



## Safety precautions

# Fluid Control Components: Warnings and Cautions

Be sure to read this section before use.

Precautions for each model series: product-specific cautions

Direct acting 2, 3-port solenoid valve (AB/GAB/AG/GAG)

## Design/selection

### ⚠ WARNING

#### 1 Working fluids

- (1) Contact CKD before using this valve for active gas (combustion gas, acetylene gas, etc.).
- (2) Since valves for LPG (propane gas, butane gas) are available as custom-made products, contact CKD.
- (3) When using this valve for dry air or inert gas, the life can be shortened considerably due to wear. Use a valve intended for dry air.
- (4) This valve cannot be used for maintaining vacuum. Consult with CKD when the vacuum needs to be maintained.

### ⚠ CAUTION

#### 1 Continuous energizing

Use the NO pressurization when using the 3-port valve in a continuously energized state with the NO port pressurized. When continuously energizing the universal or NC pressurization, use a fluoro rubber seal.

#### 2 Suction sound

With the AC voltage specifications, a loud suction sound may be heard momentarily after energizing. To avoid a suction sound, select a coil with a diode or the DC voltage model. The suction sound volume will be reduced.

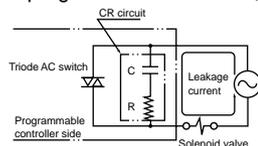
#### 3 Fluid viscosity

The fluid viscosity must be 50 mm<sup>2</sup>/s or less. Malfunctions could occur if the viscosity is higher than 50 mm<sup>2</sup>/s.

#### 4 Leakage current from other fluid control components

When operating the solenoid valve with a programmable controller, etc., check that the output leakage current from the programmable controller is within the following specifications.

Failure to observe this could lead to malfunctions.



Voltage Model No.	AC		AC diode		DC			
	100 V	200 V	100 V	200 V	12 V	24 V	48 V	100 V
AB,AG	6 mA or less	3 mA or less	2 mA or less	1 mA or less	2 mA or less	1 mA or less	0.5 mA or less	0.2 mA or less

## Mounting, piping and wiring

### ⚠ CAUTION

#### 1 Piping

- (1) Always hold the socket with a wrench, etc., if the NO side is a socket.
- (2) For steam fluids, steam generated from a boiler will contain a large amount of drainage. Always install a drain trap.
- (3) When passing steam, the make-up water in the boiler will contain substances such as "calcium salt" and "magnesium salt". As these substances will react with oxygen and carbon dioxide, and cause scales and sludge to form, always install a "water softener" and a filter for steam.

#### 2 Wiring

- (1) Refer to Intro Page 64 for information on how to wire a terminal box.

## When using the product

### ⚠ CAUTION

#### 1 Manual operation

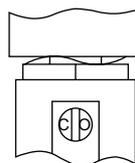
When using a product with a manual override, follow the operations below:

[For NC (open when energized)]

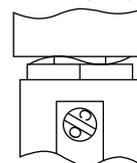
**Opening** : Insert a flathead screwdriver into the slit on the manual adjustment shaft, and turn it approx. 120° to the right or left. The plunger will rise and the valve will open. (For the 3-port valve, the NC side valve seat will open and the NO side valve seat will close.)

The open state is held even when the screwdriver is removed. Always return the valve to the original position after use.

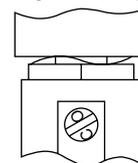
**Closing** : From the open position, turn the manual adjustment shaft so that the slit is returned to the perpendicular position, which will lower the plunger and close the valve. (For the 3-port valve, the NC side valve seat will close and the NO side valve seat will open.) (Refer to the figure below)



Valve closed state



Valve open state



Valve open state

[For NO (closed when energized)]

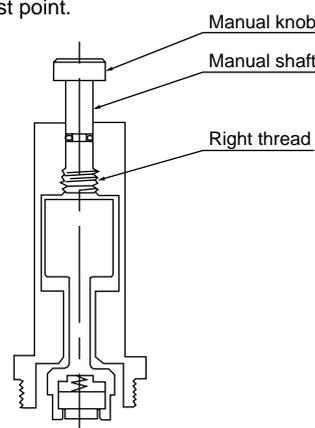
#### (1) When closing the valve with manual operation

The manual shaft is threaded, so hold the manual dial and rotate the shaft clockwise.

When the manual dial has been rotated downward 5 to 6 mm and no longer rotates, the solenoid valve will switch to closing operation.

#### (2) Reset (when not using a manual override)

Always rotate the manual dial counterclockwise and return it to the highest point.



## Maintenance

### ⚠ CAUTION

- 1 When disassembling or assembling, tighten the core assembly and socket with the following tightening torques.

Model No.	Core assembly tightening torque	Socket tightening torque	Nut tightening torque
AB	30 to 45 Nm	-	8 to 16 Nm
AG	30 to 45 Nm	8 to 16 Nm	8 to 16 Nm

# Working environment

## CAUTION

IP65 (IEC60529 [IEC529:1989-11]) standards are applied to the test. Avoid use in conditions where water or coolant directly contacts the valve.

### Degree of protection of IP65 and explanation of test method

● Degree of protection

Note: IP65 is based on the following testing method.

■ IEC (International Electrotechnical Commission) standards

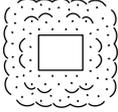
(IEC60529 [IEC529:1989-11])

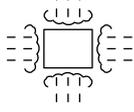
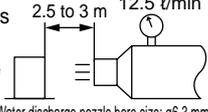
IP-□□

Degree of protection (International Protection)

1st characteristic No. (degree of protection for foreign solid matter)

2nd characteristic No. (degree of protection for water entry)

Grade	Degree of protection
6	Dust proof No inflow of dust. 

Grade	Degree of protection	Overview of test method (fresh water is used)
5	Protection against water jets No harmful effects occur even when water is sprayed with nozzles from all directions. 	The sample (exterior) is exposed to water jetting of 1 m <sup>2</sup> per minute for a total of 3 minutes or more from all directions with the testing equipment in the figure below. 

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S&B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending