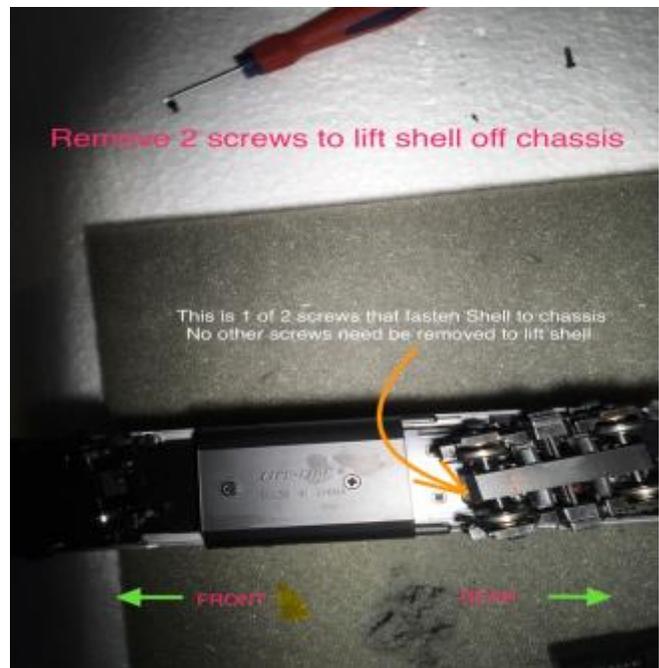


NCE P2KSR decoder installation in P2K Life-Like EMDGP38-2

This project describes installation of a NCE P2KSR non Sound mobile Decoder into a Life-Like PROTO 2000 GP38-2 diesel locomotive. I found space to be very limited. I retained the use of the original grain of wheat incandescent bulbs for the name boards but replaced the front and rear headlights with LEDs. I only had 5mm white LEDs on hand. The install would be much easier using 3mm LEDs if you have them available!

Removing the shell from a P2K EMDGP38-2 can be trying if you don't have the correct instructions to do it. In fact it is deceptively easy. Only 2 screws need be removed from the bottom of the chassis after you have removed the front and rear coupler gear boxes. See photos below for the correct screws to remove. All the other screws should be left in place. The other screws hold the weights to the chassis, and shell removal is much easier if the weights remain securely fastened.



