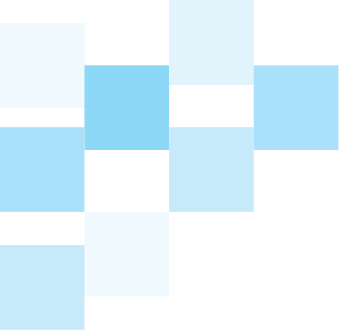


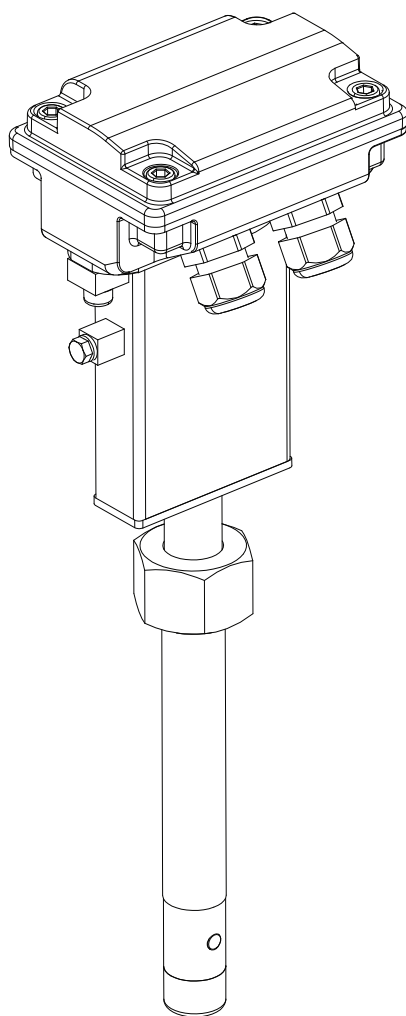


ISOMAG

The friendly magmeter

DATA SHEET

MS 3780



ISOIL 
I N D U S T R I A



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TECHNICAL DATA

OVERALL FEATURES

Size for pipe line Ø	☐ Size 1 Ø ≤ 500mm ☐ Size 2 Ø ≤ 1000mm ☐ Size 3 Ø ≤ 2000mm
Minimum conductivity	☐ 5 µS/cm
Humidity Range	☐ 0÷100% (IP 67)
Accuracy	☐ See table pag. 10
CE Certification	☐ Yes

STANDARD FEATURES

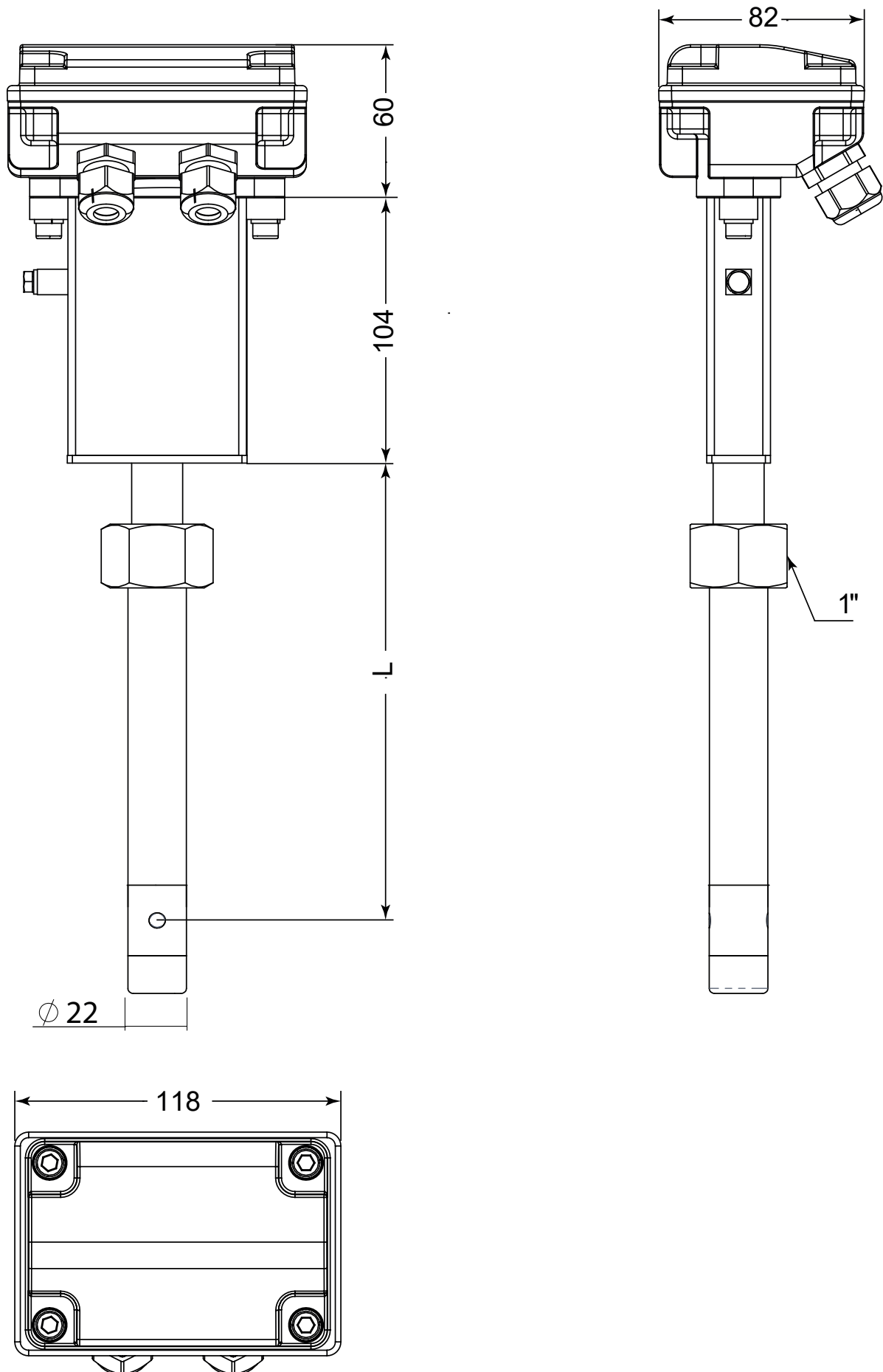
Body material	☐ Stainless steel AISI316
Nominal pressure	☐ 1600 kPa
Process connection	☐ 1" Threaded end
Version – protection rating	☐ Compact IP67
Lining material/gasket	☐ PEEK/FPM
Liquid temperature	☐ -20°C ÷ 100°C compact version ☐ -20°C ÷ 130°C separate version
Electrodes material	☐ Hastelloy C276

