Re-calibrating the SeeLevel 709 System

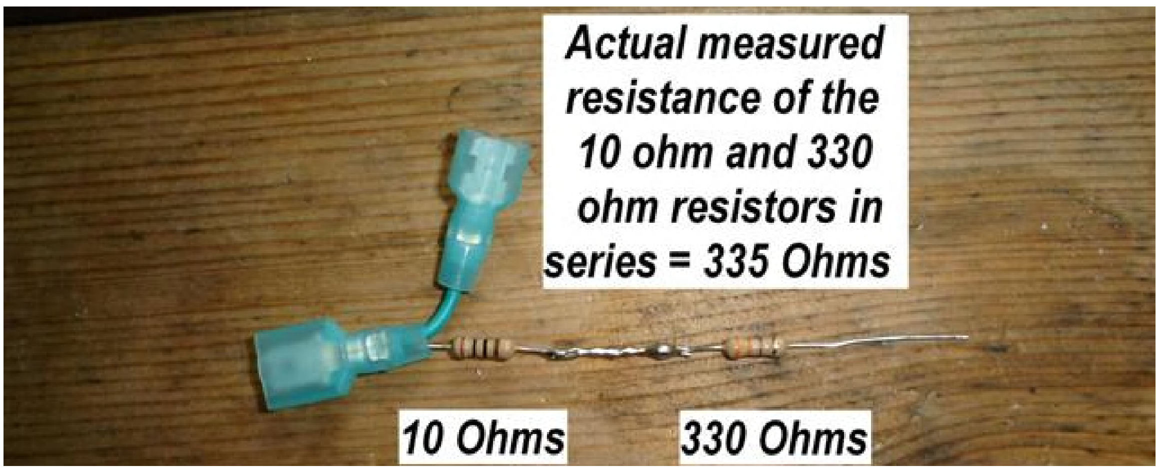
Two years ago after giving up on the Tiffin installed tank monitoring system displaying anywhere near what was in the tanks. I installed a SeeLevel 709 system. I installed two monitor panels, one monitor panel was installed on the wet bay tank wall and the second monitor panel was installed inside the coach on the hallway wall.
The **ONLY** complaint I have with the SeeLevel system, when the LP tank is full the SeeLevel system is displaying 100%. As all RVers know the LP tank installed by Tiffin and other manufactures are designed and built to allow **ONLY** 80% fill by WC (Water Capacity). The tank installed on my 2007 Phaeton is a 35 gallon Manchester tank, water capacity at 80% means the liquid **LP** capacity of the tank is 28 gallons. When the LP tank is filled (80% WC) the SeeLevel system is calibrated, after calibration the monitors each display 100%.

The tank is full at 80% (WC) capacity the tank sensor resistance to ground was measured at 89.9 Ohms, as shown on the meter above.
I have gotten tired of looking at the SeeLevel monitor reading the display showing 82% (my wet bay sensor reads high by 2% after calibration) and having to figure 80% of 80% which means the tank is really around 64% full.

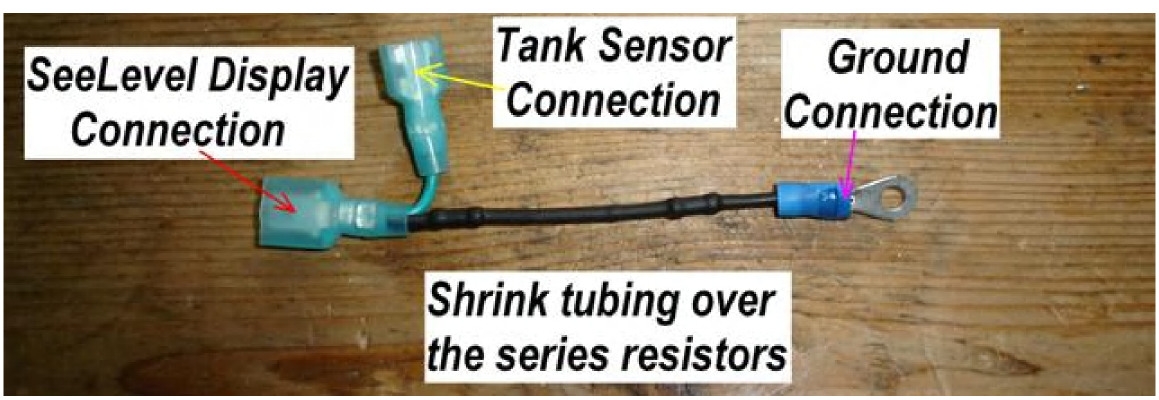
In this case the tank sensor is reading around 56% while the wet bay display is reading 82%, the display was last calibrated during the summer while temperatures were higher.

After a little planning and dragging out my rusty electronic formulas I figured a way to obtain a displayed tank fill value closer to reality. If 89.9 ohms displays 100% on the SeeLevel monitor what do I need to do for the display to show what is really in the LP tank. When the tank is full at 80% WC I want the display to read 80% or close to 80%.
After a few calculations I found a resistance of 335 ohms in parallel with the resistance of the tank sensor will display close to what I am looking for. The electrical formula for Total Resistance of resistors in a parallel configuration

is RT = (R1 x R2) / (R1 + R2). As an example I'll use 100 ohms for the resistance of R1, and use my calculated resistance of 335 ohms for R2. The formula works like this 100 ohms (R1) x 335 ohms (R2) = 33500 ohms, then 100 ohms + 335 ohms = 435 ohms. RT = 33500/435 = 77 ohms. I found after connecting all components the system has an internal resistance of about 10 ohms. While the electrical meter is displaying 90 ohms measured between the meter and ground through the tank sensor when the tank if full of LP. When the SeeLevel system is connected to the tank sensor the actual system resistance is closer to 100 ohms. If 100 ohms is 100% on the display than 82 ohms is 82% on the display.



The two resistors soldered in series ACTUALLY MEASURE 335 ohms. The green wire with the 1/4 inch male and female connectors when mated with connectors installed on the LP tank sensor wire and the SeeLevel monitor wire form a parallel circuit with the 335 ohm resistor connected to ground. The finished modification has the LP tank sensor and SeeLevel system resistance wired in parallel with the 335 ohm resistor tied to ground.



After the parallel resistor modification when the tank is filled to 80% which is actually FULL instead of the SeeLevel system displaying 100% both displays will now display a percent level closer to the actual LP tank fill, even with the 2% SeeLevel display error the filled tank is displaying 81%.

On my SeeLevel 709 system 10 ohms in parallel with my 335 ohm modification equates to about a 10% fill. 20 ohms = 19% fill, 30 ohms = 28% fill, 40 ohms = 36% fill, 50 ohms = 44% fill, 60 ohms = 51% fill, 70 ohms = 58% fill, 80 ohms = 65% fill, 90 ohms = 71% fill and 100 ohms = 77% fill.
The LP tank was filled on a cold day the RV garage temperature is never below 60 degrees making the 4% (77% to 81%) display difference partly temperature related and partly SeeLevel display error related.

Written on 1/1/2011 by **TAB**