



# ELECTRONIC LUBE METER MODEL 905 Series "A"

## GENERAL

The Electronic Preset Meter (EPM) is designed specifically to meter and dispense bulk fluids for servicing automobiles, trucks, buses, construction equipment, and similar applications. The meter is lightweight, rugged and has a comfortable grip. The 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.

A rugged, shock-resistant plastic cover similar to that used for power tools protects the meter.

METER IS NOT FOR RESALE MEASUREMENT OF FLUID.

## OPERATION

The unit is programmed by the user to dispense in quarts, liters, pints, and gallons. You can program any unit of measure in a matter of seconds. A 5-digit liquid crystal display, accurate to the second decimal point, shows the exact amount of fluid dispensed.

The EPM meter uses 4 replaceable AAA batteries and is calibrated at the factory. The meter can also be recalibrated easily in the field.

Electronic accuracy will help you save time and money. The preset feature will allow users to perform other service tasks while fluid is dispensed.

## TYPICAL APPLICATIONS

- Fleet Maintenance Shops
- Industrial Assembly
- Quick Lube Facilities
- Dealerships
- Construction and Mining Equipment
- General Automotive Service Centers
- Specialty Service and Repair Shops



**Electronic Preset Meter**

## FEATURES

- Oval Gear Driven Meter
- Durable
- Lightweight
- Large, Easy-to-Read LCD Display
- Ease of Operation
- CE Approved
  
- Totalization in Liters and Gallons
- Delivery in Liters, Quarts, Pints, Gallons
- Automatic Non-Drip Nozzle with manual shut-off feature
- Max. Totalizer Number: 99,999 Gallons or Liters
- Max. Dispense Volume: 99,999 Units
- Max. Preset Volume: 99.9 Units
  
- Anticipation Feature for Greater Fill Accuracy
- Calibration Factor for Different Fluids
- Changeable Units of Measure
- One Programmable Preset
- Total and Resettable Total
  
- Minimum 20,000 Cycles on Battery Life
- Low Battery Indicator
- Low Battery Safety Lock Out Feature
- Ability to Save Settings if Power Interrupted
- Uses Standard AAA Batteries
  
- In-Line Swivel Standard With All Meters
- Automatic Shut-Off at Preset Amount
- Emergency Manual Shut-Off
- Precision Control Valve Operation

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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. This meter is **NOT** 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.



Overhead view of Display and Keypad

### Keypad Buttons



Used to enter the quantity to be dispensed.



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



Used to enter and exit the auto mode to program batch size.



Used in normal operating mode (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.



Used to stop the flow through a mechanical override.

## 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:

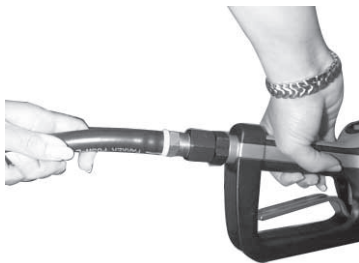
- i. Pump: follow manufacturer's recommendations
- ii. Air and Fluid Hoses: use only grounded hoses
- iii. Air Compressor: follow manufacturers recommendations
- iv. Fluid Supply Container: Follow the local code

## ⚠ 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.*

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



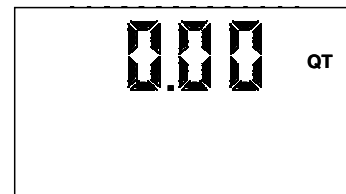
Installing the nozzle

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

### Manual Mode

1. Program the meter to manual mode by selecting reset.



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

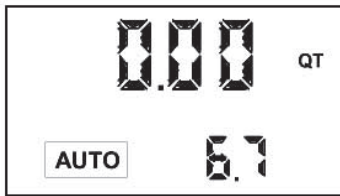
1. To enter the batch-programming mode, press the **AUTO** button. The following screen will appear:



Auto Mode


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


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




- 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.

### CAUTION

The valve will always lock in the maximum open position.  
*Note: At any time during the operation of the meter, the flow may be stopped by pressing the red  button. This will mechanically close the valve, stopping the flow. Batching may be resumed by pulling the trigger.*

- 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.
- Press the  button when finished to reset the meter. It is now ready for the next batch.


### CAUTION

Do **NOT** press  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  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  button while viewing the resettable total to

set the resettable total back to zero. Release the  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

### Mechanical Override

In case of an emergency or to interrupt a batch, the meter is equipped with a **mechanical override**. This option automatically closes the valve in the meter, stopping the flow immediately. Batching can be continued after an override, even if the meter is in the middle of a programmed batch.