OPTIONAL FEATURES

(CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)

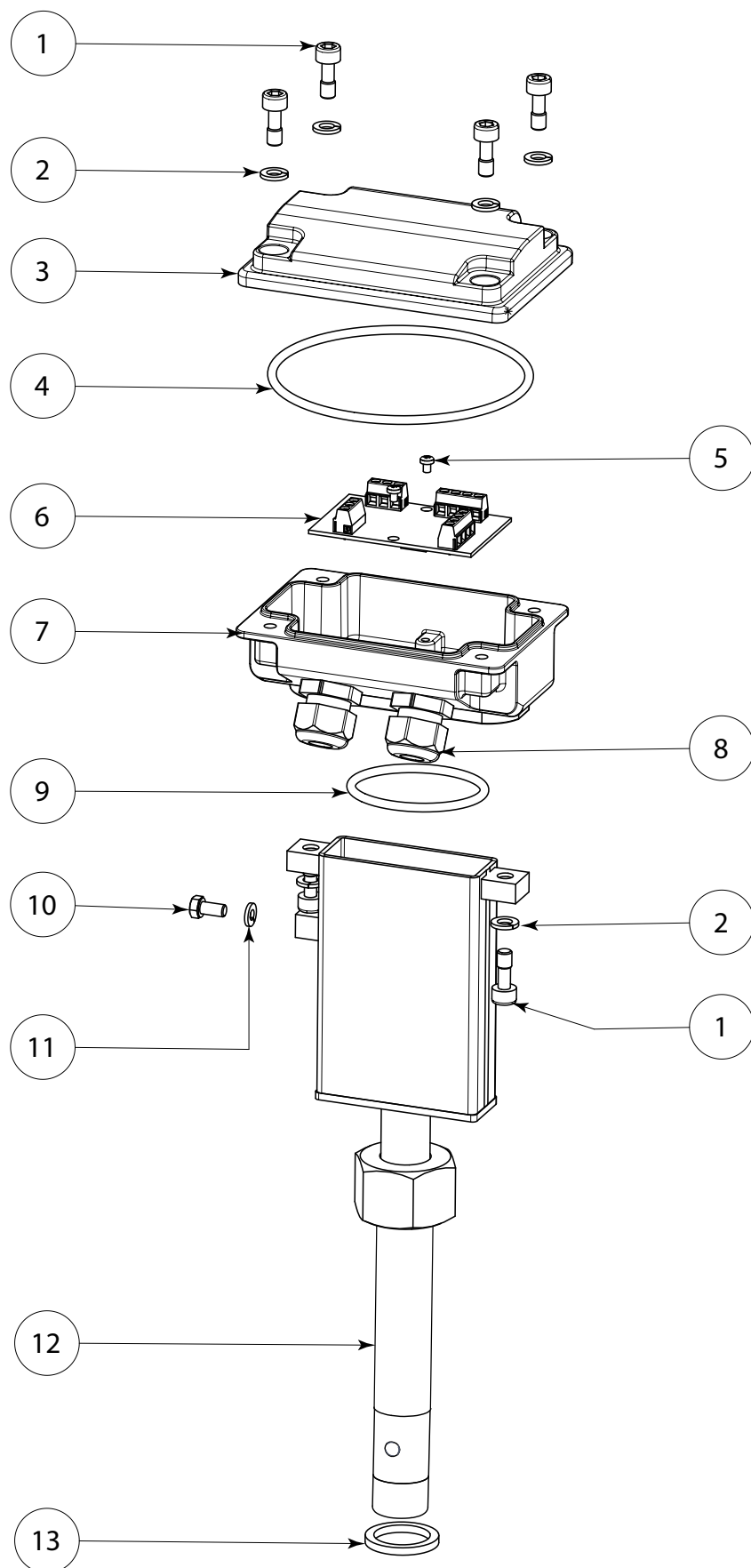
Size for pipe line Ø	☐ Other on request
Nominal pressure	☐ Others on request
Process connection	☐ Others on request
Electrodes material	☐ Others on request
Version – protection rating	☐ Separate version (max 20m) – IP 68 ☐ Separate version (max 500 m), with preamplifier – IP 67 (OPT. IP 68)

