

# Tangential Water Meters

## TW Series



## TANGENCIAL WATER METERS TW Series

### Introduction

The TW series water meters, manufactured in Italy by TECNIDRO, are specifically designed for all applications with raw water, in particular, agricultural irrigation, gardening and waste waters.

The impeller measures the flow speed and its rotation is transmitted to a screen for the visualization of the total recorded volume.

This class of measurers adopts an innovating technology that differs from the traditional equipment, characterizing itself by the following particularities:

✍ **Tangential Impeller:** it is similar to a windmill immersed and placed in tangential position with respect to the water flow. The water passage is then totally free, allowing the solid transit like sand, leaves, stones, etc... , normally present in untreated waters, without risks of cloggings or usury. The impeller invades a very small portion of the total pipe section, limiting the pressure drops to non significant values.

✍ **Magnetic Transmission:** the impeller and the immersed gears do not have physical connection with the external counter mechanism that registers and visualizes the totalized volume. The impeller rotation it is transferred to the registry using a magnetic connection that acts through a brass plate. This characteristic allows to orient the screen in the position of more opportune reading and assures that the gears of the registry do not make contact with the water and condensation phenomena do not take place. The clock dial can be replaced without needing of draining the pipe.

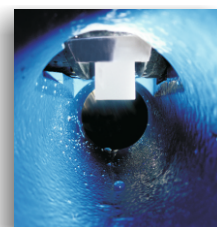
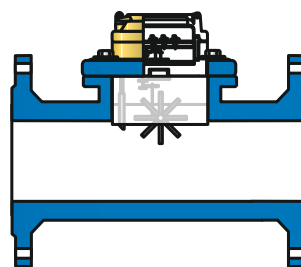
✍ **Removable Mechanism:** the measurement device (counter mechanism) is realized in a single and compacts piece and it is possible to be disassembled without needing disconnecting the body of the watermeter from the pipe.

✍ **Adjustment Device:** the mechanism includes a baffle plate that diverts the flow towards the impeller and it determines the precision of required measurement. The baffle plate is totally guided and protected in the immersed part of the mechanism and it is possible to fit its position by means of a micrometric screw, placed under the counter mechanism. The adjustment system is then trustworthy and protected, assuring that the metering precision remains stable during the measurer service.

✍ **Pulse emitter:** the counter mechanism and the totalizer are protected inside a transparent plastic capsule that presents grooves (dovetail joint type). These grooves allow contemporarily to place up to two pulses emitters dry contact type reed and an optoelectronic sensor type. The fixation system is safe and trustworthy, it does not invade the screen and it does not require to drill the capsule compromising its watertightness.

✍ **Instant flow:** the water meters TW series can be equipped with a digital equipment (mod. IST) for the instant flow visualization. The indicator is connected to the meter by means of a pulse emitter and is available in compact version (mod. IST-C) without connection cable, or separated (mod. IST-S), adapting itself to all installation needs. This equipment is designed for total immersion and is powered by a replaceable long life lithium battery.

The design of the water meters series TW, it is robust and at the same time simple conception, it offers all guarantees of good operation for all applications in open field finalized to the measurement of irrigation or not treated water.



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### Technical Data

The water meters TW series assure a precision measurement of  $\pm 5\%$  for flow rates between  $[Q_{min}]$  and  $[Q_t]$  and a precision of  $\pm 2\%$  for flow rates between  $[Q_t]$  and  $[Q_{max}]$ .

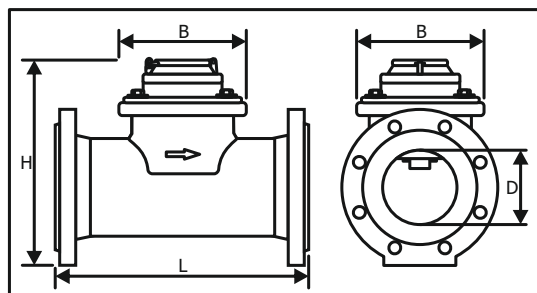
It is recommended to install water meters whose nominal flow rate  $[Q_n]$  is in the same range of the pipe project flow rate.

