

# Cold Water Recordall® Turbo Meter 10000

Size 20" (DN 500 mm)

# Technical Brief

## DESCRIPTION

**APPLICATIONS:** For use in measurement of potable cold water in commercial and industrial services where flow is in one direction only.

**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.

**CONSTRUCTION:** The Badger® Recordall Turbo 10000 meter construction consists of three basic components: meter housing, interchangeable measuring element and permanently sealed register. The housing is epoxy-coated cast iron, with round flanges. The measuring element consists of the transmission coupling, measuring element insert, rotor, straightening vane, nose cone and calibration vane assembly. The straightening vanes minimize swirl from piping arrangements upstream.

To simplify maintenance, the register and measuring element can be removed without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of many parts with 16" meter also minimizes spare parts inventory investment.

**MAGNETIC DRIVE:** Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

**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. Automatic meter reading and close proximity systems are available for all Recordall Turbo meters. (See back of sheet for additional information.) All reading options are removable from the meter without disrupting water service.

**TAMPER-RESISTANT FEATURES:** Customer removal of the register to obtain free water can be prevented when the option tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory. A tamper resistant calibration seal provides protection from unauthorized personnel.

**STRAINER:** A separate strainer is recommended to protect the measuring element.

**MAINTENANCE:** Badger Recordall Turbo 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 offers various maintenance and meter component exchange programs to fit the needs of the utility.

**CONNECTIONS:** Companion flanges for installation of meters are available in cast iron as an option.



## SPECIFICATIONS

|                                                      |                                                                                                                                                                                        |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Typical Operating Range (100% ± 1.5%)</b>         | 300 -19,800 GPM (68.1 to 4500 m³/h)                                                                                                                                                    |
| <b>Maximum Continuous Operation</b>                  | 10,000 GPM (2270 m³/h)                                                                                                                                                                 |
| <b>Maximum Intermittent Flow</b>                     | 19,800 GPM (4500 m³/h)                                                                                                                                                                 |
| <b>Typical Low Flow (Min. 95%)</b>                   | 200 GPM (45.4 m³/h)                                                                                                                                                                    |
| <b>Pressure Loss at Maximum Continuous Operation</b> | 0.5 PSI (0.03 bar)                                                                                                                                                                     |
| <b>Maximum Operating Temperature</b>                 | 120°F (49°C)                                                                                                                                                                           |
| <b>Maximum Operating Pressure</b>                    | 150 PSI (10 bar)                                                                                                                                                                       |
| <b>Meter Flanges</b>                                 | 20" Raised face round                                                                                                                                                                  |
| <b>Register</b>                                      | Straight reading, permanently sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.                                                                |
| <b>Registration</b>                                  | 10,000,000,000 Gallons<br>10,000 gallons/sweep hand revolution.<br>1,000,000,000 Cubic Feet<br>1,000 cubic ft./sweep hand revolution.<br>10,000,000 m³<br>10 m³/sweep hand revolution. |

## MATERIALS

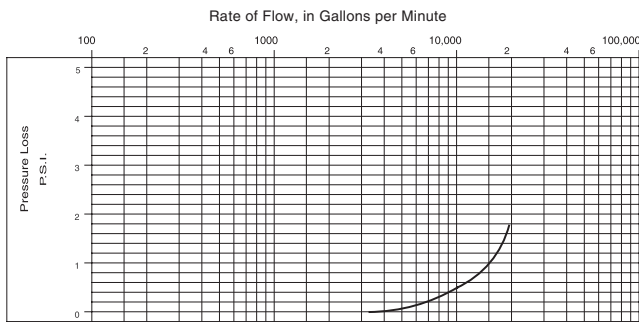
|                                          |                                   |
|------------------------------------------|-----------------------------------|
| <b>Housing</b>                           | Blue Epoxy-coated Cast Iron       |
| <b>Nose Cone and Straightening Vanes</b> | Thermoplastic                     |
| <b>Rotor</b>                             | Thermoplastic                     |
| <b>Rotor Radial Bearings</b>             | Lubricated Thermoplastic          |
| <b>Rotor Thrust Bearings</b>             | Sapphire Jewels                   |
| <b>Rotor Bearing Pivots</b>              | 316 Stainless Steel               |
| <b>Calibration Vane</b>                  | Stainless Steel and Thermoplastic |
| <b>Magnet</b>                            | Ceramic                           |
| <b>Register Lid and Shroud</b>           | Thermoplastic, Bronze             |
| <b>Trim</b>                              | Stainless Steel                   |

