Water Heater Thermostat and Upper Limit Switch

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Elevate the dreaded **RED RESET BUTTON**

APPROX. MODIFICATION TIME: 20 Min

PARTS LIST: Atwood Replacement Thermostat/Limit assembly

APPROX, COST of PARTS: $25

TOOLS NEEDED: Philips/Straight screw drivers, small wire nut, 10mm socket wrench

SPECIAL TOOLS NEEDED: A contortionist with the ability to see things close up while working in the dark!

HISTORICAL DATA:

The Rialta Water heater (Note it is not a “Hot Water Heater” cause the water starts out Cold!) was actually designed for boats. It utilizes both an electric heating element and a heat exchanger off the VW cooling system. It is this heat exchanger that causes the problems. If the VW cooling system reaches just over 190 degrees then the upper limit safety switch is tripped. The only way to “reset” this switch is the dreaded RED RESET BUTTOM. This mystical button is located beneath a cover plate on the side of the water heater. To reach this reset button you will need the “Special Tool” listed above.

The story is that an Atwood engineer was dispatched to a foreign country to reset a failed water heater onboard an expensive Yacht. It seams that Yacht builders always start with a water heater and build the boat around it (Winnebago does a similar thing with the Rialta). The engineer spent several days just locating the elusive metal box. Once found, it took him several more days and a slide rule to determine that a hole would have to be cut in the hull to access the RED RESET BUTTON! It was about this time that a small cabin boy came by and the engineer had a revelation.
By using several feet of rope he was able to lower the small lad by his feet to access the RED RESET BUTTON. The lad was paid well for his efforts. He invested his earnings in Winnebago stock and financed his way thru college. After graduating with a PHD in electrical engineering he developed the “Automatic Reset Limit Switch”. He then sold his marvelous invention to Atwood and they began using it secretly on their water heaters. We know that it is a secret because if you call Atwood they will deny that such an item exists. However it appears that our cabin boy/PHD has released the design for the “Marvelous Automatic Reset Limit Switch” (MARLS) to RV/Boat suppliers and it is now available for our use.

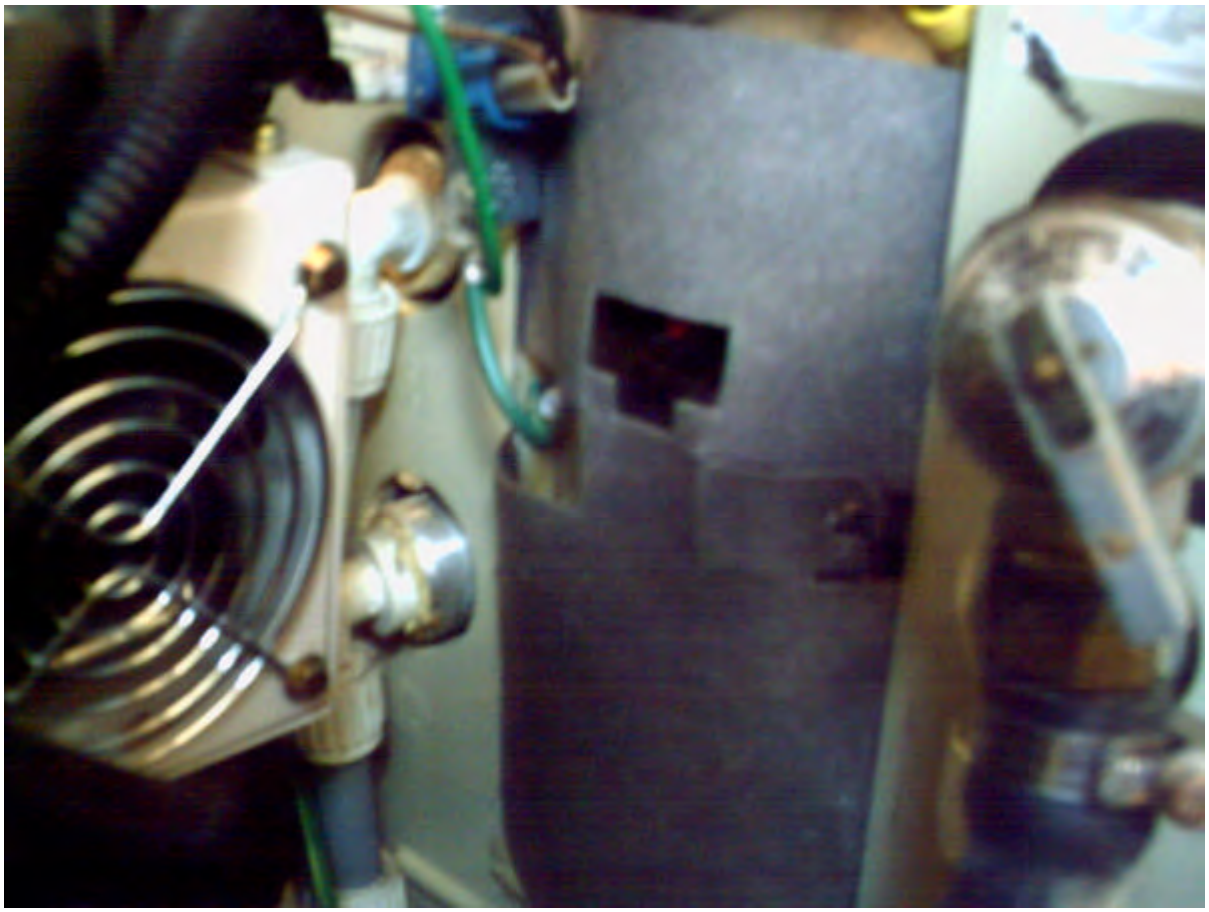
INSTRUCTIONS:

First **DISCONNECT THE POWER** to the RIALTA! You can turn off the switch, Turn off the breaker, but then **DISCONECT THE POWER** to the RIALTA! This is dangerous stuff here and safety is our number one concern.

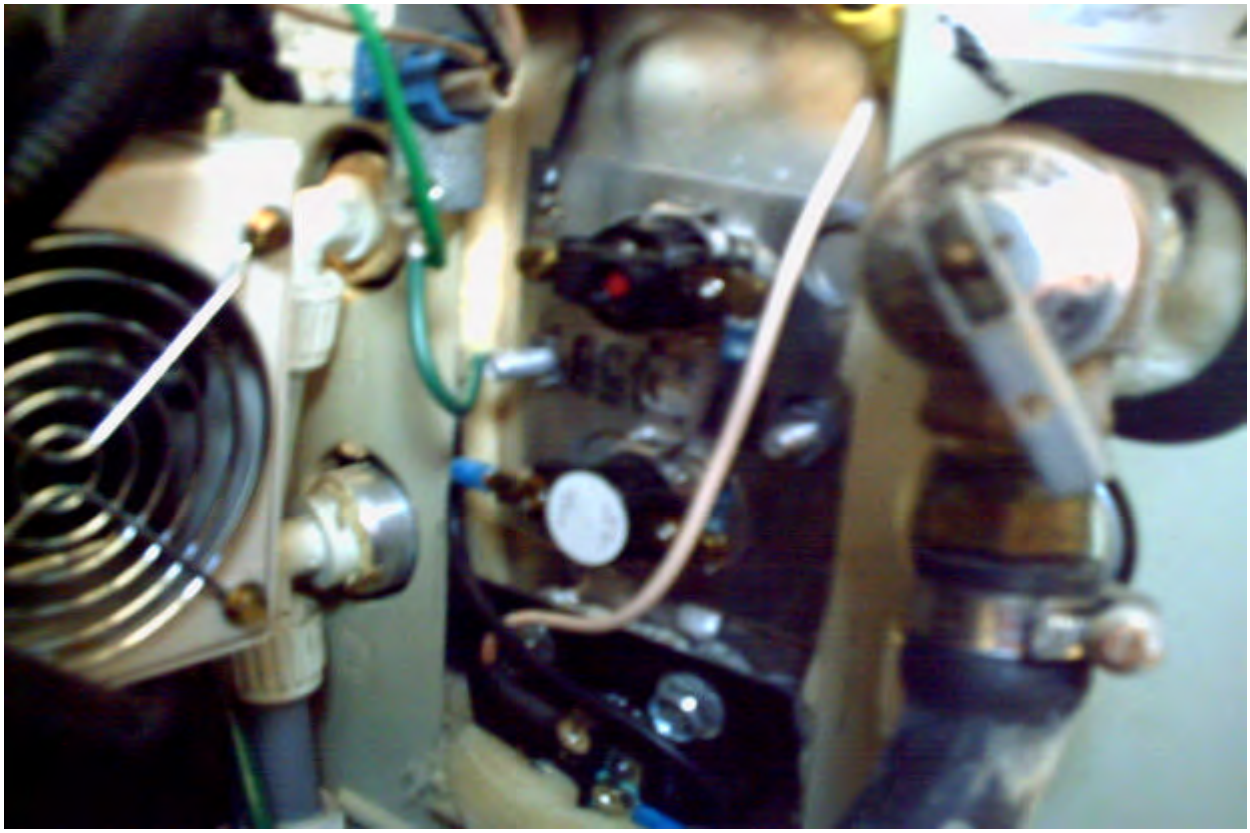
Now locate the water heater, in the QD model it us under the rear bed on the drivers side. On your model it might be else where (and let's hope not as hard to get to).

