

Tank Calibration Tips and Tricks (calibrating made easy)

Note: Do NOT use this product with flexible or expanding tanks.

CAUTIONARY WARNING - Creation of pressures or vacuums within tanks can cause an effect on the accurate measuring of fluid levels.

The smartswitch Solid State Pressure Sensor measures fluid levels from the pressure created by the weight of fluid within a tank at normal atmospheric air pressure. Pressure on the sensor is generated by the physical weight of the fluid in the tank however this pressure can be distorted by air pressure within the tank, either pressurised air or a vacuum.

WHEN FLUID IS PUMPED INTO A TANK, OR IS PUMPED OUT OF A TANK, THE TANK MUST BE ABLE TO FREELY ALLOW AIR INTO, OR OUT OF, THE TANK VIA THE VENT LINE WITHOUT RESTRICTION, OTHERWISE THE ACCURACY OF THE SENSOR WILL BE AFFECTED. THEREFORE THE USE OF CHARCOAL FILTERS OR UNDERSIZE VENT LINES MAY CAUSE A PROBLEM (see page 3 for recommended installation).

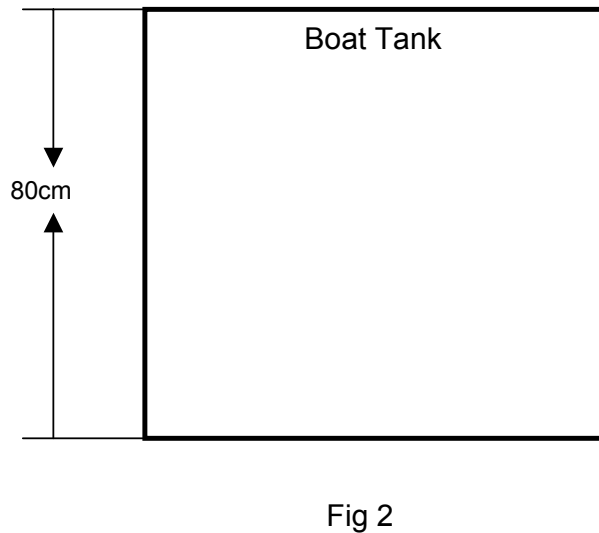
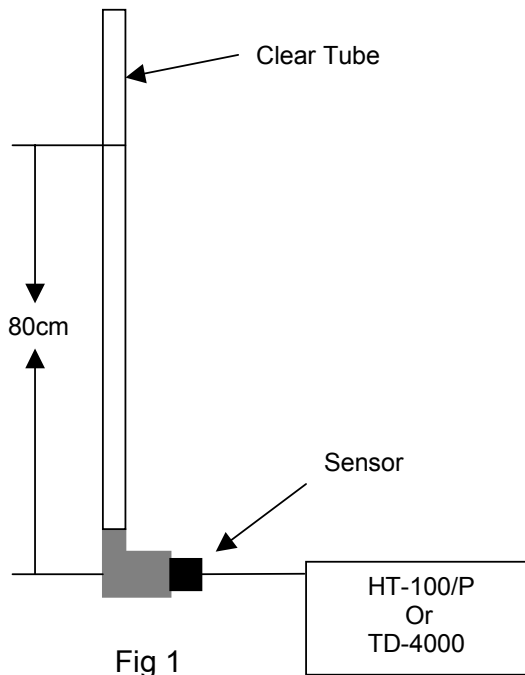
Contact your local dealer for advice on installation of the Sensor.

PLEASE NOTE: For sensor Model SEN-100 The Maximum Tank Height is 1 Meter

PLEASE NOTE: For sensor Model SEN-250 The Maximum Tank Height is 2.5 Meter

The maximum surge and safe pressure is 28psi.

Calibration of the sensor can be accomplished “off line” (as per Fig 1), if the tank depth is known. A fully calibrated sensor can then be installed, as the boat is available.



