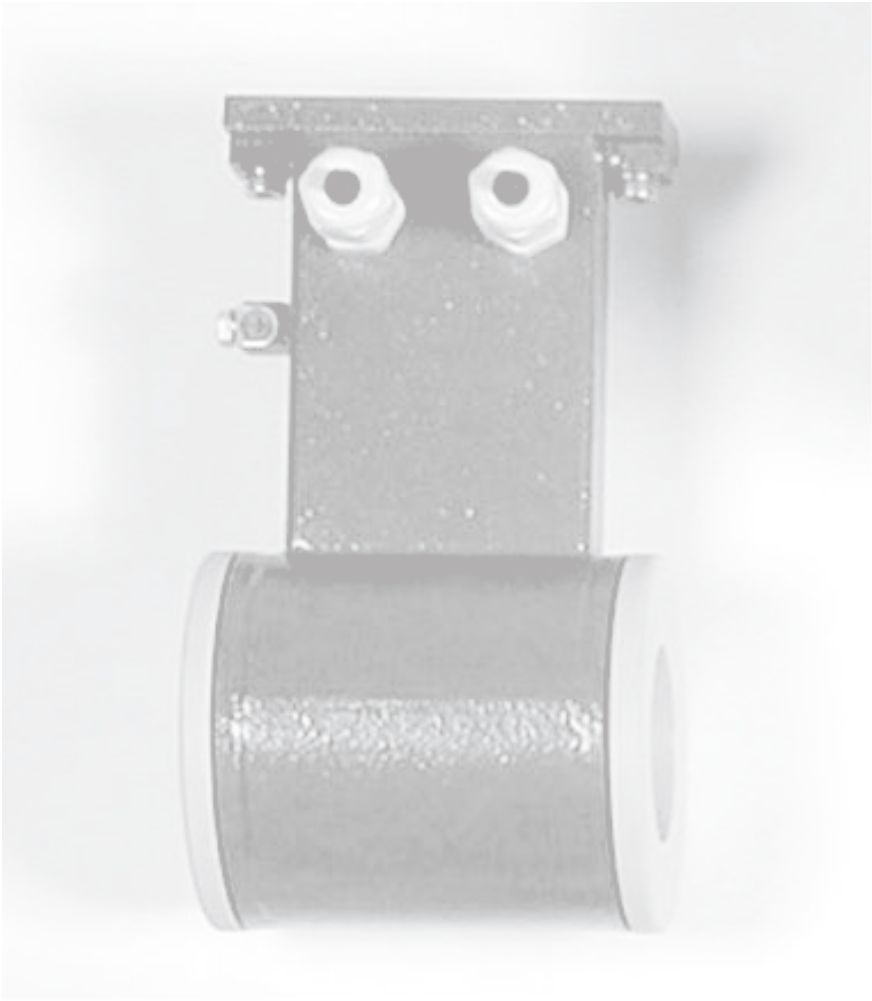
INSTRUCTION MANUAL

MS 1000



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INTRODUCTION

- This manual is integral part of the product. Read carefully the instructions contained since it contains important indications for the safety of use and of maintenance.
- The technical information and the relative products of this manual could be modified without any previous notice.
- The flow meter must be used for the use it has been built for. The improper use, possible tampering of the instrument or parts of it and substitutions of any components not original, makes the warranty to decay automatically.
- The manufacturer is considered responsible only if the instrument is used in its original configuration and setting.
- The flowmeter makes measures of liquids with conductivity greater than 5µS/cm; it consists of a sensor (described in this manual) and a converter, for it see the manual provided.
- If the sensor is supplied in compact version to the converter, consider the operating temperatures more restrictive page 6, otherwise refer to the respective manuals.
- When transporting, unpacking and handling the flowmeter, be careful and care.
- In the case of prolonged storage and of transport, use and store in the original container in a dry place, do not place more than 3 packs one above the other.
- It is possible pallets storage and transport (in case of wooden crates do not place one above the other).
- For the cleaning of the device use only a damp cloth, and for the maintenance/repairs, contact the customer service.
- For the disposal of the device and of the packaging make strict reference to the regulations
- It is forbidden the reproduction of the present manual and of possible software supplied with the instrument.

