SM-3008-A

INSTRUCTION MANUAL

SUBMINIATURE SOLENOID VALVE

FOR

MEDICAL INSTURMENTS

UMG · UMB

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 material, 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 particularly "Class H" coil where may have a high temperature.**

- **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.**

We would like to thank you for selecting a CKD subminiatur solenoid valve, "model UMG · UMB", for medical insturments.
The "model UMG · UMB" is an extreme compact solenoid valve which has been developed particularly for fluid control at a high reliability and a high accuracy.
Since the CKD product has been manufactured under a strict quality control, use it without any worry.
Read through this operation manual to use correctly and permanently the "model UMG · UMB".

CONTENTS

1. How to look at model No.

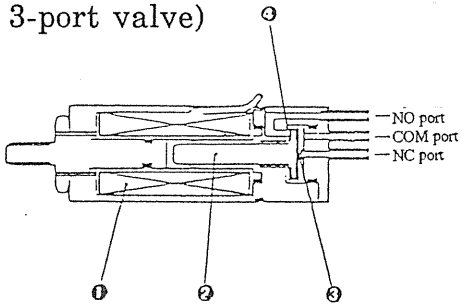
UM (a) 1 – T1 – (b)

(a)	No. of ports
B	2 ports
G	3 ports

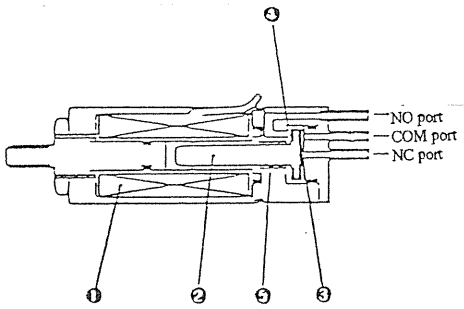
(b) Voltage
DC12V
DC24V

2. Actuation despription and internal structure & parts name

Actuation despription
(For 3-port valve)

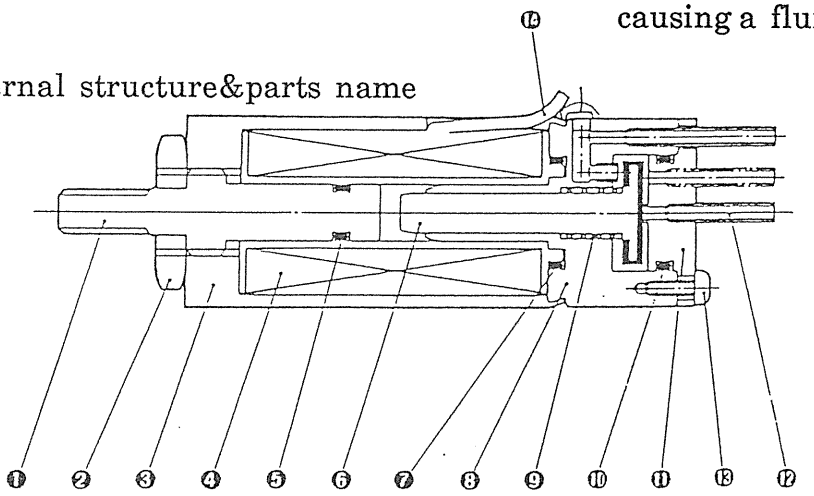


When the coil ①is energized, the plunger ② is attracted to cause the valve seat ③to be opened, and the valve seat ④ to be closed, thereby causing a fluid to flow to NC↔COM.



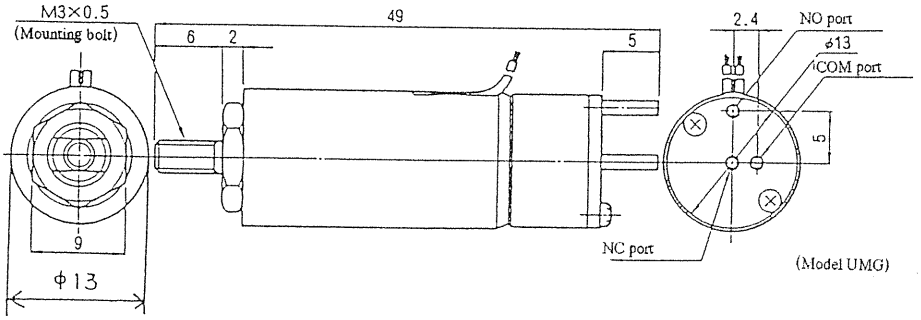
When the coil ①is deenergized, the plunger ② is returned to its original position due to the resiliency of the spring ⑤ to cause the valve seat ④ to be opened, and the valve seat ③ to be closed, thereby causing a fluid to flow to NO↔COM.

