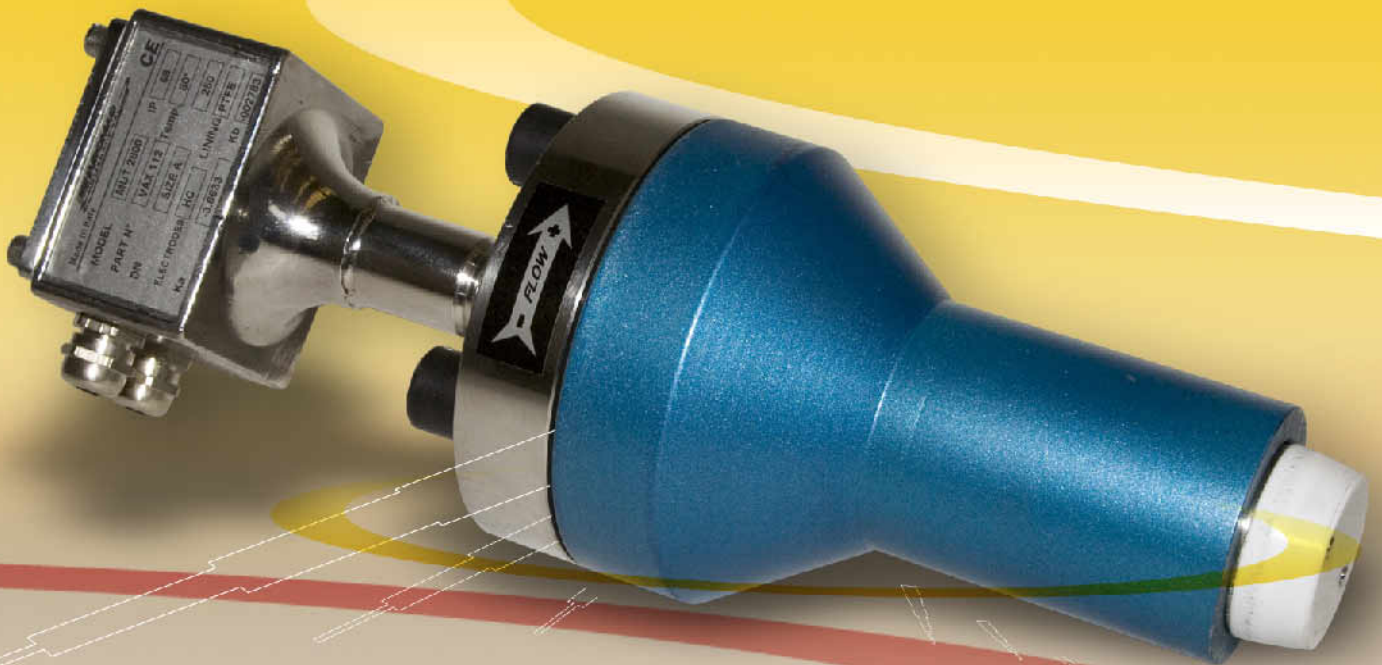


Electromagnetic flowmeters



High Pressure Insertion Sensors MUT 2800

DS170-0-ENG 

Sensor MUT 2800

Sensors MUT 2800 represents the ultimate development of EUROMAG INTERNATIONAL for metering flows in **extremely high pressure** processes. This insertion type electromagnetic flow meter, may be used in all applications that require metering of electrically conductive fluids under pressure as high as 250 bar.

MUT 2800 is an insertion type flow meter that means that its probe head is placed in a conveniently located "TEE" branch off of the main pipe line where it protrudes into the main line for a length equivalent to 1/8 of the inner line diameter. Two types of instrument, different in length, are used to meter flows in lines from DN 40 (1.1/2") to DN 600 (24"). The only difference between the various sizes of the main lines are in the line adaptor spool that is tailor made to the specific line size and thickness. This means that the amount of fixed investment to be made to install a flow meter in a line is almost independent of the line size, and within a single plant the same instrument is used in every line size with great advantage in terms of maintenance, spare parts and availability.

MUT 2800 high pressure insertion probes are made to be used in high pressure liquid flow metering, their structure entirely in AISI 304 is sturdy and capable of operating at pressures up to 250 bar. They are equipped with cartridge type electrodes isolated from the probe tip. The probe tip is covered by an isolating cap of PTFE which is designed in a way that it maintain a balanced pressure load, therefore there is no pressure induced load on the soft tip. The entire structure is welded to heavy walled AISI 304 pipe and to a ANSI 1500 rated flange. Like all electro magnetic flow meters it can be used to measure flow rates of liquids with an electric conductivity of more than 5 $\mu\text{S}/\text{cm}$, demi water minimum 20 $\mu\text{S}/\text{cm}$.

1. Body

MUT 2800 body is solid AISI 304, the body is welded to a ANSI 1500 rated stainless steel flange. Junction box suitable for compact mounting as well as separate mounting of converter is made in AISI 304 with protection class IP 68. MUT 2800 is manufactured in two standard lengths:

Size A covers installations from DN 40 (NPS 1 1/2") to DN 200 (NPS 8");
Size B covers installations from DN 250 (NPS 10") to DN 600 (NPS 24");
Special applications with different lengths may also be considered on request.

