

# FILL-RITE®

## Model BD807CMK

### METER KIT

For use with the Fill-Rite Series BD1200 and BD700 Biodiesel pumps.

## Owner's Operation & Safety Manual



### CAUTION

The Fill-Rite® Model BD807CMK Meter Kit is not for use with gasoline, diesel fuel or biodiesel less than B21. Use the Fill-Rite® Series **807CMK** meter kit to dispense gasoline & diesel fuel.

### SAFETY INSTRUCTIONS

To ensure safe and efficient operation, it is essential to read and follow each of these 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. Fire could result.
3. Disconnect power to pump before installing meter kit.
4. Do NOT exceed 50 psi (3.5 bar) of line pressure.
5. Do NOT install additional check valves or foot valves with this meter kit unless they have a proper pressure relief built into them.

### WARNING

Do not use this product for fluid transfer into aircraft. This product is not suited for use with fluids for human consumption or fluids containing water.

### GENERAL DESCRIPTION

The Fill-Rite Model BD807CMK is a positive displacement, durable, nutating disc type meter designed for accurate dispensing of biodiesel fuel at flow rates of 5-20 gpm (19-76 lpm) at pressures not to exceed 50 psi (3.5 bar). The meter body is aluminum. Inlet and outlet ports are 3/4" NPT.

### MECHANICAL INSTALLATION INSTRUCTIONS

**Relieve pressure from pump before installing meter by opening nozzle and draining fluid into an approved container.**

Meters are furnished for horizontal piping, left to right flow. Use oil resistant pipe compound on all threaded joints.

#### To install meter on a Series BD1200 pump (see Figures 1 & 2):

1. Remove 3/4" street elbow from outlet (top) of pump. See Figure 1. Save street elbow for step #3.
2. Install 3/4" x 2-1/2" pipe nipple (included with meter) at outlet of pump.
3. Install 3/4" street elbow (from step #1) at inlet of meter.
4. Assemble meter to pump as shown in Figure 2.
5. Install hose at outlet of meter. If desired, install 3/4" street elbow at outlet of meter before installing hose.

3/4" STREET  
ELBOW  
(702F3400)

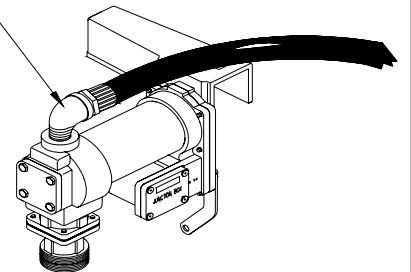


Figure 1.

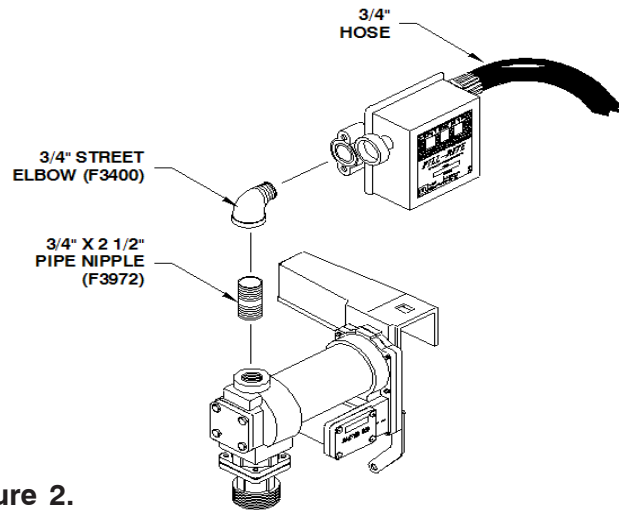
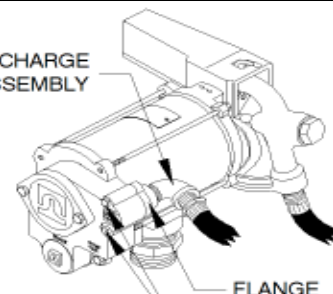


Figure 2.

#### To install meter on a BD700 pump (see Figures 3 & 4)

1. Disconnect pump discharge assembly by removing two 5/16" bolts at pump outlet (see Figure 3). Save bolts and gasket for step number 3.
2. Install the 3/4" street elbow at outlet of meter.
3. Place gasket (removed previously) in proper position at meter inlet. Connect meter inlet flange to the pump using two 5/16" hex bolts (See figure 4). Caution: Pump must NOT be operated without its check valve (700F2661) or the check valve alternate (700F2679).
4. Install hose at outlet of 3/4" street elbow (figure 4)

