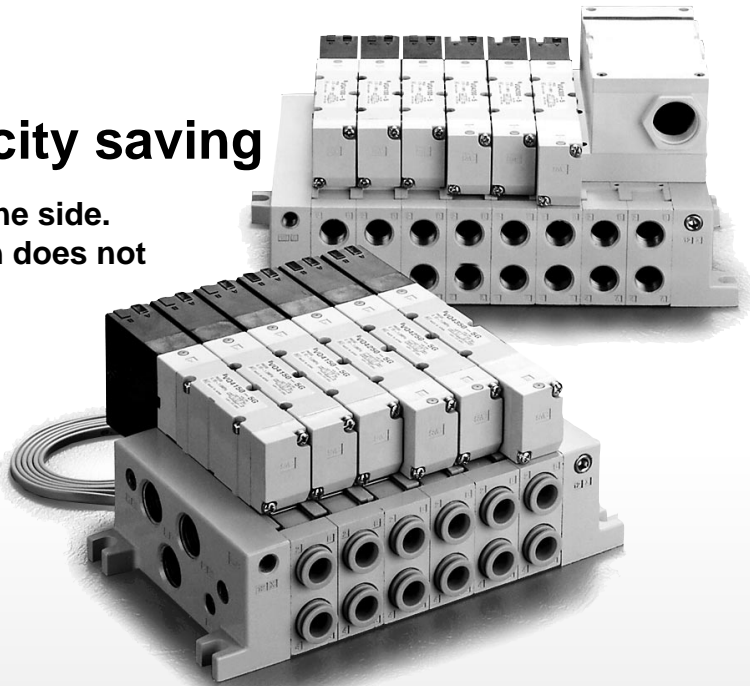


5 Port Solenoid Valve: Base Mounted Metal Seal/Rubber Seal Series VQ4000

Space and capacity saving

Pilot valve is gathered at one side.
Space saving design which does not have any protrusions.

Space saving ——— 40% less
Capacity saving ——— 50% less
(In house comparison)



Compact design with

Large flow capacity
(Suitable for cylinders up to $\varnothing 140$)

Built-in One-touch fitting for easier piping

Optional IP65 is available. Dust-tight, Jet-proof

High speed & Long life

(Metal seal, with light and surge suppressor)

VQ4100 17mS (Single)
VQ4200 12mS (Double)
100 million cycles
* According to SMC life test conditions
Dispersion accuracy $\pm 3\text{mS}$

Various centralized wiring options

<Plug-in>

<p>F kit (D-sub connector)</p>	<p>T kit (Terminal box)</p> <p>Enclosure: Optional IP65 rating</p>
<p>L kit (Lead wire)</p> <p>Enclosure: Optional IP65 rating</p>	<p>S kit (Serial transmission)</p> <p>Enclosure: Optional IP65 rating</p>

Cylinder operation speed

Valve width mm	Cv Rubber seal (Metal seal)	Cylinder speed mm/s	Cylinder bore size mm						
			40	50	63	80	100	125	140
24.5	2.2 (2.0)	150							
		300							
		450							
		600							
		750							

Pressure: 0.5MPa, Load rate: 50%

Note) Cylinder speed varies according to piping construction equipment. So this Table is for your reference only.

Performance value shown on catalog is typical value, this is not for performance guarantee.

Individual wiring style

<Plug lead>

C kit (Connector)

Enclosure: Optional IP65 rating
Grommet

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

VS7

⚠ Caution ①: Series VQ4000

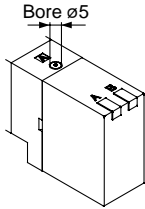
Be sure to read before use. Refer to p. 0-33 to 0-36 for Safety Instruction and common precautions.

⚠ Warning

Manual Override

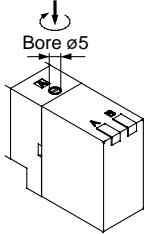
When manual override is used, the connected equipment starts operating. Make sure that there is no danger. Non-locking style (push style) is available as standard, locking slotted style is optional style.

Non-locking push style

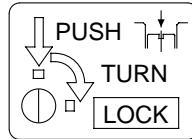


Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

Locking slotted style



Push down on the manual override button with a small screwdriver until it stops. While down, turn clockwise by 90° to lock it. Turn it counter-clockwise to release it.

