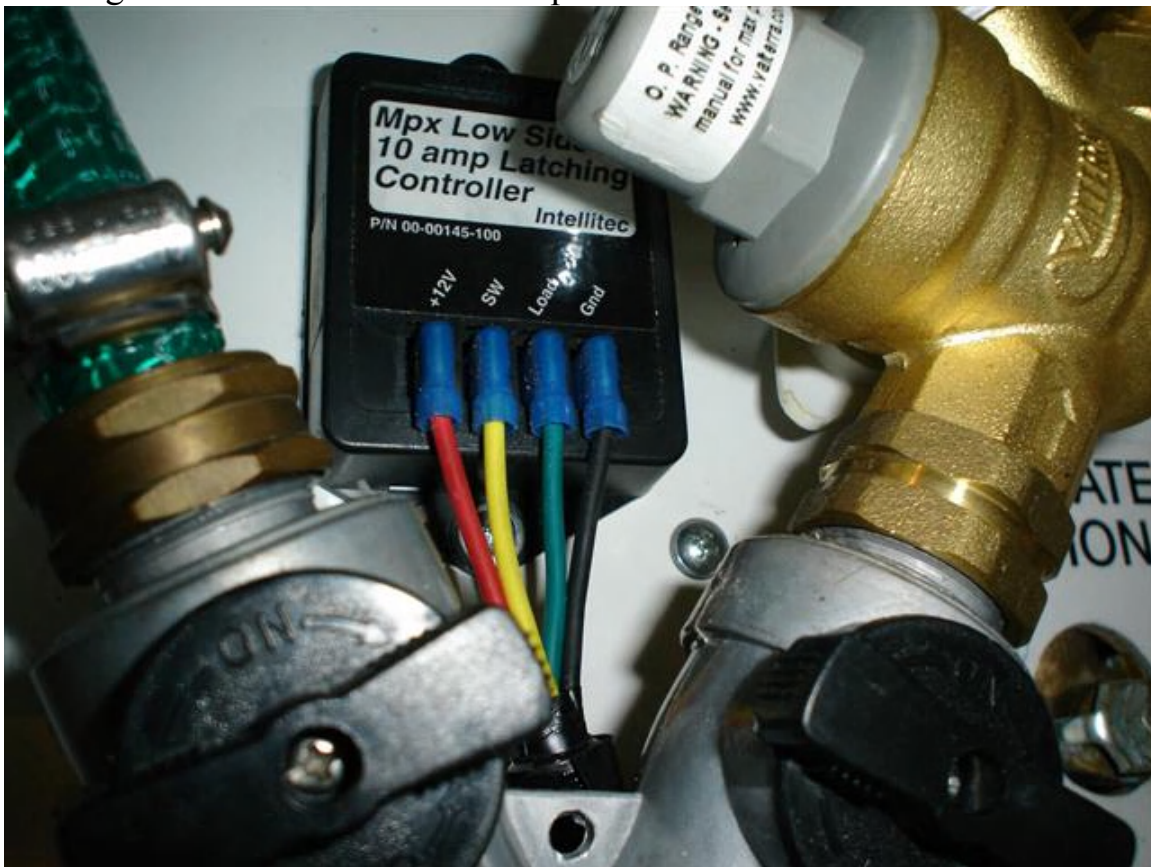


Replacing the Tiffin OEM Shurflo Water Pump AND Intellitec Low Side 10 Amp Latching Controller

