

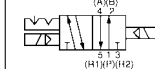
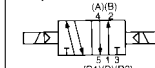
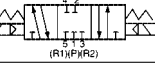
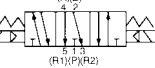


How to Order Valves

VQ 1 1 1 0 Y 5 LO 

Series
0 VQ0000

Type of actuation

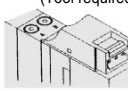
| | |
|----------|--|
| 1 | 2 position single  |
| 2 | Metal 2 position double  |
| | Rubber 2 position double  |
| 3 | 3 position closed center  |
| 4 | 3 position pressure center  |

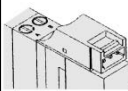
Body type
1 VQ1000

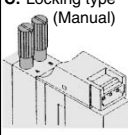
Seal

| | |
|----------|-------------|
| 0 | Metal seal |
| 1 | Rubber seal |


Manual override


Nil: Non-locking push type (Tool required)


B: Locking type (Tool required)


C: Locking type (Manual)


Electrical entry

L: L plug connector With lead wire


LO: L plug connector Without connector


With light/surge voltage suppressor

Function

| Symbol | Specifications | DC |
|------------|--------------------|--------------|
| Nil | Standard type | (1.0 W) ○ |
| H | High pressure type | (1.5 W) ○ |
| Y | Low wattage type | (0.5 W) ○ |

Coil voltage

| | |
|----------|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

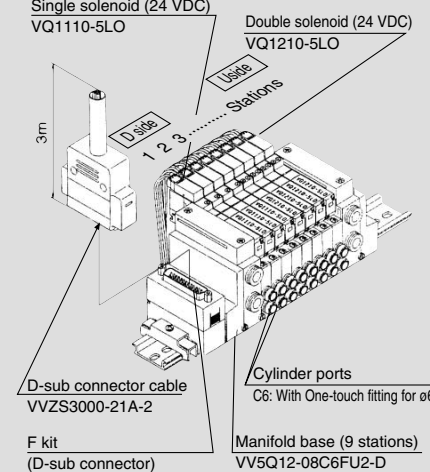
Note) LO type valve is used for F, P, T, and S kits. The plug connector and lead wire are attached to the manifold.

How to Order Valve Manifold Assembly

Example

Single solenoid (24 VDC)
VQ1110-5LO

Double solenoid (24 VDC)
VQ1210-5LO



3m

D-sub connector cable
VVZS3000-21A-2

F kit (D-sub connector)

Cylinder ports
C6: With One-touch fitting for ø6

Manifold base (9 stations)
VV5Q12-08C6FU2-D

VQC
SQ
VQ0
VQ4
VQ5
VQZ
VQD

VV5Q12-08C6FU2-D ... 1 set (F kit 8 station manifold base no.)
 *VQ1110-5LO ... 4 sets (Single solenoid part no.)
 *VQ1210-5LO ... 4 sets (Double solenoid part no.)

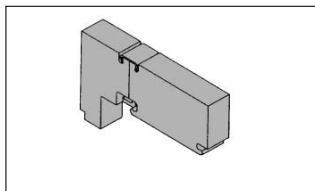
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Specify the part numbers for valves and options together beneath the manifold base part number. Besides, when the arrangement will be complicated, specify them by means of the manifold specification sheet.

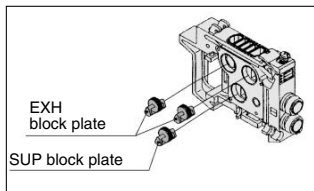
Manifold Option

P. 2-4-208

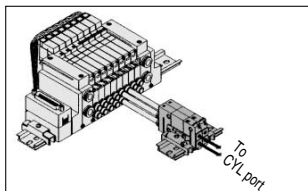
Blanking plate assembly
VVQ1000-10A-1



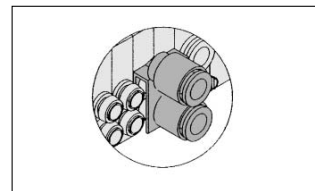
SUP/EXH block plate
VVQ1000-16A-2



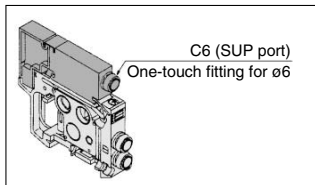
Double check block
VVQ1000-FPG-□□



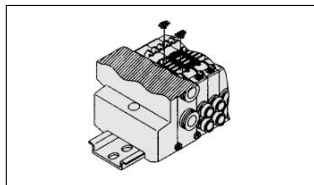
2 stations matching fitting assembly
VVQ1000-52A-C8



