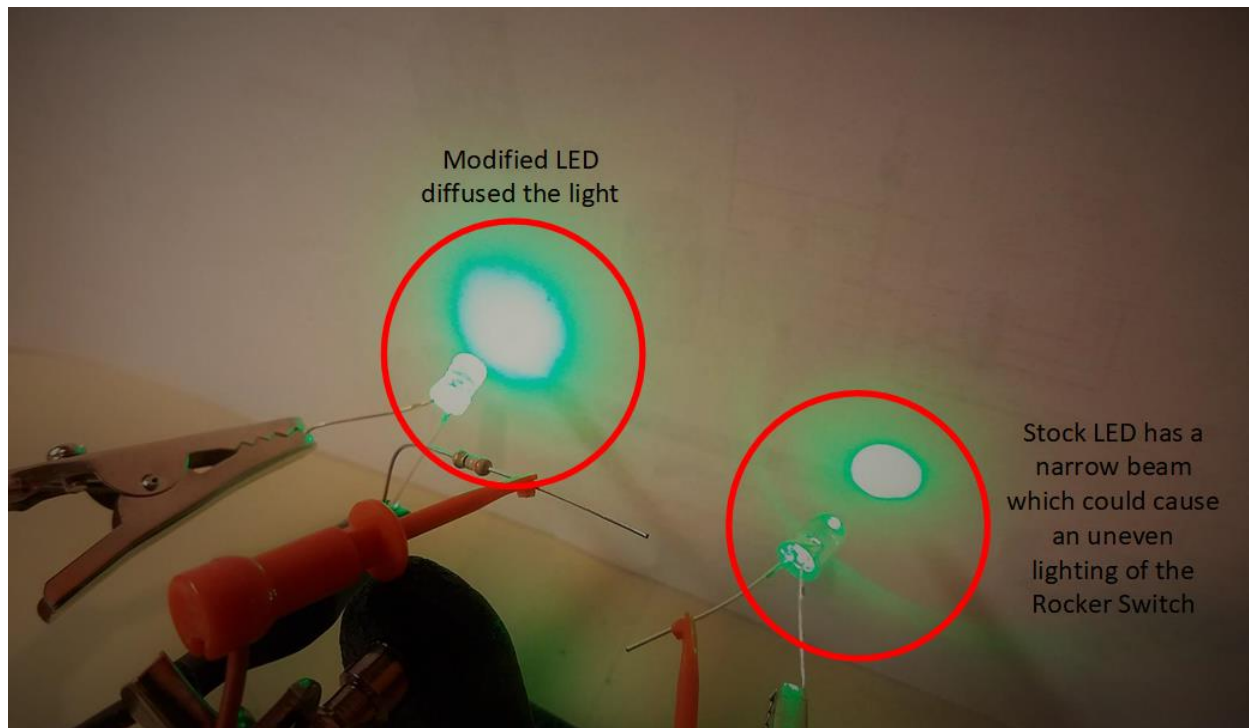


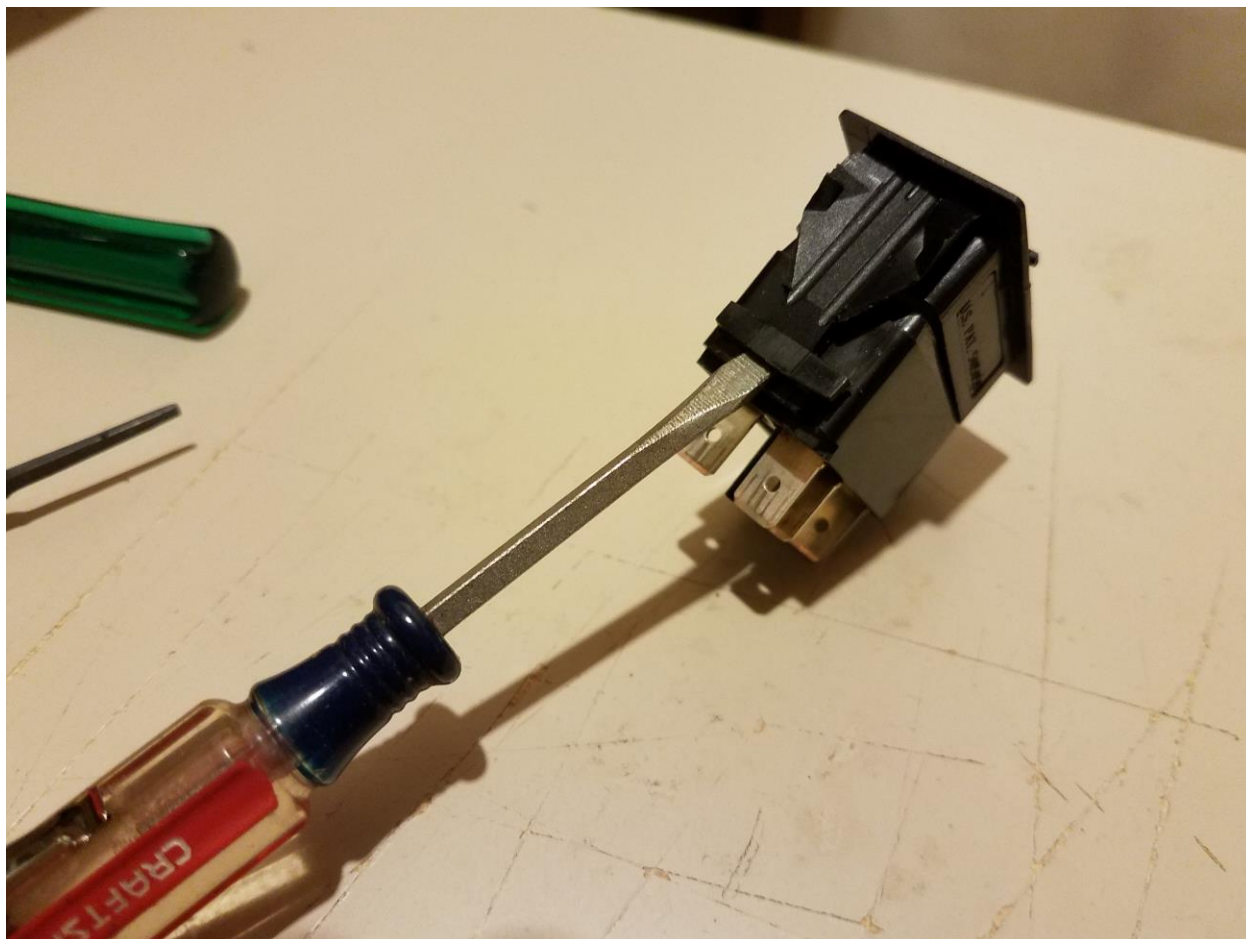
I thought others might be interested in how to modify an OTRATTW (Over-The-River-And-Thru-The-Woods) switch. I went through this exercise and decided to post my findings.

I purchased a P700-4 back in 2014. I made my own custom switch plate and used OTRATTW switches using green and red LEDs. I was very happy with this configuration and the brightness of these switches. In 2017, I purchased a P1000-5 and once again built a custom switch plate. This time I decided to change to blue and red LEDs. However, I was unhappy with these OTRATTW switches. The blue LEDs were noticeably brighter than the red LEDs. Also, these LEDs were not diffused as well as the switches I purchased in 2014, resulting in uneven lighting on the letters and pictures on the rocker. Unfortunately, I did not take any