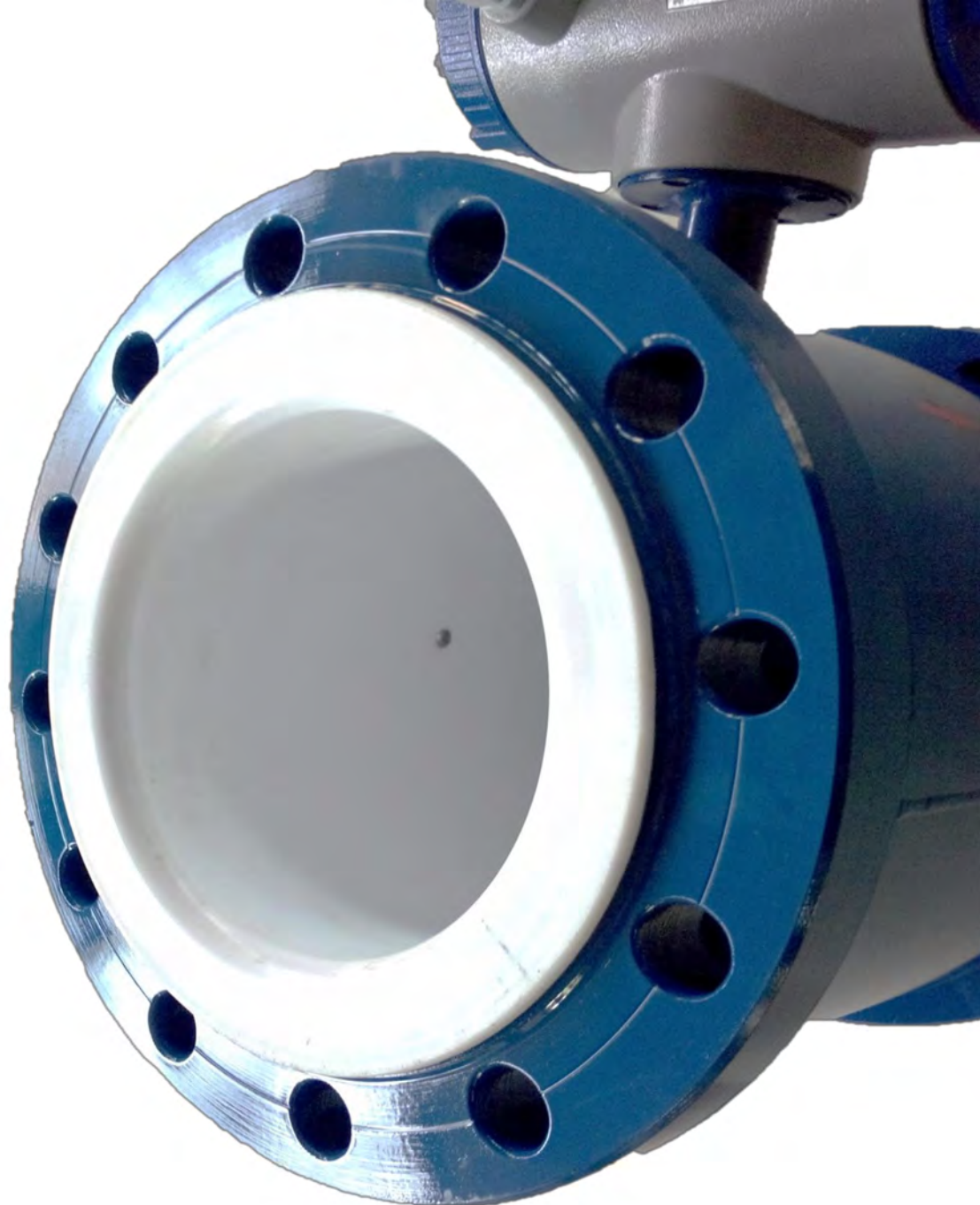


ETTRANS-M ELECTROMAGNETIC FLOW METER



ETTRANS-M 110 Sandwich (Wafer) Type Teflon (PTFE) Liner

ETTRANS-M 210 Hard Rubber Coated Water and Waste Water Applications

ETTRANS-M 410 Teflon (PTFE) Lining for all Aggressive and Corrosive Liquids

ETTRANS-M 610 Teflon (PTFE) Lining for Food & Hygienic Applications



ETTRANS-M PRODUCT FAMILY

ETTRANS-M Electromagnetic flowmeter offers the most suitable solution for all conductive liquids. Durability and reliability are a great advantage.

ETTRANS-M 110



- Wafer Type
- Inner lining is Teflon (PTFE)
- Remote or compact transmitter
- Operating temperature maximum 180°C
- Chemical resistance to alkaline and acidic solutions
- Various electrode material options

ETTRANS-M 210



- Inner coating is Hard Rubber.
- Remote or compact transmitter
- Operating temperature maximum 80°C
- Suitable for water and waste water applications.

ETTRANS-M 410



- Lining is Teflon (PTFE)
- Remote or compact transmitter
- Operating temperature maximum 180°C
- Chemical resistance to alkaline and acidic solutions
- Various electrode material options

ETTRANS-M 610



- Lining is Teflon (PTFE)
- Remote or compact transmitter
- Operating temperature maximum 180°C
- Chemical resistance to alkaline and acidic solutions
- Various electrode material options
- Stainless Steel 316 outer body
- Food type connection options

INDUSTRIES & APPLICATIONS

INDUSTRIES

- Water and Waste Water
- Food and Beverage
- Pharma and Cosmetics
- Petrochemical
- Chemistry
- Paper Industry
- Mining and Energy
- Metallurgy
- Agricultural Irrigation
- OEM's (Machine Manufacturers)



APPLICATIONS

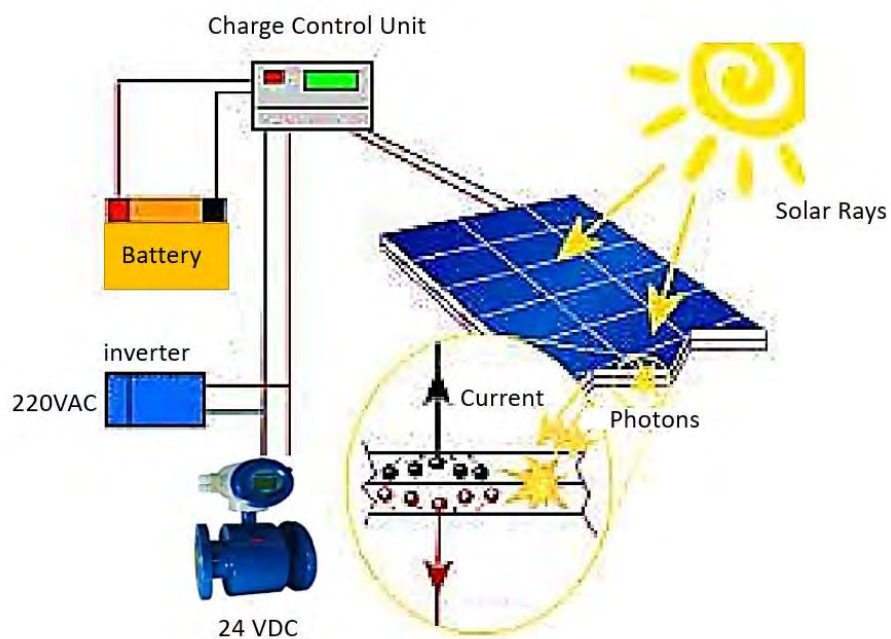
- Water Distribution Networks
- Water Purification or Desalination
- Bulk Metering or Billing
- Leakage Detection
- Sewage or Sludge Flow
- Cooling Water
- Irrigation Systems
- Liquid Fertilizer Flows
- Liquid Dosing
- Fire Extinguishing Systems
- Liquid Dosing Process
- Heating Process
- Dairy Process
- Pump manufacturers



Solar Panel Integration



The total power consumption of the ETRANS-M electromagnetic flowmeters is 20 watts. This makes it possible to work continuously at places where there is no electric energy but with a solar panel of 200 Watts and a 40-amp-hour 24VDC battery with a minimum charge of 5 hours per day.

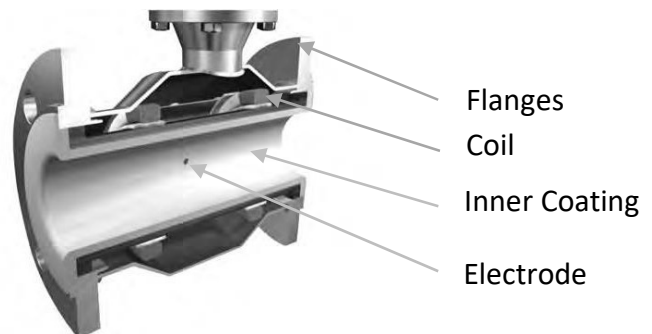
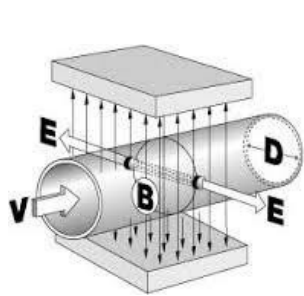


WORKING PRINCIPLE

Electromagnetic flowmeters work according to Faraday's Induction Law. An electrically conductive fluid passes through the magnetic field in an electrically isolated pipe. A pair of coils is used to generate the magnetic field and electric current is passed through these coils. A voltage proportional to the flow rate of the liquid is generated between the electrodes. The resulting voltage (v) varies depending on the flow rate (Q), the geometric correction factor (k), also known as the body coefficient, the magnetic field size (B) and the flowmeter inside diameter (D).

$$Q = f(v, k, B, D) \quad \text{and} \quad Q = v \cdot (k \cdot D \cdot B)$$

Magnetic field, inner diameter and body coefficient are constant values. As a result;
 $Q = v \cdot (k \cdot D \cdot B) = v \cdot K$ there is a linear relationship between the flow rate and the generated voltage. The voltage signals sensed with the electrodes are processed by a signal converter.



TECHNICAL SPECIFICATIONS

ETRANS-M ELECTROMAGNETIC INDUCTIVE FLOWMETER

General Features

- Measuring stability and low energy consumption with programmable low frequency square wave magnetic field stimulation.
- High integration and accuracy management with the use of 16-bit microprocessors.
- High resistance to noise and reliable measurement by digital processing.
- Low EMI switching power supply with wide supply voltage range, high efficiency and low temperature rise.
- User-friendly operating frontend.
- High-resolution backlit LCD display operating between -20 to +80 °C.
- Straight and reverse direction (back) flow readability.
- Design for counting and invoicing (billing) with three independent digit totalizers (straight, reverse and net flat totals).
- Support up to 2 km distance with 14400 bps communication.
- Eliminating the sharp electrical noise in the flow signal and ensuring stability in indicators and outputs by using "change rate limiting technology".
- Keeping calibration, synchronization or filling processes under control by enabling Totalizer starting and stopping function by a remote alarm contact.
- Self-examination function.
- Compact or remote (wall-mount type) design selection .
- IP68 protection class for piping and electronics
- IP67 protection class for converter (transmitter) unit.
- Programming language for both English and Turkish.



TECHNICAL SPECIFICATIONS

TRANSMITTER

Power Supply	: Standard 85-265 V AC 45-65Hz Optional 16-30 V DC Optional Solar Power
Energy Consumption	: <15W
Communication	: RS485, HART selectable
Flow Output	: Standard 4-20 mA analog, frequency, pulse output Modbus (Optional)
Control Output	: 2 (forward / reverse, high alarm / low alarm)
Protection Class	: IP67, IP68 (optional)
Display	: 3 Rows x 10 Digit LCD Display
Totalizer	: 3 Independent Totalizers
Cable Connection	: M18 x 1,5
Test and Diagnosis	: self -diagnosis, failure record, current output test, control input / output test, emulation test mode etc.

