

Technical Tips #58[©]

Accurate Holding Tank Levels – Horst Miracle Probe Installation

Last month I highlighted a new product that simply provided accurate holding tank levels – the Horst Miracle Probes. I have now installed them in my 2002 Bounder and thought you might find some of the hints helpful, should you want to install them in your coach. Like many modern coaches, the holding tanks were hidden from view by a panel that holds water, electrical and sewer components. These range from the outside shower, paper towel holder, tank flushing connection, water control valves to the pump switch and cable TV/telephone connections. Fortunately this panel is designed to be removed should replacement of one of



the holding tanks become necessary. I carefully examined the panel (see photo) and determined that it was held in place by a number of screws (see arrows) which, when removed, would allow it to be moved somewhat. The challenge is that the panel is larger than the opening and it is “Z” shaped, preventing it from being pulled forward towards the exterior. I was able to move the forward side of the “Z” panel out by carefully removing the rubber door gasket, thus allowing the panel to move enough to gain enough clearance to use a portable drill to drill holes in the tanks to accept the new probes.

My Bounder had spin molded sensor connections which were molded into the tank when it was manufactured, rather than the well nut style of sensor which is inserted into a hole in the tank. The Horst Miracle Probes are designed to replace the well nut style sensor and can be adapted to the spin molded style by drilling a 3/8” hole at the same level about 1” or more away from the molded connection (see photo). A few words of caution when drilling the new holes: first ensure the holding tank is empty[☺], second use a sharp 3/8” drill bit and once started, go slowly so that the hole has an uniform edge. You can place a drill depth guide on it so that the drill just penetrates the tank, however I could not use one, since I had to drill on a low angle with the panel in place. Third, while it would be ideal to be perpendicular to the tank face, an angle up to 20° off perpendicular should be acceptable. Drill the holes at the same level as the original sensors. You can line them up vertically if that is convenient. Just be certain that there is sufficient wire to make the connections. The original sensors may have been staggered to reduce the current leakage on the interior tank wall or to reduce the chances that tissue paper would short out two sensors causing a false reading. The new probes deal with these problems in their design.



After inserting them, tighten the nut closest to the tank until snug and the exterior rubber flange is slightly expanded under the washer. The Black water tank probes have a “roof” that goes on top and the stud has a flat ground on the bottom to allow the “roof” location to be positioned correctly. I found that if I rotated the black water probes about 30° to the right of center, that as I tightened the nut, the probe rotated into the correct position. You can gently rotate it with a pair of pliers if only slightly off center. Remove the wiring one by one from the existing sensors and install under the second nut on the new probes and tighten. If the ring connector will not go over

the new probe stud, cut the ring using wire cutters opposite the wire to allow it to expand. I recommend using a few drops of Corrosion Block™ on each connector to inhibit corrosion. After all the wiring has been transferred, test the installation. Both waste tanks will read Empty. From now on the readings on the panel will be accurate. Reinstall the panel and install the retaining screws. Check the water connections to ensure that none worked loose with the twisting of the panel.

Overall the probes are easy to install, the challenge is gaining access to the end of the tank where the connections are located. It took about two hours for my installation with more than half the time being expended gaining access to the tank. A professional installer would likely use a right angle drill and a short 3/8" bit and not need to move the panel. With those tools installation would be less than one hour.

From feedback I have learned from other customers, some other brands of coaches have thick wall tanks (1/4" or more) and the embedded nut in the well nut tends to push the probe out of the tank when tightened. In this situation, either countersink the head into the exterior of the tank or carefully cut away the rubber flange and insert it farther into the tank. The metal washer will provide the stop required on the outside and the embedded nut will expand the rubber into the inside the tank to provide a water seal. The Horst Probe manufacturer is able to provide advice should you run into a situation that requires a different approach.

Ironically after installing the new probes I discovered a problem with the dash panel tank level display. This had been masked by the original sensors since the readings were often erratic. With the probes reading correctly, I was able to properly troubleshoot the dash display. The wiring had been reversed at the monitor display panel so that pressing the switch to read the grey tank (1) resulted in the Black tank actually being displayed. The opposite was also true. Because the tanks often read inaccurately I was unable to depend upon the monitor panel to give correct readings and did not know there was a wiring problem. Once I eliminated the probes as a source of the false readings, it was a simple task to find and correct the wiring problem. I also applied some Corrosion Block® to both circuit board connectors to ensure dependable operation of the readouts.

If you would like a set of the Horst Miracle Probes, check them out on our website.

In my next article I will review the typical Fleetwood Monitor panel operation and wiring. Knowing that might also allow you to check your system and understand how it is designed to operate.