pictures that show this issue. I am convinced that OTRATTW changed their LEDs. I decided to open-up the switches and modify them. I first started with purchasing different red LEDs that claimed to be diffused. However, these diffused LEDs were noticeably less bright and I was unhappy with them. After some research, I realized the green and blue LEDs were the most efficient (for this style of LED) with the lumens output vs drive current more closely matched. Therefore, I purchase some green LEDs to replace the red LEDs. I also decided to modify both the green and blue LEDs to better diffuse the light. I accomplished this task by simply sanding the top of the LED, which effectively did a better job of spreading the light and reducing the focused bright spots on the switch lettering.

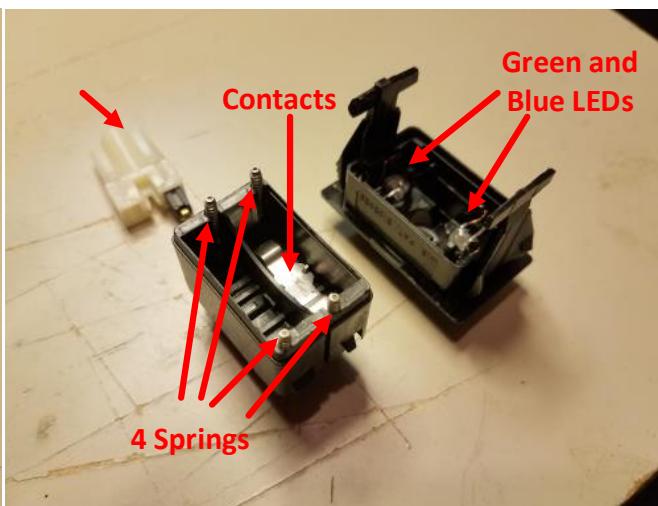
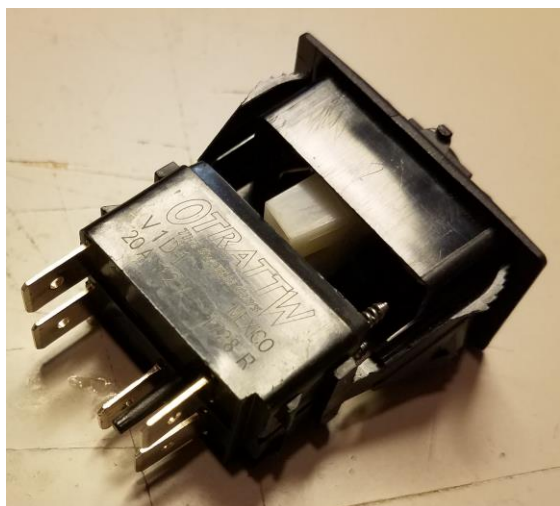