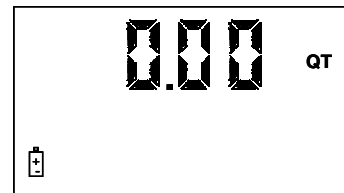
Press the red  button to activate the mechanical override. This can only be used when the valve is open. (The red stop button may require considerable force to activate since this is a mechanically activated item.)

## Service

### Changing the Battery

When the batteries need to be changed, a progression of warnings will appear on the screen.

- 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.



- 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.
- 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 AAA 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.

### ⚠ CAUTION

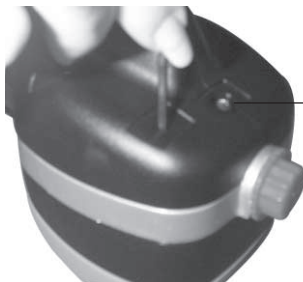
Make sure to securely replace the rubber o-rings surrounding the battery cap and screws to prevent liquid from leaking into the battery compartment. The o-rings are reusable indefinitely, however new o-rings can be purchased. See spare parts drawing on page 10. Changing the batteries will not affect 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 below)



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, or from English to metric 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 for oil. The primary use for the recalibration function is if the user wants to batch fluids with a viscosity other than 10W oil. 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 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 pre-measured batch of fluid through the meter. If the meter is programmed to batch 4.200 quarts, and it batches the entire amount but only reads 4.000 quarts, then the scale factor needs to be adjusted. Divide the quantity delivered (4.2) by the quantity dispensed (4.0) to get the error factor (1.05)

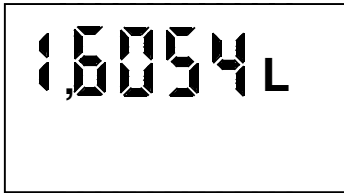
### To calculate the new scale factor:

If existing scale factor is 1.0123, the calculation would be:  
 $1.0123 \text{ (existing scale factor)} \times 1.05 \text{ (error factor)} = 1.0629 \text{ (new scale factor)}$


### Change the scale factor:

Press <PROGRAMMING> key to enter the programming mode, and the  button to advance through the units mode.


1. The first digit of the scale factor will be flashing.
2. Press the  button to scroll through the numbers.



Scale Factor Screen

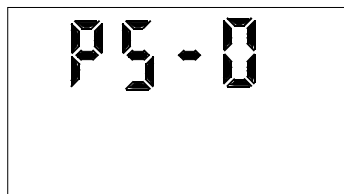
3. Press  to advance to the next number in the scale factor.
4. Repeat steps 2 and 3 for all five digits in the scale factor.

*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  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 all five scale factor digits by pressing the  button. The above screen will now be displayed.