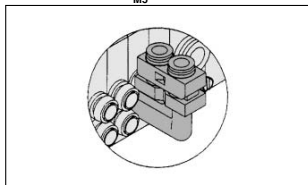
Individual SUP spacer
VVQ1000-P-1-C6



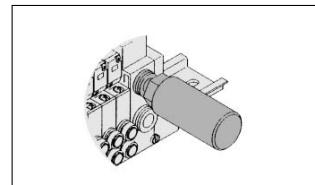
Back pressure check valve assembly [-B]
VVQ1000-18A



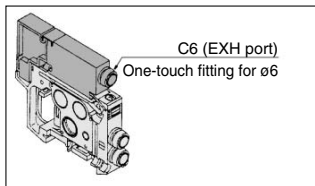
Elbow fitting assembly
VVQ1000-F-L



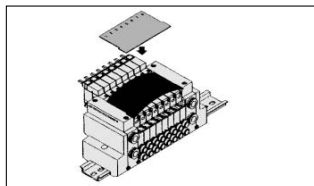
Silencer
AN200-KM8



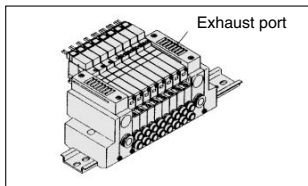
Individual EXH spacer
VVQ1000-R-1-C6



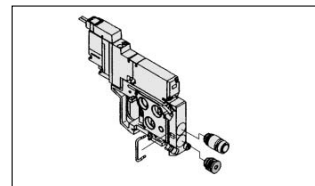
Name plate [-N*]
VVQ1000-N2-Station (1 to Max. stations)



Built-in silencer, direct exhaust [-S]

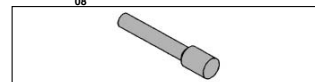


Port plug
VVQ0000-58A



For cylinder port fittings part no., refer to page 2-4-213.
 For replacement parts, refer to page 2-4-231.