2. Electrodes.

Standard electrodes are in Nikel Alloy C 22. Other materials are available on request.

3. Maximum temperature to the liquid

Maximum liquid temperature is 60°C. Special applications with higher temperatures may be provided on request.

4. Coupling and connecting to sensors

Sensors MUT2800 may be coupled with all the converters of the EUROMAG family. Compact versions and separate versions are available with cable distance between sensor and converter in accordance with Diagram 1.

5. Assembly

The MUT2800 sensors require that the line in which they have to be installed be empty in order to provide for the necessary welding of spool piece. A spool piece, manufactured to suit the main line diameter and thickness, is provided with each flow meter.

This spool piece is an essential part of the metering system since its length is calculated to provide a protrusion of the meter probe tip into the main line exactly of 1/8 of the inner line diameter. This position has been calculated in order to represent the average speed of the liquid in the line. Therefore the speed measurement taken at that depth into the flow may be readily correlated to the flow rate.

The protrusion of the probe tip into the line requires that a well established flow with a minimum amount of swirls is present in the main line. On average applications a linear length equivalent to 10 nominal diameters should be provided before the meter; while 5 nominal diameters should be installed downstream of the meter.

6. Calibration and maximum error

The MUT2800 belong to the reference Group B1 (ISO 11631). Every sensor is calibrated by a hydraulic bench with the reference weighing system National Metering Board (SIT). The uncertainty of measure is equal to 0.5% of the value of the reading when the velocity of the liquid is more than 0.3 m/s when assembled as per installation instructions.

7. Reference standards

The EUROMAG INTERNATIONAL magnetic meters are marked CE and are manufactured according to the following standards:

- * CEI EN 61010-1
- * UNI EN ISO 6817
- * EN 1434
- * EN 50081 - 1
- * EN 50082 - 1

Maximum length of cables according to the liquid conductivity.

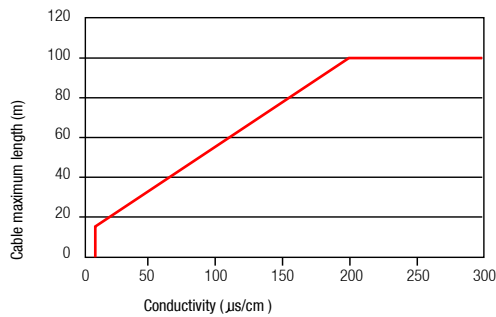


figure 1

Sensor MUT 2800 Dimensions

Size	A	B
Min/Max Line Diameter (mm)	40 / 200	250 / 600
Length (Fig. 2)	300	450

table 1



Sensors MUT2800

Line diameters	Minimum Diameter 40 mm (1.1/2") Maximum Diameter 600 mm (24")
Electrodes material	Hastelloy C 22
Body material	Stainless Steel AISI 304
Head of sensor	Stainless Steel AISI 304
Maximum operating pressure	250 bar
Temperature of liquid	-40 °C , +60 °C
Degree of protection	IP68 continuous immersion at 1,5 m (IEC 529)
Converter compatibility	MC108 - MC 308 - MC 308 C
Parts in contact with liquid	Head of sensor: AISI 304 & PTFE
	Electrodes: Hastelloy C 22
	Body: AISI 304
Electrical connections	Cable gland PG 11 (M20x1.5 on MC308C Compact)

