



Recordall® Turbo Series Fire Hydrant Meter

Model 450 Reduced Pressure Backflow Preventer Meter, 3"

DESCRIPTION

Badger Meter's Model 450 fire hydrant reduced pressure backflow preventer meter is designed to protect the potable water system by preventing backflow through fire hydrants.

Applications

For use in measuring potable cold water from a fire hydrant or other non-permanent installation where flow is in one direction.

Operation

Water flows into the meter's measuring element where flow readings are obtained by rotor revolutions transmitted by magnetic drive coupling through the meter's cover plate to the sealed register. Magnetic drive is achieved by a right angle worm drive, coupling the rotor to the vertical transmission spindle. A ceramic magnet on the spindle rotates around the vertical axis. Through the magnetic coupling, rotor rotation is transmitted to a follower magnet which transmits rotation to the register gearing.

After being measured the water flows through the pretested double cam-check assembly. Both check valves open to allow full water flow. Any backflow or downstream pressure condition is prevented by the double check valves closing. Any pressure between these valves is vented to atmosphere through a third valve located between the main double check valves.

Operating Performance

The Model 450 fire hydrant backflow preventer meters meet or exceed registration accuracy for the low flow rate, normal operating flow rate, and maximum continuous operation flow rate as specifically stated in AWWA Standard C701.

Contact the factory for specific approvals on the reduced pressure backflow preventer.

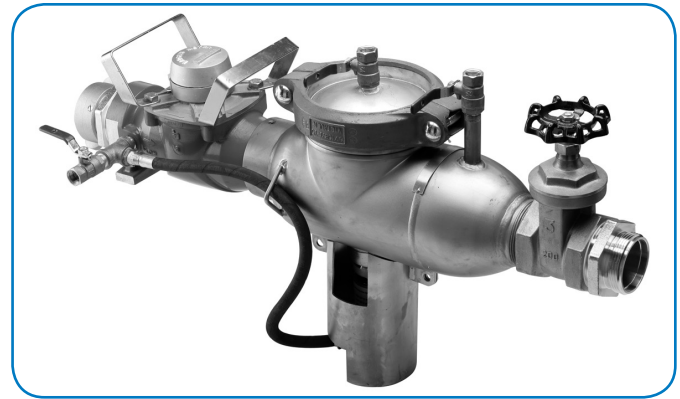
Construction

The Model 450 fire hydrant backflow preventer meter construction consists of four basic components: meter housing, measuring element, permanently sealed register, and reduced pressure backflow preventer. The housing is light-weight heat treated aluminum alloy, compact and easy to handle. The measuring element consists of the transmission coupling, measuring element insert, rotor, straightening vane, and calibration vane assembly. The straightening vanes minimize swirl from piping arrangements upstream.

The reduced pressure double check assembly consists of three independently operating valves mounted in a 300 series stainless steel housing. Two of the valves are cam checks, each internally loaded and providing a positive drip tight closure against reverse flow. The cam checks include a stainless steel cam arm and spring, rubber faced disc and a replaceable seat at the reduced-pressure zone between the two check valves, a differential pressure relief valve adds another level of backflow prevention. A stainless steel support strut is provided for installation against the base of any standard fire hydrant.

Magnetic Drive

Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling.



Restriction Plate

A permanent orifice, positioned in the outlet side of the meter housing, limits the maximum flow of water through the meter. This is provided to protect the measuring element from overspeeding when the meter discharges to atmosphere.

Sealed Register

The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provide long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading.

Tamper-Resistant Features

Removal of the register to obtain free water is prevented when the tamper detection seal wire screw or TORX® tamper-resistant seal screw is added to the meter. A tamper-resistant calibration plug seal provides protection from unauthorized personnel use.

Strainer

A compression fit double layer stainless steel strainer is installed in the inlet housing tube. The strainer insures optimum long-term field performance.

