## Valve Mounted Cylinder
### Series CV/MVGQ

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**Bore size (mm):**
- 10, 16, 20, 25, 32, 40, 50, 63, 80, 100

**Made to order specifications:**
Refer to p.5.4-1 for made to order specifications.
Valve Mounted Cylinder
Series CV/Common Precautions

Be sure to read before handling.
Applicable series: CVJ5, CVJ3

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**Manual Operation**

**Warning**
- Manual overrides are provided on two locations, one on the pilot valve, and the other on the valve body. Operate either one to effect manual operation.

- **Non-locking push style**
  - Push in the direction the arrow indicates.

- **Push-locking slotted style**
  - Press it to enable manual operation and turn it in the direction of the arrow to lock it.
  - If this is not turned, it can be used in the same way as the non-locking style.

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**Connector installation and removal**

**Installation:**
- Insert the sockets into the square holes of the connector (marked and , respectively), pinch the lead wires to push them in entirely, allowing the hook on each socket to engage with the seat of the connector, thus locking the socket in place. (Because the hook is open, it locks automatically when the socket is pushed in.) Then, lightly pull on the lead wires to verify that the sockets have been properly locked.

**Removal:**
- To pull the sockets out of the connector, use a rod with a small tip (approximately 1mm) to press the hook of the socket and pull the lead wire out. To reuse the socket, expand the hook outward.

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**Plug Connector**

**Caution**
1. **Connector installation and removal**
   - To install the connector, squeeze the lever and the connector body with your fingers, slide the connector straight over the pin, and lock it in place by pushing the tab of the lever into the groove in the cover.
   - To remove the connector, press the lever with your thumb to disengage the tab from the groove, and pull the connector straight out.

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**Installation and removal of the sockets containing lead wires**

**Installation:**
- Insert the sockets into the square holes of the connector (marked and , respectively), pinch the lead wires to push them in entirely, allowing the hook on each socket to engage with the seat of the connector, thus locking the socket in place. (Because the hook is open, it locks automatically when the socket is pushed in.) Then, lightly pull on the lead wires to verify that the sockets have been properly locked.

**Removal:**
- To pull the sockets out of the connector, use a rod with a small tip (approximately 1mm) to press the hook of the socket and pull the lead wire out. To reuse the socket, expand the hook outward.

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**Surge Voltage Suppressor**

**Warning**
- For DC:
  - Connect the wires by matching their polarities to the and marks. Be very careful to not interchange the polarities as this could cause the diodes or the switching elements to burn.
  - If the lead wires are connected beforehand, the red wire is , and the black wire is .

**Caution**
- For AC:
  - A rectifier assembly is used for preventing the generation of surge voltage.

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**Leakage Voltage**

**Caution**
- Be aware that there is an increase in the leakage voltage particularly if a C-R element (surge voltage protector) is used for protecting the switching element, because the leakage current flows through the C-R element.

The residual leakage voltage must be kept as follows:
- With a DC coil, 3% of the rated voltage or below
- With an AC coil, 8% of the rated voltage or below.

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3.5-2
Common Precautions  **Series CV**

**Applicable series:** CVM5, CVM3, MVGQ

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### Light and Surge Voltage Suppressor

**Caution**

- **Grommet**

![Grommet Diagram]

In the case of DC wiring, connect the wires by matching their polarities to the (+) and (-) marks. If the lead wires are connected beforehand, the red wire is (+), and the black wire is (-).

- **L/M plug connector**

![L/M plug connector Diagram]

- **DIN connector**

![DIN connector Diagram]

In the case of DC wiring, connect terminal No. 1 of the connector to the positive (+) side, and terminal No. 2 to the negative (-) side. (Refer to the marks on the terminal board.)

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### Plug Connector

**Caution**

1. **Connector installation and removal**

   - To install the connector, squeeze the lever and the connector body with your fingers, slide the connector straight over the pin, and lock it in place by pushing the tab of the lever into the groove in the cover.
   - To remove the connector, press the lever with your thumb to disengage the tab from the groove, and pull the connector straight out.

2. **Crimping the lead wire into the socket**

   - Peel approximately 3.2 to 3.7mm of insulation from the tip of the lead wire, make sure that the ends of the core wire are even, insert the wire into the socket, and crimp it with a crimping tool. At this time, make sure that the insulation of the lead wire does not enter the area in which the core wire is crimped.
   - Use a special crimping tool. (Crimping tool: model number DX170-75-1)

3. **Installation and removal of the sockets containing lead wires**

   - **Installation:**
     - Insert the sockets into the square holes of the connector (marked (+) and (-), respectively), then pinch the lead wires to push them in entirely, allowing the hook on each socket to engage with the seat of the connector, thus locking the socket in place. (Because the hook is open, it locks automatically when the socket is pushed in.) Then, lightly pull on the lead wires to verify that the sockets have been properly locked.
   - **Removal:**
     - To pull the sockets out of the connector, use a rod with a small end (approximately 1mm) to press the hook of the socket and pull the lead wire out.
     - To reuse the socket, expand the hook outward.

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**Series CV**

**Applicable series:** CVM5, CVM3, MVGQ
**Warning**

**Manual Operation**

Make sure that it is safe to engage manual operation before doing so, because any equipment that is connected will operate once manual operation is engaged.

- **Non locking push style [Standard]**
  Push in the direction the arrow indicates.

- **Push & turn-locking slotted style [D type]**
  Press it to enable manual operation and turn it in the direction of the arrow to lock it. If this is not turned, it can be used in the same way as the non-locking extension style.

**Plug Connector**

1. **Connector installation and removal**
   - To install the connector, squeeze the lever and the connector body with your fingers, slide the connector straight over the pin, and lock it in place by pushing the tab of the lever into the groove in the cover.
   - To remove the connector, press the lever with your thumb to disengage the tab from the groove, and pull the connector straight out.

2. **Crimping the lead wire into the socket**
   Peel approximately 3.2 to 3.7mm of insulation from the tip of the lead wire, make sure that the ends of the core wire are even, insert the wire into the socket, and crimp it with a crimping tool. At this time, make sure that the insulation of the lead wire does not enter the area in which the core wire is crimped.
   Use a special crimping tool to crimp the sockets. (Contact SMC for details on the special crimping tool.)

3. **Installation and removal of the sockets containing lead wires**
   - **Installation:**
     Insert the sockets into the square holes of the connector (marked  and ), then pinch the lead wires to push them in entirely, allowing the hook on each socket to engage with the seat of the connector, thus locking the socket in place. (Because the hook is open, it locks automatically when the socket is pushed in.) Then, lightly pull on the lead wires to verify that the sockets have been properly locked.
   - **Removal:**
     To pull the sockets out of the connector, use a rod with a small end (approximately 1mm) to press the hook of the socket and pull the lead wire out.
Surge Voltage Suppressor

<DC>
Grommet, L/M plug connector style

With surge voltage suppressor

Polarity protection diode

Red (+) |

Black (-) |

With light/surge voltage suppressor (IZ)

Polarity protection diode

Black (-) |

Red (+) |

Non polarity style circuit (U)
(24V DC and 12V DC only.)

(+)(-) |

(-)(+)

• Connect the wires by matching their polarities with the @ and 1 marks.
  (The non-polar style can be connected either way.)
• The voltage specifications for other than the 24V and 12V DC types are not provided with a reverse connection protection diode. Therefore, make sure not to interchange the polarities.
• If the lead wires are connected beforehand, the red wire is @, and the black wire is 1.

<AC>
(There is not an S type, for a rectifier prevents voltage surges.)

Grommet, L/M plug connector

With light (IZ)

(-) 2N44

(-)