



## Programmable Fuel Level Senders – 3 Terminal Model# PFLS all lengths

### Overview

Livorsi Marine's new microcontroller-based senders can be distinguished from our older analog style by a "P" in the part number ex: PFLS, and no trim/adjust potentiometers on the top of the sender. Senders with aluminum tubing are for oil, diesel, or gasoline of up to 10% ethanol; and senders with PVC tubing are for potable water. We do not offer units for non-potable water, which leaves conductive deposits on the sense wire.

### How The Senders Measure Liquid

Livorsi Marine senders work by measuring capacitance. This means that no moving parts are required. Electronics in the head convert the measured capacitance to the programmed output of ohms or volts. In fuel senders, capacitance is measured between the inner-sensing tube and the grounded outer tube, and it requires the fluid to be non-conductive. In water senders, capacitance is measured between the inner insulated sense wire and the water, which is grounded by the outer wire.

### Shortening Senders (if required)

A fuel sender's outer tube can be shortened using a tubing cutter and the inner tube snipped. Unless the sender was ordered as bendable, bending the tubing risks shorting the inner to outer tube which causes a false Empty reading. A sender ordered as bendable can be safely bent above the black bend line on the tubing because it is insulated internally above that line.

### Calibration

#### **Output Ranges are NOT changeable by the customer.**

The output range (eg 240/33 ohms) are set at the factory per the customer's order. They cannot be changed by the end user. They can be changed back at the factory if needed.

### Empty Level on Senders with 3 Screw Terminals

Empty level will already be calibrated to be the bottom of the sender if you use the sender at its factory length. If you have to shorten the sender, the Empty should be recalibrated with the following steps. Timing is important.

1. Have the sender out of tank and wired normally, but with power OFF.
2. Have SEND temporarily jumpered to NEG.
3. Turn the power on, but remove the SEND/NEG jumper after TWO SECONDS (1000-1, 1000-2). The needle will then do some bouncing and finish on Empty. If it finishes somewhere other than E or lower, there is a wiring problem or mismatched output range. Please call or fax for help.

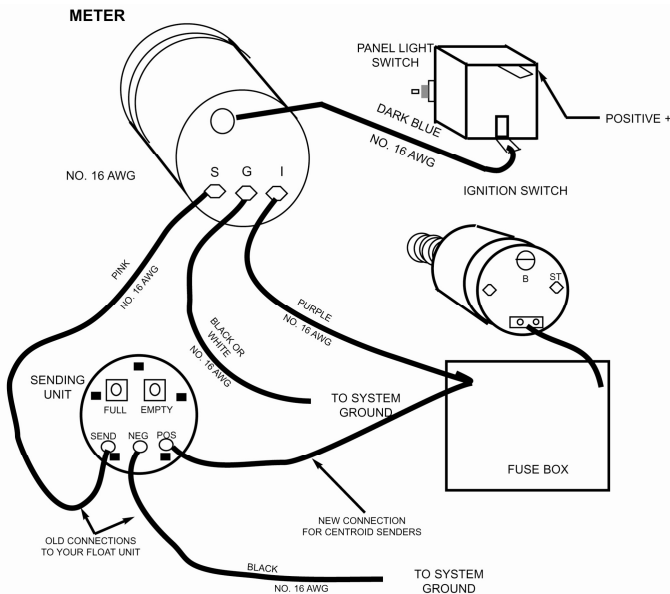
## Full Level on Senders with 3 Screw Terminals

The Full Level is automatically detected by a special sensor each time you fill the tank. The automatic mode helps the sender respond correctly to gasoline with ethanol or biodiesel. Full does not have to be set manually. Full will be calibrated at the factory a couple of inches below the sender's head.

