

ISOMAG TM

The friendly magmeter

PUSH INSERTION SENSOR

MS 3800



**INSERTION SENSOR FOR "PUSH" INSTALLATION INTO
PRESSURIZED LINES .**

DEDICATED SOFTWARE FOR LIQUID SPEED PROFILING

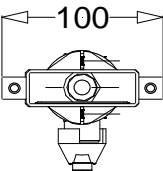
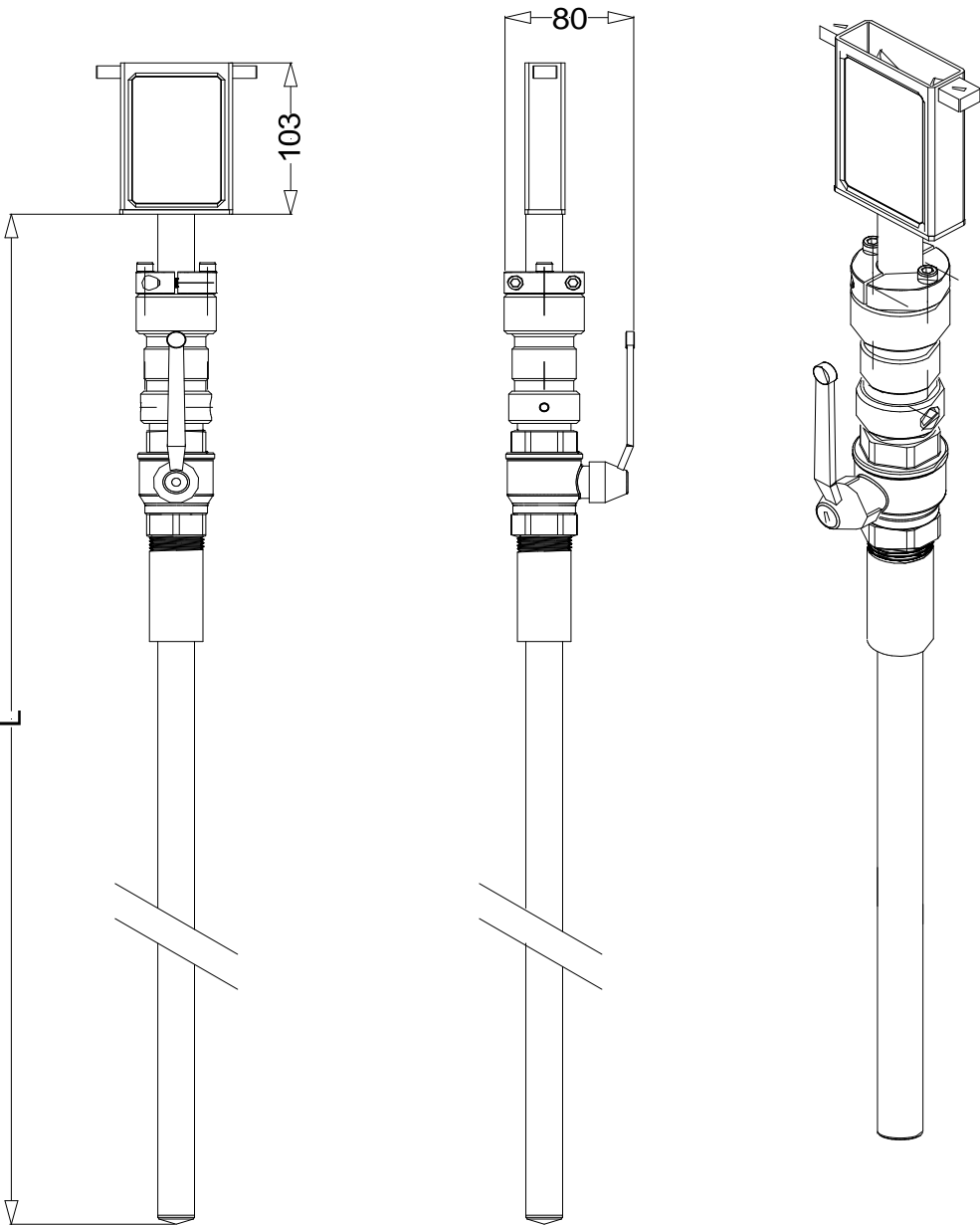
Warranty conditions are available on this website:
www.isomag.eu only in English version

