ISO Standard Solenoid Valve

PRODUCT NAME

VQ7-6/VQ7-8(-X23) Series

MODEL / Series / Product Number

*PIN assignment of -x23 is different from standard product

SMC Corporation
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These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

*1) ISO 4414: Pneumatic fluid power -- General rules relating to systems.
ISO 4413: Hydraulic fluid power -- General rules relating to systems.
IEC 60204-1: Safety of machinery -- Electrical equipment of machines .(Part 1: General requirements)
ISO 10218: Manipulating industrial robots -Safety.

**Warning**

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.
   The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.
   This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
   The product specified here may become unsafe if handled incorrectly.
   The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.
Safety Instructions

⚠️ Caution

1. The product is provided for use in manufacturing industries.
   The product herein described is basically provided for peaceful use in manufacturing industries.
   If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
   If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.
   ∗2) Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.
   ∗2) Vacuum pads are excluded from this 1 year warranty.
      A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠️ Caution

SMC products are not intended for use as instruments for legal metrology. Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.
5 Port Solenoid Valve Precautions 1

Precautions on Design

⚠️ Warning

1. Actuator drive
   When an actuator, such as a cylinder, is to be driven using a valve, take appropriate measures to prevent potential danger caused by actuator operation.

2. Intermediate stopping
   When a 3 position closed center valve is used to stop a cylinder at an intermediate position, accurate stopping of the piston in a predetermined position is not possible due to the compressibility of air. Furthermore, since valves and cylinders are not guaranteed for zero air leakage, it may not be possible to hold a stopped position for an extended length of time. Contact SMC if it is necessary to hold a stopped position for an extended time.

3. Effect of back pressure when using a manifold
   Use caution when valves are used on a manifold, as actuator malfunction due to back pressure may occur. Special caution is necessary when using a 3 position exhaust center valve, or when driving a single acting cylinder, etc. When there is a danger of this kind of malfunction, implement countermeasures such as the use of an individual exhaust spacer assembly or exhaust blocking plate.

4. Disposition of pilot exhaust
   Operate the pilot exhaust port (PE) with silencers mounted on both the D and U sides, or with release to atmosphere. If merged with the main exhaust, the main valve may malfunction due to back pressure.

5. Holding of pressure (including vacuum)
   Since valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum) in a pressure vessel.

6. Cannot be used as an emergency shutoff valve, etc.
   The valves presented in this catalog are not designed for safety applications such as an emergency shutoff valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

7. Maintenance space
   The installation should allow sufficient space for maintenance activities.

8. Release of residual pressure
   Provide a residual pressure release function for maintenance purposes. Special consideration should be given to the release of residual pressure between the valve and cylinder in the case of a 3 position closed center type valve.

9. Vacuum applications
   When a valve is used for vacuum switching, etc., take measures against the suction of external dust or other contaminants from vacuum pads and exhaust ports, etc. Moreover, an external pilot type valve should be used in this case. Contact SMC in case of an internal pilot type or air operated valve, etc.

Selection

⚠️ Warning

1. Confirm the specifications.
   The products presented in this catalog are designed only for use in compressed air systems (including vacuum). Do not operate at pressures or temperatures, etc. beyond the range of specifications, as this can cause damage or malfunction. (Refer to specifications.) Contact SMC when using a fluid other than compressed air (including vacuum).

2. Extended periods of continuous energization
   Contact SMC if valves will be continuously energized for extended periods of time.

⚠️ Caution

1. Momentary energization
   If a double solenoid valve will be operated with momentary energization, it should be energized for at least 0.1 second.

2. Leakage voltage
   Particularly when using a C-R element (surge voltage suppressor) for protection of the switching element, take note that leakage voltage will increase due to leakage current flowing through the C-R element, etc.

   Limit the amount of residual leakage voltage to the following values:
   - With DC coil: 2% or less of rated voltage
   - With AC coil: 12.5% or less of rated voltage

3. Low temperature operation
   Avoid ambient temperatures outside the range of -10 to 60°C (-5°C minimum for rubber seals). At low temperatures, appropriate measures should be taken to avoid solidification or freezing of drainage and moisture, etc.

4. Operation for air blowing
   When using solenoid valves for air blowing, an external pilot type or direct solenoid operated type should be used. Also, supply to the external pilot port compressed air within the pressure range prescribed in the specifications.

5. Mounting orientation
   In the case of a single solenoid, the mounting orientation is unrestricted. In the case of double solenoid or 3 position valves, mount so that the solenoid valve is horizontal. Also, when mounting in a location with vibration or impact, mount so that the solenoid valve is at a right angle to the direction of vibration. Do not use in locations where vibration or impact exceeds the product's specifications.
Series VQ7-6/7-8
5 Port Solenoid Valve Precautions 2

Warning
1. If air leakage increases or equipment does not operate properly, stop operation.
   After mounting or maintenance, etc., connect the compressed air and power supplies, and perform appropriate function and leakage inspections to confirm that the unit is mounted properly.
2. Instruction manual
   Mount and operate the product after reading the manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.
3. Painting and coating
   Warnings or specifications printed or pasted on the product should not be erased, removed or covered up.

Caution
1. Preparation before piping
   Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.
2. Wrapping of pipe tape
   When connecting pipes and fittings, etc., be sure that chips from the pipe threads and sealing material do not get inside the valve.
   Further, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the pipe/fitting.

3. When using closed center valves
   When using closed center type valves, check carefully to be sure there are no air leaks from the piping between the valves and cylinders.
4. Tighten threads with the proper tightening torque.
   When screwing fittings into valves, tighten with the torques given below.

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>Proper tightening torque N·m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rc1/8</td>
<td>7 to 9</td>
</tr>
<tr>
<td>Rc1/4</td>
<td>12 to 14</td>
</tr>
<tr>
<td>Rc3/8</td>
<td>22 to 24</td>
</tr>
<tr>
<td>Rc1/2</td>
<td>23 to 30</td>
</tr>
<tr>
<td>Rc3/4</td>
<td>29 to 30</td>
</tr>
</tbody>
</table>

5. Connection of piping to products
   When connecting piping to a product, refer to its instruction manual to avoid mistakes regarding the supply port, etc.

Caution
1. Polarity
   None of the series have polarity. (non-polar type)
2. Applied voltage
   When electric power is connected to the solenoid valve, be careful to apply the proper voltage. Improper voltage may cause malfunction or coil damage.
3. Confirm the connections.
   After completing the wiring, confirm that the connections are correct.

Caution
1. Lubrication
   1) The valve has been lubricated for life at the factory, and does not require any further lubrication.
   2) In the event that it is lubricated, use Class 1 turbine oil (without additives), ISO VG32.
   However, once lubrication is applied it must be continued, as the original lubricant may be eliminated leading to malfunction.
Series VQ7-6/7-8
5 Port Solenoid Valve Precautions 3

⚠️ Warning

1. Use clean air.
   - Do not use compressed air which contains chemicals, synthetic oils containing organic solvents, salts or corrosive gases, etc., as this can cause damage or malfunction.