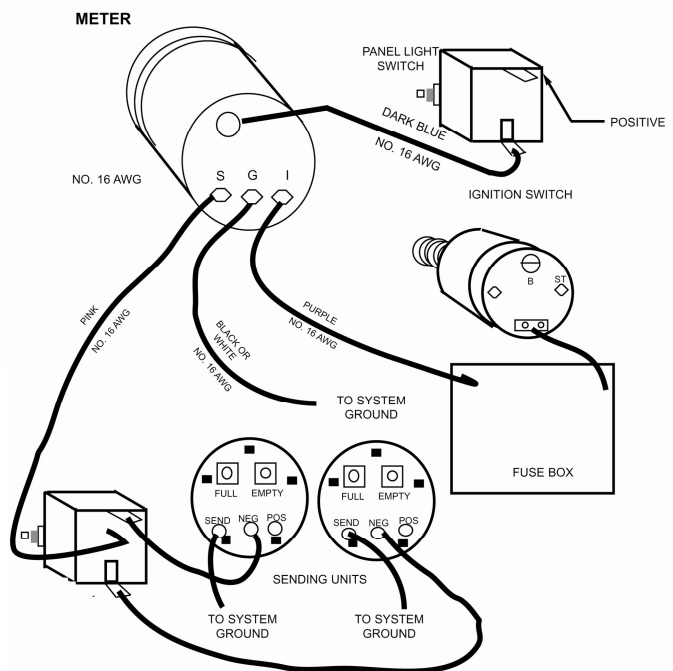
If you have shortened the sender or prefer a different Full height, recalibrate the sender with the following steps.

1. Have sender in full tank (or tube) of the appropriate liquid and wired normally, but power OFF.
2. Have SEND temporarily jumpered to NEG
3. Turn the power on, but remove SEND/NEG jumper after FIVE SECONDS (1000-1, 1000-2, 1000-3, 1000-4, 1000-5). The needle will then do some bouncing and finish on Full. If it finishes somewhere other than Full or higher, there is a wiring problem or mismatched output range.