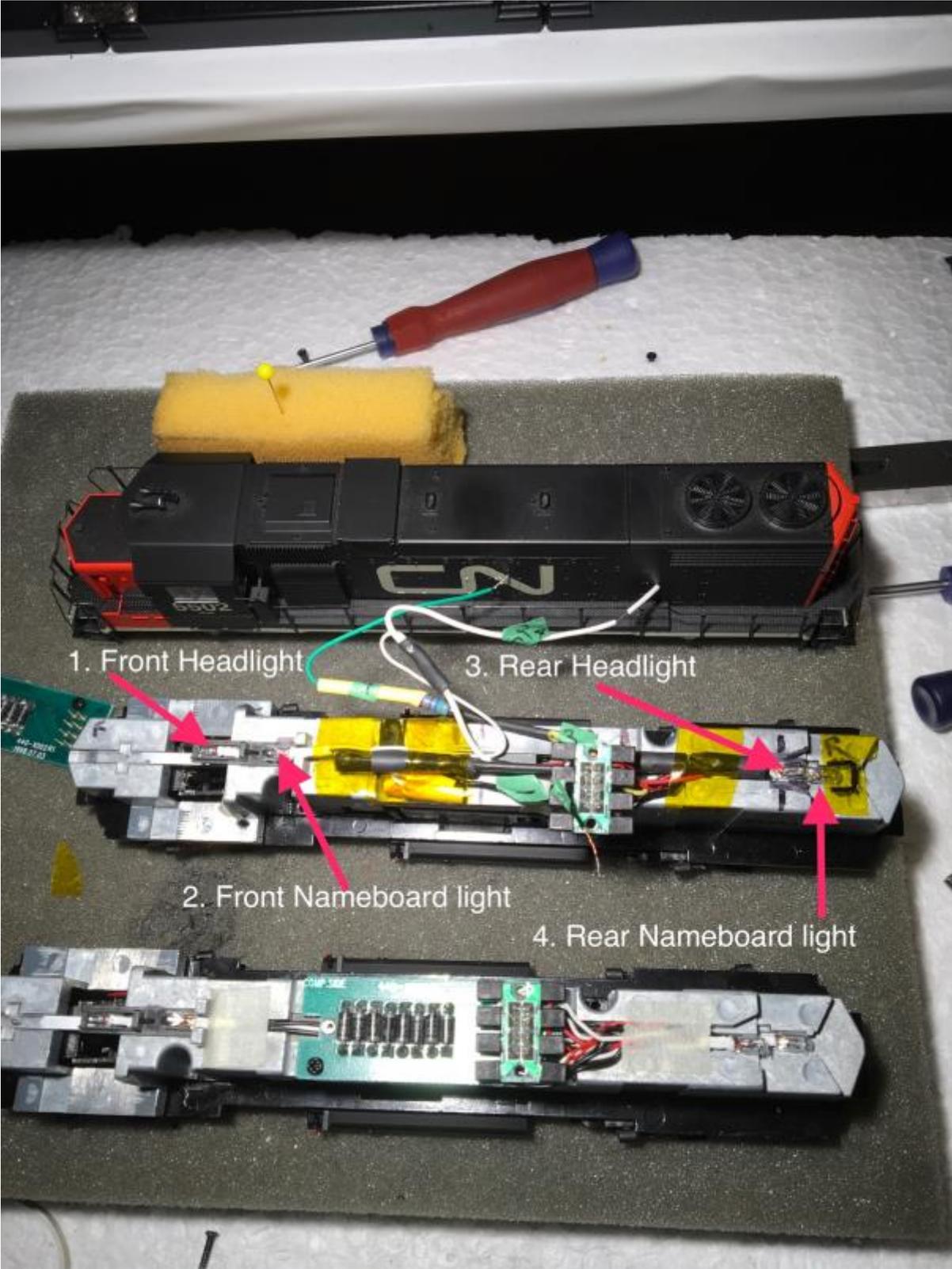
After removing these 2 screws the shell just slides off.

Space under the hood is tight. I was not able to find room for a keep alive.