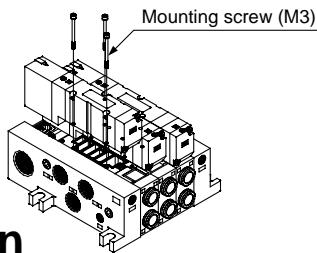


⚠ Caution

Valve Mounting

After confirming the gasket is correctly placed under the valve, tighten the mounting screws with the appropriate torque listed below.

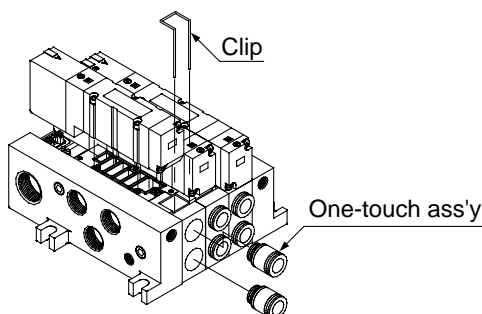
Suitable tightening torque Nm
0.8 to 1.2



⚠ Caution

Changing the One-touch Fittings

The built-in fittings on the manifold can be changed easily. Simply remove the corresponding valve and take out the fitting clip underneath. Then remove the affected fitting and replace with a new one. Finally, replace the fitting clip and remount the valve.

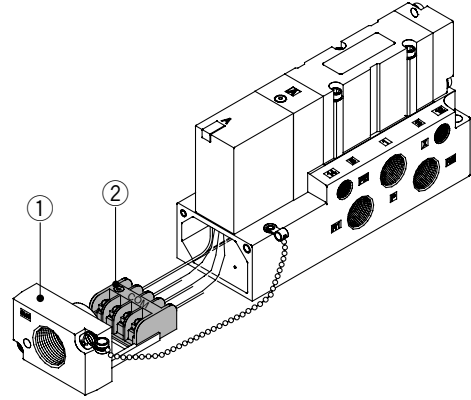


⚠ Caution

Connection of Lead Wire

Plug-in sub-plate (With terminal block)

- Remove junction cover ① of sub-plate where terminal block box ② is mounted.



- Markings shown below are on terminal block box, connect each power supply.

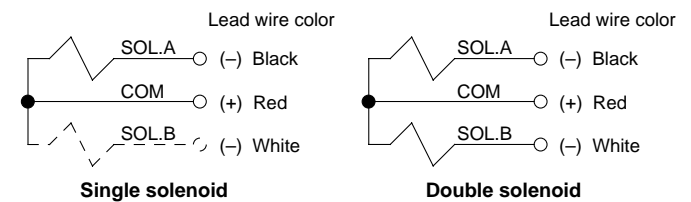
Terminal block marking	A	COM	B	\bar{T}
Model				
VQ410 ⁰ ₁	A side	COM	—	—
VQ420 ⁰ ₁	A side	COM	B side	—
VQ4 ³ ₄ ⁰ ₅ ⁰ ₆	A side	COM	B side	—

Note 1) Not polar, possible to use as -COM.

Note 2) Double wiring is used on sub-plate VQ410⁰₁.

Plug lead: Grommet

Connect each corresponding wire.



	Single solenoid	Double solenoid
Standard	<p>Black: A side solenoid (-)</p> <p>Red: COM (+)</p>	<p>Black: A side solenoid (-)</p> <p>Red: COM (+)</p> <p>White: B side solenoid (-)</p>
Enclosure (IP65)	<p>Black: A side solenoid (-)</p> <p>Red: COM (+)</p>	<p>Black: A side solenoid (-)</p> <p>Red: COM (+)</p> <p>White: B side solenoid (-)</p> <p>(It is not used in case of single.)</p> <p>Green: (It is not used in case of either single or double.)</p>

Note) No polarity. Possible to use as -COM.

⚠ Caution

Installation/Removal of Light Cover

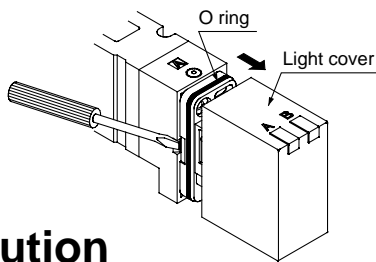
Removal of light cover

• Removal

Open the cover by inserting a small flat head screw driver into the slot on the side of the pilot assembly(see drawing below), lift the cover out about 1 mm and then pull off. (If the cover is pulled off at a angle, damage could be done to the O ring and/or the pilot valve.)