OVERALL DIMENSIONS



LAYOUT

POS.	DESCRIPTION
1	SCREW M6x16
2	GROWER Ø6
3	JUNCTION BOX COVER
4	O-RING 4400
5	SCREW M4x6
6	PCB FOR SEPARATE VERSION (NORMAL OR PREAMPLIFIER)
7	JUNCTION BOX MAIN HOUSING
8	CABLEGLANDE PG9
9	O-RING 155
10	SCREW M5x10
11	GROWER Ø5
12	SENSOR MS3770
13	GASKET PTFE

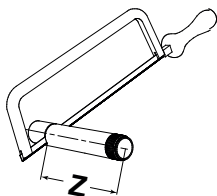


INSTALLATION

- Cut the Ø 1" jacket as in picture 1 (dimensions in pic. 6)
- **ATTENTION:** consider the necessary over-metal for the welding operation (pic. 2)

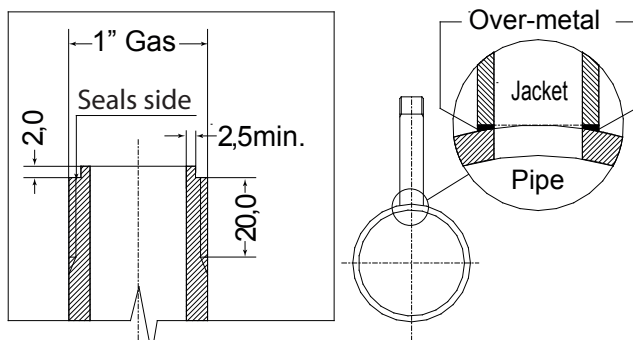
Z=L-S-1/8D-32

Pic. 1



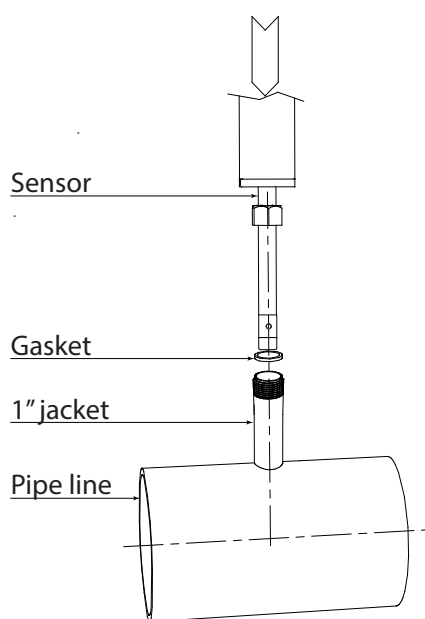
- weld the jacket to the pipe line

Recommended operative dimensions for 1" screw



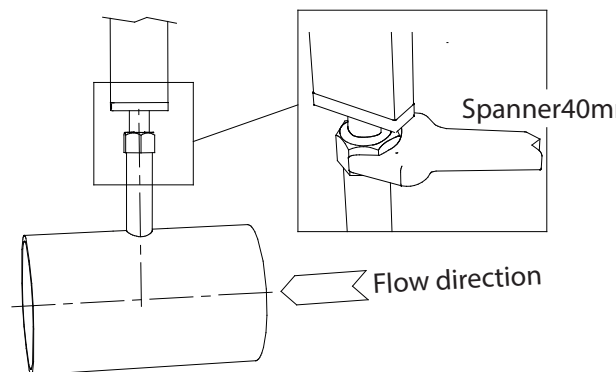
Pic. 2

- Place gasket into the sensor
- Insert the sensor into the Ø 1" nipple

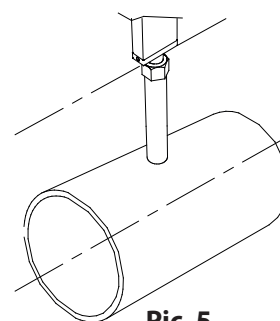


Pic. 3

- Align longitudinally the connector box with the pipe line axis (pic. 5)
- Tighten the nut with a spanner keeping the alignment (pic. 4). The fixing of the nut must guarantee the sealing of the gasket



