



SERIES 900 METER

For Models 911T, 911TL, 911T-1 1/2, 911TL-1 1/2



Model 911T

OUTSTANDING FEATURES

- 6 to 40 GPM / 23 to 151 LPM flow rate
- Accurate to within $\pm 2\%$
- 1" or 1 1/2" NPT inlet/outlet ports
- Large, easy to read numbers
- Quick reset knob
- Accumulative totalizer
- Teflon coated aluminum body



TUTHILL CORPORATION

Sotera Systems

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Dear Sotera Customer,

Thank you for buying a Sotera product. Sotera Systems represents a new age in chemical handling products. This service guide contains valuable information about your new equipment and its operating and service requirements. Please take a few minutes to review this material carefully.

Sotera Systems' mission is to provide chemical handling products for ag-chem users that provide the most accurate, safe, convenient and economical way to transfer chemicals.

If, for any reason, any of the products do not meet your performance expectations we want to hear from you. Your comments and suggestions are requested and appreciated. Thank you again for buying a Sotera Systems product. We look forward to serving you in the future.

Sincerely,

Ron C. Bulloch
Vice President, Sales

QUALITY

The superiority of Sotera Systems Series 900 meters is proven by their listing with:



Underwriters Laboratories Inc., a nationally recognized independent organization for testing of products to ensure public safety.



Canadian Standards Association, a Canadian organization for testing of products to ensure public safety.

OPTIONS

- Liter registers
- 1-1/2" NPT inlet/outlet ports

TECHNICAL INFORMATION

Design Features:

- 1" or 1 1/2" NPT female inlet and outlet ports
- Recommended for 6 to 40 GPM / 23 to 151 LPM output
- $\pm 2\%$ accuracy
- 50 PSI maximum pressure
- Meters fluid at temperatures from -15°F (-26°C) to 150°F (66°C)
- Weatherproof, corrosion resistant
- Large 11/16" register figures
- Measures flow to 1,000 gallons in 1/10 increments
- Easy to read totalizer registers to 1,000,000 gallons
- Compact design: 8 1/2" x 6 1/2" x 5 1/2"
- Convenient, large reset knob
- Self-lubricating
- Not for resale use

Fluid Compatibility

If in doubt about compatibility of a specific fluid, contact supplier of fluid to check for any adverse reactions to the following wetted materials.

Ryton	Polyester	Fluorocarbon
400 Series Stainless Steel	Teflon Coated Aluminum	

SAFETY INSTRUCTIONS

To ensure safe and efficient operation, it is essential to read and follow each of the following warnings and precautions.

1. **Improper use or installation of this product can cause serious bodily injury or death.**
2. Do NOT smoke near meter or use meter near an open flame when dispensing flammable fluids. Fire could result.
3. CAUTION: DO NOT INSTALL ADDITIONAL FOOT VALVE OR CHECK VALVE DURING INSTALLATION WITHOUT PRESSURE RELIEF VALVE. CRACKING MAY RESULT.
4. Agricultural herbicides flowing through the meter may be harmful to your health. Use and disposal of these products is controlled by federal, state or local laws and procedures.
5. Conform to fluid manufacturer's recommended handling procedures when using product and when cleaning meter.
6. Do not exceed 50 PSI / 3.5 BARS line pressure.

GENERAL DESCRIPTION

The Sotera Systems Series 900 Meter is a nutating disc flow meter. The meter uses wheel counters for registering either U.S. gallons or liters. The U.S. gallon meter has three unit wheels and a tenth wheel which can be reset to zero. It's totalizer has seven unit wheels and a tenth wheel. The liter counter has four unit wheels which can be reset to zero. It's totalizer has eight unit wheels.

INSTALLATION

Meters are furnished for horizontal piping; left to right flow unless otherwise specified. Flow parts can be located in any of four positions for horizontal or vertical piping and for either direction of flow.

1. Determine direction for fluid to flow.
2. Install meter observing directional arrow on casting.
3. Remove four screws (item 28).
4. Rotate meter cover assembly (item 37) to desired orientation.
5. Replace four screws.