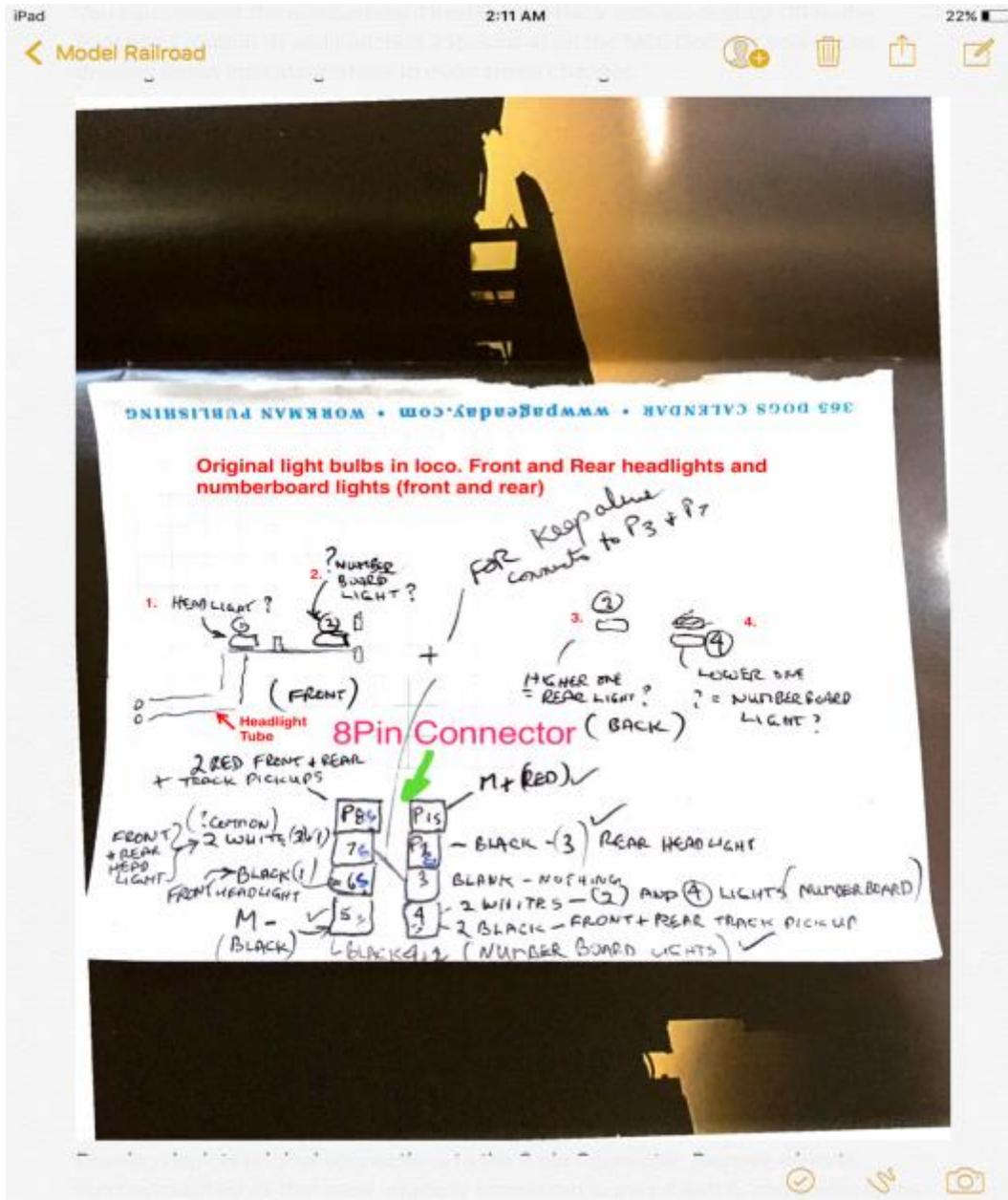


This is what you see after removing the shell:

The original incandescent mini bulbs are located as labelled. I replaced the front and rear headlights with LEDs



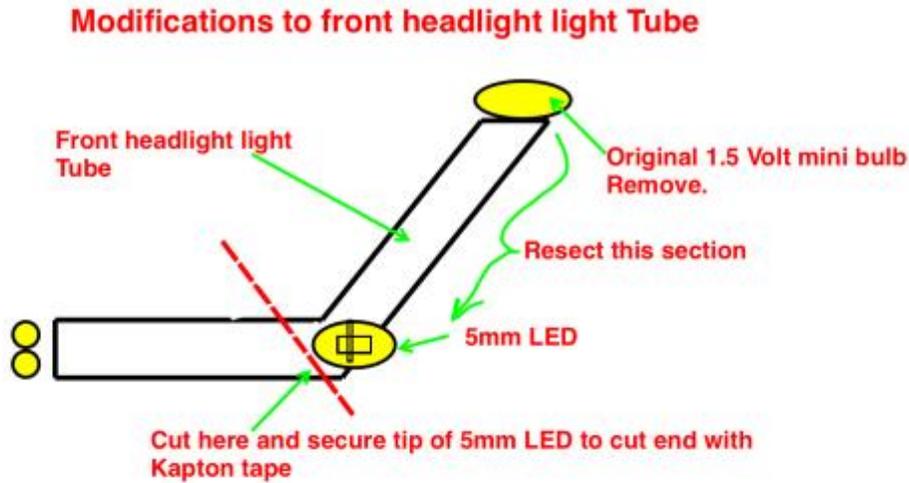
Unplug the 8 pin mini PC board from the original PC light board. Unscrew the light board and discard. The 8 pin connector uses plastic mini caps to secure wires to the 8 contact pins making removal of wires easy. At this time it is important to note that the numberboard lights are not wired correctly to be compatible with the 8 pin receptacle on the NCE Decoder. You MUST correct this before connecting to the decoder as otherwise you will fry your Decoder. The numberboard leads are connected to pins 4 and 5 on the original 8 pin connector and for DCC decoders pin 4 should connect to the negative Track Pickup and pin 5 should connect to the negative Motor Lead only. You can connect the numberboard leads to the track pickups directly OR to the Function 1 (output 3) and Function 2 (output 4) on the NCE Decoder board. See drawing below indicating where to make these changes.