Blanking plug
KQ2P-
23
04
06
08



Series VQ0000/1000

Base Mounted Plug Lead Unit

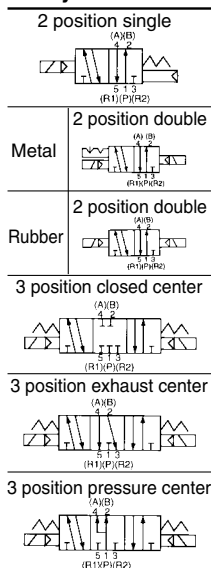


Model

| Series | Number of solenoids | Model | | Flow characteristic ⁽¹⁾ | | | | | | Response time (ms) ⁽²⁾ | | | Weight (g) | | |
|-----------------|---------------------|---------------|-------------|------------------------------------|------|------|------------------------------|------|------------|-----------------------------------|--------------------------------------|-------------------|------------|----|----|
| | | | | 1 → 4/2 (P → A/B) | | | 4/2 → 5/3 (A/B → R1/R2) | | | Standard: 1 W H: 1.5 W | Low wattage: ⁽³⁾ 0.5 W | AC ⁽³⁾ | | | |
| | | | | C [dm ³ /(s-bar)] | b | Cv | C [dm ³ /(s-bar)] | b | Cv | | | | | | |
| VQ0000 | 2 position | Single | Metal seal | VQ0150 | 0.41 | 0.20 | 0.10 | 0.44 | 0.26 | 0.11 | 12 or less | 15 or less | 29 or less | 36 | |
| | | | Rubber seal | VQ0151 | 0.53 | 0.20 | 0.12 | 0.53 | 0.22 | 0.13 | 15 or less | 20 or less | 34 or less | | |
| | Double | Metal seal | VQ0250 | 0.41 | 0.20 | 0.10 | 0.44 | 0.26 | 0.11 | 10 or less | 13 or less | 13 or less | | | |
| | | Rubber seal | VQ0251 | 0.53 | 0.20 | 0.12 | 0.53 | 0.22 | 0.13 | 15 or less | 20 or less | 20 or less | | | |
| | 3 position | Closed center | Metal seal | VQ0350 | 0.32 | 0.10 | 0.07 | 0.32 | 0.20 | 0.07 | 20 or less | 26 or less | 40 or less | | 50 |
| | | | Rubber seal | VQ0351 | 0.43 | 0.21 | 0.10 | 0.44 | 0.24 | 0.11 | 25 or less | 33 or less | 47 or less | | |
| Exhaust center | Metal seal | VQ0450 | 0.32 | 0.10 | 0.07 | 0.44 | 0.26 | 0.11 | 20 or less | 26 or less | 40 or less | | | | |
| | Rubber seal | VQ0451 | 0.43 | 0.21 | 0.10 | 0.53 | 0.22 | 0.13 | 25 or less | 33 or less | 47 or less | | | | |
| VQ1000 | 2 position | Single | Metal seal | VQ1110 | 0.70 | 0.15 | 0.16 | 0.72 | 0.25 | 0.18 | 12 or less | 15 or less | 29 or less | 64 | |
| | | | Rubber seal | VQ1111 | 0.85 | 0.20 | 0.21 | 1.0 | 0.30 | 0.25 | 15 or less | 20 or less | 34 or less | | |
| | Double | Metal seal | VQ1210 | 0.70 | 0.15 | 0.16 | 0.72 | 0.25 | 0.18 | 10 or less | 13 or less | 13 or less | | | |
| | | Rubber seal | VQ1211 | 0.85 | 0.20 | 0.21 | 1.0 | 0.30 | 0.25 | 15 or less | 20 or less | 20 or less | | | |
| | 3 position | Closed center | Metal seal | VQ1310 | 0.68 | 0.15 | 0.16 | 0.72 | 0.25 | 0.18 | 20 or less | 26 or less | 40 or less | | 78 |
| | | | Rubber seal | VQ1311 | 0.70 | 0.20 | 0.16 | 0.65 | 0.42 | 0.18 | 25 or less | 33 or less | 47 or less | | |
| Exhaust center | Metal seal | VQ1410 | 0.68 | 0.15 | 0.16 | 0.72 | 0.25 | 0.18 | 20 or less | 26 or less | 40 or less | | | | |
| | Rubber seal | VQ1411 | 0.70 | 0.20 | 0.16 | 1.0 | 0.30 | 0.25 | 25 or less | 33 or less | 47 or less | | | | |
| Pressure center | Metal seal | VQ1510 | 0.70 | 0.15 | 0.16 | 0.72 | 0.25 | 0.18 | 20 or less | 26 or less | 40 or less | | | | |
| | Rubber seal | VQ1511 | 0.85 | 0.20 | 0.21 | 0.65 | 0.42 | 0.18 | 25 or less | 33 or less | 47 or less | | | | |

- Note 1) Cylinder port size C4: (VQ0000), C6: (VQ1000) without check valve option for prevention of back pressure. As per JIS B 8375-1981 (Supply pressure: 0.5 MPa; with indicator light/surge voltage suppressor; clean air)
- Note 2) The response time is subject to the pressure and quality of the air. The values at the time of ON are given for double types.
- Note 3) AC type is only for VQ0000.

JIS Symbol



Standard Specifications

| Valve specifications | Valve construction | | Metal seal | Rubber seal | |
|--|--|---|--|---|--|
| | Fluid | Air/Inert gas | | | |
| Maximum operating pressure | 0.7 MPa (High pressure type: 0.8 MPa) | | | | |
| Min. operating pressure | Single | 0.1 MPa | 0.15 MPa | | |
| | Double | 0.1 MPa | | | |
| 3 position | 0.1 MPa | | 0.2 MPa | | |
| Ambient and fluid temperature | -10 to 50°C ⁽¹⁾ | | | | |
| Lubrication | Not required | | | | |
| Manual override | Non-locking push type/Locking type (Tool required, Manually operated) Option | | | | |
| Impact/Vibration resistance ⁽²⁾ | 150/30 m/s ² | | | | |
| Enclosure | Dust tight | | | | |
| Solenoid | Coil rated voltage | 12, 24 VDC, 100, 110, 200, 220 VAC (50/60 Hz) | | | |
| | Allowable voltage fluctuation | ±10% of rated voltage | | | |
| | Coil insulation type | Equivalent to class B | | | |
| | Power consumption (Current) | 24 VDC | 1 W DC (42 mA), 1.5 W DC (63 mA) ⁽³⁾ , 0.5 W DC (21 mA) ⁽⁴⁾ | | |
| | | 12 VDC | 1 W DC (83 mA), 1.5 W DC (125 mA) ⁽³⁾ , 0.5 W DC (42 mA) ⁽⁴⁾ | | |
| | | 100 VAC | VQ0000 | Inrush 0.5 VA (5 mA), Holding 0.5 VA (5 mA) | |
| | | 110 VAC | | Inrush 0.55 VA (5 mA), Holding 0.55 VA (5 mA) | |
| 200 VAC | | Inrush 1.0 VA (5 mA), Holding 1.0 VA (5 mA) | | | |
| 220 VAC | Inrush 1.1 VA (5 mA), Holding 1.1 VA (5 mA) | | | | |

- Note 1) Use dry air to prevent condensation when operating at low temperatures.
- 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)
- Note 3) Value for high pressure type (1.5 W)
- Note 4) Value for low pressure type (0.5 W)
- Note 5) AC type is available only on VQ0000.

