Recordall®
RCDL | Mechanical Flow Meters

Recordall® Fire Series Assemblies (FSAA)

Cold Water Meter & Strainer with Disc Bypass

UL Certified & FM 1044 Standard Approved for Fire Service Applications

NSF/ANSI/CAN Standards 61 and 372 Certified

DESCRIPTION

Recordall® Fire Series assemblies meet or exceed all pressure and performance requirements as stated in the most recent revision of AWWA Standard C703. The assembly's primary turbine meter features cast iron housing, while the disc bypass meter is cast in a lead-free bronze alloy. Fire Series assemblies comply with the lead-free provisions of the Safe Drinking Water Act and are also certified to NSF/ANSI/CAN Standards 61 and 372. These assemblies carry the NSF-61 Mark, Trade Designation: FSAA-01.

Badger Meter Fire Series assemblies also conform to UL 327 and FM 1044. The strainer conforms to UL 321 and FM 5551. The valve conforms to UL 312 and FM 1045.

Offered in five sizes, Fire Series assemblies are designed for revenue-generating flexibility, control on high volume fire service water measurement applications and feature:

- Direct coupled turbine based on an exclusive "floating rotor" design that reduces bearing friction—and associated wear and tear for optimal performance during fire service events.
- Disc meter bypass. The disc meter conforms to AWWA C700.
- 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 assembly for measuring potable cold water in your vital fire protection systems. Select this assembly when the fire service main is used for both high-volume fire applications, such as sprinkler systems, and low-volume domestic services, such as general purpose plumbing.

Operation & Performance

If water enters the meter at a low flow rate, a spring-loaded check valve on the downstream side holds the clapper assembly in a closed position. Based on size of the assembly the water is diverted through either a 1 inch, 1-1/2 inch or 2 inch disc bypass meter. This enables accurate registration of domestic use, leakage or misuse of water intended for stand-by fire protection. When a major flow is required, the resulting water pressure opens the check valve and allows water to flow through the main turbine chamber at full pipe capacity. A small amount of water continues to flow through the bypass when the clapper assembly is fully open.

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. The resulting rotor rotation is then transmitted by magnetic coupling to a sealed register or encoder. The direct magnetic drive provides a reliable meter-to-registration coupling.

Construction

Recordall Fire Series assemblies consist of the following basic components: meter housing, an AWWA Class II measuring chamber, a check valve with bypass piping, valve assembly, two isolation valves, a disc bypass measuring chamber and sealed registers or encoders. The assembly also includes a strainer, which features an open area at least six times the area of the nominal pipe size. The strainer is equipped with a flushing outlet port (or optional valve) for flushing debris from the upstream side of the strainer screen.

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 Assemblies (FSAA) User Manual"* for installation guidelines.

Badger Meter

FSA-DS-00706-EN-03 (September 2021)

