



**Badger Meter**

## Recordall® Fire Series Meter (FSMA)

Cold Water Turbine Meter & Integral Strainer

UL Certified & FM 1044 Standard Approved for Fire Service Applications

NSF/ANSI Standard 61 and 372 Certified

### DESCRIPTION

Recordall® Fire Series Meters meet or exceed all pressure and performance requirements as stated in the most recent revision of AWWA Standard C703 and feature an epoxy coated ductile cast iron housing with lead-free bronze cover.

Fire Series meters comply with the lead-free provisions of the Safe Drinking Water Act and are also certified to NSF/ANSI Standards 61 and 372. These meters carry the NSF-61 Mark, Trade Designation: FSMA-01.

Badger Meter® Fire Series Meters also conform to UL 327 and FM 1004. The strainer conforms to UL 321 and FM 5551.

Offered in five sizes, the Fire Series meter features:

- Direct coupled turbine based on an exclusive “floating rotor” design that reduces bearing friction—and associated wear and tear.
- Low head loss for optimum pressure during fire extinguishing.
- Integral fire service strainer to protect the meter element from debris and prevent downstream blockage.
- Tamper-resistant calibration vane allowing in-line accuracy adjustments while under pressure.
- Factory-calibrated and tested measuring elements that are unitized for simplified installation and inventory.
- Meters and encoders are compatible with Badger Meter ORION® family of endpoints and other approved technologies.

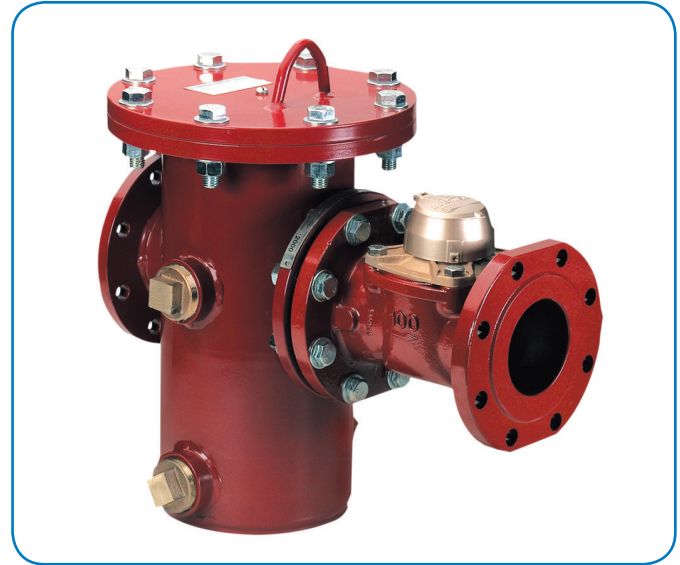
### APPLICATIONS

Use the Recordall Fire Series meters for measuring potable cold water in your vital fire protection systems. This turbine meter can be used in a secondary line dedicated to fire protection—or as part of a primary, multi-use system that provides fire service protection plus potable water for residential use and/or industrial process applications.

These meters use proven turbine technology to help provide accurate measurement and optimal performance during fire service events.

### OPERATION & PERFORMANCE

Direct magnetic drive is achieved when the magnet carrier is driven by a gear train coupled to the rotor. The gear train consists of two sets of gears connected by a vertical transmission shaft. One gear set is at the magnet carrier, the other is a worm gear set at the rotor shaft. When water enters the main turbine chamber at high volume rates, it contacts a multi-vaned rotor and flows into the Turbo Series meter measuring element. The resulting rotor rotation is then transmitted by magnetic coupling to a sealed register or encoder. The direct magnetic drive is built to provide a reliable meter to registration coupling.



### CONSTRUCTION

The Recordall Fire Series meter’s construction complies with AWWA C703 standards. It consists of the following basic components: meter housing, an AWWA Class II measuring chamber and sealed registers or encoders. The meter also includes a strainer, which features an open area at least six times the area of the nominal pipe size.

To simplify maintenance, the registers or encoders and measuring elements can be removed without removing the meter housing. Interchangeability of certain parts between meters also minimizes spare parts inventory investment

### TAMPER-PROOF FEATURES

Unauthorized removal of the register or encoder is inhibited by the optional tamper-detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