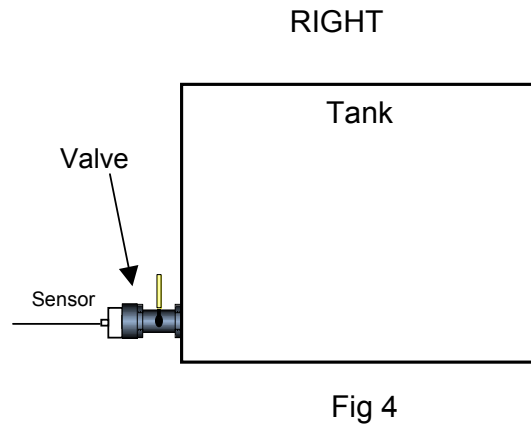
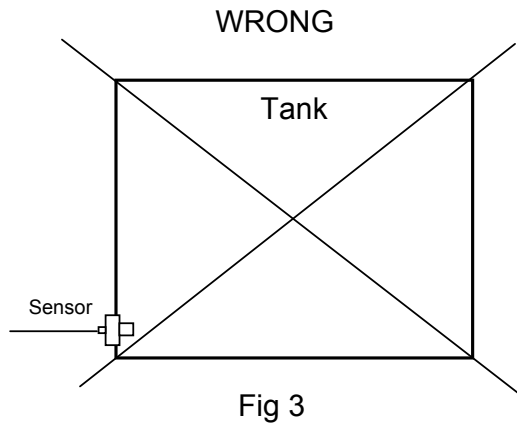
Method: Connect a tube to a standard $\frac{3}{4}$ "BSP fitting as above (Fig 1). Pour a small amount of fluid into the tube (just enough to cover the sensor and start the calibration as per the manual setting the low point. Now fill the tube to the height of the boat tank. If for example the boat tank as shown above (Fig 2) is 80cm high then fill the tube to 80cm and finish the calibration as per the manual. All finished.

NOTE: Diesel and water are different weights therefore either calculate the difference using the method below, or use the actual fluid the tank is being calibrated for.

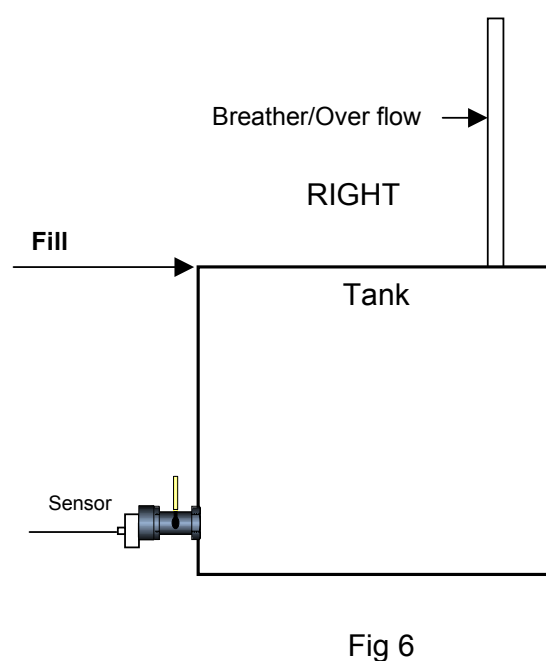
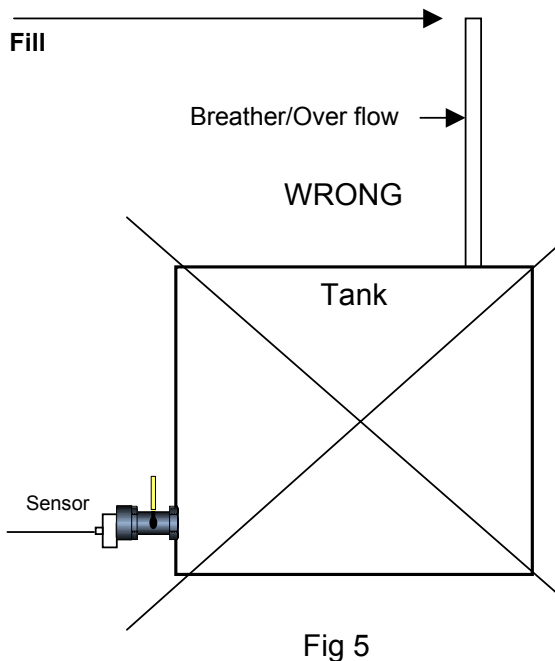
Diesel fuel weighs 83.3% per volume of water. Therefore, if calibrating for fuel but using water, a factor of 16.7% needs to be deducted from the water level height to provide proper calibration. Using the above example, an 80cm fuel tank would be calibrated as “full” using 66.6cm of water in the tube (80cm X 0.833 = 66.6cm)