ASSEMBLY & DISASSEMBLY

Meter consists of a chamber housing, measuring chamber, gear train, counter assembly and cover. Meter can be completely disassembled without disturbing piping, or meter can be partially disassembled as required.

Counter Assembly

For access to counter assembly, remove reset knob (item 15) by grasping edges and pulling firmly. Knob is held in place by a spring clip. Loosen two screws (item 14) and lift bezel off. Remove two screws (item 12) to detach counter face (item 13). Remove two screws (item 9) to extract counter (item 10). Reassemble by reversing procedure.

Meter Chamber Assembly

To expose meter chamber assembly, gear train and seal, remove four screws (item 28). Meter chamber assembly consists of upper and lower chambers, a nutating disc and four screws. Meter chamber assembly (item 3) can be dislodged by removing four screws (item 5). Reassemble by reversing procedure.

If replacement of any components of the meter chamber assembly is required, the complete assembly must be replaced due to the precise method of its construction. This assures a proper fit and a correctly operating chamber.

Gear Train and Seal

To disassemble gear train and seal, remove two screws (item 5) and gear frame (item 6). Remove cluster gear (item 18) and washer (item 19). Remove drive gear (item 24) and washers (item 23) by rotating and pulling drive gear. Remove O-ring seal (item 25).

When reassembling seal, lubricate O-ring with oil or petroleum jelly and replace in cover. Place washer on drive gear shaft. Rotate and push shaft through O-ring and cover carefully to prevent damage to O-ring. Shaft must then be guided into pinion bevel (item 27) if counter has not been removed. Replace remaining parts to complete assembly by reversing disassembly procedure.

CALIBRATION

The Sotera Systems Series 900 meters can be calibrated for either U.S. gallons or liters. Calibration is required upon installation, after disassembly, after significant wear or when metering a different viscosity fluid. Depending on the model, Series 900 meters are calibrated at the factory metering Stoddard solvent in either U.S. gallons or liters.

Meter calibration can be easily changed by following the

calibration procedure listed below. A proving container or a container of KNOWN volume will be needed for the calibration procedure. It is recommended that the container's volume be at least five times larger than the unit of calibration. For example, a five gallon container should be used when calibrating for gallons.

Procedure for Calibration:

1. Fill container to a known volume.
2. If indicated amount does not match known volume, turn calibration screw (item 31) counterclockwise to reduce indicated amount or clockwise to increase the amount.
3. Repeat step 2 until calibration is acceptable.

OPERATING INSTRUCTIONS

For accurate measurement and to prevent meter damage, meter and piping must always be filled with liquid and free of air. Meter should be calibrated per instructions in this manual prior to its use.

1. Reset meter to "0".
2. Meter is ready for use.

MAINTENANCE

Meter should operate maintenance free. However, certain liquids can dry out while in meter housing, causing meter to stop. If this happens, meter should be thoroughly cleaned (see instructions below).

Cleaning Instructions:

Run a flushing fluid through meter. For a more thorough cleaning, disassemble meter per "ASSEMBLY/DISASSEMBLY" section, "Meter Chamber Assembly" subsection. Rinse all meter components. Recalibrate meter following calibration instructions above.

Storage:

If meter is to be stored for a period of time, clean thoroughly. This will help protect meter from damage.

REPAIR

Meters needing repair should be taken to an authorized repair shop or returned to factory for service. Meters must be thoroughly triple-rinsed before being taken in for repair.

