



WT-C Carbon-Steel Body Turbine Meter Instructions

General Information

This unique system of 2" to 8" turbine meters uses one moving part, a precision helical rotor. Rotation of the rotor is electronically detected and processed. High-quality jewel bearings and polished zirconia ceramic shafts minimize friction while providing long wear life in non-lubricating fluids. The entire rotor assembly can be easily taken out of the meter for field service, without removing the meter from the pipe.

WT-C bodies are fabricated from carbon steel tubing. The standard turbine insert is machined from a stainless steel casting. Turbine rotors are Kynar (PVDF).

An electronic register can be mounted on the meter to display flow rate, total (resettable or non-resettable) and provide a programmable pulse output. The same unit, in a wall mount or panel mount housing, can be located up to 2,000 feet away. It is not necessary to have any processing electronics on the meter itself unless local reading is desired. Other electronics options (which can be meter or remote mounted) are the AO55 blind 4-20 mA transmitter, the PD10 divider, and a battery-operated (FT415) ratemeter/totalizer.

Specifications

Materials

Meter Body	Painted Carbon Steel
Turbine Insert	CF8M Cast Stainless
Turbine Rotor	Kynar (PVDF)
Shafts	Ceramic
Bearings	Sapphire journal, ruby endstone

Power

12-18VDC

Maximum Pressure

200 psi (14 bar)

Maximum Temperature

200° F (93° C)

Accuracy

± 1% FS

Flow Range (GPM)

	2"	3"	4"	6"	8"
Min	3	4	6	12	30
Max	150	400	600	1200	3000

Features

Modular electronics for a wide range of applications

- Rate/Total and pulse output
- Analog 4-20 mA
- Programmable pulse only
- Battery-powered totalizer

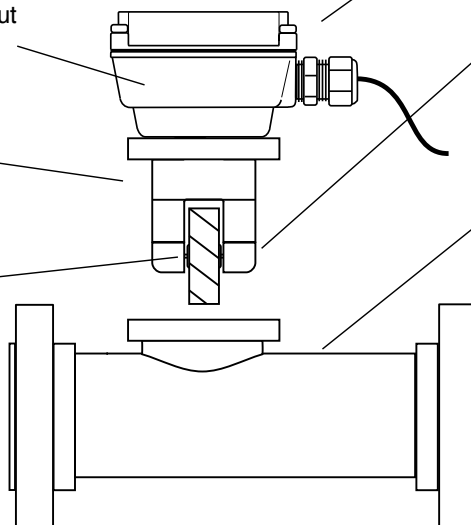
Cast stainless steel insert removes easily for service

Rotor is the only moving part

Rugged cast housing

Sapphire journal bearings for long life and low minimum flow

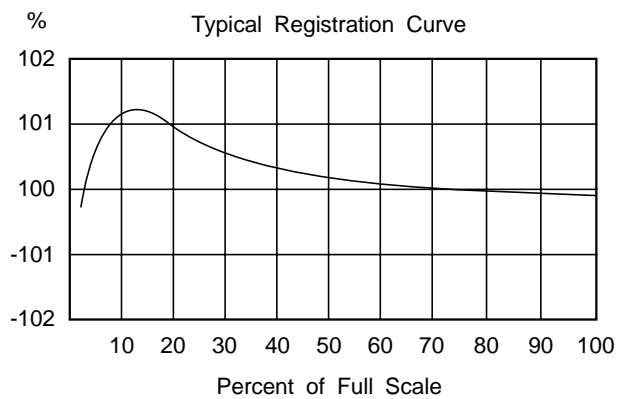
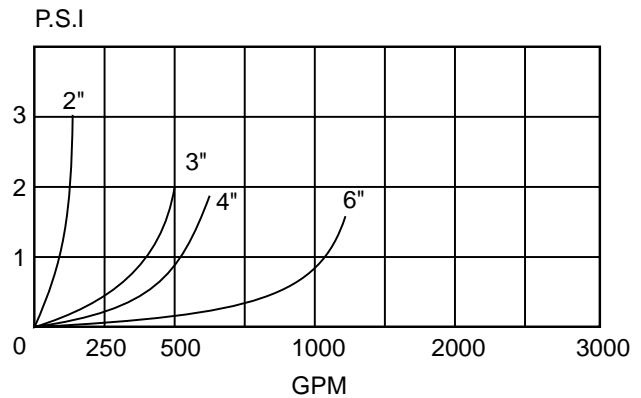
Fabricated carbon steel body, 150 lb. drilling flanges (female NPT in 2")



