instrumentation
for fluids

Variable area flowmeter
Series
60 M-1

Instructions Manual

Technical Data

- Accuracy: ± 2,5% of full scale value. Based on VDE/VDI 3513
- Scales: In l/h, l/min, m³/h, kg/h, %, mm., etc
- Scale length: 100 mm ± 5
- Mounting: Vertical (rising flow direction)
- Total length: 220 mm ± 2
- Pipe fittings: 1/4" BSP or NPT female thread
- Working pressure: 10 ... 15 bar
- Fluid temperature: -10 ... +100ºC

The glass can support a thermal shock of 150 ºC if there is no internal pressure.

The temperature difference between the interior and exterior of the glass tube must not exceed 80 ºC

Conforms with the Pressure Equipment Directive 97/23/EC.

This equipment is considered as being a pressure accessory and **NOT** a safety accessory as defined in the 97/23/EC directive, Article 1, paragraph 2.1.3.

The following instruction manuals are attached:

☐ 60-AMD Limit Switch Instructions Manual
☐ 60-AMO Limit Switch Instructions Manual
☐ 60-AMH Limit Switch Instructions Manual

Working Principle

The flowmeter consists of a float inside a conical tube. The rising flow pushes the float to an equilibrium point. The area obtained between the float and the orifice is proportional to the flow rate.

This type of measuring principle is known as variable area.

The equilibrium point depends on :

- The float weight : Pf
- The fluid thrust : E
- The free flow area : Al

The area proportional to the flow rate will be:

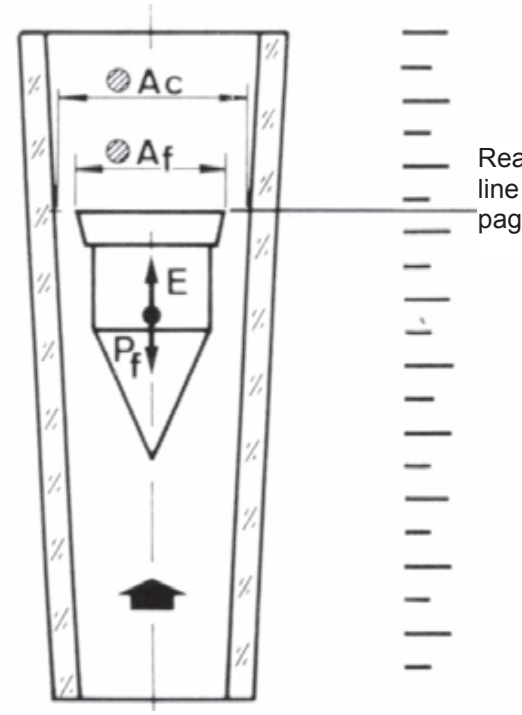
$$Al = Ac - Af$$

where:

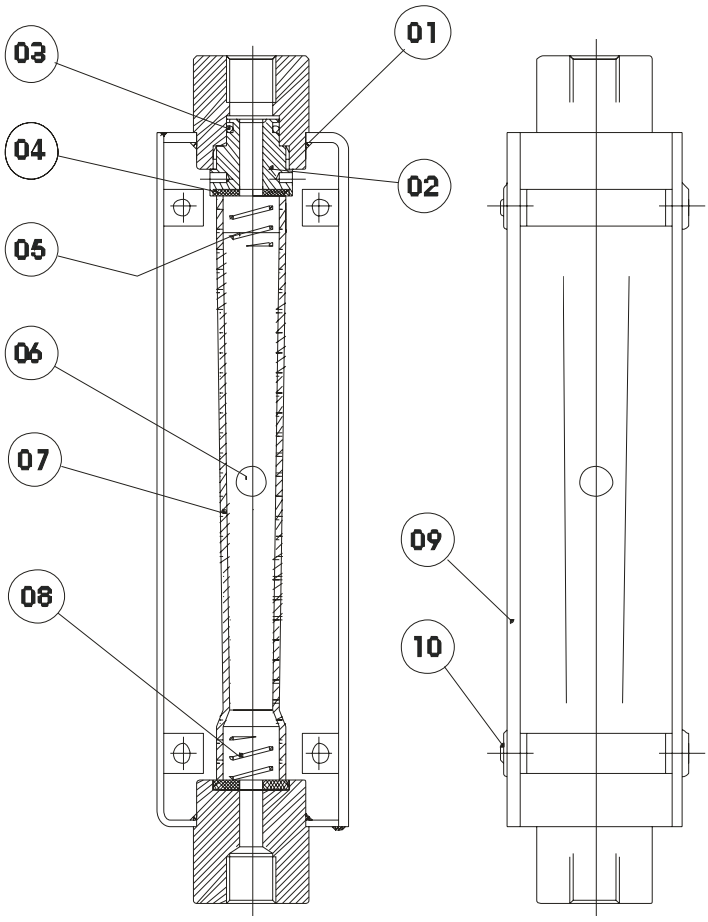
Ac = Flow measuring tube area

Af = Float area

Each position of the float corresponds to a flow rate indicated on the scale printed on measuring tube.