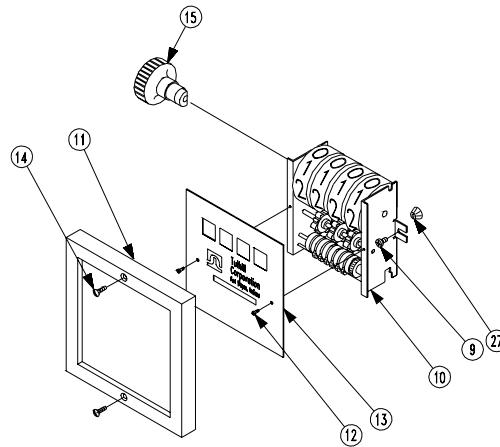
900 SERIES METER PARTS LIST

ITM NO.	PART NO.	PROC. NO.	DESCRIPTION	QTY
1	900-5T	F8101	Meter Housing - Teflon Coated	1
2	300-28V	F7788	Gasket - Fluorocarbon	2
3	900-25	F8087	Meter Chamber Assembly	1
4	900-15V	F8068	Cover Gasket - Fluorocarbon	1
5	F4017	F4017	#10-24 x 1/2 PHMS, ACR II, T	4
6	900-14	F8066	Gear Frame	1
7	900-6T	F8103	Meter Cover - Teflon Coated	1
8	F8132	F8132	#12-1/2 PHMS, Type AB	2
9	F4007	F4007	#8-32 x 5/16 PHMS, ACR II, TT	2
10	900-17	F8070	Counter Assembly - U.S. Gallon	1
	900-17L	F8071	Counter Assembly - Liter	Opt.
11	900-16	F8069	Bezel	1
12	800-66	F4020	#4-40 x 1/4 PHMS	2
13	F4253A	F4257	Counter Face	1
	F4254A	F4258	Counter Face - Liter	Opt.
14	702-26	F3410	#8 x 1/2 OHMS - Type B	2
15	800-105A	F4261	Knob Assembly	1
17	800-16	F3820	Shaft - Cluster Gear	1
18	800-159	F3841	Cluster Gear - U.S. Gallon	1
	800-161	F3843	Cluster Gear - Liter	Opt.
19	800-18	F3830	Washer	1
20	900-11	F8063	Driver Pinion Shaft (Included w/Item 7)	1
21	900-13	F8065	Retaining Ring	1
22	900-12	F8064	Driver Pinion	1
23	800-55	F3980	Washer	3
24	800-160A	F3845	Drive Gear - U.S. Gallon	1
	800-162A	F3846	Drive Gear - Liter	Opt.
25	800-97V	F4191	O-Ring (5-106) - Fluorocarbon	1
27	800-172	F3959	Pinion Bevel	1
28	700-16	F2810	5/16-18 x 7/8 HHCS	4
29	900-39	F8158	Seal Screw	1
30	800-125V	F4449	O-Ring (-012) - Fluorocarbon	1
31	900-38A	F8160	Adjustment Screw (Includes Item 32)	1
32	900-40V	F8159	O-Ring (-010) - Fluorocarbon	1
33	1200-66	F6721	1/4-20 x 3/4 HHCS (1" meters)	8
34	900-20T	F8105	1" Meter Flange - Teflon Coated	2
	900-30T	F8109	1-1/2" Meter Flange - Teflon Coated	Opt.
36	900-29	F8091	1/4-20 x 1-1/2 HHCS (1-1/2" meters)	Opt.
37	900-6UT	F8046	Meter Cover Assy - U.S. Gallon - Teflon	
	900-6LT	F8049	Meter Cover Assy - Liter - Teflon	