⚠️ Caution

1. Install air filters.
   - Install air filters close to valves at their upstream side. A filtration degree of 5μm or less should be selected.

2. Install an air dryer or after cooler, etc.
   - Air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer or after cooler, etc.

3. If excessive carbon powder is generated, eliminate it by installing mist separators at the upstream side of valves.
   - If excessive carbon powder is generated by the compressor, it may adhere to the inside of valves and cause malfunction.

Refer to SMC's "Air Cleaning Equipment" catalog for further details on compressed air quality.

Operating Environment

⚠️ Warning

1. Do not use valves in atmospheres of corrosive gases, chemicals, salt water, water or steam, or where there is direct contact with same.
2. Do not use in an explosive atmosphere.
3. Do not use in locations subject to vibration or impact. Confirm the specifications for each series.
4. A protective cover, etc., should be used to shield valves from direct sunlight.
5. Shield valves from radiated heat generated by nearby heat sources.
6. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.
7. When solenoid valves are mounted in a control panel or are energized for extended periods of time, employ measures to radiate excess heat so that temperatures remain within the valve specification range.

⚠️ Caution

1. Drainage removal
   - Remove drainage from air filters regularly. (Refer to specifications.)
2. Lubrication
   - In the case of rubber seals, once lubrication has been started, it must be continued.
   - Use Class 1 turbine oil (without additives) VG32. Other lubricating oils will cause malfunction or other trouble.
   - Contact SMC regarding Class 2 turbine oil (with additives) VG32.

How to Find the Flow Rate (at air temperature of 20°C)

Subsonic flow when \( P_1 + 0.1013 < 1.89 \) (\( P_2 + 0.1013 \))

\[
Q = 226S \sqrt{P(P_2 + 0.1013)}
\]

Sonic flow when \( P_1 + 0.1013 ≥ 1.89 \) (\( P_2 + 0.1013 \))

\[
Q = 113S (P_1 + 0.1013)
\]

- \( Q \): Air flow rate \([\text{m}^3/\text{min} (\text{ANR})]\)
- \( S \): Effective area \([\text{mm}^2]\)
- \( \Delta P \): Differential pressure \([\text{P}_1 - \text{P}_2] \) \([\text{MPa}]\)
- \( P_1 \): Upstream pressure \([\text{MPa}]\)
- \( P_2 \): Downstream pressure \([\text{MPa}]\)

* Correction for different air temperatures

Multiply the flow rate calculated with the above formulas by a coefficient from the table below.

<table>
<thead>
<tr>
<th>Air temperature (°C)</th>
<th>-20</th>
<th>-10</th>
<th>0</th>
<th>10</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correction coefficient</td>
<td>1.08</td>
<td>1.06</td>
<td>1.04</td>
<td>1.02</td>
<td>0.98</td>
<td>0.97</td>
<td>0.95</td>
<td>0.94</td>
</tr>
</tbody>
</table>

No.VQ7-6-OMW0001
**Warning**

Manual Override Operation

Since connected equipment will be actuated when the manual override is operated, first confirm that conditions are safe.

Push type is standard. (Tool required)

Push type (Tool required)

Push down on the manual override button with a small screwdriver until it stops. (Approx. 1.5 mm)

Release the screwdriver and the manual override will return.

**Caution**

Mounting of Valves

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

<table>
<thead>
<tr>
<th>Series</th>
<th>Proper tightening torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQ7-6</td>
<td>2.3 to 3.7</td>
</tr>
<tr>
<td>VQ7-8</td>
<td>4.0 to 6.0</td>
</tr>
</tbody>
</table>

**Caution**

Installation and Removal of Pilot Valve Cover

Installation and Removal of Pilot Valve Cover

- **Removal**
  
  To remove the pilot valve cover, spread the cover's hook outward about 1 mm with a flat head screw driver, and pull the cover straight off. If it is pulled off at an angle, the pilot valve may be damaged or the protective O-ring may be scratched.

- **Installation**
  
  Put the cover back on straight without touching the pilot valve, and push it all the way until the cover's hook locks, without twisting the protective O-ring. (When pushed in, the hook opens and locks automatically.)

**Caution**

Replacement of Pilot Valves

- **Removal**
  
  1. Remove the sockets which are installed on the pilot valve pins by pulling them straight upward.
  2. Remove the pilot valve mounting screws with a small screwdriver.

- **Installation**
  
  1. After confirming installation of the gasket, securely tighten the mounting screws with the proper torque shown in the table below.
  2. Put the sockets on straight and install them securely so that the receptacle housings touch the coil surface as shown in the drawing below.

If they are pushed in with excessive force, there is a danger of the sockets coming off of the receptacle housings. Confirm that the sockets do not protrude from the windows on the side of the receptacle housings.

<table>
<thead>
<tr>
<th>Mounting screw</th>
<th>Proper tightening torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1.7 x 12</td>
<td>0.12 to 0.13</td>
</tr>
</tbody>
</table>
**Warning**

How to Wire DIN Terminal

ISO#: DIN 43650 A compatible

Connection
1. Loosen the top screw and remove the connector housing from the terminal spades on the solenoid.
2. Remove the housing screw and insert a screwdriver into the slot area on the underside of the DIN cap and carefully separate block and 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).

Precautions
Pull a connector out vertically, never at an angle.

Applicable cable
O.D.: ø6 to ø12 (When you use the cord longer than ø9, cut the inside of grommet along the cutout and then insert the code.)

Using a Pre-wired Connector

4 core wire round type connector (M12) conforming to NECa (Nippon Electric Control Equipment Industries Association) standard 4202

How to Calculate the Flow Rate
Refer to front matters 42 to 45 for How to Calculate the Flow Rate.

**Caution**

Internal Wiring Specifications

Note: Regarding the wiring for DC coil surge voltage generated when OFF is about 60V, please contact SMC separately for further suppression of the coil surge voltage.

100 VAC: Single

100 VAC: Double

200 VAC or more: Single

200 VAC or more: Double

* Terminal numbers in the circuits are for a DIN connector. Numbers inside ( ) are pre-wired connector pin numbers.

