RFX Meter Handle

Parts and Technical Service guide Guía de servicio técnico y recambio Guide d'instructions et pièces de rechange	Ref.: **Model 2188**

Description/ Descripción/ Description

E

The Samson RFX is designed to control and monitor the consumption and inventory balances of automotive fluid products with minimal installation and programming costs. The wall mounted keypad module consists of a 12-button keypad, LCD display and integral ticket printer. The RFX keypad can control up to 48 meters and track 8 different fluids and tanks. It is capable of sending and receiving data typically up to 300 feet in a service facility installation. A unique, patented feature of the control system is that the dispense trigger of the RFX Meter is locked until authorization from the keypad is received. After the dispense is completed, the user can top off the dispense and the actual amount used is sent back to the keypad and this meter returns to the locked status. Additionally, the meter can be installed on portable dolly systems offering control and monitoring of often high-cost lubrication products. Up to 50 operators can be defined with their own unique PIN number for accessing the system. The system provides dispense reports by operator, fluid type, meter or tank. This allows for flexibility in reviewing system activity.

Operation/ Modo de empleo/ Mode d'emploi

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The operator enters his PIN number and RO number and then selects the hose that the fluid is to be dispensed from. The operator then enters the required quantity and presses ENTER to confirm. After preesing 'Reset' the meter is then authorized to automatically dispense and shut off when the authorized amount of fluid is dispensed. The operator may then top off the vehicle for the proper fill, if necessary. The operator may allow the meter to "time out" or may depress "Reset" which sends all actual dispense data back to the keypad and puts the meter into a secure "Locked" status until the next authorized dispense work order is received from the keypad. After each dispense, a transaction ticket is printed showing the fluid and quantity dispensed along with the operator's name.

System Features

- Very low installation costs
- Patented "Lock-Out" to prevent unauthorized dispenses
- Oval Gear metering technology
- Measurement in Pints, Quarts, Gallons or Liters
- Field replaceable AA Batteries in meters
- Control of portable fluid tanks
- Integral ticket printer
- Serial port for report printer

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Factory Settings
Each meter is preprogrammed and calibrated at the factory. Unless otherwise specified at the time of the order, each meter is programmed in quarts for use with motor oil. The meter is shipped in the Manual Mode. If you need to change the factory settings, see page 6.

1000 psi (67 bar) Maximum Working Pressure
8 gpm (30 Lpm) Maximum Flow Rate

This Meter is designed specifically to dispense motor oils (S.A.E. 5-50), gear oils (S.A.E. 80-240), automatic transmission fluid, antifreeze (Ethylene Glycol) solution, and hydraulic fluid. Other models of the EPM are designed to dispense brake fluid or windshield wiper fluid.

SYMBOLS

⚠WARNING

This symbol is an alert to the possibility of serious injury or death if the instructions are not followed.

⚠CAUTION

This symbol is an alert to the possibility of damage to or destruction of equipment if the instructions are not followed.

⚠WARNING

Equipment Misuse Hazard
1. This equipment is for professional use only.
2. Read all instructions, tags, and labels before operating the equipment.
3. Use the equipment only for its intended purpose.
4. Do **NOT** modify or alter the equipment.
5. Do **NOT** leave equipment unattended while dispensing.
6. Check equipment daily. Repair or replace worn or damaged parts immediately.
7. Do **NOT** exceed the maximum working pressure level of the lowest rated system component.
8. Use only extensions and nozzles that are designed for use with this equipment.
9. Use only fluids and solvents that are compatible with the equipment. Read all fluid and solvent manufacturer's warnings.
10. Tighten all fluid connections before operating this equipment.
11. Do **NOT** stop or deflect leaks with hands, body, gloves, or rags.
12. Do **NOT** dispense valves towards any person or any part of the body.
13. Do **NOT** place hands or fingers over the end of or into the dispense valve.
14. Comply with all local, state, and federal fire, electrical, and safety regulations
15. Use of this product in a manner other than specified in this manual may result in impaired operation or damage to equipment.

