

# WOLTMANN TYPE FLOW METER

## USER MANUAL



**TABLE OF CONTENTS**

<b>INDEX</b>	<b>PAGE NO</b>
<b>1. Introduction</b>	<b>1</b>
<b>2. Specifications</b>	<b>1</b>
<b>3. Dimensional Details</b>	<b>2</b>
<b>4. Installation</b>	<b>5</b>
<b>5. Maintenance</b>	<b>7</b>
<b>6. Technical Details</b>	<b>8</b>



## **1. INTRODUCTION**

Heavy duty, particularly suited for high flow rates, TURBOBAR WPH water meters cover a very wide flow range. They are used in industrial, waterworks, water distribution, water monitoring and agricultural applications.

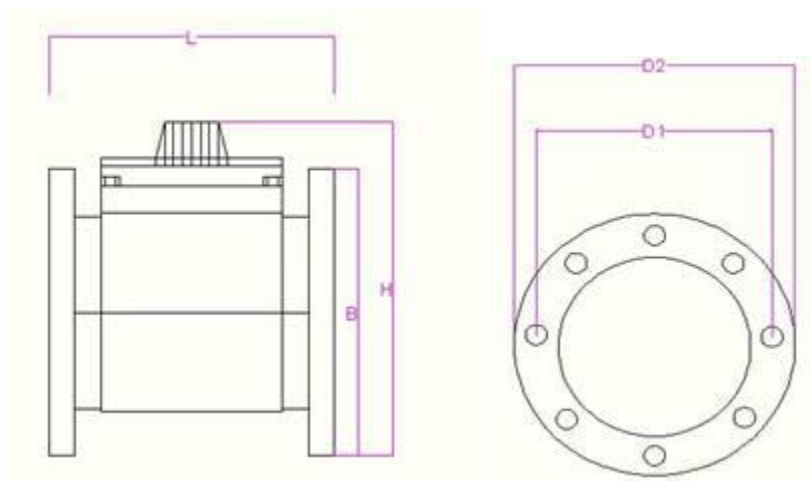
Based on the Woltmann principle, the helical blades of the turbine rotate about the axis of flow. The TURBOBAR is a long-life product that is easy to maintain at low cost.

## **2. SPECIFICATIONS:**

- Woltman type design for industrial applications
- IP 68 Protected dry type mechanism
- Low head loss
- Good sensitivity in initial start
- Body internally/externally e/p powder painted
- Optical reading available
- 3 years of warranty
- Special thick glass with resistance to impacts
- Almost no maintenance
- Service and spare parts available for 10 years.



**3. DIMENSION DRAWING:**



**Dimensions and Weights**

Meter Size Dia (mm)	Length L	Width B	Height H	Connecting Flange			Weight (Kg)
				D2 (mm) Flange Dia	D1 (mm) Bolt Circle Dia	Connection Bolt (PCS-Dia)	
65	200	185	235	185	145	2-M16+2-M14	13
50	200	165	215	165	125	4-M16	12
80	225	200	240	200	160	8-M16	14
100	250	220	245	220	180	8-M16	15
125	250	250	260	250	210	8-M16	20
150	300	285	310	285	240	8-M20	38
200	350	340	385	340	295	8-M20	51



## 4. INSTALLATION

### Installation requirements

#### General

A water meter should be installed in a location that is easily accessible, convenient for readouts, protected against frost and the effect of wiring and gas systems. In case such a spot cannot be found a water meter should be built into a wall.

A water meter should have valves on both the inlet and the outlet that cut off water inflow so that the water meter or its measuring insert can be removed for repair or maintenance. These valves should always be fully opened during the normal operation of the meter.

The pipeline section that a water meter is mounted on should be shaped in such a way as to prevent the possibility of air entering inside the meter. The water meter should always be completely filled with water. Therefore the pipeline after the outlet of the meter should not descend below the level of the meter. Pipes bypassing the water meter are only allowed, if they cannot be operated during the normal operation of the meter. Gate valves, non return valves, pressure reducing valves, and other fittings or incorrectly sized seals, which are installed in front of meters, create turbulence that can have a detrimental effect on meter accuracy. These fittings should be installed behind the meter. A trouble-free straight pipeline with the nominal diameter of the meter must be set up in the flow direction in front of each meter. The length of that pipeline must be at least three times the nominal diameter (3 DN). For DN400 or bigger meters it must be at least the five times the nominal diameter (5 DN). Except for combination meters, no sharp cross-sectional restriction should exist immediately behind the meter. If a service valve must be installed before the inlet to the meter, a suitable flow rectifier should be installed directly on the inlet to the meter.