DIN terminal wiring specifications

Pre-wired connector wiring specifications

Note: For standard, there is no polarity. It can also be used as ~COM.
ISO Standard Solenoid Valve
VQ7-6 Series
Size 1/Single Unit

How to Order Valves

VQ7-6 FG S 3 (-X23)

Passage symbol

| FG | (A) | (B) | 4/3 | (R1)/(R2) |
| YZ | (A) | (B) | 4/2 | (R1)/(R2) |
| FHC | (A) | (B) | 4/2 | (R1)/(R2) |
| FJG | (A) | (B) | 4/2 | (R1)/(R2) |
| FPG | (A) | (B) | 4/2 | (R1)/(R2) |
| RG | (A) | (B) | 4/2 | (R1)/(R2) |

* Semi-standard

Number of solenoids
S Single
D Double

CE-compliant
Nil —
O CE-compliant

Connector
Nil DIN terminal block (With connector)
O DIN terminal block (Without connector)
SC Pre-wired connector

Sub-plate port size
Nil Without sub-plate
A02 Side ported 1/4" FN
A03 Side ported 3/8"
B02 Bottom ported 1/4" JT
B03 Bottom ported 3/8"

* Port R is 3/8" and 5(R1) are 3/8"

Seal
Nil Metal seal
R Rubber seal

Pilot exhaust
Nil Common exhaust
V Individual exhaust

Option
Nil None
Z Light/ surge voltage suppressor
N With indicator light

Coil rated
1 110 VAC, 50/60Hz
2 230 VAC, 50/60Hz
3 24 VDC
4 12 VDC
5 110 VAC, 50/60Hz
6 220 VAC, 50/60Hz

For other listed voltages, please consult with BIM.

How to Order Sub-plate

VS7-1 A02

Port size

| A02 | Side ported 1/4" FN |
| A03 | Side ported 3/8" |
| B02 | Bottom ported 1/4" JT |
| B03 | Bottom ported 3/8"

* Port 3(R2) and 5(R1) are 3/8"

Thread type
Nil F
O G
T NPTF

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Porting specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS7-1-A02F</td>
<td>Side 1/4 3/8</td>
</tr>
<tr>
<td>VS7-1-A02O</td>
<td>Side 3/8</td>
</tr>
<tr>
<td>VS7-1-B02T</td>
<td>Bottom 1/4 3/8</td>
</tr>
<tr>
<td>VS7-1-B02F</td>
<td>Bottom 3/8</td>
</tr>
</tbody>
</table>

Weight (kg)
0.37
**ISO Standard Solenoid Valve**

**VQ7-6 Series**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of positions</th>
<th>Model</th>
<th>Flow rate characteristics</th>
<th>Response time (ms)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQ7-6</td>
<td>Single 2-position</td>
<td>Metal seal VQ7-6-FG-5-C</td>
<td>b CV</td>
<td>4/2 (P → A/B)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber seal VQ7-6-FG-5-C-R</td>
<td>b CV</td>
<td>2/5 (A/B → E/A)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Double 3-position</td>
<td>Metal seal VQ7-6-FG-D-C</td>
<td>b CV</td>
<td>4/2 (P → A/B)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber seal VQ7-6-FG-D-C-R</td>
<td>b CV</td>
<td>2/5 (A/B → E/A)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Closed center</td>
<td>Metal seal VQ7-6-FHG-D-C</td>
<td>b CV</td>
<td>4/2 (P → A/B)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber seal VQ7-6-FHG-D-C-R</td>
<td>b CV</td>
<td>2/5 (A/B → E/A)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Exhaust center</td>
<td>Metal seal VQ7-6-FJG-D-C</td>
<td>b CV</td>
<td>4/2 (P → A/B)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber seal VQ7-6-FJG-D-C-R</td>
<td>b CV</td>
<td>2/5 (A/B → E/A)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Double check</td>
<td>Metal seal VQ7-6-FPG-D-C</td>
<td>b CV</td>
<td>4/2 (P → A/B)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber seal VQ7-6-FPG-D-C-R</td>
<td>b CV</td>
<td>2/5 (A/B → E/A)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Pressure center</td>
<td>Metal seal VQ7-6-FIG-D-C</td>
<td>b CV</td>
<td>4/2 (P → A/B)</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber seal VQ7-6-FIG-D-C-R</td>
<td>b CV</td>
<td>2/5 (A/B → E/A)</td>
<td>1.1</td>
</tr>
</tbody>
</table>

**Standard Specifications**

**Valve construction**
- Metal seal
- Rubber seal

**Fluid**
- Air

**Maximum operating pressure**
- 1.0 MPa

**Min. operating pressure**
- Single: 0.15 MPa
- Double: 0.15 MPa
- 3 position: 0.15 MPa

**Ambient and fluid temperature**
- –10 to 60°C
- –5 to 50°C

**Lubrication**
- Not required

**Manual override**
- Push type (Tool required)

**Impact/Vibration resistance**
- 150/30 m/s²

**Enclosure**
- IP65 (Dust tight, Low jet proof)

**Coil rated voltage**
- 12 VDC, 24 VDC, 100 VAC, 110 VAC, 20 VAC, 220 VAC, 240 VAC 50/60Hz

**Power consumption**
- ±10% of rated voltage

**Solenoid specifications**
- Class B or equivalent

**Power (Current)**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC</td>
<td>1W DC (42 mA)</td>
</tr>
<tr>
<td>12 VDC</td>
<td>1W DC (83 mA)</td>
</tr>
<tr>
<td>100 VAC</td>
<td>1.2 VA (12 mA)</td>
</tr>
<tr>
<td>110 VAC</td>
<td>1.3 VA (11.5 mA)</td>
</tr>
<tr>
<td>120 VAC</td>
<td>1.5 VA (12 mA)</td>
</tr>
<tr>
<td>200 VAC</td>
<td>2.5 VA (12.5 mA)</td>
</tr>
<tr>
<td>220 VAC</td>
<td>2.6 VA (13 mA)</td>
</tr>
<tr>
<td>230 VAC</td>
<td>2.8 VA (12.5 mA)</td>
</tr>
<tr>
<td>240 VAC</td>
<td>3 VA (13 mA)</td>
</tr>
</tbody>
</table>

**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** The value with an AC coil comes with a rectifying device; therefore, there is no difference in the consumption current when it is in the inrush and holding states.

- No.VQ7-6-OMW0001
## VQ7-6 Series
### Construction

#### DIN Terminal Type

<table>
<thead>
<tr>
<th>Metal seal type</th>
<th>Rubber seal type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQ7-6-FG-S-□</td>
<td>VQ7-6-FG-S-□R</td>
</tr>
<tr>
<td>VQ7-6-FG-D-□</td>
<td>VQ7-6-FG-D-□R</td>
</tr>
<tr>
<td>VQ7-6-FPG-D-□</td>
<td>VQ7-6-FPG-D-□R</td>
</tr>
</tbody>
</table>

### Replacement Parts (For valve)

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>VQ7-6-FG-S-□</th>
<th>VQ7-6-FG-D-□</th>
<th>VQ7-6-FG-D-□R</th>
<th>VQ7-6-FPG-D-□</th>
<th>VQ7-6-FPG-D-□R</th>
<th>VQ7-6-FG-D-□R</th>
<th>VQ7-6-FG-D-□R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gasket</td>
<td>VQ7060-13-4-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pilot valve assembly</td>
<td>VQZ1100-□</td>
<td>VQ7-6-FG-D-□</td>
<td>VQ7-6-FG-D-□</td>
<td>VQ7-6-FG-D-□</td>
<td>VQ7-6-FG-D-□</td>
<td>VQ7-6-FG-D-□</td>
<td>VQ7-6-FG-D-□</td>
</tr>
<tr>
<td></td>
<td>(1) (2)</td>
<td></td>
<td>VQ71-FPG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Double check spacer</td>
<td></td>
<td></td>
<td>VV71-FPG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Pilot valve cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>DIN terminal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) When the voltage is the same, the replacement of pilot valve assembly is possible.
Note 2) Since the substrate circuit in the valve is different, voltage cannot be changed with the pilot valve assembly.
Note 3) The pilot valve for 100 to 240 VAC is common.