⚠ Precautions 1

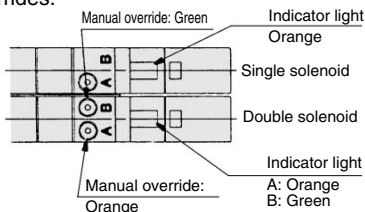
Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 2-9-2.

Light/Surge Voltage Suppressor

⚠ Caution

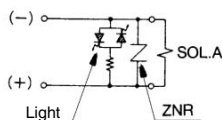
In the case of VQ1000, the standard model is equipped with an indicator light and surge voltage suppressor. The lighting positions are concentrated on one side for both single solenoid type and double solenoid type.

For the double solenoid type, A side and B side energization are indicated by two colors which match the colors of the manual overrides.



* In the case of VQ0000, solenoid and manual override on both sides.

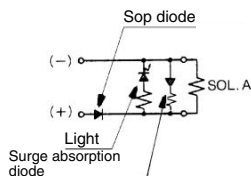
DC circuit diagram VQ0000



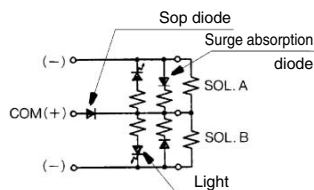
* In the case of VQ0000, solenoid and manual override on both sides.

Note) A side energization:
A light (orange) illuminates.
With wrong wiring preventing ability (stop diode)
B side energization:
B light (green) illuminates.
Equipped with a surge absorption (surge absorption diode) mechanism.

VQ1000 (DC)/Single solenoid



VQ1000/Double solenoid



Manual Override

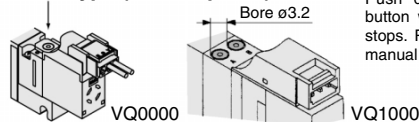
⚠ Warning

Without an electric signal for the solenoid valve the manual override is used for switching the main valve.

Push type is standard. (Tool required)

Option: Locking type (Tool required/Manual)

■ Push type (Tool required)

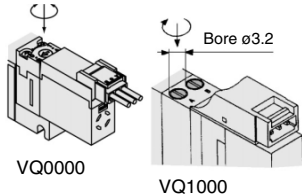


Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

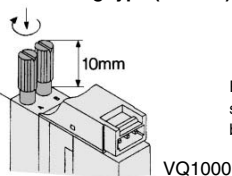
■ Locking type (Tool required) <Option>

If the manual override is turned by 180° clockwise and the ► mark is adjusted to 1, it will be locked in the ON state.
If the manual override is turned by 180° counterclockwise and the ► mark is adjusted to 0, locking will be released and the manual override will return.

Push down completely on the manual override button with a small screwdriver. While down, turn clockwise 90° to lock it. Turn it counterclockwise to release it.



■ Locking type (Manual) <Option>



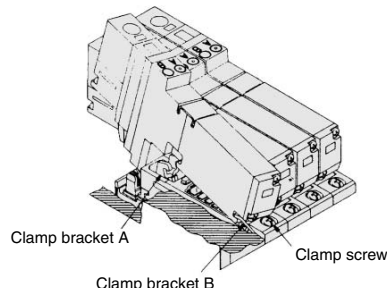
Push down on the manual override button with a small screwdriver or with your fingers until it stops. Turn clockwise by 90° to lock it. Turn it counterclockwise to release it.

⚠ Caution

Do not apply excessive torque when turning the locking type manual override. (0.1 N·m or less)

How to Mount/Remove Solenoid Valve

⚠ Caution



How to Remove

1. Loosen the clamp screw until it turns freely. (The screw is captive.)
2. Lift the coil side of the valve body while pressing down slightly on the screw head and remove it from the clamp bracket B. When the screw head cannot be pressed easily, gently press the area near the manual override of the valve.