Meter Overview

FCC ID: GIF-RFEPM
FCC CERTIFIED, PART 15, SUBPART C

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The meter is Samson's Electronic Preset meter (RFX) equipped with RF communications allowing authorization and dispense information. Once a work order has been set up, the operator simply pulls the trigger and the authorized amount of fluid for that meter will dispense. The valve will automatically shut off when the full amount has been dispensed. A "Top Off" feature allows additional amounts to be dispensed and tracked after the valve closes. Upon completion of the dispense effort, the valve locks prohibiting any unauthorized dispense to occur.

Meter Display and Keypad

Keypad Buttons

(10) (1) (0.1)

Used to enter the quantity to be dispensed when RF communications are not available.

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Total (TOTAL)

Used to display the accumulated total of fluid, as well as the resettable total during normal operating mode.

Auto (AUTO)

Used to enter and exit the Auto Mode when RF communications are not available.

Reset (RESET)

Used to accept a dispense order from the keypad. Used in normal operating mode (RF, manual or auto) to clear the previously programmed batch and to reset the meter. Used to reset the resettable total after pressing the TOTAL button.

Shut-Off (◯)

Used to stop the flow through an electrical override.

Meter Installation
Pre-Installation Procedure
1. Relieve the system pressure:
   a. Turn off the power supply to the pump or close the shutoff valve.
   b. Dispense any fluid in the system into a waste container by opening the dispense valve.
   c. Open all bleed-type master air valves and fluid drain valves in the system.
   d. Leave the drain valve open until ready to pressurize
      the system.

2. Close the shutoff valve.

3. Ground hoses and reels:
   Grounding reduces the risk of static sparking; ground all system components according to local, state, and federal code. Consult the user's manual of the pump and other system components to ground the following:
      i. Pump: follow manufacturer's recommendations
      ii. Air and Fluid Hoses: use only grounded hoses
      iii. Air Compressor: follow manufacturers recommendations
      iv. Fluid Supply Container: Follow the local code

⚠WARNING

Do not use Teflon® tape on pipe joints; it may cause a loss of grounding across the joint.

Installation Procedure
1. If this is an existing installation, go directly to step 6. *Steps 2 through 5 are for flushing the system prior to installing the meter.*
2. Close fluid dispense valves at every dispense position.
3. Once the main fluid outlet valve at the pump is closed, the air pressure to the pump motor is properly adjusted, and the air valve is open, slowly open the main fluid valve.

4. Place the hose end in a waste container. Make sure hose is secure so no fluid will leak during flushing.
5. Slowly open the dispense valve and allow enough oil to pass through to ensure that the system is clean. Close the valve and repeat for all dispense positions.

Note: If the system has multiple dispense positions, begin at the position farthest from the pump, and move towards the pump.

6. Relieve the Pressure (see Relieve the System Pressure, above).
7. Insert the metal end of the hose into the swivel located at the end of the handle, and tighten completely with an open ended, adjustable wrench.
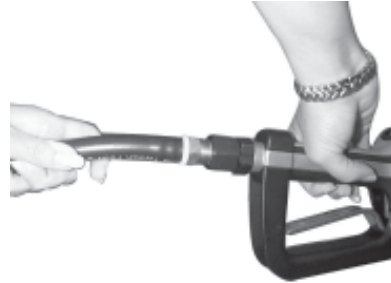
Attaching the hose

Note: The threaded end of the meter will always have female threads, so the metal end of the hose must have male threads. Apply thread sealant to the male end. The inlet and outlet connections are both 1/2" NPT or 1/2" BSPP depending on meter model.

8. Thread the new nozzle onto the opposite end of the meter and screw in tightly with an open ended, adjustable wrench.


Installing the nozzle

9. Open all dispense position shut-off valves, and start the pump to pressurize the system.
10. To ensure accuracy, purge all air from the fluid lines and dispense valve before use.

Operating the Meter - RF Mode:

When the battery pack is attached to the meter, the meter will automatically enter the RF Mode. The trigger is in a locked-out position and no oil can be dispensed until a dispense order is received by the meter.
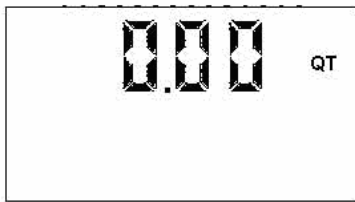
RF Mode

1. Pressing the (RESET) button on the meter will enable it to receive a dispense order from the keypad. When a dispenser order is required, the trigger will unlock.


