instrumentation
for fluids

Variable Area Flowmeter

Series

2100 / 2150 / 2300 / 2340

Instructions Manual

C-MI-01 Rev.:2 English version

Technical characteristics

- Precision according to VDE/VDI 3513:
  - 2100 ± 4% f. s. value Class 4
  - 2150 ± 2,5% f. s. value Class 2,5
  - 2300/2340 ± 1,6% f. s. value Class 1,6
- Standard Scales:
  - Water in l/h.
  - Air in Nl/h up to 700 Nl/h.
  - Air in Nm³/h from 1 to 17 Nm³/h.

  (on demand in l/s, cc/min, %.)
- Mounting: Vertical (rising fluid).
- Fittings:
  - 2100/2150/2300 Rp 1/4" (BSP) or 1/4" NPT
  - 2340 Rp 1/2", Rp 3/4" (BSP) or 1/2", 3/4" NPT
- Materials:
  - Metering tube: Borosilicate Glass
  - Fittings: EN 1.4404 (AISI-316L)
  - Float: EN 1.4404 (AISI-316L), Aluminium, Glass, Ceramic PVC, PVDF, PTFE.
  - Valve: EN 1.4404 (AISI-316L)
  - Valve seat: PTFE
  - Gaskets: NBR (Nitrile Rubber) (Viton® on demand)
- Working Pressure: 15 bar max.
- Fluid temperature: 0 ... +120ºC.
- Ambient temperature: 0 ... +80ºC.

Conforms with Directive 97/23/CE

- Optional limit switches:
  - 20-AMD
    Bi-stable inductive proximity detector, NAMUR DIN 19234

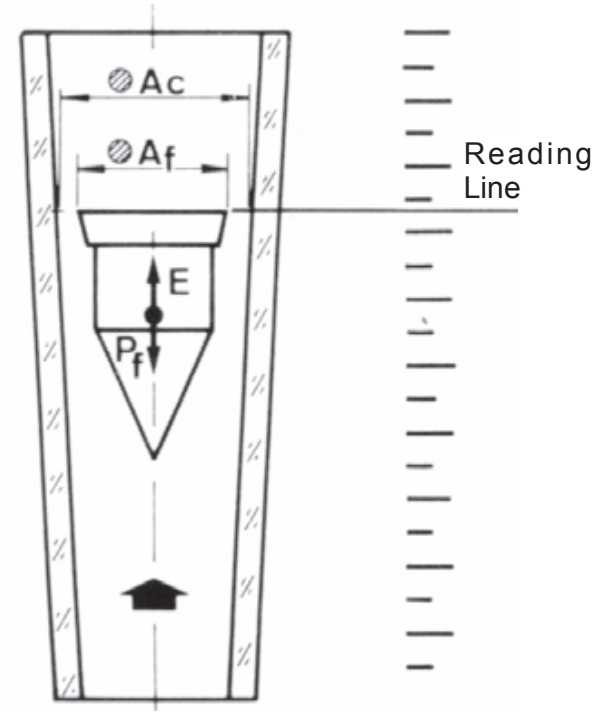
    Conforms with Directive EMC 89/336/EEC

    CE
  - 20-AMO
    Optical limit switch (for clear fluids).
    - Power supply:
      12 VDC, 24 VDC, 24 VAC,
      110 VAC, 230 VAC, 240 VAC.

    Conforms with Directive EMC 89/336/EEC

    CE

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 tube 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 metering tube area

Af = Float area

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

RECEPTIÓN

The flowmeter is supplied ready for use.

Turning the apparatus carefully upside down, check that the float moves freely.

MOUNTING

The flowmeter must be mounted vertically taking into account that:

The fluid inlet is at the bottom (the low end of the scale).

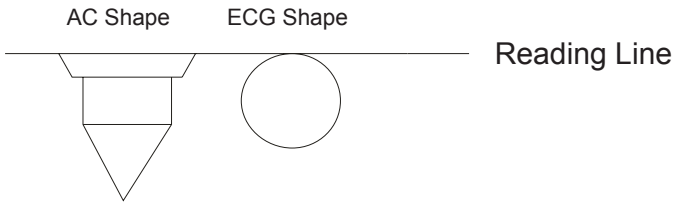
The fluid outlet is at the top (the high end of the scale).

It is most important that the flowmeter is installed perfectly vertical, given that deviations of the order of 5-10º from the vertical can produce reading errors of up to 10%.

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

To dismount the metering tube for cleaning proceed as following:

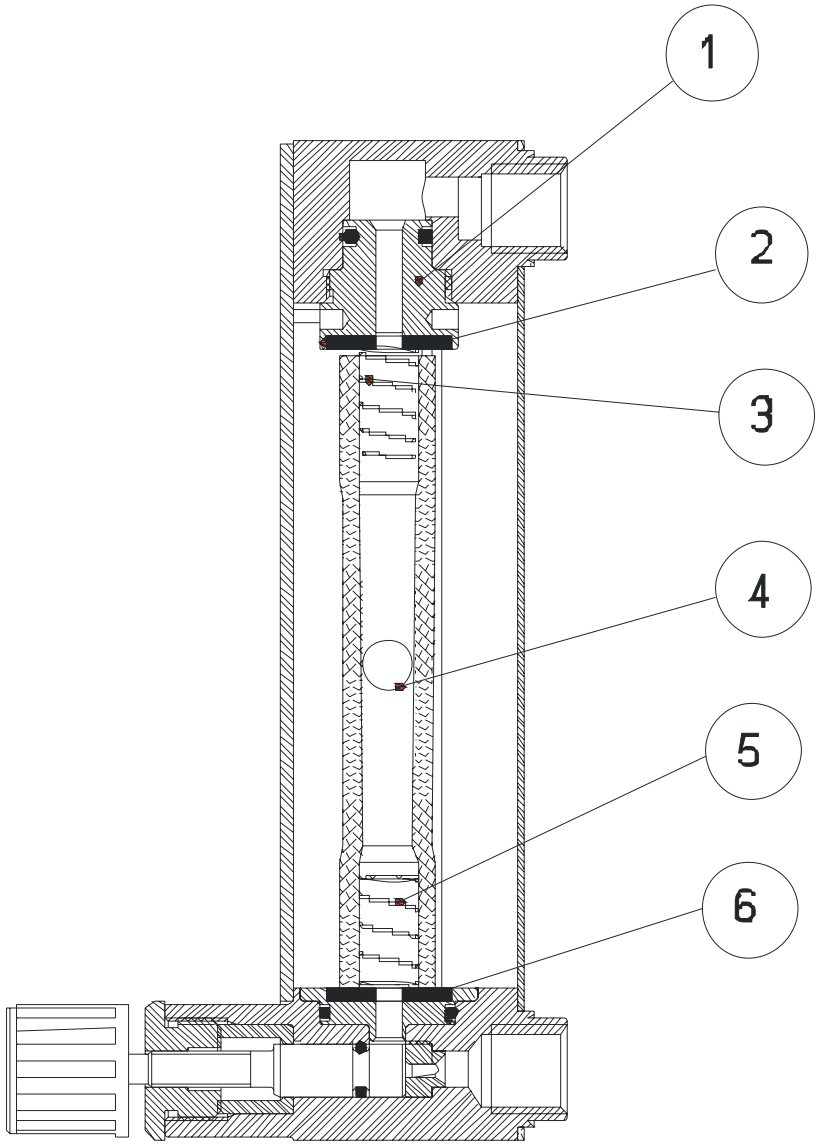
Turn the press (1) clockwise between a half turn and one and a half turns, depending on the model, to free the metering tube.

Remove the springs or stops (3 & 5) and the float (4). 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

Next mount the float (4), and then the springs or stops (3 & 5) and then place the gaskets (2 & 6) well centred in their seatings with the aid of the metering tube.

Centre the metering tube and gently tighten the press (1) anti-clockwise until a seal is obtained.



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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