1- Wall Mounting (Remote) Transmitter



2- Compact Transmitter



TECHNICAL SPECIFICATIONS

MATERIAL TYPES

Housing Material	: ETRANS-M 110 Carbon Steel (with Coating) ETTRANS-M 210 Carbon Steel (with Coating) ETTRANS-M 410 Carbon Steel (with Coating) ETTRANS-M 610 Stainless Steel
Flanges	: Standard Carbon Steel (with Coating) Stainless Steel (optional)
Clamp/Sleeve	: Stainless Steel
Electrode Material	: Stainless Steel 316 Hastelloy® C, Titanium or Tantalum (optional)
Inner Lining (Coating)	: Hard Rubber Teflon (PTFE) (up to DN300) Ceramic (DN15.....DN40)
Connection Head	: Stainless Steel (Only in Remote Type)
Converter (Transmitter)	: Cast Aluminum

INSTALLATION CONDITIONS

Line Occupancy	: Full occupancy must be supplied
Inlet Pipeline	: Minimum 5xDiameter straight pipeline
Outlet Pipeline	: Minimum 2xDiameter straight pipeline
Earthing Ring	: Non-conductive pipes must be equipped with earthing rings.



ETTRANS-M 110
(Teflon PTFE)



ETTRANS-M 210
(Ebonite Hard Rubber)



ETTRANS-M 410
(Teflon PTFE)



ETTRANS-M 610
(Teflon PTFE)

TECHNICAL SPECIFICATIONS

SOME CRITERIA FOR CONFIGURATION

Diameter Determination: The optimum operating flow range of the device is 1-3 m/s. The maximum measuring flow range is ± 12 m/s. If a new line will be installed, the flow meter selection rules are;

Optimum flow-diameter correlation ➡ $2,825 \times 10^{-3} \times D^2 < Q < 8,475 \times 10^{-3} \times D^2$

Maximum flowrate vs diameter correlation ➡ $0,0339 \times D^2 < Q_{\max}$

D: Inner Diameter (mm) Q_{\max} : Maximum Flow (m³/h)

Liner Material: The inner coating is selected according to the process temperature, process and fluid type. Teflon liner should be preferred for hygienic applications. Teflon has high resistance to chemical content and temperature up to 180 ° C. Thanks to this feature, CIP/SIP (“on-site cleaning and sterilization applications”) can be used safely. For processes with a maximum process temperature of 80 ° C, hard rubber coating can be preferred.

Electrode Selection: Stainless steel electrodes are used in water and domestic wastewater applications. Select the appropriate electrode according to the properties of the fluid.

Pressure Class: The pressure class of the device is determined by the maximum process pressure. The process pressure should be specified when the device is ordered.

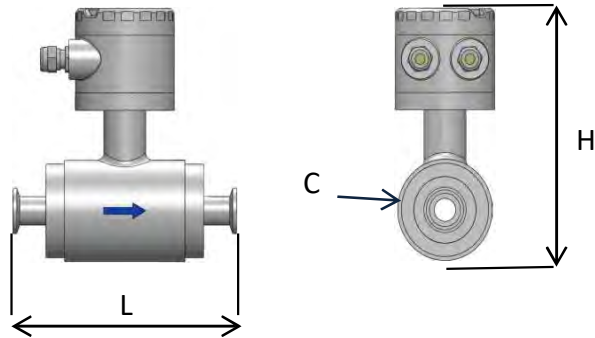
Design: The signal transducer of the device, the monitor can be (compact) or remote display. If flow rate info will be controlled on screen or the device is not easily accessible, remote model should be preferred. Preferring a remote model at higher environmental temperatures will be a better choice to protect the signal converter. It is important to consider that the compact model will be more economical while deciding on model.

Connection Type: Standard connection is flanged type. It is possible to use flanges in accordance with DIN, ANSI and JIS standards. However, in some processes including food and pharmaceutical industry, clamp or sleeve connection is much more preferable.

Power Supply: The power supply of the flowmeter can be selected as 85-265 V AC, 16-30 V DC, by default. In addition, solar panel integration is possible in areas away from the power grid or in ecological applications.

ETRANS-M 610 Teflon (PTFE) Food/Hygenic Applications

Sandwich (wafer) type flow sensor with many different process connection alternatives for all sterile application needs, such as the pharmaceutical and food/beverage area. Flowmeter housing is made of stainless 316 and lining is Teflon (PTFE).