START UP AND MAINTENANCE OF THE INSTRUMENTS

- Before starting up the instrument, always make a sure connection to ground as suitable to page 5.
- Verify periodically: the cables integrity, the tightening of the sealing elements (cable glands, covers, etc.), the mechanical fixing of the instrument on the pipe or on the wall stand

SAFETY

Before using the instrument, always make a sure connection to the ground

Avoid any attempt to repair the instrument. If the instrument is not functioning properly, please call the nearest assistance service

Pay maximum attention during the operations

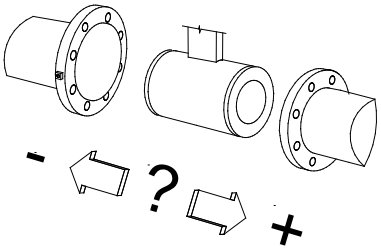
ATTENTION !!!

DANGER !!!

GENERAL INFORMATION ON THE SENSORS INSTALLATION

Flow direction

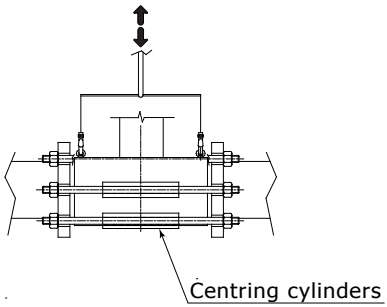
Before install the sensor locate the direction of the liquid in the piping
The sign of the flow rate is positive, when the flow direction is from – to + as printed on the tag plate.
If after the installation, for plant request becomes necessary reverse the sign of the flow, it is enough reverse the sign of the coefficient KA



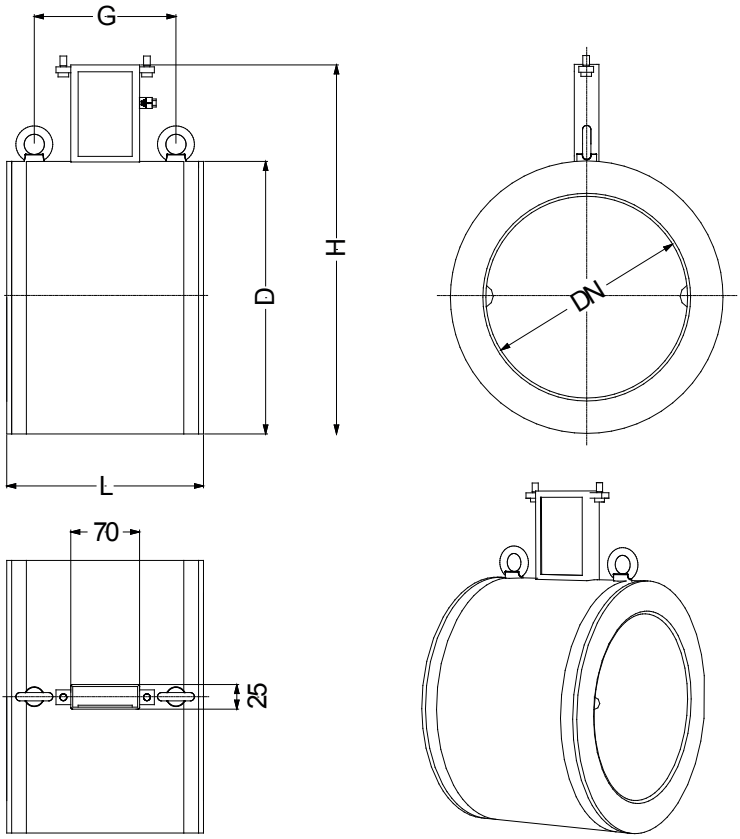
Lifting sensors

The sensors with eyebolts must be lifted by the method shown below.
The eye-bolt are measured to sustain exclusively the weight of the meter

