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TECHNICAL GUIDANCE

Flowmeter for air conditioner ONE-TOUCH FLOW® CFW2000 Series PORTABLE AND DETACHABLE

GENERAL

The CFW2000 is the liquid flowmeter mainly designed for air conditioner. The flow rate is detected by the differential pressure which is created by a Pitot tube inserted into the pipe.

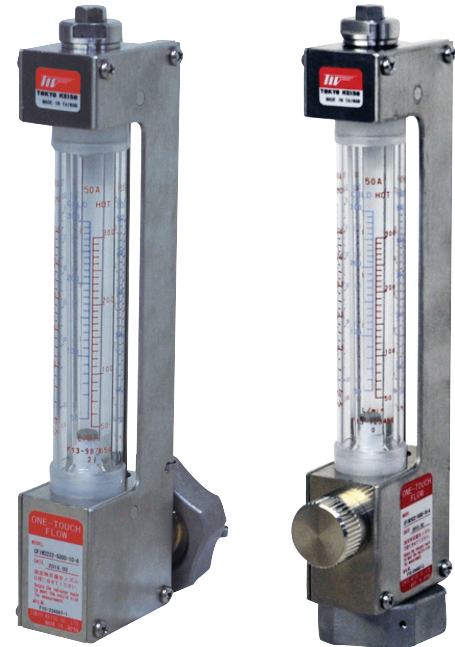
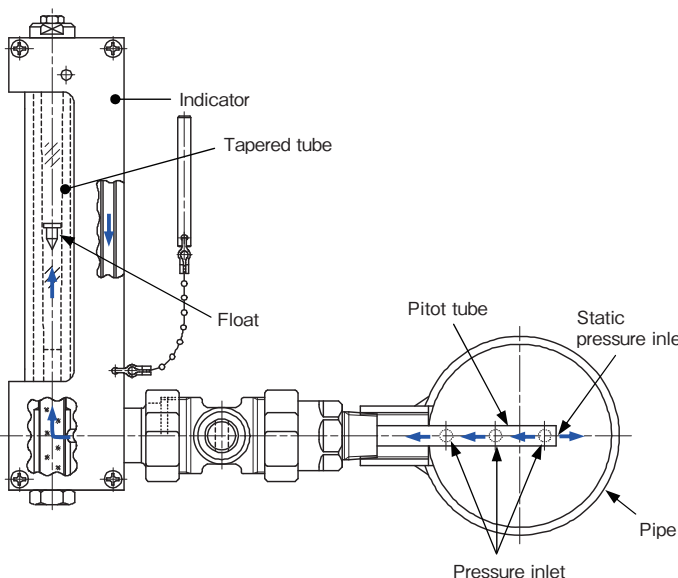
As the indicator is compatible with 4 different line sizes as per customers' choice, one indicator can be commonly used for 4 different pipes by just installing the fixing nozzles on them. It saves space and cost for the services where no continuous monitoring is required. Thus, the portable and detachable indicator, "ONE-TOUCH FLOW" is most suitable for the measurement of cold and hot water for the air conditioning system in collective housings, office buildings and other facilities.

FEATURES

- ❑ Portable indicator is detachable with one touch action
- ❑ Just weld a 20 mm (3/4 inch) socket in the existing pipe and screw the flowmeter into the socket
- ❑ Minimum pressure loss
60°C hot water in red and 7°C cold water in blue with double scales
- ❑ For both horizontal and vertical pipes
- ❑ One indicator can be commonly used for 4 different pipes.
- ❑ Light weight, cost effective and quick delivery

MEASURING PRINCIPLE

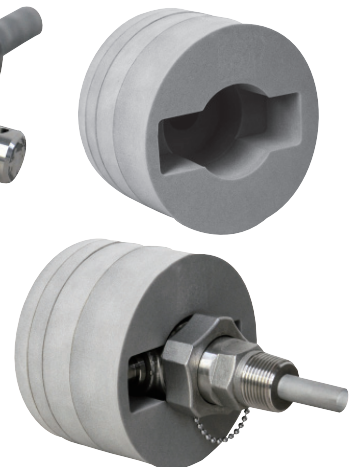
The Pitot tube inserted into the pipe which have two pressure inlets, one for the total pressure (dynamic + static pressure) and the other one for static pressure only. The liquid is introduced into the flowmeter as a bypass line by the pressure difference of the total and static pressure as shown by an arrow ← in the following schematics. The flow going through the tapered tube makes the float stay at a position on the scale corresponding to the total flow rate in the pipe.



Dew prevention cover (option)



The dew prevention cover is detachable with one touch action.



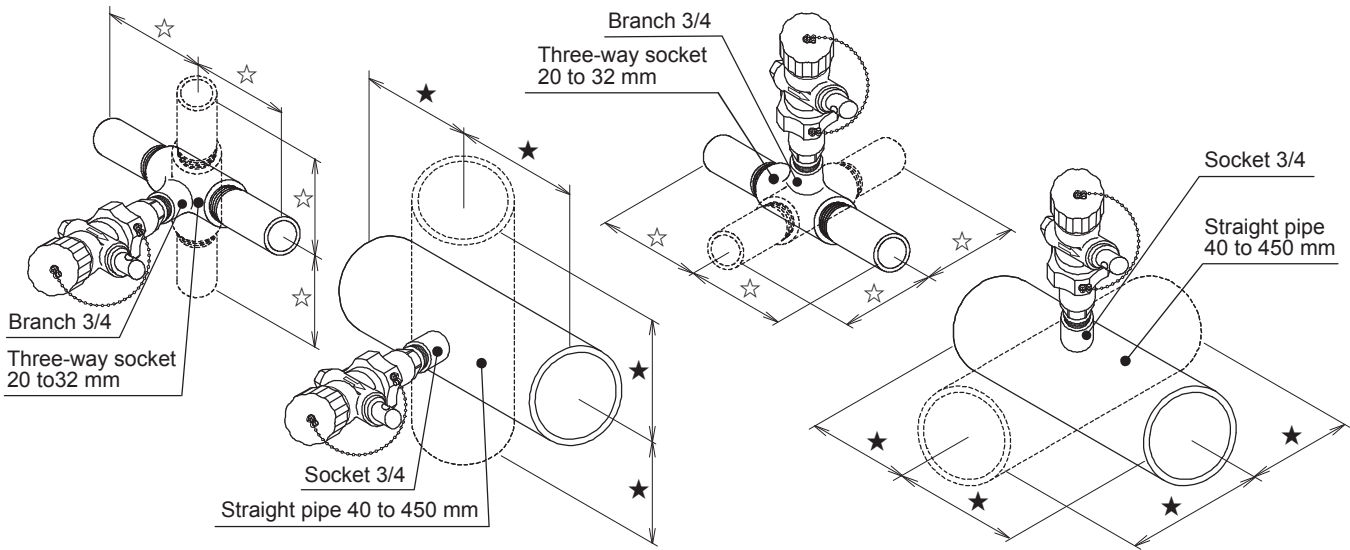
STANDARD SPECIFICATIONS

- Measuring liquid : Water, Cold water, Hot water
- Main pipe size : 20 mm (3/4") to 450 mm (18")
- Indication accuracy : $\pm 5\%$ (F.S.)
- Max. operating pressure
CFIW2 □ □ - □ □ □ □ -10 1.0 MPa
CFIW2 □ □ - □ □ □ □ -20 2.2 MPa
- Operating temperature : 0 to 80°C
The operating temperature is typical one which may change according to operating or environment conditions. (Use the lining or plastics pipe within its allowable temperature).
- Mass Indicator : CFIW2 □ □ □ Approx.1.3 kg
Fixing nozzle CFNW □ □ □ Approx.1.0 kg

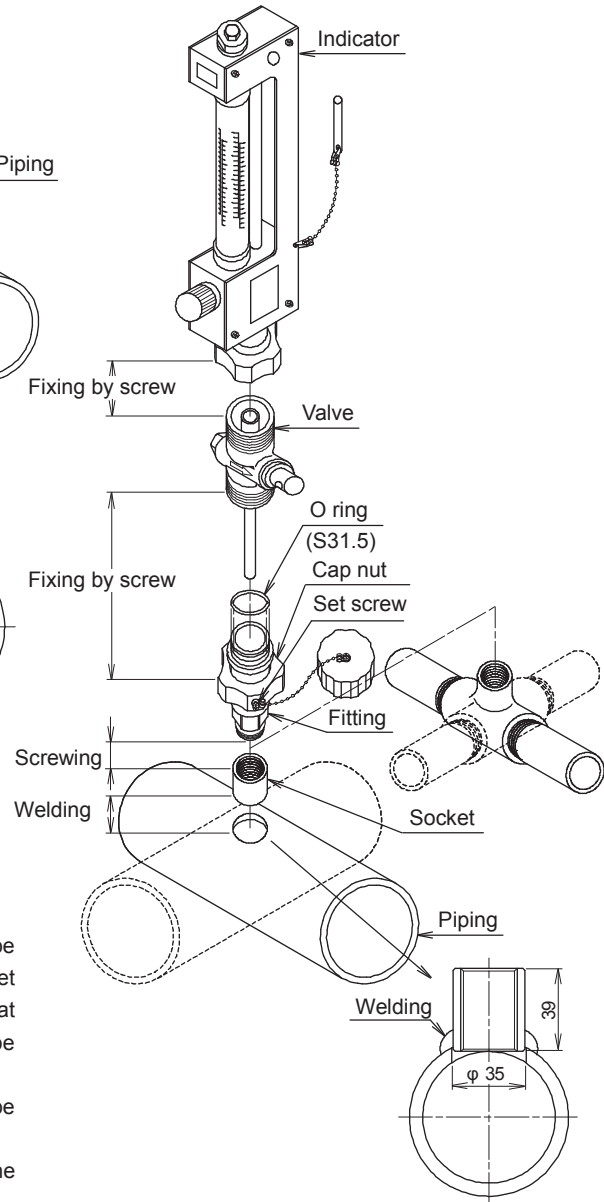
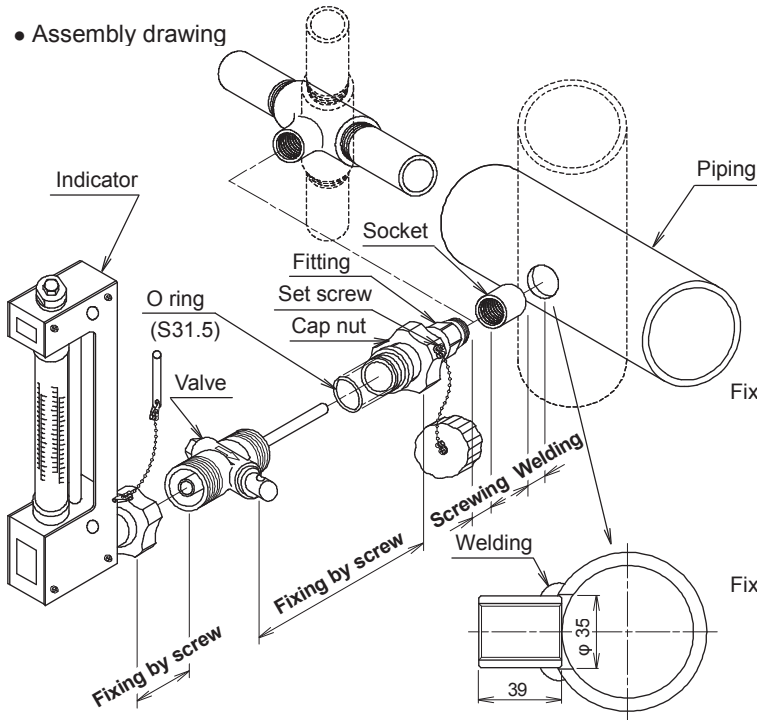
INSTALLATION, STRAIGHT RUNS AND ASSEMBLY DRAWING

• Horizontal installation (CFW2200 series)

• Vertical installation (CFW2400 series)



• Assembly drawing



• Installation

1) Keep the upstream and downstream straight runs as follows.

Pipe size	Upstream	Downstream
32 mm or less (☆)	10D or more	5D or more
40 mm or more (★)	5D or more	3D or more

Note : D is the inside diameter of main pipe.

- To install the flowmeters, drill a hole of 35mm diameter into the pipe having more than or equal to 40mm diameter. Use the three-way socket for the pipe having 20 to 32 mm diameter. Select and drill the hole at right place so that the final fixed posture of tapered tube should be vertical.
- Weld the socket to the drilled hole. The centerline of the socket must be perpendicular to the one of the pipe.
- Screw the CFNW fixing nozzle into the welded socket to complete the installation.