How to Remove

1. Press down on the clamp screw. → Clamp bracket A opens. Diagonally insert the hook on the valve end plate side into clamp B.
2. Press the valve body downward. (When the screw is released, it will be locked by clamp bracket A.)
3. Tighten the clamp screw. (Proper tightening torque: 0.25 to 0.35 N·m)

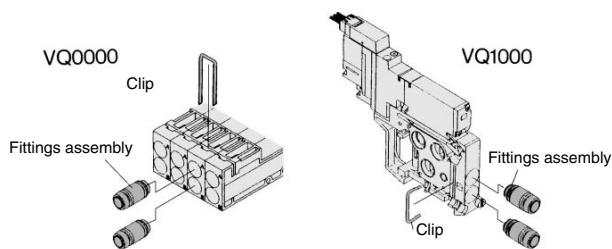
Mounting

1. Dust on the sealing surface of the gasket or solenoid valve can cause air leakage.
2. In the case of VQ0000, valve mounting screw clamping torque is 0.18 to 0.25 N·m.

Replacement of Cylinder Port Fittings

⚠ Caution

The cylinder port fittings are a cassette for easy replacement. The fittings are blocked by a clip inserted from the top of manifold. Remove the clip with a screwdriver to remove fittings. For replacement, insert the fitting assembly until it strikes against the inside wall and then re-insert the clip to specified position.



Take off the valve and remove the clip.

Remove the clip after taking off the manifold.

| Applicable tubing O.D. | Fitting assembly part no. | |
|------------------------|---------------------------|----------------|
| | VQ0000 | VQ1000 |
| Applicable tubing ø3.2 | VVQ1000-51A-C3 | VVQ1000-50A-C3 |
| Applicable tubing ø4 | VVQ1000-51A-C4 | VVQ1000-50A-C4 |
| Applicable tubing ø6 | — | VVQ1000-50A-C6 |
| M5 | — | VVQ1000-50A-M5 |

* Refer to "Option" on pages 2-4-208 to 2-4-211 for other types of fittings.

⚠ Caution

1. Use caution that O-rings must be free from scratches and dust. Otherwise, air leakage may result.
2. After screwing in the fittings, mount the M5 fitting assembly on the manifold base. (Tightening torque 0.8 to 1.2 N·m)
3. Purchasing order is available in units of 10 pieces.

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD

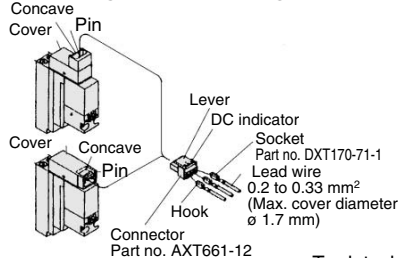
⚠ Precautions 2

Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 2-9-2.

How to Use Plug Connector

⚠ Caution

Attaching and detaching connectors

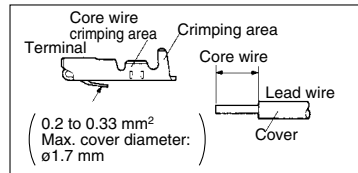


To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.

To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.

Crimping the lead wire and socket

Peel 3.2 to 3.7 mm of the tip of lead wire, neatly into a socket and press contact it by a press tool. Be careful so that the cover of lead wire does not enter into the core press contacting part.



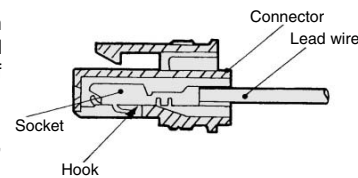
Attaching and detaching lead wires with sockets

Attaching

Insert a socket in the square hole (Indicated as ⊕, ⊖) of connector, push in the lead wire and lock by hanging the hook of socket to the seat of connector. (Pushing-in can open the hook and lock it automatically.) Then confirm the lock by lightly pulling on the lead wire.

Detaching

For pulling-out the socket from the connector, pull out the lead wire while pushing the hook of the socket with a fine point (ca. 1 mm) tool. If the socket is to be re-used, spread the hook to the outside.

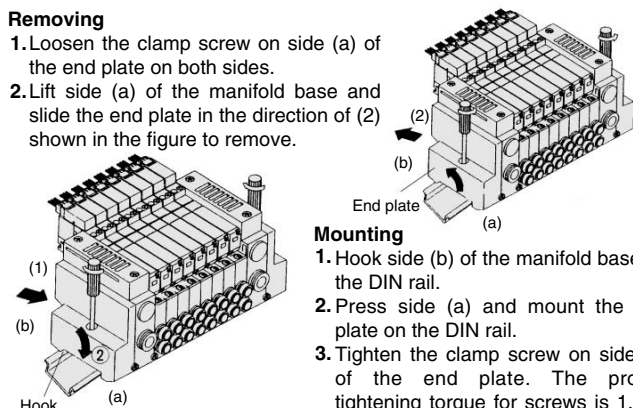


Mounting/Removing from the DIN Rail (VQ1000)

⚠ Caution

Removing

- Loosen the clamp screw on side (a) of the end plate on both sides.
- Lift side (a) of the manifold base and slide the end plate in the direction of (2) shown in the figure to remove.