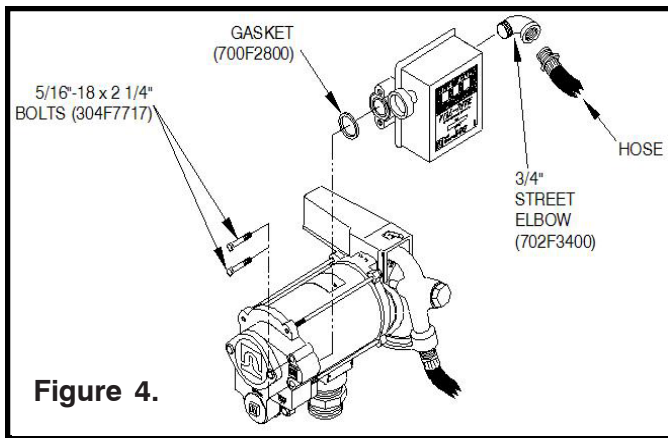
DISCHARGE  
ASSEMBLY



FLANGE

5/16"-18 x 2 1/4"  
BOLTS (304F7717)

Figure 3.



**Figure 4.**

Meter chamber assembly consists of upper and lower chambers, a nutating disc and seal gasket. 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 gear frame (item 12) by prying slightly. Remove cluster gear (item 10) and washer (item 11) from shaft (item 9). Remove drive gear (item 8) and washers (item 7) by rotating and pulling drive gear. Remove O-ring seal (item 6).

When reassembling seal, lubricate O-ring liberally with oil or petroleum jelly and replace in cover. Place washer on drive gear shaft. Carefully rotate and push shaft through O-ring and cover to prevent damage to O-ring. Shaft must then be guided into pinion bevel (item 28) if counter has not been removed. Replace remaining parts to complete assembly by reversing disassembly procedure.

**Storage:**

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

**CALIBRATION PROCEDURE**

The Series BD807CMK meters are factory calibrated in either U.S. gallons or liters using mineral spirits. Calibration is recommended when first using the meter, after disassembly, or after significant wear.

1. To calibrate the meter, first locate a container of KNOWN volume. It is recommended that the container's volume be five gallons or larger.
2. Prime the pump and meter to remove all air from the system.
3. Reset the meter to zero (with no liquid flowing).
4. Fill the container to the known volume.
5. If indicated amount does not match known volume, insure pump is off and pressure relieved, then remove seal screw (item 23) and turn calibration screw (item 21) counterclockwise to reduce the amount indicated on the meter, or clockwise to increase the amount. A full turn will change the indicated amount by about 0.1 Gal. (0.4L).
6. Reinstall seal screw.
7. Repeat step 2 - 6 until calibration is acceptable.

**TROUBLESHOOTING GUIDE**

**Counter is reading high or low:**

- Check calibration and recalibrate if necessary.
- Check for air in product and repair air leaks.
- Meter chamber or gears may be worn or sticking. Correct by cleaning or replacing internal metering components.

**Shaft seal leakage:**

- Dirty or damaged seals. Correct by cleaning o-ring and seat area or replacing seal.

**Gasket leakage:**

- Correct loose gasket by tightening joints.
- Clean dirty gaskets and seat area.
- Replace damaged gaskets.

**Low flow capacity:**

- Clean clogged meter chamber
- Clean or replace screens and filters in piping.

**Meter body cracks:**

- Install pressure relief valve to allow high pressure to bleed back to tank.

**Nutating disc breaks:**

- Avoid flow surge by putting shut-off valve on outlet of meter.
- Place meter as close as possible to pump and keep piping full of liquid.

**OPERATING INSTRUCTIONS**

For accurate measurement, meter and piping must 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" (with no liquid flowing).
3. Meter is ready for use. Start flow of liquid. Do not exceed 50 PSI line pressure.

**MAINTENANCE (see exploded view)**

Meter is maintenance free under normal operation. However, if meter becomes plugged, it will likely need to be disassembled and cleaned. Use mineral spirits or diesel fuel to clean meter components.

**Counter Assembly**

For access to counter assembly, remove reset knob (item 3) by grasping edges and pulling firmly. Remove two screws (item 29) and lift counterface (item 2) and cover (item 1) off. Remove two screws (item 13) to extract counter (item 4). Reassemble by reversing procedure.

**Meter Chamber**

To expose meter chamber, tilt the meter slightly face down, so that no parts fall out when removing meter housing. Remove the four screws (item 20), then remove meter housing (item 19).

