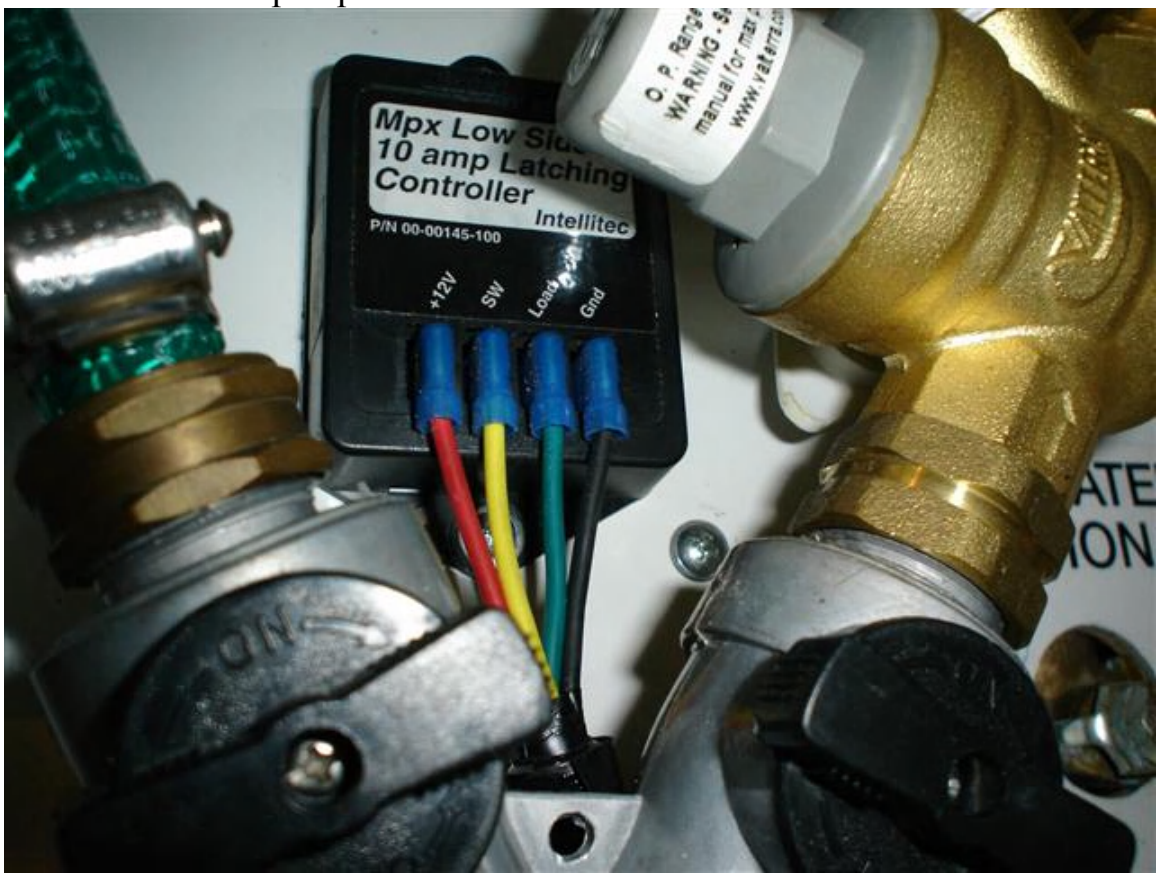
Troubleshooting a Tiffin RV Water Pump Problem