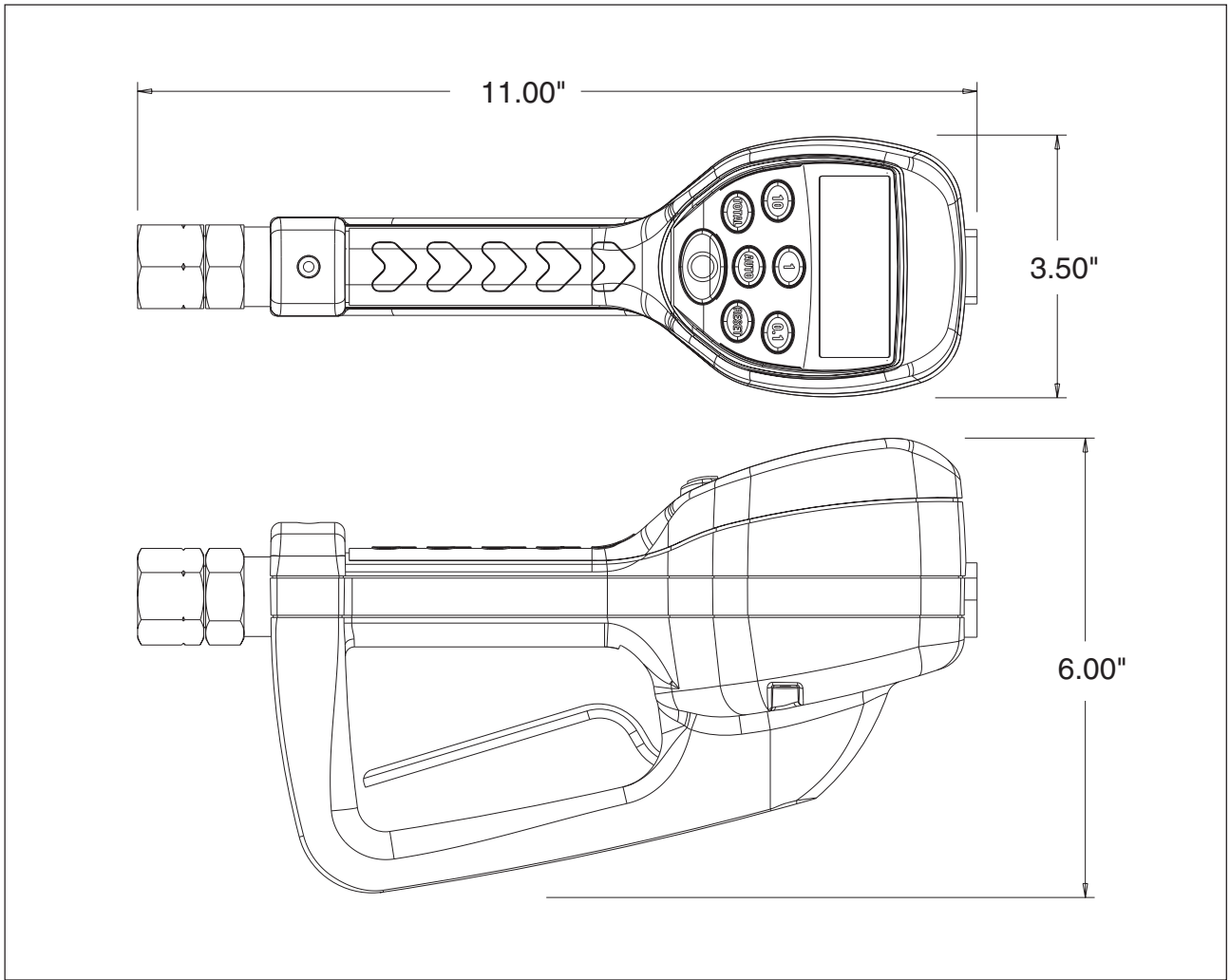
1. The 'PS-' will be followed by a flashing zero. The zero is the initial setting of the pulse delay factor

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

3. When finished selecting the pulse delay factor, press  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  button to return to the normal operating screen.

