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SM-6320-A/1

INSTRUCTION MANUAL

FOR

AIR OPERATED VALVE

AGD

Prior to using the Product, it is essential to read this INSTRUCTION MANUAL, especially the description of safety-use issue.

For quick reference whenever necessary, keep this INSTRUCTION MANUAL in a good manner.

CKD Corporation

FOR SAFETY USE

The Product is to be used by those who has a basic knowledge about meterial, fluid, piping electricity regarding Control Valves (solenoid valves, motor valves, air operated valves and so on.)

Never use this Product by those who have no knowledge or are not well trained about Control Valves.

Should be any trouble or accident caused by a wrong selection and/or wrong use of the Product even by a person of basic knowledge about Control Valves, we are not responsible therefore.

Since any customer of the Product have a variety of its application, we are not in a position to get all the information on how and where the Product is used. There may be the cases where that the Product may not meet customers' requirement or may cause any trouble or accident , by fluid, piping or other condition that are not within the specifications of the Product.
Under such a circumstance, select with their responsibility the most suitable application and use of the Product according to the customers' requirements.

The Product incorporates a various safety arrangement, however miss-handling of the product may lead to any trouble or accident on customers side ., To avoid any possible trouble, read this INSTRUCTION MANUAL carefully and understand it fully.

Pay your attention to the items described in this Text, as well as the items indicated below:

⚠ CAUTIONS

- When energized, heat is generated at coil portion of solenoid valves and motor valves paticularly "Class H" coil where may have a high tenperature.

- There my have electric shock when wire connecting portion of solenoid valves or motor valves are touched. In case of disassembly or inspection, turn off power supply beforehand. Don't touch live portion by wet hands.

- Make piping so as not to have leakage and check for no leakage before use , because in case of control valves for high temperature fluid like steam, leakage may cause heat injury.

Thank you for selecting the MODEL AGD11/12 air operated valve for chemical gasses.
The MODEL AGD is a new, air operated valve for chemical gasses. It has been developed as the result of our many years of proven experience to meet the widest range of demands from various users.
All CKD products are manufactured under strict quality controls so that they can be used with assurance in many applications.
Please read this manal to use CKD products effectively. For the internal configuration and the parts list, refer to the approved plan.

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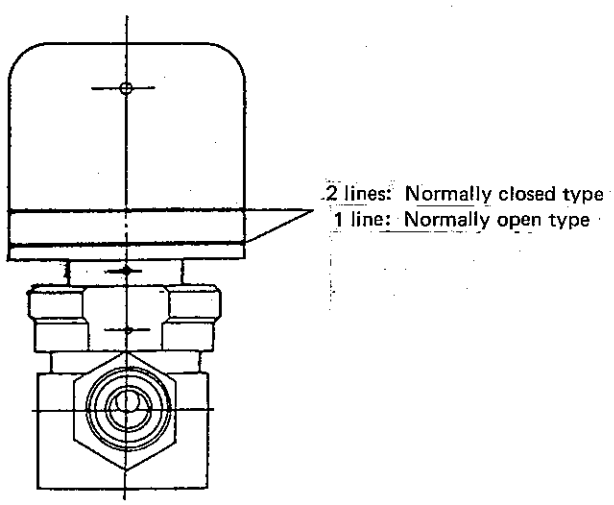
1. DESCRIPTION OF THE TYPE NUMBER

Example: A G D 1 (a) - 8 - (b) - 5

(a)	Motion type
1	Normally closed
2	Normally open

(b)	Connector type
S	Flareless type double connector
R	VCR connector

The difference between the NC type and the NO type is shown by the number of lines (ridges).