I also modified the internal resistors (found in the switches) to get the LEDs to have approximately the same brightness. To my surprise, it was not difficult to modify these switches. There are tabs on the top and bottom of the switches that allow the upper and lower bodies of the switch to be separated.

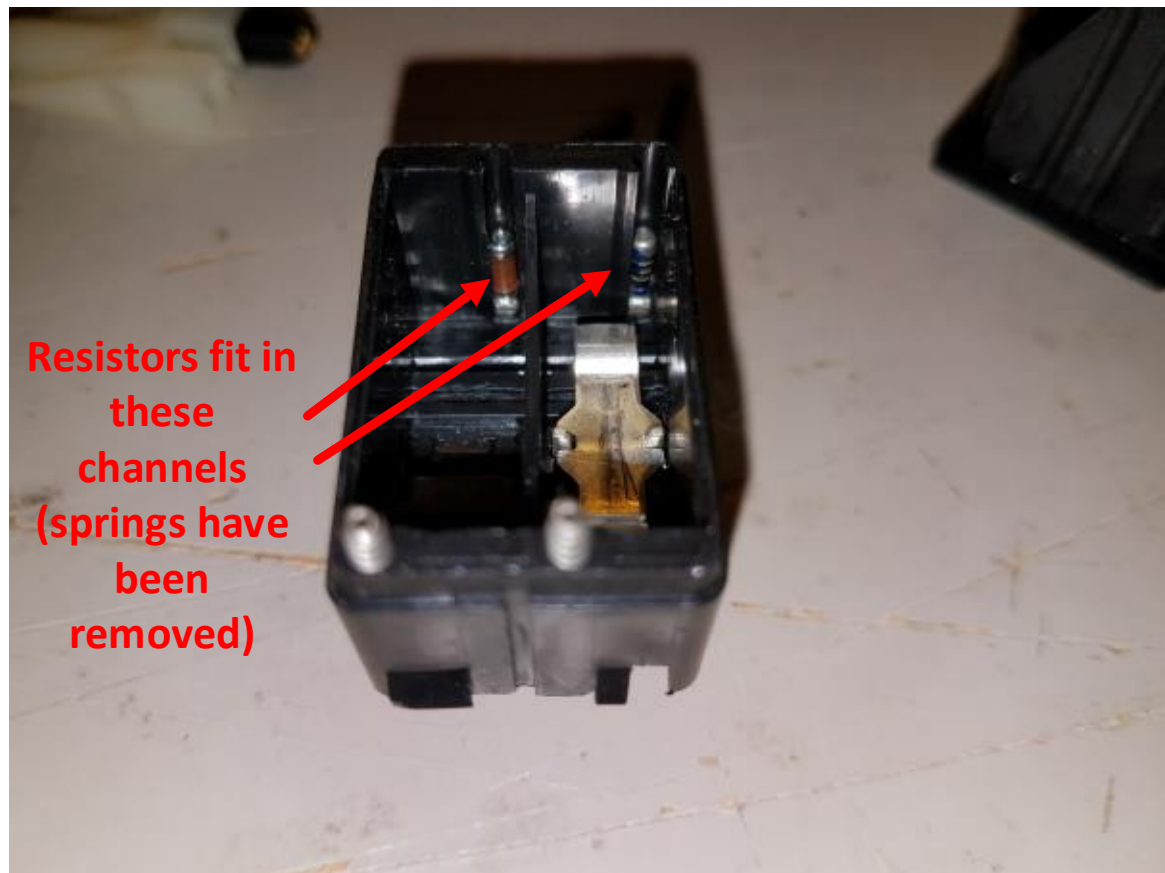


Carefully pry the tabs out, which will release the upper and lower bodies of the switch. Be careful, there are 4 springs which will pop the switch open once the tabs are released. There are several parts that will easily fall-out once the 2 halves are separated. It is not difficult to put back together, just don't lose any of the pieces.



The switch shown in the diagrams is an OTRATTW SPST On/Off Switch (V1D1JCBB). There are 2 LEDs, the lower LED is blue. The upper LED was red, however I replaced it with a green LED.