• Installation

Insert the cover straight onto the pilot assembly making sure not to contact the pilot valve and lock into place.

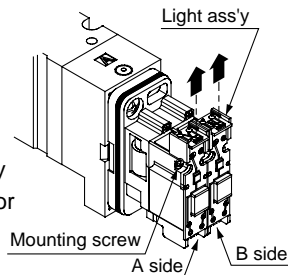


⚠ Caution

Changing the Pilot Valve

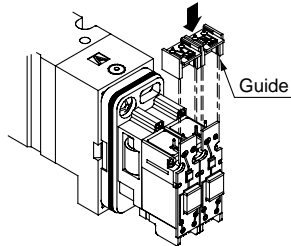
• Removal of Pilot Valve

1. Remove the light cover. (See above) Then remove the mounting screws that attach the valve to the pilot assembly.
2. Remove the light circuit board by pulling it straight off the connector pins.



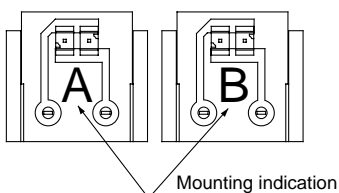
• Installing Pilot Valve

1. Insert the light circuit board onto the connector pins on the pilot valve.
2. Confirm that the gasket is on the pilot valve and tighten the mounting screws with the torque listed below.



Suitable tightening torque Nm
0.1 to 0.13

Note) Pilot valves can be mounted on either direction. Make sure that the light circuit board is mounted correctly on the pilot valve. It is marked with an "A" or "B". (A side is orange and B side is green.) If mounted on the wrong side, the light will be darker.



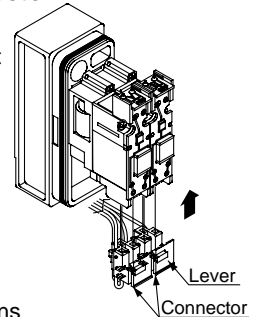
Light circuit No.

SOL. A	VQZ100-47-A
SOL. B	VQZ100-47-B

Plug Lead

Installation/Removal Plug connector with lead wires

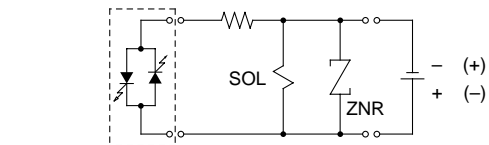
- To install the connector simply insert it onto the pins, push the lever hook into the groove and lock into place.
- To remove the connector, push down on the lever and remove the hook from the groove.



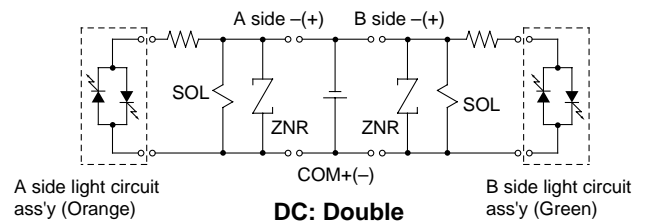
Note) Do not use excessive force to remove the connector as this might loosen the wire connections inside the connector.

⚠ Caution

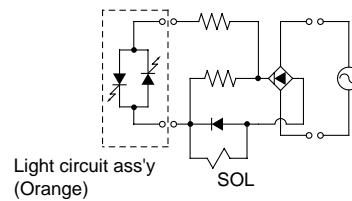
Internal Wiring Specifications



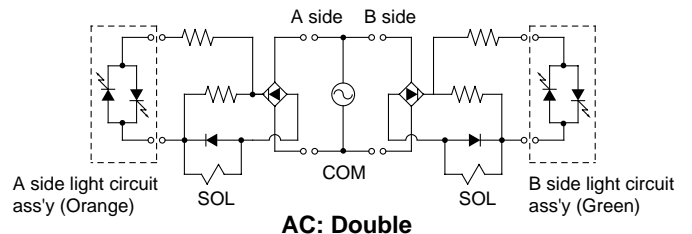
Light circuit ass'y (Orange) **DC: Single**



A side light circuit ass'y (Orange) **DC: Double** B side light circuit ass'y (Green)



Light circuit ass'y (Orange) **AC: Single**



A side light circuit ass'y (Orange) **AC: Double** B side light circuit ass'y (Green)

⚠ Caution

Enclosure IP65

Wires, cables, connectors, etc. used for models conforming to IP65 should also have enclosures equivalent to or stricter rating than IP65.