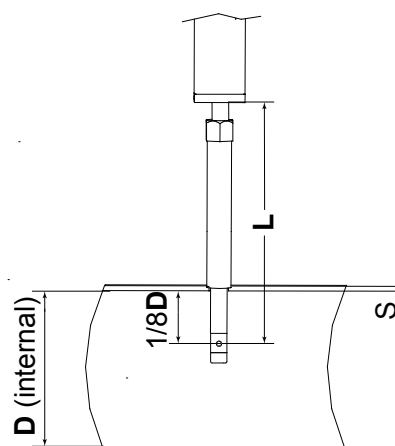
Pic. 4



Pic. 5

SIZE	DN RANGE	L
SIZE 1	DN 80 up to DN 500	176
SIZE 2	DN 80 up to DN 1000	244
SIZE 3	DN 80 up to DN 2000	462

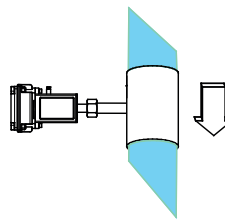
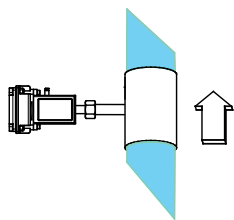
Sensor installed



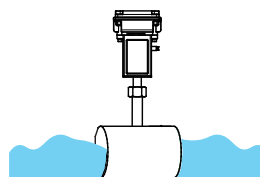
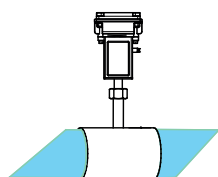
Pic. 6

INSTALLATION RECOMMENDATIONS

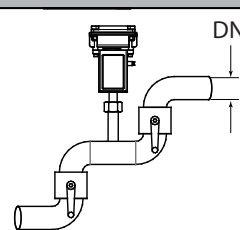
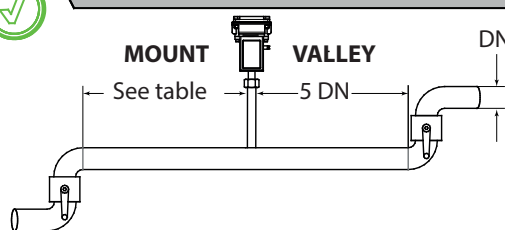
In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer



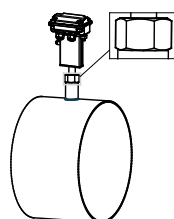
Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty



Install the sensor away from bends and hydraulic accessories



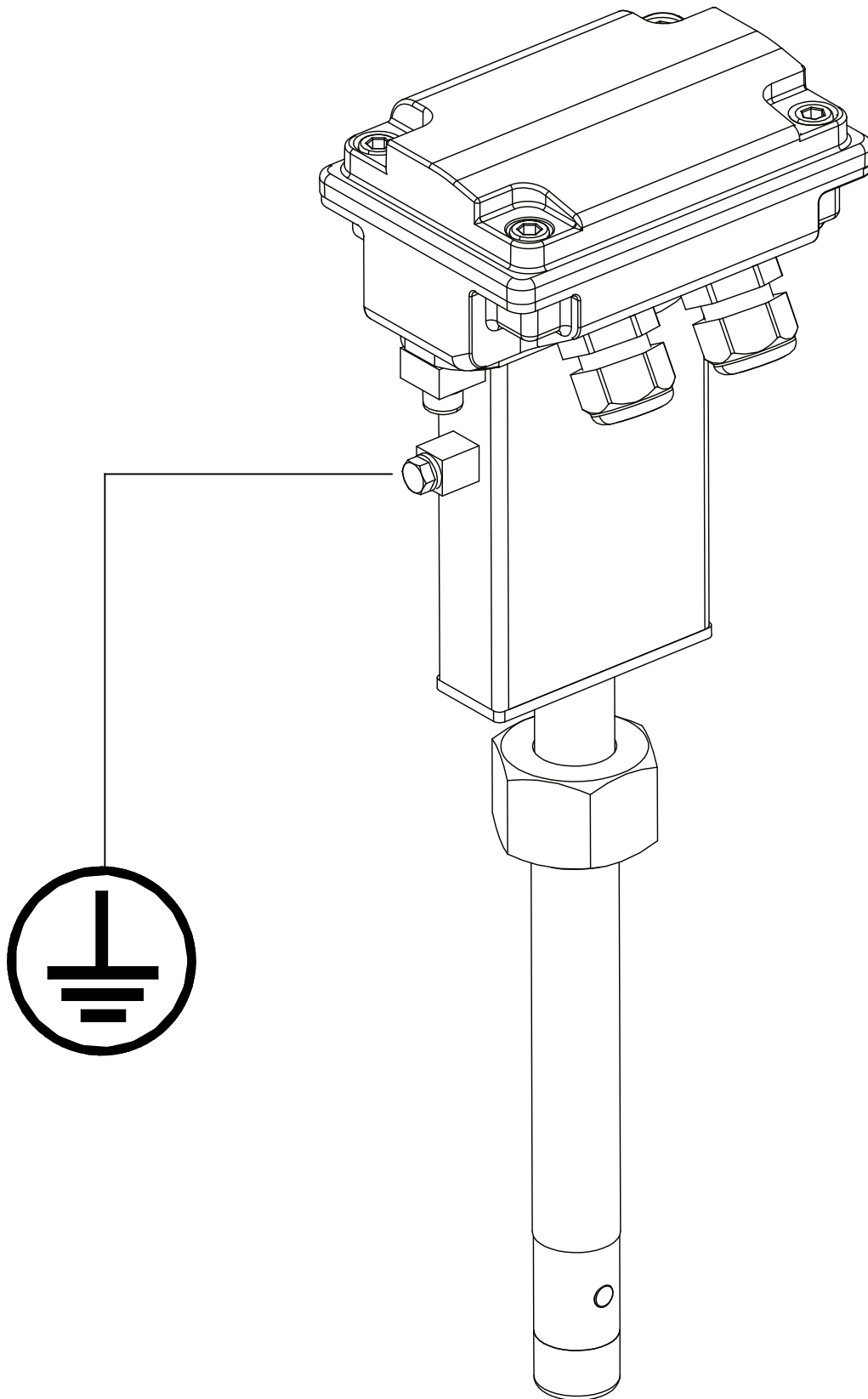
Install the sensor away from bends and hydraulic accessories



Min upstream straight length expressed in multiples of pipe diameter. Table according data from UNI10727_1998

Disturbance upstream from the measuring point	Valid for a measurement at the point of mean axial velocity	Valid for a measurement on the axis of the pipe
90° elbow or a t-bend	50	25
Several 90° coplanar bends	50	25
Several 90° non- coplanar bends	80	50
Total angle convergent 18 to 36°	30	10
Total angle divergent 14 to 28°	55	25
Fully opened butterfly valve	45	25
Fully opened plug valve	30	15

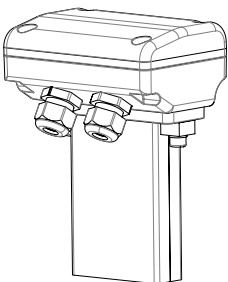
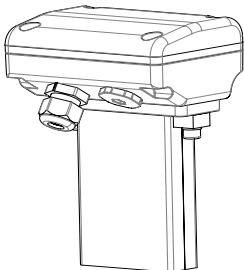
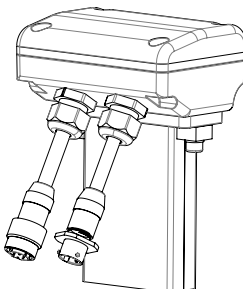
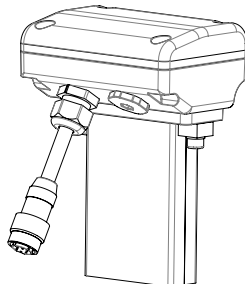
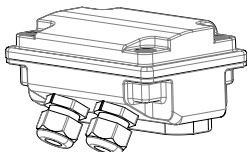
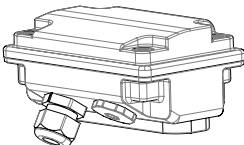
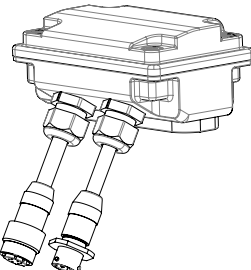
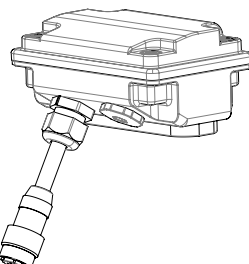
SENSOR GROUNDING



For the correct operation of the meter the sensor and liquid must be equipotential. ALWAYS connect sensor and converter to the ground.