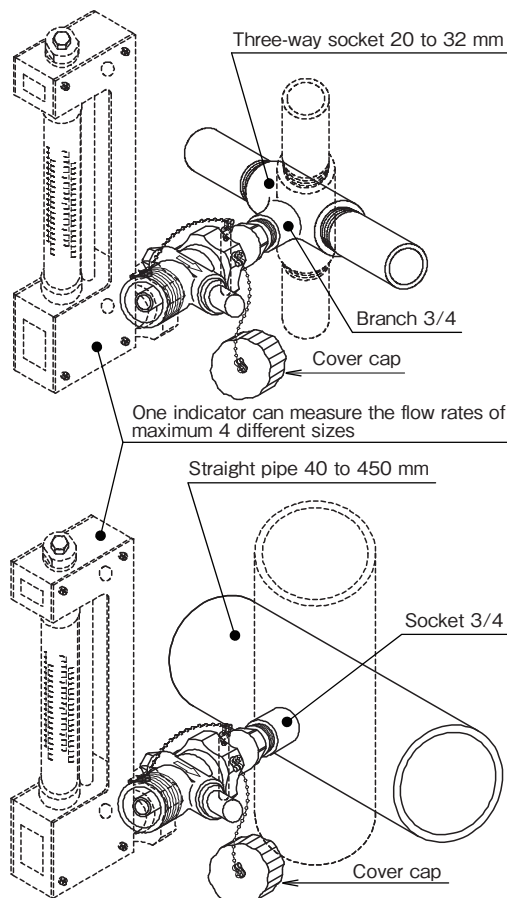
SUGGESTIONS

- ❑ Install the fixing nozzles on the main pipes in advance. Measure the flow rate by fixing the indicator on them when required. One indicator can measure the flow rates of maximum 4 different sizes of the standard pipe. However it measures one flow rate of one size of non-standard pipe.

Following table shows the indicator commonly used for the combination of measuring pipes.

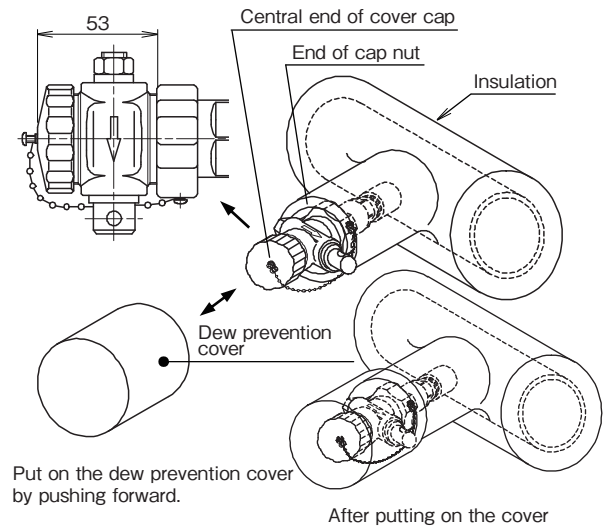
Kinds of measuring pipes	Can an indicator be used commonly?
A combination of three-way sockets 20 to 32mm (JIS B2301) and 40 to 450 mm SGP pipes (JIS G3452)*6	Yes For 4 different sizes of pipes
A combination of three-way sockets 20 to 32mm (for Sch.40 pipes) and 40 to 450 mm STPG pipes (JIS G3454 Sch 40)*7	Yes For 4 different sizes of pipes
<ul style="list-style-type: none"> • A mixed combination of above *6 and *7 • Three-way sockets with 40 mm or larger • Non-standard pipes in inside diameters • Resin pipes • Lining pipes in general 	No An indicator per one pipe size

- ❑ The model CFIW2 □ □ - □ □ □ □ -10 flowmeter is calibrated based on the inside diameter of JIS G3452 SGP. The model CFIW2 □ □ □ - □ □ □ □ -20 flowmeter is calibrated on JIS G3454 STPG Sch.40. If pipes are different from above, consult TOKYO KEISO. Specific calibration is required.
- ❑ Run the fluid fully in the pipe. Otherwise it could not be measured.



HOT AND COLD INSULATION

- ❑ When the fixing nozzle is insulated up to the end of the cap nut as shown in the drawing below, the fixing nozzle may get a dew condensation due to the fluid temperature. To prevent a dew condensation the dew prevention cover can be provided on request. See page 3. The distance between the end of cap nut and the central end of the cover cap is 53 mm. Do not insulate this part. If this part is insulated, the dew prevention cover cannot be put on.

