

# Specification Sheet

# TS4000 Turbine Meter



**Sizes: 1½" - 6"**

## Description

**Operation.** TS4000 Turbine Meters are designed for installation where occasional low and moderate to high sustained flows are demanded. Water passes through the meter without a change in flow direction, driving a helix rotor in direct proportion to the quantity of water passing through the meter. Rotor revolutions are transferred to a register by a magnetic drive.

**Compliance to Standards.** The TS4000 Turbine Meter complies with all performance and material requirements of the American Water Works Association Standard C701, Class II In-Line (High-Velocity) Type, as most recently revised.

**Installation.** The meter must be installed in a clean pipeline, free from any foreign materials. Install the meter with direction of flow as indicated by the arrow cast in the meter case. The meter may be installed in horizontal, inclined or vertical lines. The integral plate strainer of the 1½" - 6" TS4000 protects the turbine and helps reduce the effects of turbulence. Furthermore, the integral strainer reduces the required pipe diameters of undisturbed flow to five upstream and three downstream. The installer should consider a bypass pipe with gate valves for use during maintenance. Integral test ports are standard on all sizes.

**Application.** TS4000 meters are for use in POTABLE COLD WATER up to 120°F (50°C) and working pressures up to 150 psi. The meter will perform with accuracy registration of 100% ± 1 1/2% within the AWWA recommended flow ranges\*. Both pressure loss and accuracy tests are made before shipment. No adjustments need be made before installation.

**Construction.** The meter consists of a main case, an integral strainer, a measuring element, a case cover, integral test ports and a magnetically driven register assembly. The main case is cast in either traditional waterworks bronze or low-lead bronze with raised characters showing model, size and direction of flow. The case has a throated inlet. The measuring element assembly consists of the rotor, straightening vanes, accuracy regulator, spindles and gears. The measuring element is attached to the underside of the cover with stainless steel screws and washers. The internal accuracy regulator vane is interconnected with an external regulator assembly located underneath the register. This allows meter cali-

## Specifications

### Performance

| Sizes | Accuracy GPM |             | Flow GPM   |         |
|-------|--------------|-------------|------------|---------|
|       | +/- 5%       | +/-1 1/2% * | Continuous | Maximum |
| 1½"   | 1.5          | 3-400       | 220        | 400     |
| 2"    | 1.5          | 3-400       | 220        | 400     |
| 3"    | 2.2          | 7.5-900     | 600        | 900     |
| 4"    | 2.6          | 7.5-1,500   | 1,200      | 1,500   |
| 6"    | 8            | 13-3,100    | 2,500      | 3,100   |

### Performance (all sizes)

|                          |     |
|--------------------------|-----|
| Operating Pressure psi   | 150 |
| Operating Temperature °F | 120 |

### Sweep Hand Registers

| Size     | USG | Cu Ft | Cu Meter |
|----------|-----|-------|----------|
| 1½" - 4" | 10  | 1     | 1        |
| 6"       | 100 | 10    | 10       |

### Capacity of Register

| Size     | USG  | Cu Ft | Cu Meter |
|----------|------|-------|----------|
| 1½" - 4" | 100  | 10    | 1        |
| 6"       | 1000 | 100   | 10       |

### Register Type

Permanently sealed direct reading register.  
InVISION Absolute Encoder register  
Digital register

### Materials

|                          |                                      |
|--------------------------|--------------------------------------|
| Main Case                | Waterworks Bronze or Low-lead Bronze |
| Top Cover Plate          | Waterworks Bronze or Low-lead Bronze |
| Body O-Ring              | Synthetic Rubber                     |
| Case Bolts               | Stainless Steel                      |
| Measuring Element        | Glass Loaded Noryl                   |
| Rotor                    | Glass Loaded Polypropylene           |
| Rotor Thrust Bearing     | Synthetic Sapphire                   |
| Rotor Spindle            | Tungsten Carbide                     |
| Thrust Pads              | Tungsten Carbide                     |
| Register Lens            | Tempered Glass                       |
| Register Housing and Lid | Polymer or Bronze                    |
| Register Can             | 90% Copper Alloy                     |

bration without depressurizing the test bench or meter service. The regulator is protected by the register assembly, assuring tamperproof performance. The main case and cover are assembled with an O-ring gasket and stainless steel bolts. The register assembly is secured to the main case with a tamperproof screw or tamperproof punch pin.