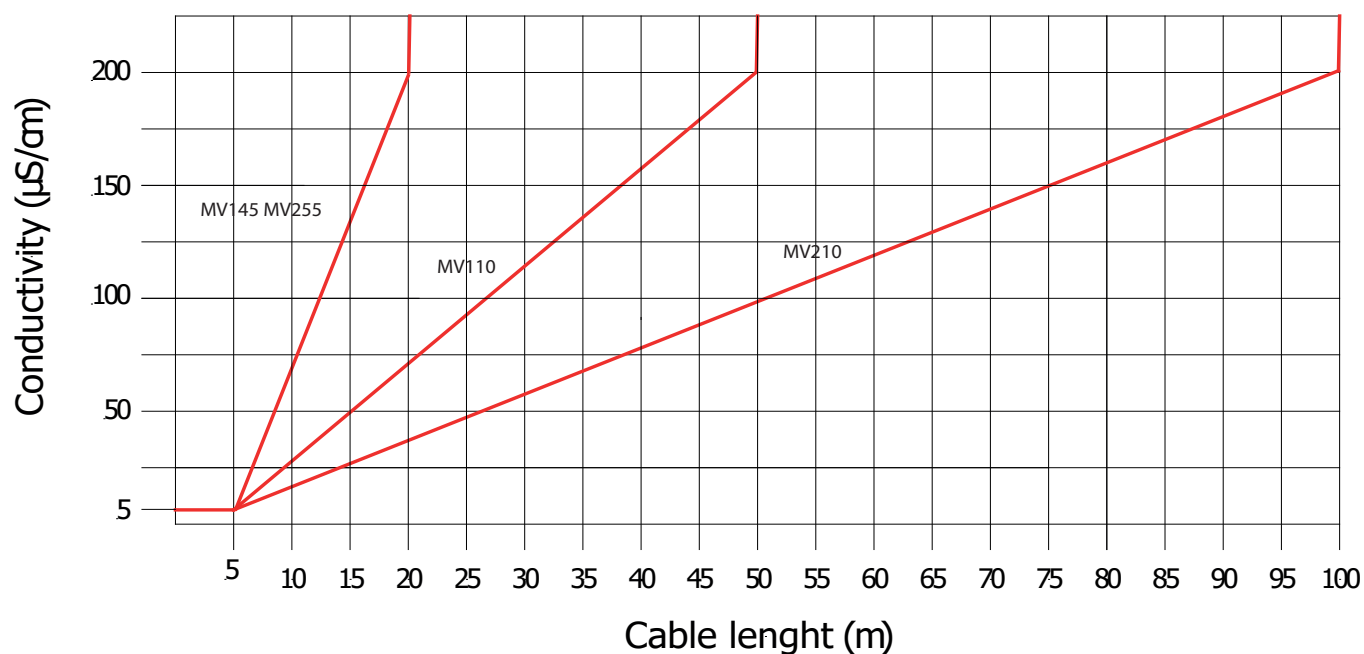
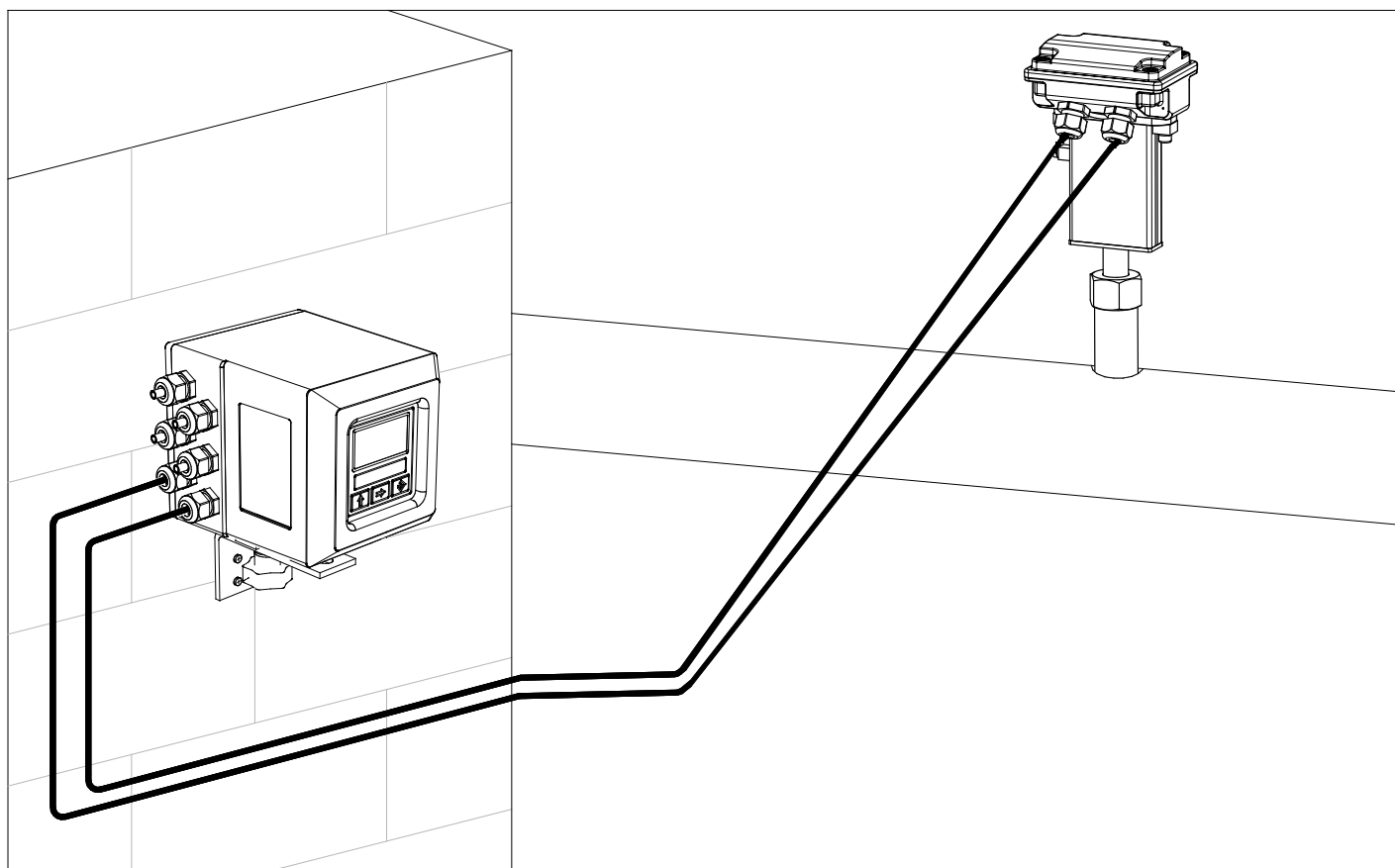
For grounding with a cathodic protection pipe, please contact the manufacturer.