table 2

Fig. 2 - Sensor Sizes

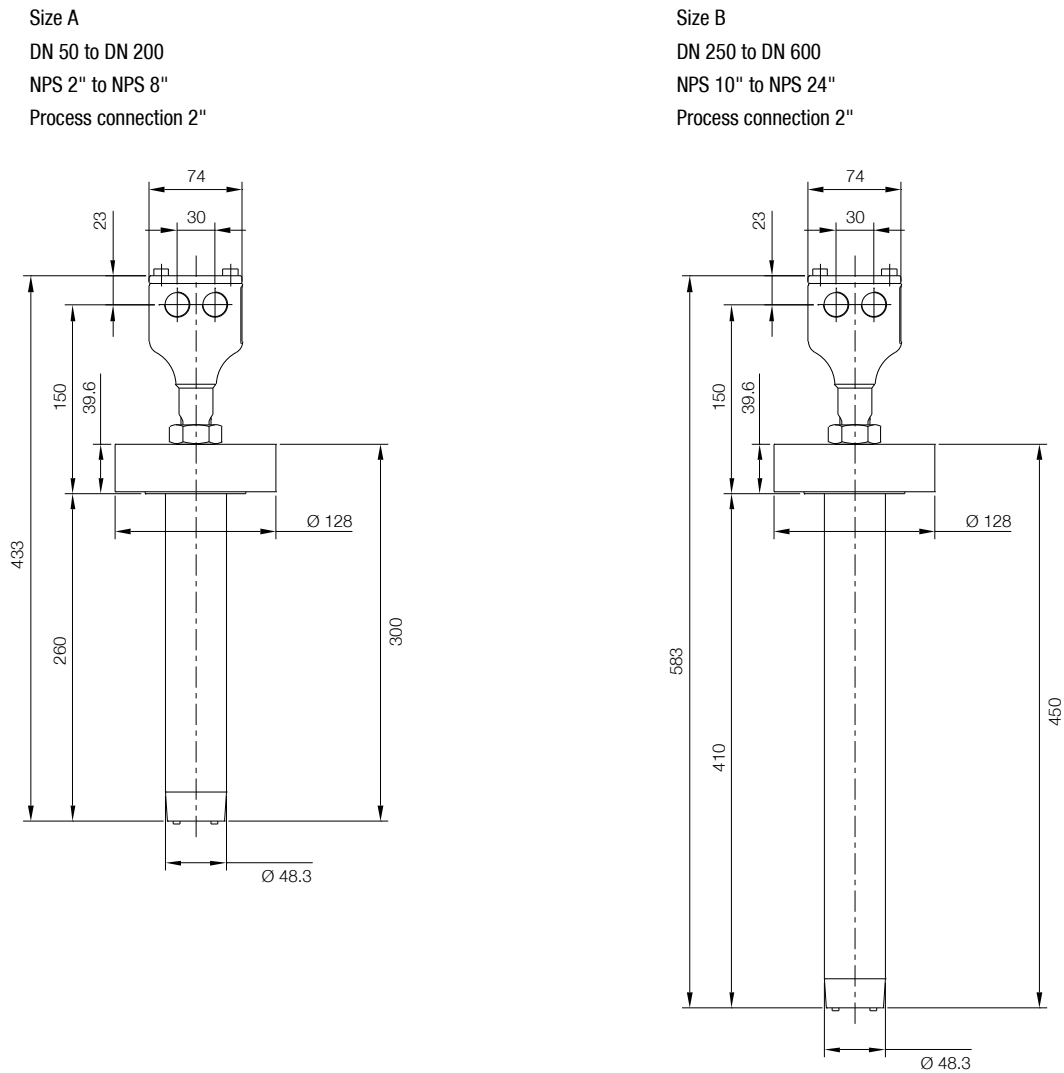
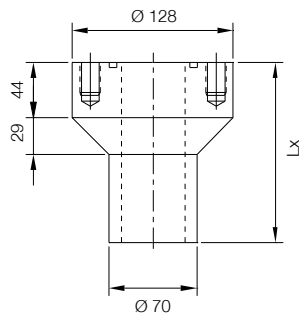


Fig. 3 - Adapting Spool

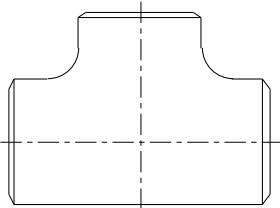
Machined to suit main line size and thickness
Flanged #1500 Rated



This side to be welded to line off branch

Fig. 4 - Installation

Main Line 2" or less
Install a TEE of NPS 2"



Main Line larger than 2"
Use a weldolet of a suitable pressure class reduced to 2"

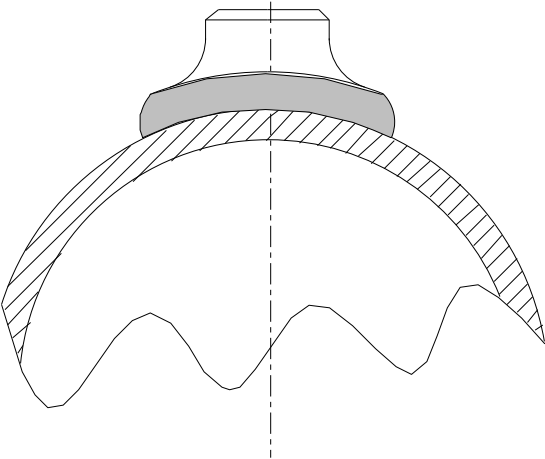
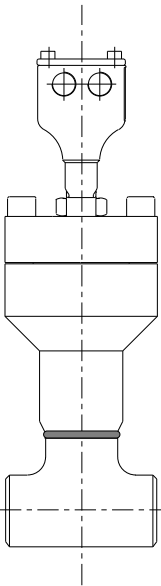
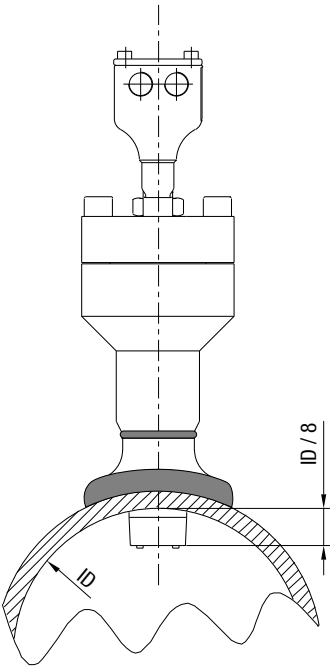


Fig. 5 - Typical Installation

Main Line 2" or less



Main Line larger than 2"



Data shown in this catalogue are subject to modification without prior notice.