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

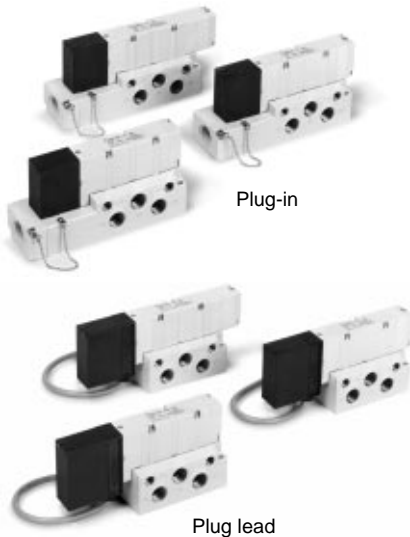
VS

VS7

Series VQ4000

Base Mounted Valve

Plug-in, Plug Lead/Single Unit



Model

Series	Configuration	Model	Effective area (mm ²) (Cv) ⁽¹⁾	Response time ms ⁽²⁾		Weight (kg) ⁽³⁾		
				Standard: 1W	Low wattage and AC			
VQ4000	2 position	Single	Metal seal	VQ41 ₅ 0	36.0 (2.0)	20 or less	22 or less	0.23 (0.29)
			Rubber seal	VQ41 ₅ 1	39.6 (2.2)	25 or less	27 or less	
		Double	Metal seal	VQ42 ₅ 0	36.0 (2.0)	12 or less	12 or less	0.26 (0.32)
			Rubber seal	VQ42 ₅ 1	39.6 (2.2)	15 or less	15 or less	
	3 position	Closed center	Metal seal	VQ43 ₅ 0	32.4 (1.8)	45 or less	47 or less	0.28 (0.34)
			Rubber seal	VQ43 ₅ 1	36.0 (2.0)	50 or less	52 or less	
		Exhaust center	Metal seal	VQ44 ₅ 0	36.0 (2.0)	45 or less	47 or less	0.28 (0.34)
			Rubber seal	VQ44 ₅ 1	39.6 (2.2)	50 or less	52 or less	
		Pressure center	Metal seal	VQ45 ₅ 0	36.0 (2.0)	45 or less	47 or less	0.28 (0.34)
			Rubber seal	VQ45 ₅ 1	39.6 (2.2)	50 or less	52 or less	
Double check	Metal seal	VQ46 ₅ 0	19.8 (1.1)	55 or less	57 or less	0.50 (0.56)		
	Rubber seal	VQ46 ₅ 1	21.6 (1.2)	62 or less	64 or less			



Note 1) Value for valve on sub-plate and cylinder port Rc3/8
 Note 2) As per JISB8375-1981 (Supply pressure: 0.5MPa, with indicator light and surge suppressor, clean air).
 Note 3) (): Weight of plug lead unit
 Table: Without sub-plate
 With sub-plate: Add 0.41kgf for plug-in style, 0.30kgf for plug lead style.

Standard Specifications

	Seal			
	Metal seal	Rubber seal		
Fluid	Air, Inert gas	Air, Inert gas		
Max. operating pressure ⁽³⁾	1.0MPa			
Min. operating pressure	Single	0.15MPa		
	Double	0.15MPa		
	3 position	0.15MPa		
Ambient and fluid temperature	-10 to 50°C ⁽¹⁾	-5 to 50°C ⁽¹⁾		
Lubrication	Not required			
Manual override	Non-locking push style/Locking slotted style (Option)			
Shock/Vibration resistance	150/30 m/s ² ⁽²⁾			
Enclosure	Dust proof (Available IP65 style)			
Coil rated voltage	12, 24V DC and 100, 110, 200, 220V AC (50/60Hz)			
Solenoid specifications	Allowable voltage	±10% of rated voltage		
	Coil insulation	Class B or equivalent		
	Power consumption (Current value)	24V DC	1W DC (42mA), 0.5W DC (21mA) ⁽³⁾	
		12V DC	1W DC (83mA), 0.5W DC (42mA) ⁽³⁾	
		100V AC	Inrush 1.2VA (12mA), Holding 1.2VA (12mA)	
		110V AC	Inrush 1.3VA (11.7mA), Holding 1.3VA (11.7mA)	
		200V AC	Inrush 2.4VA (12mA), Holding 2.4VA (12mA)	
220V AC	Inrush 2.6VA (11.7mA), Holding 2.6VA (11.7mA)			

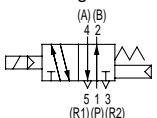


Note 1) Use dry air to prevent condensation when operating at low temperatures.
 Note 2) Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle direction of the main valve and armature, for both energized and de-energized states. (Value in the initial stage.)
 Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2,000 Hz. Test was performed at both energize and de-energized states to the axis and right angle direction of the main valve and armature. (Value in the initial stage.)