FM APPROVED

UL LISTED

Product Data Sheet

SPECIFICATIONS

FSAA Model Includes Disc Bypass Meter	**4 in. (100 mm)**	**6 in. (150 mm)**	**6 in. (150 mm)**	**8 in. (200 mm)**	**10 in. (250 mm)**
Meter Flanges , AWWA C207 Class D	4 in. (100 mm)	6 in. (150 mm)	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Disc Bypass Meter	1 in. (25 mm)	1 in. (25 mm)	1-1/2 in. (38 mm)	2 in. (50 mm)	2 in. (50 mm)
Typical Operating Range (100% ± 1.5%)	1.25…1250 gpm (0.28…284 m^3/h)	1.25…2500 gpm (0.28…568 m^3/h)	2.5…2500 gpm (0.57…568 m^3/h)	2.5…4500 gpm (0.57…1022 m^3/h)	2.5…7000 gpm (0.57…1590 m^3/h)
Typical Low Flow (95% minimum)	0.75 gpm (0.17 m^3/h)	0.75 gpm (0.17 m^3/h)	1.5 gpm (0.34 m^3/h)	1.5 gpm (0.34 m^3/h)	1.5 gpm (0.34 m^3/h)
Maximum Continuous Flow	1000 gpm (227 m^3/h)	2000 gpm (454 m^3/h)	2000 gpm (454 m^3/h)	3500 gpm (795 m^3/h)	5500 gpm (1249 m^3/h)
Maximum Intermittent Flow	1250 gpm (284 m^3/h)	2500 gpm (568 m^3/h)	2500 gpm (568 m^3/h)	4500 gpm (1022 m^3/h)	7000 gpm (1590 m^3/h)
Maximum Operating Pressure	175 psi (12 bar)				
Maximum Operating Temperature	120° F (49° C)				
Pressure Loss at Crossover	3 psi (0.28 bar)				
Check Valve	Valve body conforms to UL 312 and FM 1044.				
Bypass Line	Specify right-facing (standard, as shown) or left-facing assembly.				
Strainer	Screen open area is at least six times the area of the nominal pipe size. Equipped with a 2 in. (4 in. model) or 3 in. (all other models) flushing port to flush debris from upstream side of strainer screen. Optional flush valve assembly available.				

MATERIALS

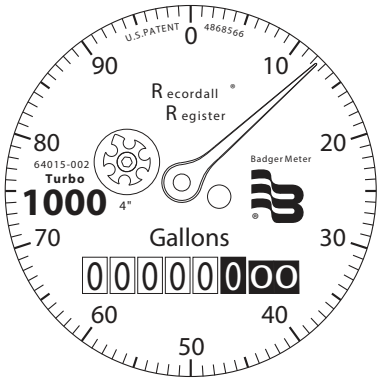
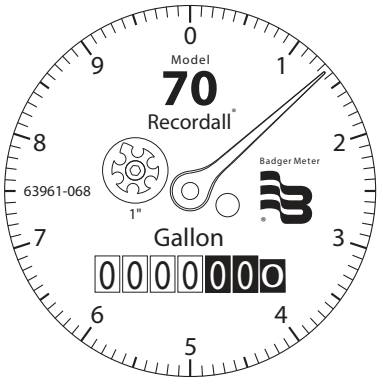
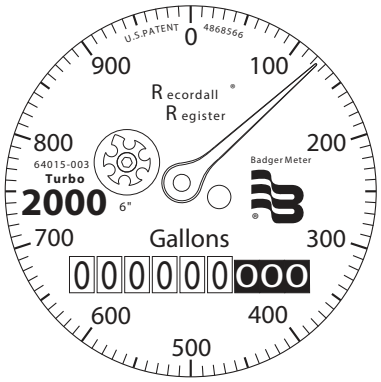
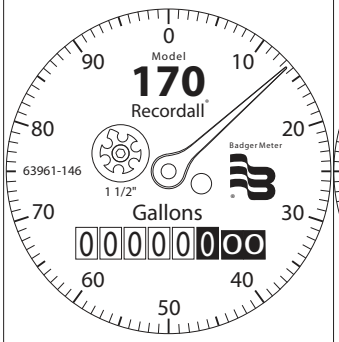
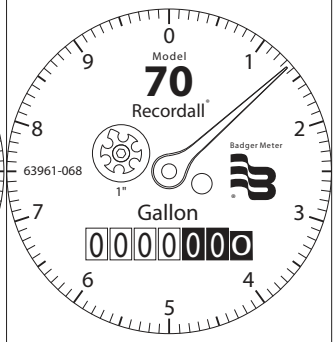
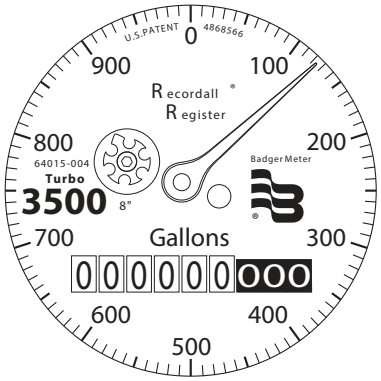
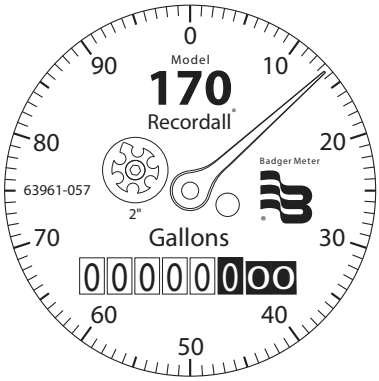
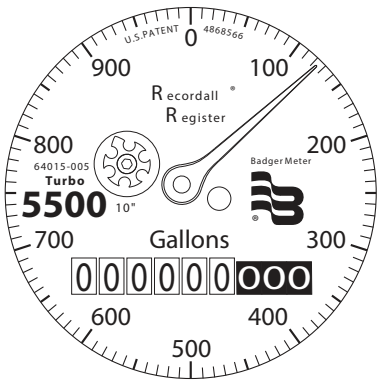
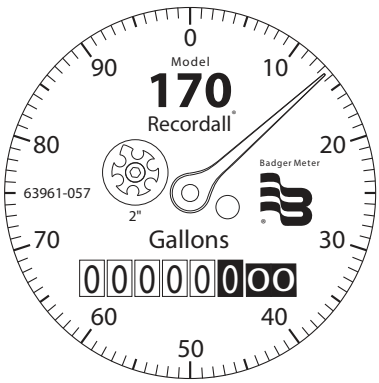
Meter Housing	Fusion-bonded epoxy coated ductile cast iron
Bypass Meter Housing & Cover	Lead-free bronze alloy
Bypass Measuring Chamber	Injection-molded thermoplastic
Bypass	Water works brass piping conforming to AWWA C800
Nose Cone & Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thruster Bearing	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel and thermoplastic
Magnet	Ceramic
Turbine Shaft & Bolts	Stainless steel
Clapper Assembly (clapper, spring, hinge & pins)	Stainless steel
Clapper Seal	Elastomeric, EPDM
Valve Seat	Stainless steel
Valve & Strainer Cover Plate	Fusion-bonded epoxy coated steel
Valve & Strainer Cover Plate Gasket	Elastomeric sheet / O-ring
Valve Body	Fusion-bonded epoxy coated steel / stainless steel
Strainer Screen & Trim	Stainless steel
Strainer Body	Fusion-bonded epoxy coated steel
Trim	Zinc-plated steel or (optional) all stainless steel

