

Residential Fire Meter Model RFM

Scope

This specification covers cold water meters in sizes 3/4" through 2". The intended use of the Residential Fire Meter (RFM) is to provide accurate measurement of water consumption for both domestic and fire suppression water requirements through a single supply line using a meter which bears UL approval. Per existing AWWA standards, C700 (Positive Displacement) and C708 (Multi-jet) meters are not acceptable for use in combination potable water/fire suppression supply lines and should not be used. The meter in this specification must be highly accurate, light weight and have minimal maintenance. It must provide fire suppression flows even though the strainer may become partially blocked and the measuring element may become incapacitated.

All meters should conform to any applicable AWWA Standard that may be published in regard to Domestic Fire Meters at a later date. At a minimum, all meters must be UL approved.

Type

Meters shall be of the Vertical Rotor Turbine type. All water must pass through the measuring element. Positive Displacement, Multi-Jet and Single Jet meters are not Vertical Rotor Turbine Meters.

Size

The size of the meter shall be determined by the nominal size opening of the inlet and outlet.

Length

Meters 3/4" through 2" shall be offered in compact as well as standard laying lengths as determined by AWWA C-700 and listed below.

Size	Compact	Standard
3/4"	7"	9"
1"	9"	10 3/4"
1 1/2"	9"	13"
2"	10"	17"

Main Case

The main case shall be constructed of a copper alloy containing not less than 81% copper. The main case shall contain both the measuring element and the integral strainer. 3/4" through 2" shall be bottom case entry.

The size, model, direction of flow shall be cast in raised characters on the case. The UL logo and listing shall be cast into the casting prominently. The serial number shall be imprinted on both the body and the lid.

External Bolts

All external bolts, nuts and washers shall be stainless steel.

Threaded Ends

Meters 3/4" and 1" in size shall be Male Iron Pipe. Meters 1 1/2" and 2" shall be Internal Pipe Thread.

Pressure Test

Meters shall be guaranteed to operate successfully at a working pressure of 175 PSI without leakage or damage to any part. They must be capable of withstanding (5) times the working pressure or 875 PSI during destructive testing.

Registration

The registration shall be accurately recorded through the normal operating flow limits at not less than 98% nor more than 102% of actual throughput. Accuracy at the specified minimum flow rate shall be at least 95% at the flow specified by size in the table below.

Size	Normal Operating Flow Range 98% - 102%	Minimum Flow Limits 95%	Maximum Intermittent Flow
3/4"	1.0 - 30 GPM	.50 GPM	35GPM
1"	1.5 - 50 GPM	.75 GPM	55GPM
1 1/2"	2.0 - 100 GPM	1.50 GPM	110 GPM
2"	3.0 - 160 GPM	2.00 GPM	175 GPM

Registers

Registers shall be magnetic driven, straight reading, and provide easy to read visual registration at the meter. Registers shall be permanently hermetically roll sealed utilizing an “L” shaped gasket between the copper housing and the register lens. Registers shall contain a low flow indicator and a center sweep hand. The unit of measurement shall be in U.S. Gallons/Cubic Feet. Meter size and date of manufacture shall be stamped on the register face plate. All registers including encoder registers shall have the register or meter serial number clearly and permanently stamped on top of the register.

Registers Lids and Housings

Register lids and housings must be manufactured of a molded red plastic for easy visual identification as fire service meters. Housings shall be designed to facilitate removal of the register without special tools and permit field replacement.

Measuring Chamber

The measuring chamber shall be a turbine assembly mounted in a vertical orientation. All water must pass through the measuring element.

The turbine will utilize a “Retro-Thrust” feature to reduce wear over the life of the meter. Low flows will cause the rotor to wear against a sapphire bearing mounted in the top case of meter. High flows will cause the turbine to pull down in the flow way to wear against a sapphire bearing located in the bottom of the hub assembly.

The inlet hub assembly shall include integral straightening vanes to eliminate the need for straight pipe diameters in front of or behind the meter.

Strainers

All meters must be provided with stainless steel, integral strainers that provide a minimum of (4) times the inlet pipe diameter of strainer surface area to provide adequate flow rates in case of fire.

All strainers must have an effective straining area of at least two (4) times the nominal pipe size of the meter.

Weight

The weight of the meter shall not exceed the following amounts:

Size	Compact (lbs)	Standard (lbs)
3/4	4	5
1	7	10
1 1/2	10	13
2	16	20

Installation

The meter shall be designed so that no straight pipe diameters of pipe are needed upstream or downstream to properly install the meter and maintain its performance. Meters shall be able to be installed in yokes, meter setters, or between elbows and maintain accuracy and performance. Meters may be installed vertically or horizontally.

Remote Read/Automatic Meter Reading Capabilities

All meters shall be compatible and upgradeable to Visual Remote Read LCD Devices, Non-Contact Scan Read Pads, and Radio Read Devices without removal from service or modification to the casting. All systems will be comprised of "Solid State" electronic components.