N.B.: For sensor MS 1000 we recommend the use of centring cylinders



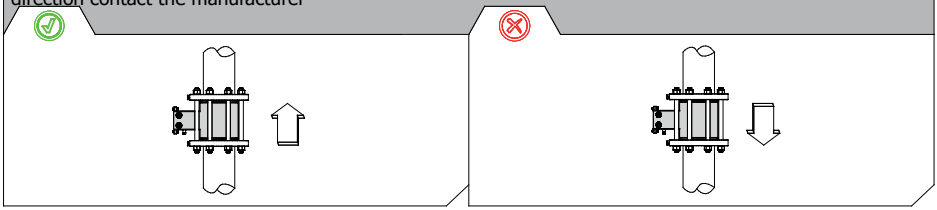
OVERALL DIMENSIONS



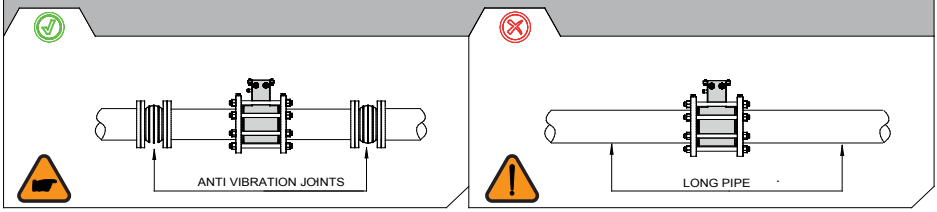
mm (inches)	DN													
	25 (1″)	**32 (1″ 1/4)**	**40 (1″ 1/2)**	**50 (2″)**	**65 (2″ 1/2)**	**80 (3″)**	**100 (4″)**	**125 (5″)**	**150 (6″)**	**200 (8″)**	**250 (10″)**	**300 (12″)**	**350 (14″)**	**400 (16″)**
L	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0
	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-3 (-0.12)	-5 (-0.20)	-5 (-0.20)	-5 (-0.20)	-5 (-0.20)
	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	150 (5.90)	150 (5.90)	150 (5.90)	180 (7.09)	180 (7.09)	200 (7.87)	250 (9.84)	300 (11.81)	350 (13.78)	400 (15.75)
H	147 (5.79)	153 (6.02)	161 (6.34)	177 (6.97)	199 (7.83)	209 (8.23)	239 (9.40)	263 (10.35)	291 (11.46)	362 (14.25)	417 (16.42)	467 (18.39)	527 (20.75)	579 (22.80)
D	62 (2.20)	67 (2.44)	78 (2.76)	92 (3.39)	108 (4.25)	118 (4.65)	148 (5,83)	172 (6.77)	200 (7.87)	271 (10.67)	326 (12.83)	376 (14.80)	436 (17.17)	488 (19.21)
G	-	-	-	-	-	-	-	-	-	144 (5.67)	194 (7.64)	244 (9.60)	294 (11.57)	344 (13.54)
Weight kg (lbs)	1.2 (2.64)	1.6 (3.52)	1.8 (3.96)	2 (4.4)	3.6 (7.92)	3.8 (8.36)	5 (11)	7.8 (17.16)	8.2 (18)	18.2 (40)	24 (53)	27 (59)	32 (70)	39 (86)
Usable flanges	PTFE-EBONITE: PN10, PN16, PN25, PN40, ANSI150, ANSI,300 PP: PN10, PN16, ANSI150									PTFE-EBONITE: PN10, PN16, ANSI150				

SHREWDNESS AND PRECAUTIONS

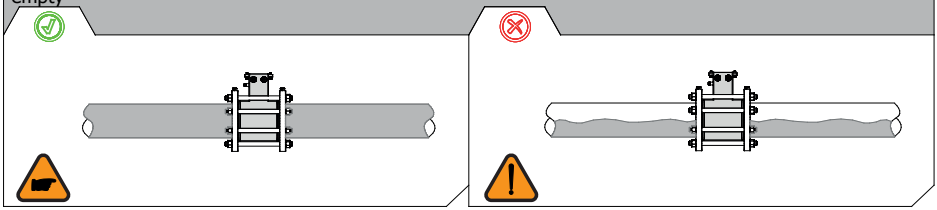
In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer



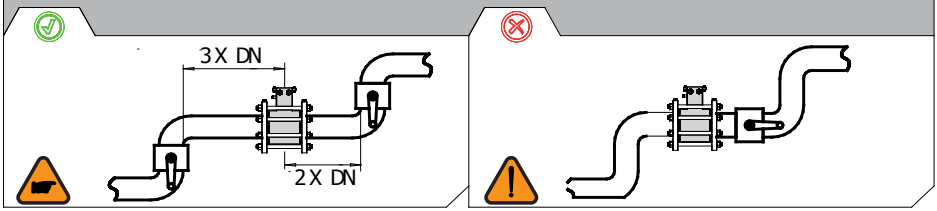
For installations in long pipe lines, please use anti vibration joints



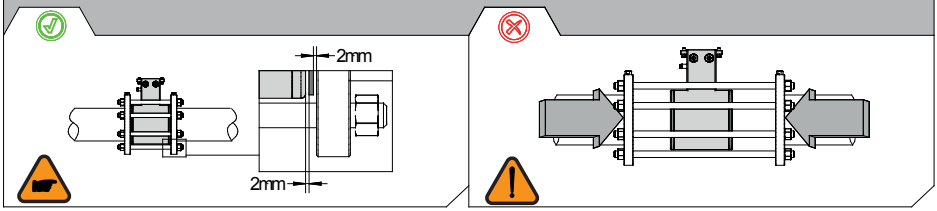
Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty



Install the sensor away from bends and hydraulic accessories



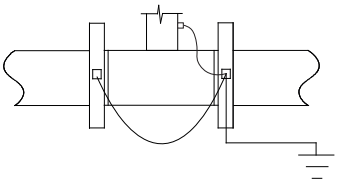
Avoid positioning flanges by tigthening the nuts.



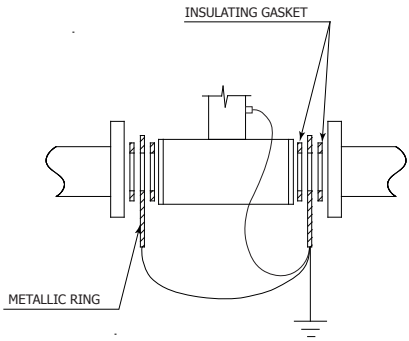
GROUNDING INSTRUCTIONS

For correct operation of the meter is NECESSARY that the sensor and the liquid are equipotential, so ALWAYS connect the sensor and converter to ground:

GROUNDING WITH METALLIC PIPE



GROUNDING WITH INSULATING PIPE



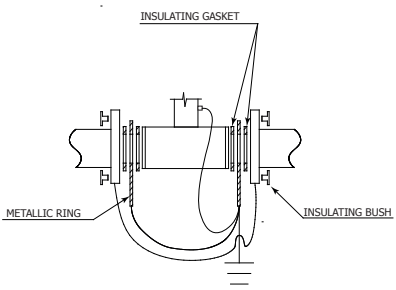
If the sensor has to be mounted on a pipe made of an insulating materials necessary:

- Install two metallic ring between the sensor flanges and the counter flanges of the pipe line

or

- Use a sensor with the additional grounding electrode

GROUNDING WHEN THERE IS A CATHODIC PROTECTION OVER THE PIPE



If the sensor must be install in the piping with a cathodic protection, is necessary:

- using insulating bushes to isolate the bolts
- Grounding metallic rings should be provided to ground the liquid using insulating gasket between the rings

IMPORTANT: The ripple of DC power source used for cathodic protection shall be = 0

OPERATING TEMPERATURES

	EBONITE LINING				PP LINING				PTFE LINING			
	Liquid temperature		Ambient temperature		Liquid temperature		Ambient temperature		Liquid temperature		Ambient temperature	
	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
°C	0	80	-5	60	0	60	0	60	-20	130	-10	60
°F	30	176	23	140	32	140	32	140	-4	266	14	140

TORQUES (NM) FOR WAFER SENSOR'S BOLTS

OPERATIVE PRESSURE			
Kpa	**1600**		**4000**
psi	**260**		**600**
DN	**EBON.**	**PP**	**PTFE**
25		19	25 [32]
32		28	43 [40]
40		36	53 [63]
50		52	68 [35]
65		75	45 [53]
80		41	53 [68]
100		56	83 [94]
125		71	112 [130]
150		106	135 [113]
200	288 (433)		
250	408 (455)		
300	510 (683)		
350	598 (946)		
400	821 (911)		

- Tighten uniformly in diagonally opposite sequence
- The torque listed in tab are applicable to flanges: EN1092-1, DIN2501, BS4504, ANSI B16.5, JIS
- Is recommended the use of gaskets DIN 2690
- (***)= FOR SENSORS ON ANSI 150 FLANGES
- [***]= FOR SENSORS ANSI 300 FLANGES

PED CERTIFIED INSTRUMENTS

These devices will be delivered with specific indications, in particular:

- On the instrument Label plate: a reference to the notified body (PED II only)
- On the Declaration of Conformity: a reference to the PED directive, to the harmonized standard connected to it and also a reference to the notified body (only if it's a PED II device)
- Addendum: The Risk analysis, a document to which it's important to pay the utmost attention

MANUAL REVIEWS

REVIEW	DATE	DESCRIPTION
MAN_MS1000_EN_IT_NL_R01	25/05/2021	INTEGRATION: NOMENCLATURE UPDATED

At the end of its lifetime, this product shall be disposed of in full compliance with the environmental regulations of the state in which it is located.