	L	H	C
DN15	180	250	100
DN20	180	250	100
DN25	180	250	114

Connection Models

- Clamp Connection,
- Sleeve Connection,
- Ask for other connection types.



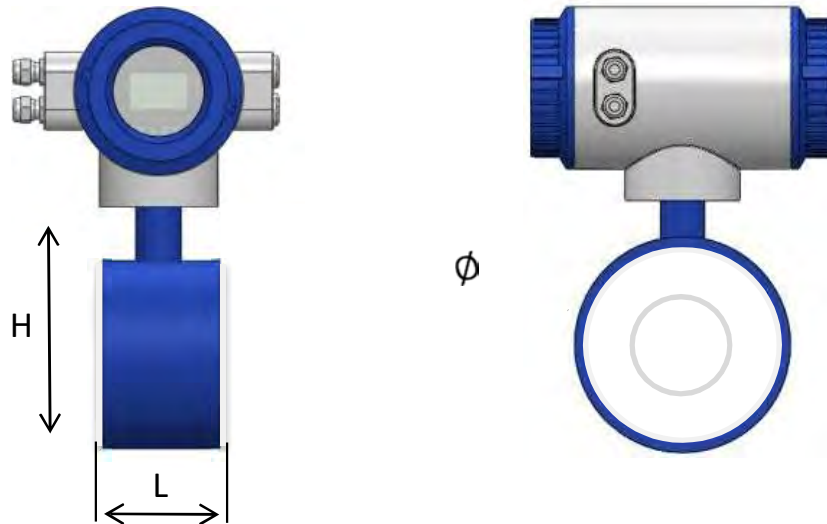
ETRANS-M 610R



ETRANS-M 610K

ETRANS-M 110 Teflon (PTFE)

ETRANS-M 110 Sandwich (Wafer) type is an economical model. Lining is Teflon (PTFE). Wall mounting (remote) and compact options are available.



Diameter		Dimensions (mm)				Approx.Weight (kg)
DN	STANDARD PN (bar)	L		H	Ø	
		DIN	ISO			
25	40	54	54	150	66	1,75
40	40	78	78	160	82	2,75
50	40	100	100	170	101	4,25
80	40	150	150	180	130	5,75
100	40	200	200	200	156	10,50

1- Remote (Wall-mount) Transmitter



2- Compact Type Transmitter



ETTRANS-M 210 Ebonite (Hard Rubber)



Nominal Diameter		Dimensions (mm)				Approximate Weight (kg)
DN	STANDARD PN (bar) *	L		H	Ø	
		DIN	ISO			
15	40	150	150	125	95	4,00
20	40	150	150	125	105	4,50
25	40	150	200	141	115	5,00
32	40	150	200	157	140	6,00
40	40	150	200	166	150	7,00
50	40	200	200	185	165	11,00
65	16	200	200	199	185	12,00
80	40	200	200	209	200	14,00
100	16	250	250	237	220	15,00
125	16	250	250	266	250	19,00
150	16	300	300	299	285	22,00
200	10	350	350	357	340	34,00
250	10	400	400	405	395	48,00
300	10	500	500	455	445	58,00
350	10	500	550	507	505	78,00
400	10	600	600	563	565	101,00
450	10	600	**	613	615	111,00
500	10	600	**	667	670	130,00
600	10	600	**	777	780	165,00
700	10	700	**	893	895	248,00
800	10	800	**	1009	1015	331,00
900	10	900	**	1111	1115	430,00
1000	10	1000	**	1221	1230	507,00
1200	10	1200	**	1325	1455	625,00

* Please ask for other pressure classes.