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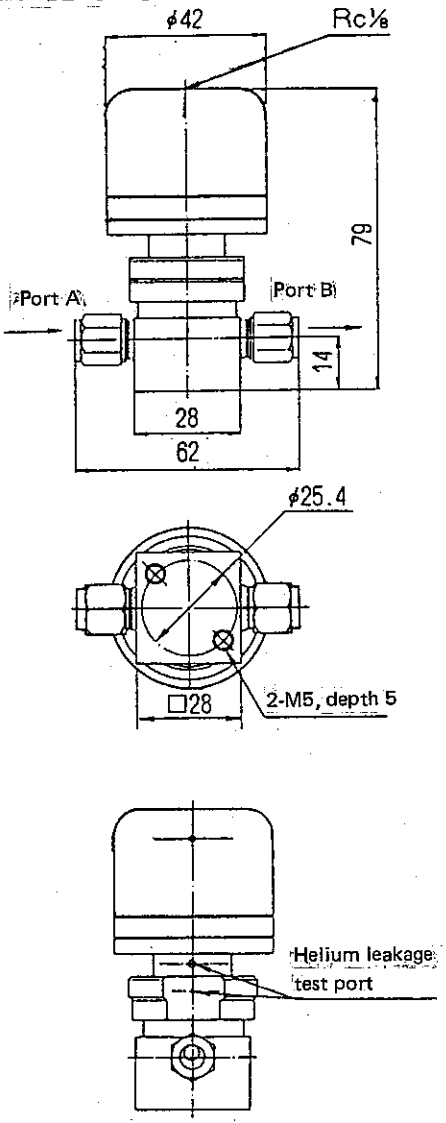
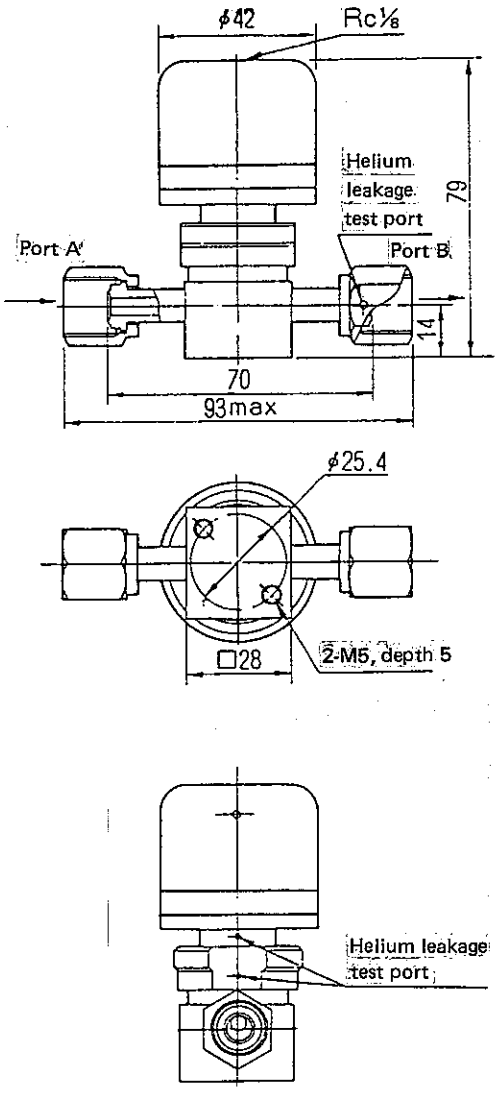
2. OUTSIDE DIMENSIONS

- AGD11-8S-5
- AGD12-8S-5



- AGD11-8R-5



Component materials -- gas connection

Component	Material
Body	SUS 316
Diaphragm	*ASL 350
Valve seal metal	SUS 316
Valve seal	PCTFE
Gasket	PCTFE

(*) This material has a corrosion resistance almost equal to that of SUS 316.

3. PRECAUTIONARY INSTRUCTIONS

3-1 When using

(1) This valve is, of course, developed for use with chemical gasses. However, conformity with the fluid to be used must be ensured before use. It can be checked with the table of "Component materials - gas connection" in this manual.

(2) The temperature of the fluid to be used must fall within the listed range.

(3) The pressure must fall within the listed range. Any pressure which falls outside the range may result in malfunctions and/or external leakage.