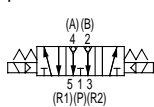
Note 3) Values in case of low power consumption model (0.5W).

Symbol

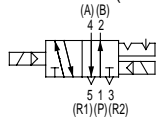
2 position single



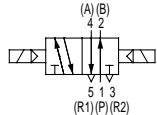
3 position double check



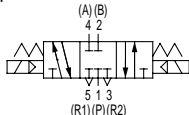
2 position double (Metal)



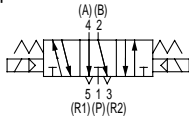
2 position double (Rubber)



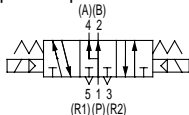
3 position closed center



3 position exhaust center



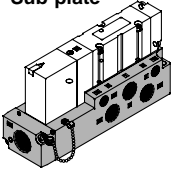
3 position pressure center



How to Order Valve

Body style

O: Plug-in Sub-plate



Port size

-	Without sub-plate (for manifold)
02	Rc1/4
03	Rc3/8

Note) Refer to p.1.11-46 for thread standard.

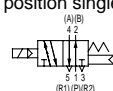
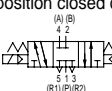
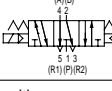
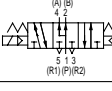
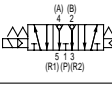
Piping

-	Side piping
B	Bottom piping

Plug-in VQ4 1 0 0

Plug lead VQ4 2 5 1

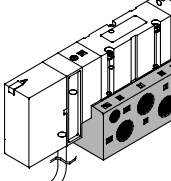
Configuration

1	2 position single	3	3 position closed center
			
2	Metal 2 position double	4	3 position exhaust center
	Rubber 2 position double		
5	3 position pressure center	6>Note)	3 position double check
			

Note) Refer to p.1.11-36 for double check style.

Body style

5: Plug lead Sub-plate

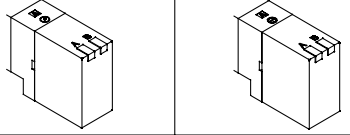


Enclosure

-	Dust-proof
W	Dust tight, jet proof (Applicable to IP 65)

Manual override

-	Non-locking push style	B	Locking slotted style
---	------------------------	---	-----------------------



Light and surge voltage suppressor

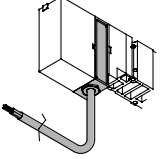
-	With
E	W/o light/With surge suppressor

Coil voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC

Electrical entry

Grommet	G	Lead wire length 0.6m
	H	Lead wire length 1.5m



Seal

0	Metal seal
1	Rubber seal

Function

-	Standard (1W)
Y ⁽¹⁾	Low wattage (0.5W)
R ⁽²⁾	External pilot

Note 1) Applicable to DC specification.
 Note 2) Refer to p.1.11-46 for external pilot specification. Combination of external pilot and perfect interface is not possible.
 Note 3) When specifying more than one option, indicate symbols alphabetically.

- SY
- SYJ
- SX
- VK
- VZ
- VF
- VFR
- VP7
- VP4
- VQ
- VQ4**
- VQZ
- VQD
- VZS
- VFS
- VS
- VS7

How to Order Sub-plate

Electrical entry

P	Plug-in conduit terminal
S	Plug lead

Port size

02	Rc1/4
03	Rc3/8

Note 1) Bottom piping type is applicable to only Rc1/4.
 Note 2) Refer to p.1.11-46 for thread standard.