<< A Crusingator Document >>

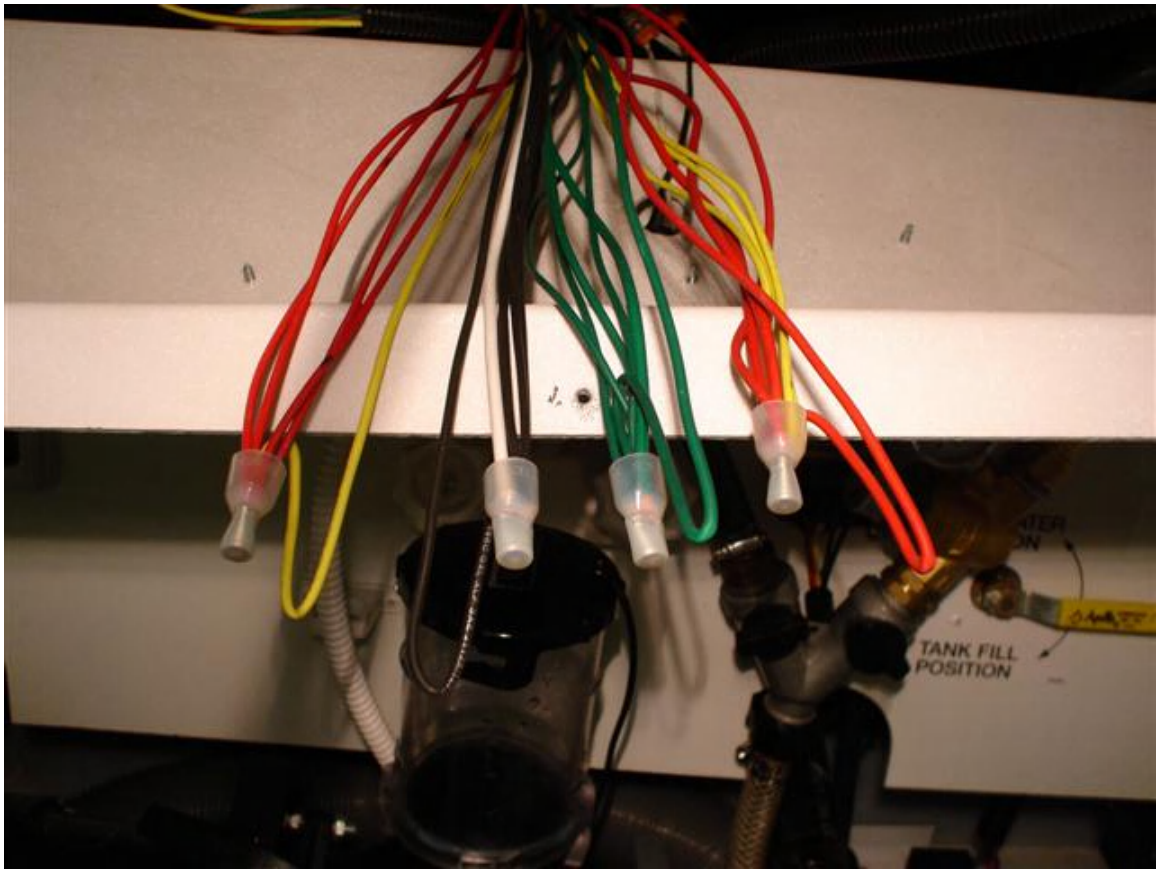
An intermittent now I have water, now I don't is not a problem any of us desire to have. In the various coaches checked, Tiffin usually installs the water pump latching controller behind the wet bay panel and almost on top of the black and grey tanks. Well hidden and hard to check when you have an intermittent water pump. That is one reason I moved my controller in front of the panel. Tiffin also makes all of the connections for the twenty-four various wires for the water pump behind that same panel. The four wires attached to the controller make up the basic components of the electrical portion of the water pump circuit. The pump needs 12 volts and a ground to operate. We also desire to turn the pump on and off, and we desire to have a light illuminate when the pump is on and for the light to turn off when we turn the pump off.



These four connections are the four wires we are most concerned with. The Red is +12VDC, the Yellow is the Switch (SW), the Green is the Load and the Black is the ground. If you are having problems with your water pump, I suggest you move this Low Side Latching Controller to a place convenient for troubleshooting, now and for the future.

As stated above, Tiffin also bundles all of the electrical wiring for the water pump behind the same wet bay panel. The wire colors on my RV may or

may not be the exact same on yours. By removing three self drilling screws in the top panel near the door hinge and four self drilling screws from the back panel you can wrestle the top panel out of your way enough to work in the area. The rat's nest of water pump wiring and the low side latching controller should be right in front of you. As shown in thispicture of the rat's nest.

