T4000 Turbine Meter

Sizes: 1 ½" - 12"

Performance:

Size	Inches	1 ½	2	3	4	6	8	10	12
	mm	38.1	50.8	76.2	101.6	152.4	203.2	254.0	304.8
Performance									
> 95% - 101.5%	GPM	1.5	1.5	2.2	2.6	8	16	20	40
Accuracy	m3/hr	.3	.3	.5	.6	1.8	3.6	4.5	9.1
98.5% - 101.5%	GPM	3-400	3-400	7.5-900	7.5-1250	13-2600	18-4500	27-7000	50-9000
Accuracy	m3/hr	.7-91	.7-91	1.7-204	1.7-284	3.0-590	4.1-1022	6.1-1590	11.4-2044
Continuous flow	GPM	220	220	600	1000	2000	3500	5500	6500
	m3/hr	50	50	140	225	450	800	1250	1500
Maximum flow	GPM	400	400	900	1250	2600	4500	7000	9000
	m3/hr	90	90	200	290	550	1000	1600	2000
Register Resolution									
Sweep Hand Registers	USG	100	100	100	100	1000	1000	1000	1000
	cu ft	10	10	10	10	100	100	100	100
	m3	1	1	1	1	10	10	10	10
Capacity of Registers (millions)	USG	100	100	100	100	1000	1000	1000	1000
	cu ct	10	10	10	10	100	100	100	100
	m3	1	1	1	1	10	10	10	10

Performance (all sizes): Operating Pressure 150 psi (1034kPa), Operating Temperature 120°F (50°C)

Register Type — Choice of permanently sealed direct reading register. InVISION Absolute Encoder register, Digital register, Industrial registers.

Materials

Main Case (1 ½" - 8")	Waterworks Bronze or Low-lead Bronze
Main Case (10" - 12")	Epoxy Coated Cast Iron
Top Cover Plate (1 ½"-12")	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 or stainless steel

Operation

T4000 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 T4000 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. Elster AMCO Water recommends that all turbine meters be installed with ten pipe diameters of undisturbed flow upstream of the meter, and five pipe diameters of undisturbed flow downstream of the meter. It is highly recommended that a plate strainer be used to protect the turbine and help reduce the effects of turbulence. Furthermore, the addition of a 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 and a downstream test tee for future field-testing.

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Application

T4000 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, a measuring element, a case cover and a magnetically driven register assembly. In sizes 1 1/2" through 8" the main case is cast in either traditional waterworks bronze or low-lead bronze, the 10" and 12" main case is epoxy coated cast iron, all 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 calibration 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. Sizes 4" through 8" come standard with integral test ports.

Register

The register is contained within a 90% copper or 304 stainless steel 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 12" 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 with companion flanges 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, Elster AMCO Water maintains a fully equipped and staffed repair facility in Florida.

Reading Options

T4000 meters are available with Absolute Encoder and Digital 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. Elster AMCO Water's Encoder and Digital registers interface to a variety of automated meter reading systems, allowing technology upgrade without register replacement.

Electronic Meter Reading (EMR)

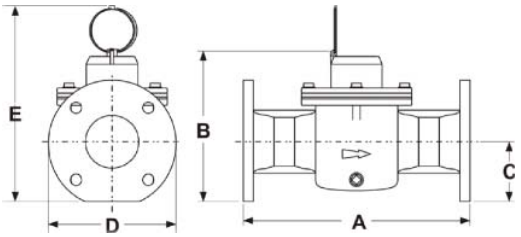
The T4000 is available with InVision Absolute Encoder technology that allows electronic interrogation of the meter's register via inductive coupled touch pads. Elster AMCO Water's pit version of the InVision encoder utilizes a fully potted glass lens, permanently sealed to eliminate any chance of moisture 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)

Elster AMCO Water 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 Elster AMCO Water's Encoder or Digital Register for reliable measurement inputs.

Dimensions and Net Weight

Meter Size	A		B		C		D		E		Weight	
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs.)	(kg.)
1 1/2" Oval	10	259	8 3/16	208	1 7/8	47.6	5 5/8	142	11 1/2	292.1	22 1/2	10.2
2" Oval	10	258	8 1/8	206.4	2 1/8	54	6 1/16	154	11 1/2	292.1	24	10.9
3" Round	12	308.5	9 3/8	238	3 13/16	93.6	7 1/2	190	12 11/16	322.3	37 1/2	17
4" Round	14	360	9 3/4	247.6	4 3/16	106.4	9 1/16	229	13 1/16	331.8	51	23.1
6" Round	18	457.2	13	330.2	5 1/2	139.7	11	279.4	16 5/16	414.3	101 1/2	46
8" Round	20	508	15 1/8	384.2	6 1/2	165.1	13 9/16	344.5	18 1/2	469.9	136 1/2	61.9
10" Round	17 3/4	451	17 1/4	438.2	7 3/4	197	16 1/10	406	21 1/2	546.1	181	82
12" Round	19 3/4	502	18 1/3	466	8 4/5	224	18 1/10	457	22 1/2	571.5	230	104



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