(4) Don't disassemble. Any reassembled part may decrease the listed performance.

(5) The delivered product has been carefully cleaned and packed for use in clean rooms. Handle with care.

3-2 When piping

(1) Any dust in the line or that produced during installation may scratch your valve seats or disphragm seals, and resulst in leakage. Be sure to flush the line internally before mounting the valve.

(2) Use the valve with a BA tube whose diameter is 1/4" (6.35 mm).

(3) Any driving solenoid to be connected to the driving block must satisfy the specifications and the intended use. (Please refer to our brochures).

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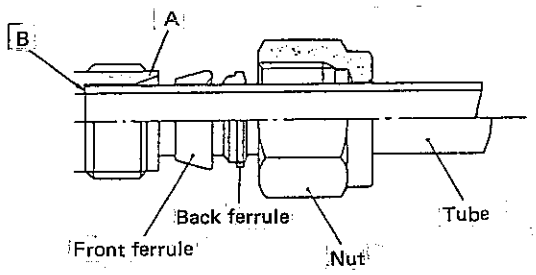
3-2-1 Fastening procedure for the flareless type double connector

(1) Insert and push the tube through the nut hole until it firmly touches the "anti-climber" (B) of the connector.



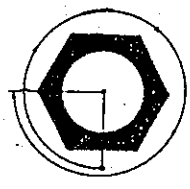
Caution 1: The product is delivered with its flareless type double connector properly set, so you can use it dirctly. Should you disassemble it, be sure to properly reassemble it (in the order shown in the figure). Properly insert the tube, so that its edge doesn't scrath the tapered face (A) of the connector.

Caution 2: Cut the tube with right angles, and carefully remove any internal/external burrs from its edges.

(2) Tighten the nut with your fingers as tightly as possible. (The resultant position is called the "finger-tightened" position).

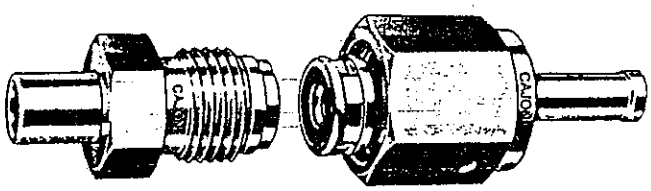
(3) Hold the body (so that it can't turn) and tighten the nut with another spanner.

* The tightening will be complete after you give the nut a 1 1/4 turn from the finger-tightened position.



3-2-2 Tightening procedure for the VCR connector

(1) If you want to use an "original" (i.e. your own) gasket, mount the gasket into the female nut if possble. This makes tightening easy. If you use the VCR gasket/retainter assembly, then push the retainer into the gland (whose shoulder has been removed) as shown in the figure. This will cause the gasket to correctly seat and hold on the bead.



(2) Assemble the parts and finger-tighten the female nut.

(3) Mark the hexagonal block of both the nut and body.

(4) When the gasket is made of 316 stainless steel or nickel:
With a backup wrench hold the hexagon faces tightly, and give the female nut a 1/8 turn from the finger-tightened position.

If it is made of copper, Teflon, or aluminum:
With a backup wrench hold the hexagon faces tightly, and give the female nut a 1/4 turn from the finger-tightened position.

4. MAINTENANCE AND CHECK

4-1 Periodic check

To ensure optimum use, periodically check the valve 1 or 2 times a year.

4-2 Disassembling

Avoid disassembling the air-operated valve for chemical gasses. Otherwise, it may not satisfy the specifications. If you have to disassemble it (for example some foreign material has slipped into the valve sheet and it has resulted in internal leakage) then replace the stem assembly ㉓ and gasket ㉔ with new ones after disassembly. For replacement parts please contact us of our authorized dealers.

For composite diagrams see pages 10 - 11.

Before disassembling, the valve working air and fluid/pressure must be released. If any hazardous substance is used, the tubing MUST be completely purged with a safe fluid such as N2 etc before removing and disassembling the valve. Use the following procedure to disassemble.