Care must be taken with all connections to water meters. Gaskets should be set concentrically to the pipeline. A water meter must not be installed eccentrically on a pipeline. Gaskets must not intrude into the flow of water.

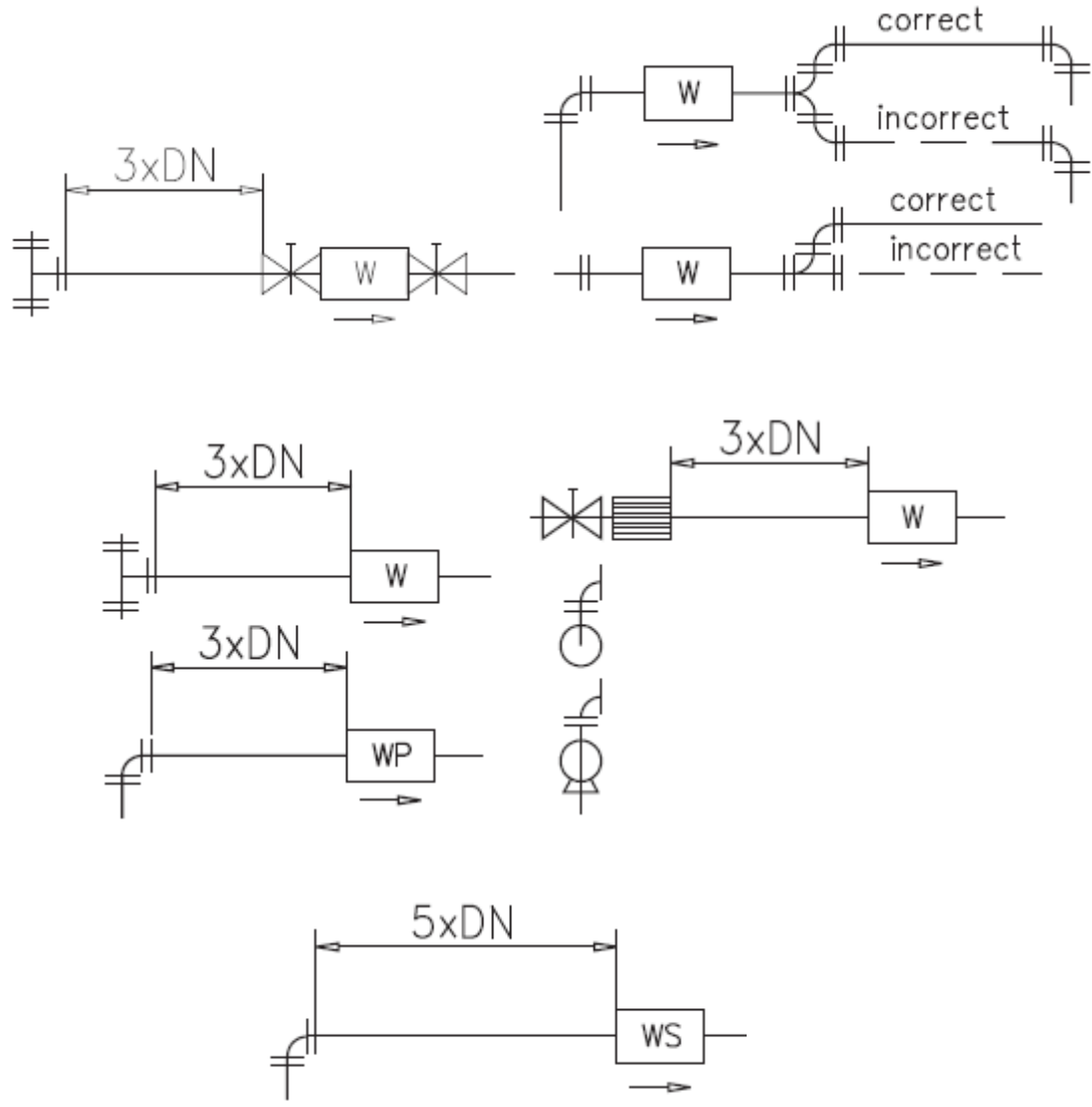
Water should flow through a water meter in the direction indicated by arrows put on the side(s) of the body. Pipelines must be flushed and cleaned to remove sand, gravel prior to installing the meter. If impurities exist in the normal water supply, the water meter should be fitted with a filter or dirt box on the upstream











