1 SAFETY RECOMMENDATION

1.1 General recommendation

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of “Caution,” “Warning” or “Danger.” To ensure safety, be sure to observe ISO4414, JIS B 8370 (Note2), and other safety practices.

Note 1: ISO 4414: Pneumatic fluid power - General rules relating to systems.

Note 2: JIS B 8370: Safety practice for electrical and electronic equipment and installations.

1.2 Conformity to standard

This product is certified to and complies with the following standards:

- EMC Directive 89/336/EEC
- EN61000-6-2
- EN55011
- EN61000-4-5
- VQC1000/2000

This product is certified to and complies with the following standards:

- 3.3.4 Internal wiring specification
- 1.2 Conformity to standard

2 INTENDED CONDITIONS OF USE

2.1 Specifications

<table>
<thead>
<tr>
<th>Valve Configuration</th>
<th>Metal seat</th>
<th>Rubber seat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air/hot gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.7MPa (Cylindrical type, 1.5MPa)</td>
<td>0.15MPa (Cylindrical type, 0.3MPa)</td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>0.001MPa (Cylindrical type, 0.01MPa)</td>
<td>0.001MPa (Cylindrical type, 0.01MPa)</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.5MPa (Cylindrical type, 1.5MPa)</td>
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</tr>
<tr>
<td>Min. operating pressure</td>
<td>0.01MPa (Cylindrical type, 0.1MPa)</td>
<td>0.01MPa (Cylindrical type, 0.1MPa)</td>
</tr>
</tbody>
</table>

2.2 Piping

- Use dry air to prevent condensation at low temperatures.
- Impact resistance: No malfunction occurred in a one-way test between 8.3 and 20000G. Test was performed on the axial and right directions of the main valve and armature, for both energized and de-energized states.

3 INSTALLATION

3.1 Environment

- WARNING:

  Do not install unless the safety instructions have been read and understood.

3.2 Piping

- WARNING:

  Before piping, make sure to clean up chips, cutting oil, dust etc.

- CAUTION:

  - When installing piping or fitting into a port, ensure thatewart material does not enter the port itself.
  - When using seal tape, leave 1.5 to 2 threads exposed on the end of pipe/fitting.

3.3 Electrical connection

- WARNING:

  When DC power is connected to a solenoid valve equipped with light and/or surge voltage suppressor, check for polarity indications.

- CAUTION:

  - For polarity indications:
    1. No diode to protect polarity: if polarity connection is wrong, the diode in the valve or switching device at control equipment or power supply may be damaged.
    2. With diodes to protect polarity: if polarity connection is wrong, the valve does not work.

3.3.2 Cable safety instructions

- WARNING:

  1. Avoid miswiring, as this can cause malfunction, damage and fire in the unit.

- CAUTION:

  1. Prevent noise and surge in signal lines, keep all wiring separate from power lines and high voltage lines. Otherwise, this can cause a malfunction.

3.3.3 Light/Surge voltage suppressor VQC1000/2000

- WARNING:

  1. Ensure that the air supply system is filtered to 5 micron.

- CAUTION:

  1. Installations in conjunction with atomic energy, railway, air navigation, vehicles, or safety equipment.

- WARNING:

  1. Ensure that the air supply system is filtered to 5 micron.

- CAUTION:

  1. Installations in conjunction with atomic energy, railway, air navigation, vehicles, or safety equipment.

3.4 Internal wiring specification VQC1000/2000

- WARNING:

  1. No diode to protect polarity: if polarity connection is wrong, the diode in the valve or switching device at control equipment or power supply may be damaged.

- CAUTION:

  1. Prevent noise and surge in signal lines, keep all wiring separate from power lines and high voltage lines. Otherwise, this can cause a malfunction.

- WARNING:

  1. Ensure that the air supply system is filtered to 5 micron.

- CAUTION:

  1. Installations in conjunction with atomic energy, railway, air navigation, vehicles, or safety equipment.

3.3.5 Electrical Wiring

- WARNING:

  1. No diode to protect polarity: if polarity connection is wrong, the diode in the valve or switching device at control equipment or power supply may be damaged.

- CAUTION:

  1. Prevent noise and surge in signal lines, keep all wiring separate from power lines and high voltage lines. Otherwise, this can cause a malfunction.

- WARNING:

  1. Ensure that the air supply system is filtered to 5 micron.

- CAUTION:

  1. Installations in conjunction with atomic energy, railway, air navigation, vehicles, or safety equipment.

3.3.6 Flange connection (F kit)

- WARNING:

  1. No diode to protect polarity: if polarity connection is wrong, the diode in the valve or switching device at control equipment or power supply may be damaged.

- CAUTION:

  1. Prevent noise and surge in signal lines, keep all wiring separate from power lines and high voltage lines. Otherwise, this can cause a malfunction.

- WARNING:

  1. Ensure that the air supply system is filtered to 5 micron.

- CAUTION:

  1. Installations in conjunction with atomic energy, railway, air navigation, vehicles, or safety equipment.
3.4 Mounting

**CAUTION:**
- After handling, repair, or equipment modification, consult the compressed air and power suppliers, and perform appropriate function and leakage inspections to confirm that the unit is mounted properly.
- The non-locking push type (tool required) is standard, and the slotted locking type (tool required) is optional.

**Manual override**
- Since connected equipment will operate when the manual override is actuated, confirm that conditions are safe prior to activation.
- The valve has been lubricated for life at the factory, and does not require any further lubrication.
- If you wish to add additional lubrication, however, please be sure to use ISO VG22 oil (without additive).
- If lubricated, oil will be released from the system to be drained.

**Infrasound operation**
- Valves should be switched at least once every 30 days to prevent malfunction. (Use vacuum according to the air supply.)

**Manual override operation**
- When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

3.5 Lubrication

**CAUTION:**
- Lube products have been lubricated for life at manufacture, and do not require lubrication service.
- If lubricant is used in the system, use ISO VG32 Class 1 (no additive), ISO VG32. Once lubricant is used in the system, lubrication must be continued because the original lubricant applied during manufacturing will be washed away.
- The valve has been lubricated for life at the factory, and does not require any further lubrication.
- If you wish to add additional lubrication, however, please be sure to use ISO VG22 oil (without additive).

**Manual override**
- Mount and operate the product only after reading the manual carefully and understanding its contents. Always keep the manual handy for easy reference.

**Cleaning**
- Warnings or specifications printed or pasted on the product should not be erased, removed or covered up.

**Solenoid valve removal and mounting VQC1000/2000**

**Removal steps**
1. Loosen the clamp screws until they turn freely. (The screws do not come out.)
2. Remove the solenoid valve from clamp B by lifting the cut-out side of the valve while pushing on the screw top.
3. Push down the manual override button with a small screwdriver, etc. to release the manual override.

**Mounting steps**
1. Push the clamp screws. Clamp A opens. Insert the top plate of valve into clamp B from an angle.
2. Push the valve down into place. When you release the screws, the valve will be locked into place (M kit).