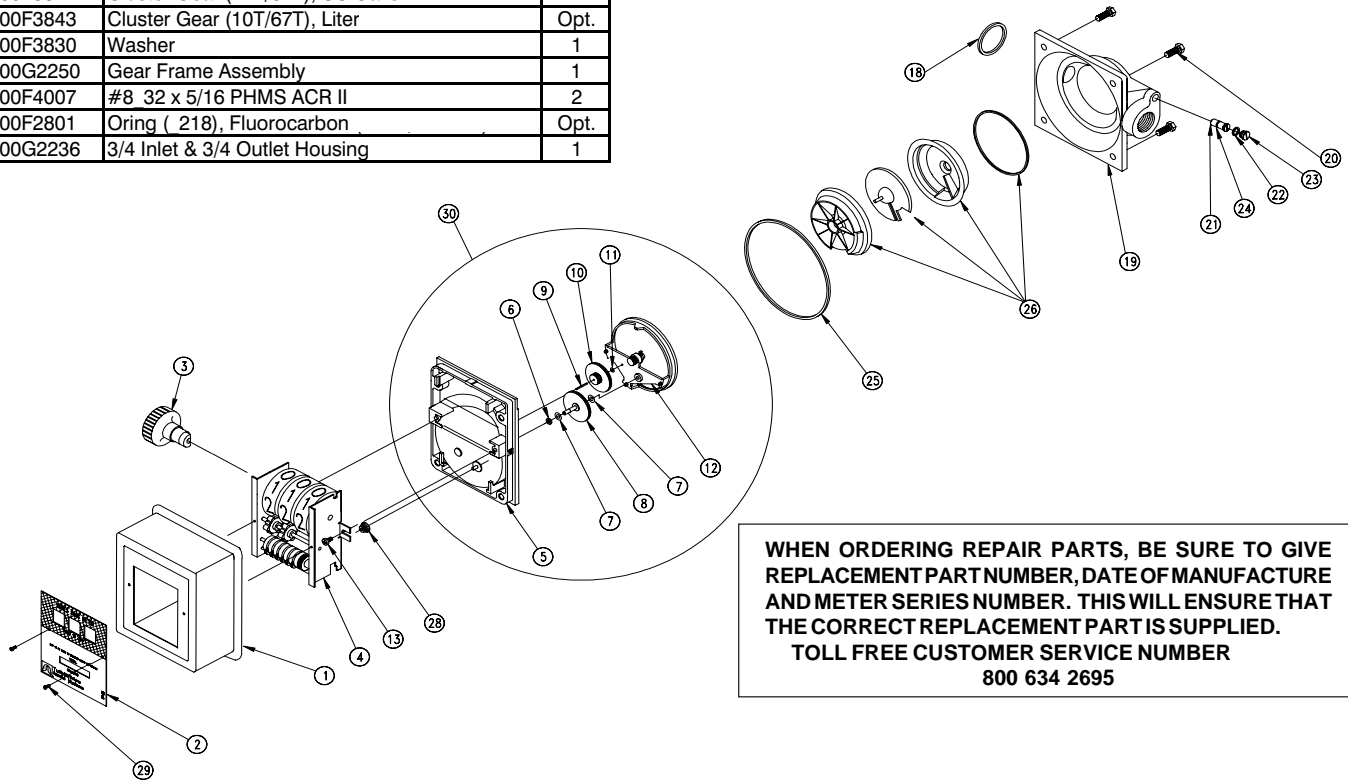
**WETTED MATERIALS**

Ryton	Aluminum
Flourocarbon	Stainless Steel

## BD807CMK METER KIT PARTS LIST

ITM. NO.	PART NO.	DESCRIPTION	QTY.
1	800G2246	Counter Cover	1
2	800G0208	Counter Face, U.S. Gallon	1
	800G0241	Counter Face, Liter	Opt.
3	800G8870	Knob	1
4	800F4080	Counter, US Gallon	1
	800F4081	Counter, Liter	Opt.
5	800G2246	Meter Cover	1
6	800F4191	Oring (5 106) Fluorocarbon	1
7	800F3980	Washer	2
8	800F3845	Drive Gear (70T), US Gallon	1
	800F3846	Drive Gear (84T), Liter	Opt.
9	800F3820	Shaft, Cluster Gear	1
10	800F3841	Cluster Gear (22T/67T), US Gallon	1
	800F3843	Cluster Gear (10T/67T), Liter	Opt.
11	800F3830	Washer	1
12	800G2250	Gear Frame Assembly	1
13	900F4007	#8 32 x 5/16 PHMS ACR II	2
18	700F2801	Oring ( 218), Fluorocarbon	Opt.
19	800G2236	3/4 Inlet & 3/4 Outlet Housing	1

ITM. NO.	PART NO.	DESCRIPTION	QTY.
20	800G8892	5/16-18 x 1 HWTRS	4
21	800F4463	Calibration Screw (Includes Item 24)	1
22	800F4449	O-ring (-012) Fluorocarbon	1
23	800F4440	Seal Screw	1
24	800F4036	O-ring (-008) (Included w/Item 21) Fluoroca	1
25	800F4011	O-ring (-156), Fluorocarbon	Opt.
26	800G2599	Meter Chamber Assembly - Fluorocarbon	Opt.
28	800F3959	Pinion Bevel	1
29	35F1397	#4 x 3/8 PHSMS	2
30	800G2532	Cover Assembly - U.S. Gallon	1
	800G2535	Cover Assembly - Liter	Opt.