ISOIL 
INDUSTRIA
The solutions that count

TECHNICAL DATA

Body material	<input type="checkbox"/> Stainless steel AISI 304 or 316 (optional)
Size for pipe line Ø	<input type="checkbox"/> Size 0 max insertion deep 150 mm <input type="checkbox"/> Size 1 max insertion deep 300 mm <input type="checkbox"/> Size 2 max insertion deep 500 mm <input type="checkbox"/> Size 3 max insertion deep 700 mm <input type="checkbox"/> Size 4 max insertion deep 1000 mm <input type="checkbox"/> Other on request
Nominal pressure	<input type="checkbox"/> 2500 kPa
Process connection	<input type="checkbox"/> Threaded end (with exclusion ball valve) <input type="checkbox"/> Other on request
Liquid temperature	<input type="checkbox"/> -20 °C ÷ 100 °C compact version <input type="checkbox"/> -20 °C ÷ 130 separate version
Lining material	<input type="checkbox"/> PTFE
Gasket material	<input type="checkbox"/> FPM (O-ring)
Electrode material	<input type="checkbox"/> Stainless steel AISI 316L <input type="checkbox"/> Other on request
Version – protection rating	<input type="checkbox"/> Compact version – IP 67 (OPT. IP 68) <input type="checkbox"/> Separate version (max 20m) – IP 68 <input type="checkbox"/> Separate version (max 500 m), with preamplifier – IP 67 (OPT. IP 68)
Optional	<input type="checkbox"/> Pressure sensor
Accuracy	<input type="checkbox"/> See table below

OVERALL DIMENSIONS



SIZE	MAX DEPTH	L
SIZE 0	150 mm	500
SIZE 1	300 mm	650
SIZE 2	500 mm	850
SIZE 3	700 mm	1050
SIZE 4	1000 mm	1350

INSTALLATION

INSTALLATION STEPS

- 1) Define the Z value length and lock the reference ring

AVAILABLE INSERTION DEEP	
Insertion	"Z" VALUE
1/8D	$L-(X+S+1/8D+110)$
1/2D	$L-(X+S+1/2D+110)$
7/8D	$L-(X+S+7/8D+110)$

S = THICKNESS OF PIPE
D = INTERNAL DIAMETER OF PIPE
Z = VALUE TO REACH THE CORRECT INSERTION DEEP
X = MAXIMUM VALUE OF MANIFOLD

- 2) Weld to the pipeline the Ø 1" hose-coupling .
ATTENTION: "X" dimension max 140 mm
- 3) Screw the 1" sensor's nipple to the 1" valve
- 4) Slowly open the valve
- 5) Insert the sensor up to the reference ring ("Z" dimension)
- 6) Verify the lineup (Fig. 2) : the sensor's junction box MUST be aligned with the pipe axis
- 7) Tighten the two screws of locking collar

SIZE	L	MAX DEPTH
SIZE 0	500	150 (X<140)
SIZE 1	650	300 (X<140)
SIZE 2	850	500 (X<140)
SIZE 3	1050	700 (X<140)
SIZE 4	1350	1000 (X<140)