** Ask for the dimensions.

*** We reserve the right to make changes in size without notice.

ETRANS-M INSTALLATION RULES

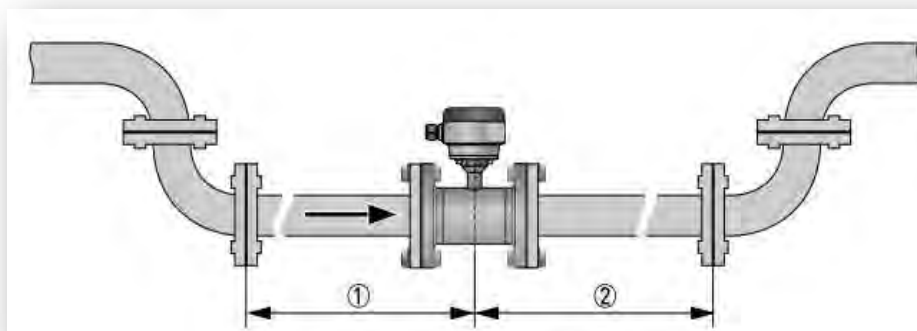


Figure 1: Recommended Inlet and Outer Pipe

$1 \geq 5 \text{ DN}$

$2 \geq 2 \text{ DN}$

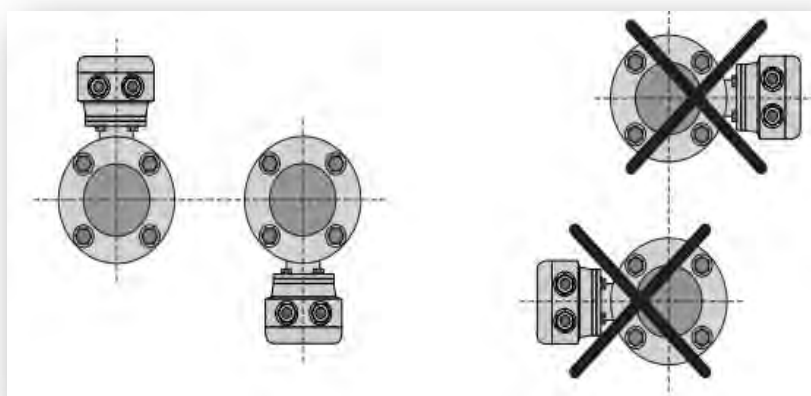


Figure 2: Mounting Positions

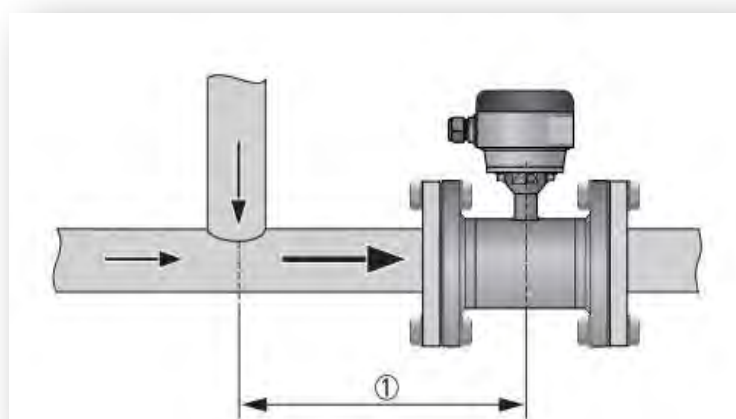


Figure 3: T Connection

$1 \geq 10 \text{ DN}$

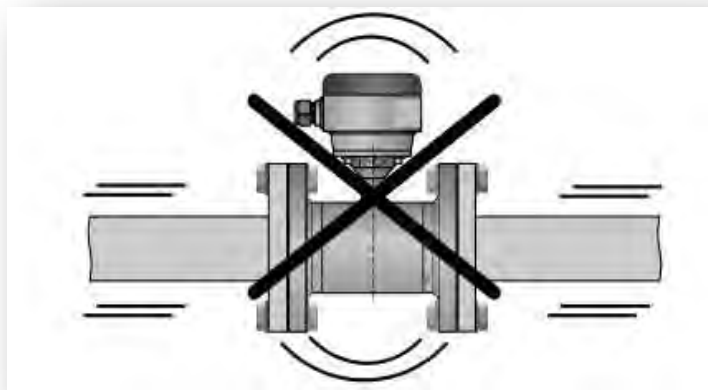