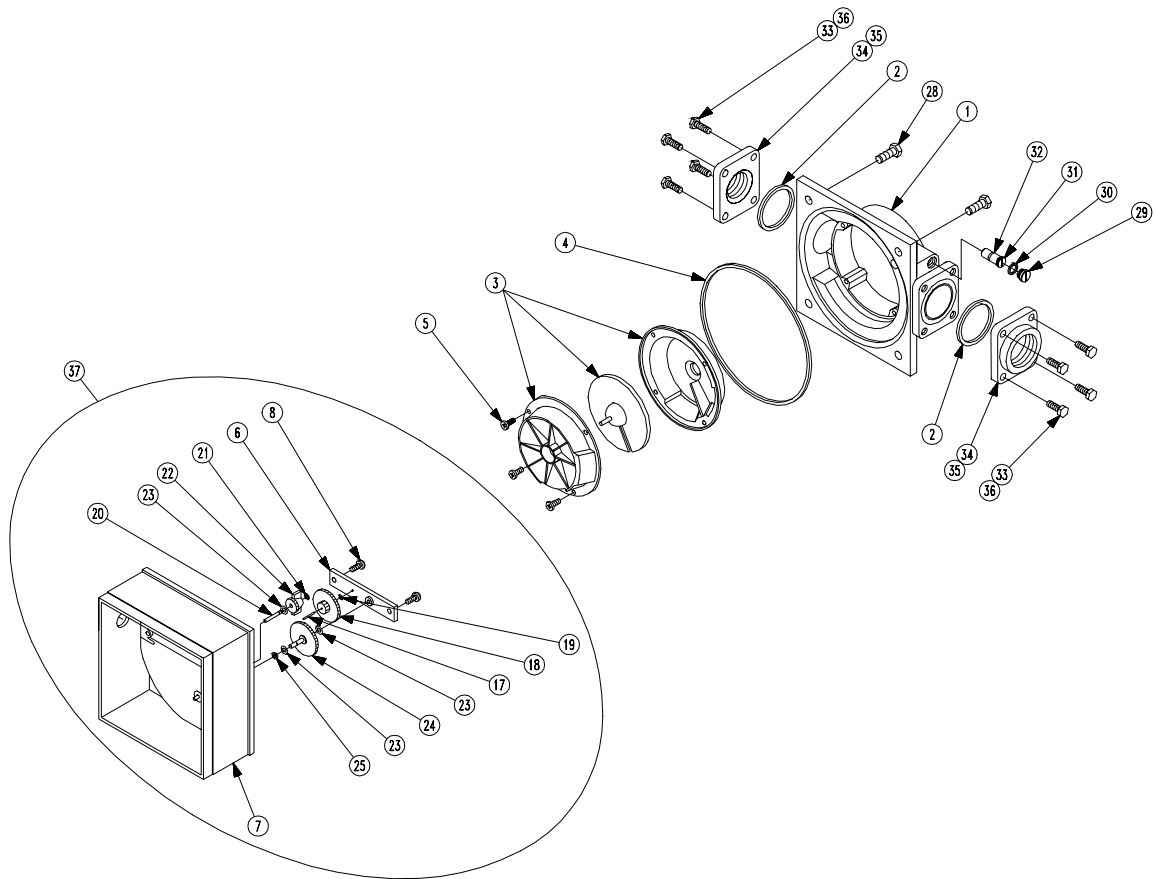
900 SERIES REPAIR PARTS KITS

900-48V	F8120	Meter Repair Kit, U.S. Gallon (Fluorocarbon Seals) (Includes items 2-4, 6, 17-19, 21-25, 27, 30, 32)
900-48LV	F8123	Meter Repair Kit, Liter (Fluorocarbon Seals) (Includes items 2-4, 6, 17-19, 21-25, 27, 30, 32)

If meter was used for a fluid other than a petroleum product, it must be triple-rinsed and accompanied by a Material Safety Data Sheet indicating the chemicals which have been pumped through the unit. Meters not adhering to these specifications may be refused service at either the repair shop or at the factory.



WHEN ORDERING REPAIR PARTS, BE SURE TO GIVE REPLACEMENT PART NUMBER, DATE OF MANUFACTURE AND METER SERIES NUMBER. THIS WILL ENSURE THAT THE CORRECT REPLACEMENT PART IS SUPPLIED.



TROUBLESHOOTING GUIDE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
Counter reading high or low	<ul style="list-style-type: none"> • Calibration off • Air in product • Measuring chamber or gears sticking 	<ul style="list-style-type: none"> • Recalibrate meter. • Find and repair air leaks in system. • Clean or replace internal metering components.
Shaft seal leakage	<ul style="list-style-type: none"> • Dirty seal • Bad seal 	<ul style="list-style-type: none"> • Clean O-ring seal and seat area. • Replace seal.
Gasket leakage	<ul style="list-style-type: none"> • Loose joints • Dirty gasket • Bad gasket 	<ul style="list-style-type: none"> • Tighten joints. • Clean gasket and seat area. • Replace gasket.
Low flow capacity	<ul style="list-style-type: none"> • Clogged meter chamber 	<ul style="list-style-type: none"> • Clean meter chamber.