RF Mode Batch

2. Pull the trigger to begin the flow. The valve will automatically lock in place, even though the trigger will fall back to the closed position. The flow will automatically shut off when the programmed batch size has been dispensed.

⚠CAUTION

Do **NOT** press (RESET) before topping off. The meter will return to a locked-out position and not allow additional fluid to be dispensed until a valid dispense order is received from the keypad.

3. The user has the option to top off at the end of the dispense order. To top off the tank, simply pull the trigger to begin the flow and release when the desired amount has been pumped.

4. Press the (RESET) button when finished to reset the meter. The total quantity dispensed will be transmitted to the keypad and the meter will return to a locked-out position. The meter is now ready to receive the next dispense order from the keypad.

Meter Operation

TO START DISPENSE
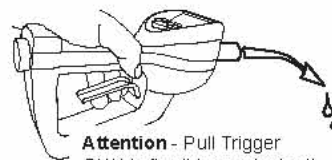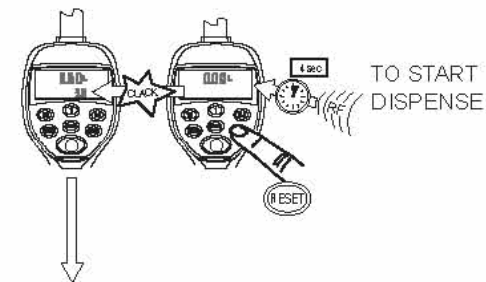
Attention - Pull Trigger ONLY after it has unlocked! To dispense fluid, pull trigger up until it latches and release. The meter will shut off automatically when the dispense quantity is reached.

TO END DISPENSE

Manual Mode - No RF Communications

1. Program the meter to manual mode by holding down the (TOTAL) key and pressing (10) (1), (0.1), (AUTO) and (AUTO). The solenoid will now unlock and the meter may be used as a Standard Series EPM.

Manual Mode

2. Pull the trigger to begin the flow.

3. When the desired amount has been pumped, release the trigger to stop the flow. Press (RESET) to reset counter display to zero.

Programming the Preset Batch Function - No RF Communications

1. To enter the Auto Mode, press the (AUTO) button. The following screen will appear:

Auto Mode

2. The meter is now ready to be programmed. Change the batch size by pressing the (10), (1) and (0.1) buttons.

   a. Pressing the 10 button will increase the batching amount in increments of 10 units.
   b. Pressing the 1 button will increase the batching amount in increments of 1 unit.
   c. Pressing the 0.1 button will increase the batching amount in increments of 0.1 units.

3. Pull the trigger to begin the flow. The valve will automatically lock in place, even though the trigger will fall back to the closed position. The flow will automatically shut off when the desired batch size has been dispensed.

NOTE: The meter will automatically shut off if the trigger is pulled and the meter does not sense any flow. The display will then begin to flash indicating the meter has shut off. Press the (RESET) button to stop the display from flashing.

Also, in case of an emergency or to interrupt a batch, the meter is equipped with an electrical override. (See Electrical Override.)

⚠ CAUTION

The valve will always lock in the maximum open position.

4. The user has the option to top off at the end of the batch. To top off the tank, simply pull the trigger to begin the flow and release when the desired amount has been pumped.
5. Press the (RESET) button when finished to reset the meter. It is now ready for the next batch.

⚠ CAUTION

Do **NOT** press (RESET) before topping off. The meter will begin a new batch.

## Normal Operating Mode Functions

Total
This option allows users to see the accumulated total as well as the resettable total.

Press and hold the (TOTAL) button while in normal operating mode to see the accumulated total. Continue holding and after three seconds the screen will change to the resettable total, which displays the total fluid dispensed since the resettable total was last set back to zero.

Press the (RESET) button while viewing the resettable total to set the resettable total back to zero. Release the (TOTAL) button to return to the normal operating screen.