Drawing depicts original connections to the 8 pin Connector. Remove wires to numberboard lights that were originally connected to pins 4 and 5, and solder to the Function 1 and 2 outputs on the decoder.

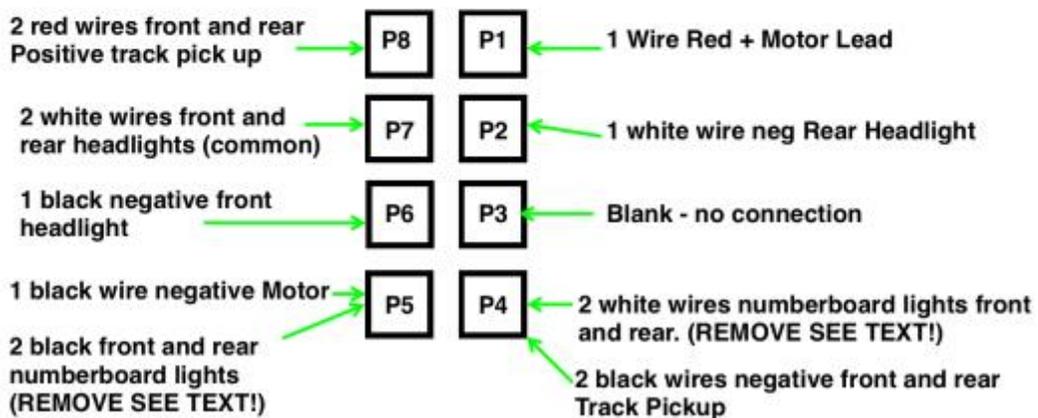
To use a 5mm LED for the front headlight I had to modify the light Tube by removing a section and securing the LED to the end of the modified Tube with Kapton tape.

Diagram showing where to modify the front headlight light Tube:



Original wire connections to 8 pin mini PC Connector

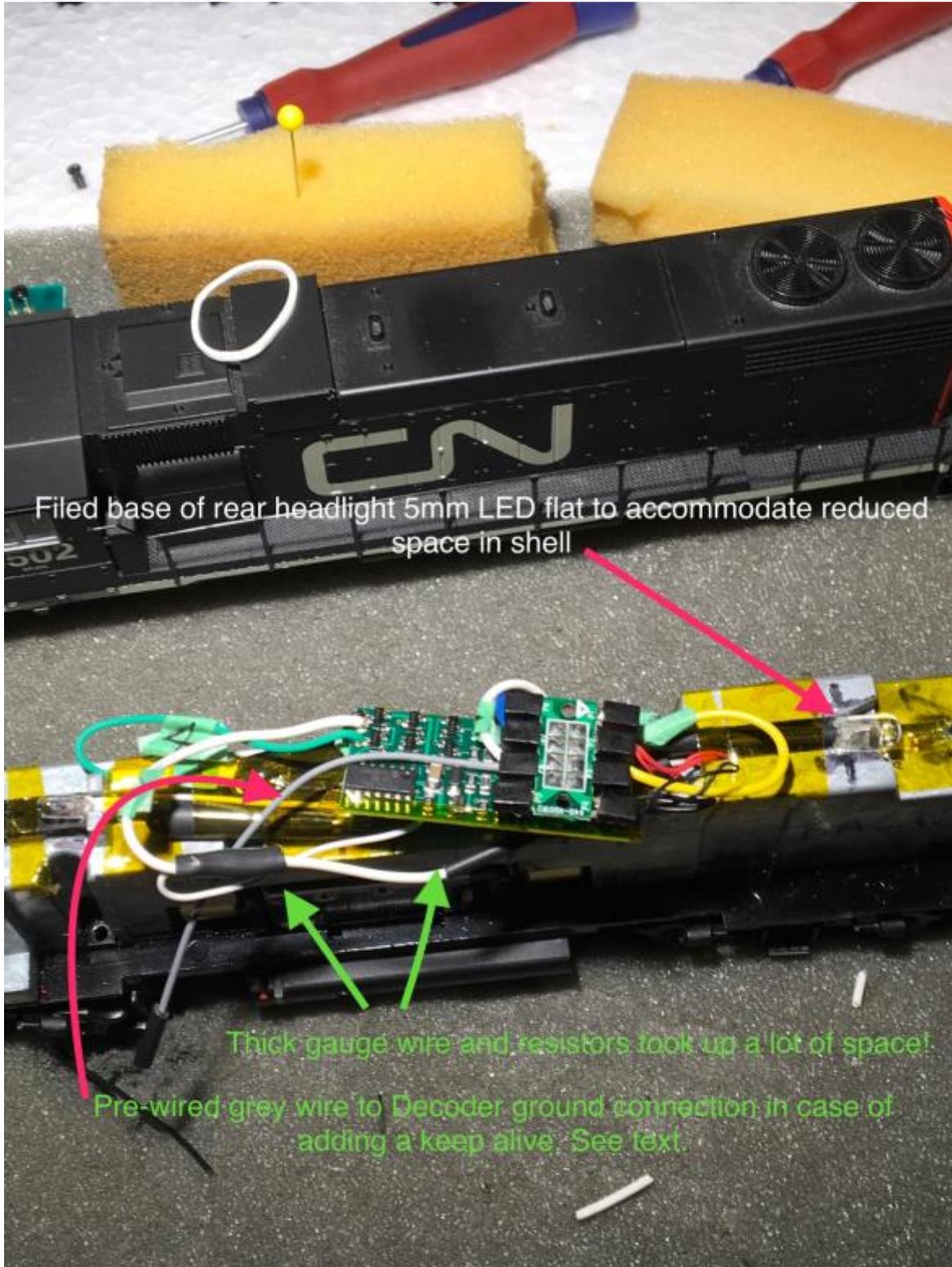
(Note that the wire colours do not conform to NMRA DCC standard)



