

# WT-Series



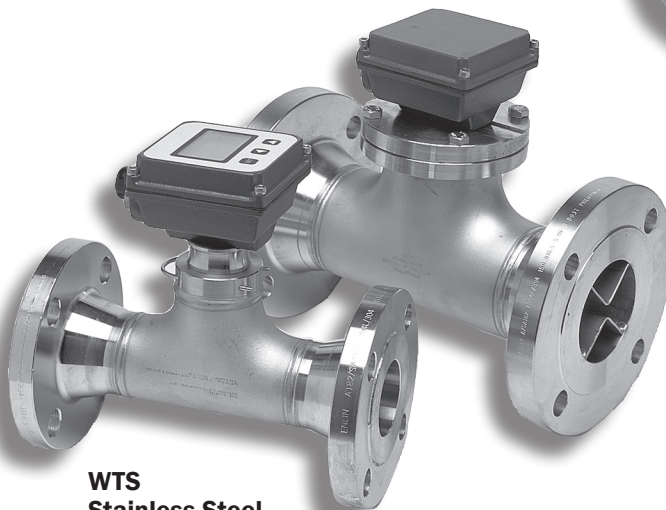
## INLINE TURBINE METER INSTRUCTIONS



**WTP**  
PVC Body



**WTC**  
Carbon Steel



**WTS**  
Stainless Steel

WT-SERIES INLINE TURBINE METER INSTRUCTIONS

## GENERAL INFORMATION and SPECIFICATIONS

### GENERAL INFORMATION

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

WTP bodies are fabricated from Schedule 80 PVC fittings, WTC bodies from carbon steel tubing, and WTS bodies from stainless steel tubing. The turbine insert on WTC and WTS meters is machined from a stainless steel casting. The WTP turbine insert is machined from a solid piece of PVC. Turbine rotors on all models are Kynar (PVDF).

WT meters can be ordered with various output options. The basic model (100) comes with pulse output only. An electronic display (Seametrics FT420) is mounted on the 101 model to display flow rate and total (resettable or non-resettable), and provide a programmable pulse or 4-20 mA output. Other electronics options include a blind 4-20 mA transmitter (A055) on the 102 model and a battery-powered (FT415) rate/totalizer plus pulse output for applications that lack power (104 model). All of these controls/displays can be mounted on the meter or remotely mounted on a wall or panel up to 2,000 feet away. WT-Series meters are compatible for use with most other remote-mount Seametrics displays and controls as well.

### SPECIFICATIONS\*

		WTP				WTC					WTS				
<b>Pipe Sizes</b>		2", 3", 4", 6"				2", 3", 4", 6", 8"					2", 3", 4", 6", 8"				
<b>Materials</b>	<b>Meter Body</b>	PVC Schedule 80 fittings				Painted carbon steel					304 Stainless steel (316 SS optional)				
	<b>Turbine Insert</b>	PVC				CF8M cast stainless					CF8M cast stainless				
	<b>Rotor</b>	Kynar (PVDF)				Kynar (PVDF)					Kynar (PVDF)				
	<b>Shaft</b>	Zirconia ceramic 3"-6"				Zirconia ceramic 3"-8"					Zirconia ceramic 3"-8"				
	<b>Shaft</b>	Tungsten Carbide 2"				Tungsten Carbide 2"					Tungsten Carbide 2"				
	<b>Bearings</b>	Sapphire journal, ruby endstone				Sapphire journal, ruby endstone					Sapphire journal, ruby endstone				
<b>Cable</b>		#22 AWG, 2000' max				#22 AWG, 2000' max					#22 AWG, 2000' max				
<b>Flanges</b>		Optional (See Dimensions)				150 lb. drilling (3-8" only)					150 lb. drilling (3-8" only)				
<b>Maximum Pressure</b>		150 psi @ 75° F (10 bar @ 24° C) (see chart)				200 psi (14 bar)					200 psi (14 bar)				
<b>Maximum Temperature</b>		120° F (50° C) (see chart)				200° F (93° C)					200° F (93° C)				
<b>Accuracy</b>	<b>3"-8"</b>	+/- 1% of full scale				+/- 1% of full scale					+/- 1% of full scale				
	<b>2"</b>	+/- 2.5% of full scale				+/- 2.5% of full scale					+/- 2.5% of full scale				
<b>Flow Range (GPM)</b>		<b>2"</b>	<b>3"</b>	<b>4"</b>	<b>6"</b>	<b>2"</b>	<b>3"</b>	<b>4"</b>	<b>6"</b>	<b>8"</b>	<b>2"</b>	<b>3"</b>	<b>4"</b>	<b>6"</b>	<b>8"</b>
<b>Minimum</b>		2	3	6	12	2	3	6	12	30	2	3	6	12	30
<b>Maximum</b>		150	400	600	1200	150	400	600	1200	3000	150	400	600	1200	3000