end of the meter. When putting water meters into service, slowly open the valve in front of the meter to prevent overloading or a sudden pressure on the meter's parts, as the meter may still be filled with air.

For WS-meters the length of the pipeline before the inlet of the meter must be at least the five times nominal diameter (5 DN).

A straight pipe, 2DN or longer, should be installed after the outlet of the meter.





- |   |                   |   |                       |
|---|-------------------|---|-----------------------|
|  | Sluice valve open |  | Water meter (W/WS/WP) |
|  | Flange            |  | Flow Rectifier        |
|  | Filter            |  | Space Curvature       |
|  | FFR piece         |  | Bend                  |
|  | Flow direction    |  | Centrifugal pump      |



**Installation in rigid pipelines**

For the installation of meters in rigid pipelines we recommend the use of an adjustable adapting pipe to make installation and removal easier. If the meter needs repairing, it should normally be completely removed and replaced with a certified meter. In some cases, only the meter inserts need to be changed. In these cases the bodies remain in the pipelines (except WP).

**Installation in rigid pipelines with different nominal diameter**

If the nominal size of the meter differs from the nominal size of a pipeline, tapered adapters (reducers) should be used. The use of a one-sided tapering flange pass is prohibited. For pipe size reduction as well as extension, a turbulence-free straight pipeline as described in section. Must be set up in the flow direction in front of each meter. A small head loss is caused by the flange pass.

**Installation positions**

Another important factor to attend to is the water meters mounting position on a water-pipe network: horizontal, vertical or skew. (See Table). It is not permitted to install the water meters with the counter facing downwards.

Type of water meter	Mounting position			Position of the counter
	Horizontal	Vertical	Skew	
WPH	✓	✓	✓	←↖↑↗→
WP, WI	✓	✓	✓	←↖↑↗→
WS	✓			↑
WB	Vertical inflow – horizontal outflow			↑

**5. MAINTENANCE**

The accuracy of a water meter decreases over time. This accuracy decrease is accelerated in the presence of aggressive effect of water, particularly if it leaves deposits (iron, magnesia) causing premature wear of the mechanical parts of a water meter. Therefore, every single water meter should – after a reasonable period of operation – be removed and inspected or tested if necessary. Accuracy should be checked prior to dismantling and cleaning. Chemical compounds that have a harmful effect on materials that water meter parts are made of should not be used. In particular aliphatic hydrocarbons such as petrol, xylene, toluene and some of their derivatives (i. e. acetone) must in no circumstance be used. If parts do need to be replaced, only original manufacturer spare parts should be used.

NOTE: The manufacturer reserves the right to introduce any alterations in order to improve product quality. Those alterations might not be shown in the operating manual, however the main characteristics of given water meter type will be preserved.



## 6. TECHNICAL DETAILS

### Definition

For the purposes of this technical specification, the following definitions apply.

#### “Volumetric Meter”:

Volumetric meter is a device, fitted into a closed conduit, which consists of chambers of known volume and a mechanism driven by the flow, whereby these chambers are successively filled with water and then emptied. By counting the number of these volumes passing through the device, the indicating device totals the volume flow.

#### “Velocity Meter”:

Velocity meter is a device, fitted into a closed conduit, which consists of moving element set in motion directly by the velocity of the water flow. The movements of the moving element are transmitted by mechanical or other means to the indicating device, which totals the volume flow.

### Woltman Meter

Woltman meters are a device, consisting of a helical blade which rotates about the axis of flow in the meter.

### Single- Jet and multi- jet Meters:

Single/ multi jet type in meters is devices consisting of turbine rotor rotating about the axis perpendicular to the flow of water in the meter. The meter is called a single- jet meter if the jet impinges at a single place on the rotor's periphery, and a multi- jet if the jet impinges simultaneously at several points around the periphery of the rotor.