REGISTERS / ENCODERS

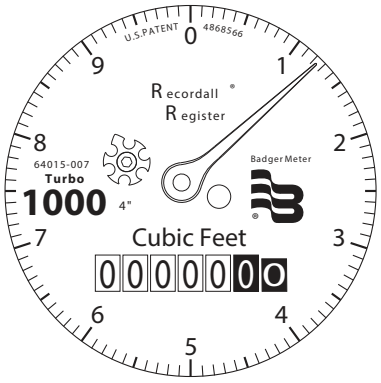
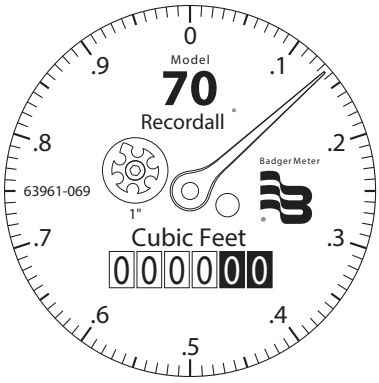
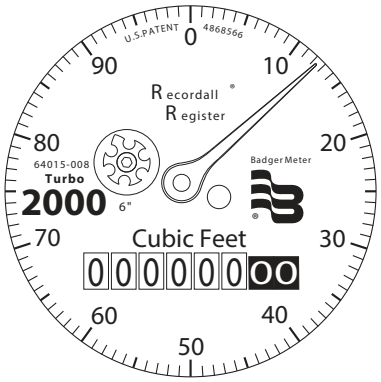
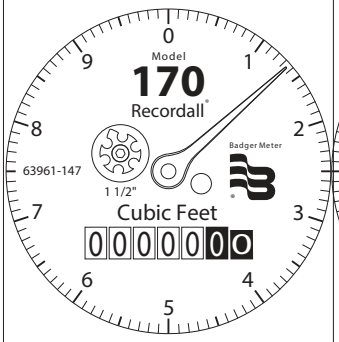
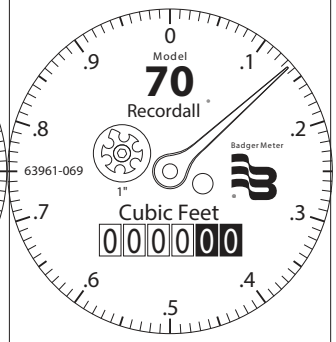
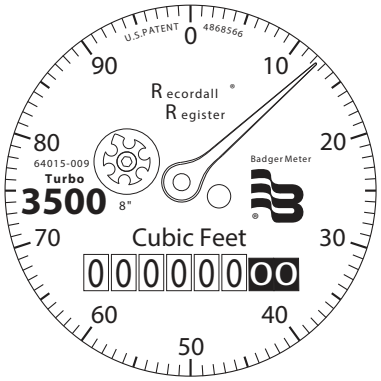
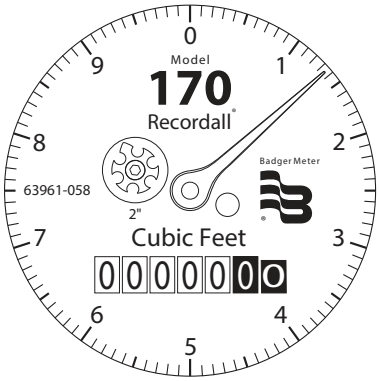
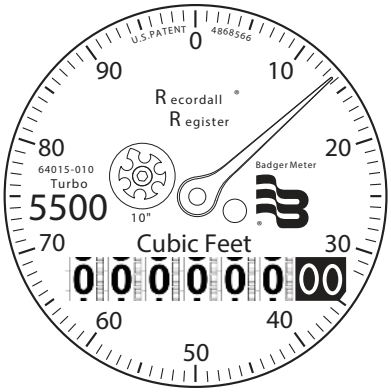
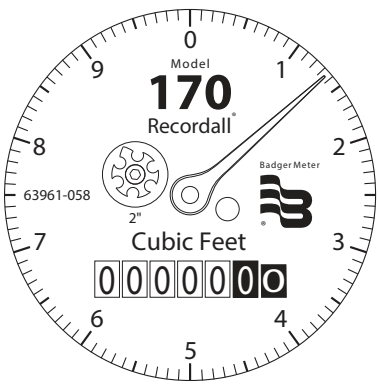
Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 10,000,000 gallons (1,000,000 ft^3, 100,000 m^3).

