CKD

D3- 246432 2 2012.04.01

Handling Instructions

3QRA・B1 series

Thank you for purchasing CKD product.
Please review the precautions in this Instruction thoroughly for safe operation of this equipment.

Keep this document in a safe location so that it is easily referenced as necessary.
For further information, refer to the instruction manual and product catalog.

CAUTION!! Do not unpack solenoid valve until the piping is ready for connection.

Foreign materials entering through piping port will cause failure and malfunction.

⚠ WARNING

■ Do not step on or place objects on the product. Failure to follow this warning may cause falling accident, falling of the product, bodily injury due to fall, malfunction due to breakage of the product, etc.

■ Before inspecting, checking or adjusting the product, turn off power supply and shut down compressed air line and verify zero residual pressure.

Piping and installation

⚠ WARNING

■ Do not use water or solvent for cleaning and painting. Plastics broken by the solvent and coating materials will clog the port, causing malfunction.

■ Check the location of piping port by referring to product indication, etc. Wrong piping will cause malfunctioning of actuator.

■ Screws used to fasten pipe joints must be tightened with a correct torque. Otherwise, air will leak or screws will be damaged.

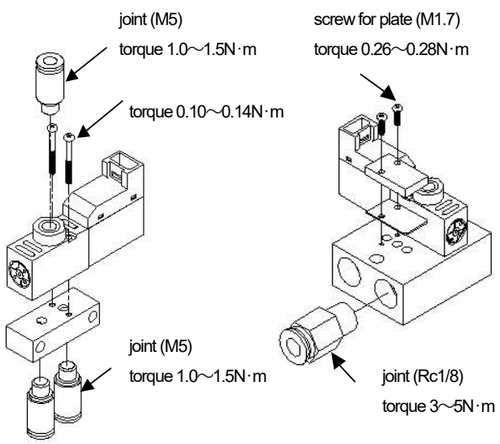
Tightening torque

Connecting screw	Tightening torque N・m
M5	1～1.5
Rc1/8	3～5

⚠ CAUTION

■ Do not use as emergency cutout solenoid valve. Starting response time can be late, when leaving under elevated pressure long time.

■Screws used to fasten with a correct torque.



■ Before starting the piping work, always blow the air to the inside of the piping (flushing) or clean the inside of the piping to remove cutting chips, coolant, and dusts, etc.

■ Do not mount the solenoid valve by supporting it with piping. Secure the valve with dedicated supporting member.

■ When winding a seal tape, wind it from the position 2 mm or more away from the top of the screw in the screw threading direction.
If the seal tape is projected from the top of the pipe screw thread, the seal tape may be cut by screwing in the pipe and such cut dust may enter the valve, causing malfunction to the valve.

■ Prevent entrainment of foreign materials from exhaust port by facing down the exhaust port or by using a silencer.

■ Standard type is built in the mesh filter into 2(A) port to prevent entrainment of foreign materials, however the minute dust can not be remove. Built in the vacuum filter between the pad nozzle and the valve in the vacuum condition.

Lubrication

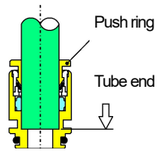
⚠ CAUTION

■ Do not lubricate. Doing so will cause slow response or malfunction.

Joint and Tube

Push-in joint

■ Insert the tube to the tube end. Verify positive engagement of the tube by gently pulling it with a force of approx. 20 N. If the tube is not inserted to the bottom, it may become loose, causing air leakage.



Tube

■ With the dedicated cutter, cut the cable at a right angle.

■ The bending angle of piping must be larger than the minimum bend radius of the tube.

Wiring method

⚠ WARNING

■ When performing wiring work, make sure to do so with the power supply turned off. Also, do not touch the terminal during it is energized or let wet hands get near. There is a risk of receiving electric shock.

⚠ CAUTION

■ Install wiring before check the working voltage

■ The voltage will drop by simultaneous energizing and by the length of the cable. Check that the solenoid voltage drop is within 10% of the rated voltage.

Cautions on individual units

Grommet with lead wire

■Lead wire AWG#26 OD ϕ1.35. Also it has no polarity.

C type and D type connector

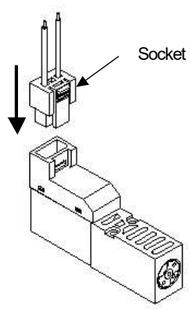
■Standard type self-reset valve has no polarity, but self-reset valve with option H(large flow rate) and self-hold valve have polarity.

Verify the polarity before installing wiring

①To engage the socket, hold the lever and the socket with fingers and insert it to the square opening of the connector. Engage the detent on lever to groove of the connector to lock. Note that when inserting the socket downward, hold it so that the lever faces frontward, and when inserting it horizontally, the lever faces upward.

②To disengage the socket, first disengage the detent of lever from the groove by pressing lever, and then pull the socket straight downward.

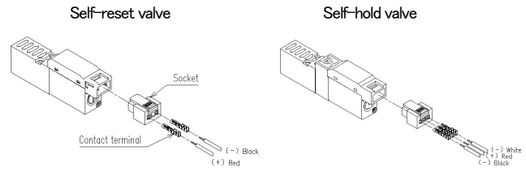
■The socket assembly has lead wire of AWG #26, OD ϕ1.35.