WELCOME TO A NEW AGE IN CHEMICAL HANDLING PRODUCTS.

With the creation of Sotera Systems, Tuthill Corporation has ushered in a new age in chemical handling products for the ag-chem dealer and agricultural user. After more than 35 years of product research and development in fuel and chemical handling equipment, Tuthill Corporation has created Sotera Systems to focus solely on the needs of the ag-chem industry.

You'll recognize the familiar Tuthill traits in every Sotera Systems product, like the uncompromising quality, workmanship and dependability you've always relied on. But Sotera Systems is something more, something unique. It's designed, engineered, tested and serviced by ag-chem people. People who understand the needs of the ag-chem world, the changes that are taking place, and the chemical handling solutions it will take to meet those needs.

A SPECIAL MARKETPLACE. A SPECIAL COMPANY.

The ag-chem market is a dynamic, ever-changing world, which means it is not an industry you can know at a glance. You have to be entrenched. That's why Sotera Systems is out in the fields talking to farmers, dealers and other ag-chem users, and listening to what they have to say.

And they say plenty – everything from concerns about safety, accuracy and governmental policies to convenience, cost and dependability. By being in the fields, Sotera Systems gains tremendous insight into the needs of ag-chem dealers, manufacturers and end users. And uses this information to create products that make sense for their market. It takes a dedicated company to grasp every detail and translate it into ag-chem products that perform. It takes a company like Sotera Systems.

AG-CHEM PRODUCTS. AG-CHEM SUPPORT.

Sotera Systems is not just another product line, it is our only line. Day in and day out, our attention and commitment is to the ag-chem market. And this commitment goes beyond the manufacturing of quality chemical-handling systems; it includes world-wide product support and technical expertise even when you're in the field. Our distributors and dealers are knowledgeable ag-chem professionals who offer years of experience and the latest in chemical-handling advice. Our mission is to lead the way in finding innovative ways to transfer chemicals safely, accurately, conveniently and economically. In partnership with the ag-chem market, Sotera Systems will champion a new age of chemical handling.

PRODUCT WARRANTY

Sotera Systems of Tuthill Corporation ("Manufacturer") warrants to each buyer of its products ("the Buyer") for a period of 12 months from date of invoice or sales receipt but in no event more than 18 months from date of manufacture that goods of its manufacture ("Goods") will be free from defects of material and workmanship. Manufacturer's sole obligation under the foregoing warranties will be limited to either, at Manufacturers' option, replacing or repairing defective Goods (subject to limitations hereinafter provided) or refunding the purchase price for such Goods theretofore paid by the Buyer, and Buyer's exclusive remedy for breach of any such warranties will be enforcement of such obligations of Manufacturer. If Manufacturer so requests the return of the Goods, the Goods will be redelivered to Manufacturer in accordance with Manufacturer's instructions F.O.B. Factory. The remedies contained herein shall constitute the sole recourse of the Buyer against Manufacturer for breach of warranty. **IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR CONSEQUENTIAL DAMAGES, NOR SHALL**

MANUFACTURER'S LIABILITY ON ANY CLAIM FOR DAMAGES ARISING OUT OF THE MANUFACTURE, SALE, DELIVERY OR USE OF THE GOODS EXCEED THE PURCHASE PRICE OF THE GOODS. The foregoing warranties will not extend to Goods subjected to misuse, neglect, accident or improper installation or maintenance, or which have been altered or repaired by anyone other than Manufacturer or its authorized representative. **THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED.** No person may vary the foregoing warranties and remedies except in writing signed by a duly authorized officer of Manufacturer. Warranties or remedies that differ from the foregoing shall not otherwise be binding on Manufacturer. The Buyer's acceptance of delivery of the Goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.



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