(1) To disassemble the cylinder assembly:

Type AGD 11 ... Remove hexagon socket set screw ⑰, and turn the product upside down. Hold it gently down on a work table, and remove the C-shaped snap ring ⑱. The cylinder ① will separate.

Note: The cylinder ① has a spring ② in it. Keep it.

Slide the piston ⑥ horizontary. This will separate it from the stem assembly ㉓. (No screw has been used to connect the piston to the stem assembly).

Type AGD12 ... Remove hexagon socket set screw ⑰, and turn the product upside down. hold it down gently on a work table, and remove the C-shaped snap ring ⑱. The cylinder ⑨ will separate. Remove the C-shaped snap ring ⑩ to separate the piston ⑫. Slide the piston rod ⑭ horizontally until it is separated from the stem assembly ㉓. (No screw has been used to connect the piston rod to the stem assembly).

(2) To disassemble the stem assembly:

Type AGD11/12.. After disassembling the cylinder assembly, loosen the locknut ⑲. This will separate the holer ㉑ from the body ㉕, and you can remove the stem assembly ㉓.

4-3 Assembling

(1) Reassemble the product by reversing the disassembly procedure. (For the correct tigtening torque to use for the locknut use 700 kgf cm as rule-of-thumb setting).

(2) Handle with care, so that all passages have no foreign material in them.

4-4 Malfunctions and corrections

No.	Failure	Cause	Correction
1	Internal leakage	Clogged by foreign material. Scratch on valve sheet/seat.	Clean the body/stem assembly. Replace the stem assembly with a new one.
2	External leakage	Diaphragm is broken.	Replace the stem assembly with a new one.
3	Incomplete action	Working pressure is insufficient. Control solenoid is faulty. Movable part is not greased.	Keep the pressure within the recommended range. Replace the solenoid with a new one. Apply (silicon) grease. Replace the O-ring with a new one.

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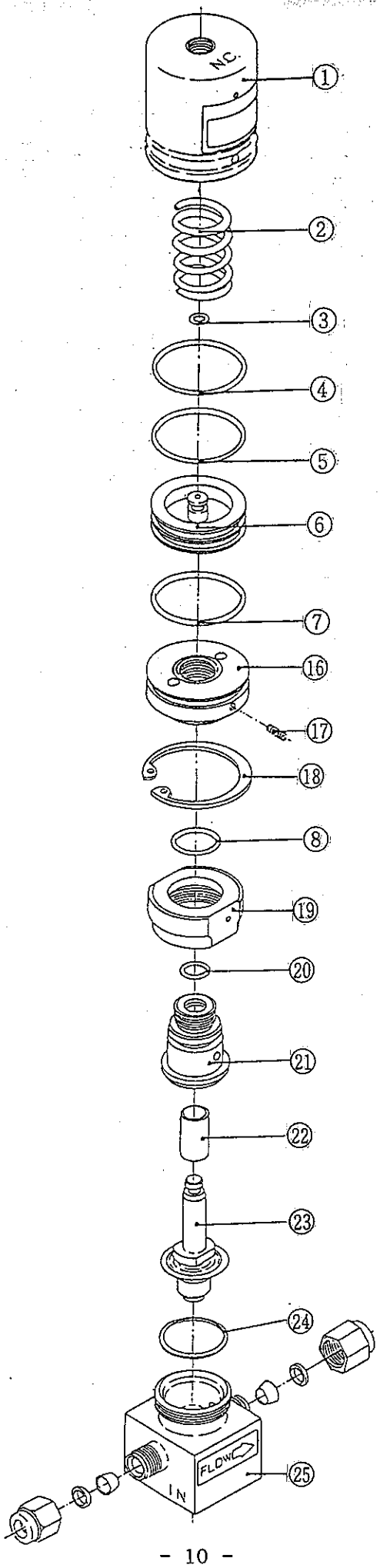
AGD11



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