Piping

-	Side piping
B	Bottom piping

Enclosure

-	Dust proof
W	Dust tight, Jet proof

How to replace pilot valve ass'y (Voltage)

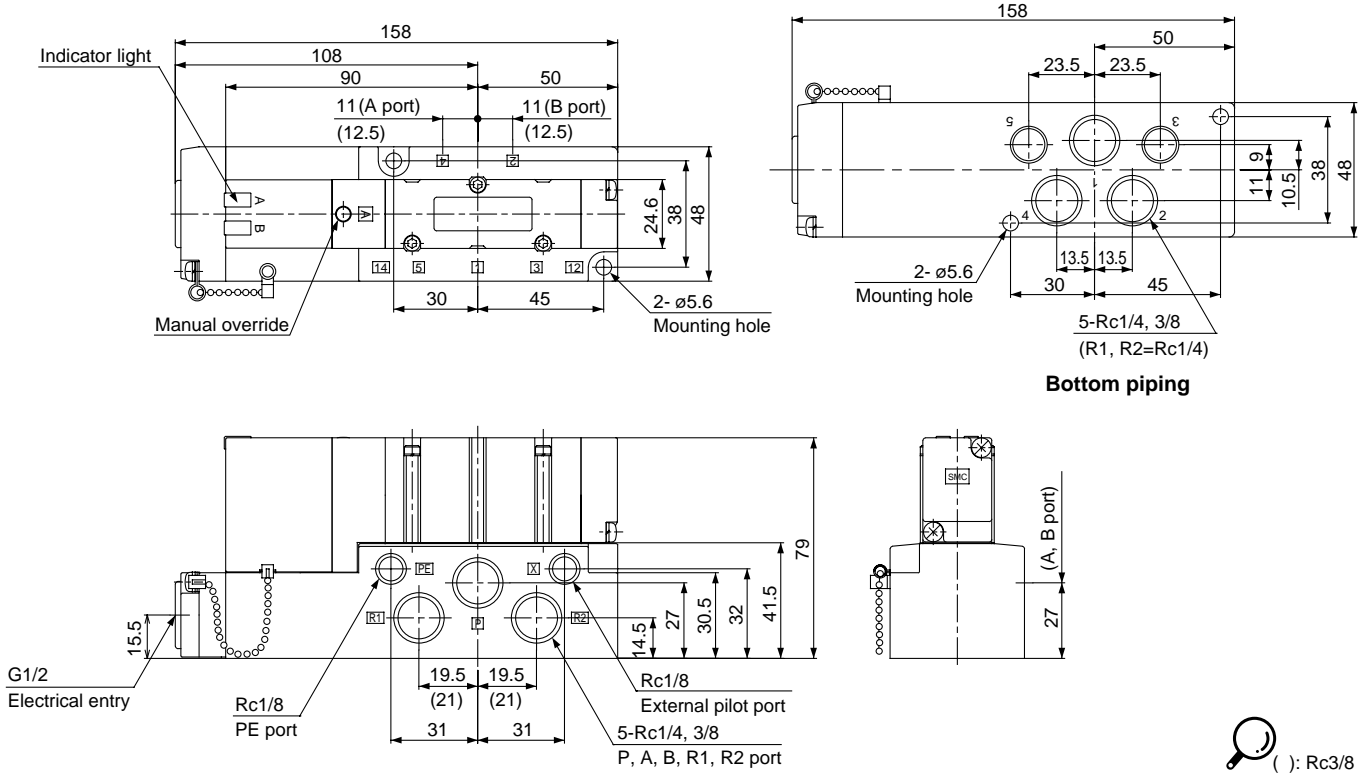
- Refer to p.1.11-42 and p.1.11-43 for part no. of pilot valve ass'y
- Refer to p.1.11-3 for "How to Replace".

