

OPERATOR'S MANUAL

635360-X

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

RELEASED: 10-7-04
REVISED: 6-11-10
(REV. 03)

ELECTRONIC PRESET DIGITAL METER FOR USE WITH LUBRICATION FLUIDS



**READ THIS MANUAL CAREFULLY BEFORE INSTALLING,
OPERATING OR SERVICING THIS EQUIPMENT.**

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

TECHNICAL DATA

Models	635360-X
Inlet / Outlet Ports (female)	1/2 - 14 N.P.T.
Operating Pressure Range	5 - 1,000 p.s.i. (0.34 - 69.0 bar)
Meter Mechanism	Oval gears
Flow Rate (Range) ①	1/4 - 8 g.p.m. (1 - 30 l.p.m.)
Operating Temperature Range	20° to 120° F (-5° to 50° C)
Accuracy . Oils	± 0.5%
Anti-freeze	± 1.5%
LCD Display	
Batch Total (3 digits)	99.9 units
Cumulative Total (5 digits)	99,999 units
Power Supply	"AAA" Alkaline batteries (4)
Battery Life (minimum)	20,000 cycles
Weight (less nozzle / with batteries)	3.20 lb (1.45 kg)

① Tested with DTE-25 motor oil at ambient temperature. Minimum - maximum flow range will vary with fluid viscosity.

67353 Control Handle



Figure 1

MODEL IDENTIFICATION CHART

	Model	Control Handle	Dispense Units	Total Units	Nozzle (see page 7)
	635360-2	67353	Quarts	Gallons	629245-1 Flexible Hose
cancelled	635360-3	67353-3	Liters	Liters	629245-1 Flexible Hose
	635360-22	67353	Quarts	Gallons	629245-2 Rigid Tube
	635360-24	67353	Quarts	Gallons	629516 Flexible Hose
cancelled	635360-33	67353-3	Liters	Liters	629245-2 Rigid Tube

OPERATING AND SAFETY PRECAUTIONS

READ, UNDERSTAND, AND FOLLOW THIS INFORMATION TO AVOID INJURY AND PROPERTY DAMAGE.

⚠️ WARNING EQUIPMENT MISUSE HAZARD.

- This equipment is for professional use only.
- Read all instructions, tags and labels before operating this equipment.
- Use this equipment only for its intended purpose.
- Do not modify or alter this equipment.
- Do not leave equipment unattended while dispensing.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure level of the lowest rated system component.
- Use only extensions and nozzles that are designed for use with this equipment.
- Use only fluids and solvents that are compatible with this equipment. Read all fluid and solvent manufacturer's warnings.
- Tighten all fluid connections before operating this equipment.
- Do not stop or deflect leaks with hands, body, gloves or rags.
- Do not dispense valves toward any person or any part of the

body.

- Do not place hands or fingers over the end of or into the dispense valve.
- Comply with all local, state and federal fire, electrical and safety regulations.
- Use of this product in a manner other than specified in this manual may result in impaired operation or damage to equipment.

⚠️ WARNING = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage.

⚠️ CAUTION = Hazards or unsafe practices which could result in minor personal injury, product or property damage.

NOTICE = Important installation, operation or maintenance information.

GENERAL INFORMATION

The electronic digital flow meter is designed to provide precise metering of motor oils (S.A.E. 5 - 50), gear oils (S.A.E. 80 - 240), automatic transmission fluid, antifreeze solution and hydraulic fluid. The meter is not designed to dispense brake fluid or windshield wiper fluid.

This meter uses oval gears, which respond to flow, and rotate dividing the fluid into single volumes (units). As the gears rotate, they generate a signal, via a magnetic coupling, which protects the micro-processor from exposure to the fluid. The micro-processor uses a calibration "factor" and calculates pulses generated by the gear rotations into calibrated flow units which display in either quarts or liters on the meter register (batch total).

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 4. The meter display panel has seven push-buttons (see figure 2):

Keypad Buttons "10", "1", "0.1" - Used to enter the quantity to be dispensed.

"Total" - Used to display the accumulated total of fluid, as well as the resettable total during "auto" and "manual" modes.

"Auto" - Used to enter and exit the "auto" mode.

"Reset" - Used in "manual" or "auto" modes 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 thru a mechanical override.