RTS-T-20

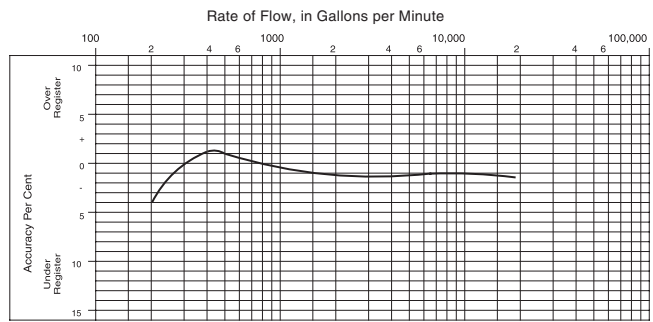


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## PRESSURE LOSS CHART

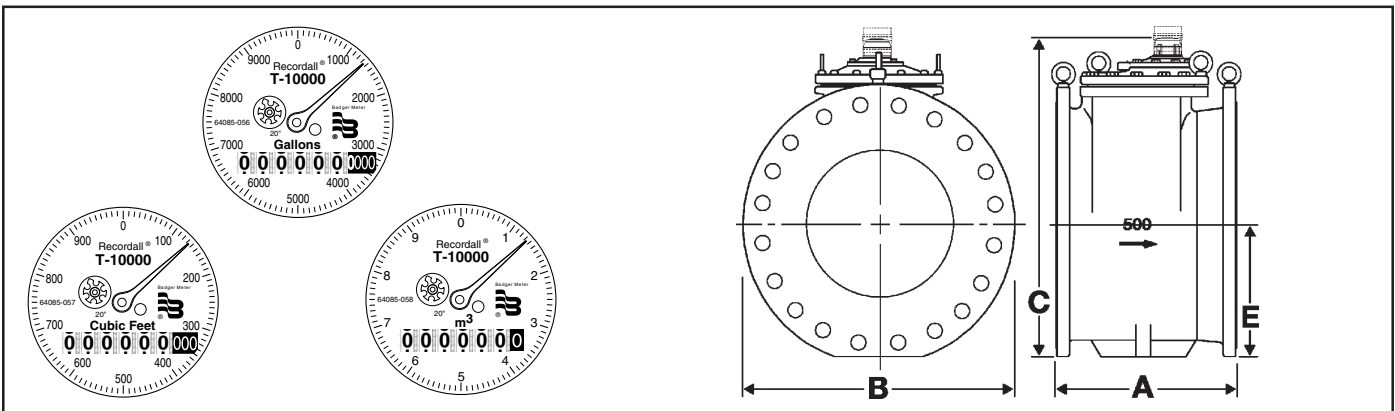


## ACCURACY CHART



| Meter & Pipe Size  | DIMENSIONS                    |                             |                                 |             |                              |           |                 |                 |
|--------------------|-------------------------------|-----------------------------|---------------------------------|-------------|------------------------------|-----------|-----------------|-----------------|
|                    | Length<br>A                   | Width<br>B                  | Height<br>C                     | Bolt Circle | Centerline<br>E              | No. Bolts | Net Weight      | Shipping Weight |
| 20" Meter (DN 500) | 19 <sup>11/16</sup> " (500mm) | 28 <sup>1/8</sup> " (715mm) | 30 <sup>13/16</sup> "** (783mm) | 25" (635mm) | 14 <sup>1/16</sup> " (357mm) | 20        | 565 lb. (256kg) | 615 lb. (279kg) |

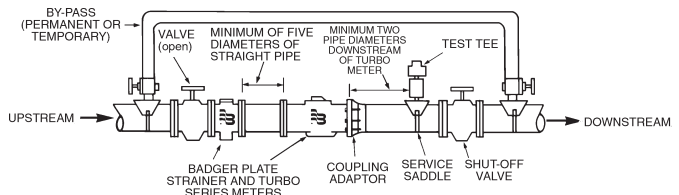
\*Add 1<sup>3/8</sup>" (34mm) to height for ROM generator.



**PROPER INSTALLATION:** The following installation guidelines will insure optimum field performance and reliability when installing a Badger Turbo meter.

1. A strainer is recommended to insure optimum flow conditioning and protection for the turbo meter measuring element.
2. When using a strainer, five (5) diameters of straight pipe separating the strainer upstream of the meter is recommended.
3. ONLY full-open gate valves should be used immediately upstream of the meter. Butterfly valves MUST be five (5) pipe diameters or more upstream of the meter. Full-open gate or butterfly valves can be used downstream.
4. DO NOT install pressure reducing devices or check valves upstream of the meter.
5. Unweighted check valves MUST be located at least three (3) pipe diameters downstream of the meter.

6. Pressure reducing devices and externally weighted check valves MUST be located at least five (5) pipe diameters downstream of the meter.



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Please see our website at  
[www.badgermeter.com](http://www.badgermeter.com)  
 for specific contacts.



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