On the side of the box there is a metal cover. It is held on with 2 screws. One at the top another at the bottom (once you get the bottom one out of a QD model take it outside and throw it as far as you can (it will make you feel much better).


Remove the cover



You may see a hard fiber board cover (this may be missing along with the bottom screw if the heater has ever been worked on). This cover may be held on with two nuts. These nuts are 10mm and should be easily removed. Once they are off pry the cover off. It goes behind the sheet metal cabinet just a little (don’t worry if it breaks in two you can still use it).



THERE IT IS!!!!!! The **RED RESET BUTTON!!!!**
Now you see why this thing is going in the trash!

Now note where all the wires go you have to get them all stuffed back in here after we install the new part.

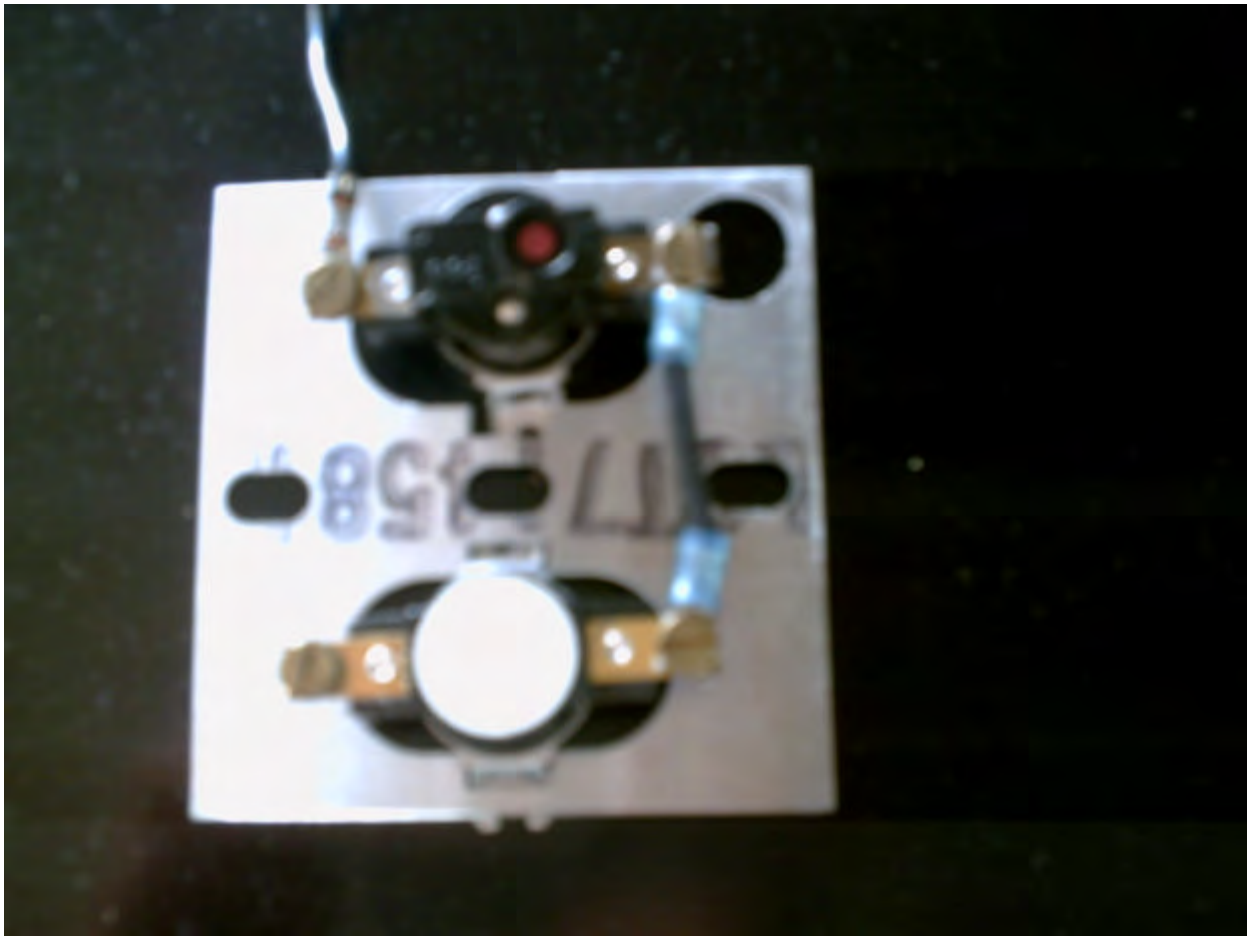
On the left there is a green wire that connects to the heater via another one of those nuts. This is the service ground side of the electrical connections. There is a black wire that runs from the RED RESET BUTTOM to the HOT side of the electrical connections. This connection is via a wire nut (the little yellow twist on/off thing). We need to twist this connection off (it's righty tighty lefty loosey).

Below the RED RESET BUTTOM is the thermostat. This keeps the water temp at 120 degrees. On the thermostat there are two black wires. One comes from the limit switch, the other goes to the heating element. We have to remove the one on the heating element side.

If you can get to the Philips head screw on the heating element and remove the screw then KUDOS to YOU. I just cut the black wire. Not the white one that is the ground side of the electrical connections (you cut that one and the thing will explode Mr. Bond)