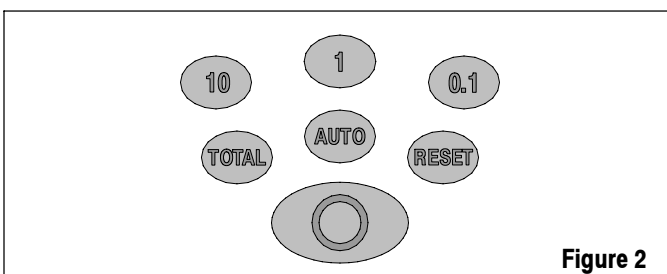


Figure 2

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 codes. Consult the user's manual of the pump and other system components to ground the following:
 - a. Pump - Follow the manufacturer's recommendations.
 - b. Air and fluid hoses - Use only grounded hoses.
 - c. Air compressor - Follow the manufacturer's recommendations.
 - d. Fluid supply container - Follow the local code.

⚠️ WARNING Do not use PTFE 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 thru 5 are for flushing the system prior to installing the meter.
2. Close the 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 the hose is secure so no fluid will leak during flushing.
5. Slowly open the dispense valve and allow enough oil to pass thru 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 toward 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 using an open ended, adjustable wrench (see figure 3).



Figure 3

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 N.P.T..

8. Thread the new nozzle onto the opposite end of the meter and screw in tightly using an open ended, adjustable wrench (see figure 4).

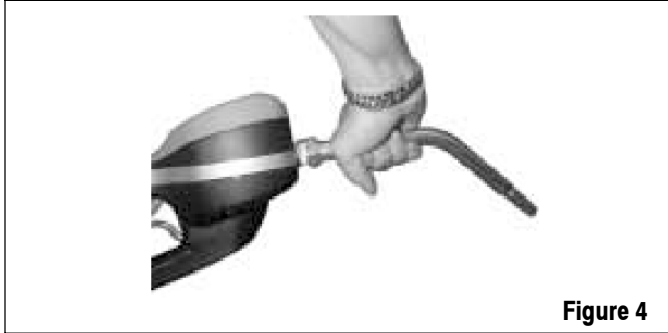


Figure 4

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.

METER OPERATION

Manual Mode

1. Program the meter to "manual" mode by selecting "RESET".

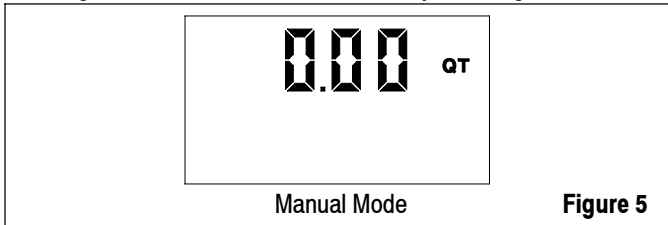


Figure 5

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 the counter display to zero.

Programming the Preset Batch Function

1. To enter the "auto" mode, press the "AUTO" button. The following screen will appear:

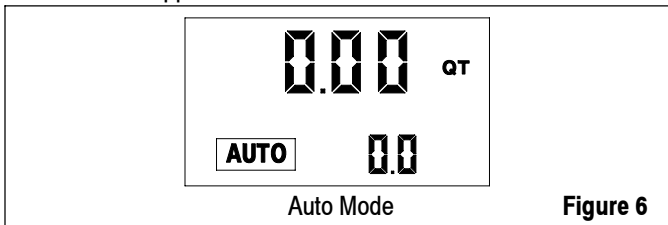


Figure 6

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 in-

crements of 1 unit.

- c. Pressing the "0.1" button will increase the batching amount in increments of 0.1 units.

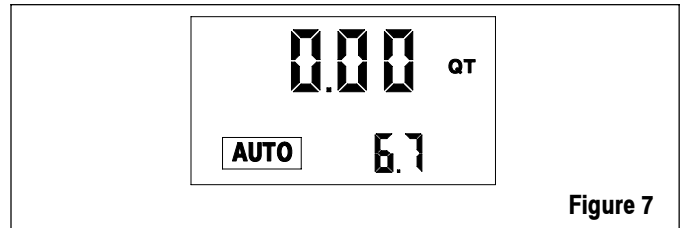


Figure 7

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 a mechanical override (see "Mechanical 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 the "RESET" button 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 the normal operating mode to see the accumulated total. Continue holding, and after 3 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 units to English units (see "Changing Factory Settings").

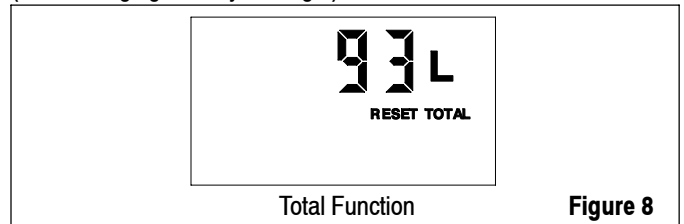


Figure 8

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. 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 "Shut-Off" button to activate the mechanical override. This button may require considerable force to activate and can only be used when the valve is open. Press the "RESET" button to cue up the next

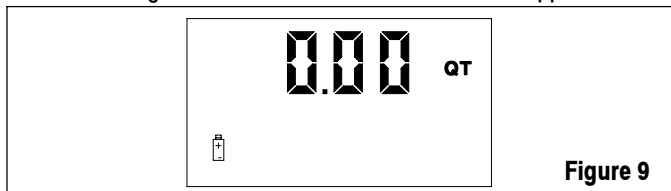
batch and stop the display from flashing.