Electronic Options Specifications

WT100 (Pulse Only)	
Power	6-24 VDC
Pulse Type	Current sinking
WT 100 with PD 10 Divider	
Power	12-24 VDC
Divider Range	1-4,095
Output	Current sinking, 20 mA max.
WT101	
Power	12-32 VDC, 1.5 mA current loop powered
Rate	8-digit autorange
Total	8-digit, selectable decimal Reset standard, non-reset option
Memory	Nonvolatile (no battery needed)
Pulse Output	0.1 second, open collector
Pulse Range	0.1 - 200,000 gallons per pulse
Analog Output	4-20 mA, user-programmed span, two wire
WT102 (AO55 Blind Transmitter)	
Output	4-20 mA
Loop Power	12 - 36 VDC (isolated)
Accuracy	± 1%
Response Time	3 sec., 95% FS
WT104 (Battery-powered Rate/Totalizer)	
Total	8 digit LCD
Rate	4 1/2 digit LCD
Battery	3V Lithium, 5 yrs. normal life

Pressure Loss Chart

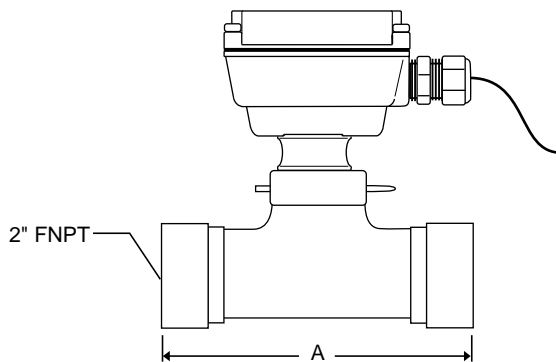


Dimensions

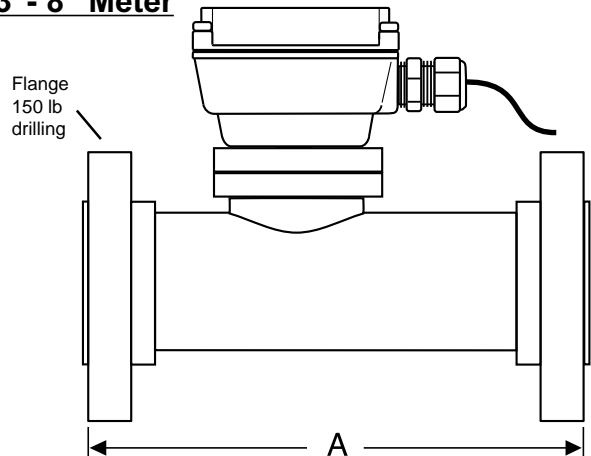
Meter size	Dimen. A
2"	8"*
3"	12"
4"	14"
6"	18"
8"	20"

* Female NPT threaded ends standard, flange or weld ends available

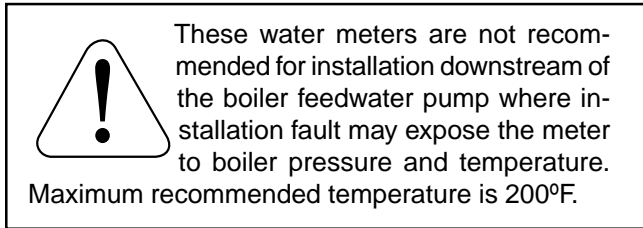
2" Meter



3"- 8" Meter



Installation

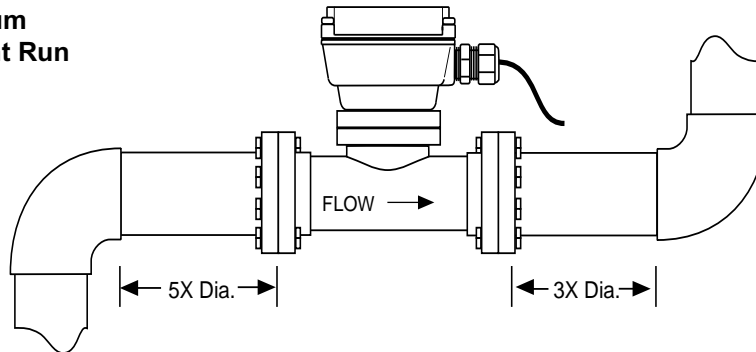


Maintenance and Repair

Recalibration. If it is necessary to recalibrate the meter for any purpose, this can be done by any SeaMetrics-authorized facility. Call the factory for information.

Turbine Insert Removal and Installation. In order to repair any mechanical parts (rotor or shafts) it is neces-

Minimum Straight Run



Piping Conditions. In general, the standard practice of installing the meter with ten diameters of straight pipe upstream and five downstream are recommended. However, it is possible under some circumstances to operate with less. (See diagram above.)

Flanges. For sizes 3" and above, the standard flanges are 150 lb. ANSI drilling. Either partial or full-face gaskets can be used. When installing, tighten the bolts evenly, and use care to prevent a misaligned gasket from entering the flow stream.

Position. The WT Series are all-position meters, and can be operated in a vertical or horizontal position, and with the meter insert in any radial position. A horizontal insert position is preferred if there is a risk of air becoming trapped due to constant low flows. Operating the meter in partially-filled pipe will result in inaccuracies.

Connections. Most WT meters require electrical connections. See the connections diagram for the one relevant to your meter.