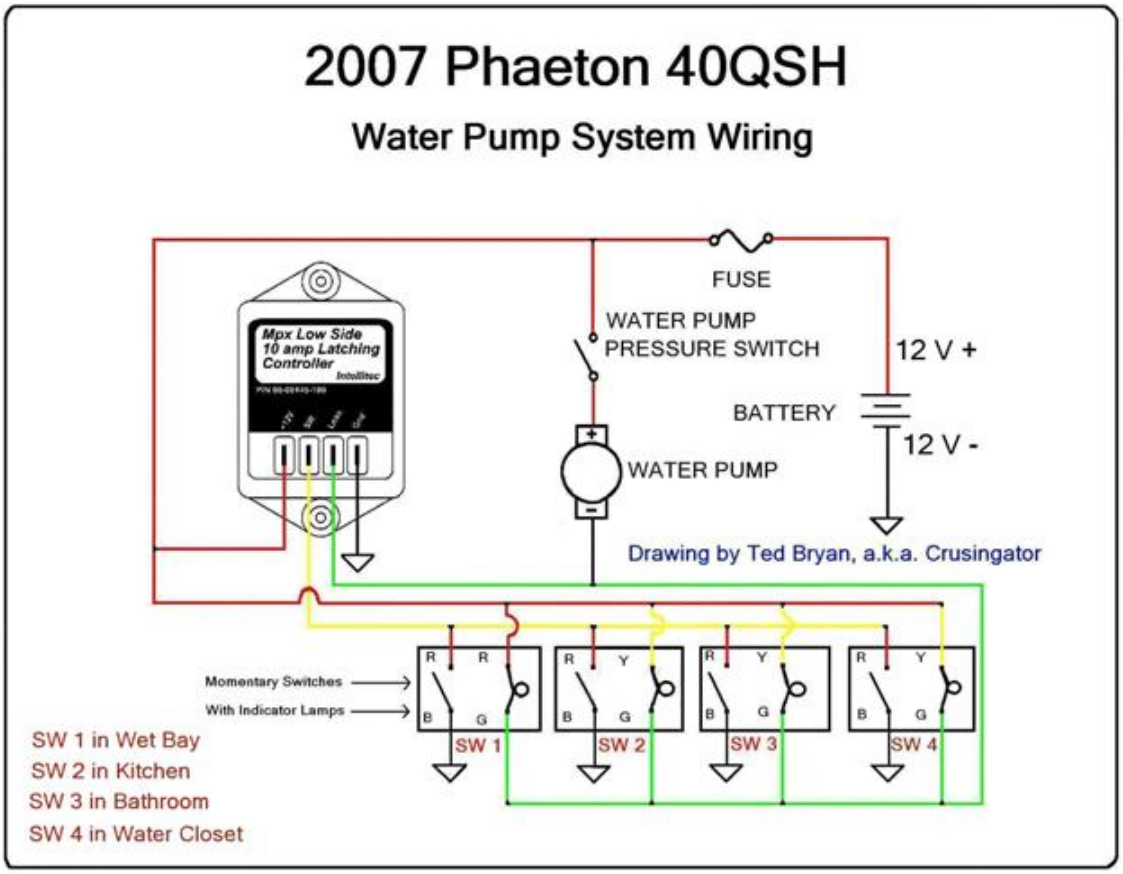


I folded back the four water pump controller wires the Yellow (SW) wire (on the left) is spliced to four red wires. The Black (Gnd or Ground) wire is spliced to four other black wires and one white wire. The Green wire (load) is spliced to five other green wires. And the Red (+12V) wire is spliced to three other red wires and three yellow wires.

Below is a basic explanation of the water pump operation. Each push of the water pump switch ON button sends a momentary ground pulse to the controller. Push the button ONCE, it turns the pump ON and also the indicator light displaying the pump is ON. Push the button again and it sends another ground pulse to the controller to tell it to turn the pump OFF and the indicator light also turns OFF. When the system is operating as designed that is all there is to the system. Push it's ON, Push it's OFF.

