



## COLD WATER METERS/ FIRE SERVICE COMPOUND METER TYPE



### SPECIFICATIONS

#### GENERAL

All meters furnished shall be manufactured by a registered ISO 9001 quality standard facility. Acceptable meters shall have a minimum of fifteen (15) years of successful field use. All specifications meet or exceed the latest revision of AWWA C703.

#### LEAD FREE LEGISLATION

Federal changes are on the horizon governing the acceptable amount of lead in the drinking water system. Knowing that water meters have a life expectancy of approximately 20 years, the Utility wishes to ensure that meters purchased today will meet the Safe Drinking Water Act (SDWA) per NSF 372 that will become effective in January 2014 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.
  - As of January 4, 2014, 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.
  - After January 4, 2014, any meters not in compliance with these requirements that are physically removed from service for testing or repair, cannot be re-installed 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, Annex G and Annex F. Specifically:

- Meters shall be made of "lead free" alloy as defined by NSF/ANSI 61, Annex G and Annex F.
- Manufacturer shall provide a copy of a letter from NSF International on NSF letterhead documenting compliance with NSF/ANSI 61, Annex G, which allows a maximum weighted average lead content level of 0.25% of the wetted surface area.
- Manufacturer shall provide a copy of a letter from NSF International on NSF letterhead documenting compliance with NSF/ANSI 61, Annex F, which requires leaching of less than 5 µg/L in tests performed per the NSF/ANSI 61 test methodology for water with pH of 5 and pH of 10.
- 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 consist of a combination of an AWWA Class II inline horizontal axis turbine for measuring high rates of flow and a positive displacement bypass meter conforming to AWWA C700 for measuring low rates of flow. An automatic valve shall direct the flow from the bypass meter to the mainline meter as flow rates increase and back to the bypass meter as flow rates decrease. All components of the meter assembly shall be both UL (Underwriter's Laboratory) Listed and FM (Factory Mutual) approved for fire service use. Meters shall be certified to NSF/ANSI 61, Annex G and Annex F requirements.

## CAPACITY

The capacity of the meters in terms of normal operating range, maximum rate for continuous use, maximum loss of head, and extended low flow capability is as follows:

Size	Normal Operating Range (gpm)	Maximum Rate for Continuous Use (gpm)	Maximum Loss of Head at Max. Rate (psi)	Extended Low Flow (gpm)
4"	3/4 - 1200	1200	9	3/8
6"	1 1/2 - 2500	2500	10.5	3/4
8"	2 - 4000	4000	10.5	1
10"	2 - 6500	6500	9	1

## SIZE

The size of 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
4"	33"
6"	45"
8"	53"
10"	68"

## CASE AND COVER

The meter body, strainer body, and valve body shall be 300 series stainless steel. The meter body shall be welded to the valve body effecting a uni-body construction with the valve. The strainer outlet and meter inlet shall be connected by a Style 77 Victaulic or other UL Listed/FM Approved grooved coupling. The meter assembly shall have a rated working pressure of 175 psi.

The meter cover shall be cast of a NSF/ANSI 61, Annex G and Annex F lead free alloy containing a minimum of 85% copper. An arrow indicating direction of flow shall be cast in raised characters on the cover. The cover shall have a rated working pressure of 175 psi. The cover shall contain a calibration vane for the purpose of calibrating the turbine measuring element while inline and under pressure. The calibration vane shall be mounted under the register that is attached in a tamper-resistant manner.

## STRAINER

Meters shall be supplied with a strainer designed and approved for fire service use by UL and FM and shall have a rated working pressure of 175 psi. The size, model, and NSF certification shall be marked on the strainer cover.

The strainer shall be constructed of 300 series stainless. The strainer basket shall be constructed of AISI Type 18-8 stainless steel. The strainer shall contain a flushing port located near its bottom to facilitate easy cleaning.

## EXTERNAL BOLTS

Meter strainer and valve cover bolts shall be made of AISI Type 316 stainless steel. All other bolts shall be 300 series stainless steel.

## CONNECTIONS

Inlet and outlet flanges shall be 300 series stainless steel and round flanged per AWWA C207, Class D.

## REGISTERS

Registers shall be permanently roll-sealed in a copper can and glass lens, straight reading in gallons, cubic feet, or cubic metres. Registers shall include a center-sweep test hand and low flow indicator. Registers shall be removable for replacement without interruption of the service line.

**REGISTER BOXES**

Register boxes and covers shall be of bronze composition. The name of the manufacturer and the meter serial number shall be clearly identifiable and located on the register box covers.

**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 on the meter flange or cover and on register box covers.

**UNITIZED MEASURING ELEMENT**

A UME is a complete assembly, factory calibrated to AWWA standards that includes the cover, registers, and a turbine measuring element. 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. The gear train shall be housed within the turbine measuring chamber. All moving parts of the gear train shall be made of a self-lubricating polymer or AISI Type 316 stainless steel for operation in water.

**BYPASS METER**

The bypass meter shall be of a positive displacement, nutating disc type. The bypass meter may be piped on the left or right side of the assembly. The bypass meter shall conform to AWWA C700 standards in the following sizes:

Mainline Size	Meter Size
4" Mainline	1" Bypass Meter
6" Mainline	1 1/2" Bypass Meter
8" and 10" Mainline	2" Bypass Meter

**AUTOMATIC VALVE**

The automatic valve shall be of the spring-loaded, knuckle-joint type. All internal linkage parts shall be stainless steel. A vulcanized rubber disc on a stainless steel clapper plate shall seal against a bronze seat. The springs shall be AISI Type 18-8 stainless steel.

The disc meter shall include a self-actuated valve that directs flow through the disc meter at low flow rates, and through the turbine meter at high flow rates. At high flow rates, the self-actuated throttle valve shall restrict the flow through the disc meter to minimize wear.

**REGISTRATION ACCURACY**

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

**REGISTRATION ACCURACY**

All meters shall be equipped with encoder remote registers per AWWA C707 and meet all AWWA C703 performance standards.

Acceptable meters shall be Neptune HP PROTECTUS® III S or approved equal.

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