Dimensions in mm

Fig. 1

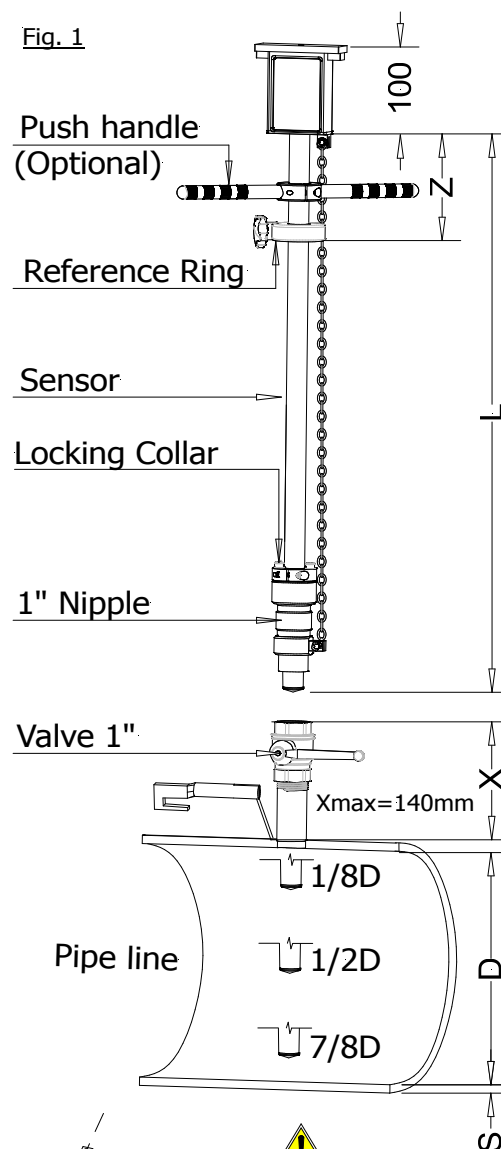
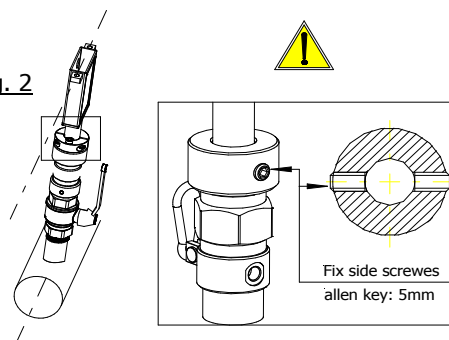


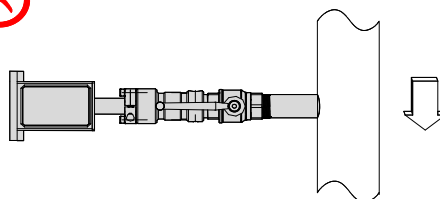
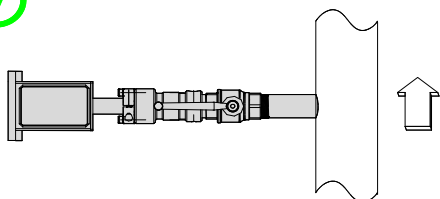
Fig. 2



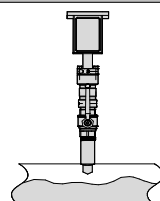
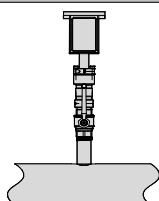
SAFETY WARNING : DON'T REMOVE OR MODIFY THE LOCKING CHAIN

INSTALLATION RECOMMENDATIONS

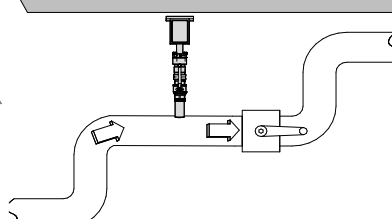
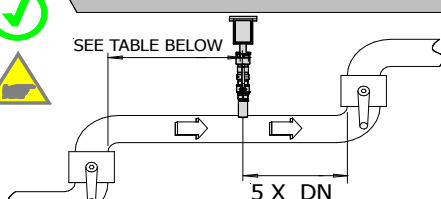
In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer



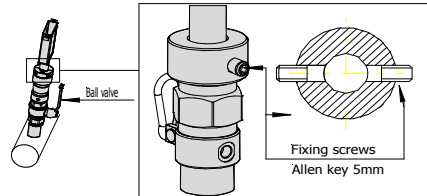
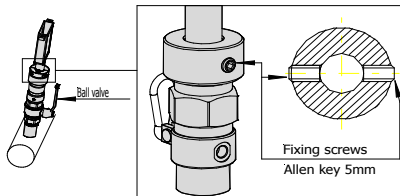
Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty



Install the sensor away from bends and hydraulic accessories



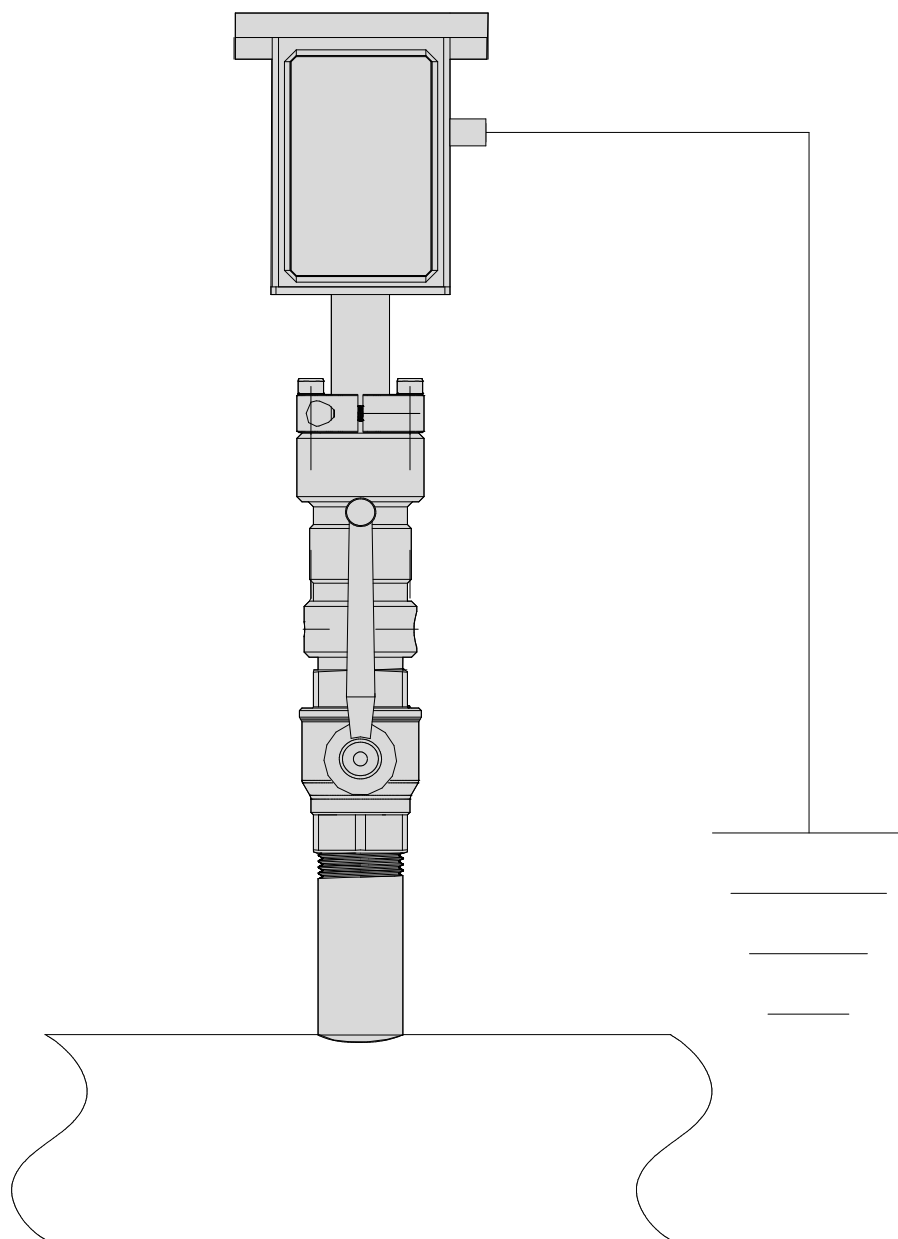
Tighten the two fixing screws before opening the ball valve



