



COLD WATER METERS/ COMPOUND TYPE SPECIFICATIONS



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 C702.

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

Compound meters shall consist of a combination of an AWWA Class II turbine meter for measuring high rates of flow and a rotating disc type positive displacement meter for measuring low rates of flow enclosed in a single maincase. An automatic valve shall direct flows through the disc meter at low flow rates and through the turbine meter at high flow rates. At high flow rates, the automatic valve shall also serve to restrict the flow through the disc meter to minimize wear.

OPERATING CHARACTERISTICS

The meters shall comply with the operating characteristics shown below:

Size	Normal Operating Range (gpm)	Maximum Continuous Flow (gpm)	Maximum Loss of Head at Max. Cont.	Maximum Intermittent Flow (gpm)	Low Flow (gpm)
2"	1/2 - 200	160	8	200	1/8
3"	1/2 - 450	350	8	450	1/8
4"	1 - 1000	700	8	1000	1/2
6"	1 1/2 - 2000	1400	8.5	2000	3/4
6" x 8"	1 1/2 - 2000	2000	10.5	2000	3/4

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
2"	15 1/4"
3"	17"
4"	20"
6"	24"
6" x 8"	55 3/8"

CASE AND COVER

The maincase and cover shall be cast from an NSF/ANSI 61, Annex G and Annex F certified lead free high copper 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 covers all contain a stainless steel calibration vane for the purpose of calibrating the turbine measuring element while the meter is inline and under pressure. A test plug shall be located in the maincase or the cover for the purpose of field testing of the meter.

EXTERNAL BOLTS

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

CONNECTIONS

Maincases shall be flanged. The 2" meters shall be oval flanged and 3" through 6" sizes shall be round flanged per Table 4, AWWA C702.

REGISTERS

Separate magnetic-drive registers shall record the flow of the turbine and disc meters and their total will be the registration of the compound meter. The registers shall be permanently roll-sealed, straight reading indicating in cubic feet, gallons, or cubic metres. Registers shall include a center-sweep test hand, a low flow indicator, and a glass lens. The registers shall be serviceable without interruption of the meter's operation. Registers shall be guaranteed for at least ten (10) years.

REGISTER BOXES

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

REGISTER BOX SEALING

Registers shall be affixed to the 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 flange or cover as well as the register box covers.

MEASURING CHAMBERS

The turbine measuring chamber shall be a self-contained unit, attached to the cover for easy removal. The turbine shaft shall be tungsten carbide with tungsten carbide inserts and shall rotate in removable graphite bushings. Thrust bearings shall be tungsten carbide.

The nutating disc chamber shall be a self-contained unit mounted on the cover and easily removable from the cover. It shall conform to AWWA Standard C700 for the following sizes: 2" and 3" - 5/8" disc; 4" - 3/4" disc; 6" - 1" disc. The inlet to the disc chamber shall be a "single" opening of adequate size not to be susceptible to plugging and water restriction by water-borne debris.

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 and a nutating disc chamber assembly. It shall be easily field removable from the meter body without the requirement of unbolting flanges.

INTERMEDIATE GEAR TRAIN - TURBINE SECTION

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

AUTOMATIC VALVE

The automatic valve shall be of the spring-loaded, poppet type. All valve parts shall be made of lead free high copper alloy containing a minimum of 85% copper, stainless steel, or a suitable polymer with a replaceable semi-hard EPDM rubber seat.

Only the cover must be removed to gain access to the valve for inspection or service.

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.

STRAINER

A strainer shall be provided for the disc meter. It shall be easily removable and have an effective straining area of double the disc meter inlet.

REGISTRATION ACCURACY

Registration accuracy over the normal operating range shall be 98.5% to 101.5%. Registration at the crossover shall not be less than 95% with direct reading registers. Registration at the crossover shall not be less than 90% with absolute encoder or generator remote registers.

Registration at the extended low flow rate shall not be less than 95%.

REMOTE CAPABILITY OPTIONS

All meters shall be equipped with encoder remote registers per AWWA C707 and shall meet all AWWA C702 performance standards.

Acceptable meters shall be Neptune TRU/FLO® Compound or approved equal.

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