### Electronic Options Specifications\*

<b>WT100 (Pulse Output Only)</b>		<b>WT102 (Blind 4-20 Transmitter) (e.g. A055)</b>	
Power	6-24 Vdc	Power	24 - 36 Vdc (isolated)
Pulse Output	0-160 pulse/second current sinking	Analog Output	4-20 mA loop
Regulatory	CE Mark	Response Time	2-60 seconds, 90% of full scale (depends on input averaging)
<b>WT101 (Powered Rate/Totalizer) (e.g. FT420)</b>		<b>WT104 (Battery-powered Rate/Totalizer) (e.g. FT415)</b>	
Power	12-32 Vdc (for 4 mA DC min); 24-32 Vdc (for accuracy of 4-20 mA loop)	Power	3.6 Vdc Lithium battery replaceable, 3-5 year life
Rate	6-digit autorange	Rate	6-digit auto range
Total	8-digit	Total	8-digit
Memory	Non-volatile (no battery needed)	Pulse Output	0.1 second open collector (scaled); 0-75 pulse/second passthrough (unscaled); High alarm or low alarm
Pulse Output	0.1 second open collector (scaled); 0-75 pulse/second passthrough (unscaled); High alarm or low alarm		
Analog Output	4-20 mA loop (24-32 Vdc required)		
Regulatory	CE Mark		

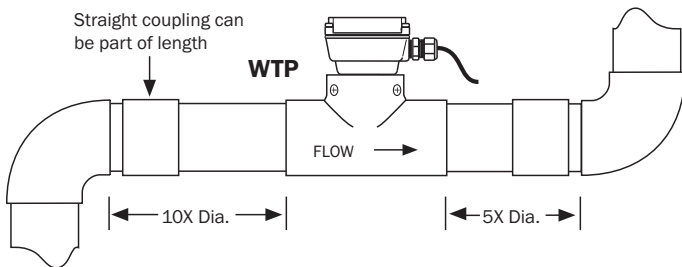
\*Specifications subject to change • Please consult our website for current data ([www.seametrics.com](http://www.seametrics.com)).

**INSTALLATION**



**CAUTION:** These water meters are not recommended for installation downstream of the boiler feedwater pump where installation fault may expose the meter to boiler pressure and temperature. Maximum recommended temperature is 120° (PVC) or 200° (Metal).

**Piping Conditions.** Installing the meter with 10 diameters of straight pipe upstream and 5 downstream is recommended.

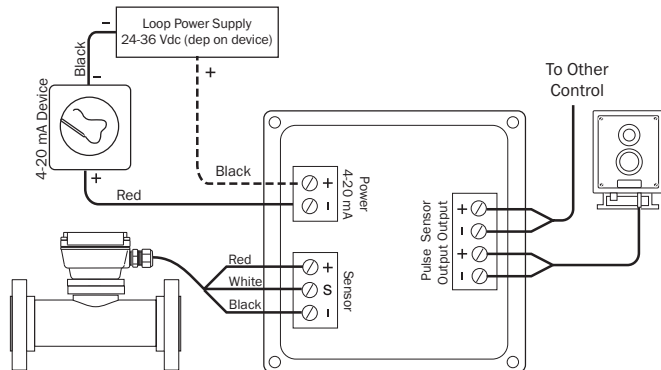


**Flanges.** For 3-8" WTC and WTS meters, standard flanges are 150 lb. ANSI drilling. 2" WTC or WTS meters and all PVC meters can be installed with optional flanges according to pipe manufacturer's recommendations. For PVC a bolt torque of 10-20 ft-lbs. for 2" flanges, 20-30 ft-lbs. for 3" and 4" flanges, and 35-50 ft-lbs. for 6" flanges is recommended.