Note: The accumulated total cannot be reset, unless the user changes from English units to metric units or from metric to English units. (See Changing Factory Settings.)
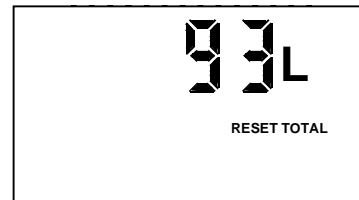
Total Function

Electrical Override
In case of an emergency or to interrupt a batch, the meter is equipped with an **electrical override**. This option automatically closes the valve in the meter, stopping the flow immediately. The display will begin to flash because the meter does not sense any flow. Batching can be continued after an override, even if the meter is in the middle of a programmed batch and the display continues to flash.

Press the red (◯) button to activate the electrical override. This button can only be used when the valve is open.

Press the (RESET) button to cue up the next batch and stop the display from flashing.
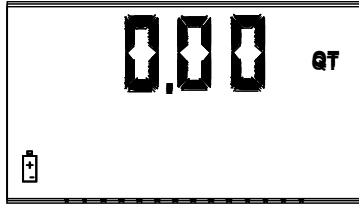
Service
Changing the Battery
When the batteries need to be changed, a progression of warnings will appear on the screen.

1. First warning: the **Low Battery Icon** will appear in the

lower left corner of the display. This means that the batteries are low and need to be changed within one week after the icon first appeared.

2. Second warning: The **AUTO** function will shut off and the auto icon will disappear. This means the battery power is too low to run the auto function. The meter can still run in manual mode.

3. Third Warning: The screen goes blank. This means there is no power left. The display cannot be run. However the meter will still allow fluid to pass through when the valve is opened, but it will not measure flow.

• The battery compartment is located on the underside of the trigger guard. Unscrew the two screws located under the guard and remove the battery cover to expose the batteries.

• Replace the old batteries. This meter takes 4 AA alkaline batteries. Replace the cover and the screws when finished. Note battery polarity markings inside battery compartment cover.

• Dispose of used batteries properly according to local regulations.

NOTE: Changing the batteries will not affect any of the programmed values, or totals.

Changing Factory Settings

Factory Settings
Each meter is preprogrammed and calibrated at the factory. Unless otherwise specified at the time of the order, each meter is programmed in quarts for use with motor oil.
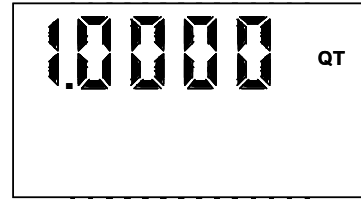
1. Press (RESET) to wake up the meter if screen is blank.

   To enter the programming mode, press and hold the **"PROGRAMMING"** key located in the access hole under the meter for 2 seconds. (See picture)
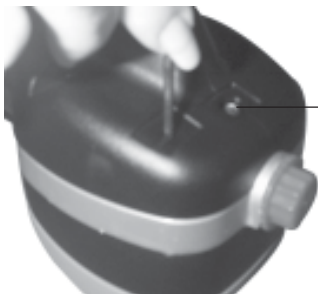
Use a 5/32" Allen wrench or similar blunt tool

Location of access hole for PROGRAMMING Key.

After the screen flashes, it will display the scale factor and units of measurement.

Initial Programming Screen

Programming the Units
This meter comes with the option to choose 4 different units of measure. Unless otherwise specified at the time of the order, each meter is programmed in quarts for use with motor oil. The 'QT' will be flashing on initial start-up.

1. Toggle the four options ('L', 'QT', 'GAL', 'PT') by pressing the (TOTAL) button.

2. When the desired option is on the screen, press the (RESET) button to advance. The units of measurement icon will stop flashing and the first digit of the scale factor will begin flashing.

Note: If the 'L' units have been selected, the decimal point will begin to flash. The user now has the option to change the decimal point to either a period or a comma. To do this, press the (TOTAL) button. Press the (RESET) button to advance to the scale factor screen.

⚠CAUTION
Changing the units of measurement from metric to English units, or from English to metric units will clear the accumulated total, and resettable total.

Recalibrating the Meter
The Scale factor is used to adjust the accuracy of the meter. The scale factor will be set at the factory using oil with the viscosity of 10W motor oil. The primary use for the recalibration function is if the user wants to batch fluids with a different viscosity. If the fluid has a lower viscosity, more fluid can slip past the gears without being detected. Changing the scale factor can adjust the meter to compensate for that loss. The meter multiplies each pulse by this number to correct the accuracy when it converts to the specified units, so the reading on the dial is always correct.