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No.VQ7-6-OMW0001
**Manifold VV71 Series**

**VQ7-6 Series**

---

**How to Order Manifold**

**Stations**

- 1 station
- 2 stations
- 10 stations

Note: When equipped with control unit, 1 or 2 stations are used for mounting.

**2 (B), 4 (A) port connection**

- 02R 1/4 (B side)
- 03R 3/8 (B side)
- 02L 1/4 (L side)
- 03L 3/8 (L side)
- 02Y 1/4 (Y side)
- 03Y 3/8 (Y side)
- C6R One-touch fitting all (R side)
- C6L One-touch fitting all (L side)
- C11R One-touch fitting ø10 (R side)
- C11L One-touch fitting ø10 (L side)

Note: When ports are mixed, indicate piping specifications by means of the manifold specification sheet.

**Thread type**

- Nil
- F
- G
- NPTF

Note: With One-touch fittings, Nil

**CE-compliant**

- Nil
- O
- G

**Silencer box**

- Nil
- B
- With

Note: The silencer box is mounted on the end plate located on the side (D, U, B) that is selected in 1(P), 3(R2), 5(R1) port connection.

**Air release valve coil rating**

- Nil
- None

Note: For other specifications, consult with SWC.

**1(P), 3(R2), 5(R1) port connection**

- 01D 1-4 (D side)
- 02U 1-4 (U side)
- 02B 1-4 (Both sides)
- 03D 3/8 (D side)
- 03U 3/8 (U side)
- 03B 3/8 (Both sides)
- C11D One-touch fitting ø12 (D side)
- C11U One-touch fitting ø12 (U side)
- C11B One-touch fitting ø12 (Both sides)
- Mixed

Note: When ports are mixed, indicate piping specifications by means of the manifold specification sheet.

**Control unit type** (See pages 1130 and 1131 for details.)

- Nil
- A
- AP
- M
- MP
- F
- G
- C
- E

- Air filter with auto-drain
- Air filter with manual drain
- Regulator
- Air release valve
- Pressure switch
- Blanking plate (Air release valve)
- Blanking plate (Filter, Regulator)
- Blank plate (Pressure switch)
- Number of manifold blocks (required for mounting): 2 2 2 2 2 2 2 2

**Manifold Specifications**

<table>
<thead>
<tr>
<th>Manifold block size</th>
<th>Applicable orifice valve</th>
<th>Porting specifications</th>
<th>Stations</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO size 1 VQ7-6 Series ISO size 1</td>
<td>Right, Left</td>
<td>2(B), 4(A) port size 1/4 3/8 C6 ø6 C11 ø10</td>
<td>10 stations</td>
<td>0.43×6.45 (6 Stations)</td>
</tr>
</tbody>
</table>

Note: When equipped with control unit, 1 or 2 stations are used for mounting.

---

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No.VQ7-6-OMW0001
**Manifold Option Parts**

### Blanking plate assembly
**AXT502-9A**

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

![Blanking plate assembly](image)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT592-45-2</td>
<td>4</td>
</tr>
</tbody>
</table>

### Block plate (For SUP/EXH passages)
**AXT502-14**

When two or more different high pressures are supplied to one manifold, block plates are installed between stations having different pressures. Also, in cases such as when valve exhaust effects other stations in a circuit, block plates are used for exhaust at stations where the exhaust is to be separated.

![Block plate SUP/EXH passages](image)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUP passage blocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXH passage blocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUP passage blocked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Individual SUP spacer
**VV71-P**

Note: It is not applicable to One-touch fittings.

By mounting individual SUP spacers on a manifold block, it is possible to provide individual supply ports for each valve.

![Individual SUP spacer](image)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT592-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

### Individual EXH spacer
**VV71-R**

Note: It is not applicable to One-touch fittings.

By mounting individual EXH spacers on a manifold block, exhaust ports can be provided individually for each valve. (3, 5 common EXH type)

![Individual EXH spacer](image)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT592-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

### Block plate (For pilot EXH passage)
**AZ503-53A**

When a valve’s pilot exhaust effects other valves in a circuit, block plates are used between stations where the pilot exhaust passages are to be separated.

![Block plate EXH passage](image)

### Throttle valve spacer
**AXT503-23A**

A throttle valve spacer is mounted on a manifold block to control cylinder speed by throttling exhaust air flow.

![Throttle valve spacer](image)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT592-45-5</td>
<td>4</td>
</tr>
</tbody>
</table>
ISO Standard Solenoid Valve VQ7-6 Series

Reverse pressure spacer AXT502-21A-1

Thread type

- Nil
- Rc
- F
- G
- T
- NPTF

With reverse pressure control manifold specifications, when pressure is changed individually on one side (e.g., high speed cylinder return), pressure can be supplied individually to the R2 side by mounting a reverse pressure spacer. (Port 3 (R2) is individual and 5 (R1) is common.)

Accessory

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

Residual pressure release valve spacer VV71-R-AB

This is used by mounting on a manifold block in order to exhaust the residual pressure trapped inside of a cylinder, etc., during an intermediate stop with a 3 position closed center or perfect type valve. Residual pressure at ports A and B is exhausted individually to the outside by manual operation.

Accessory

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

R1, R2 individual EXH spacer VV71-R2-03

Thread type

- Nil
- Rc
- F
- G
- T
- NPTF

By mounting an individual EXH spacer on a manifold block, individual exhaust is possible from both R1 and R2. (3 (R2) and 5 (R1) are individual ports.)

Accessory

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

Individual SUP spacer with residual pressure release valve VV71-PR-02

Thread type

- Nil
- Rc
- F
- G
- T
- NPTF

This is used by mounting on a manifold block in order to stop the inlet side supply pressure in an individual supply spacer, while at the same time exhausting the residual pressure are performed by pressing the manual override, which can be locked by turning it.

Accessory

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

Main EXH back pressure check plate AXT503-37A

In cases where back pressure affects actuator operation due to simultaneous operation of manifold valves, etc., this effect can be eliminated by installing a plate between the manifold block and the valve from which back pressure is to be prevented.

Accessory

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

Adapter plate for locked-up cylinder AXT502-26A

Thread type

- Nil
- Rc 1/4
- F
- G 1/4
- T
- NPTF 1/4

When using a locked-up cylinder with 2 valves for control, this spacer can be used by mounting on a manifold block. It consists of a circuit equipped with a function to prevent lurching during release.