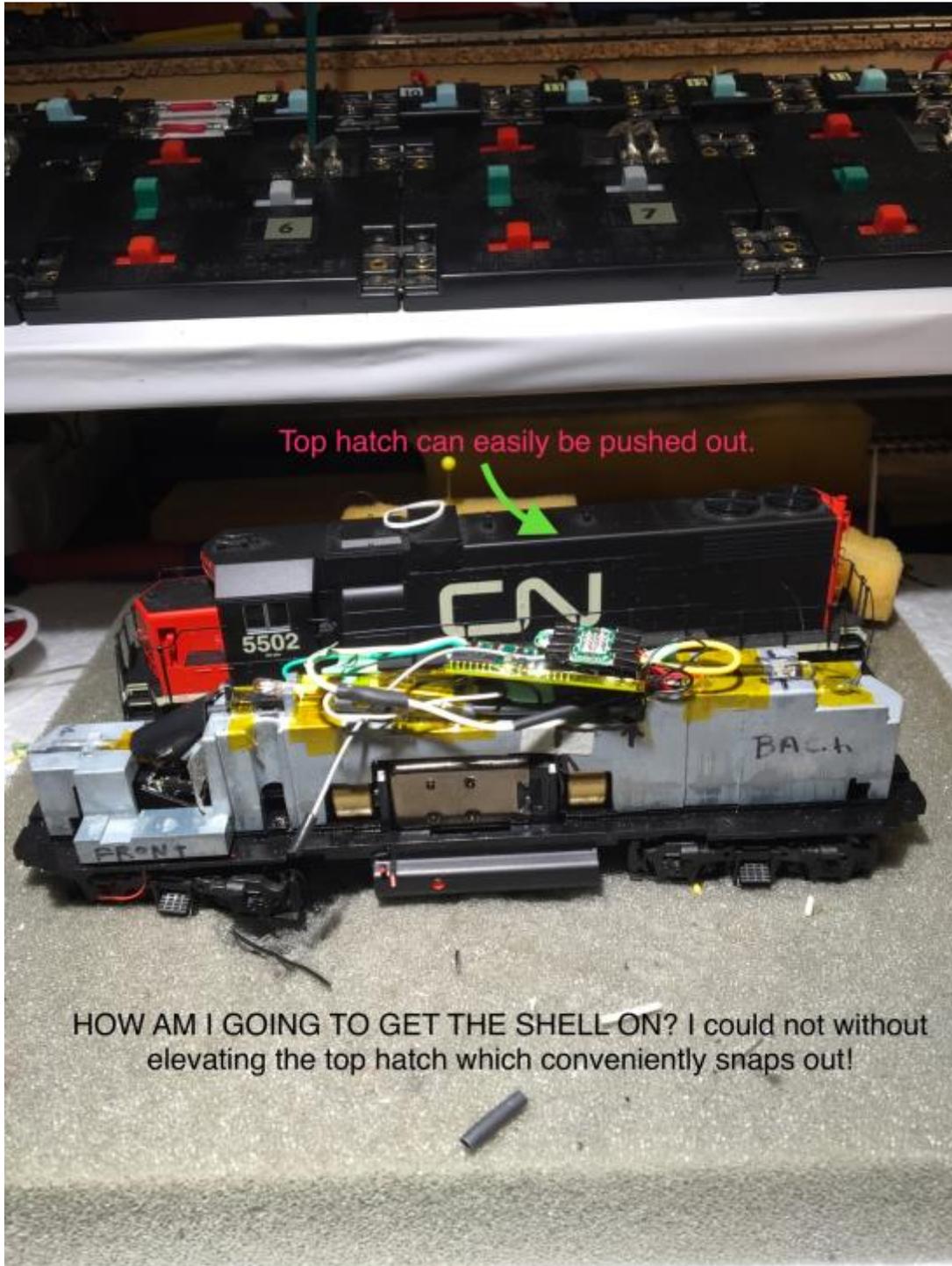
After modifying front head light:



Adding the resistors to the front and rear LEDs (1.5K ohms) and to the nameboard mini light bulbs (530 ohm) took up a lot of space.



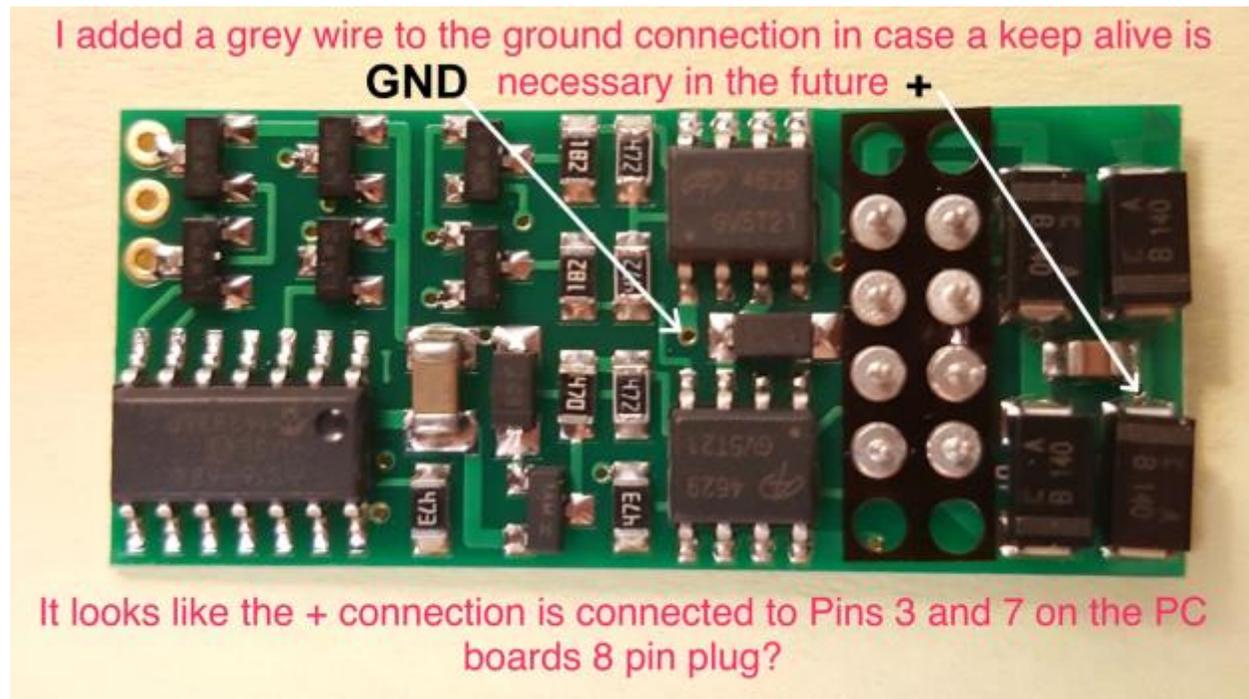
The 530 ohm resistors reduced brightness of the bulbs too much so I suggest using 360 ohm resistors for the 1.5 Volt original incandescent mini bulbs for the nameboards. The nameboard lights are soldered to the Function 1 and 2 outputs on the decoder. Use heat shrink tubing to insulate all wire connections and place Kapton tape on to the back of the decoder to prevent shorts with the chassis. I soldered the wires to the 8 pin plug connections in addition to using the plastic pin covers. Plug the 8 pin connector into the 8 pins on the decoder, making sure no wires are pinched. Now put the shell back on!