For an approximate scale factor for fluids of different viscosities, consult the following chart:

Type of Fluid	Viscosity (cSt)	Scale Factor
Water/Anti-Freeze	5	1.044
Anti-Freeze	18	1.007
Automatic Transmission Fluid	80	1.002
Motor Oil	140	1.000
Mobil 80W-90	450	0.999
50W	900	0.996
140W	1800	0.993

(Unless otherwise specified at the time of the order, each meter is programmed in quarts for use with 10W motor oil.)

Note: The original meter scale factor is written inside of the meter when calibrated at the factory. It may have been revised after field installation. Use scale factor shown on display, not the trigger.

To view the current program scale factor, do the following:

1. Press and hold the (TOTAL) button.

2. Then, press and hold the (AUTO) button.

For an absolute scale factor, perform the following test: Run a measured amount of fluid through the meter. If the meter delivers 4.20 quarts, and the display shows only 4.00 quarts, then the scale factor needs to be adjusted. Divide what the meter delivered (4.20) by what the display shows (4.00) to get the error factor (1.05).

Calculating the new scale factor:

If existing scale factor is 1.0123, then the calculation would be: 1.0123 (existing scale factor) x 1.05 (error factor) = 1.0629 (new scale factor).

Change the scale factor:

Press **"PROGRAMMING"** key to enter the programming mode, and the (RESET) button to advance through the units mode.

1. The first digit of the scale factor will be flashing.

2. Press the (TOTAL) button to scroll through the numbers.
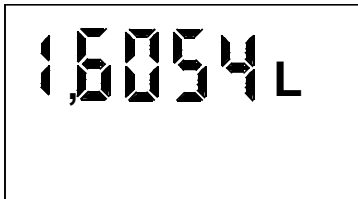
Scale Factor Screen

3. Press (RESET) to advance to the next number in the scale factor.

4. Repeat steps 2 and 3 for all five digits in the scale factor.

Note: All digits can be scrolled between 0 and 9 except the first, which can only be scrolled from 0 to 1.

5. When finished setting the scale factor, press the (RESET) button and the scale factor and units measurement screen will be replaced with the pulse delay screen:

Setting the Pulse Delay Factor
The **Pulse Delay Factor** is used to correct for fast flow rates by closing the valve in the meter between one and five pulses sooner than the selected value. The meter is factory programmed with a pulse delay factor of 0.

Pulse Delay Screen

Advance through the unit selection and all five scale factor digits by pressing the (RESET) button. The above screen will now be displayed.

1. The 'PS-' will be followed by a flashing zero. The zero is the initial setting of the pulse delay factor

2. Scroll between settings (0 to 5) by pressing the (TOTAL) button.

3. When finished selecting the pulse delay factor, press (RESET) and the display will return to the scale factor screen.

4. When finished programming these options, press the **"PROGRAMMING"** key and hold it until the screen flashes three times then goes blank. Press the (RESET) button to return to the normal operating screen.