Accessory

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-45-6</td>
<td>4</td>
</tr>
</tbody>
</table>

No.VQ7-6-OMW0001
**VQ7-6 Series**

**Manifold Option Parts**

**Silencer box**

VV7-□-□□□□□□□SB

This can be provided as a unit on the end plate to reduce manifold exhaust noise and piping labor.

**Pilot EXH silencer**

AN110-01

This is used by mounting on the pilot exhaust port in order to reduce manifold and single type pilot exhaust noise, and to prevent the entry of dust.

**Release valve spacer**

AXT502-17A

Combination of VQ7-6-FG-S (Single) and release valve spacer can be used as air release valve. Note) Mounting on 2 position double and 3 position valves is not possible.

**Residual pressure release valve spacer**

AZ503-82

At the same time as pilot pressure is released, residual pressure between the cylinder and valve is released. There are two pilot types: internal pilot and external pilot types.

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>AZ503-82A</th>
<th>AZ503-82B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching signal type (Pilot type)</td>
<td>Internal pilot</td>
<td>External pilot</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specification</th>
<th>AZ503-82A</th>
<th>AZ503-82B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable solenoid valve</td>
<td>VQ7-6</td>
<td></td>
</tr>
<tr>
<td>Applicable sub-plate</td>
<td>ISO standard size 1</td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>1.0 MPa</td>
<td></td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>0.15 MPa</td>
<td></td>
</tr>
<tr>
<td>(Pressure generated when the valve element is switched to the stopping side)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>5 to 60°C</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Non-lube (Use turbine oil Class 1 (ISO VG32), if lubricated)</td>
<td></td>
</tr>
</tbody>
</table>
**Double check spacer VV71-FPG**

By combining a 3 position exhaust center valve with a double check spacer, an intermediate stopping position of a cylinder can be held for an extended period. It can also be used for drop prevention at the cylinder stroke and when releasing residual supply pressure, by combining it with a 2 position single or double valve.

**Double check spacer with residual pressure release valve VV71-FPGR**

This is a double check spacer equipped with a residual pressure release function, to release residual pressure inside a cylinder during maintenance or adjustment, etc.

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AX1500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AX1610-45-8</td>
<td>4</td>
</tr>
</tbody>
</table>

**Caution**

- Since extended cylinder stops are not possible if there are leaks from piping between the valve and cylinder or from fittings, etc., check for leakage using a neutral liquid detergent.
- Since One-touch fittings allow slight air leakage, screw piping is recommended when stopping the cylinder in the middle for a long time.
- Combination of 3 position, closed center and pressure center valves is not possible.
- Set the load weight so that the cylinder side pressure is less than two times the supply side pressure.
- When using the residual pressure release function, confirm the action of actuators, etc., and operate after providing for safety measures.
- Be aware that if the exhaust side of perfect spacer is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.
- To combat the effects of back pressure, when required, we recommend installing an individual EXH spacer between the double check spacer and the manifold.

**Interface regulator ARB250-00-A/B**

Spacers Interface regulators can be placed on top of the manifold block to reduce the pressure of each of the valves.

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AX1500-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AX1610-45-8</td>
<td>4</td>
</tr>
</tbody>
</table>

**Caution**

- When combining a pressure center valve and interface regulator with reduced pressure at ports A and B, use model ARB210-A.
- When combining a reverse pressure valve and interface regulator, use model ARB210-A.
- Further, it cannot be used with reduced pressure at port P.
- When combining a double check valve and an interface regulator, use a manifold or sub-plate as a basis, and stack them in the following order; the perfect spacer → the interface regulator → the valve.
- When a closed center valve is combined with the interface regulator’s A, B port regulation, note that it cannot be used for intermediate stops of a cylinder because there is leakage from relief port on the regulator.
Control Unit Specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter (With auto-drain/With manual drain)</td>
<td>Filtration degree</td>
</tr>
<tr>
<td></td>
<td>Regulator</td>
</tr>
<tr>
<td>Set pressure (Outlet pressure)</td>
<td>0.05 to 0.85 MPa</td>
</tr>
<tr>
<td>Pressure switch</td>
<td>Pressure adjustment range</td>
</tr>
<tr>
<td></td>
<td>Contact</td>
</tr>
<tr>
<td></td>
<td>Rated current</td>
</tr>
<tr>
<td>Air release valve (Single only)</td>
<td>Operating pressure range</td>
</tr>
</tbody>
</table>

Options

<table>
<thead>
<tr>
<th>Component</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanking plate</td>
<td>AXT502-9A (For manifold)</td>
</tr>
<tr>
<td></td>
<td>AXT502-18A (For release valve adapter plate)</td>
</tr>
<tr>
<td></td>
<td>MP2 (For control equipment/filter regulator)</td>
</tr>
<tr>
<td></td>
<td>MP3-1 (For pressure switch)</td>
</tr>
<tr>
<td>Release valve adapter plate</td>
<td>AXT502-17A</td>
</tr>
<tr>
<td>Pressure switch</td>
<td>IS3100-X230</td>
</tr>
</tbody>
</table>

Control Unit Type

<table>
<thead>
<tr>
<th>Control equipment</th>
<th>Ordering symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter with auto-drain</td>
<td>NII</td>
</tr>
<tr>
<td>Air filter with manual drain</td>
<td>A</td>
</tr>
<tr>
<td>Regulator</td>
<td>AP</td>
</tr>
<tr>
<td>Air release valve</td>
<td>M</td>
</tr>
<tr>
<td>Pressure switch</td>
<td>MP</td>
</tr>
<tr>
<td>Blanking plate (Air release valve)</td>
<td>F</td>
</tr>
<tr>
<td>Blanking plate (Filter, Regulator)</td>
<td>G</td>
</tr>
<tr>
<td>Blanking plate (Pressure switch)</td>
<td>C</td>
</tr>
<tr>
<td>Number of manifold blocks required for mounting (stations)</td>
<td>E</td>
</tr>
</tbody>
</table>

Use of Control Unit

**Construction and piping**

1. The supply pressure (P0) passes through the regulator with filter ① and is adjusted to the prescribed pressure. Next, it goes through the release valve ② (downstream residual pressure switching function used as normally ON) and is supplied to the manifold base side (P).
2. When the release valve ② is OFF, the supply pressure from port Po is blocked, and the air which was being supplied to the manifold side port P passes through the release valve ② and is discharged from port R1.
3. The pressure switch is piped into the outlet side of the release valve ②. (It operates when the release valve ② is energized.) Also, since there is an internal voltage drop of 4V, it may not be possible to confirm the OFF and ON states with a tester, etc.