Series VQ4000

Plug-in

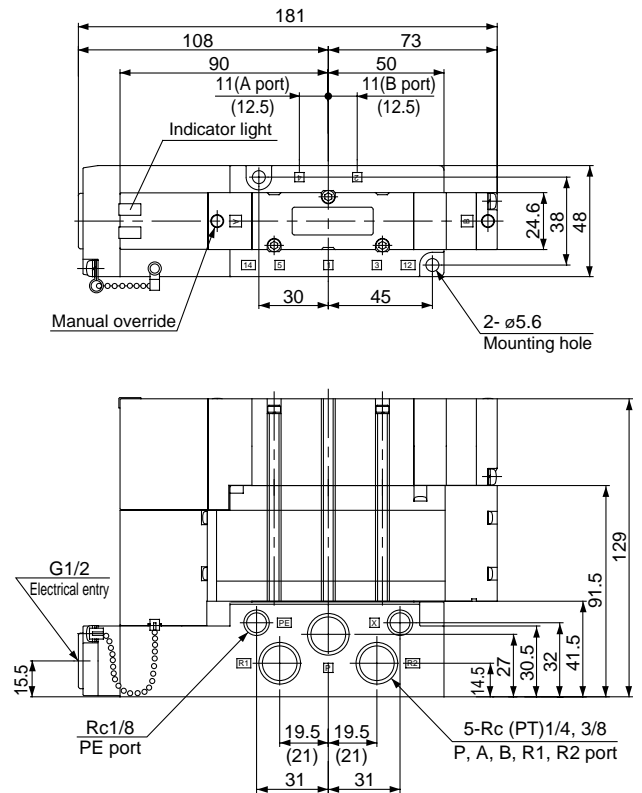
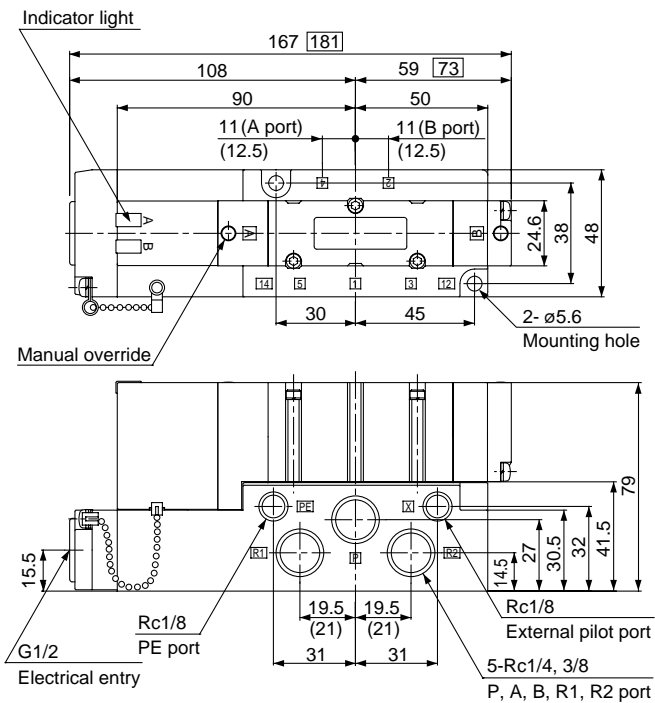
Conduit terminal

2 position single: VQ410⁰-□



- 2 position double: VQ420⁰-□
- 3 position closed center: VQ430⁰-□
- 3 position exhaust center: VQ440⁰-□
- 3 position pressure center: VQ450⁰-□

3 position double check: VQ460⁰-□

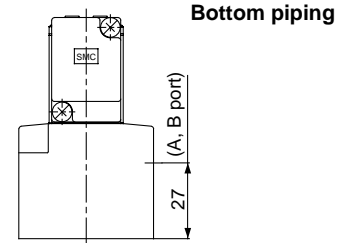
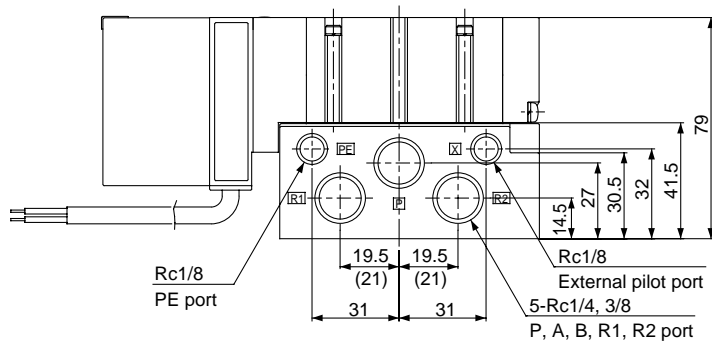
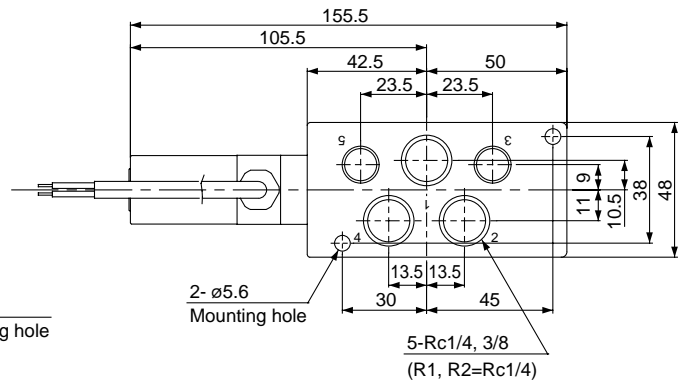
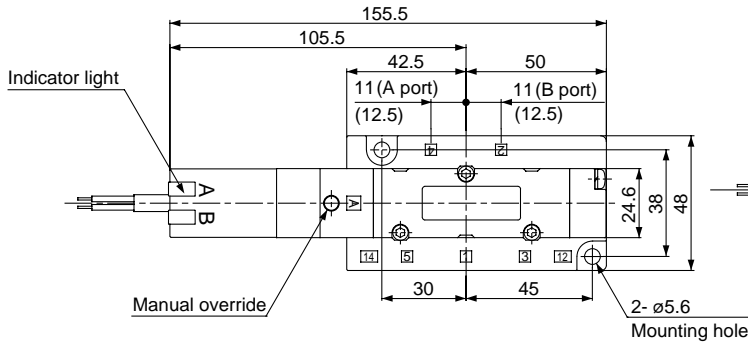