Either partial or full-face gaskets can be used. Tighten the bolts evenly. Use care to prevent a misaligned gasket from entering the flow stream.

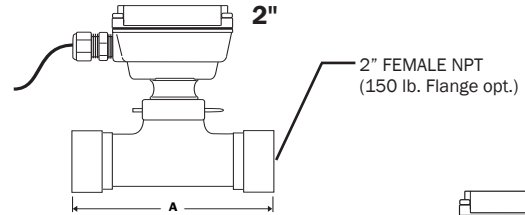
**Position.** The WT-Series are all-position meters, operable in a vertical or horizontal position, with the meter insert in any radial position. A horizontal position is preferred if there is a risk of air becoming trapped due to constant low flows. Operating the meter in partially-filled pipe will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

**CONNECTIONS**



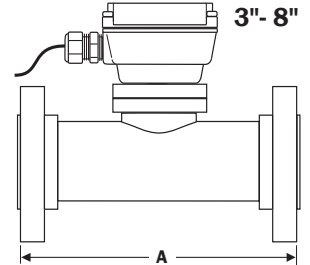
For operating instructions for the various electronic modules, consult the manual for the specific module, included with the meter at purchase.

**WTC and WTS Meters**

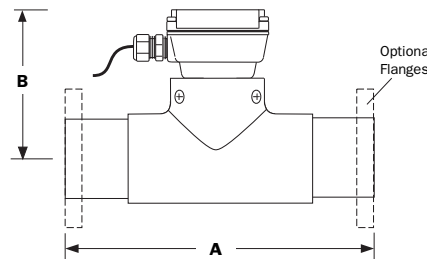


Size	Dim A
2"	* 8" / ±10"
3"	12"
4"	14"
6"	18"
8"	20"

\*Without flange  
±With flange



**WTP Meter**



Size	A	B
2"	10"	7.5"
3"	12"	6.5"
4"	14"	7.0"
6"	18"	8.5"

**MAINTENANCE and REPAIR**

**Recalibration.** If it is necessary to recalibrate the meter for any reason, this can be done by any Seametrics-authorized facility. Call your supplier for information.

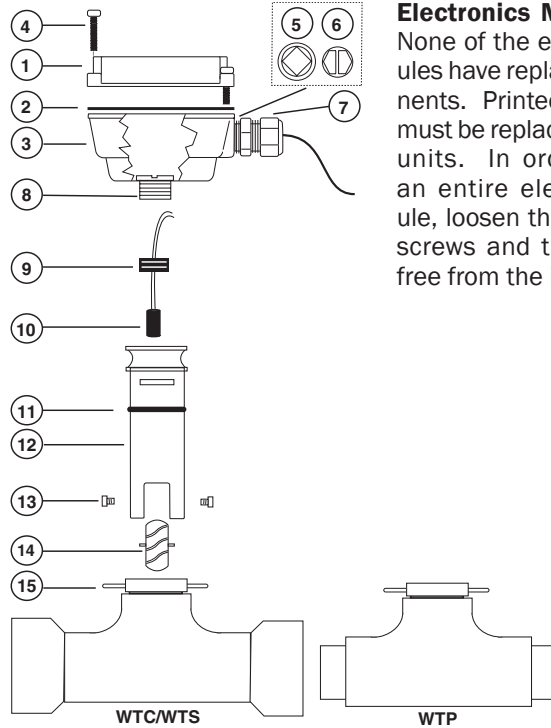
**Turbine Insert Removal and Installation. CAUTION:** First remove all pressure from the line. Then remove the screws or bolts that hold the insert in place (or the U-clip in the 2" meters) and tug gently until the insert comes free. A twisting motion can help to loosen the O-ring seal. Reverse the procedure to reinstall, after coating the O-ring with lubricant (plastic compatible in the WTP). Do not overtighten.

**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 overtighten 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 is rarely necessary. However, certain electrical conditions can damage the sensor. To replace it, first remove the electronics module. Disconnect the sensor leads from the electronics module terminals and remove the threaded plug over the sensor. Finally, remove the sensor by pulling on the sensor leads. A gentle tug should be sufficient. Reverse the process to replace the sensor.