Lessons learned from this installation:

Before attempting this installation it would be worth waiting for more suitable accessory parts than what I used. For example don't use 5 mm LEDs. Obtain 3 mm LEDs. Use narrower gauge wire for connections..i.e. 30AWG. This will also allow for use of smaller diameter heat shrink tubing. I found that due to the excellent design of the PROTO 2K Life-Like EMDGP38-2 model's Track Pickup system, I did not require a keep alive. If a keep alive is necessary I think you would have to cut out space for it in the lead weights. Much more space could be gained by not using the original 8 pin plug, and wiring directly to appropriate connection points on the decoder board. In other words using a prewired Decoder with an 8 pin wire harness would avoid having to use the 8 pin plug which takes up a lot of critical vertical space. To add Sound you could use a Soundtraxx Tsunami TSU1100 (which includes an optional capacitor) or TSU 2200 with an 8 wire harness and place mini cube speakers in the cabin space on either side of the front truck Drive gears?

Where to add keep alive or No Halt connections to the NCE SR P2K decoder:
(Courtesy of Ed Wilson at NCE Corporation.)



It seems to me that examination of the decoder's PC board shows the + connection wired to Pins 3 and 7 of the 8 pin connector. (These pins are the common connections on an NMRA DCC 8 pin plug). I have not added a keep alive and therefore can not verify this theory. Best to check carefully for yourself before using these connections. I prewired a small grey wire to the ground connection and then can add a keep alive if necessary in future using this 'ground connection wire' and making a connection to pin 3 or 7?

This is what my final installation looked like.

Ignoring the elevated top hatch, all worked well. The NCE Decoder runs well with excellent speed control, and the light functions were great! Hope any of you reading this can benefit from some of my

mistakes. Using 3mm LEDs and finer gauge wire should make this a perfect install. George at Soundtraxx used a TSU2200 Soundtraxx Decoder discarding both the original PC lightboard and the mini PC 8 pin connector, and installed mini cube speakers in the cab space on either side of the front truck Drive gear.

The NCE P2K SR non sound mobile decoder is an excellent choice for installation into a PROTO 2000 locomotive, especially for the EMD GP 38-2. NCE has designed this Decoder specifically for fitting into these models. The Motor Control is one of the best I have seen in any decoder, with five functions included all for just \$29.95 USD. Well done NCE!

A photo of my finished model appears on the last page. You will notice I have gone out of my way with lighting to accentuate the fact I elevated the top hatch (it removes easily just by pushing it out of the shell) to accommodate the vertical height of the 8 pin plug. (In reality it does not look bad..hardly noticeable). This would not be necessary if using 30 gauge wire, 3 mm LEDs instead of 5 mm and maybe ¼ watt instead of ½ watt resistors? If one ever needs to add sound, just sync a Sound Car to the consist by waving SoundTraxx's magic wand! This was a very enjoyable and successful Decoder project. Thank you NCE.

Doug Dyer
Victoria BC



CN Spiritwood Subdivision