Figure 4: Avoid Vibrations

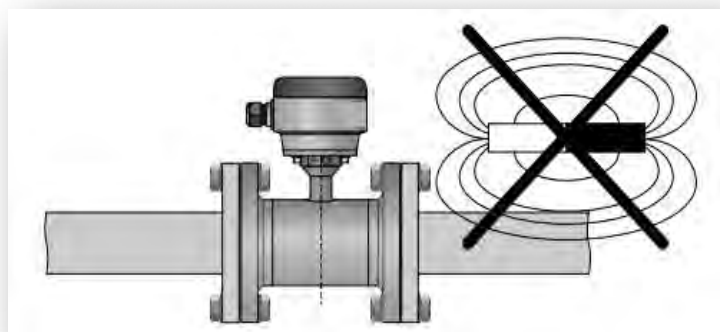


Figure 5: Avoid Magnetic Inductive Zone

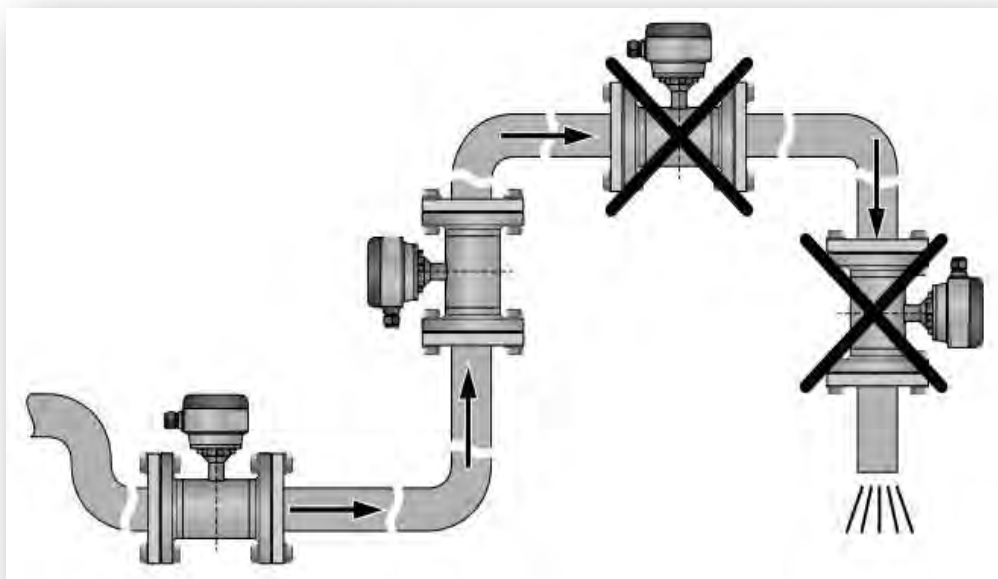


Figure 6: Mounting in Bent Pipes

ETRANS-M INSTALLATION RULES

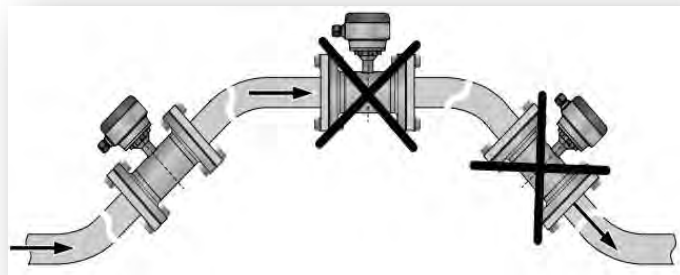


Figure 7: Mounting in Bent Pipes

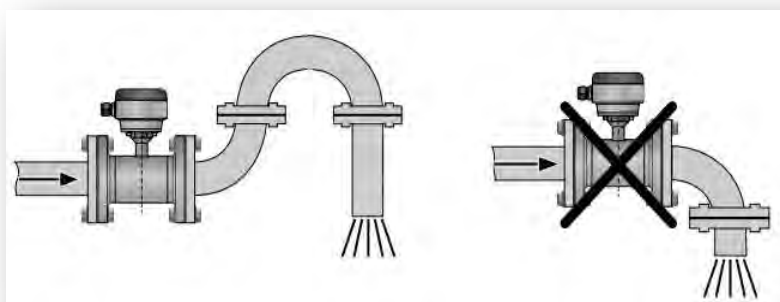


Figure 8: Mounting in Open End Lines

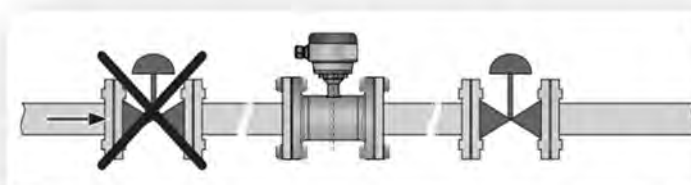


Figure 9: Installation With Control Valve