Mounting

- Hook side (b) of the manifold base on the DIN rail.
- Press side (a) and mount the end plate on the DIN rail.
- Tighten the clamp screw on side (a) of the end plate. The proper tightening torque for screws is 1.2 to 1.6 N·m.

Enclosure IP65

⚠ Caution

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

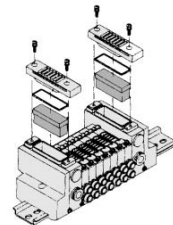
How to Calculate the Flow Rate

⚠ Caution

For obtaining the flow rate, refer to pages 2-1-8 to 2-1-11.

Built-in Silencer Replacement

⚠ Caution



A silencer element is incorporated in the end plate on both sides of the manifold base. A dirty and choked element may reduce cylinder speed and cause malfunction. Clean or replace the dirty element.

Remove the cover from the top of the end plate and remove the old element with a screwdriver, etc.

Element part no.

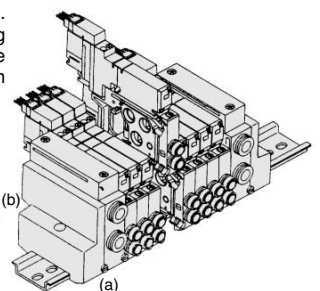
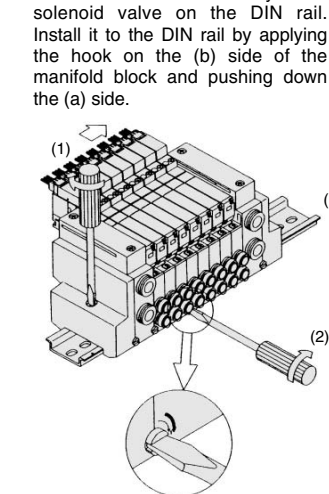
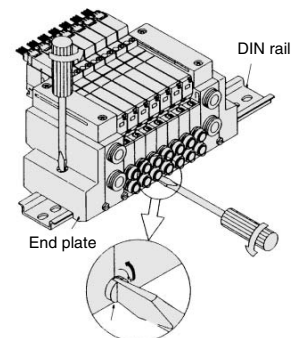
| Type | Element part no. | |
|--|------------------|---------------|
| | VQ0000 | VQ1000 |
| Built-in silencer, direct exhaust (-S) | VVQ0000-82A-1 | VVQ1000-82A-1 |

* The minimum order quantity is 10 pcs.

Manifold Base Station Increasing Procedure (VQ1000)

⚠ Caution

- Loosen the clamp screw on the top surface of the end plate on one side.
- Turn the manual override between the manifold blocks with a regular screwdriver, etc. in a counterclockwise direction.
- Slide the manifold base to the side where the screw is loosened. Make a clearance of 15 mm or more.
- Mount the station increasing manifold block assembly and solenoid valve on the DIN rail. Install it to the DIN rail by applying the hook on the (b) side of the manifold block and pushing down the (a) side.



- Slide the manifold bases with a slight clearance in-between and lock them by turning the manual override between the manifold blocks clockwise.
- Tighten the screw on the top surface of the end plate, and the station has been added. (Proper tightening torque 1.2 to 1.6 N·m)

Manifold Block Assembly

| VQ1000 | Port size |
|-----------------|---------------------------------|
| VVQ1000-1A-2-C3 | With One-touch fitting for ø3.2 |
| VVQ1000-1A-2-C4 | With One-touch fitting for ø4 |
| VVQ1000-1A-2-C6 | With One-touch fitting for ø6 |
| VVQ1000-1A-2-M5 | M5 thread |

Series VQ0000/1000

Option

Special Wiring Specifications

In the internal wiring of F kit, P kit, T kit and S kit, double wiring (connected to SOL. A and SOL. B) is adopted for each station regardless of the valve and option types. Mixed single and double wiring is available as an option.