Disturbance upstream from the measuring point	Min upstream straight length in multiples of conduit diameter.	
	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

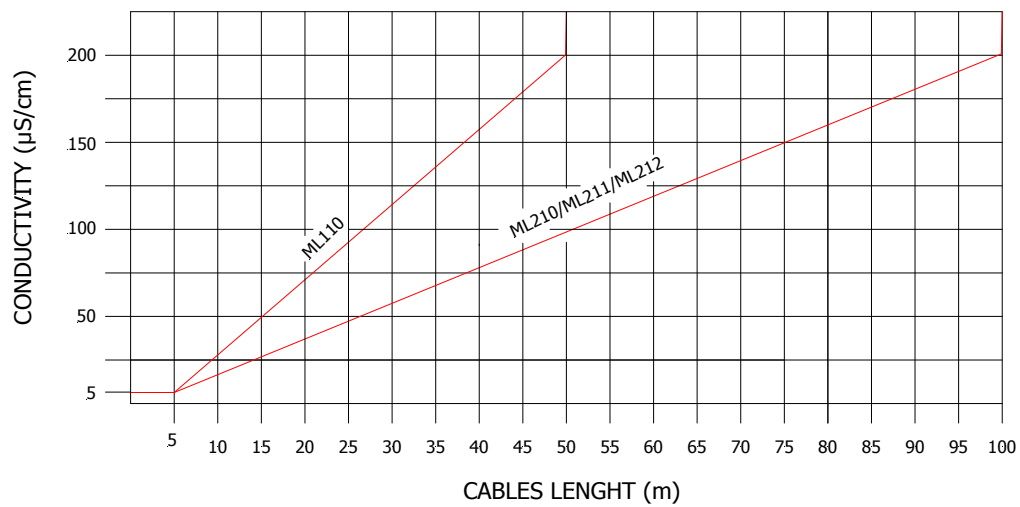
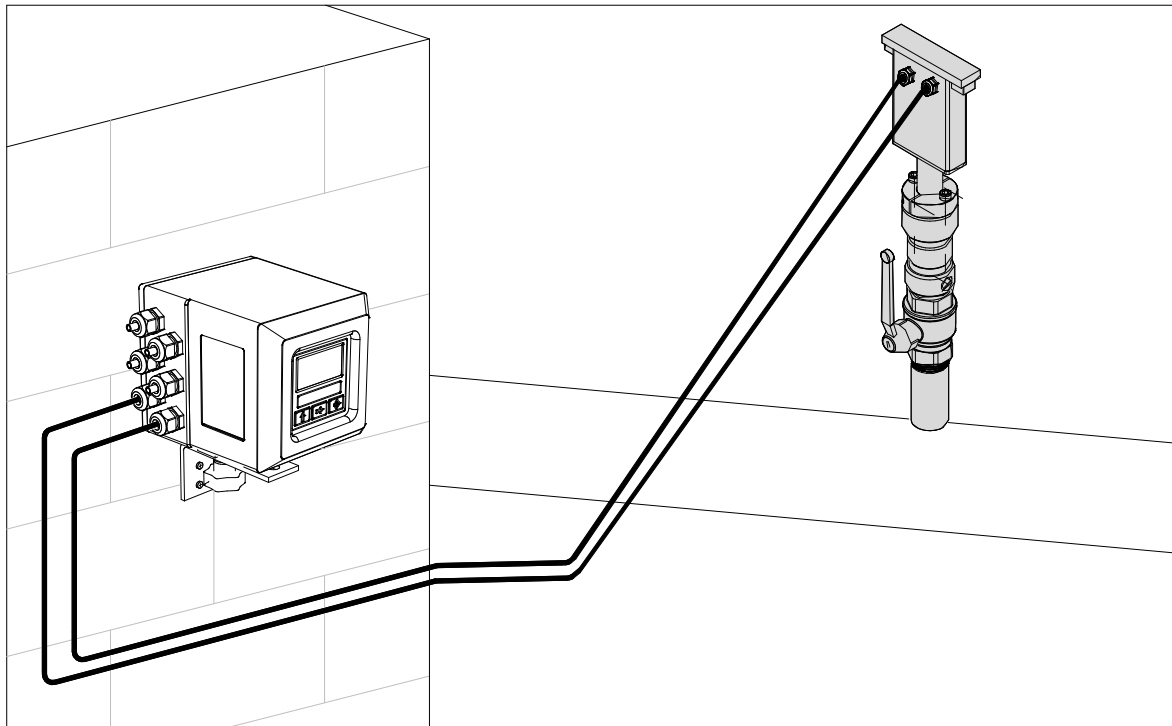
NOTE: According to data from UNI1072700_1998