### Flow – Rate:

Flow rate is the quotient of the volume of water passing through the water meter and the time taken for this volume to pass through the water meter.

### Permanent Flow- Rate (Qp):

Permanent flow rate is defined as the flow- rate at which the meter is required to operate in a satisfactory manner (see 3.1.8) under normal conditions of use. e.g. under steady and / or intermittent flow conditions.

### Overload Flow Rate (Qa)

Overload Flow Rate is defined as the flow- rate at which the meter is required to operate in a satisfactory manner (see 3.1.8) for short period of time without deteriorating. It's value is twice the value of Qp.





**Minimum Flow –Rate (Q min.):**

Minimum Flow Rate is defined as the lowest flow- rate at which the meter is required to give indications within the maximum permissible error tolerance. It is determined in relation with the numerical value of the meter designation.

**Flow Rate Range**

Range limited by the overload flow- rate  $Q_s$ , and the minimum flow- rate,  $Q_{min}$  in which the meter indications must not be subject to an error in excess of the maximum permissible errors is defined as Flow Rate Range.

This range is divided into two zones called “Upper” and “Lower” Zones. Separated by the transitional flow – rate.

**Transitional Flow- Rate (Qt):**

Flow rate value occurring between overload and minimum flow- rates, at each the flow – rate range is divided into two zones, the “Upper Zone” and “Lower Zone”, each characterized by a maximum permissible error in this zone.

**Volume Flow**

Volume of water passing through the water meter disregarding the time taken.

**Indicating Device:**

Device displaying the volume flow.

**Nominal Pressure (PN):**

Numerical designation which is a rounded number for reference purpose. All equipment of the same nominal size (DN) and designated by the same PN number shall have compatible mating dimensions.

**Maximum Admissible Working Pressure (MAP):**

For a water meter, MAP is defined as the maximum internal pressure that it can withstand permanently at a given temperature.

**NOTE 1:** For low temperatures between 0<sup>o</sup> C and 30<sup>o</sup> C, the MAP for materials Currently used for the bodies of water meters remains constant.. For cold water meters  
PN= MAP.

**Nominal Size (DN)**

Numerical designation common to all the components of a pipe system, excluding that Designed by their external diameter or by the thread dimension. It is a whole number Used for reference only, approximating the constructional dimensions.

**Pressure Loss**

Pressure loss caused by the presence of a water meter in the pipeline at a given flow- rate.



**Maximum Admissible Temperature (MAT):**

For a water meter maximum temperature that it can withstand at a given internal pressure.

**Meter Designation (N):**

Numerical value, preceded by capital letter N to designation the meter in relation to tabulated values of dimensions.

**Operating Conditions**

Woltman Type Bulk Water Meters shall be suitable in every respect for operation under following operating conditions.

**Temperature**

The working temperature range shall be suitable for a country with following conditions

- a. Annual average ambient temperature = 30° C
- b. Maximum ambient temperature = 40° C
- c. Minimum ambient temperature = 6 °C

**Humidity & Immersion**

A meter shall be suitable for installation in a pit or basement which may be subjected to flooding. Therefore, meters and their fittings shall be capable of operating normally even when submerged to a depth of 1 M.

**Installation & Position**

Meter shall be suitable for installation in vertical horizontal and inclined positions without loss of its required accuracy and counter shall be so positioned that it shall be easy to read in or horizontal or inclined positions.

**Meter Type, Meter Designation, Size of Flange End**

All meters to be supplied under this contract shall be of Woltman type with flanged end connections. The meter designation, size of flanged end connections and the respective required quantities are as below:

Meter Designation	N15	N40	N60	N150	N250	N400	N600	N1000
Nominal Size of Flanged End	50	80	100	150	200	250	300	400



---

*Head Office*



**RLT INSTRUMENTATION PVT.LTD,**

#2, Rangarajapuram 1st Street, Kodambakam, Chennai – 600024.

Ph: 044-24806500 (10 Lines); Fax: 044-24806555

E-mail: [chennai@rltech.in](mailto:chennai@rltech.in) ; Website: [www.rltech.in](http://www.rltech.in)