1. How to Order

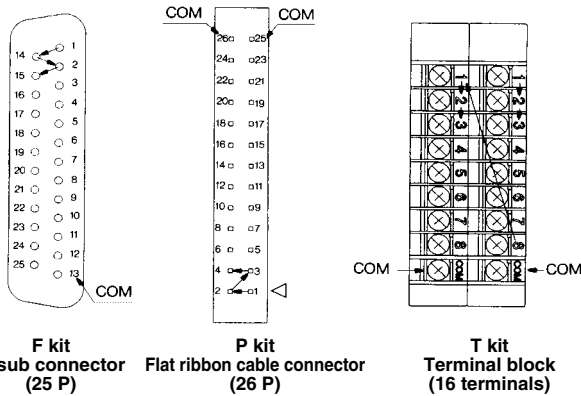
Indicate an option symbol "-K", for the manifold no. and be sure to specify the mounting position and number of stations of the single and double wiring by means of the manifold specification sheet.

Example) VV5Q05-08C4FU1-D K S

Others, option symbols: to be indicated alphabetically.

2. Wiring specifications

With the A side solenoid of the 1st station as no. 1 (meaning, to be connected to no. 1 terminal), without making any terminals vacant.



3. Max. number of stations

The maximum number of stations depends upon the number of solenoids. Assuming one for a single and two for a double, determine the number of stations so that the total number is not more than the max. number given in the following table.

| Kit | F kit (D-sub connector) | | P kit (Flat ribbon cable connector) | | | T kit (Terminal block) | | S kit (Serial transmission) | |
|-------------|---------------------------------|-----------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----|-----------------------------|----|
| | F _S ^U 25P | F _S ^U A 15P | P _S ^U 26P | P _S ^U C 20P | P _S ^U B 16P | P _S ^U A 10P | T1 | | T2 |
| Type | | | | | | | | | S□ |
| Max. points | 16 ^{Note)} | 14 | 16 ^{Note)} | 16 ^{Note)} | 14 | 8 | 8 | 16 | 16 |

Note) Due to the limitation of internal wiring.

Negative Common Specifications [Series VQ1□10]

The following valve part numbers are for negative COM specifications. Manifold model no. is the same as the standard products.

How to order negative COM valves

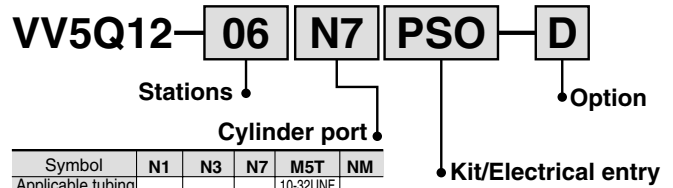
VQ1110 N - 5M

• Negative common specifications

* Series VQ0□50 has no polarity, so the negative common is applicable to standard models.

Inch-size One-touch Fittings

Valve with inch-size One-touch fittings is shown below.



| Symbol | N1 | N3 | N7 | M5T | NM |
|-------------------------------|--------|--------|-------|----------------------|-------|
| Applicable tubing O.D. (Inch) | ø1/8" | ø5/32" | ø1/4" | 10-32UNF (M5 thread) | Mixed |
| A, B port | VQ0000 | ○ | ○ | ○ | ○ |
| | VQ1000 | ○ | ○ | ○ | ○ |

1(P), 3(R) port size
 VQ0000ø1/4"
 VQ1000ø5/16"

Note) When inch size fittings are selected for a cylinder port, use inch size fittings for both P and R port, too.

Plug Connector Assembly Model

Connector assembly will be required when the F, P, S kits add a valve. Specify the style of valve and connector assembly.

Connector Assembly Part No.

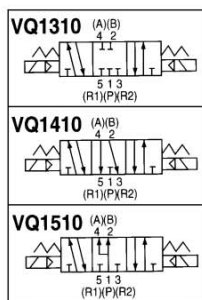
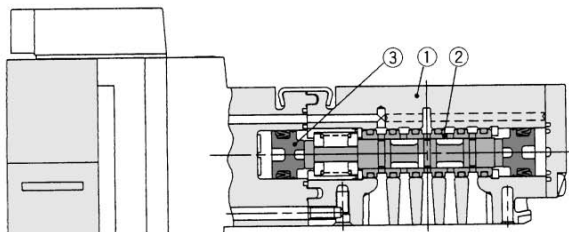
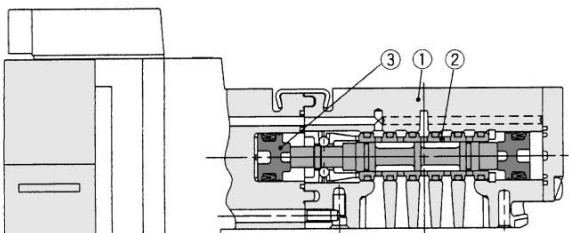
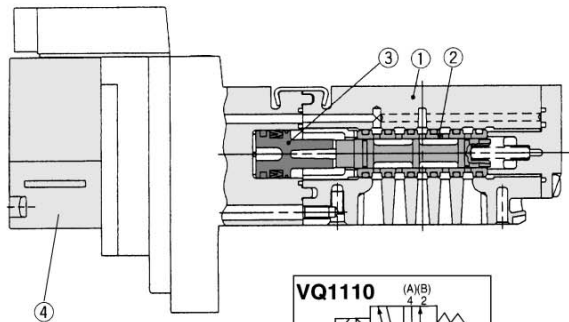
| Specifications | | Part no. |
|----------------------------|-----------------|---------------|
| Single VQ0000 (2-wire) | Positive common | AXT661-14A-F |
| | Negative common | AXT661-14AN-F |
| Double (latching) (3-wire) | Positive common | AXT661-13A-F |
| | Negative common | AXT661-13AN-F |

