帳票番号：KWK-82-108-E
2005 年 2 月 14 日制定
2020 年 9 月 16 日改訂

Operation Manual

MULTI FLOW SIGHT

MFI Type

B-MFI Type

MFA Type

Contents

KAWAKI MEASURING INSTRUMENT CO.,LTD.

Safety information

Please do not use the different conditions and specifications are decided when ordering.

・In case of using the different liquids, it may cause the trouble by corroding the inside body, and it may result in injury & property damage by liquid splashes due to leakage.

・In case the products are used under out of specifications on pressure and temperature, flow meter may be broken. It may result in injury and property damage by destroyed objects and liquid splashes.

Read before using

1. Unpacking

   Please confirm the delivered products are same with your ordered products or not. And check the products are without any foreign matters and damages.

2. Cleaning of inside piping

   Do flashing in the piping before installing the flow meter even if it is existing or new facility. If there is sludge, iron powder and rust, etc in the piping, it may cause the trouble of working failure or damage.

3. Installation of the flow meter to the piping

   Install the flow meter as indication of the body side shows allow mark.

   In case the flow meter is installed in different flow direction and liquid flows, internal parts must be damaged.

   Do not install the products with graduation plate faces to ground, because the internal flapper may interfere with other parts and it may result in working failure.

   If the air mixed in the piping, the products can not measure the flow rate precisely, so the inside of piping must be full of liquid all the time.

Product outline

MFI Type

This model is a flow site that allows you to monitor the amount of oil in each branch pipe of the lubrication lubricator together. Each indicator has a needle valve for adjusting the amount of oil, a float that moves up and down according to changes in the amount of oil, an inspection window for each indicator, and it is also possible to measure the approximate flow rate.by putting the optional rough flow scale for each indicator. The indicated part applicable between from 1 to 11 body. We also offer the MFI-S type with a steel protective cover for glass tube protection and easy-to-read float position for liquids with low transparency.

B-MFI Type

When using black type oil with extremely low transparency such as high performance gear oil, the movement of the float cannot be confirmed with the type that monitors the flow rate through the glass such as MFI type. This model is a multi-flow site that can monitor the oil flow regardless of the transparency of the fluid by replacing the MFI type indicator with the external magnet following type flow site FS-O type. It is also possible to measure the approximate flow rate by entering the flow rate scale in actual measurement.

MFA Type

By combining the contact mechanism with the MFI type indicator, the contact can be turned ON (OFF) at any flow rate. When the MFI float floats up due to the flow of fluid, the magnet simultaneously floats up through the connecting rod, and when the magnet rises to the position of the reed switch that is adjusted so that the contact operates at the specified flow rate in advance, the contact operates. To do. It is a self-holding type reed switch and an electric contact type with a magnet, and holds the contact until it returns. (Return of the contact is about 5-10mm lower than the ON (OFF) position.
In addition, since the magnet is placed away from the fluid passage, it has a structure that prevents malfunctions due to the adhesion of iron powder, etc, even if it contains them in the fluid.

Specifications

Model	MFI-○-15 B-MFI-○-15	MFI-○-20 B-MFI-○-20	MFA
Application	Oil		
Max. Pressure	0.7 MPa		
Max. Temperature	80℃		
Inlet size	Rc 1/2	Rc 3/4	It is same with MFI type
Outlet size	Rc 3/8		
Connection	Rc、NPT		
Contact	—		Maximum switching capacity: 10W Maximum switching current: 0.5A Maximum operating voltage: AC125V

標準材質表 Standard material table

Parts name	Material
Body / Indicated part	SS400 or SUS304
Float	C3604
Glass tube	CTE-33
Packing	FPM

Maintenance / Inspection

If the glass tube becomes dirty or damaged, or foreign matter enters the glass tube, making it difficult for the float to move, so do disassemble and clean it according to the following procedure.

Disassembly procedure(See the exploded view)

(1) Remove the joint metal of part number ⑫.
(2) Remove the packing of part number ⑪.
(3) Remove the nut of part number ⑩.
(4) Remove the packing of part number ⑨.
(5) Remove the glass of part number ⑥.
(6) Remove the spring of part number ⑧.
(7) Remove the indicator of part number ⑦.
(8) Remove the packing of part number ⑤.

Clean and replace the glass accordingly.
The case (3) and body (1) are fixed with an adhesive, so do not disassemble.