□ : 3 position
() : Rc3/8

Plug Lead

Grommet

2 position single: VQ415⁰₁-□^G_H



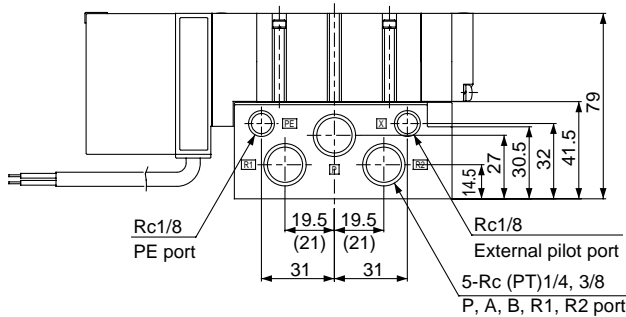
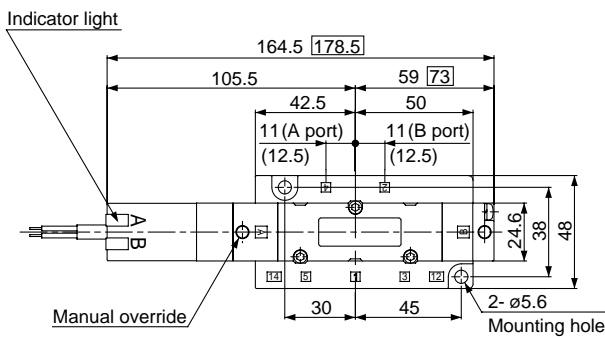
⊕ : Rc3/8

2 position double: VQ425⁰₁-□^G_H

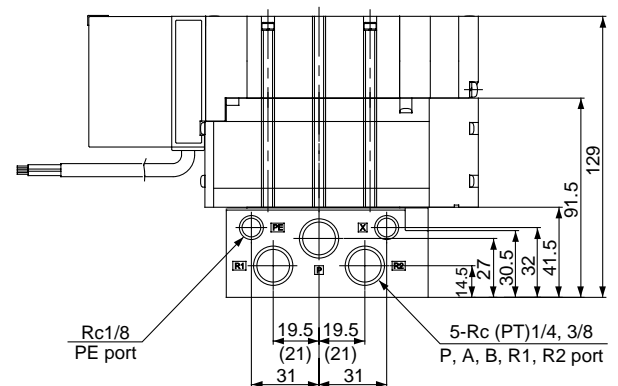
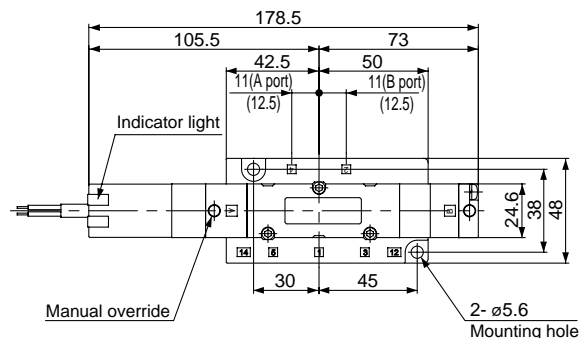
3 position closed center: VQ435⁰₁-□^G_H

3 position exhaust center: VQ445⁰₁-□^G_H

3 position pressure center: VQ455⁰₁-□^G_H



3 position double check: VQ465⁰₁



⊕ : 3 position
⊖ : Rc3/8

- SY
- SYJ
- SX
- VK
- VZ
- VF
- VFR
- VP7
- VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

VS7