### METER INSTALLATION

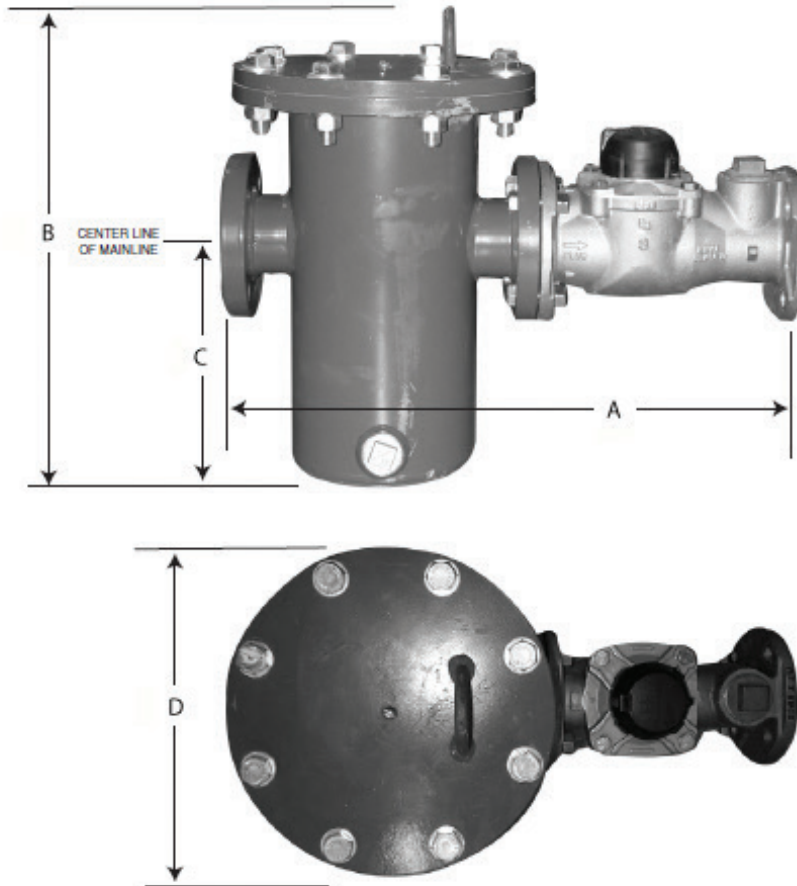
The meter is designed for installations where flow is in one direction only. Companion flanges for installation of meters on various pipe types and sizes are available in cast iron or NL bronze as an option. See the “Recordall® Fire Series Meters (FSMA) User Manual” for installation guidelines.



## SPECIFICATIONS

Fire Series FSMA Model	3 in. (80 mm)	4 in. (100 mm)	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
<b>Meter Flanges, Class D</b>	3 in. (80 mm)	4 in. (100 mm)	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
<b>Typical Operating Range (100% ± 1.5%)</b>	6...550 gpm (1.36...125 m <sup>3</sup> /h)	10...1250 gpm (2.27...284 m <sup>3</sup> /h)	20...2500 gpm (4.54...568 m <sup>3</sup> /h)	30...4500 gpm (6.81...1022 m <sup>3</sup> /h)	50...7000 gpm (11.35...1590 m <sup>3</sup> /h)
<b>Typical Low Flow (95% minimum)</b>	4 gpm (0.90 m <sup>3</sup> /h)	6 gpm (1.36 m <sup>3</sup> /h)	15 gpm (3.40 m <sup>3</sup> /h)	20 gpm (4.54 m <sup>3</sup> /h)	40 gpm (9.00 m <sup>3</sup> /h)
<b>Maximum Continuous Flow</b>	450 gpm (102 m <sup>3</sup> /h)	1000 gpm (227 m <sup>3</sup> /h)	2000 gpm (454 m <sup>3</sup> /h)	3500 gpm (681 m <sup>3</sup> /h)	5500 gpm (1249 m <sup>3</sup> /h)
<b>Maximum Intermittent Flow</b>	550 gpm (125 m <sup>3</sup> /h)	1250 gpm (284 m <sup>3</sup> /h)	2500 gpm (568 m <sup>3</sup> /h)	4500 gpm (1022 m <sup>3</sup> /h)	7000 gpm (1590 m <sup>3</sup> /h)
<b>Maximum Operating Pressure</b>	175 psi (12 bar)				
<b>Maximum Operating Temperature</b>	120° F (49° C)				
<b>Strainer</b>	Open area is at least six times the area of the nominal pipe size. Equipped with a 2 in. flushing port to flush debris from upstream side of strainer screen. Optional flush valve assembly available.				
<b>Register Type</b>	Odometer-type, straight reading, permanently sealed magnetic drive standard. Automatic meter reading systems are optional.				
<b>Registration</b>	100,000,000 gallons 100 gallons/sweep hand revolution		1,000,000,000 gallons 1000 gallons/sweep hand revolution		
	10,000,000 ft <sup>3</sup> 10 ft <sup>3</sup> /sweep hand revolution		100,000,000 ft <sup>3</sup> 100 ft <sup>3</sup> /sweep hand revolution		
	1,000,000 m <sup>3</sup> 1 m <sup>3</sup> /sweep hand revolution		10,000,000 m <sup>3</sup> 10 m <sup>3</sup> /sweep hand revolution		
<b>Materials</b>					
<b>Meter Housing &amp; Cover</b>	Fusion-bonded epoxy coated ductile cast iron with lead-free bronze alloy cover				
<b>Nose Cone &amp; Straightening Vanes</b>	Thermoplastic				
<b>Rotor</b>	Thermoplastic				
<b>Rotor Radial Bearings</b>	Lubricated thermoplastic				
<b>Rotor Thrust Bearing</b>	Sapphire jewels				
<b>Rotor Bearing Pivots</b>	Passivated 316 stainless steel				
<b>Calibration Mechanism</b>	Stainless steel & thermoplastic				
<b>Magnet</b>	Ceramic				
<b>Turbine Shaft &amp; Bolts</b>	Stainless steel				
<b>Strainer Screen</b>	Stainless steel				
<b>Strainer Body</b>	Fusion-bonded epoxy coated steel				
<b>Trim</b>	Zinc-plated carbon steel (standard), stainless steel (optional)				