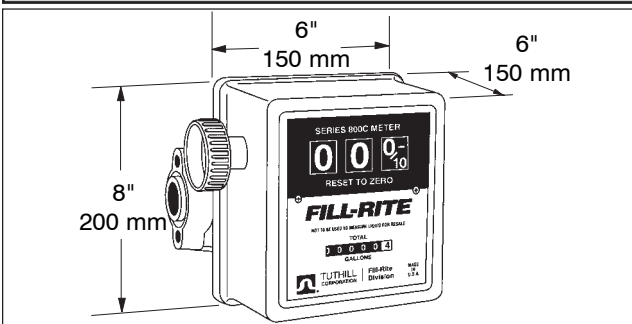


**WHEN ORDERING REPAIR PARTS, BE SURE TO GIVE REPLACEMENT PART NUMBER, DATE OF MANUFACTURE AND METER SERIES NUMBER. THIS WILL ENSURE THAT THE CORRECT REPLACEMENT PART IS SUPPLIED.**  
**TOLL FREE CUSTOMER SERVICE NUMBER**  
**800 634 2695**

### BD807CMK SERIES REPAIR KITS

PART NO.	DESCRIPTION
800KTG2541	Repair Kit, U.S. Gallon (Viton Seals) (Includes items 6-12, 18, 22, 24-26, 28)
800KTG2543	Repair Kit, Liters (Viton Seals) (Includes items 6-12, 18, 22, 24-26, 28)

### BD807C DIMENSIONS



Meters are furnished for horizontal piping, left to right flow. Flow ports can be located in any of four positions for horizontal or vertical piping. To change direction of flow, do the following:

1. Lay meter counter face down on a clean flat surface.
2. Arrow mark on meter housing indicates fluid flow direction.
3. Remove four screws (item 20).
4. Lift meter housing (item 19) and chamber assembly (item 26) and rotate together to desired flow direction.  
**CAUTION: Chamber opening must face towards inlet port of meter.**
5. Replace four screws (item 20) and tighten well.
6. Install meter.

## BIODIESEL NOTES

**Definition:** Biodiesel is a clean burning fuel made from vegetable oil or animal fat that has been processed to meet the requirements of ASTM D6751 standard. Only biodiesel that meets the ASTM D6751 standard are to be used with Fill-Rite Series BD807CMK meter. Unprocessed or recycled vegetable oil are not biodiesel and are not to be used with the Fill-Rite Series BD807CMK meter.

Biodiesel is often blended with petroleum diesel fuel. When blended, the resulting fuel is known by the percentage of biodiesel in the blend; ie. a 20% biodiesel blend with 80% petroleum diesel is know as B20. Pure biodiesel is B100, also know as "Neat" biodiesel. Blends with 20% biodiesel or less (B1-B20) are generally treated like petroleum diesel fuel.

The Fill-Rite Series BD807CMK Meter Kit are designed to handle biodiesel blends of B21–B100 (21%-100% biodiesel). Users who wish to dispense blends with lower concentrations of biodiesel (B1-B20) should use the Fill-Rite Series FR807CMK meter kit.

**Temperature Limitations:** B100 (100% biodiesel) that meets ASTM D6751 has a "gel" point of 38°F (3.3°C). If B100 gets colder than 40°F (4.4°C), the Fill-Rite Series BD807CMK meter may not operate properly due to the thickness of the fluid. In some situations, tank manufactures may be able to supply tank and pipeline heaters that are safe to use and can keep the temperature of the B100 above 40°F.

**Cleaning Properties of Biodiesel:** Biodiesel has scrubbing and cleaning properties that tend to loosen rust, varnish, and dirt in storage tanks, piping, and equipment. The resulting debris can clog filters and screens, or damage equipment. It is important to understand this and take precautions to prevent problems when first using biodiesel.

**Shelf Life of Biodiesel:** It is recommended that biodiesel be used within 6 months for best performance. Microbial growth may occur if biodiesel is stored for longer periods.

For more information on biodiesel, go to [www.biodiesel.org](http://www.biodiesel.org).

## PRODUCT WARRANTY

Tuthill Transfer Systems ("Manufacturer") warrants to each consumer buyer of its Fill-Rite products (the "Buyer"), from the date of invoice or sales receipt, that goods of its manufacture ("Goods") will be free from defects of material and workmanship. Duration of this warranty is as follows:

- Heavy Duty Products - Two years
- Standard Duty Products – One year
- Economy Duty Products – One year
- Cabinet pumps, Parts, and Accessories - One year

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'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.