**Caution**

- In the case of air filters with auto-drain or manual drain, mount so that the air filter is at the bottom.
ISO Standard Solenoid Valve
VQ7-8 Series
Size 2/Single Unit

How to Order Valves

VQ7-8 FG S 3 (X23)

Passage symbol

FG (A) (B) 4 2
R1(P)(R2)

YZ (A) (B) 4 2
R1(P)(R2)

PHC (A) (B) 4 2
R1(P)(R2)

FJG (A) (B) 4 2
R1(P)(R2)

PPG (A) (B) 4 2
R1(P)(R2)

FG (A) (B) 4 2
R1(P)(R2)

Number of solenoids
S Single
D Double

CE-compliant
Nil O CE-compliant

Connector
Nil DIN terminal block (With connector)
O DIN terminal block (Without connector)
SC Pre-wired connector

Only SC type is available with the X23

Sub-plate port size
Nil Without sub-plate
A03 Side ported 3/8
A04 Side ported 1/2
A06D Side ported 3/4
B03 Bottom ported 3/8
B04 Bottom ported 1/2
B06 Bottom ported 3/4

Thread type
Nil F G Rc T NPTF

Seal
Nil Metal seal
R Rubber seal

Pilot exhaust
Nil Common exhaust
V Individual exhaust

Option
Nil None
Z Light/Surge voltage suppression
N With indicator light

Coil rated
1 100 VAC, 50/60Hz
2 200 VAC, 50/60Hz
3 24 VDC
4 12 VDC
5 110 VAC, 50/60Hz
6 220 VAC, 50/60Hz

For other rated voltages, please consult with SMC

How to Order Sub-plate

VS7-2 A03

Port size
A03 Side ported 3/8
A04 Side ported 1/2
A06D Side ported 3/4
B03 Bottom ported 3/8
B04 Bottom ported 1/2
B06 Bottom ported 3/4

Thread type
Nil F G Rc T NPTF

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Porting location</th>
<th>Port size</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS7-2-A02</td>
<td>Side</td>
<td>3/8</td>
<td>0.68</td>
</tr>
<tr>
<td>VS7-2-A04</td>
<td>Side</td>
<td>1/2</td>
<td>1.29</td>
</tr>
<tr>
<td>VS7-2-A06</td>
<td>Side</td>
<td>3/4</td>
<td>0.68</td>
</tr>
<tr>
<td>VS7-2-B02</td>
<td>Bottom</td>
<td>3/8</td>
<td>0.68</td>
</tr>
<tr>
<td>VS7-2-B04</td>
<td>Bottom</td>
<td>1/2</td>
<td>1.29</td>
</tr>
<tr>
<td>VS7-2-B06</td>
<td>Bottom</td>
<td>3/4</td>
<td>1.29</td>
</tr>
</tbody>
</table>

No.VQ7-6-OMW0001
### ISO Standard Solenoid Valve VQ7-8 Series

#### Flow rate characteristics

<table>
<thead>
<tr>
<th>Flow rate characteristics</th>
<th>1 → 4/2 (P → A/B)</th>
<th>4/2 → 5/3 (A/B → EA/EB)</th>
<th>Response time (ms)</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.24</td>
<td>0.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 or less</td>
<td>40 or less</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.64</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Standard Specifications

#### Valve construction

<table>
<thead>
<tr>
<th>Valve construction</th>
<th>Metal seal</th>
<th>Rubber seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>1.0 MPa</td>
<td></td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>Single : 0.15 MPa</td>
<td>0.20 MPa</td>
</tr>
<tr>
<td>Double : 0.15 MPa</td>
<td>0.15 MPa</td>
<td></td>
</tr>
<tr>
<td>3 position : 0.15 MPa</td>
<td>0.20 MPa</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 60°C(1)</td>
<td>–5 to 60°C(1)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
</tr>
</tbody>
</table>

#### Valve specifications

<table>
<thead>
<tr>
<th>Valve specifications</th>
<th>Single</th>
<th>Double</th>
<th>3 position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve insulation type</td>
<td>Class B or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption (Current)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 VDC</td>
<td>1 WDC (42 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 VDC</td>
<td>1 WDC (83 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 VAC(3)</td>
<td>1.2 VA (12 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110 VAC(3)</td>
<td>1.3 VA (11.5 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 VAC(3)</td>
<td>1.5 VA (12 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 VAC(3)</td>
<td>2.5 VA (12.5 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220 VAC(3)</td>
<td>2.6 VA (13 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>230 VAC(3)</td>
<td>2.8 VA (12.5 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>240 VAC(3)</td>
<td>3 VA (13 mA)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes

1. Based on JIS B 8419: 2010 (Value for supply pressure of 0.5 MPa, with light surge voltage suppressor, when using clean air). Response time values will change depending on pressure and air quality. Value when ON for double type.
2. Weight without sub-plate. (Sub-plate: 3/8, 1/2: 0.68 kg, 3/4: 1.29 kg)

---

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) Since AC coil specifications include a rectifying device, there is no difference in power consumption between inrush and holding.
VQ7-8 Series

Construction

DIN Terminal Type

Metal seal
VQ7-8-FG-S-

VQ7-8-FG-D-

VQ7-8-FPG-D-

Rubber seal type
VQ7-8-FG-S-

VQ7-8-FG-D-

VQ7-8-FPG-D-

Replacement Parts (For valve)

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>VQ7-8-FG-S-</th>
<th>VQ7-8-FG-D-</th>
<th>VQ7-8-FP-D-</th>
<th>VQ7-8-FP-D-</th>
<th>VQ7-8-FG-S-</th>
<th>VQ7-8-FG-D-</th>
<th>VQ7-8-FP-D-</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gasket</td>
<td>VG7080-13-4-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pilot valve assembly</td>
<td>VG710Q-6 (5: 24 VDC, 6: 12 VDC, 1: For AC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pilot valve cover</td>
<td>VG7060-9A-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Double check spacer</td>
<td>VV72-FPG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>DIN terminal</td>
<td>UKL-S1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) When the voltage is the same, the replacement of pilot valve assembly is possible.
Note 2) Since the substrate circuit in the valve is different, voltage cannot be changed with the pilot valve assembly.
Note 3) The pilot valve for 100 to 240 VAC is common.
Manifold VV72 Series
VQ7-8 Series

How to Order Manifold

Manifold Specifications

<table>
<thead>
<tr>
<th>Manifold block size</th>
<th>Applicable solenoid valve</th>
<th>Porting specifications</th>
<th>Stations</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO size 2</td>
<td>VQ7-8 Series</td>
<td>2(β), 4(A) port size</td>
<td>03R, 04R</td>
<td>0.96 + 0.77</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1(P), 3(R2), 5(R1)</td>
<td>04D, 04U</td>
<td>(in Stations)</td>
</tr>
</tbody>
</table>

Note: The silencer box is mounted on the end plate located on the side (D, U, B) that is selected in "1(P), 3(R2), 5(R1) port connection."
**VQ7-8 Series**

### Manifold Option Parts

#### Blanking plate assembly
**AXT512-9A**
It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-2</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Block plate (For SUP/EXH passages)
**AXT512-14-1A (For SUP)**
**AXT512-14-2A (For EXH)**
When two or more different high pressures are supplied to one manifold, block plates are installed between stations having different pressures. Also, in cases such as when valve exhaust affects other stations in a circuit, block plates are used for exhaust at stations where the exhaust is to be separated.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUP passage blocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXH passage blocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUP passage EXH blocked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Individual SUP spacer
**VV72-P-04**
By mounting individual SUP spacers on a manifold block, it is possible to provide individual supply ports for each valve.

