

WT-Series

Inline Turbine Meter Instructions

WTS-800



WTP-800

WTP-400



General Information

General InformationPage 4

SpecificationsPage 4

Electronic Options Specifications.....Page 4

Installation

Installation.....Page 5

Connections

Connections.....Page 5

Maintenance and Repair

Recalibration.....Page5

Turbine Insert Removal and InstallationPage 5

Rotor and Shaft Replacement.....Page 5

Sensor Replacement.....Page 5

Replacement Parts.....Page 6

Warranty

Seametrics Limited WarrantyPage 7

This unique system of 3" 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 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 and WTS bodies from stainless steel tubing. The turbine insert on 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 FT430/440) can be mounted on the 103 and 109 models 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 (AO55) on the 102 model and a battery-powered (FT450) rate/totalizer plus pulse output for applications that lack power (107 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 other remote-mount Seametrics displays and controls as well.

Specifications*

WTP					WTS			
Pipe Sizes		3", 4", 6"			3", 4", 6", 8"			
Materials	Meter Body	PVC Schedule 80 fittings			304 Stainless steel (316 SS optional)			
	Turbine Insert	PVC			CF8 cast stainless			
	Rotor	Kynar® (PVDF)			Kynar® (PVDF)			
	Shaft	Zirconia ceramic			Zirconia ceramic			
	Bearings	Sapphire journal, ruby endstone			Sapphire journal, ruby endstone			
Cable		#22 AWG, 2000' max			#22 AWG, 2000' max			
Flanges		Optional (See dimensions)			150 lb. drilling			
Maximum Pressure		150 psi @ 75° F (10 bar @ 24° C) (See chart)			200 psi (14 bar)			
Maximum Temperature		120° F (50° C) (See chart)			200° F (93° C)			
Accuracy		± 1% of full scale			± 1% of full scale			
Flow Range (GPM)		3"	4"	6"	3"	4"	6"	8"
	Minimum	3	6	12	3	6	12	30
	Maximum	400	600	1200	400	600	1200	3000

Kynar is a registered trademark of Arkema, Inc.

* Specifications subject to change. Please consult our web site for current data (seametrics.com).

Electronic Options Specifications*

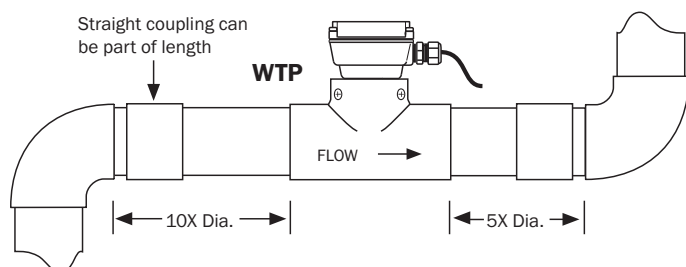
	WT100	WT102	WT103	WT107	WT109
Power	6-36 Vdc	24-36 Vdc (isolated)	7-30 Vdc	Battery (Lithium "C", 3.6V, replaceable)	7-30 Vdc, 4mA (4-20 mA when loop powered)
Electronic Display		A055	FT430	FT450	FT440
Pulse Out	0-160 pulse/sec. current sinking		Pulse scaled and pulse pass through	Pulse scaled	Pulse scaled
Analog Out		4-20 mA Loop			4-20 mA Loop
Rate			5-digit autorange	5-digit autorange	5-digit autorange
Total			8-digit	8-digit	8-digit
Memory			Non-volatile	Non-volatile	Non-volatile
Response Time		2-60 seconds, 90% full scale, (depending on input averaging)			
High/Low Alarm			Selectable on one output	Selectable on one output	Selectable on one output
Environmental		NEMA 4X, IP66	NEMA 4X, IP67	NEMA 4X, IP67	NEMA 4X, IP67
Regulatory	CE Mark	CE Mark	CE Mark	CE Mark	CE Mark

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.

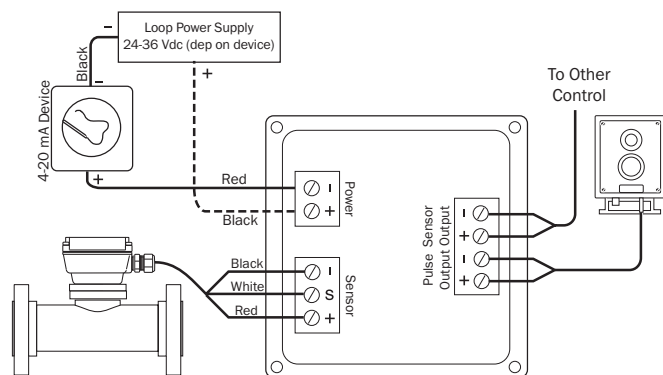


Flanges. For WTS meters, standard flanges are 150 lb. ANSI drilling. PVC meters can be installed with optional flanges according to pipe manufacturer's recommendations. For PVC a bolt torque of 20-30 ft-lb for 3" and 4" flanges, and 35-50 ft-lb for 6" flanges is recommended.