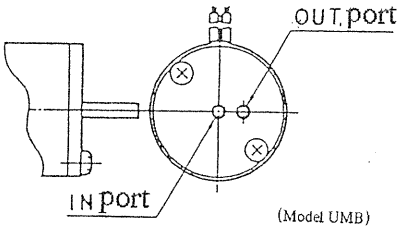
Internal structure&parts name



No	Parts name	Material	No	Parts name	Material
①	Core A	Highly corrosion-resistant ferrite stainless	⑧	Body	Highly corrosion-resistant ferrite stainless
②	Hexagon nut	SWRM3	⑨	Spring	SUS304-WPB
③	Bonnet	Solenoid soft iron	⑩	O-ring	FKM
④	Coil	———	⑪	Cap	Highly corrosion-resistant ferrite stainless
⑤	O-ring	FKM	⑫	Connecting pipe	SUS304
⑥	Plunger	Highly corrosion-resistant ferrite stainless	⑬	Phillips and pan-head machine screw	SUS304
⑦	O-ring	FKM	⑭	Lead Wire	———

Overall Dimensions





3. Using precautions

3-1. Precautions in using

(1) Do not use the product at a place where ambient atmosphere contains a corrosive gas or an explosive gas.

(2) Use the product at a fluid temperature and an ambient temperature within a specified range.

(3) Use the product at a pressure within a specified range.
Otherwise, it causes a malfunction.

(4) Take care not to allow dust, foreign matter and the like to enter a fluid, because they otherwise prevent the normal function of the solenoid valve.

(5) Do not apply water to the coil.

3-2. Precautions in piping

(1) If a dust present in piping or generated during piping work enters the solenoid valve, a malfunctions or a leakage may occur. Always perform flushing the inside of piping before mounting the solenoid valve.

(2) The conncting ports employ a pipe with outside diameter 1.26. Although the following commercially available tubes can be used, the easy-to-slip out properties of tube varies with service conditions. Therefore, sufficient study the conditions to select an suitable tube.

· Fluoroplastic based(TFE, PFA, FEP, etc.) tubes Milimeter size $\phi 2 \times \phi 1$ Maker name: Flowel, etc.

Milimeter size	$\phi 2 \times \phi 1$	Maker name : Flowel, etc.
Inch size	$\phi 1/16$"($\phi 1.58 \times \phi 0.8$)	Maker name : Galtec, etc.

· Other plastic tubes

Silicon tubes	$\phi 2 \times \phi 1$	Large commercial availability (General tube makers)
Taigon tubes	$\phi 2.38 \times \phi 0.8$	Maker name : Norton Co.
Microline tubes	$\phi 1.78 \times \phi 1.02$	Maker name : Thermoplastic Co.

(3) Set the inserting length of tube at about 3mm.
Take extreme care on"crack" of tube.

(4) Take care not to apply an unreasonable force to a tube when removed.

3-3. Precautions in mounting

(1) The top end of the core A is provided with a threaded portion of M3×0.5×6mm long as a mounting bolt.
Mounting should be performed by proving the mating side with a threaded portion of M3×0.5 or with a nut which is used to tighten through a through hole both the side and the top end to fix the valve(see Fig. 1).
Do not a pply a torque of 0.3N·m(3kgf·cm) or more to the mounting bolt.

(2) Never loosen the hexagon nut because it is used to fix the core A (see Fig.1).

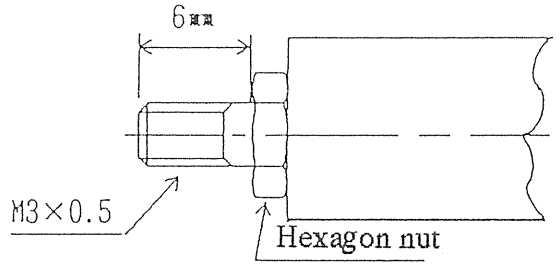
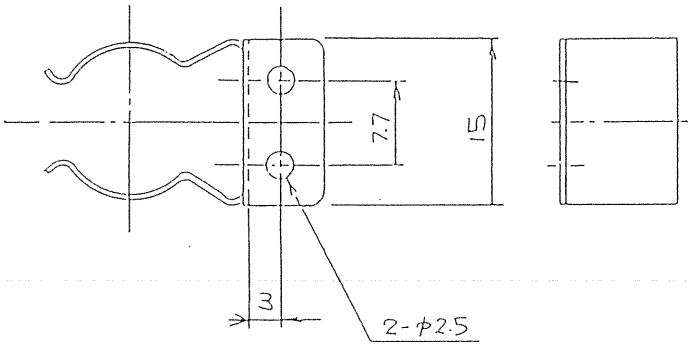
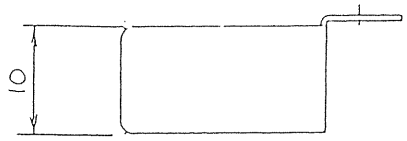


Fig.1

(3) Where the valve cannot be fixed with the M3×0.5 threaded portion due to space or handling, the mounting method by a mounting clip can be employed.(The clip is of custom-made, see below.)