#### Individual EXH spacer
**VV72-R-04**
By mounting individual EXH spacers on a manifold block, exhaust ports can be provided individually for each valve. (3, 5 common exhaust type)

#### Block plate (For pilot EXH passage)
**AZT512-49A**
When a valve’s pilot valve exhaust affects other valves in a circuit, block plates are used between stations where the pilot exhaust passages are to be separated.

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-5</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Throttle valve spacer
**AXT510-32A**
A throttle valve spacer is mounted on a manifold block to control cylinder speed by throttling exhaust air flow.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-5</td>
<td>4</td>
</tr>
</tbody>
</table>
### Reverse pressure spacer

**AXT512-19A**

With reverse pressure control manifold specifications, when pressure is changed individually on one side (e.g., high speed cylinder return), pressure can be supplied individually to the R2 side by mounting a reverse pressure spacer. (Port 3 (R5) is individual and 5 (R1) is common.)

![Image of Reverse pressure spacer](image1)

**Thread type**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Rc</th>
<th>F</th>
<th>G</th>
<th>T</th>
<th>NPTF</th>
</tr>
</thead>
</table>

**Port size**

<table>
<thead>
<tr>
<th>1</th>
<th>3/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1/2</td>
</tr>
</tbody>
</table>

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-5</td>
<td>4</td>
</tr>
</tbody>
</table>

### Main EXH back pressure check plate

**AXT512-25A**

In cases where back pressure effects actuator operation due to simultaneous operation of manifold valves, etc., this effect can be eliminated by installing a plate between the manifold block and the valve from which back pressure is to be prevented.

![Image of Main EXH back pressure check plate](image2)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-3</td>
<td>4</td>
</tr>
</tbody>
</table>

### R1/R2 individual EXH spacer

**VV72-R2-04**

By mounting an individual EXH spacer on a manifold block, individual exhaust is possible from both R1 and R2. (3 (R5) and 5 (R1) are individual ports.)

![Image of R1/R2 individual EXH spacer](image3)

**Thread type**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Rc</th>
<th>F</th>
<th>G</th>
<th>T</th>
<th>NPTF</th>
</tr>
</thead>
</table>

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-5</td>
<td>4</td>
</tr>
</tbody>
</table>

### Adapter plate for locked-up cylinder

**AXT602-5A**

When using a locked-up cylinder with 2 valves for control, this spacer can be used by mounting on a manifold block. It consists of a circuit equipped with a function to prevent lurching during release.

![Image of Adapter plate for locked-up cylinder](image4)

**Thread type**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Rc</th>
<th>F</th>
<th>G</th>
<th>T</th>
<th>NPTF</th>
</tr>
</thead>
</table>

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>2</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-54-5</td>
<td>8</td>
</tr>
</tbody>
</table>

### Conversion adapter plate

**VV72-V-1**

This conversion adapter plate allows a VQ7-6 (size 1) valve to be mounted on a VQ7-8 manifold base. (V type)

![Image of Conversion adapter plate](image5)

**Accessory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT512-11</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>M6 x 20/(With switch)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>M4 x 20/(With switch)</td>
<td>2</td>
</tr>
</tbody>
</table>
Double check spacer
VV72-FPG
By combining a 3 position exhaust center valve with a double check spacer, an intermediate stopping position of a cylinder can be held for an extended period. It can also be used for drop prevention at the cylinder stroke end when releasing residual supply pressure, by combining it with a 2 position single or double valve.

Caution
- Since extended cylinder stops are not possible if there are leaks from piping between the valve and cylinder or from fittings, etc., check for leakage using a neutral liquid detergent.
- Since One-touch fittings allow slight air leakage, screw piping is recommended when stopping the cylinder in the middle for a long time.
- Combination of 3 position, closed center and pressure center valves is not possible.
- Set the load weight so that the cylinder side pressure is less than two times the supply side pressure.
- When using the residual pressure release function, confirm the action of actuators, etc., and operate after providing for safety measures.
- Be aware that if the exhaust side of perfect spacer is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.
- To combat the effects of back pressure, when required, we recommend installing an individual EXH spacer between the double check spacer and the manifold.

Silencer box
VV72-FPG-SB
This can be provided as a unit on the end plate to reduce manifold exhaust noise and piping labor.

Interface regulator
ARB350-00-\( P \)\( \quad A \quad B \)
Spacer Interface regulators can be placed on top of the manifold block to reduce the pressure of each of the valves.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
<td>AXT510-13</td>
<td>1</td>
</tr>
<tr>
<td>Bolt</td>
<td>AXT632-64-6</td>
<td>4</td>
</tr>
</tbody>
</table>

Caution
- When combining a pressure center valve and interface regulator with reduced pressure at ports A and B, use model ARB310-\( P \)\( A \quad B \).
- When combining a reverse pressure valve and interface regulator, use model ARB310-\( A \quad B \).
- Further, it cannot be used with reduced pressure at port P.
- When combining a double check valve and an interface regulator, use a manifold or sub-plate as a basis, and stack them in the following order; the perfect spacer \( \rightarrow \) the interface regulator \( \rightarrow \) the valve.
- When a closed center valve is combined with the interface regulator's A, B port regulation, note that it cannot be used for intermediate stops of a cylinder because there is leakage from relief port on the regulator.
## VQ7-6/VQ7-8 Series

### Manifold Option Parts/Mounting Bolt Part No.

#### VQ7-6 Mounting Bolt Part No.

<table>
<thead>
<tr>
<th>Number of options</th>
<th>Single stack</th>
<th>Double stack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting bolt No.</td>
<td>AXT632-45-1</td>
<td>AXT632-45-2</td>
</tr>
<tr>
<td>Size</td>
<td>M5 x 35 with SW</td>
<td>M5 x 15 with SW</td>
</tr>
</tbody>
</table>

#### VQ7-8 Mounting Bolt Part No.

<table>
<thead>
<tr>
<th>Number of options</th>
<th>Single stack</th>
<th>Double stack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting bolt No.</td>
<td>AXT632-54-1</td>
<td>AXT632-54-2</td>
</tr>
<tr>
<td>Size</td>
<td>M6 x 45 with SW</td>
<td>M6 x 10 with SW</td>
</tr>
</tbody>
</table>

### Option mounting diagram

The installation position of spacer (1) in the option mounting diagrams is limited only by the precautions given below.