Maintenance

The Model 450 fire hydrant backflow preventer meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger Meter offers various maintenance and meter component exchange programs to fit the needs of the utility.

Hose Couplings

The meter is available with standard (2-1/2" – 7-1/2 NST) fire hose swivel couplings and a 3" gate valve as standard equipment, unless otherwise specified. Complete thread specifications (listed on the back page of this document) must be furnished for special fire hose fittings.

SPECIFICATIONS

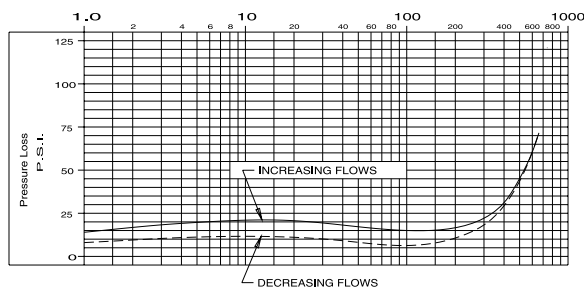
Typical Operating Range (100%±1.5%)	5...660 gpm (1.1...150 m ³ /hr)
Maximum Continuous Flow	500 gpm (102 m ³ /hr)
Maximum Intermittant Flow	660 gpm (150 m ³ /hr)
Typical Low Flow (Min. 95%)	4 gpm (0.9 m ³ /hr)
Pressure Loss at Max. Continuous Operation	37 psi @ 450 gpm (2.55 bar @ 102 m ³ /hr) (standard couplings with orifice and screen) Note: 27 psi @ 350 gpm
Maximum Operating Pressure	150 psi (10 bar)
Standard Hose Coupling	2-1/2" – 7-1/2 NST threads (78P – 3.4 mm) (National standard fire hose coupling thread)
Register	Straight-reading, permanently sealed magnetic drive standard.
Registration	100,000,000 gallons; 100 gallons/sweep hand revolution. 10,000,000 cubic feet; 10 cubic ft/sweep hand revolution. 1,000,000 m ³ ; 1 m ³ /sweep hand revolution.
Assembly Weight	62 lb

Materials

Housing	Heat treated aluminum alloy/stainless steel
Nose Cone and Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thrust Bearings	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel and thermoplastic
Magnet	Ceramic
Register Cover	Bronze
Trim	Stainless steel
Inlet Screen	Stainless steel with Elastomer

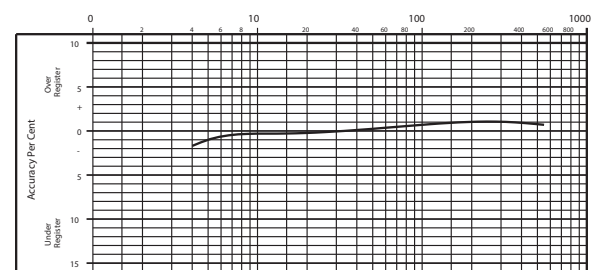
Pressure Loss Chart

Rate of flow in gallons per minute (gpm)

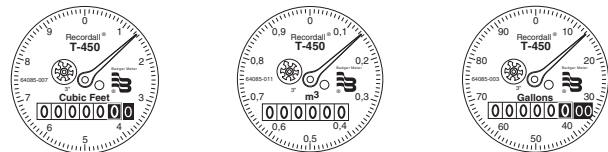


Accuracy Chart

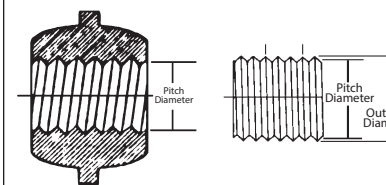
Rate of flow in gallons per minute (gpm)



TYPICAL INSTALLATION



Specifications for Special Fire Hose Coupling Threads



Required Information

- Number of threads per inch and thread form, if other than American National Standard.
- Outside diameter of male threads.
- Pitch diameter of male threads.
- Pitch diameter of female threads.

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