Operation

For operating instructions for the various electronic modules, consult the manual for the specific module. This should be included with the meter when purchased.

sary to remove the turbine insert. To do this, first remove all pressure from the line. Then remove the machine screws which hold the top flange in place. The flange is an integrated part of the insert.

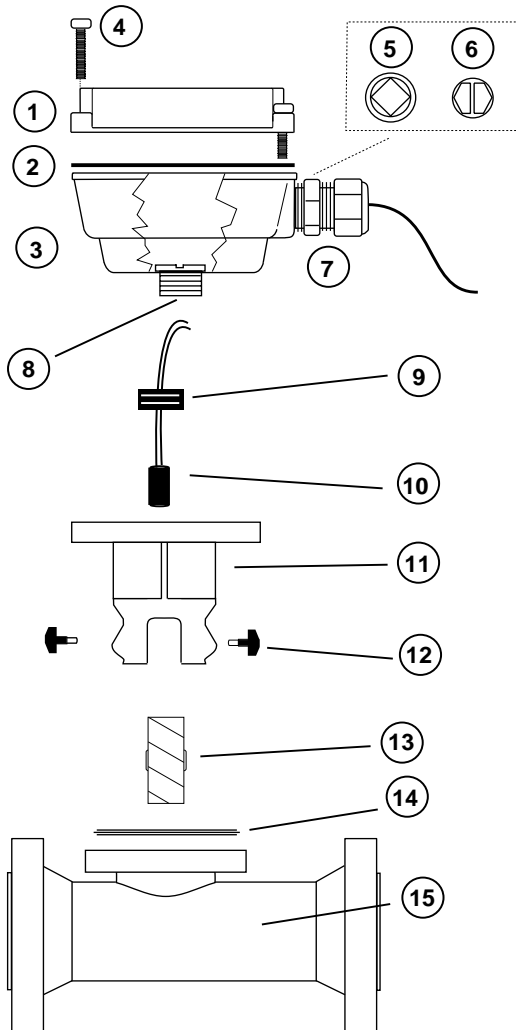
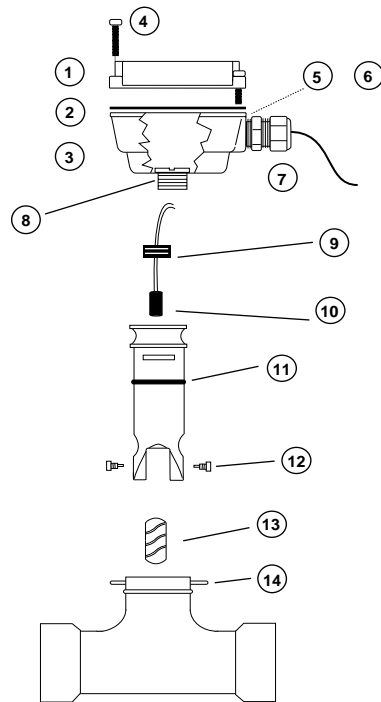
Rotor and Shaft Replacement. Examine the rotor to determine if bearings or shaft are damaged or excessively worn. The rotor should spin smoothly and freely, with no visible wobble. Back and forth play should be very minor, less than 1/64". If it is necessary to replace the rotor or shafts, first back out both shafts with a small blade screwdriver. The rotor will come free as soon as the shaft ends come free of the rotor bearings. Reverse the procedure to reinstall. **Note:** Do not over-tighten the shaft screws. Check to be sure that a small amount of free play between the shaft ends and the bearings remains.

Sensor Replacement. This procedure is rarely necessary. However, certain electrical conditions can damage the sensor. To replace it, first remove any electronics module in the aluminum electronics housing. Disconnect the sensor leads from terminals on the back of the board. Remove the strain relief or electronic housings, then remove the sensor retaining screw, using a screwdriver. Then remove the sensor tugging gently on the sensor leads.

Electronic Module Repair. None of the electronics modules have replaceable components. Printed circuit boards must be replaced as complete units. In order to replace an electronic module, loosen the four screws which fasten each unit. Once the screws are loose, the unit will lift free from the insert housing.

WT(C) Meter Assembly:

WT(C) Parts - 2"		
1-6	Housing (see below)	
7	Strain relief	7655
8	Housing retainer screw	26508
9	Sensor retaining screw	25321
10	Sensor	26310
11	O-ring	25081
12	Shaft screw (2)	16710
13	Turbine rotor	25947
14	U-clip	15527



WT(C) Parts - 3"-8"		
1	Upper blind housing	26181
1	PD10 divider module	26520
1	FT420 rate/total display module	26949
1	AO55 4-20 mA transmitter module	26521
1	FT415 rate/total display module	26519
2	Gasket	26211
3	Lower housing	29930
4	Housing screw	26229
5	Plug, steel	26073
6	Plug, plastic	26079
7	Strain relief	7655
8	Sensor retainer	25321
9	Sensor	26310
10	Insert 3"-8"	16820
11	Turbine shaft screw (2)	16710
12	Turbine rotor	15316
13	O-ring	25105
14	Meter body	

SeaMetrics

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