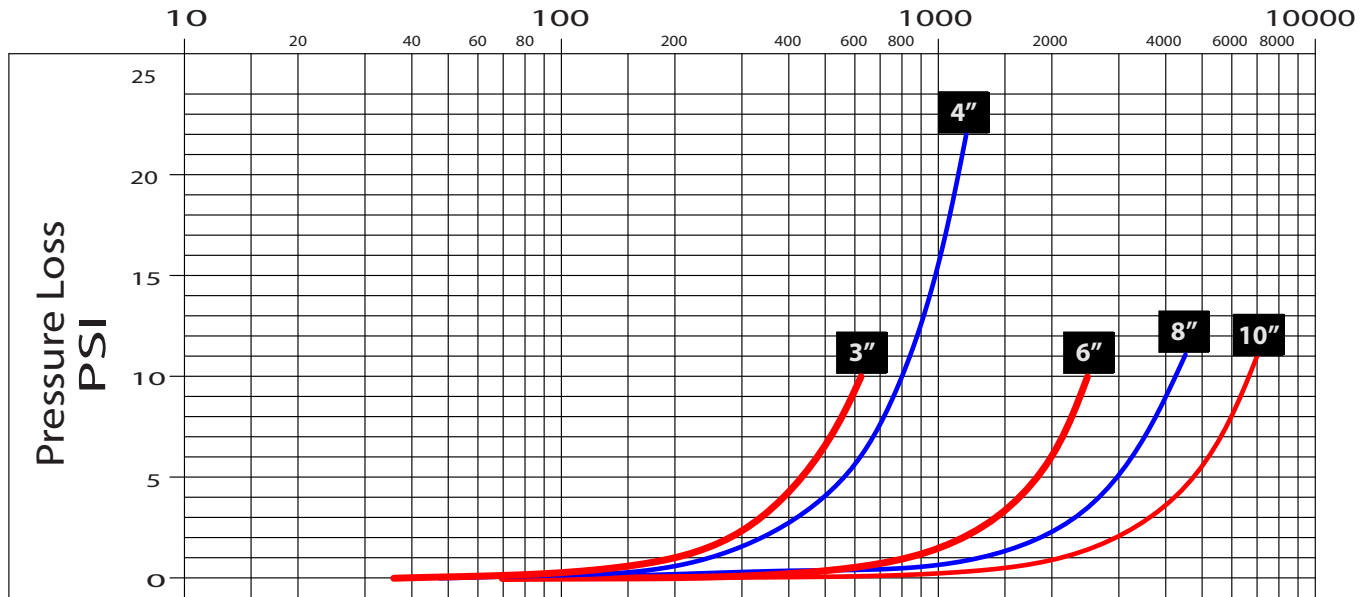
**PHYSICAL DIMENSIONS**



Fire Series FSMA Model	3 in. (80 mm)	4 in. (100 mm)	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Meter & Pipe Size	3 in.	4 in.	6 in.	8 in.	10 in.
Shipping Weight (fully assembled)	105 lb (48 kg)	165 lb (75 kg)	315 lb (143 kg)	700 lb (318 kg)	765 lb (347 kg)
Length (A)	26-3/8 in. (670 mm)	21-11/32 in. (542 mm)	30-5/16 in. (762 mm)	36-17/32 in. (928 mm)	44-1/8 in. (1121 mm)
Height (B)	20-5/8 in. (523 mm)	20-5/8 in. (523 mm)	22-3/8 in. (568 mm)	25-1/16 in. (637 mm)	29-5/16 in. (745 mm)
Height (C)	10-5/8 in. (269 mm)	10-5/8 in. (269 mm)	11-1/16 in. (281 mm)	12-1/16 in. (535 mm)	14-13/16 in. (376 mm)
Width (D)	13-1/2 in. (343 mm)	13-1/2 in. (343 mm)	19 in. (483 mm)	25 in. (635 mm)	27-1/2 in. (699 mm)

## PRESSURE LOSS CHART

Rate of flow in gallons per minute (gpm).



## Making Water Visible®

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