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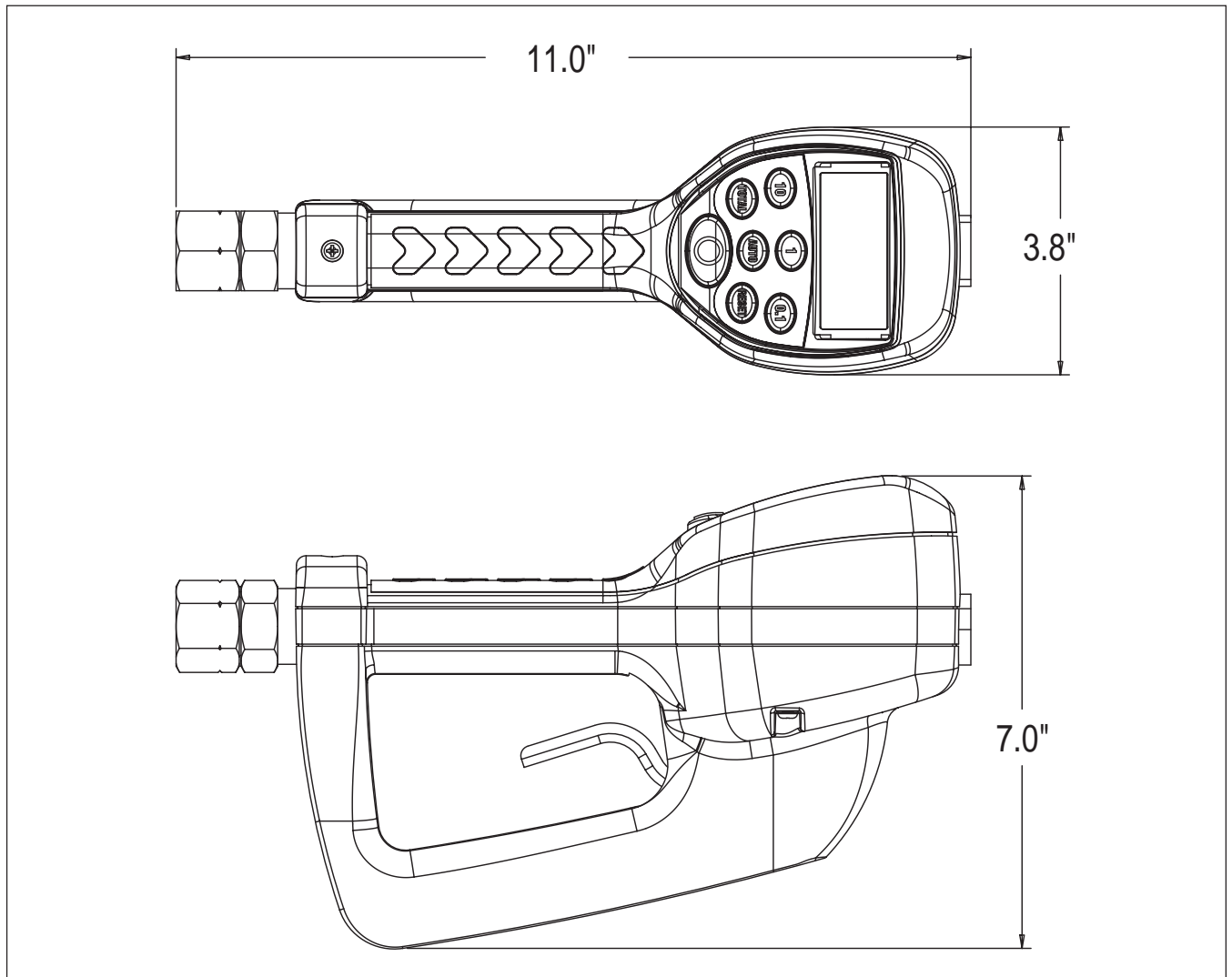
SPECIFICATIONS

	English	Metric
Maximum Flow *	8 gpm	30 lpm
Minimum Flow *	0.25 gpm	1 lpm
Operating Pressure (Maximum)	1000 psi	67 bar
Operating Pressure (Minimum)	5 psi	.35 bar
Operating Temperature (Maximum)	120° F	50° C
Operating Temperature (Minimum)	20° F	- 5° C
Accuracy - Oils	+/- 0.5%	+/- 0.5%
Accuracy - Anti-freeze	+/- 1.5%	+/- 1.5%
5-Digit LCD Display, 10 mm High x 5 mm Wide	Quarts, Pints, Gallons	Liters
Inlet and Outlet Connections	½" NPT	½" BSPP

* Tested with DTE-25 motor oil at ambient temperature. Min.-Max. flow range will vary with fluid viscosity.