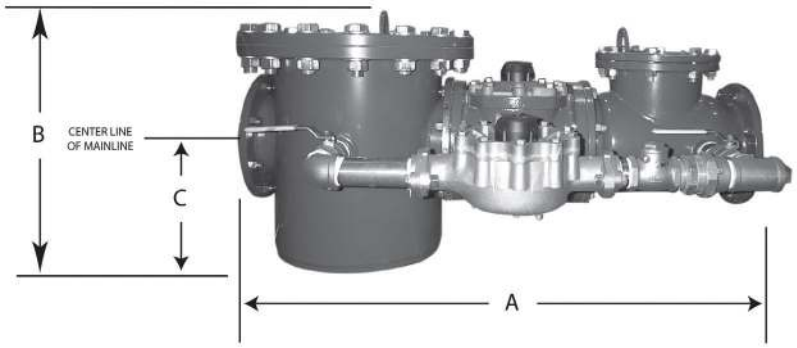
Registers—Gallons

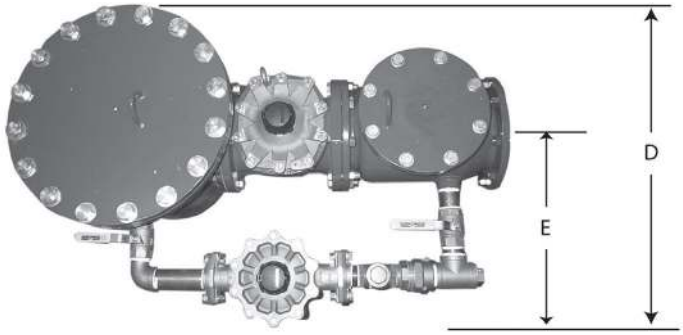
	High Flow	Low Flow
4 in.		
6 in.		 
8 in.		
10 in.		

Registers—Cubic Feet

	High Flow	Low Flow
4 in.		
6 in.		 
8 in.		
10 in.		

DIMENSIONS

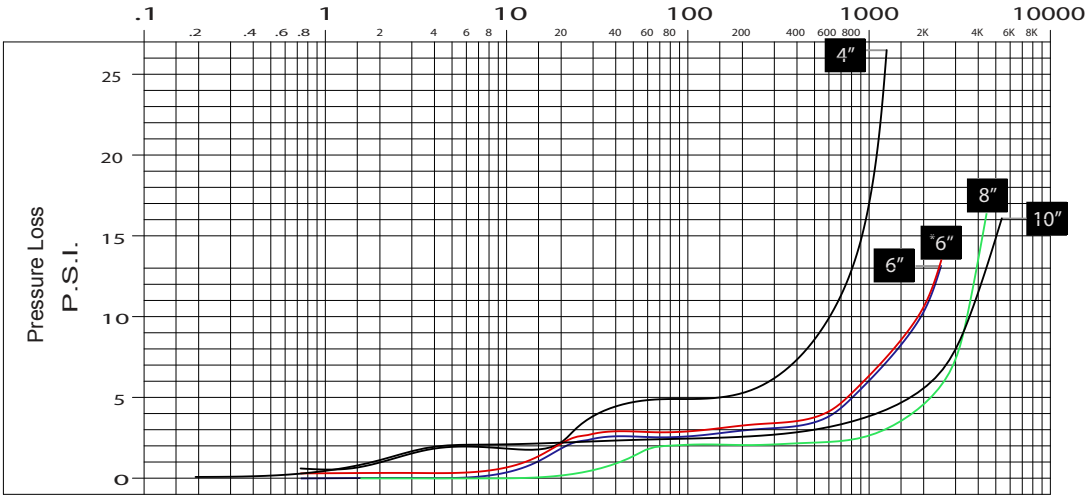




FSAA Model Includes Disc Bypass Meter	**4 in. (100 mm)**	**6 in. (150 mm)**	**6 in. (150 mm)**	**8 in. (200 mm)**	**10 in. (250 mm)**
Meter & Pipe Size	4 in. (100 mm)	—	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Disc Bypass Meter	1 in. (25 mm)	1 in. (25 mm)	1-1/2 in. (38 mm)	2 in. (50 mm)	2 in. (50 mm)
Shipping Weigh Fully Assembled	312 lb (142 kg)	507 lb (230 kg)	507 lb (230 kg)	767 lb (348 kg)	1073 lb (487 kg)
Length (A)	33 in. (838 mm)	45 in. (1143 mm)	45 in. (1143 mm)	53 in. (1346 mm)	68 in. (1727 mm)
Height (B)	20-5/8 in. (524 mm)	22-3/8 in. (568 mm)	22-3/8 in. (568 mm)	25-1/16 in. (637 mm)	25-5/16 in. (643 mm)
Height (C)	10-5/8 in. (270 mm)	11-1/16 in. (281 mm)	11-1/16 in. (281 mm)	12-1/16 in. (306 mm)	14-13/16 in. (376 mm)
Height (D)	23-3/16 in. (589 mm)	30 in. (762 mm)	34-1/4 in. (870 mm)	35-1/2 in. (902 mm)	34-1/2 in. (876 mm)
Height (E)	16-7/16 in. (418 mm)	20-1/2 in. (521 mm)	24-3/4 in. (629 mm)	23 in. (584 mm)	20-3/4 in. (527 mm)