The next picture is an electrical schematic of my motor homes water pump wiring. Again your water pump wiring colors may be slightly different, but

the operation is the same. I labeled the various pump switches SW1 through SW4 and I noted their location on the schematic.
Looking at the electrical schematic you can see that the four (momentary) switches are all connected to the SW (yellow) connection on the controller. The red (+12V) wire is connected to the three yellow wires and three red wires. This is the power to operate the pump and the indicator lamps for each switch position. The green (load) wire is connected to five other green wires. These wires are to the load side of the four pump switch indicator lamps and the water pump negative side. The fourth wire is the ground (Grd or Ground) wire, it and four other black wires from the individual pump switches along with a white wire make up the pump ground circuit. It's no wonder that these twenty-four wires can cause such a headache, when they do not perform as expected.



The following is my attempt to break down the trouble shooting of an intermittent water pump problem into several easy steps.
The first step is to make sure that something is not placing a CONSTANT ground on the latching controller. If a constant ground is being applied or an intermittent ground, the water pump WILL NOT OPERATE CORRECTLY. Remove the yellow wire from the latching controller. Removing the yellow

wire from the controller isolates the controller from all of the switches and the switch wiring. Take a piece of wire and connect one end to a good ground on the RV frame. TAP (do not hold) the other end of the wire to the switch (SW) post on the controller. If the water pump turns either ON or OFF then somewhere in the switches or the switch wiring there is a constant ground or an intermittent ground being applied. Find that and you have corrected your water pump problem. Put the yellow wire back on the latching controller post.

If the first step did not correct the problem, we move on to step two. This next step is to make sure that the battery is sending +12V to the fuse. My fuse panel is under the Norcold refrigerator, the fuse is labeled "Water Pump". Test the voltage on both sides of the fuse with either an electrical meter or a test lamp. Now make sure that same +12 volts is getting to the latching controller at the +12V red wire.

Slip the wire terminal back enough to and again check for +12V with a meter or test lamp. The third step, is to check the water pump and its attached pressure switch.

The two red wires at the back of the pump go to the pressure switch. If the pressure switch is bad or intermittent you can bypass the switch to test the switch. Remove both of the red wires from the pressure switch and temporarily connect the two red wires together. If the pump runs and there

are no other problems in the circuit then the pressure switch is bad. Make sure to replace the red wires to their proper place on the pressure switch when finished testing.
If that did not correct the problem either, we'll move on to the fourth step. Only one more easy test, and then to the more expensive water pump. Remove the black wire from the pump and touch it to a good ground, like the chassis frame. Or, if it is easier just add a good ground wire to the existing black pump wire. If this test did not make the water pump run and it is still not operating properly, it is time to test the water pump itself. Step five, for this test I like to remove the pump from the other wiring and just test the pump and its wiring. Disconnect both the red and black wires from the pump. Find a good source of +12 volts, one that is fused is best, just in case the pump would like to blow a fuse, it is better to replace a fuse then wiring and other components.
Apply a good ground to the black wire on the pump. Now, apply +12 volts through a fuse to the red pump wire, the pump should run. If the pump does not operate and you have a good ground and +12 volts, then the pump is bad.
At this point you should have completed the troubleshooting of your water pump and its other associated components. I hope that the problem and repair was a simple and inexpensive one.
In most cases an intermittent water supply problem is usually a bad wiring connection or a ground wire which has been damaged and causing a ground to be applied when a ground is not desired. I usually find checking the yellow connection at the controller by removing the yellow wire from the controller. Then simply tapping a good ground to the SW connection on the controller will prove if the water supply issue it is a ground or wiring problem.
If you are still having water pump problems, I suggest that you check each and every wire and its connection.
I apologize for making this troubleshooting procedure either too simple or too complex. Every individual does not have the same training or background. I have attempted to set out a step by step method of finding and then eliminating a basic water supply problem. I took each step in order of most likely cause. I went from easiest (cheapest) to less likely to be the cause to the most expensive and less likely to be the cause. If this procedure assists you in any way, then I have accomplished my goal.