#### Spacers
- Main EXH back pressure check plate
- Throttle valve spacer
- Release valve spacer
- Spacer (1) Individual SUP spacer
- Individual EXH spacer
- R1, R2 individual EXH spacer
- Reverse pressure spacer
- Residual pressure release valve spacer
- Individual SUP spacer with residual pressure release valve
- Interface regulator (P port regulation)
- Interface regulator (A port regulation)
- Interface regulator (B port regulation)
- Double check spacer
- Double check spacer with residual pressure release valve

**Note 1:** A throttle valve spacer and double check spacer (including those with residual pressure release valve) cannot be combined.

**Note 2:** When a double check spacer (Top) (including those with residual pressure release valve) and individual EXH spacer (Bottom) are combined with a R1, R2 individual EXH spacer (Bottom), be careful regarding the installation position.

**Note 3:** When an interface regulator (Top) and double check spacer (Bottom) (including those with residual pressure release valve) (Bottom) are combined, be careful regarding the installation position.

### Spacers

- Main EXH back pressure check plate
- Interface regulator (P port regulation)
- Interface regulator (A port regulation)
- Interface regulator (B port regulation)
- Double check spacer
- Spacer (1) Individual SUP spacer
- Individual EXH spacer
- R1, R2 individual EXH spacer
- Reverse pressure spacer
- Residual pressure release valve spacer
- Throttle valve spacer
- Release valve spacer

**Note 4:** When an interface regulator (Top) and double check spacer (Bottom) (including those with residual pressure release valve) (Bottom) are combined, be careful regarding the installation position.
ISO Standard Solenoid Valve VQ7-6/VQ7-8 Series

Exploded View of Manifold/VQ7-6

<table>
<thead>
<tr>
<th>D side end plate assembly</th>
<th>Tension bolt</th>
<th>Manifold block assembly</th>
<th>U side end plate assembly</th>
</tr>
</thead>
</table>

**End Plate Assembly**

**AXT502—A—**

- **End plate position**
  - L: U side
  - R: D side
- **P. R port size**
  - 02: 1/4
  - 03: 3/8
  - C12: One-touch fitting for ø12

**Manifold Block Assembly**

**AXT502—1A—**

- **Cylinder port location**
  - L: L side
  - R: R side

**Replacement Parts (For manifold block)**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
<th>Qty.</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AXT502-19</td>
<td>4</td>
<td>NBR</td>
</tr>
<tr>
<td>2</td>
<td>AXT502-20</td>
<td>2</td>
<td>NBR</td>
</tr>
<tr>
<td>3</td>
<td>AXT502-22-2</td>
<td>1</td>
<td>SPCC</td>
</tr>
<tr>
<td>4</td>
<td>AXT502-31</td>
<td>1</td>
<td>NBR</td>
</tr>
<tr>
<td>5</td>
<td>M4 x 8</td>
<td>2</td>
<td>SWRH</td>
</tr>
</tbody>
</table>

Note: Side piping only

Note 2: In this manifold block assembly, tension bolt for increasing station (1 station) is included.

**<Tension Bolt Part No.>**

**AXT502—34—**

- **Thread type**
  - Nil
  - R:
  - T: NPTF

Note: It is not applicable to One-touch fittings.

**Stations**

- 2: For 2 stations
- 3: For 3 stations
- 10: For 10 stations

Note: These 3x rods are solid pieces for each number of stations.
**VQ7-6/VQ7-8 Series**

Exploded View of Manifold/VQ7-8

<table>
<thead>
<tr>
<th>D side end plate assembly</th>
<th>Manifold block assembly</th>
<th>U side end plate assembly</th>
</tr>
</thead>
</table>

### <End Plate Assembly>

**AXT512**

**End plate position**
- L: U side
- R: D side

**P. R port size**
- 04: 3/8
- 06: 1/2
- C12: One-touch fitting for ø12

**Replacement Parts (For manifold block)**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
<th>Qty.</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AXT512-13</td>
<td>2</td>
<td>NBR</td>
</tr>
<tr>
<td>2</td>
<td>AS568-022</td>
<td>1</td>
<td>NBR</td>
</tr>
<tr>
<td>3</td>
<td>AS568-029</td>
<td>2</td>
<td>NBR</td>
</tr>
<tr>
<td>4</td>
<td>AXT512-5</td>
<td>1</td>
<td>NBR</td>
</tr>
<tr>
<td>5</td>
<td>AXT512-4</td>
<td>1</td>
<td>SPCC</td>
</tr>
<tr>
<td>6</td>
<td>M4 x 10</td>
<td>2</td>
<td>SWRH</td>
</tr>
<tr>
<td>7</td>
<td>AXT512-6-1</td>
<td>2</td>
<td>SPCC</td>
</tr>
<tr>
<td>8</td>
<td>AXT512-6-4</td>
<td>2</td>
<td>SS</td>
</tr>
<tr>
<td>9</td>
<td>AXT512-6-3</td>
<td>2</td>
<td>SCM</td>
</tr>
</tbody>
</table>

### <Manifold Block Assembly>

**AXT512-1A**

**Thread type**
- N: Rc
- F: G
- T: NPTF

**Porting specifications**
- A: Side
- B: Bottom

**Cylinder port size**
- 03: 3/8
- 04: 1/2

Note: It is not applicable to One-touch fittings.
## Failures and Countermeasures

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause of problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Malfunction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve is not shifting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the valve shift when the manual override is pushed in?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td>VCheck the voltage, then if it is dropping, readjust.</td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the indicator light come on when solenoid is energized?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Slow response</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The valve operates but response is very slow.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| VLow response was due to the pressing of residual voltage in the deenergized state (OFF position) |                           | Check the residual voltage. Keep the residual voltage at the following values of the rated voltage:  
DC coil: 22 or less  
AC coil: 3.0% or less |
| VMain Valve is "sticking"  
Vcontamination in the supply air is adhering to the main valve, causing little or no movement. |                           | VReplace the valve. VClean the air supply (See P.23). |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause of problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air leakage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) The mounting bolts</td>
<td>Tighten the mounting bolts. Proper tightening torque:</td>
</tr>
<tr>
<td></td>
<td>might be loose. (See F.6)</td>
<td>VQ7-5:2.3 to 3.7N-m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VQ7-8:4.0 to 6.0N-m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the gasket is damaged, replace it.</td>
</tr>
<tr>
<td></td>
<td>2) From the exhaust port.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace the valve.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean the air supply. (See F.41).</td>
</tr>
<tr>
<td>Note: In the case of the metal seal type valve, air leaks across the spool by: as follows, VQ7-5: about 250cm/min per port. (at 0.3MPa)</td>
<td>3-2) The inside leakage increased because dust particles from the air supply were caught in the main valve.</td>
<td></td>
</tr>
</tbody>
</table>