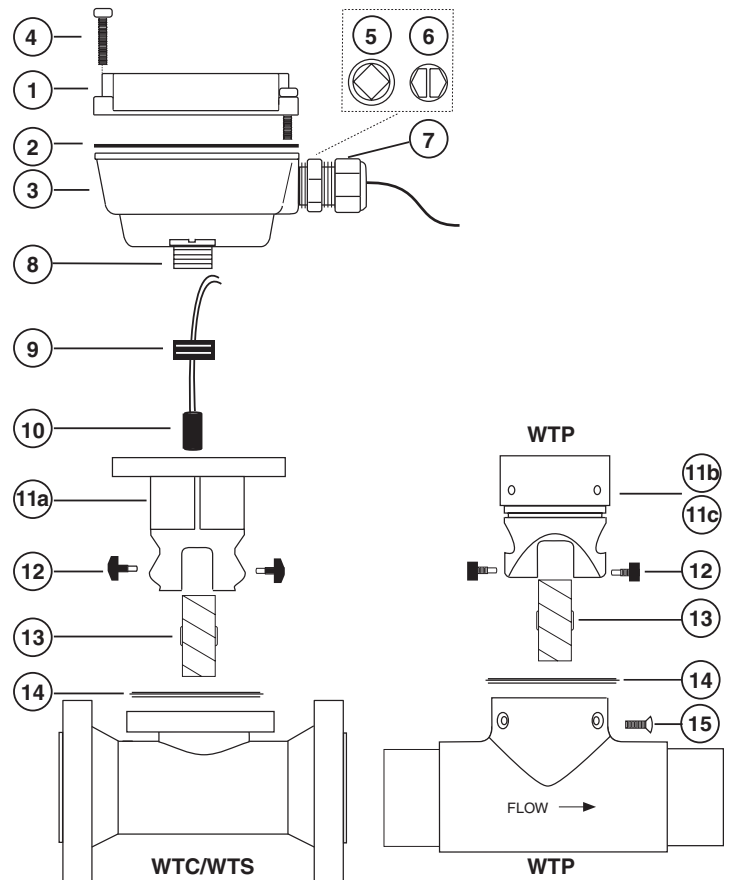
**REPLACEMENT PARTS**

2" METERS		
1-6	Housing	see 3 - 8"
7	Strain relief	101850
8	Square housing adapter	Not Available
9	Pickup retaining screw	100298
10	Pickup, Micropower (for WT104)	100508
	Pickup, Standard (for WT101)	100419
11	O-ring, EPDM	100264
12	Insert	Contact Factory
13/14	Rotor Repair Kit, Polypro/Tungsten Carbide	101912 <small>After 1-1-2011</small>
14	Rotor Assembly, Polypro/Tungsten Carbide	101862 <small>After 1-1-2011</small>
15	U-clip, stainless	100154



**Electronics Module Repair.**  
None of the electronics modules have replaceable components. Printed circuit boards must be replaced as complete units. In order to replace an entire electronics module, loosen the four retaining screws and the unit will lift free from the insert housing.

3" - 8" METERS		WTC	WTP	WTS
1	Upper blind housing assembly	100662	100662	100662
1	Powered rate/totalizer	100495	100495	100495
1	Blind 4-20 mA transmitter	100471	100471	100471
1	Battery-powered rate/totalizer	100469	100469	100469
2	Lower housing gasket	100411	100411	100411
3	Lower housing	100502	100502	100502
4	Upper housing screw assembly (4 req)	100414	100414	100414
5	Plug, steel	100360	100360	100360
6	Water seal assembly	100364	100364	100364
7	Strain relief	101850	100850	100850
8	Square housing adapter	Part Not Replaceable		
9	Pickup retaining screw	100298	100298	100298
10	Pickup, Micropower (for WT104)	100508	100508	100508
	Pickup, Standard (for WT101)	100419	100419	100419
11a	Insert, 3"-8" WTC and WTS	100440	100440	100440
11b	Insert, 3" PVC	N/A	100438	N/A
11c	Insert, 4"-6" PVC	N/A	100439	N/A
12	Shaft assembly, ceramic (2 req)	100227	100227	100227
13	Rotor (PVDF) /bearing assembly	100152	100333	100152
14	O-ring, EPDM	100270	100214	100270
15	Insert screw (4 req'd)	N/A	100023	N/A



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