**Register.** The register is contained within a 90% copper seamless can which is oven cured at 150°F for 90 minutes to eliminate condensation. The 1/4" true tempered glass lens is secured in an "L" shaped gasket, and then roll sealed to produce a permanent sealed design. To assure easy reading, the totalizer wheels are large and color-coded. The applicable size, model, registration, part number and date code are printed on the calibrated dial face. Moving clockwise during operation, the extra thin sweep hand does not interfere with meter reading, and the flow indicator will detect plumbing leaks.

**Connections.** The 3" through 6" meters are available with round flanged end connections. The 1 1/2" and 2" meters are available with 2-bolt oval flanged-end connections. Both flanged connections conform to ANSI B16.1 cast iron pipe flange, Class 125. Both bronze and cast iron companion flanges are available. The companion flanges are faced, drilled and tapped with ANSI B2.1 internal taper pipe thread and conform to ANSI B16.1 cast-iron pipe flange, Class 125.

**Maintenance.** The measuring element with integral straightening vanes can be removed, repaired or replaced without removing the main case from the service line. Pretested and calibrated measuring elements with cover plates and registers are available for exchange or purchase. In addition, AMCO Water Metering Systems Inc maintains a fully equipped and staffed repair facility in Ocala, Florida.

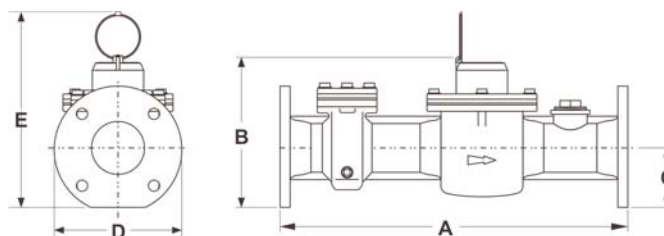
**Reading Options.** TS4000 meters are available with Absolute Encoder and Digital Encoder register options to provide water usage output to the entire spectrum of electronic meter reading systems, giving flexibility to utilities implementing or upgrading reading technologies. AMCO's Encoder and Digital registers interface to a variety of automated meter reading systems, allowing technology upgrade without register replacement.

**Electronic Meter Reading (EMR).** The TS4000 is available with InVision Absolute Encoder technology that allows electronic interrogation of the meter's register via inductive coupled touch pads. AMCO's pit version of the InVision encoder utilizes a fully potted glass lens, permanently sealed to eliminate any chance of moisture penetration. The InVision register features a programmable ID number, leak detector that provides visual indication of plumbing leaks, factory potted touch pads for wall or pit-lid mounting, and low power consumption for AMR applications.

**Automatic Meter Reading (AMR).** AMCO offers the full spectrum of RF technology alternatives - Walk-by, Drive-by and Fixed Network, to reduce reading cost beyond electronic meter reading, while further increasing personnel safety. RF Transmitters accept input from the AMCO's Encoder or Digital Register for reliable measurement inputs. RF Systems from AMCO are designed for reading both pit and inside set meter installations, and are to perform in the extremes of service conditions they will encounter.

**Dimensions and Net Weights**

| Meter Size  | Dimensions (inches) |         |         |        |          | Weight (lbs.) |
|-------------|---------------------|---------|---------|--------|----------|---------------|
|             | A                   | B       | C       | D      | E        |               |
| 1 1/2" Oval | 13                  | 8 1/4   | 1 13/16 | 5 7/8  | 11 9/16  | 32            |
| 2" Oval     | 17                  | 8 9/16  | 2 13/16 | 6      | 11 15/16 | 39            |
| 3" Round    | 19                  | 9 3/16  | 3 3/4   | 7 9/16 | 12 1/2   | 54 1/2        |
| 4" Round    | 23                  | 10 3/16 | 4 3/16  | 9 1/16 | 13 1/2   | 73            |
| 6" Round    | 27                  | 13 3/8  | 5 3/16  | 11     | 16       | 141           |



**AMCO Water Metering Systems Inc.**

www.amcowater.com

The company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice. These products have been manufactured with current technology and in accordance with applicable AWWA Standards.

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