n.	Part	Materials
1	Body	EN 1.4404
2	M. Tube clamp	EN 1.4404
3	O-ring	NBR
4	End gasket	NBR
5	Top spring	EN 1.4401
6	Float	EN 1.4404 / Glass / Ceramic / Hostalen
7	Measuring Tube	Borosilicate Glass
8	Bottom spring	EN 1.4401
9	Transparent protection	Metacryilate
10	Screw	Nylon ®



RECEPTION

The flowmeter is supplied ready for installation and service.

The blocking elements that hold the float for transport should be removed before installation.

Turning the instrument up side down, check that the float moves freely in the tube.

INSTALLATION

The instrument must be installed taking into account the following:

The fluid inlet will be in the bottom of the flowmeter (the one nearest the scale's minimum value).

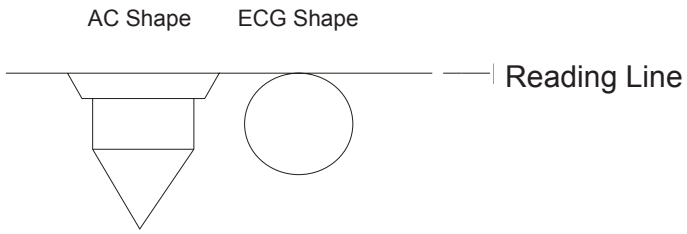
The fluid outlet will be in the top of the flowmeter (the one nearest the scale's maximum value).

It is very important that the position of the instrument is completely vertical, given that deviations of about 5º– 10º can produce errors of about 10% of the reading.

⚠ Never open suddenly the regulating valve as this may cause the float to hit the glass tube and break it.

FLOW RATE READING

The float determines the flow rate measurement on the scale.
For the different shapes of floats, the readings must be taken at the height shown in the drawing at the right.



CLEANING AND MAINTENANCE

Remove the 4 screws (10) and the transparent protection (9) to gain access inside the body (1).

Screw up the measuring tube clamp (2) into the body head (1), until the metering tube (7) is free.

Remove the metering tube (7), taking care that the top and bottom springs (8 and 5) don't fall out.

Once the metering tube (7) is removed, withdraw the top and the bottom springs (8 and 5) and the float (6). NOTE: The top spring is different from the bottom one and should not be interchanged.

Cleaning should be done using a soft brush (bottle brush or similar) to avoid scratching the measuring tube.

The float should also be cleaned with a soft brush, never with metallic utensils which could scratch it's surface

To reassemble the instrument, inspect the gaskets (4) to see if they are in good working condition, and if not, change them.

Put the bottom spring (8) in the measuring tube (7), insert the float and the top spring (5).

Assemble the measuring tube inside de body.

Screw down the measuring tube clamp (2) from the body head (1), until the tube is tight and the gaskets make a proper seal.

Put the transparent protection (9) in the body (1) and screw in the 4 screws (10).

WARRANTY

TECFLUID guarantees all the products for a period of 24 months from their sale, against all faulty materials, manufacturing or performance. This warranty does not cover failures which might be imputed to misuse, use in an application different to that specified in the order, the result of service or modification carried out by personnel not authorized by Tecfluid, wrong handling or accident.

This warranty is limited to cover the replacement or repair of the defective parts which have not damaged due to misuse, being excluded all responsibility due to any other damage or the effects of wear caused by the normal use of the devices.

Any consignment of devices for repair must observe a procedure which can be consulted in the website www.tecfluid.fr, "After-Sales" section.

All materials sent to our factory must be correctly packaged, clean and completely exempt of any liquid, grease or toxic substances.

The devices sent for repair must enclose the corresponding form, which can be filled in via website from the same "After-Sales" section.

Warranty for repaired or replaced components applies 6 months from repair or replacement date. Anyway, the warranty period will last at least until the initial supply warranty period is over.

TRANSPORTATION

All consignments from the Buyer to the Seller's installations for their credit, repair or replacement must always be done at freight cost paid unless previous agreement.

The Seller will not accept any responsibility for possible damages caused on the devices during transportation.

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