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1

2
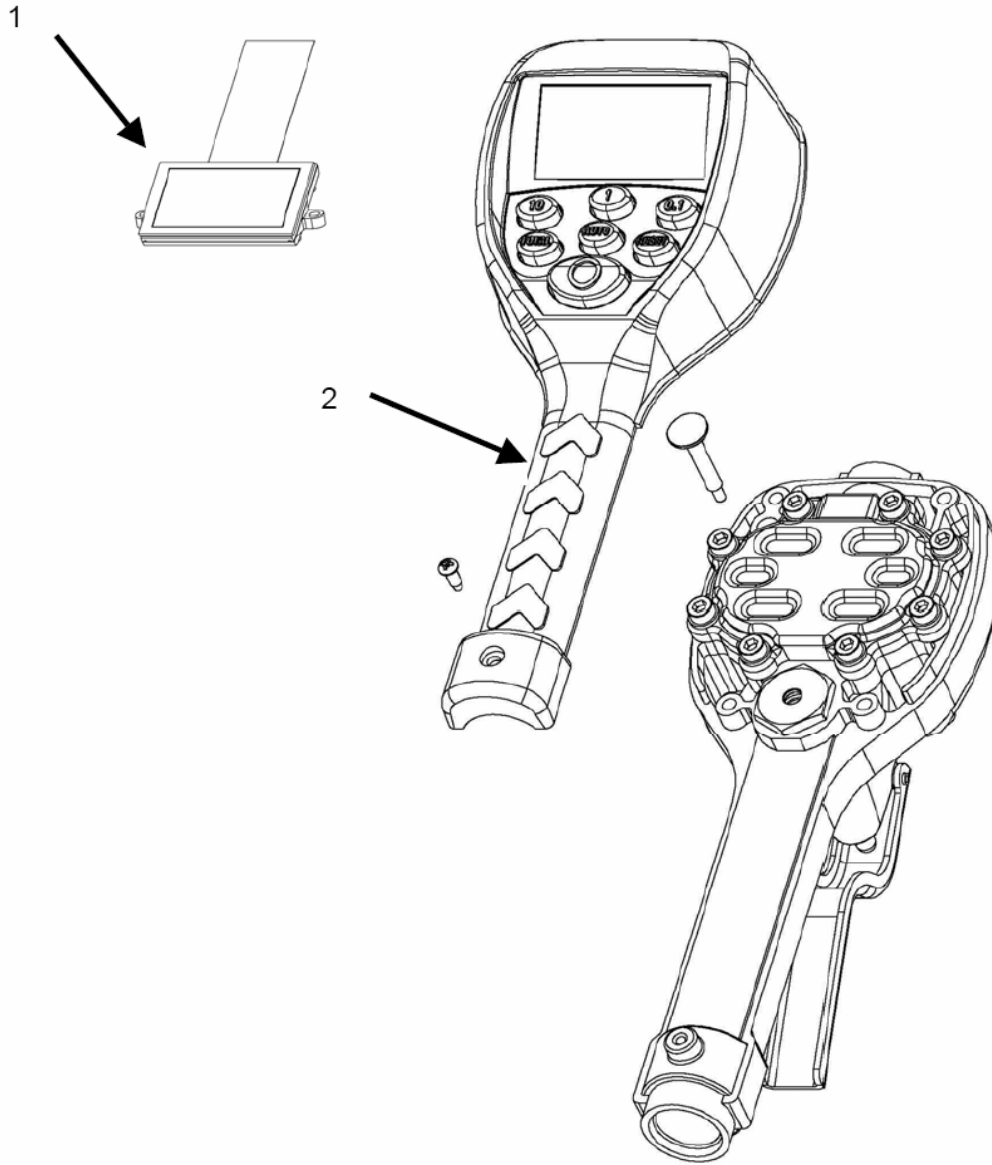
ITEM #	PART DESCRIPTION	PART NUMBER
1	Display Assembly	64103-023
2	EPM2 Std. Register Assembly	64103-024
Not Shown	Swivel, NPT	64082-001
Not Shown	Rubber Boot	65546-001
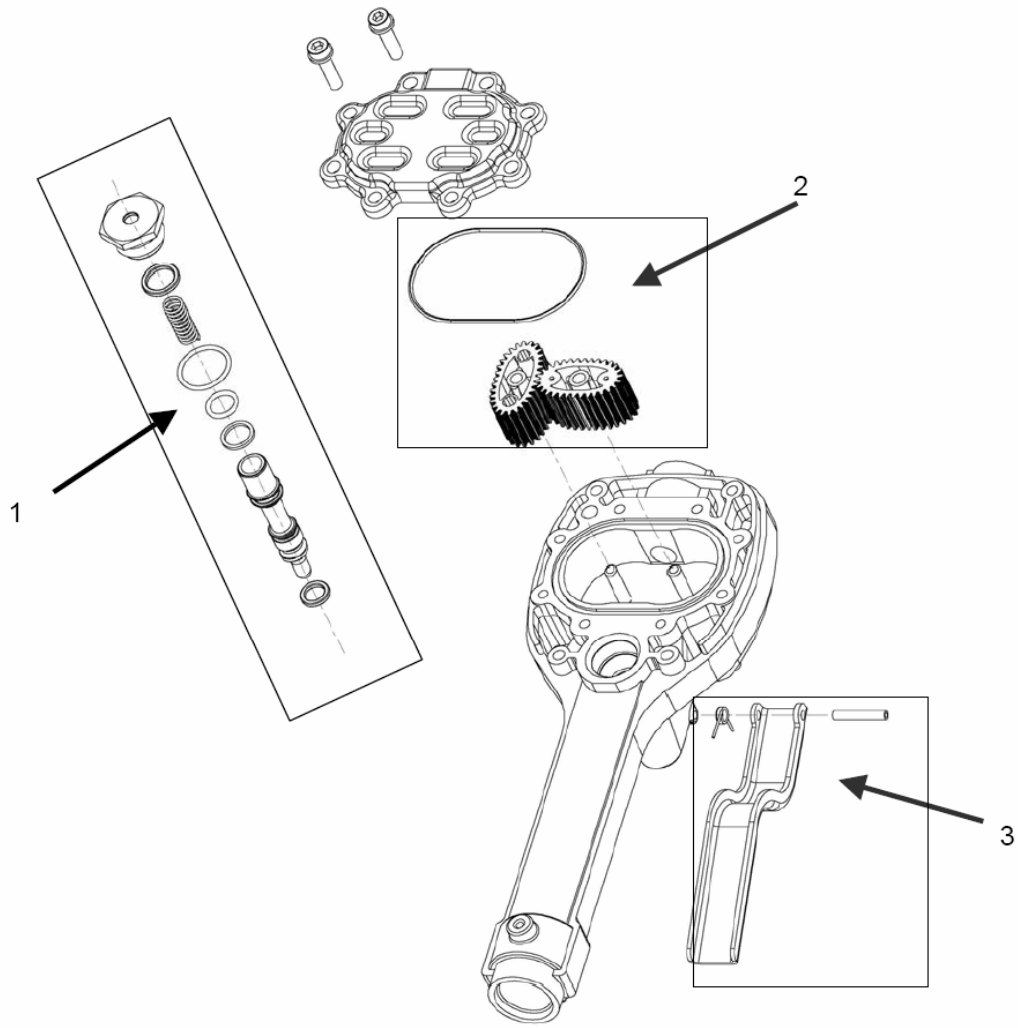
ITEM #	PART DESCRIPTION	PART NUMBER
1	Valve Assembly	64103-010
2	Gear Service Kit with O-Ring	62896-001
3	Trigger Assembly	64103-005

TROUBLESHOOTING

⚠ WARNING

Relieve the pressure prior to checking or repairing the meter. Make sure all valves, controls, and pumps are operating correctly.

Symptom	Possible Cause	Remedy
Battery Icon is displayed	Batteries are low	Replace batteries
Display Blank	Meter asleep	Push reset button
	Loose battery connection	Remove battery pack and check battery connection / Push reset button
	Batteries dead	Replace batteries / Push reset button
Meter does not latch for batching	Meter not in AUTO mode	Press AUTO button and program batch size
	Meter not reset after prior batch	Press RESET button
	Low batteries	Check for battery icon / replace batteries / push RESET button
Slow or no fluid flow	Filter is clogged	Clean or replace the filter in the swivel nut
	Pump pressure is low	Turn up the pump pressure
	Foreign material is jamming meter	Contact your local distributor for repair
Meter inaccurate	Scale factor not correct for fluid	Enter program mode, check and reset program factor
Batch overruns program value	Pulse delay value set too low	Enter program mode, reset pulse delay to higher value

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