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.**

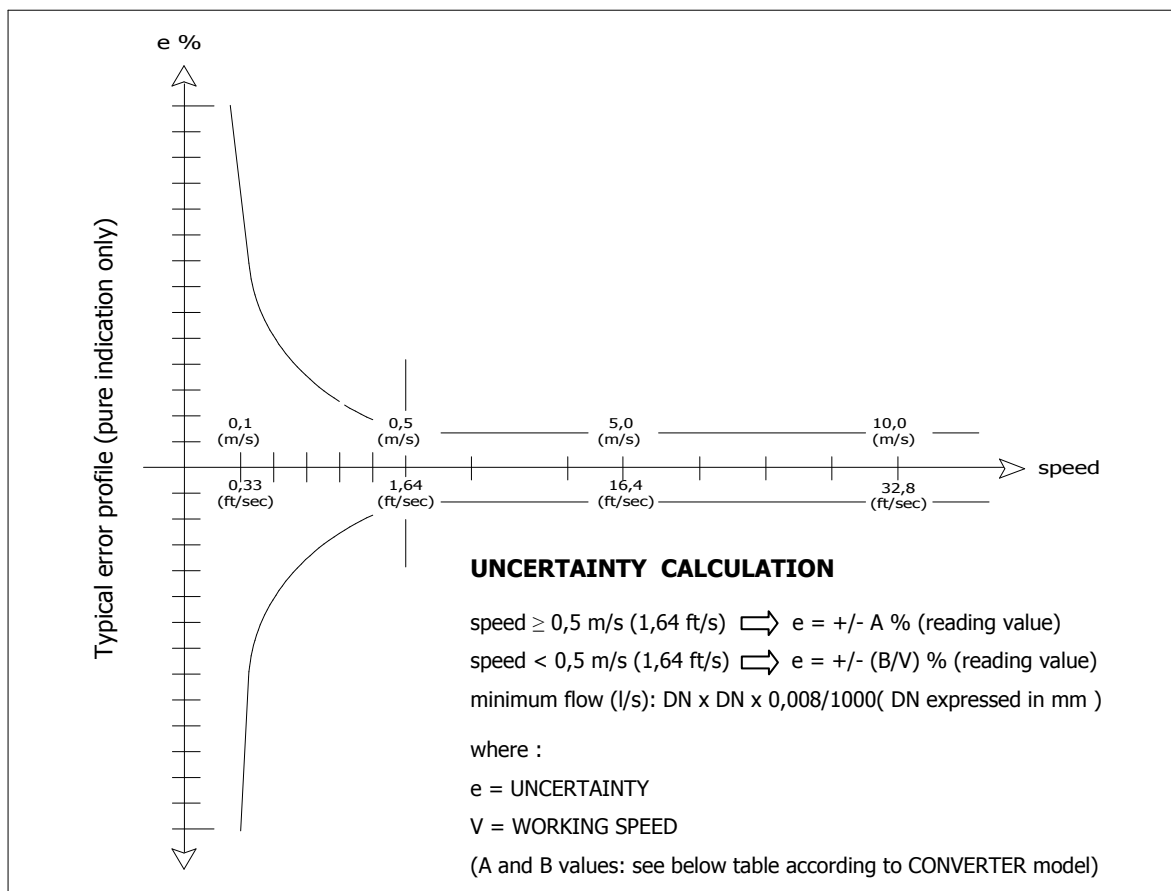
SEPARATE VERSION



Notes:

- 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 $\mu\text{S}/\text{cm}$

ACCURACY TABLE



ALL CONVERTER

A	B (m/s)	B (ft/s)
2	1	3,28

Reference conditions :

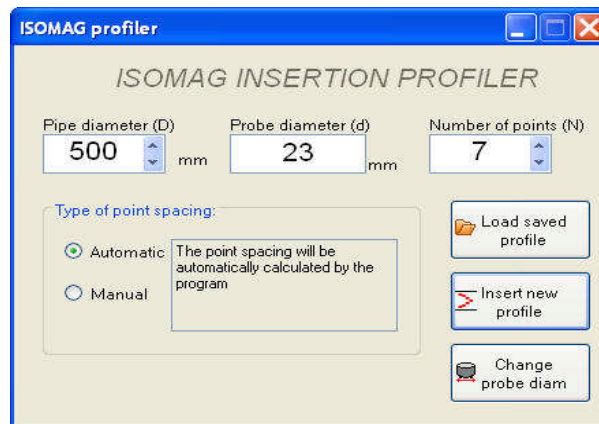
- ☐ Constant flow rate during the test
- ☐ Pressure: >30 Kpa
- ☐ Flow condition : fully developed flow profile
- ☐ Zero stability $\pm 0,005$ %

PROFILING WITH ISOFLOW PROFILER

Flow Profiler is an application designated to calculate the value of the correction coefficients K_i and K_p when the flow profile is not fully developed. This is achieved by measuring the flow velocity at different insertion depths along pipe diameter.

FUNCTIONING

Main page



At program start-up appears the following window appears that allows the input of the following base parameters used in the profiling computation:

- Diameter of the pipe in which the sensor probe is inserted
- Diameter of the sensor probe (this is usually 23 mm)
- Number of points in which the flow velocity is measured
- Type of point spacing that is correlated to the probe insertion depth at which measures are taken.

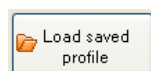
Possible choices for the point spacing parameter are:

- Automatic: the point spacing will be automatically calculated by the program
- Manual: the insertion depth of every point will be inserted by the user.

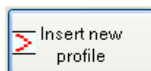


For the program to operate correctly it is necessary to insert at least one point on the pipe axis and to insert the same number of points above and below the center line. The points must be inserted in the insertion depth order.

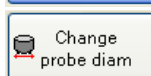
The buttons on the right are used to:



Load a profile previously saved by Profiler program from a text file. The successive window will be automatically opened and filled with the saved data.



Open the form to insert a new profile.



