

Holding Tank Monitoring

After installing the Horst Miracle Probes on my coach, I discovered that the wiring to my Holding Tank Monitor System was incorrect. This problem had been masked by the erratic operation of the monitor and with the tank problem resolved, I was able to tackle the secondary issue.

What follows is a quick primer on how these systems function: Since water conducts electricity, there are a series of sensors rising up the side of the waste holding tanks connected to the coach monitor panel. These sensors are usually stainless steel screws mounted in a rubber bushings that are installed in the tank or similar screws spin welded to the tank in the tank manufacturing process. Depending upon the design either the end, or the head of the screw is exposed within the tank just off the inner tank wall. The lowest sensor is always submerged and it is critical to the monitor system operation. As the sensors installed at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full levels in the tank become submerged, they conduct electricity, completing the circuit to the lowest sensor. When the monitor panel switch is activated to show the tank reading, the lowest sensor in the tank is activated, power flows from whichever sensors are in contact with the tank fluid to the lowest sensor and the corresponding light on the monitor panel shows the level.

On the Fleetwood monitor panel installed on my Bounder, the lowest sensor is connected to the monitor panel switch when the button is selected. All of the other wiring is always connected to the panel, in order of the tank sensor's location. That is, the "Full" sensor wiring from the black, grey and fresh water tanks is connected to the "F" LED on the monitor panel. Likewise all of the " $\frac{1}{2}$ " wiring is connected to the " $\frac{1}{2}$ " LED on the monitor panel and so on. According to the wiring diagram for my coach the 'F' wiring is red, the ' $\frac{3}{4}$ ' wiring is orange, the ' $\frac{1}{2}$ ' is green and the ' $\frac{1}{4}$ ' is blue. The grey tank lower probe wiring is brown, the black tank lower probe wiring is black and the water tank lower probe wiring is white. However the color of one set of wires on the coach differed from the wiring diagram. The connections at the monitor panel are made through plug in circuit board connectors with very fine wiring which is crimped by means of butt connectors to the wiring from the tank.

For those that have attended my maintenance seminars you will know that plug in connectors are tin and are pressed onto the copper circuit board. As time and humidity take its toll, the corrosion between these two dissimilar metals develops into a perfect insulator. Removing these connectors and using Corrosion Block™ on the connections will reduce the likelihood of corrosion, thereby maintaining the accuracy of the system. On my coach the brown and black wiring was reversed and depressing the rocker switch toward '1' actually monitored the black tank and moving toward '2' monitored the grey levels. Reversing the wiring at the butt connectors corrected the problem and with Horst Miracle probes installed we can depend upon the displayed levels as being accurate.

For those that choose to make this improvement, a lesson learned: Look carefully at your holding tank before locating the new probe next to the existing one. Look to see if that is really an accurate location. I found that my $\frac{1}{4}$ black tank was so low on the tank that just adding some water to slosh around on the tank bottom activates the ' $\frac{1}{4}$ ' sensor. Doing the upgrade again I would have moved the probes up and spaced them more logically based on the tank shape.