4. Maintenance&check

4-1. Periodic check

Perform a periodic check once or twice a year.
Avoid a check by disassembling because this product has been adjusted during assembling.
Therefore, check for appearance and the degree of leakage as check items.

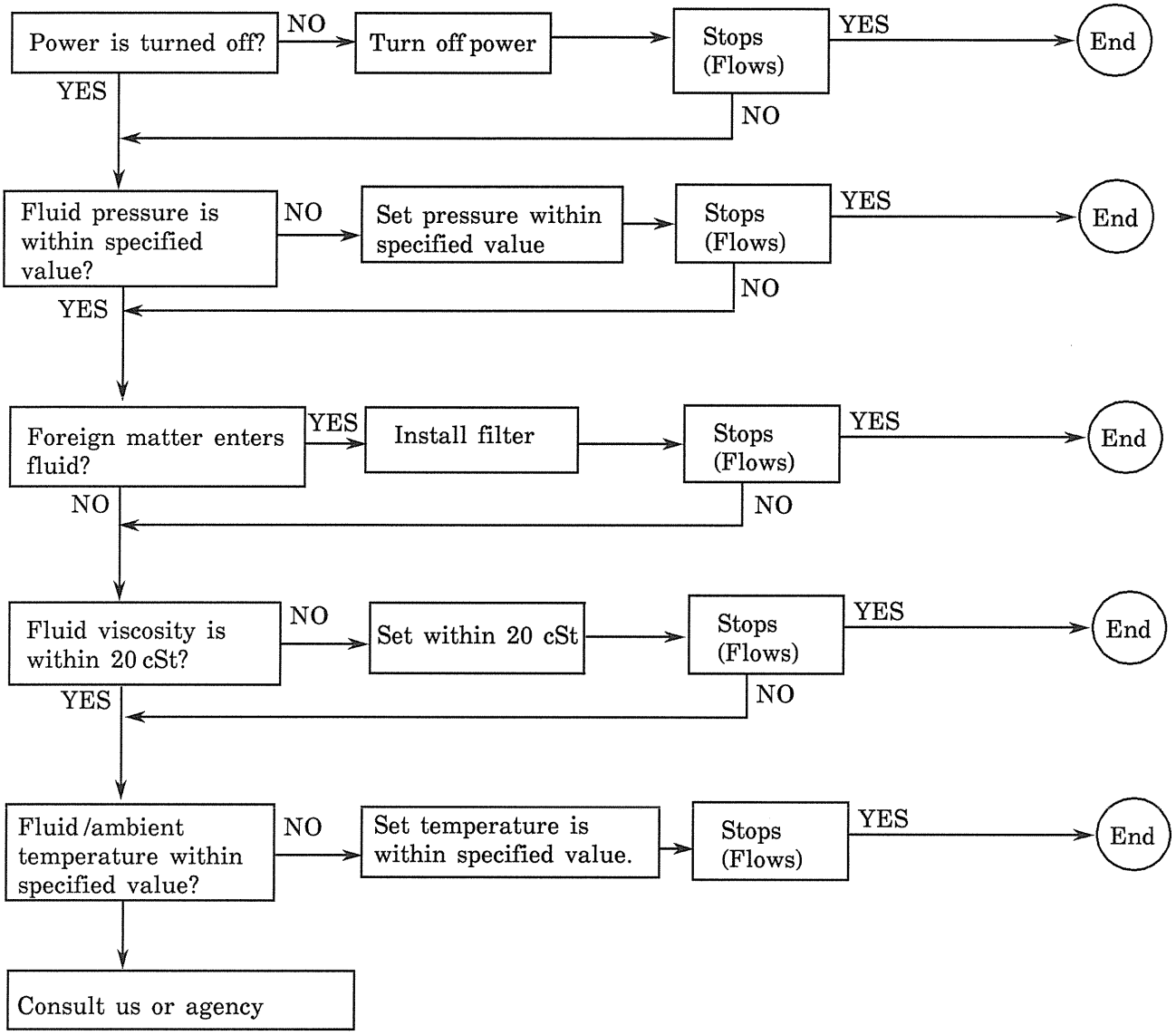
4-2. Maintenance

(1) Avoid a maintenance by disassembling.

(2) Maintenance parts are not provided because this product has been adjusted during assembling.

4-3. Troubleshooting

(1) Fluid on the NC side of the model UMG or for the model UMB fails to stop. (Fluid on the NO side of the model UMG fails to flow.)



4-3. Troubleshooting

(2) Fluid on the NC side of the model UMG or for the model UMB fails to flow. (Fluid on the NO side of the model UMG fails to stop.)