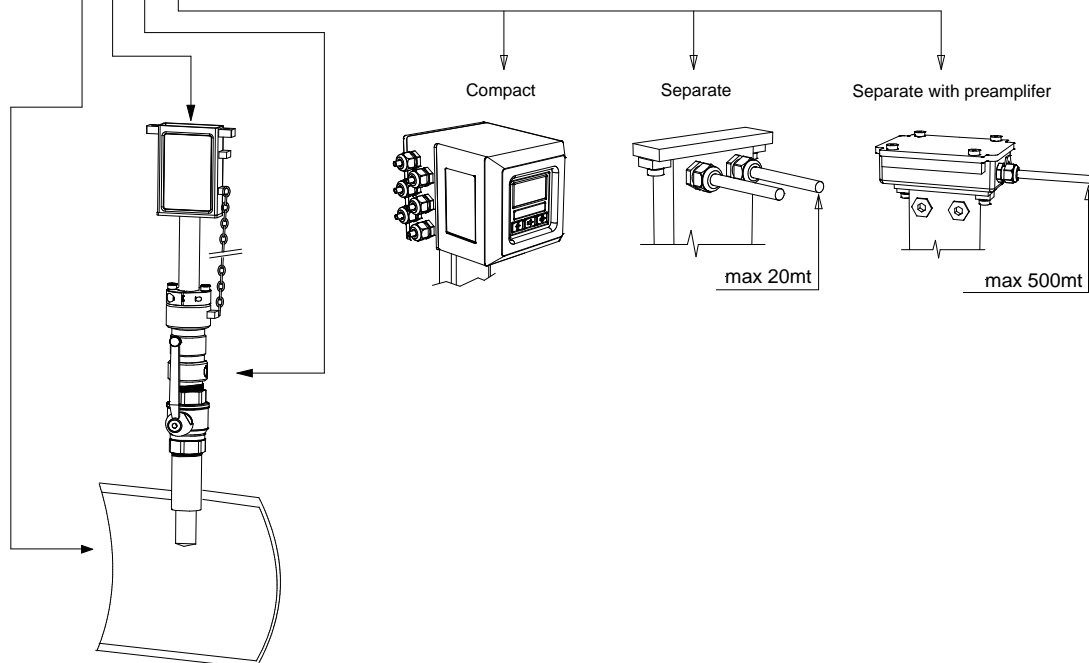
Change the diameter of the insertion sensor probe.

For more details consult the operating manual.

HOW TO ORDER

MS 3800	Max Insertion Depth
0	max insertion 150 mm
1	max insertion 300 mm
2	max insertion 500 mm
3	max insertion 700 mm
4	max insertion 1000 mm
9	suitable for diameter : to be specified
Sensor and electrodes material / lining	
A	Sensor material AISI304, PTFE lining, electrodes in AISI316 , Junction box in AISI 304
Z	Sensor material: to be specified
Accessory for mounting in pressurised pipe line	
1	Without accessories
2	Accessory kit, suitable for mounting in pressurised line, composed by: 1" hose-coupling (to welding on the and 1" ball valve (Bronze material)
6	Accessory kit, suitable for mounting in pressurised line, composed by: 1" hose-coupling (to welding on the pipe)+1" ball valve (Bronze) + QUICK CONNECTIONS 1/8"
9	Special connection: to be specified
Execution - Protection rate	
A	Compact version, IP67 protection rate, liquid maximum temperature 100 °C
B	Separate version "C", maximum length (see table), liquid maximum temperature 130 °C, protection rate IP68
C	Separate version "L" (in Carbon Steel), with preamplifier (maximum length 500 m), liquid maximum temperature 100 °C, protection rate IP67
D	Separate version "L" (in AISI304), with preamplifier (maximum length 500 m.), liquid maximum temperature 100 °C, protection rate IP67
E	Version with length and position of the neck of the Sensor to define according draw. G006 (valid for A-B-C-D versions, add the relative COST)
F	Separate version with N° 2 connectors IP 68 suitable for C015/16 for fast cable connections (max 20 m-ADD THE COST)
G	Separate version with N° 1 connectors IP 68 suitable for C18 for fast cable connections (max 20 m-ADD THE COST)
H	Separate version with N° 1 connectors IP 68 suitable for C014 for fast cable connections TO PRAMPLIFIER IN CARBON STEEL (DEFINE LENGHT MAX 500 m-ADD THE COST)
I	Separate version with N° 1 connectors IP 68 suitable for C014 for fast cable connections TO PRAMPLIFIER IN STAIN. STEEL (DEFINE LENGHT MAX 500 m-ADD THE COST)
M	Compact version, IP67 protection rate , with the possibility to turn the converter 90°

MS 3800 2 A 1 A **EXAMPLE OF ORDER CODE**



The manufacturer reserves the right to make design improvements without notice.