Do and Don'ts

We recommend fitting a valve between the tank and the sensor as below (Fig 4). This is recommended for easy removal of sensor during maintenance.



CAUTION: For calibration of a PRESSURE SENSOR (SEN-100, SEN-250, or SEN-B300) using either the 2-POINT or 5-POINT method, when setting the FULL level, be certain that NO FLUID REMAINS IN THE BREATHER TUBE. Setting the FULL level with a breather pipe which is either partially or completely full, will give a false setting. Any fluid sitting above the top of the tank in the breather tube will cause the system to record that level as the top of the tank rather than the true tank top. Therefore, if you are filling the tank to set the FULL point, DO NOT fill until the fluid spurts out of the breather as a sign of FULL. Be sure you stop the filling at the true tank top, or if you do believe that the breather contains fluid, drain enough fluid (or run the engine long enough) to insure the tank breather is empty.



Do and Don'ts

If an in-line filter is used on a tank breather pipe, then this could cause negative pressure in the tank for a period of time, due to the constrictive air flow during a pumping operation. This in turn will cause the pump to turn off prematurely as the system will think the tank is empty. The fitting of a solenoid valve, or a one-way valve, will eliminate this potential situation.

Note: This has been addressed by selecting the 'Special Pump' feature in the Set-Up Menu of the tank monitoring system.

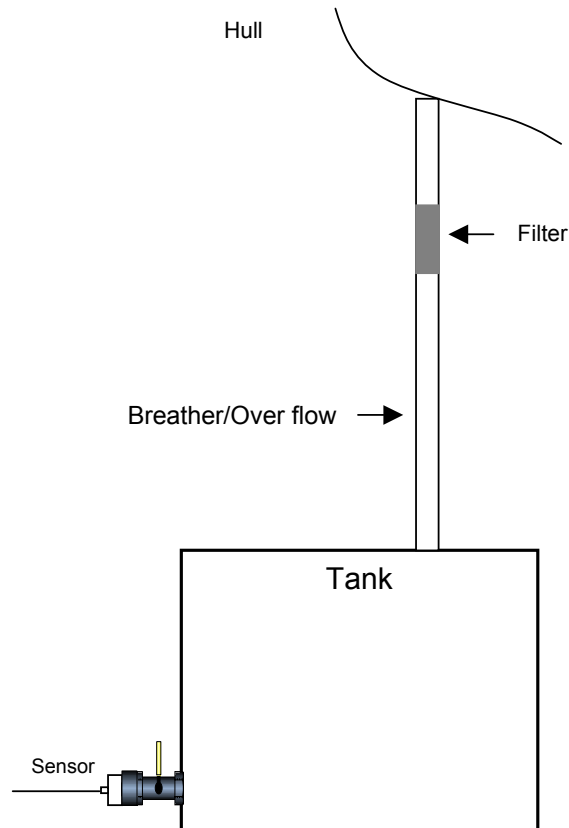
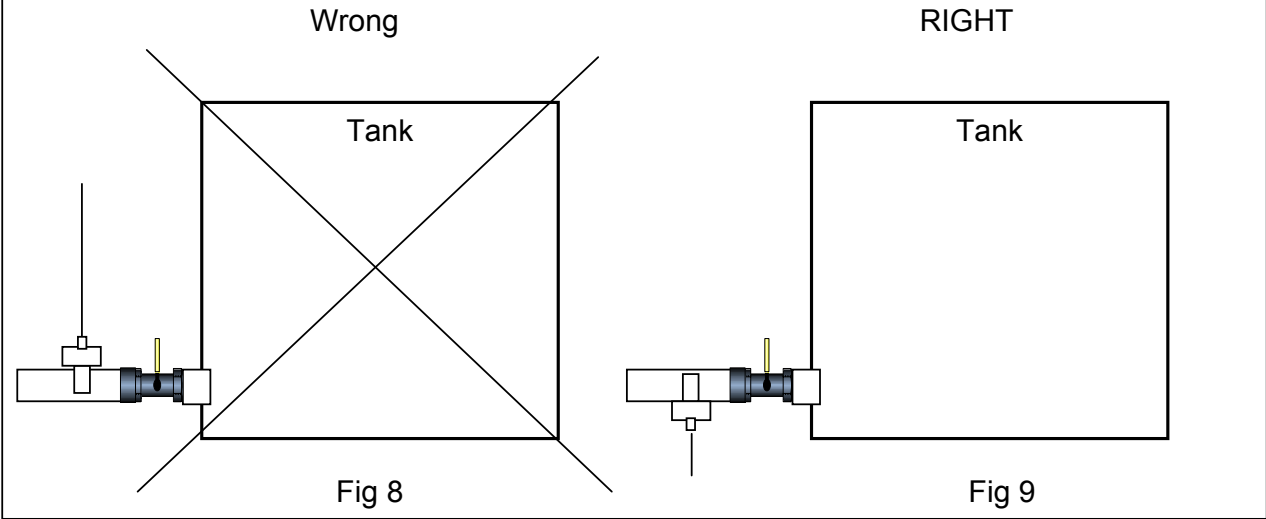