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

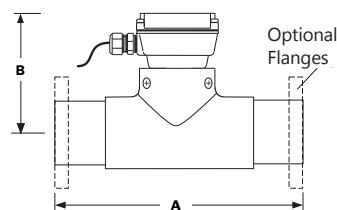


For operating instructions for the various electronic modules, consult the manual for the specific module, included with the meter at purchase.

WTP Meter

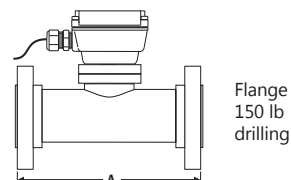
Meter Size	Dim A	Dim B
3"	12"	6.5"
4"	14"	7.0"
6"	18"	8.5"

NOTE: Flange options face-to-face dimension ("A") is the same as plain ends.



WTS Meter

Meter Size	Dim A
3"	12"
4"	14"
6"	18"
8"	20"



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 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.

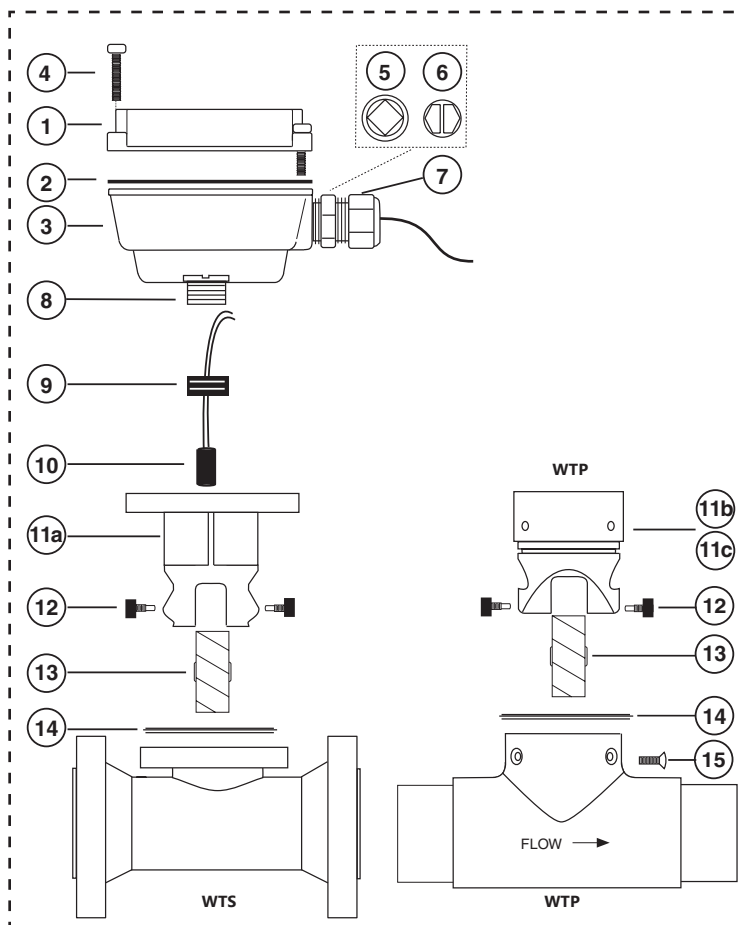
Rotor and Shaft Replacement. Examine the rotor to determine if bearings or shaft are damaged or excessively worn. The rotor should spin smoothly and freely, with no visible wobble. Back and forth play should be very minor, less than 1/64". If it is necessary to replace the rotor or shafts, first back 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

		White Housing	Blue Housing
1	Upper housing/electronics	Contact service representative for your specific model	Contact service representative for your specific model
2	Housing gasket/seal	102025	100411
3	Lower housing	Not field replaceable	Not field replaceable
4	Housing screw/washer kit (4 each)	100414	100414
5	Plug, steel (battery units)	100360	100360
6	Strain relief kit, small (includes 2)	100364	100364
7	Strain relief kit, large (includes 1) (externally powered units)	101850	101850
		WTP	WTS
8	Square housing adapter	Not field replaceable	Not field replaceable
9	Pickup retaining screw	100298	100298
10	Pickup, Micropower*	100508	100508
	Pickup, Standard	100419	100419
11a	Insert, SS	N/A	100440
11b	Insert, 3" PVC	100438	N/A
11c	Insert, 4"-6" PVC	100439	N/A
12	Shaft assembly, ceramic (includes 2)	103312	103312
13	Rotor (PVDF) /bearing assembly	100333	100333
14	O-ring, EPDM	100214	100270
15	Insert screw (4 req'd)	100023	N/A

* For WT100 with an FT450W or a WT107



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.