The resistors in these switches are positioned below the shorter cylindrical spring found on the corner of the switch. Once you remove the spring, the resistor can easily be removed by sliding it out of the cylindrical column. If the switch has two LEDs, there will be two resistors, one for each LED.



The two short springs serve as electrical conductors that connect the resistors to the LEDs. The two longer springs connect the opposite leads on the LED to the contactors/electrical tabs. When the 2 bodies are snapped together, the springs will come in contact with the leads to the LEDs.



The LEDs are just press fit in the plastic body and can easily be removed. There are a couple of plastic tabs that hold the bulb in place and the leads are held in place with preformed channels and slits in the plastic columns. The tricky part is forming the leads to properly fit in the designated channels. Be sure to study (take a picture) of the switch configuration so that you properly route the LEDs the same way during reassembly.

The OTRATTW switches use Metal Electrode Leadless Face (MELF) resistors. This style of resistor is not readily available, however they can be purchased on the internet. I purchased my resistors from Mouser Electronics.

<https://www.mouser.com/Search/ProductDetail.aspx?R=CMB02070X1201GB200virtualkey59430000virtualkey594-CMB02070X1201GB2>

The resistor value for the Green LED was 580 ohms.
The resistor value for the Blue LED was 1.2Kohm.

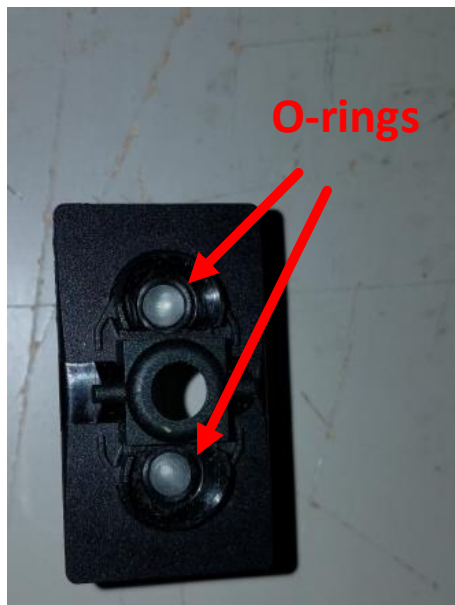
If you replace the LED, be sure to use a 5mm LED. I purchased the Green LEDs from Amazon.

https://www.amazon.com/gp/product/B006G6TKQW/ref=oh_aui_detailpage_o01_s00?ie=UTF8&psc=1

There are several different switch configurations. Some switch configuration may require you to solder a small wire to the lead of the LED to extend it far enough to reach the intended post. It will be obvious if that is necessary once you open and examine the internal configuration of the switch.

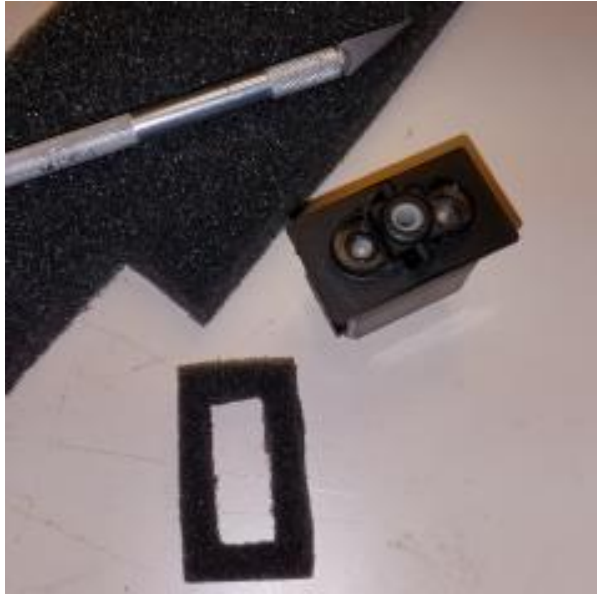
Note: It is critical that you get the polarity correct on the LED. It is very easy to damage the LED if it is installed backwards. The longer lead is the positive node and the shorter lead is negative node. You will need to determine the polarity of the LED that you are replacing and install the new LED oriented to have the same polarity. It is not a big deal if you damage the LEDs because they are cheap if you buy them in bulk. I believe I paid about \$6 for 50 LEDs.

Once you have reassembled the 2 halves, check and make sure the rubber O-ring is properly seated where the LED bulb protrudes through the hole in the upper body. Simply take a small screw driver and reseal the O-ring if it has popped out.



With this style of Rocker switch, some of the light bleeds around the rocker. This is not a big deal, but it is more noticeable when it is dark in the cab. I found a post by Hondasxs where he added a foam gasket between the Rocker and Switch body. This

worked reasonably well in preventing this issue and was easy to add.



The final result of the modified switch was more even colored light with the brightness better matched between the 2 LEDs. I used my phone for taking all of the pictures and it had trouble getting the colors to match. It looks better than the pictures indicate.