Assembly procedure

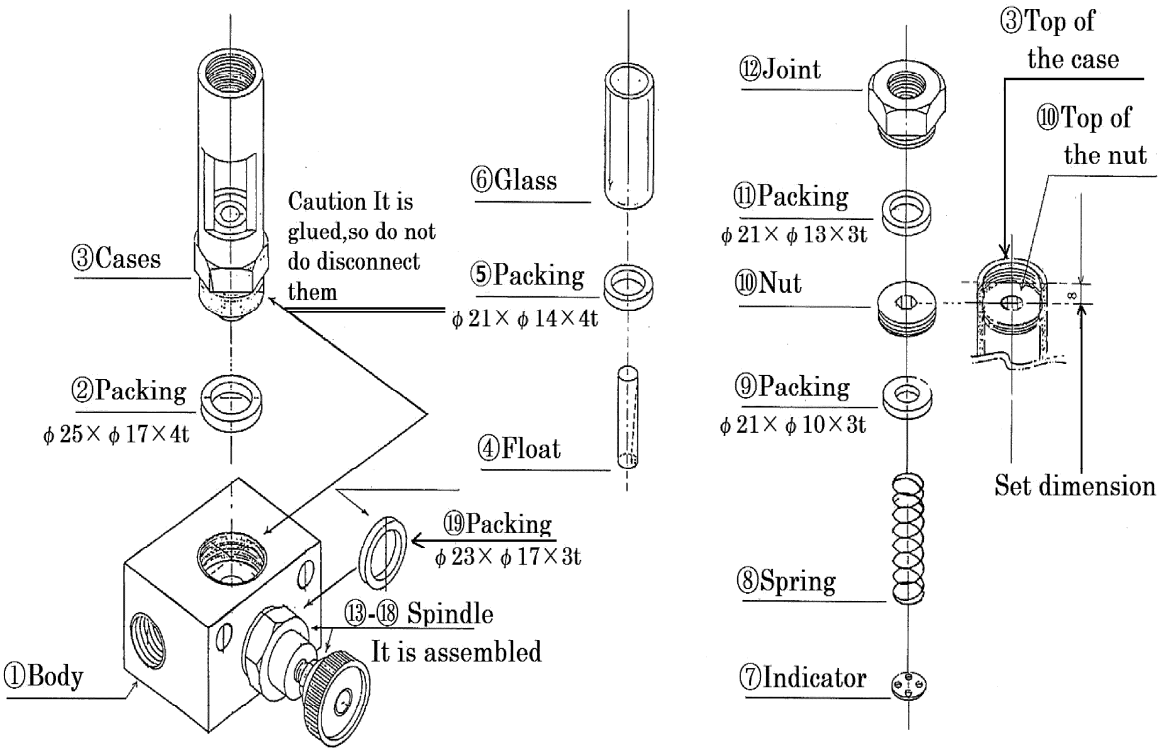
(1) Set the packing of part number ⑤.
(2) Set the glass of part number ⑥.
(3) Set the indicator of part number ⑦.
(4) Set the spring of part number ⑧.
(5) Set the packing of part number ⑨.
(6) To screw in the nut of part number ⑩ by using L type wrench. In this case, screw in the nut that is screwed in from the top of the cylindrical pillar until the top of the nut is 8 mm.
This 8mm is important in terms of oil seal, so please measure it with a caliper.
(7) Set the packing of part number ⑪.
(8) Screw in the joint metal of part number ⑫ with a spanner.

Please do not do the following when assembling.

- Do not set the indicator of part number ⑦ before the glass of part number ⑥.
- Do not tighten the nut of part number ⑩ more than 8mm.
- When screwing in the joint of part number ⑫, do not tighten so that force is applied momentarily.

Incorrect steps can damage the glass and other parts.

MFI exploded view



Disassembly procedure for B-MFI

The lid is a screw type, so use the bell wrench to loosen the lid. By removing the lid, the cushion, cover plate, partition plate, guide plate, transparent plate, O-ring, flapper, and spring can all be disassembled. After cleaning the transparent plate and flapper, reassemble in reverse order.