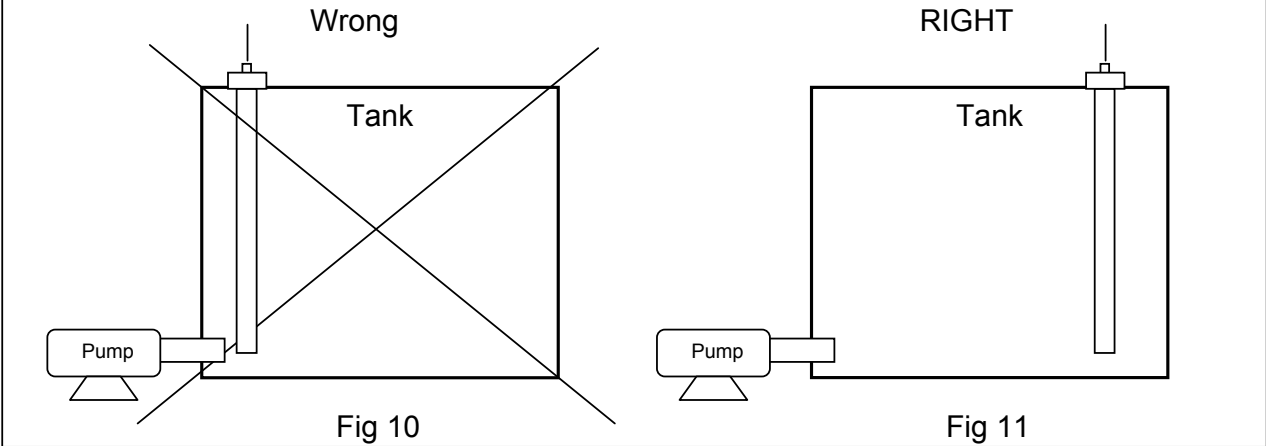
Fig 7

Do and Don'ts

For pipe mounted sensors, we recommend the sensor be fitted in the bottom of the pipe (Fig 9) to avoid air locks. Mounting in the side is acceptable if the bottom is not accessible.



For top mount installations, DO NOT mount the extraction pump below or next to the sensor, or sensor tube (Fig 10), as this will cause a vacuum.



For quick and easy calibration of a top mount sensor, simply set the low point with the complete sensor and air lock probe out of the tank. Ensure the tank is full and insert the sensor tube into the tank, now set the full point. Setting the "full" point may also be done "off-line". I.e. outside the tank using a vessel made from a 4" tube for example.