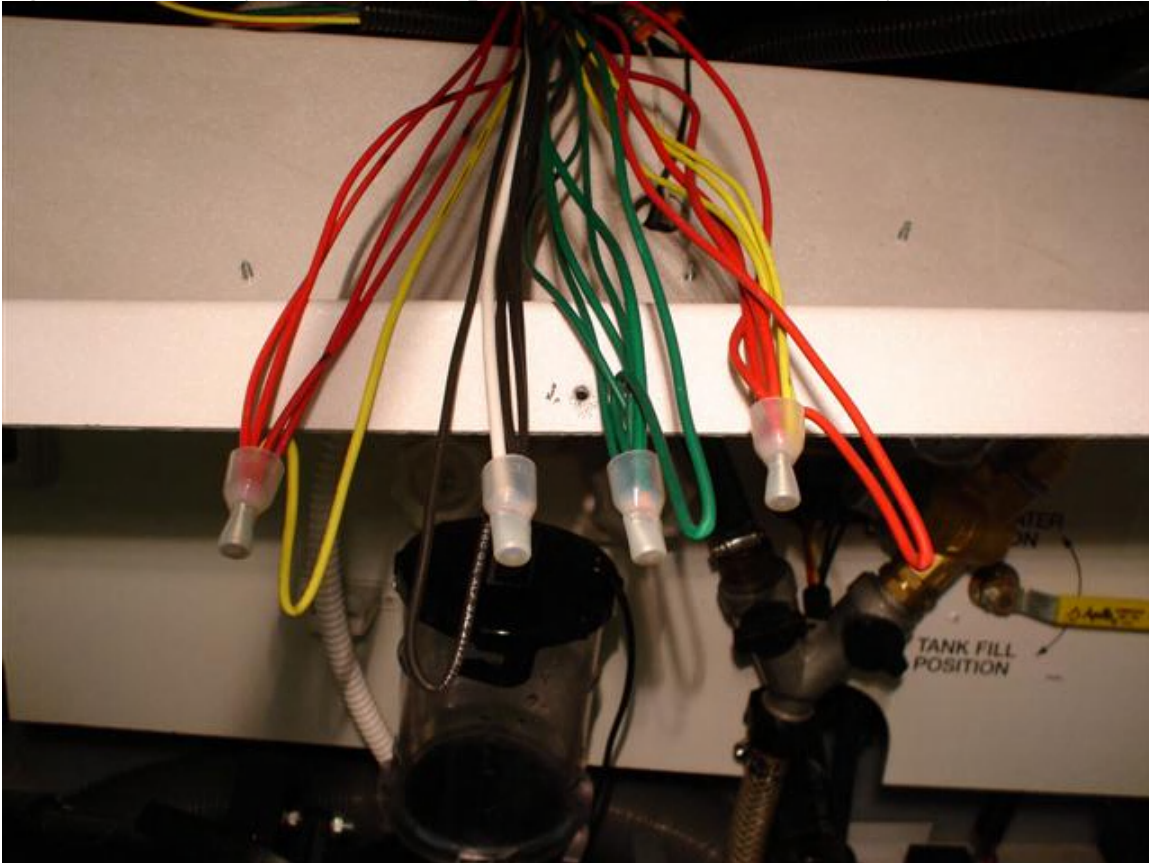
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The Tiffin RV network has recently been a hot bed of discussion regarding the Tiffin installed Shurflo 2.8 water pump. Tiffin installs this pump in most if not all of its coaches. It is usually wired to multiple pump switches through out the inside and outside of the coach. On my 2007 Phaeton, Tiffin installed 4 switches and pump ON indicators. The easiest way to wire the multiple pump switches is to use what is known as a low side latching controller. Tiffin usually lays this latching controller behind the wet bay panel and sort of on top of the black or grey water tanks. I moved my controller to make it easy to service in the event the controller were to get wet on top of the tank it would either quit operating or become an intermittent operating problem.

The specifications on this pump state that it will provide 2.8 gallons of water at 40 PSI with a current draw of 6.5 amps. As you can see in the picture the latching controller is rated for 10 amps **MAXIMUM**.



The four wiring connections on the controller are. The Red wire is connected to +12VDC, the Yellow wire is connected to the Switch (SW), the Green wire is connected to the Load and the Black wire is connected to the ground. 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. Here is a picture of the rat's nest in my coach.