The limited warranty set forth below is given by Seametrics, with respect to Seametrics and INW brand products purchased in the United States of America.

Seametrics warrants that products manufactured by Seametrics, when delivered to you in new condition in their original containers and properly installed, shall be free from defects in material and workmanship. **Seametrics products are warranted against defects for a period of two (2) years from date of installation, with proof of install date. If no proof of install date can be provided, warranty period will be two (2) years from date of shipment from Seametrics, as defined on Seametrics' invoice.** Seametrics' obligation under this warranty shall be limited to replacing or repairing the part or parts, or, at Seametrics' option, the products, which prove defective in material or workmanship. The following are the terms of Seametrics' limited warranty:

- a. Buyer must give Seametrics prompt notice of any defect or failure and satisfactory proof thereof.
- b. Any defective part or parts must be returned to Seametrics' factory or to an authorized service center for inspection.
- c. Buyer will prepay all freight charges to return any products to Seametrics' factory, or another repair facility, as designated by Seametrics.
- d. Defective products, or parts thereof, which are returned to Seametrics and proved to be defective upon inspection, will be repaired to factory specifications.
- e. Seametrics will deliver repaired products or replacements for defective products to the buyer (ground freight prepaid) to the destination provided in the original order.
- f. Products returned to Seametrics for which Seametrics provides replacement under this warranty shall become the property of Seametrics.
- g. This limited warranty covers all defects encountered in normal use of Seametrics products, and does not apply to the following cases:
 - i. Loss of or damage to Seametrics product due to abuse, mishandling, or improper packaging by buyer
 - ii. Failure to follow operating, maintenance, or environmental instructions prescribed in Seametrics' instruction manual
 - iii. Products not used for their intended purpose
 - iv. Alterations to the product, purposeful or accidental
 - v. Electrical current fluctuations
 - vi. Corrosion due to aggressive materials not approved for your specific product
 - vii. Mishandling, or misapplication of Seametrics products
 - viii. Products or parts that are typically consumed during normal operation
 - ix. Use of parts or supplies (other than those sold by Seametrics) which cause damage to the products, or cause abnormally frequent service calls or service problems
- h. A new warranty period shall not be established for repaired or replaced material, products, or supplies. Such items shall remain under warranty only for the remainder of the warranty period on the original materials, products, or supplies.
- i. In the event that equipment is altered or repaired by the buyer without prior written approval by Seametrics, all warranties are void. Damage caused by equipment or accessories not manufactured by Seametrics may void the product's warranty.
- j. SOFTWARE: The Seller grants the user a non-exclusive license to use Seametrics' software, according to the following limitations and conditions:
 - i. The user may install the software on one or more desktop or laptop computers.
 - ii. All title and intellectual rights to the software are owned by Seametrics.
 - iii. No copies may be made or distributed except as described above.
 - iv. The user may not modify or reverse-engineer the software.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. NO IMPLIED WARRANTY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIED TO THE PRODUCTS AFTER THE APPLICABLE PERIOD OF THE EXPRESS LIMITED WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON OR ENTITY WITH RESPECT TO THE PRODUCTS, SHALL BIND SEAMETRICS. SEAMETRICS SHALL NOT BE LIABLE FOR LOSS OF REVENUES, OR PROFITS, OR INCONVENIENCES, EXPENSE FOR SUBSTITUTE EQUIPMENT OR SERVICE, STORAGE CHARGES, LOSS OF DATA, OR ANY OTHER SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGE CAUSED BY THE USE OR MISUSE OF, OR INABILITY TO USE THE PRODUCTS, REGARDLESS OF THE LEGAL THEORY ON WHICH THE CLAIM IS BASED, AND EVEN IF SEAMETRICS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL RECOVERY OF ANY KIND AGAINST SEAMETRICS BE GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT SOLD BY SEAMETRICS AND CAUSING THE ALLEGED DAMAGE. WITHOUT LIMITING THE FOREGOING, YOU ASSUME ALL RISK OF LIABILITY FOR LOSS, DAMAGE, OR INJURY TO YOU AND YOUR PROPERTY AND TO OTHERS AND THEIR PROPERTY ARISING OUT OF USE OR MISUSE OF, OR INABILITY TO USE THE PRODUCTS NOT CAUSED DIRECTLY BY THE NEGLIGENCE OF SEAMETRICS.

SOME STATES DO NOT ALLOW LIMITATIONS ON THE DURATION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. SIMILARLY, SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF CONSEQUENTIAL DAMAGE, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS; HOWEVER, YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.



Seametrics • 19026 72nd Avenue South • Kent, Washington 98032 • USA
(P) 253.872.0284 • (F) 253.872.0285 • 1.800.975.8153 • seametrics.com

LT-65200056r2.1 20170503
5/3/2017