### Size, Weight and Recommended Flow Rate

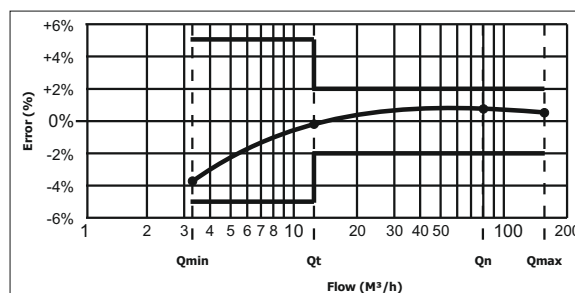
<b>Nominal Diameter</b>	(mm)	50	80	50	65	80	100	125	150	200	250	300
	(inch)	2"	3"	2"	2½"	3"	4"	5"	6"	8"	10"	12"
<b>Dimensions</b>	<b>D</b> (mm)	50	80	50	65	80	100	125	150	200	250	300
	<b>L</b> (mm)	200	225	200	200	225	250	250	300	350	400	500
	<b>B</b> (mm)	130	130	165	185	200	220	250	285	340	405	460
	<b>H</b> (mm)	215	230	250	265	280	290	305	340	380	425	455
<b>Weights</b>	(kg)	4.5	7.5	7.0	10.0	12.0	14.0	17.5	26.5	41.0	65.5	85.0
<b>Connections</b>	BSP NPT		ISO PN16/10 ANSI 150									
<b>Nominal Flow Rate</b>	$Q_3$ (m³/h)	25	63	25	40	63	100	160	250	400	630	1000
<b>Minimum Flow Rate</b>	$Q_1$ (m³/h)	1.0	2.5	1.0	1.6	2.5	4.0	6.4	10.0	16.0	25.2	40.0
<b>Transitional Flow Rate</b>	$Q_2$ (m³/h)	1.6	4.0	1.6	2.5	4.0	6.4	10.2	16.0	25.6	40.3	64.0
<b>Overload Flow Rate</b>	$Q_4$ (m³/h)	31	80	31	50	80	125	200	312	500	788	1250