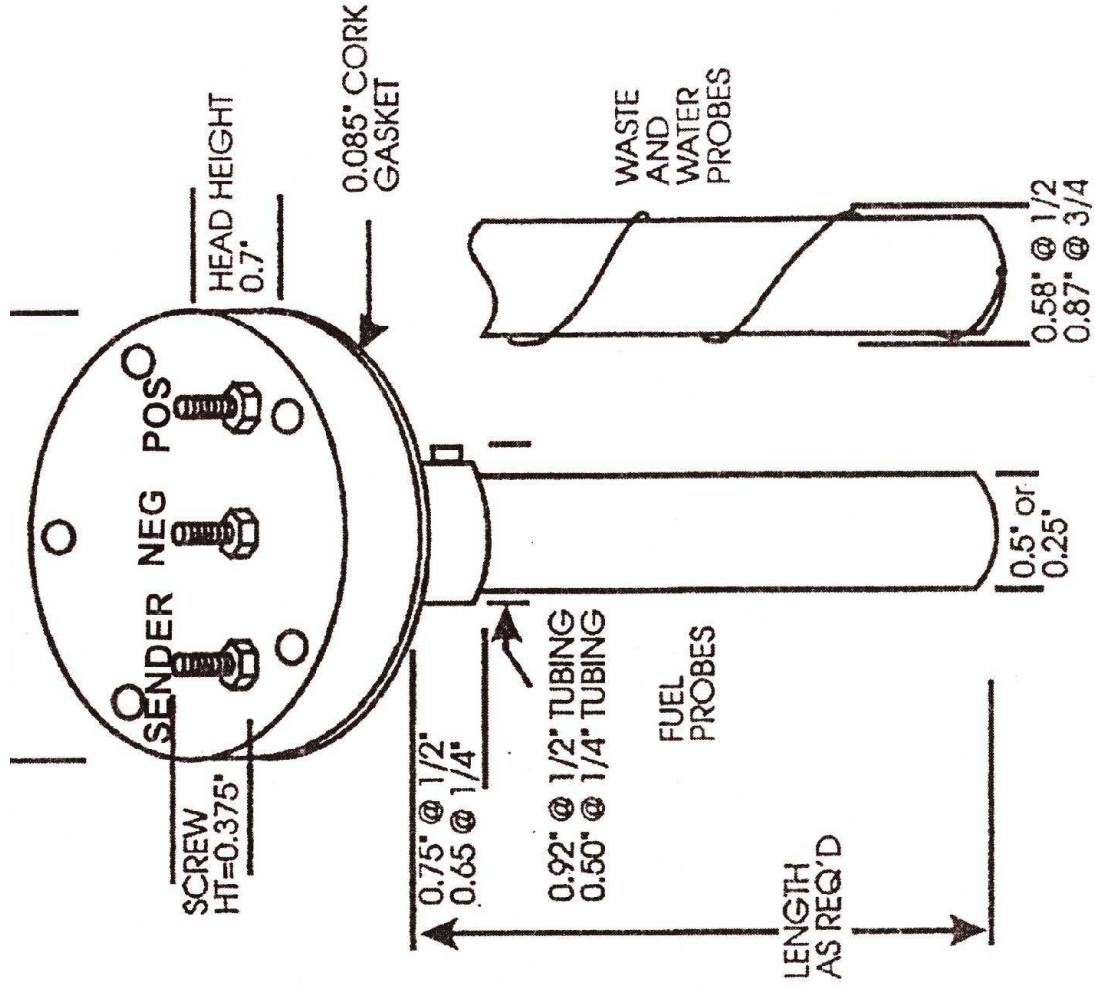
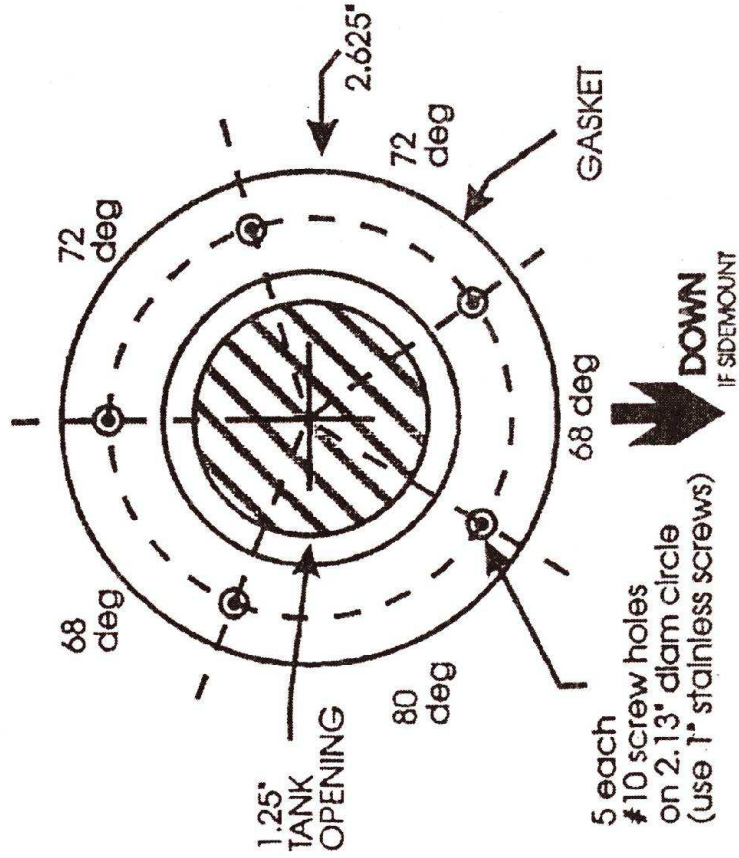
### 3 Terminal Single



### 3 Terminal -Dual



MOUNTING DIAGRAM  
STANDARD 5-HOLE BOLT PATTERN  
ACTUAL SIZE IF CIRCLE MEASURES 2 5/8"



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