SENSOR VERSIONS / JUNCTIONS BOX

	1	2	3	4
A PAINTED ALUMINIUM				
B AISI 304				

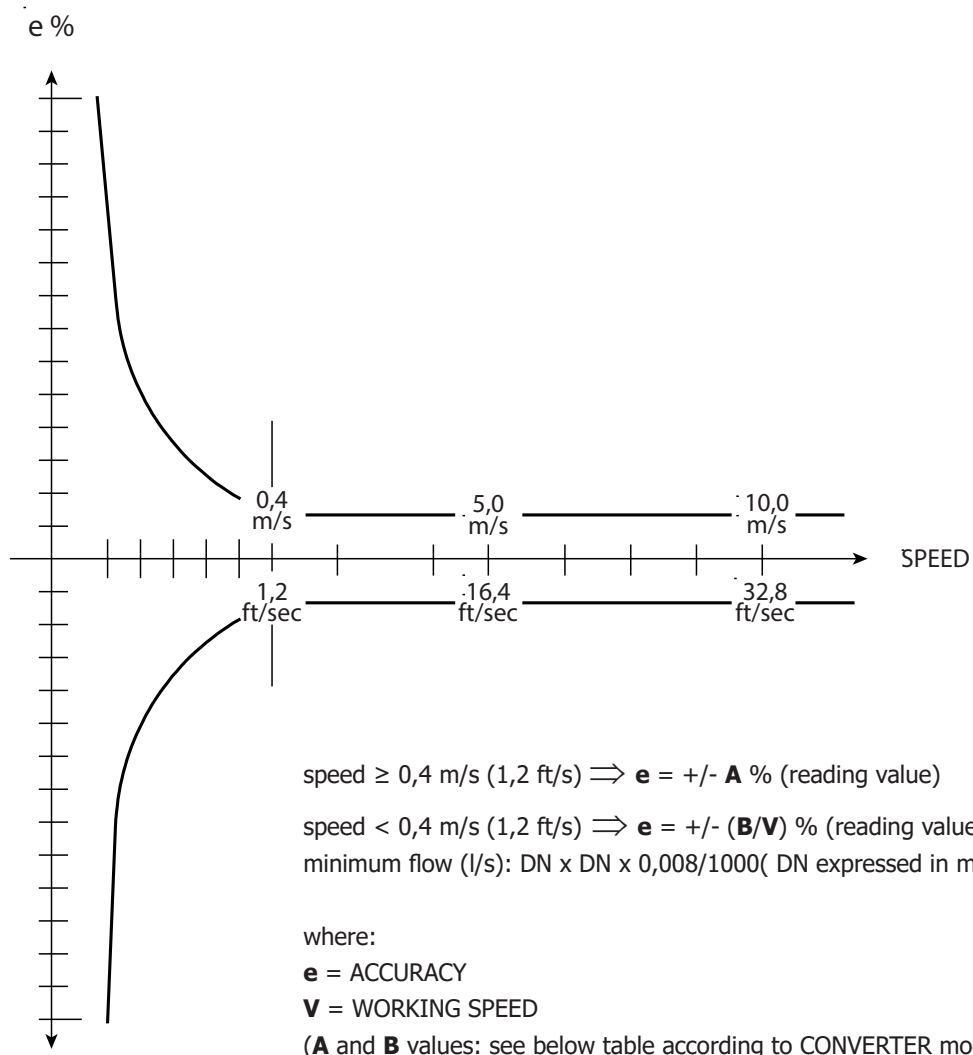
PRICE LIST OPTIONS	JUNCTION BOX TYPE (surface finish)
A	Without junction box, converter connected on the connections box
B	A-1 A-2 only for MV110
G	A-4
F	A-3
N	A-2 with preamplifier
Q	A-4 with preamplifier
U	B-1 (raw) B-2 only for MV110 (raw)
S	B-4 (raw)
T	B-3 (raw)
P	B-2 with preamplifier (raw)
R	B-4 with preamplifier (raw)
K	B-1 (polished) B-2 only for MV110 (polished)
Y	B-4 (polished)
W	B-3 (polished)
V	B-2 with preamplifier (polished)
J	B-4 with preamplifier (polished)