NOTE: Flow suitable to directive ISO 16399

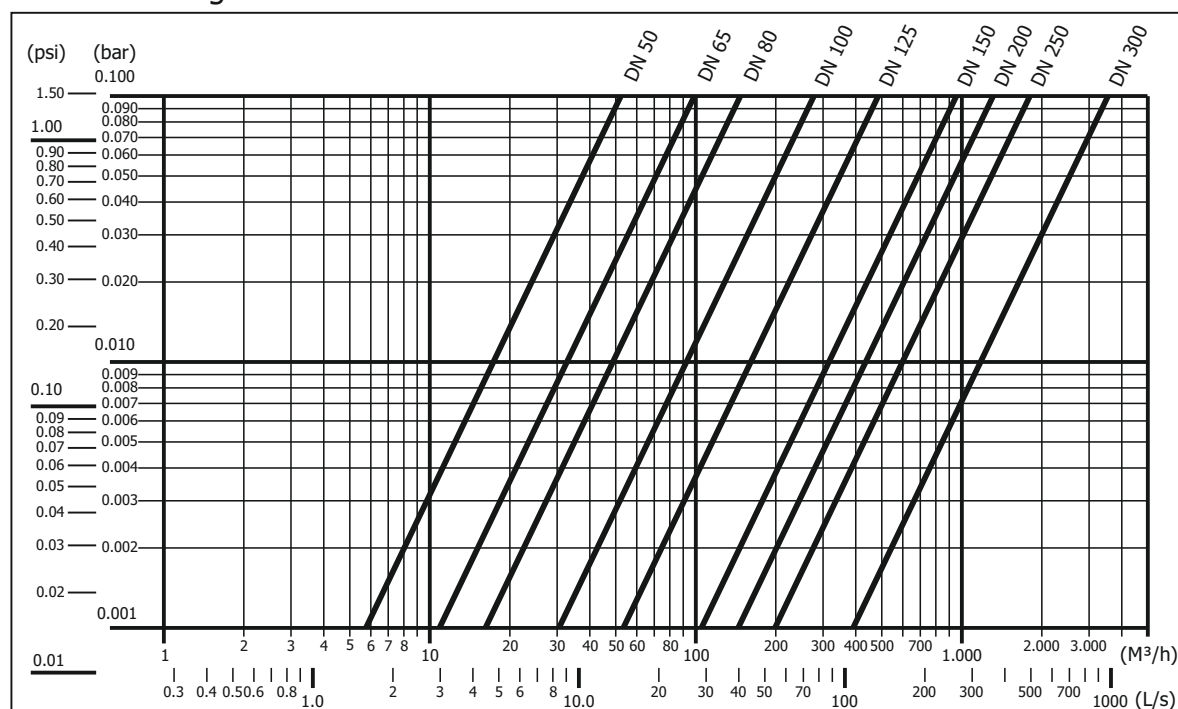
### Dimensions



### Typical Accuracy Curve



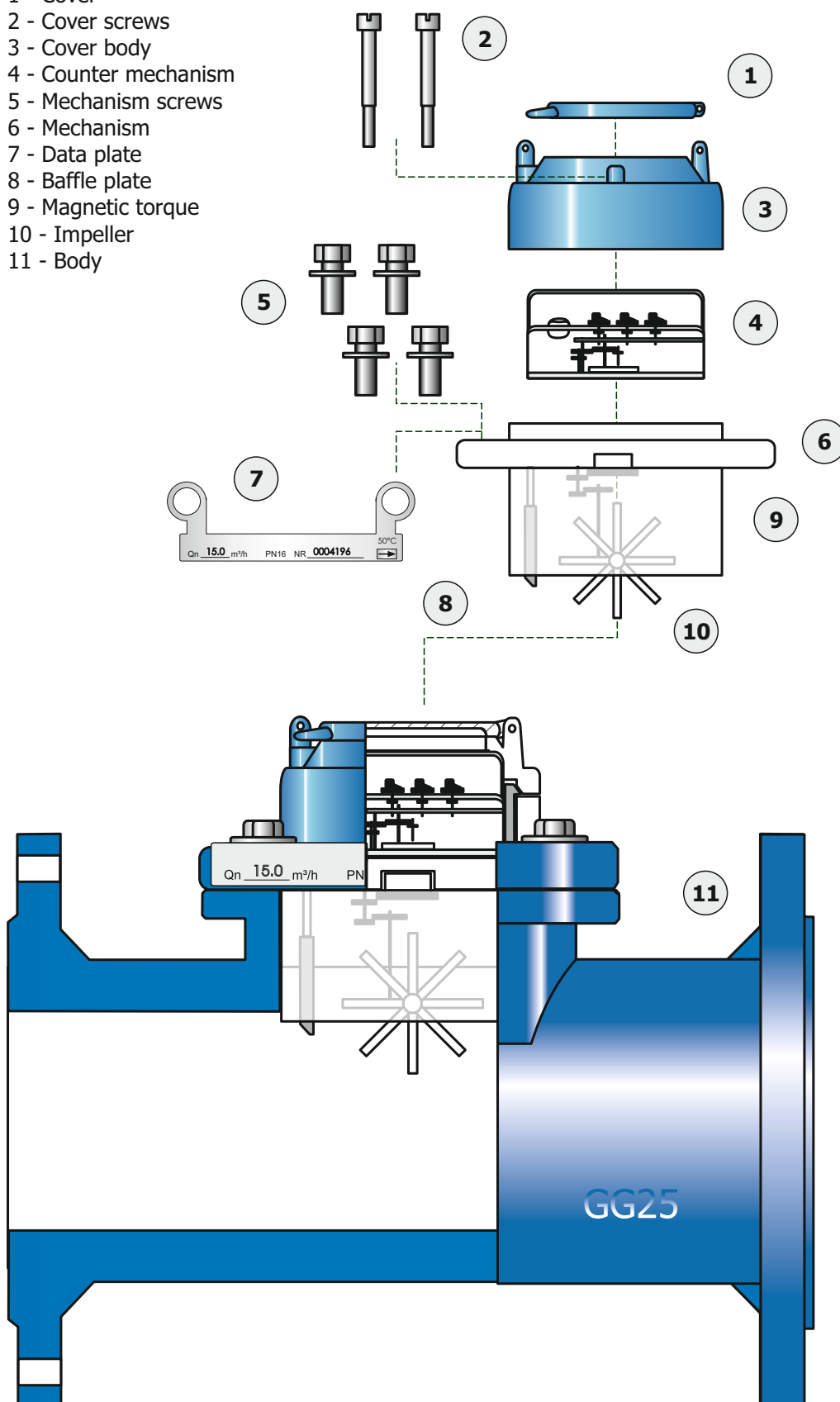
### Head Loss diagram



# TANGENTIAL WATER METERS TW Series

## Parts List

- 1 - Cover
- 2 - Cover screws
- 3 - Cover body
- 4 - Counter mechanism
- 5 - Mechanism screws
- 6 - Mechanism
- 7 - Data plate
- 8 - Baffle plate
- 9 - Magnetic torque
- 10 - Impeller
- 11 - Body



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### Instant Flow Rate Indicator

The instant flow rate indicator IST manufactured by TECNIDRO® is an electronic device that measures the time that interruns between the pulses generated by an emitter type reed and it turns it into instantaneous volume.

The equipment is powered by a replaceable long life lithium battery.

When there is flow in the pipe, IST indicator activates and visualizes in a digital screen the instantaneous flow expressed in [l/s] or [m<sup>3</sup>/h] or [Gpm], accordingly to the configuration of firmware realized in factory.

IST Indicator can be added to all tangential water meter series TW or to any other meter that gives pulses type reed to 1 pulse each 10, 100 or 1,000 liters.

Accordingly the installation exigencies it is possible to have two different solutions:

- ✎ **Compact** (mod. IST-C): IST indicator is already placed upon the mechanic counter of the meter, without connection cables and protected under a sealed plastic cover. This version can only be applied to TECNIDRO® meters series TW.
- ✎ **Separated** (mod. IST-S): the indicator is placed into a small plastic box that includes a metallic support plate to be place in a position that facilitates its reading. This version includes two meters of cable for the connection to the pulse emitter.

Both versions are realized for total immersion in protection class Ip67.

IST indicators are also realized with an optional pulse exit that allow to connect the equipment to a Data Logger for the remote consumption accounting.



**Compact type  
IST-C**



**External type  
IST-S**