ETRANS-M INSTALLATION RULES

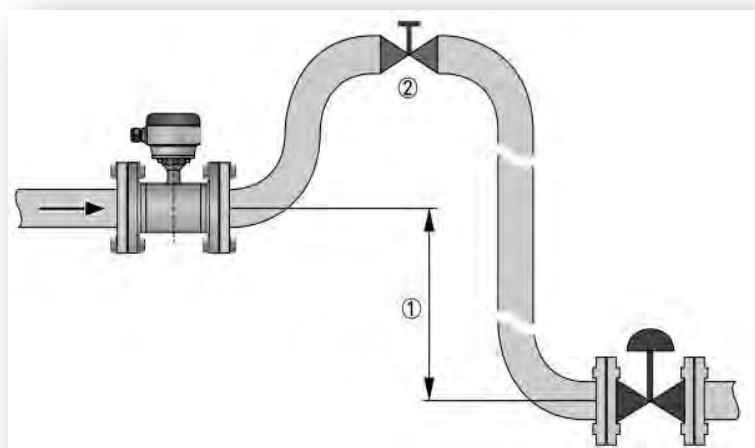


Figure 10: Installation with Air Evacuation

1 \geq 5 m

2 : Ventilation Point

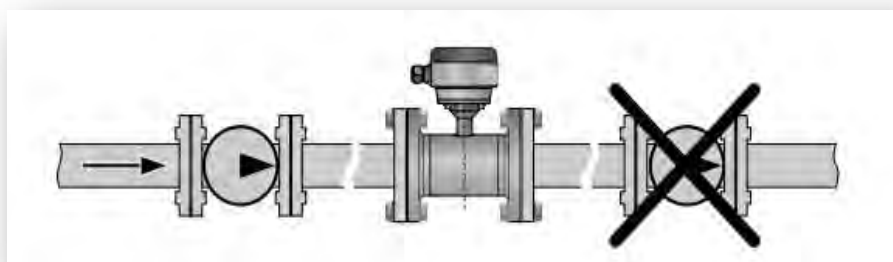


Figure 11: Installation with Pump

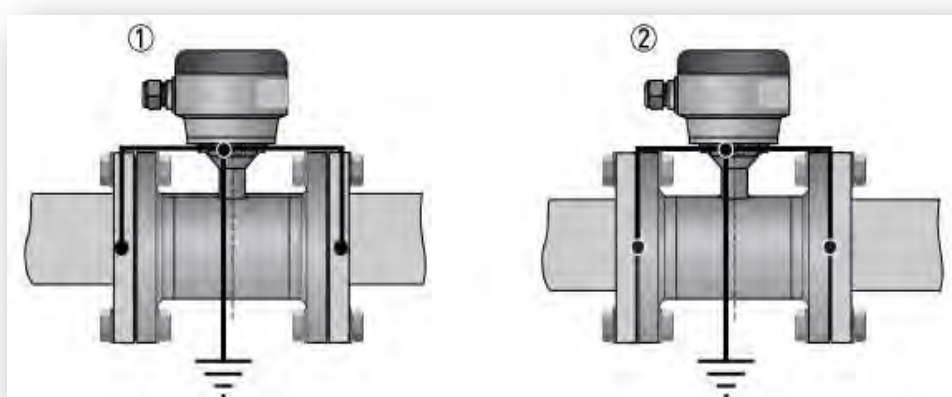


Figure 12: Earthing Ring (For Plastic Pipes)

SOME INSTALLATION SAMPLES



SOME INSTALLATION SAMPLES



SOME INSTALLATION SAMPLES



Enlsan Calibration Station for Diameters DN2,5....DN40