SERVICE

Changing the Batteries

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

1. The 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.



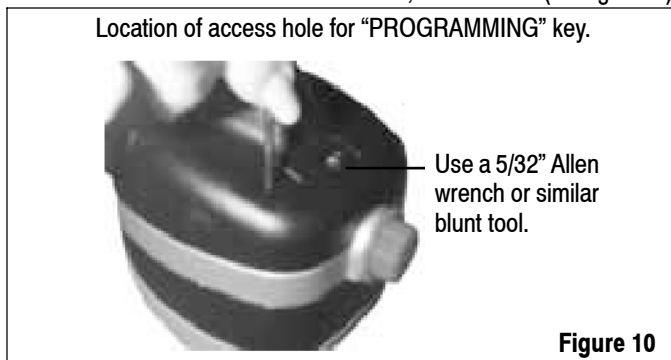
2. The second warning - The "AUTO" function will shut off and the auto icon will disappear. This means the battery power is too low to run the auto function. The meter can still run in manual mode.
 3. The third warning - The screen goes blank. This means there is no power left. The display cannot be run. However, the meter will still allow fluid to pass thru 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 four "AAA" alkaline batteries. Replace the cover and the screws when finished. Note the battery polarity markings inside the 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

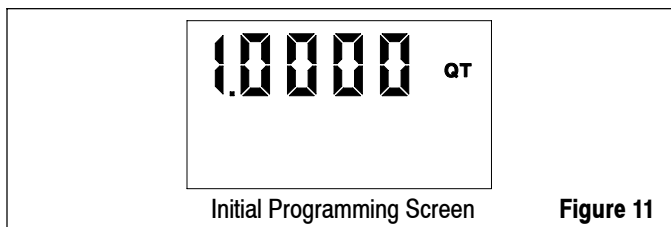
Factory Settings

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 figure 10).



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



Programming the Units

This meter comes with the option to choose four 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 units to English units, or from English units 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 on the inside of the meter when calibrated at the factory. It may have been revised after field installation. Use the scale factor shown on the display, not the trigger.

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

1. Press and hold the "TOTAL" button.
2. Press and hold the "AUTO" button.

For an absolute scale factor, perform the following test:

Run a measured amount of fluid thru 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).

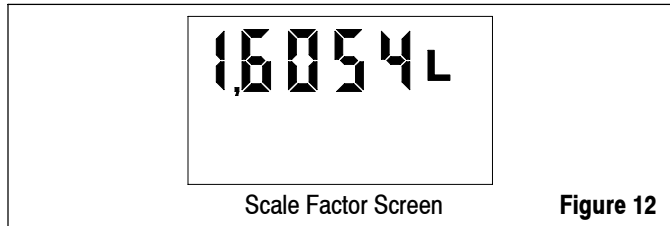
Calculating the New Scale Factor

If the 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, then press the "RESET" button to advance thru the units mode.

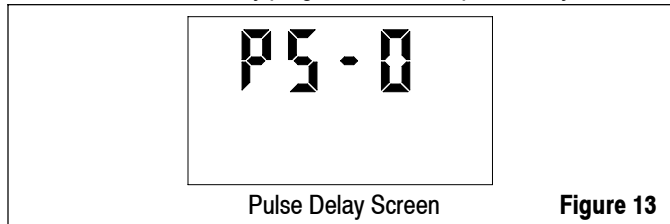
1. The first digit of the scale factor will be flashing.
2. Press the "TOTAL" button to scroll thru the numbers.



3. Press the "RESET" button 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.



Advance thru the unit selection and all five scale factor digits by pressing the "RESET" button. The above screen (see figure 13) 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 - 5) by pressing the "TOTAL" button.
3. When finished selecting the pulse delay factor, press the "RESET" button 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.

TROUBLE SHOOTING

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

Battery icon is displayed.

- Batteries are low.
 - a. Replace batteries.

Display is blank.

- Meter is asleep.
 - a. Push "RESET" button.
- Batteries are dead.
 - a. Replace batteries, push "RESET" button.
- Program error.
 - a. Remove and reinsert batteries, push "RESET" button.
- Loose battery connection.
 - a. Remove batteries and check battery connection, push "RESET" button.

Meter does not latch for batching.