Note) Lead wire length: 300 mm

The part numbers above are applicable to 2 to 10 stations. 11 to 16 stations: "AXT661-13A(N)-F-425".

Construction: VQ1000/Plug Lead Unit

Metal seal



Component Parts

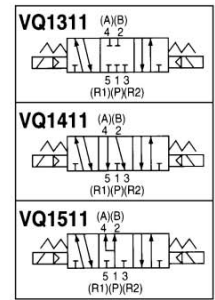
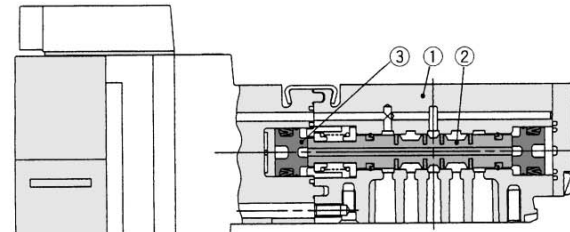
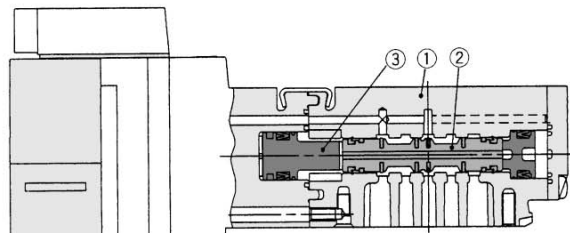
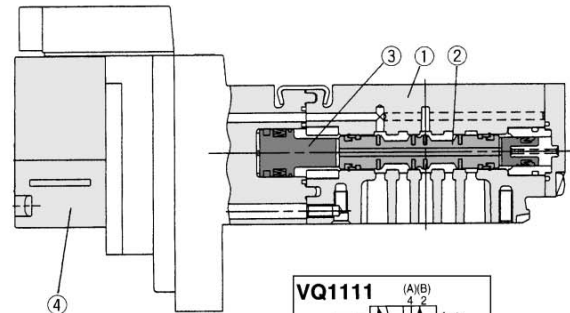
| No. | Description | Material | Note |
|-----|--------------|-----------------|------|
| ① | Body | Zinc die-casted | |
| ② | Spool/Sleeve | Stainless steel | |
| ③ | Piston | Resin | |

Replacement Parts

| | | | |
|---|----------------------|--|-------------------|
| ④ | Pilot valve assembly | VQ111 ^(H) _(Y) - □ - 1 <small>Note</small> Voltage 1 to 6 | Single |
| ⑤ | Pilot valve assembly | VQ131 ^(H) _(Y) - □ - 1 <small>Note</small> Voltage 1 to 6 | Double/3 position |

Note) (H): 1.5 W, (Y): 0.5 W

Rubber seal type



Component Parts

| No. | Description | Material | Note |
|-----|-------------|-----------------|------|
| ① | Body | Zinc die-casted | |
| ② | Spool valve | Aluminum/HNBR | |
| ③ | Piston | Resin | |

Replacement Parts

| | | | |
|---|----------------------|--|-------------------|
| ④ | Pilot valve assembly | VQ111 ^(H) _(Y) - □ - 1 <small>Note</small> Voltage 1 to 6 | Single |
| ⑤ | Pilot valve assembly | VQ131 ^(H) _(Y) - □ - 1 <small>Note</small> Voltage 1 to 6 | Double/3 position |

Note) (H): 1.5 W, (Y): 0.5 W

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD