

CKD

INSTRUCTION MANUAL
FOR
Air operated valve for process gas

AGD□□R-□

- Before using this product, thoroughly read this instruction manual.
- In particular, read the safety precautions carefully.
- After reading this instruction manual, keep it in a safe place where all concerned personnel can refer to it immediately.

CKD Corporation

1. Safety Precautions

Our products are varieties of control valves such as solenoid valves, electric actuator valves and air operated valves and are designed to be used by people who have a basic knowledge of materials, fluids, piping, electricity and the like. We shall accept no responsibility for accidents caused by incorrect selection or usage of our products by people who have no knowledge of, or who have not undergone sufficient training with respect to these products.

The applications for which our customers put our products to use are many and varied and so therefore, it is not possible for us to provide details that cover all such applications.

Depending on the applications or the usage methods, there have been cases where it has not been possible to demonstrate the performance of products and accidents have occurred due to conditions such as the flow medium or piping. Accordingly, it is the customer's responsibility to decide how the product shall be used and to check the products' specifications in accordance with the customer's applications and the usage methods of the products.

While these products are equipped with various safety features, there may be accidents due to the customer's incorrect handling of the products.

To avoid such accidents, **it is strongly advised that the instruction manual be thoroughly read and understood prior to using the product.**

When designing and manufacturing devices using the CKD products, the manufacturer has an obligation to check that the safety of the device's mechanical mechanism, pneumatic control circuit or fluids control circuit, and the system operated by the electrical control that controls these circuits is secured.

It is important to appropriately select, use, handle and service the product to ensure that the CKD product is used safely.

Always observe the warnings and cautions to ensure the safety of the device.

Check that the safety of the device can be ensured, and manufacture a safe device.



1. This product is designed and manufactured as a device and part for general industrial machines. This product must be handled by a well versed and skilled operated.

2. Use the product within the Specifications.

This product cannot be used outside the product's characteristic specifications. Never modify or additionally machine this product. This product is intended for use in general industrial machines and parts. It is not intended for use outdoors, or under the following types of conditions or environments.

- i. Use for special applications requiring safety including nuclear energy, railway, aircraft, ship, vehicle, medical devices, devices or applications coming into contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press clutches, brake circuits or safety devices.
- ii. Use for applications where human life or assets could be greatly affected, and special safety measures are required.

3. Always observe association standards and regulations, etc., related to the safety of device design and control, etc.


ISO 4414, JIS B 8370 (pneumatic system rules)
Occupational Safety and Sanitation Laws, and other safety rules, association standards and regulations.


4. Never handle, pipe or remove the devices before confirming the safety.


- i. Always inspect and service the machine and devices after confirming the safety of the entire system related to this product.
- ii. Note that there may be hot sections or charged sections even when operation is stopped.
- iii. When inspecting or servicing the device, always cut off the energy source (air supply or water supply), and cut off the power to the relevant facility. Discharge any compressed air from the system, and pay special attention to water leaks and electricity leaks.
- iv. When starting or restarting a machine or device that incorporates pneumatic devices, make sure that the system safety, such as the popping out prevention measures, is secured.

5. Always observe the following warnings and cautions to prevent accidents.

■ The safety precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

 **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency or urgency to a warning.

 **WARNING:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

 **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.

In any case, important information that must be observed is explained.

Safe Usage of Our Products

Thank you for purchasing the CKD air operated valve for process gas [AGD model].
The AGD model is an air operated valve developed with years of experience to
Enable use in a variety of fields by many users.

CKD products are manufactured under strict quality control.

Please read this instruction manual to use the CKD product efficiency.
Refer to the latest specification drawings and specifications for details on the inner
structure, part lists and specifications.

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2. Cautions on Use

2-1. Design and Selection



WARNING

- i. This product is not designed as a valve to ensure safety such as an emergency shut-off valve. When using in that type of system, always provide other measures to accurately ensure safety.
- ii. Incorrect device selection and handling will result in product trouble and may cause trouble in the customer's system. Always make sure that this product's specifications and the customer's system are compatible.
- iii. Working fluid
 - Always check the compatibility of the wetted section material and working fluid before starting use.
- iv. Fluid temperature
 - Observe the fluid temperature given in the specifications.
- v. Fluid pressure range
 - Observe the fluid pressure given in the specifications.
- vi. Ambient condition
 - Do not use this product in corrosive gas environment, or where the product may be subject to chemicals, salt water, water steam, etc.
 - Observe the ambient temperature given in the specifications.
- vii. Securing maintenance space
 - Secure enough space for maintenance.

2-2.Installation



WARNING

Incorrect installation and piping result in product trouble, may cause trouble in the customer's system, and may result in death or serious injury. The customer is responsible for making sure that the system is operated by someone who understands the system and has read the instruction manual thoroughly. After installing the product, carry out an adequate function test and confirm that the installation state is correct.

Installation



CAUTION

1. This product is assembled in a super clean room after precision cleaning. Always open the clean pack in the packaging box in a clean environment just before installation.
2. When installing this product, be careful not to touch any gas contacting area (valve body interior and fitting seal surface); doing so may lead to adhesion of impurities and contamination of high-purity gas.

piping



CAUTION

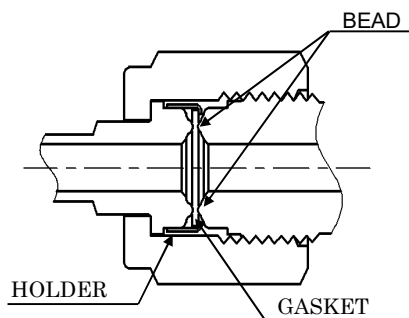
- 1 Dirt or burrs in the piping or during the piping work could damage the valve seat or diaphragm seal, and cause leaks. Always remove all dirt and burrs before installing the valve.
- 2 Check that the connection port direction is correct when piping the product.
- 3 Pipe so that any tension, compression or bending, etc., caused by the pipe is not applied on the valve body.
- 4 Operation may fail if the piped tube is bent. Check that piping matches the required length.
- 5 Please use a solenoid valve to be connected to the actuator for actuation suitable for the specifications and the application.
- 6 Please use air and inactive gas of coming through a filter with filtration capability of 5 micron meter or more for operation of the valve.

- 7 Check that there is no dirt, scratches, or burrs get on the seal before tightening the joint in the following procedures.

■ Tightening Manual

● J X R Fittings

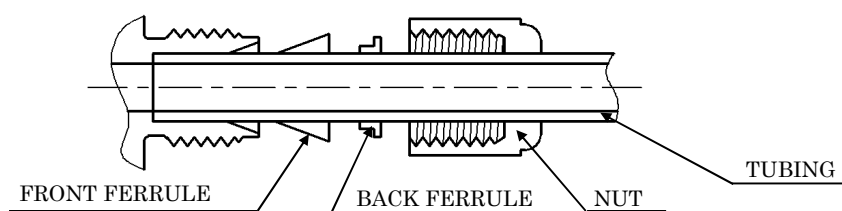
- (1) Insert the gasket with holder to the gland.
This will place and hold the gasket correctly on the bead.
(For a gasket with no holder, insert it to the female nut.)



- (2) Assemble each parts, and tighten the nut as much as you can with your fingers.
(This position is called the "finger-tight position".)
- (3) Hold the body securely and tighten the nut by 1/8 round turn (when the gasket material is nickel / SUS316) from the finger-tight position.
※ Please consult with your distributor or our contact listed in other materials.
- (4) When the fitting needs to be disassembled/retightened, replace the gasket with a new one and tighten the nut 1/8 turn past the finger-tight position (same as the original instruction).

● Tightening Manual for Dual Joint-Bite Type Fitting

- (1) Make sure the front ferrule, back ferrule, and nut are assembled correctly.
- (2) Insert the tubing into the fitting all the way in and tighten the nut firmly finger-tight. (This position is called the "finger-tight position".)
- (3) Use a tool to tighten the nut 1 and 1/4 turn past the finger-tight position.



- (4) If the tightened fitting is to be disassembled and then retightened, use a marking pen to match mark the nut position before loosening and removing the nut. When retightening the nut, tighten the nut slightly past the match mark.
※ Use a SUS304TP or SUS316TP (or equivalent) stainless steel tube that is 1/4 inch (at least 0.71 mm thick) or 3/8 inch (at least 0.89 mm thick) in diameter for the tubing.

- Do the leakage inspection always after completion of tightening the fittings, and make sure there is no leakage.

Baking

CAUTION

- ① During operation, use only within the baking temperature range as listed in the specifications.
- ② Fully open the valve when baking.

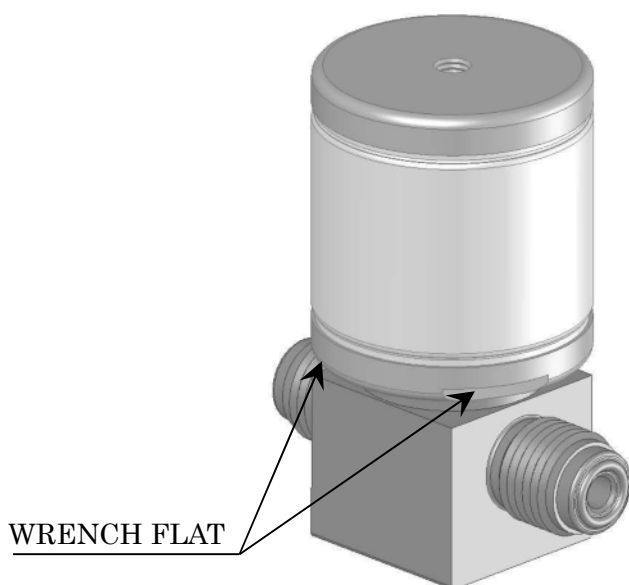
2-3. Cautions on Use

WARNING

- ① Observe the fluid temperature given in the specifications.

CAUTION

- ① Use after verifying compatibility of the wet surface material and the working fluid.
- ② Please use air and inactive gas of coming through a filter with filtration capability of 5 micron meter or more for operation of the valve.
- ③ DO NOT apply wrenches to the wrench flat part.
If this part is tightened or loosened, we do not guarantee the product performance.



- ④ Do not use the valves, etc., as footing or place heavy objects on them.
- ⑤ If the product has been left unused for a long period of time, always carry out a test operation before starting regular operation.

3.Maintenance and Inspection

DANGER

- ① Always follow the instructions given in the instruction manual.
- ② Always turn the release the operation air, fluid and pressure before starting.
- ③ Before replacing the valve, sufficiently purge out the residual gas in the valves and piping with inert gas, etc., so that devices and people in the area are not affected.
- ④ After completing the work, always carry out a leak inspection and confirm that there are no leaks.

3-1.Disassembly

DANGER

DO NOT disassemble the product. If disassembled, we do not guarantee such product.

3-2.Periodic Inspection

DANGER

To ensure the product is used in the optimum state, carry out a periodic inspection once or twice a year.

- (1) Leaks outside of the valve
- (2) Leaks from the fitting
- (3) Loose and disconnected operation air tubing
- (4) Smooth valve operation

3-3.Troubleshooting

If a failure should occur, following are assumed for causes.

Please contact with your distributor or our contact listed the back.

	MODE	CAUSE	COUNTERMEASURE
1.	Internal leakage	Jam with foreign materials. Mark, deform on the valve seat.	Please contact with your distributor.
2.	External leakage	<ul style="list-style-type: none"> ▪ Break in a diaphragm. ▪ Mark on a gasket(ferrule)etc. ▪ Loose fitting nut. 	<ul style="list-style-type: none"> ▪ Please contact with your distributor. ▪ Please replace the gasket etc. ▪ Please replace the gasket etc. and tighten the nut with the specified amount.
3.	Malfunctioning	<ul style="list-style-type: none"> ▪ Insufficient operation pressure. ▪ Failure of a solenoid valve for operation. ▪ Break in an actuator. 	<ul style="list-style-type: none"> ▪ Please set the pressure within the specified value. ▪ Please replace the solenoid valve for operation. ▪ Please contact with your distributor.

4.How to Read the Part Number

AGD (A) (B) R- (C)

(A)	Series
0	1/8in.Port Size Equivalent
1	1/4in.Port Size Equivalent
2	3/8in.Port Size Equivalent

(B)	Function
1	Normal Close
2	Normal Open

(C)	Fittings
4RM	1/4in.JXR Male Fitting
4R	1/4in.JXR Female Fitting
4S	1/4in.Dual Joint-Bite Type Fitting
6RM	3/8in.JXR Male Fitting
6R	3/8in. JXR Female Fitting
6S	3/8in.Dual Joint-Bite Type Fitting

* The series 0 and 1 are supplied with 1/4in. fittings, and the series 2 is supplied with 3/8in. fitting.

* The fittings option 4S is not available with AGD01R and AGD02R.

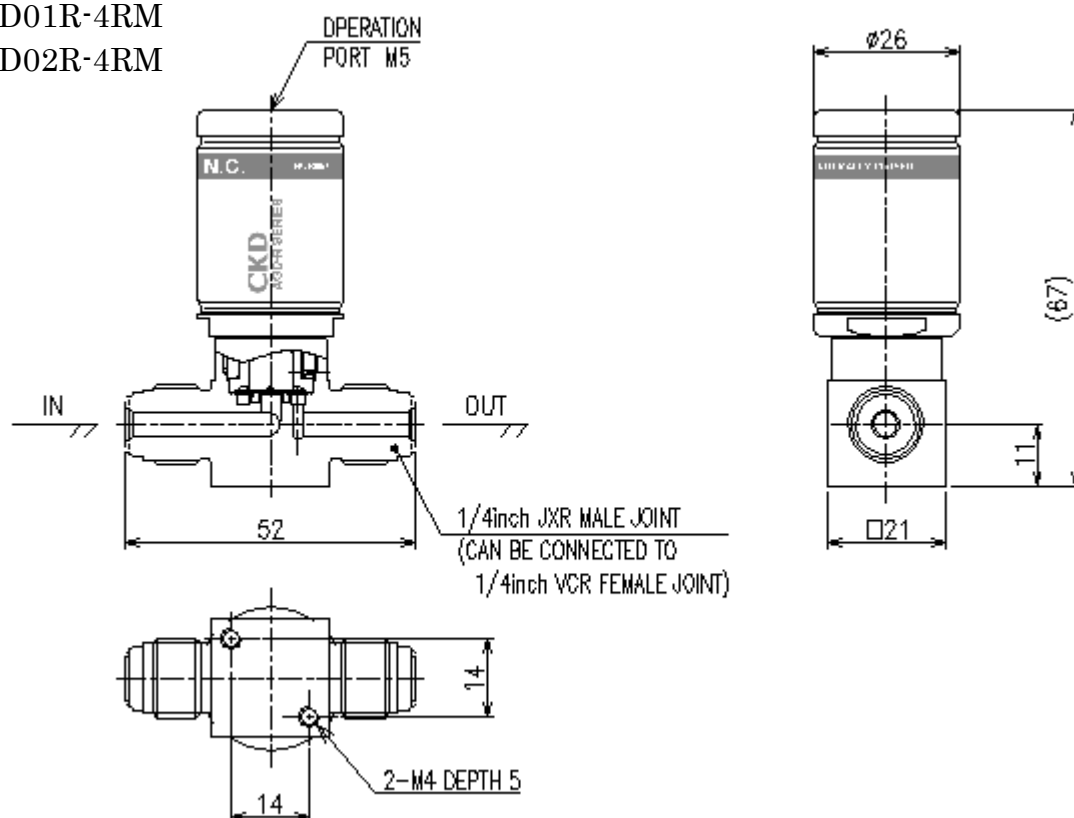
* JXR Fittings can be connected with VCR fittings.

(Part Number Reference Table)

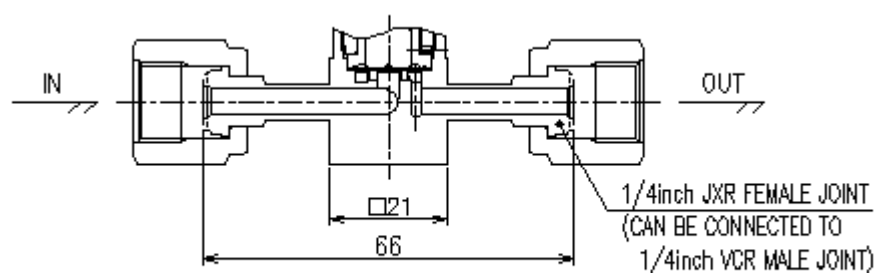
Series (Cv Value)	Function	Fittings	Part Number
1/8 in. Port Size Equivalent (0.1)	NC	1/4 in. JXR Male	AGD01R-4RM
		1/4 in. JXR Female	AGD01R-4R
	NO	1/4 in. JXR Male	AGD02R-4RM
		1/4 in. JXR Female	AGD02R-4R
1/4 in. Port Size Equivalent (0.3)	NC	1/4 in. JXR Male	AGD11R-4RM
		1/4 in. JXR Female	AGD11R-4R
		1/4 in. Dual Joint-Bite Type	AGD11R-4S
	NO	1/4 in. JXR Male	AGD12R-4RM
		1/4 in. JXR Female	AGD12R-4R
		1/4 in. Dual Joint-Bite Type	AGD12R-4S
3/8 in. Port Size Equivalent (0.65)	NC	3/8 in. JXR Male	AGD21R-6RM
		3/8 in. JXR Female	AGD21R-6R
		3/8 in. Dual Joint-Bite Type	AGD21R-6S
	NO	3/8 in. JXR Male	AGD22R-6RM
		3/8 in. JXR Female	AGD22R-6R
		3/8 in. Dual Joint-Bite Type	AGD22R-6S

5. Dimensions

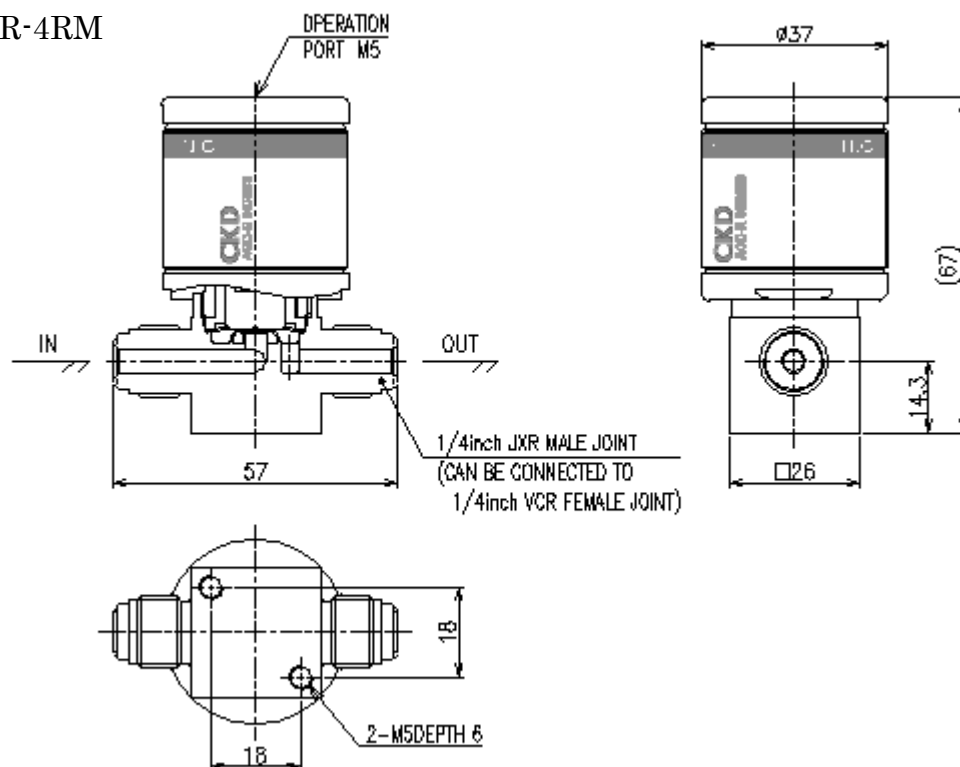
- AGD01R-4RM
- AGD02R-4RM



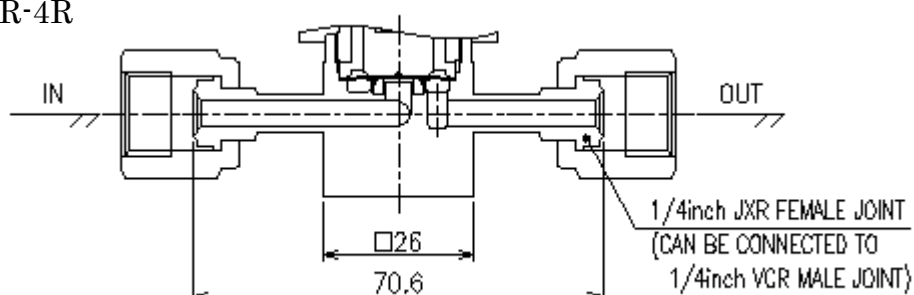
- AGD01R-4R
- AGD02R-4R



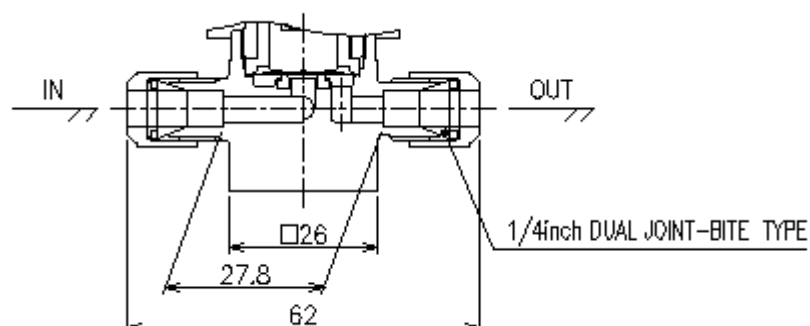
- AGD11R-4RM
- AGD12R-4RM



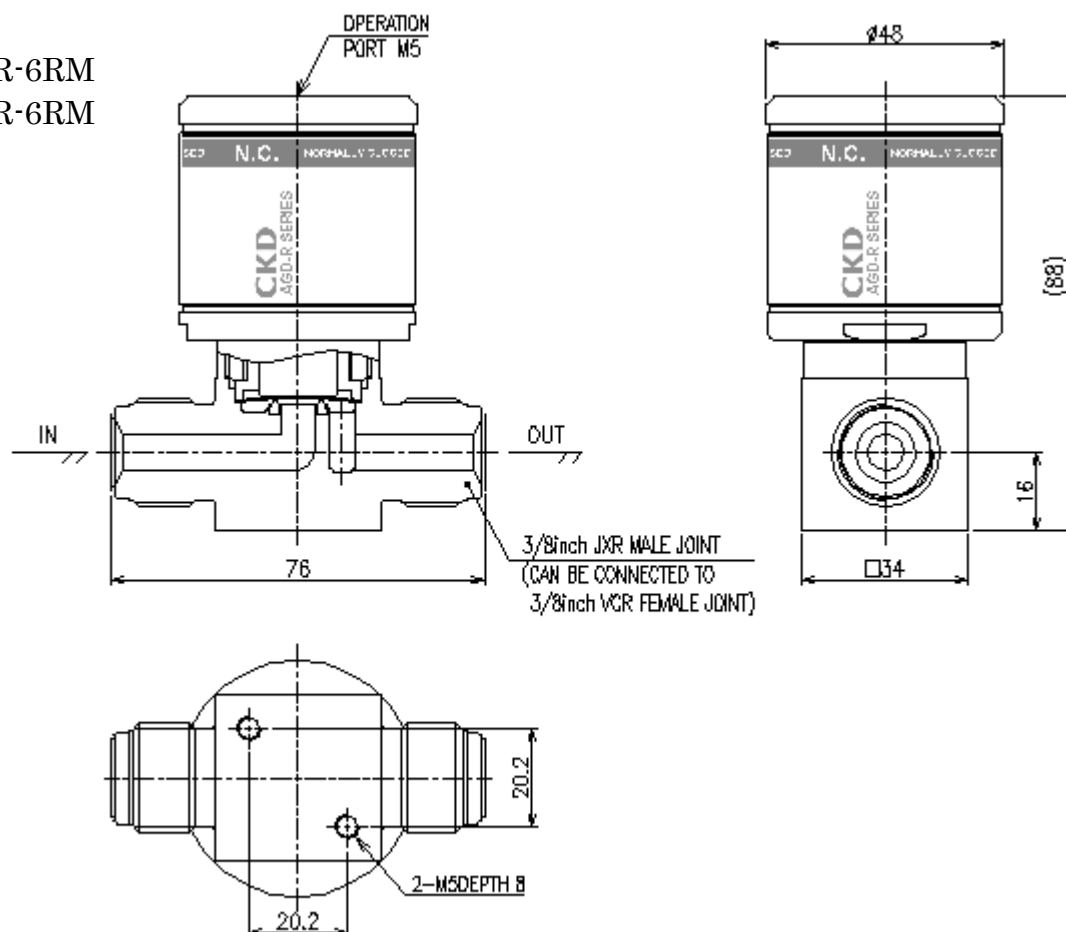
- AGD11R-4R
- AGD12R-4R



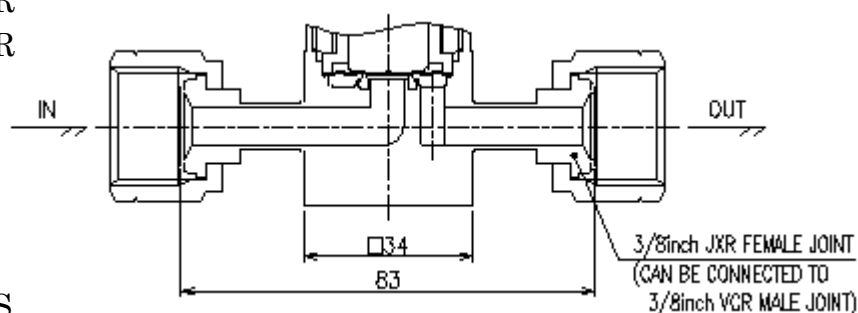
- AGD11R-4S
- AGD12R-4S



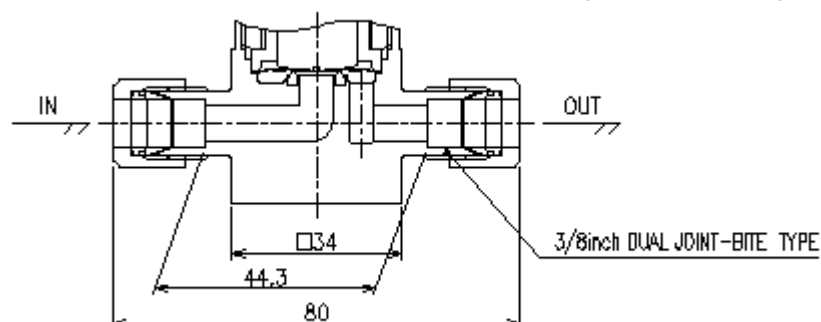
- AGD21R-6RM
- AGD22R-6RM



- AGD21R-6R
- AGD22R-6R



- AGD21R-6S
- AGD22R-6S



Major Parts Materials-Gas Contacting Area

Part Name	Materials
Body	SUS316L
Diaphragm	Ni-Co Alloy
Valve Seat	PCTFE
Front Ferrule	SUS316
Back Ferrule	
(Dual Joint-Bite Type Fittings)	



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•Specifications are subject to change without notice.