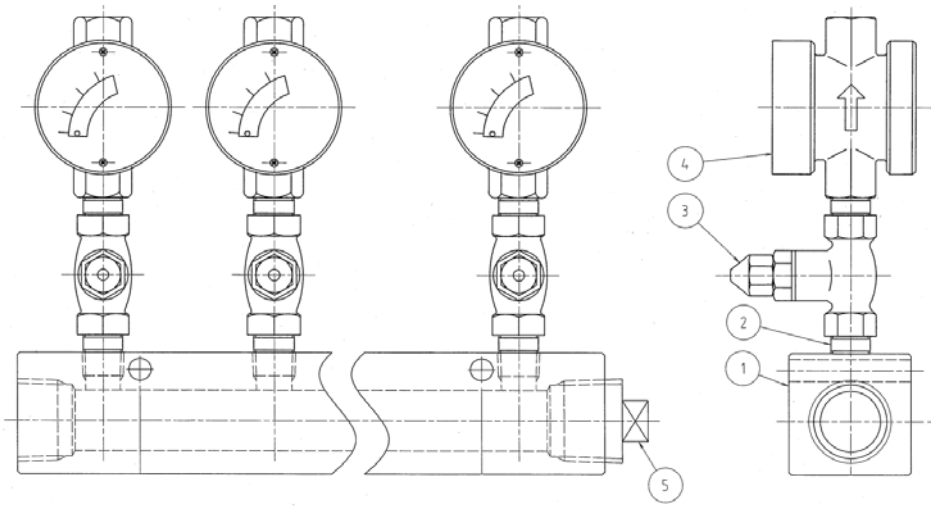
When it is the model with flow rate scale, check the position of the guide plate scale beforehand when disassembling, and make sure that the position does not change during reassembly.

When disassembling the cover plate, be careful not to drop the external magnet.

Do not remove the cover plate and guide plate unless it is necessary.

* The entire flapper unit inside the Flow Site can be removed, but do not disassemble the unit.

B-MFI type drawing

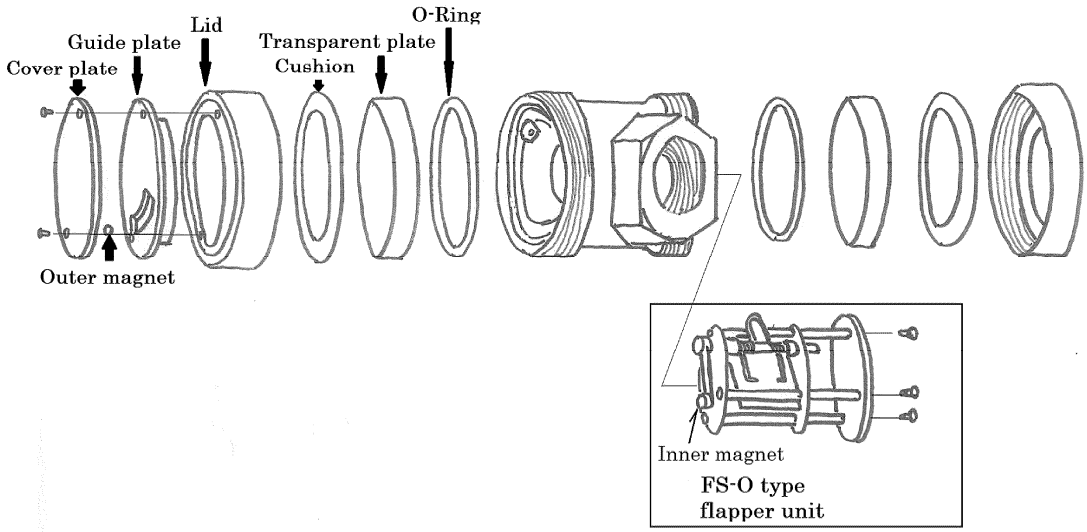


No	NAME	MATERIAL	REQ.No.	REMARK
1	Body	C3604	1	
2	Nipple	SUS304	2n	
3	Valve	CAC406	n	
4	Flow sight	CAC406	n	Compact Type
5	Plub	SS400	1	

Standard material table

Parts name	Material
Body	SS400
Flow sight	C3604/C3604
Needle valve	C3604/C3604

B-MFI Exploded drawing



Method of contact changing (MFA Type)

(See the MFA type structural drawing)

(1) Loosen the pan head screw with part number ⑩.

(2) Remove the lid of part number ② and the same tube of part number ③.