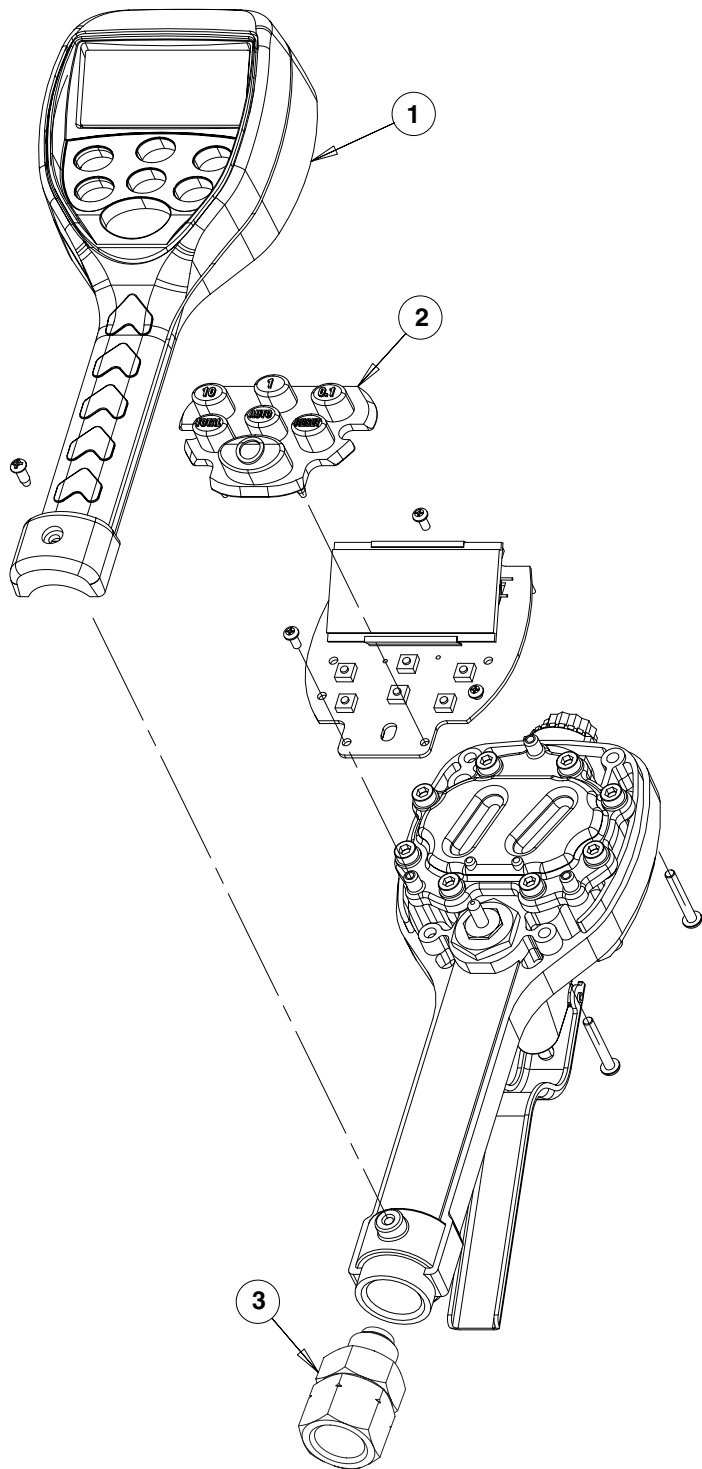




**SPECIFICATIONS**

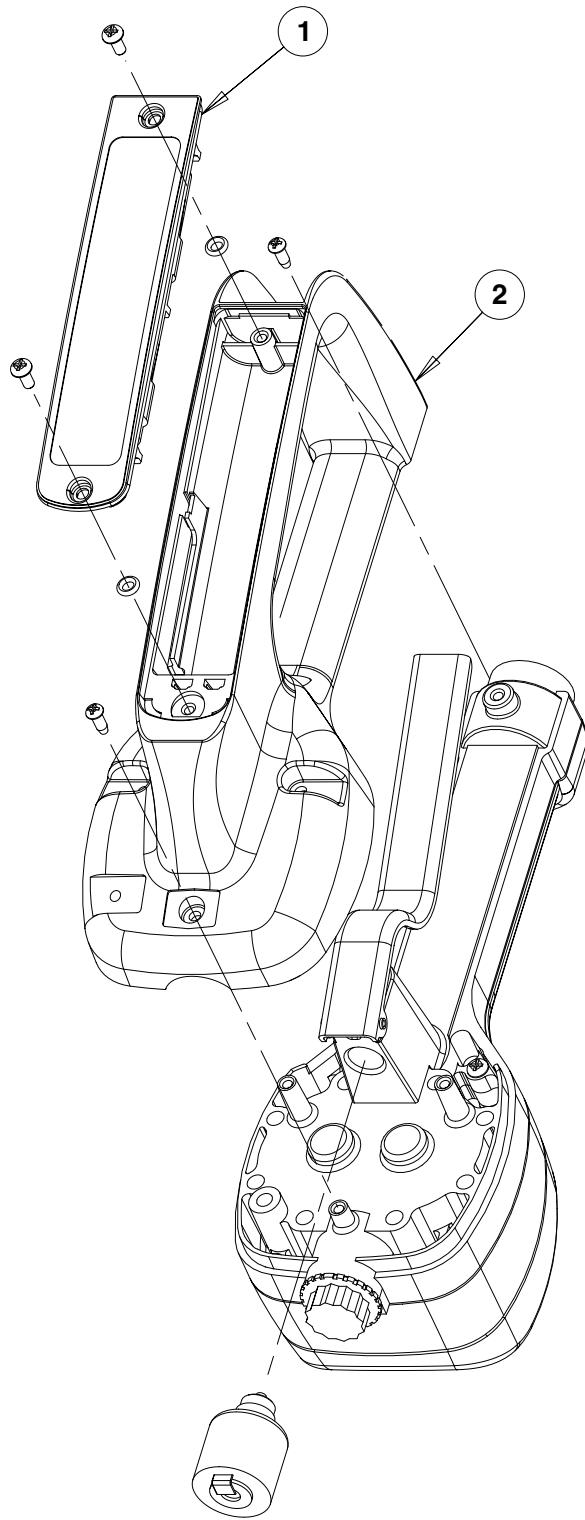
	<b>English</b>	<b>Metric</b>
Maximum Flow *	8 gpm	30 lpm
Minimum Flow *	0.25 gpm	1 lpm
Operating Pressure (Maximum)	1000 psi	67 bar
Operating Pressure (Minimum)	5 psi	.35 bar
Operating Temperature (Maximum)	120° F	50° C
Operating Temperature (Minimum)	20° F	- 5° C
Accuracy	+/- 0.5%	+/- 0.5%
5-Digit LCD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