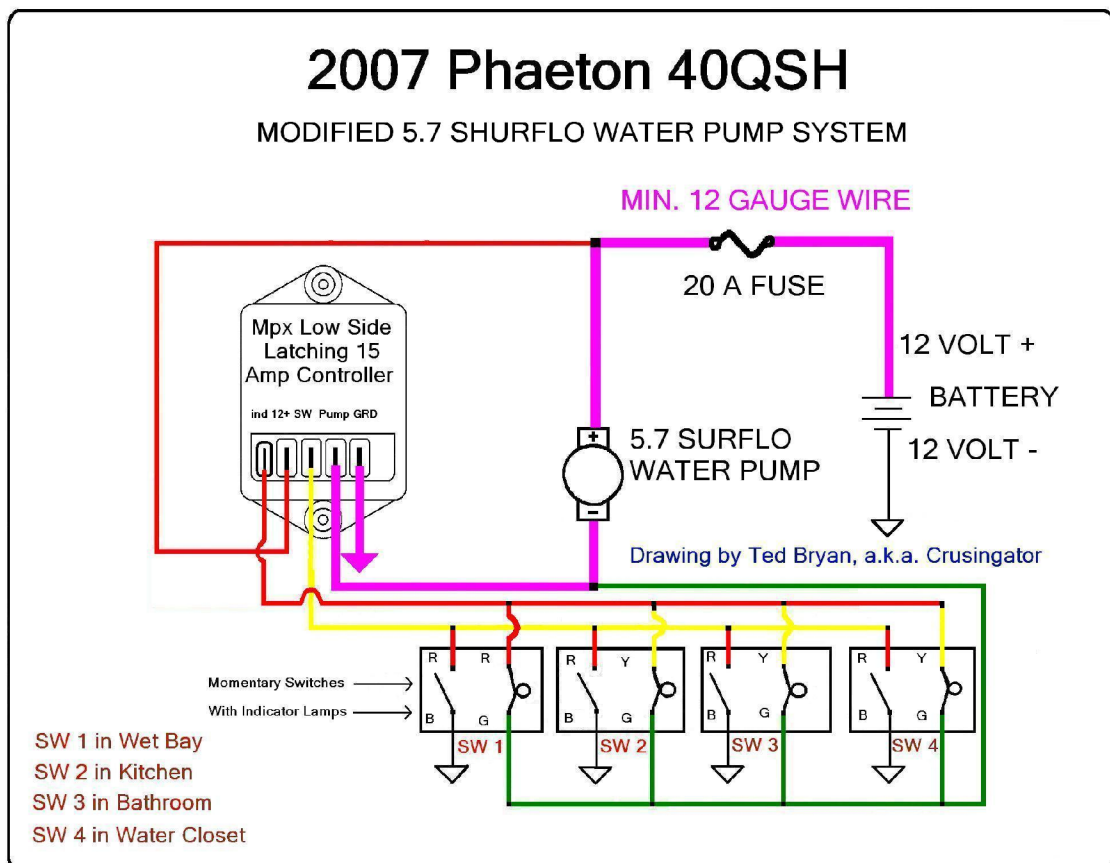


I folded back the four wires running to the water pump controller in this picture. The Yellow (SW) wire (on the left) is spliced to four red wires. The Black (Gnd or Ground) wire is spliced to four other black wires and one white wire. The Green wire (load) is spliced to five other green wires. And the 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 a 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 the pumps ON, Push again the pumps OFF. The next picture is an electrical schematic of the changes I would make to my coach's water pump wiring IF I were replacing the OEM water pump with a high capacity Shurflo 5.7 GPM water pump. 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 new PURPLE wire between the 20 amp fuse and the water pump. With the new latching controller we have a fifth connection on the controller and it is the ind (indicator) connection that wire connects to the four indicator lamps on the pump switches. 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 all of these wires can cause such a headache, when they do not perform as expected.



The first step in making this modification is to make sure that the wiring between the battery, the 20 amp fuse and the pump is of adequate size for the new pump which will be drawing 10 amps, where the OEM pump was only drawing 6.5 amps. The new pump will be drawing over a 50 percent increase in the load. Based on my research I recommend a minimum of a 12 gauge wire in the above circuit. The ground wire (negative) pump lead should also be a minimum of a 12 gauge wire running from the pump to the PUMP side of the latching controller. The final wiring change is to make sure the GRD (ground) connection on the controller is a minimum of a 12 gauge wire. I noted the wiring needs to be a 12 gauge wire by highlighting the schematic in PURPLE. The wiring used to switch the pump ON and OFF and the wiring used for the pump ON indicators does not need to be replaced. They are both switching circuits and have very little load and a low amperage draw.

Now we are ready to replace the OEM water pump AND the OEM low side latching controller. Wait a minute, why change out the low side latching controller? Because the OEM controller is rated at a maximum of 10 amps and the normal load of the new 5.7 water pump **IS** 10 amps. That leaves no room for error such as voltage drop or maybe the pump stalls for some reason and now the controller is blown because the circuit drew too much amperage. I have always desired to make repairs or modifications **ONLY ONE TIME**. Do it right the first time and be finished with it.

I believe Tiffin's wiring will be adequate in most cases IF while replacing the OEM water pump and the OEM latching controller the opportunity is taken to **SHORTEN** the RATS NEST (wiring) and to make sure **ALL** electrical crimps are tight.

A second method of making this modification is to install a load relay between a 20 amp fuse and the new water pump. The load relay wiring should be a minimum of 12 gauge wire. Installing the load relay would allow the OEM water pump wiring to be used strictly for controlling the load relay's contacts.

1. Replacing a few feet of wiring and/or making sure the OEM wiring is securely crimped.
2. Replacing the Shurflo 2.8 GPM @ 40 PSI water pump with a new Shurflo 5.7 GPM @ 65 PSI water pump.
3. Replacing the Intellitec Low Side 10 Amp Latching Controller with a higher rated Low Side 15 Amp Latching Controller.

This modification should give you a water pump system that will be trouble free, with higher volume at a higher water pressure for years to come.