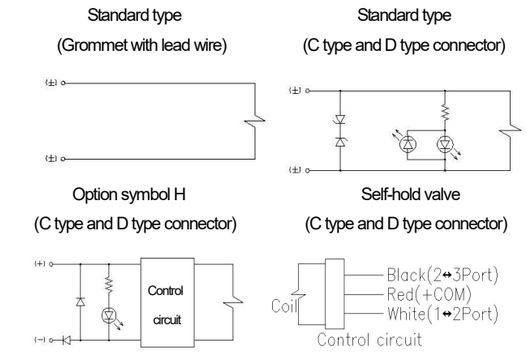
Assembling connector

①On the lead wire end, peel off 3 mm of insulation. Insert each conductor to contact terminal and press fit them with a crimping tool. Verify that conductor and insulation are positively clamped and end of the conductors are visible (0 to 0.5 mm). Use lead wire of AWG #26-28, 0.08 to 0.16 mm^2.
[Crimping tool: H4-M31]

②After crimping, insert the contact terminal to each square opening of the socket to the bottom until it is internally locked. Lightly pull the terminal to see that it is locked.



Solenoid valve internal circuit diagram



Manual override

⚠ WARNING

■ Be sure the area near the operating cylinder is cleared of all unauthorized personnel before working.

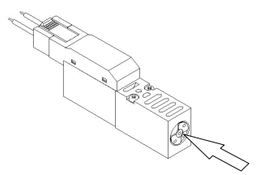
Operation of the manual override

Self-reset valve

When pushing the manual override, the spool can be moved on operator position of energized.

Push the manual override from front by a tool with thin end like a precision screwdriver. If it is pushed slantingly, the spool can not be moved on correct position. Doing so will cause internal leakage.

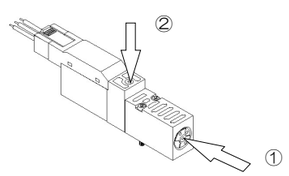
After releasing, push it straightly from front again.



Self-hold valve

Pressing the manual override ① or ② can switch the flow path.(① : 1⇔2、② : 2⇔3)

Press the manual override straight down (not at an angle) using a fine-tipped tool such as a precision screwdriver



Continuous energizing

⚠ CAUTION

■When touching the valve, be careful of it. The coil temperature may rise by temperature around it or by welding time.

■The performance of solenoid valve deteriorate by energized long time.
Verify the following units, especially the standard flow rate type.

・Set up welding time shorter than de-energized time at intermittent energized.

• Each period of energization shall be 5 minutes or less for self-reset valve and 30 seconds or less for self-hold valve.

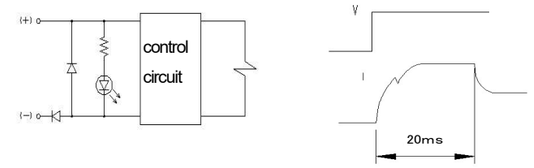
• Use the solenoid valve that the temperature around it is not more than max regulation temperature.

Option symbol H (large flow rate type)

⚠ CAUTION

■Do not use the solenoid valve when it is subject to vibration or shock beyond the range of spec. Doing so will cause malfunction.

■The large flow rate type has the control circuit of current, therefore the current value is reduced when the coil holds suctioned. Verify that only plus common has polarity.



Self-hold valve

⚠ CAUTION

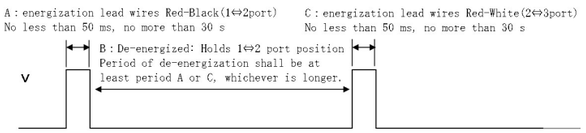
■Do not use the solenoid valve when it is subject to vibration or shock beyond the range of spec. Doing so will cause malfunction.

1 Precautions when energizing the valve

- Period of continuous energization shall not exceed 30 seconds. (See A and C in the illustration below)
- Ratio of energization shall be 50% or less. (See B in the illustration below)
- Minimum excitation time shall be 50 ms or more. (See A and C in the illustration below)
- Do not energize black and white lead wires simultaneously.
  If they are energized simultaneously, the solenoid valve will not operate and will maintain the state it was in before energization.
  Be aware that, from that condition, if the power to both wires is not turned off at the same time, it will cause the solenoid valve to actuate.

2 The solenoid valve may malfunction if it is in close proximity to a magnetic source.
Install the valve at least 10 cm away from any magnetic source.

3 The holding position may change if the solenoid valve is subjected to excessive shock (more than is permitted by the specifications) during transportation or installation.
Always check the position manually or electrically before use



Head Office & Factory 2-250 Ouji, Komaki-city, Aichi, 485-8551
TEL (0568)77-1111 FAX (0568)77-1123

Sales Div. 2-250 Ouji, Komaki-city, Aichi, 485-8551
TEL (0568)74-1303 FAX (0568)77-3410

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CKD Corporation