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

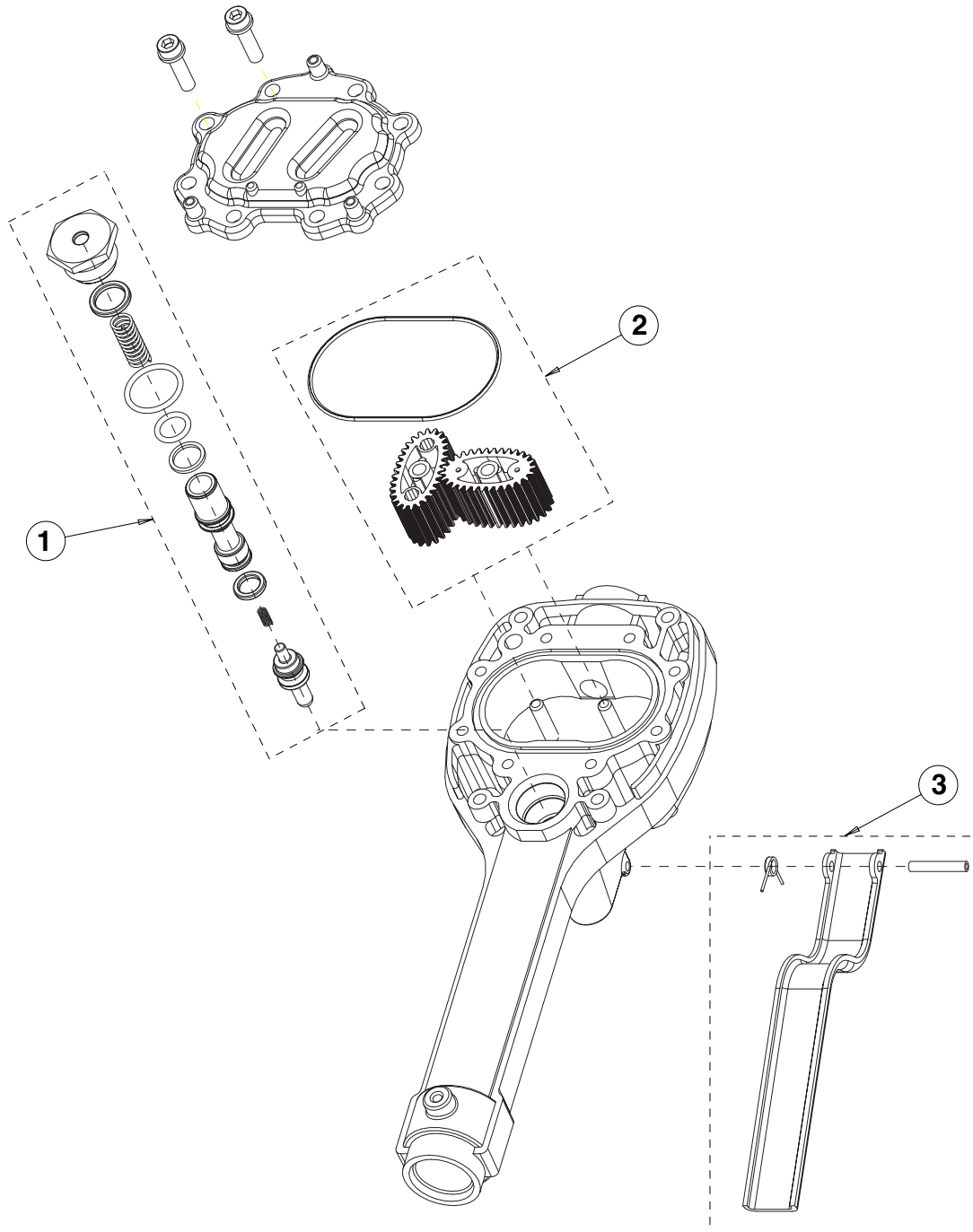


ITEM #	PART DESCRIPTION	PART NUMBER
1	Top Case with Screws	272379
2	Keypad	272380
3	Swivel and Screen	272397