With all the connections removed… The black wire on the limit switch (yellow wire nut) and the black wire going from the thermostat to the heating element (I cut that one makes it a lot easier). We can now remove the two nuts that hold the assembly to the tank. The nut on the left holds the service ground to the tank **REMEMBER THIS**! (There will be a test later).

Now remove the Old Assembly



The new one looks like this.

Mount the new assembly to the tank using the nuts (Did you remember the Green Wire? TESTING). The large hole goes on the top this ensures that the high temp switch is on the top of the tank. Be sure the thermostats seat into there holes properly and they sit flat against the tank. Just snug the nuts don't over tighten them; they are not of the best quality.

Now strip the black wire on the upper limit switch and connect it with the wire nut to the power supply line (black wire). Electrical tip #1… Don't twist the wires together when using a wire nut, let the nut do the twisting. If you twist the wires together first then the nut may not get a good bite on the wires and may fall off.

Now strip the wire on the bottom thermostat and use a wire nut to connect it to the heating element wire. You will have to cut the ends off this wire unless you got the little screw out of the heating element and can put the new terminal under the screw and retighten. Again I just cut the wires and used another wire nut.

Now! Remember how all the wires went back in the case? Arrange the wires to where you can get the paper shield back in place (if you had one). If you can get it back under the sheet metal that will hold it in place (it more than likely tore when you tried to remove it, but that is ok). Then replace the metal cover (this takes some jiggling). Then replace the top screw. Now look around and see if you have a small cabin boy handy (provided you even saved the bottom screw) if not your finished.