SEPARATE VERSION

**Note:**

- ❑ It is recommended to install the connection cables away from, or protect against sources of electromagnetic noise.
- ❑ The minimum conductivity of the liquid medium to ensure correct functionality of the empty pipe detection is 20 $\mu\text{S/cm}$

ACCURACY TABLE



A	B (speed m/s)	B (speed ft/s)
2	0,8	0,24

Reference conditions:

- Constant flow rate during the test
- Pressure: > 30 kPa
- Flow condition : fully developed flow profile
- Zero stability $\pm 0,005 \%$
- ID accuracy: mean value better than 1%, IDmin/IDmax > 0,98

HOW TO ORDER

CODE EXAMPLE		CODE/DESCRIPTION
Suitable for piping diameter		
1	1	Suitable for diameter < / = 500 mm.
	2	Suitable for diameter < / = 1000 mm.
	3	Suitable for diameter < / = 2000 mm.
	9	Suitable for diameter: to be specified
Sensor and electrodes material / lining		
A	A	Sensor material AISI316, Peek lining, electrodes in Hastelloy C276 , gasket in FKM , NEK in SS AISI 304
	Z	Sensor material: to be specified
Connection type		
1	1	1" female threaded connection
	0	Connection: to be specified
Version / Protection rate		
A	A	Compact execution, IP67 protection rate
	B	Separate version - Material JB: Alluminium - IP68 - for Cable C014 + C015/16
	F	Separate version - Material JB: Alluminium - IP68 - n.2 MIL connectors for Cable C015/016-CC/CS + CB
	N	Separate version - Material JB: Alluminium - IP67 - with Preamp for Cable C014 + C015/16
	L	Separate version - Material JB: Alluminium - IP68 - with Preamp - n.2 MIL connectors for Cable C015/016-CC/CS + CB
	U	Separate version - Material JB: 304 RAW - IP68 for Cable C014 + C015/16
	T	Separate version - Material JB: 304 RAW - IP68 - n.2 MIL connectors for Cable C015/016-CC/CS + CB
	P	Separate version - Material JB: 304 RAW - IP67 - with Preamp for Cable C014 + C015/16
	M	Separate version - Material JB: 304 RAW - IP68 - with Preamp - n.2 MIL connectors for Cable C015/016-CC/CS + CB
	K	Separate version - Material JB: 304 Polished - IP68 for Cable C014 + C015/16
	W	Separate version - Material JB: 304 Polished - IP68 - n.2 MIL connectors for Cable C015/016-CC/CS + CB
	V	Separate version - Material JB: 304 Polished - IP67 - with Preamp for Cable C014 + C015/16
	J	Separate version - Material JB: 304 Polished - IP68 - with Preamp - n.2 MIL connectors for Cable C015/016-CC/CS + CB

Complete code
example for
order

MS3780-1A1A

ISOIL INDUSTRIA S.p.A.

HEAD OFFICE	SERVICE
Via Fratelli Gracchi, 27 20092 Cinisello Balsamo (MI) Tel +39 02 66027.1 Fax +39 02 6123202 sales@isoil.it	service@isoil.it

If you want to find the complete list of our distributors access at the following link:
<http://www.isoil.it/en>



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