



# Cold Water Meters/ 1½" - 10" Class II Turbine Type

## GENERAL

All meters furnished shall be produced in a manufacturing facility whose QMS is ISO 9001 certified. Acceptable meters shall have a minimum of fifteen (15) years of successful field use. All specifications meet or exceed the latest revision of AWWA C701.

## LEAD FREE LEGISLATION

There have been federal changes to the acceptable amount of lead in the drinking water system. Knowing that water meters have a life expectancy of approximately twenty (20) years, the Utility wishes to ensure that meters purchased meet the Safe Drinking Water Act (SDWA) per NSF/ANSI 372 for the following reasons:

- > The Utility wishes to assure the safety of its drinking water.
- > The Utility wishes to safeguard its investment in metering infrastructure.
  - Meter inventory that does not meet the SDWA (NSF 372) lead free requirements will have to be returned to the manufacturer or scrapped at a cost that the Utility is not willing to incur.
  - Any meters not in compliance with these requirements that are physically removed from service for testing or repair, cannot be reinstalled and will have to be scrapped at a cost that the Utility is not willing to incur.

As a result, the Utility requires that all water meters submitted in this proposal be compliant with NSF/ANSI 61, and NSF/ANSI 372. Specifically:

- > Meters shall be made of "lead free" alloy as defined by NSF/ANSI 61 and NSF/ANSI 372.
- > Manufacturer shall provide a copy of a letter from NSF International on NSF letterhead documenting compliance with NSF/ANSI 61.
- > Manufacturer shall provide a copy of a letter from NSF International on NSF letterhead documenting compliance with NSF/ANSI 372.
- > Manufacturer will provide documentation that its US-based foundry uses only lead free materials in the manufacture of its water meters. This documentation shall be signed by an authorized officer of the company.

## TYPE

Meters shall be of the inline horizontal-axis type per AWWA Class II. Meters shall be certified to NSF/ANSI 61 and NSF/ANSI 372 requirements.



## CAPACITY

The capacity of the meters in terms of normal operating range, maximum continuous flow, maximum loss of head, and maximum intermittent flow shall be as shown below:

Size	Normal Operating Range (gpm)	Maximum Continuous Flow (gpm)	Maximum Loss of Head at Max. Cont. Flow (psi)	Maximum Intermittent Flow (gpm)
1½"	4 - 160	160	4	200
2"	4 - 200	200	4.5	250
3"	5 - 450	450	5	560
4"	10 - 1200	1200	5.5	1500
6"	20 - 2500	2500	5	3100
8"	35 - 4000	4000	5	5000
10"	50 - 6500	6500	3.5	8000

## SIZE

The size of the meters shall be determined by the nominal size (in inches) of the opening in the inlet and outlet flanges. Overall lengths of the meters shall be as follows:

Size	Laying Length	Meter/Strainer Combined Length
1½"	10" (13" w/test spool)	-
2"	10"	17"
3"	12"	18"
4"	14"	21½"
6"	18"	27"
8"	20"	30"
10"	26"	41"

## CASE AND COVER

The maincase and cover shall be cast from NSF/ANSI 61 and NSF/ANSI 372 certified lead free alloy containing a minimum of 85% copper. The size, model, NSF certification and arrows indicating direction of flow shall be cast in raised characters on the maincase or cover. The cover shall contain a calibration vane for the purpose of calibrating the turbine measuring element while the meter is inline and under pressure. The calibration vane shall be mounted under the register or shall be covered by a protective cap that is attached in a tamper-resistant device.

## EXTERNAL BOLTS

Casing bolts shall be made of AISI Type 316 stainless steel.

## CONNECTIONS

Maincases shall be flanged. 1½" and 2" sizes shall be oval flanged and 3" through 10" sizes shall be round flanged per Table 3, AWWA C701.

## REGISTERS

Registers shall be permanently roll-sealed, straight reading, indicating in cubic feet, gallons, or cubic metres. Registers shall allow for in-line serviceability.

## REGISTER BOX SEALING

The register box shall be affixed to the top cover by means of a plastic tamperproof seal pin that must be destroyed in order to remove the register.

## METER SERIAL NUMBER

The meter serial number shall be imprinted on the meter maincase or cover as well as the register box cover.

## MEASURING CHAMBER

The turbine measuring chamber shall be a self-contained unit attached to the cover for easy removal. The turbine spindles shall be stainless steel; turbine shafts shall be tungsten carbide.

## UNITIZED MEASURING ELEMENT

A UME is a complete assembly, factory-calibrated to AWWA standards, that includes the cover, registers, and both a turbine measuring element assembly. It shall be easily field-removable from the meter body without the requirement of unbolting flanges.

## INTERMEDIATE GEAR TRAIN

The intermediate gear train shall be directly coupled to the turbine rotor and magnetically coupled to the register through the meter cover. All moving parts of the gear train shall be made of a self-lubricating polymer or stainless steel for operation in water.

## REGISTRATION ACCURACY

Registration accuracy over the normal operating range shall be 98.5% to 101.5%.

## REMOTE CAPABILITY OPTIONS

All meters shall be equipped with encoder remote registers per AWWA C707 and meet all AWWA C701 performance standards.

Acceptable meters shall be Neptune® HP Turbine or approved equal.



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