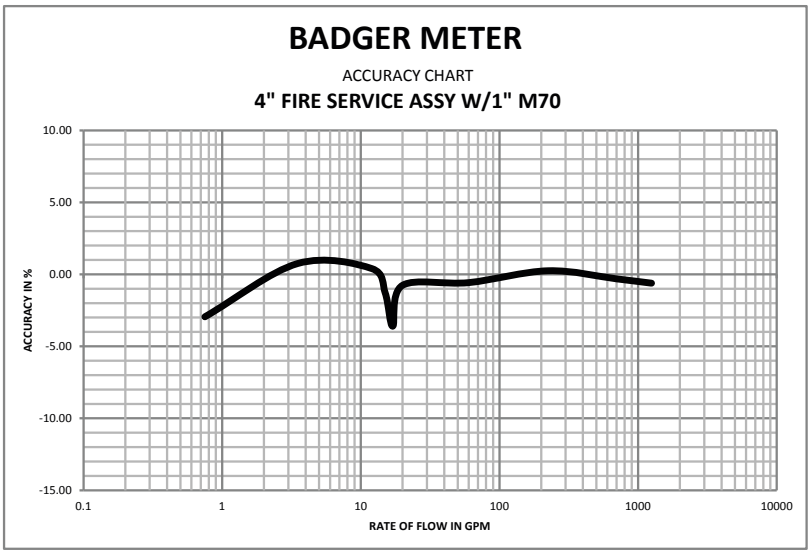
PRESSURE LOSS CHART

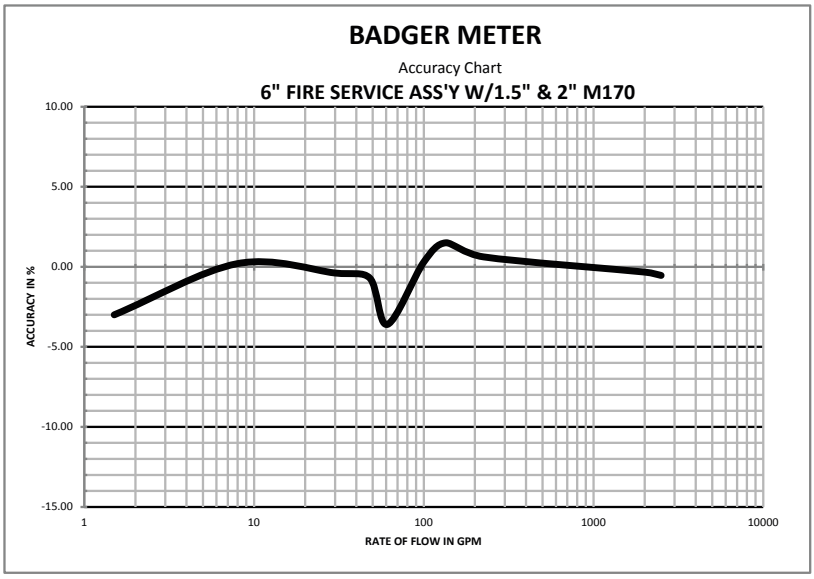
Rate of flow in gallons per minute (gpm).



ACCURACY CHARTS

Rate of flow in gallons per minute (gpm).





ACCURACY CHARTS (CONTINUED)

Rate of flow in gallons per minute (gpm).