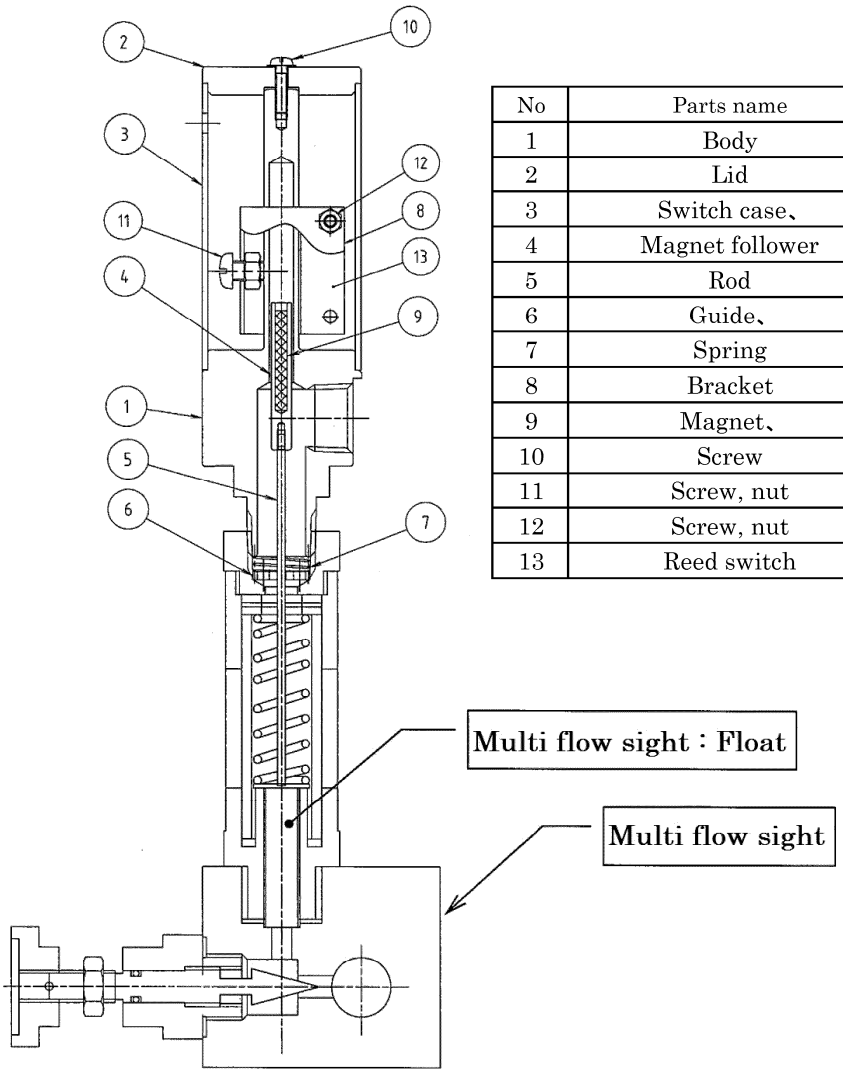
(3) Loosen the pan head screw with part number ⑪ a little until the reed switch with part number ⑬ moves by hand.

(4) Hold the float of the multi-flow site at the desired flow rate position and move the reed switch to the position where the contact operates.

(5) Tighten the pan head screw with part number ⑪.

(6) Check the operation of the reed switch several times, and if there is no problem, assemble each part.

MFA type structural drawing



No	Parts name
1	Body
2	Lid
3	Switch case、
4	Magnet follower
5	Rod
6	Guide、
7	Spring
8	Bracket
9	Magnet、
10	Screw
11	Screw, nut
12	Screw, nut
13	Reed switch

Troubleshooting

Trouble	Cause	Solution
Float (Flapper) does not fall when fluid stops.	The scale is existed around the float (Flapper)	Remove the scale according to the disassembly procedure for MFI or B-MFI.
Float (Flapper) does not rise (when the fluid flows.	The scale is existed around the inside float (Flapper)	Remove the scale according to the disassembly procedure for MFI or B-MFI.
	Low flow rate	The actual flow rate is extremely low against the balancing of spring depresses the float (Flapper)
Float (Flapper) scatters when fluid flows.	High flow rate	The actual flow rate is extremely high against the balancing of spring depresses the float (Flapper)
	Fluid temperature is low	In case of the viscous fluid, the temperature does not rise completely due to the viscosity increases, so it is indicated higher than the actual flow rate. Wait until the temperature of the fluid rises.
Large instruction error (In case of the goods with graduation plate)	The fluid temperature is different from the specification at the time of ordering.	In case of viscous fluid, the effect of viscosity change will occur. If the temperature is lower than the specified temperature, it is higher than the actual flow rate and when the fluid temperature is higher than the specified temperature, it is lower than actual flow rate. Check the fluid temperature is fixed when ordering. If the using temperature changes, please send it to us for our recalibration.

Trouble	Cause	Solution
Contact does not work	The wiring is broken	Replace the wiring
	Reed switch is damaged	Replace the reed switch
	Magnet follower is stuck	Disassemble and clean according to the method of contact changing

Warranty period and its scope

Warranty period is one year after delivery. However, if the supplier carries out the commissioning attendance adjustment of the installation, it will be one year after finishing it. If the failure occurs during the warranty period due to responsibility of the supplier, supplier will repair and provide the replacement parts free of charge.

*Damage caused by out of order is not covered by warranty

If the following cases are applied, it is not covered by warranty.

1. Inappropriate handling and using by customers
2. When the cause or reason of the failure due to other valves or machines.
3. Modification or repair by not supplier.
4. Natural disaster