- Meter is not in "AUTO" mode.
 - a. Press "AUTO" button and program batch size.
- Meter was not reset after prior batch.
 - a. Press "RESET" button.
- Low batteries.
 - a. Check for battery icon, replace batteries, push "RESET" button.

Slow or no fluid flow.

- Filter is clogged.
 - a. Clean or replace the filter in the swivel nut.
- Pump pressure is low.
 - a. Turn up the pump pressure.
- Foreign material is jamming meter.
 - a. Contact your local distributor for repair.

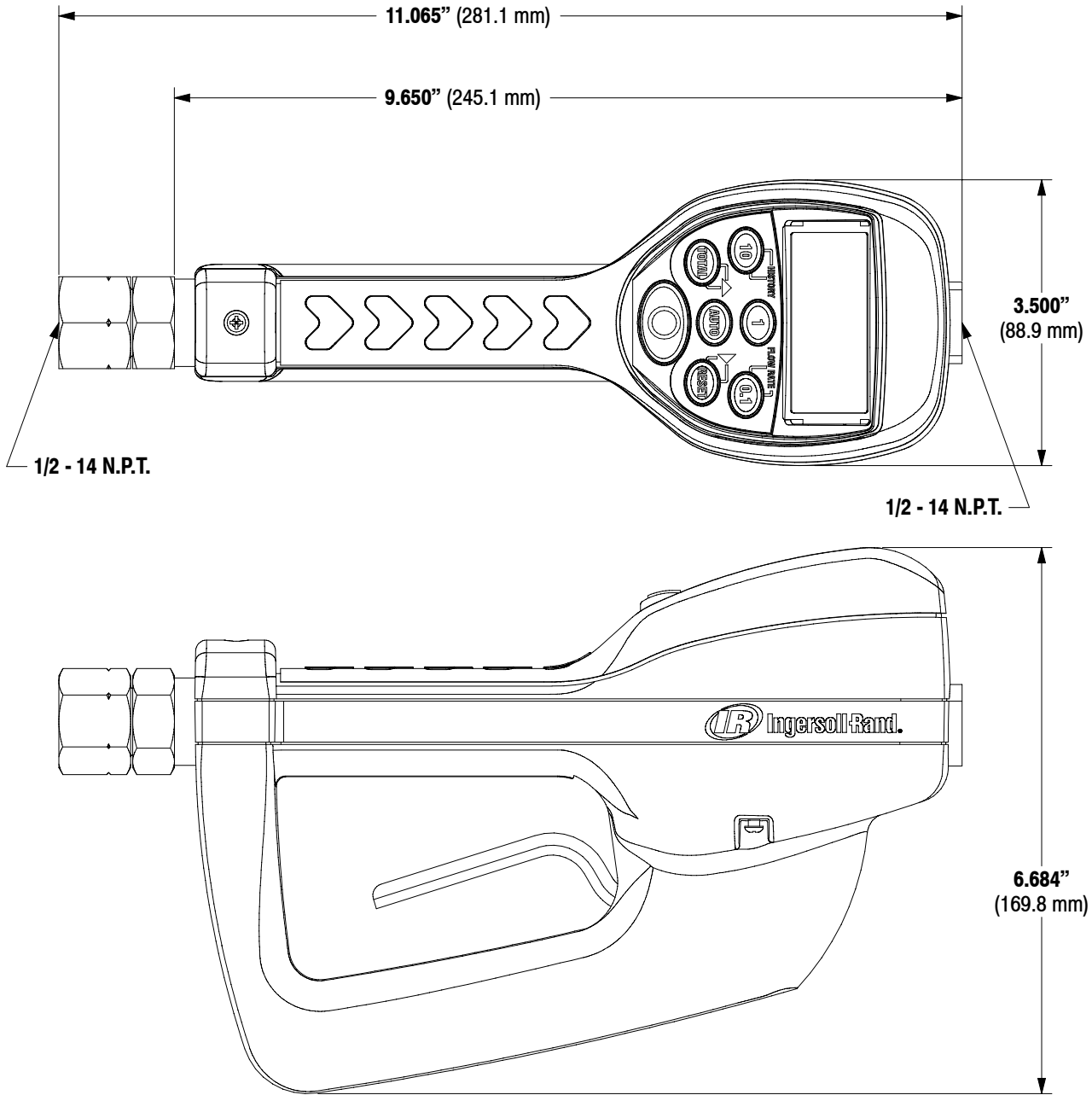
Meter is inaccurate.

- The scale factor is not correct for the fluid.
 - a. Enter program mode, check and reset program factor.

Batch overruns program value.

- The pulse delay value is set too low.
 - a. Enter program mode, reset pulse delay to a higher value.

DIMENSIONAL DATA



NON-DRIP NOZZLE ASSEMBLIES