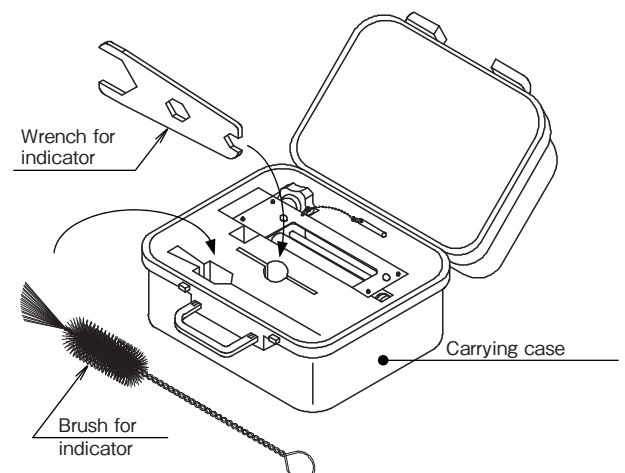


HOW TO MEASURE

- 1) Open the cap of the CFNW fixing nozzle.
- 2) Insert the CFIW indicator into the CFNW nozzle, and fix the CFIW indicator by tightening up the cap nut. At this time, be careful that the tapered tube of CFIW indicator must be vertical. Confirm that the scale range corresponds to the size of the main pipe.
- 3) Move a valve handle to "Open" when installation is completed. Liquids run through indicator and it starts to measure the flow rate.
- 4) Conduct this in reverse procedure to finish measurement

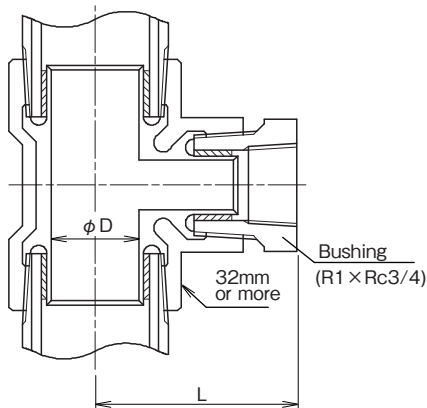
HOW TO STORE AFTER MEASURING

The CFIW indicator has been delivered with the carrying case as shown below. Store the indicator in it after measuring the flow rate. An air elimination plug, a wrench used for opening and closing caps on the top and bottom of indicator, a brush for cleaning the tapered tube are contained in the case. Use them for the maintenance.



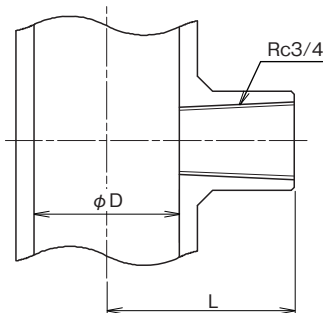
LINING PIPING

- Only scale range 2 is available for the pipe lined with PVC. The flow rate is based on when the flow runs through the inside diameter of the pipe which consists of a tee joint of the Eslo coat LX made by Sekisui Chemical Co.'s Eslon®. If you use other fittings, additional calibration is needed. Please check "D" and "L" in the drawing below and contact us.
- When the main pipe size is between 32 mm and 150 mm, provide either one of the following tee joint and bushing assembly to make the connection size 20 mm:
 - A tee joint with 25 mm in branch line + A bushing with 25 mm x 20 mm
 - A tee joint with larger than 25 mm in branch line + One or more bushings in series to make the final connection size 20 mm
 For further consultation inform us of the dimension "L" in the following drawing



OTHER PIPING

- Available for other piping. Consult factory for details. Inform of the type of piping and dimension of "L" and "D" of the following figure.



ORDERING INFORMATION

- Inform us the kind of your pipe and installation method when inquiring or ordering the flowmeter.

CAUTIONS ON USING CFW2000 SERIES



This flowmeter has a glass tube which is subject to the pressure from the piping. Avoid the use of CFW2000 Series for the following services.

1. Liquid services subject to impulse pressure in the process.
2. Secondary accidents might occur due to the breakage of glass in such services :
 - Toxic fluids such as poisons, stimulant and narcotics
 - Flammable fluids
 - Explosive fluids
3. Any services where scattering of glass fragments might cause a serious injury.
4. The installation places of the flowmeters where breakage of glass might be caused by the accidents from the surrounding piping or equipment.
5. On-off operation where breakage of glass might be caused by the collision of the float inside meter due to the abrupt change of flow.
6. Services where the heat shock by abrupt change of temperature.

* Specification is subject to change without notice.

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