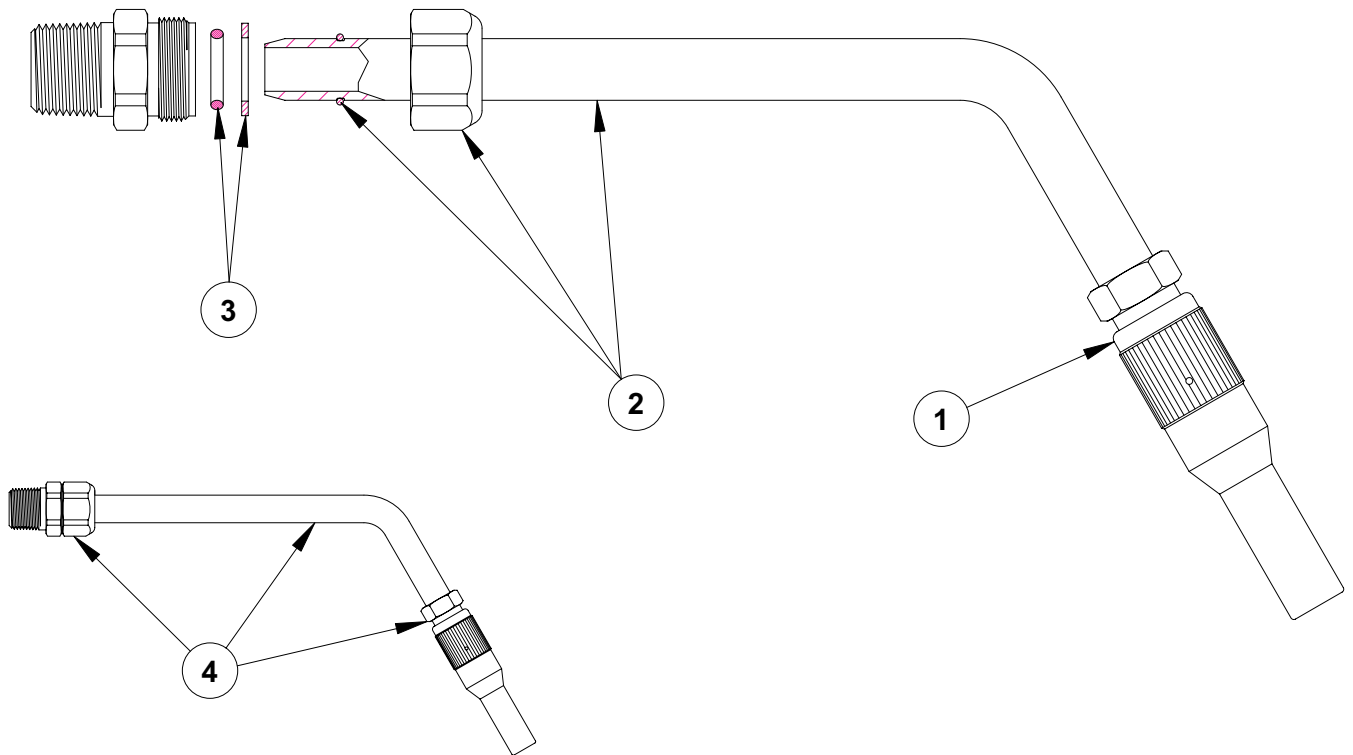




ITEM #	PART DESCRIPTION	PART NUMBER
1	Battery Door with Screws	272383
2	Bottom Case with Screws	272384



ITEM #	PART DESCRIPTION	PART NUMBER
1	Valve Assembly	272373
2	Gear Service Kit with O-Ring	272377
3	Trigger Assembly	272378



ITEM #	PART DESCRIPTION	PART NUMBER
1	Non-Drip Nozzle Assembly	84799
2	Tube Assembly	272389
3	O-Ring and Washer Kit	272390
4	Nozzle Assembly**	272391

\*\* Consists of Items 1, 2 and 3

# Troubleshooting

## ⚠ WARNING

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

Symptom	Fault	Remedy
Battery Icon is displayed	Batteries are low	Replace batteries
Display Blank	Meter asleep Batteries dead Program error Loose battery connection	Push reset button Replace batteries / Push reset button Remove and reinsert battery pack / Push reset button Remove battery pack and check battery connection / Push reset button
Meter does not latch for batching	Meter not in AUTO mode Meter not reset after prior batch Low batteries	Press AUTO button and program batch size Press RESET button Check for battery icon / replace batteries / push RESET button
Slow or no fluid flow	Filter is clogged Pump pressure is low Foreign material is jamming meter	Clean or replace the filter in the swivel nut Turn up the pump pressure 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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